

FROM SHERDS TO LANDSCAPES: STUDIES ON THE ANCIENT NEAR EAST IN HONOR OF MCGUIRE GIBSON

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STUDIES IN ANCIENT ORIENTAL CIVILIZATION • VOLUME 71
THE ORIENTAL INSTITUTE OF THE UNIVERSITY OF CHICAGO
CHICAGO • ILLINOIS

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KISH AND THE SPATIAL ORGANIZATION OF CITIES IN THIRD-MILLENNIUM BC SOUTHERN IRAQ

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ABSTRACT

Despite its social, geopolitical, and historiographical significance, the city of Kish has been largely left out of archaeological discussions of early Mesopotamian urbanism. This study will combine the results of McGuire Gibson's 1966–67 surface collection with various geospatial datasets that did not exist or were unavailable to him at the time of his fieldwork (declassified intelligence satellite photographs, digital terrain data, and recent commercial satellite imagery) to reassess Kish's urban development and compare it to contemporary cities elsewhere in Mesopotamia.

INTRODUCTION: EARLY MESOPOTAMIAN URBANISM AND THE CITY OF KISH

At one time in the history of ancient Mesopotamia, the city of Kish was so important that holding the title “King of Kish” was equivalent to controlling the world. In literary compositions, the city was so closely associated with political power that time and again, kingship returned to it—no less than four times in the Sumerian King List. When disputes emerged between city rulers in the far south of Sumer, they based their claims on decisions made by the king of Kish, in some cases many generations earlier. In a civilization replete with great cities, Kish was legendary.

Yet Kish rarely features in archaeological discussions of Mesopotamian cities. This may be in part because of the difficulties of working with the excavated materials, despite the heroic efforts of McGuire Gibson and P. R. S. Moorey (Gibson 1972b, 1980; Moorey 1978). The architecture and stratigraphy remains challenging, but the site's spatial layout and chronological development is accessible. Topographic plans were generated by various excavators, and aerial photography exists as well. Most importantly, the site was subjected to a three-week surface collection by Gibson during his 1966–67 survey of the Kish region (Gibson 1972a, b). Through analysis of chronologically sensitive artifacts found at the various mounds, Gibson described the spatial evolution of settlement on the site from the Uruk period to the Ottoman era.

Despite the importance of cities in Mesopotamian history, intensive surface collections have been relatively rare. The surveys of Adams, Wright, and Gibson emphasized regional settlement patterns over individual site biographies (reviewed in Ur 2013b). There are notable exceptions: Uruk was subjected to an intensive effort focused on shifting occupations (Finkbeiner 1991), and surface collections at Mashkan-shapir underlaid a synchronic study of use of space (Stone and Zimansky 2004). Lagash, Nippur, and Fara were surveyed at lower intensity (Gibson 1992; Martin 1983; Carter 1989–90). An intensive topographic and surface survey was planned for Kish by the Japanese expedition in 2001 but could not be carried out (Matsumoto and Oguchi 2004). The southern Iraqi heartland stands in contrast to northern Mesopotamia, where systematic intensive

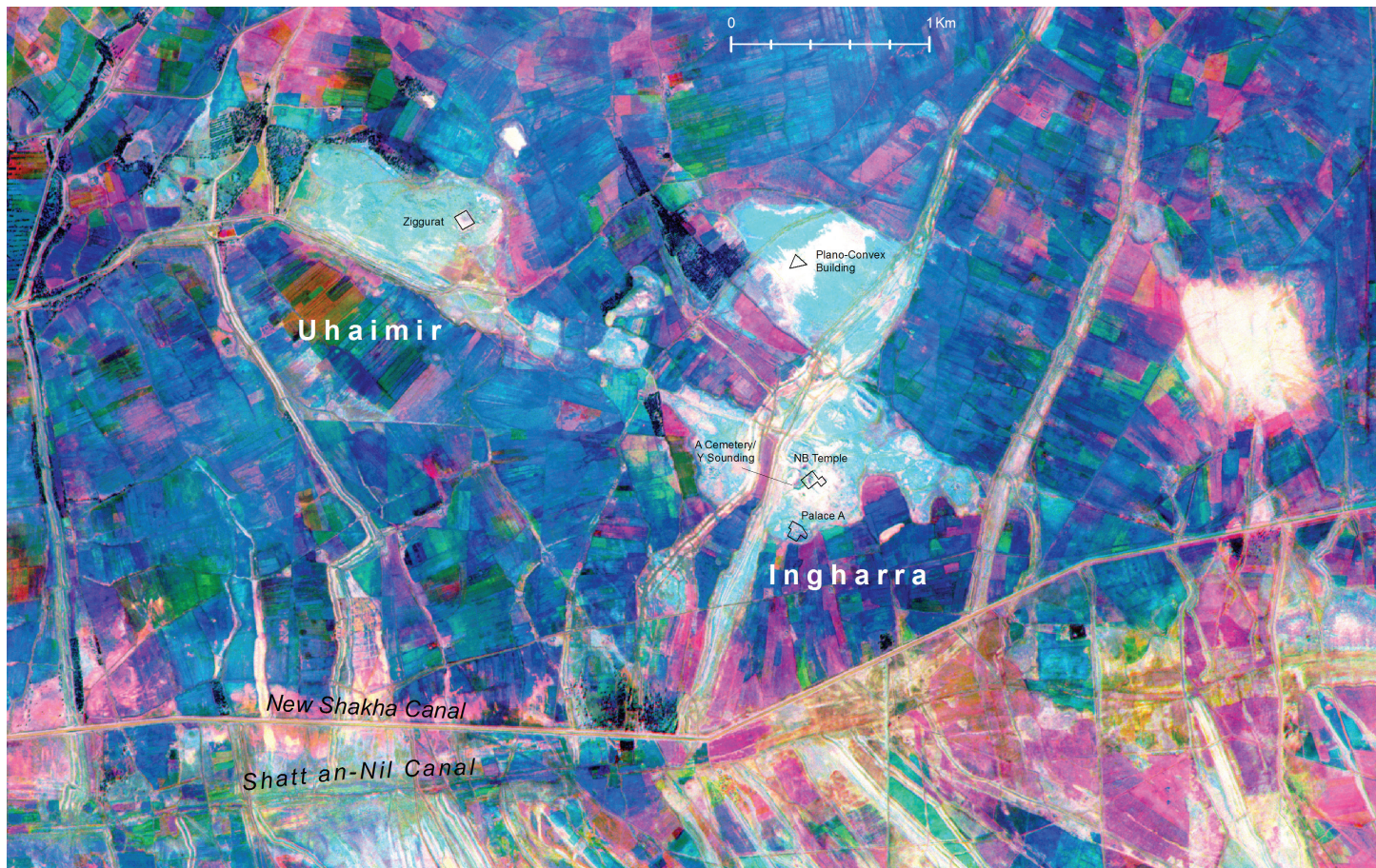


FIGURE 12.1. False-color satellite photograph of Kish based on three CORONA photographs (Ur 2014a): Mission 1039 (February 28, 1967, red); Mission 1103 (May 4, 1968, green); and Mission 1104 (16 August 1968, blue).

collections of urban sites within larger regional surveys have been common (e.g., Ball, Tucker, and Wilkinson 1989; Ur 2010; Ur, Karsgaard, and Oates 2011).

This study presents a reassessment of Gibson's survey results for the city of Kish. At its most basic, it proposes quantified sizes for the city at its various phases of settlement, using geospatial tools not available to Gibson and his colleagues at the time of their fieldwork. It reconsiders the spatial scale of individual mounds, and the site generally, using a range of remote sensing datasets that have become available in the past fifteen years. Finally, it places Kish in comparative perspective, in terms of scale and morphology, with its contemporaries in greater Mesopotamia.

DATASETS

This study relies heavily on Gibson's published results from the surface collection (Gibson 1972b), and also his consideration of the distribution of texts from the excavations (Gibson 1972a), as well as the reassessments of the early excavations (Gibson 1972b; Moorey 1978). For a spatial study, Mackay's site map is especially useful (1929).

The new contributions of the study at hand are remote sensing analyses based on several sources. Some are quite old: an aerial mosaic of Kish taken by the Royal Air Force in 1929 (Moorey 1978), and a pair of images of Uhaimir taken at approximately the same time. Three sources derive from the US CORONA intelligence satellite program, which has been a boon to Near Eastern landscape archaeology (Casana, Cothren, and Kalayci 2012; Ur 2013a, c). These photographs have been stacked to create a multiband false-color image (Ur 2014a) in which dry or unvegetated surfaces are white or light colored, and wet or durably vegetated land appears black or dark (fig. 12.1). Archaeological features that appear light include mounded areas and canal spoil banks.

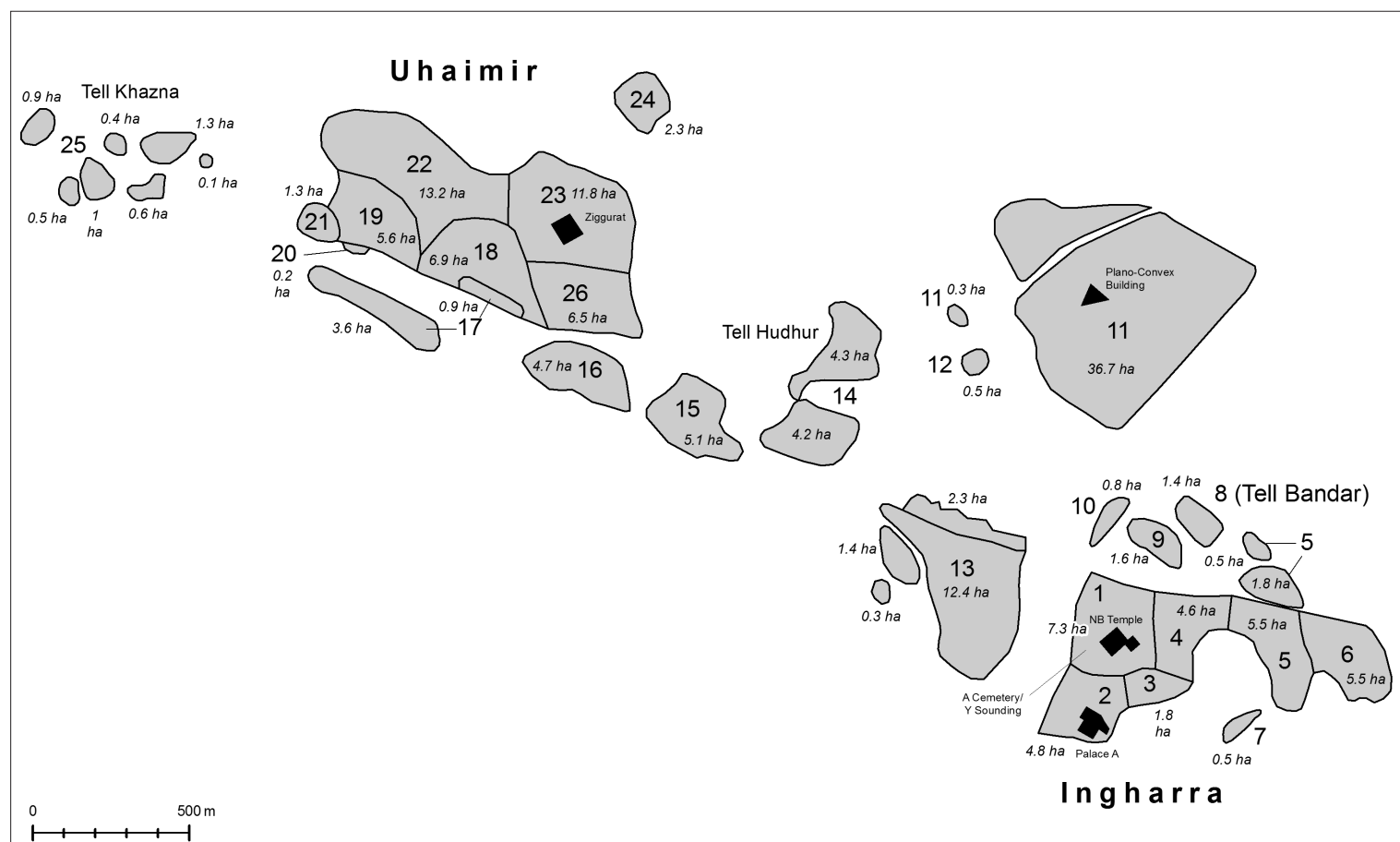


FIGURE 12.2. The mounds of the Kish settlement complex and their spatial extent. Numbering scheme follows Gibson (1972b). For spatial data see Ur (2014a).

Additional remote sensing sources for Kish are more recent. A 2.5 m resolution SPOT mosaic of the site, and most of Iraq, can be viewed on Google Earth; its date is indeterminate but probably postdates the 1990s. The QuickBird satellite imaged Kish on July 7, 2006. Modern commercial satellites have the advantage of high resolution, but their recent date is a decided disadvantage for archaeological landscapes. In the case of the Kish region, the last forty years have seen the arrival of massive new irrigation schemes and an enormous expressway, including a cloverleaf exit in the center of the site complex. CORONA scenes may not be able to resolve the trenches of Mackay or Watelin, but they depict a Kish prior to the arrival of destructive modern transformations.

These datasets were georeferenced, projected into the Universal Transverse Mercator (UTM) zone 38 coordinate system, and brought into a GIS environment, where the position and extent of each mound could be measured precisely. They can be viewed as interactive web maps at <https://arcg.is/0Lu9W0> and are downloadable (Ur 2014a).

ANALYSIS

A GIS-based reassessment of its extent is the first step in a comparative study of Kish and its contemporaries. From Tell Khazna in the northwest (Gibson's Area 25) to the Sasanian town at the southeast (Gibson's Areas 5–7), the site extends 4,700 m (fig. 12.2). This linearity is almost certainly a legacy of its latest phases of settlement. At its widest, between Areas 11 and 13, it is 1,600 m across, but elsewhere does not exceed 600–700 m. The entire archaeological complex, including seemingly unoccupied space between the mounds, covers approximately 385 ha, although at no point in Kish's history was this entire area settled simultaneously.

MOUNDS AND COLLECTION AREAS

Kish has been labeled as a “twin city” since serious investigations started in the early twentieth century AD, and probably had a double identity through much of its ancient life as well (Edzard 1975, 1980). The western mound of Uhaimir covers about 47 ha, slightly larger than represented by Gibson (Gibson 1972b, fig. 25). His dashed but unlabeled southeastern extension of Uhaimir has been arbitrarily designated as Area 26. Uhaimir’s outlying mounds to the south (Areas 15–17) are also larger than mapped by Gibson.

The eastern part of the site has the modern name Ingharra. Since Ur III times it was independently termed *Ḫursagkalama*, a term that initially applied only to the Inanna/Ishtar ziggurat complex (Area 1) but later denoted the entire eastern half of the city (Gibson 1975; Edzard 1975). Areas 1–4 are contiguous; separate to the west is Area 13, which is a much larger mound (almost 17 ha) than represented by Gibson. It is separated from Areas 1–4 by a series of massive canals running to the northeast, the largest being connected clearly to the late Shatt an-Nil canal south of the site. Eastern and northern Ingharra comprises a series of low mounds (Areas 5–10), several of which are more contiguous than Gibson’s maps suggest.

Far to the north of Ingharra proper, but probably to be considered a part of it, is Area 11, an extensive area where Mackay excavated the ED III plano-convex building. In CORONA scenes, it is a vast area of almost 40 ha, and indeed probably was much reduced by mid-twentieth century agricultural expansion, if Mackay’s map (1929) is accurate.

Other mounds of the complex fall outside of the Uhaimir–Ingharra dyad. Between them is the double mound Tell Hudhur (Area 14, 8.5 ha total). North of Uhaimir is the small mound 24 (2.3 ha) and west of Uhaimir is Tell Khazna, a scatter of small mounds totaling 4.8 ha.

These area assessments are based primarily on CORONA photographs, which were taken only a few years after Gibson’s fieldwork. One must bear in mind, however, that they reflect visible site areas after millennia of natural and human transformation of the site. The isolated nature of the mounds may be due to the twin process of alluviation and wind deflation (Wilkinson 2003, pp. 80–81). Kish is at the center of the Euphrates flood plain, a part of the plain with high rates of sediment deposition (Buringh 1960). With floods and agriculture, the level of the plain around Kish and other sites would be expected to rise. At the same time, dry winds can deflate sites and river levees, especially if they are devegetated for any period of time (Armstrong and Brandt 1994). The area of Kish has certainly been subjected to heavily wind deflation over the millennia, since all traces of pre-second-millennium BC levees have been completely effaced (see below).

The division between natural and cultural transformations is arbitrary, since they are closely related. Natural floods may have deposited sediments over Kish, but the sediment load from artificial canals may have been just as substantial. Furthermore, their excavators dug around and through Kish’s mounds, obscuring earlier phases. The large canals that bifurcate Ingharra, for example, can be connected to the Shatt an-Nil, which Gibson dates to the early Islamic period (Gibson 1972b, pp. 53, 60). These distributaries, and the offtakes from them, certainly could have irrigated a lot of low-mounded Kish.

HISTORICAL DEVELOPMENT OF KISH

The general outlines of settlement history at Kish were established firmly by Gibson’s surface collection; the reassessment presented here extends it only through GIS- and remote sensing-enabled spatial precision and some interpretations based on other Mesopotamian cities. For many periods, there is little new to add aside from an areal estimate, and the reader is directed to Gibson’s assessment (esp. 1972b, pp. 58–60, figs. 25–33). The estimates provided here are based on the full extent of each of Gibson’s areas; if he indicated it to be settled in a given period, the entire area is included in the calculation. This approach certainly results in higher estimates than Gibson would have made, had he quantified; in his maps for individual periods, he often represents mounds as partially occupied. In the absence of published information on how his areas were further subdivided, this reassessment has simply included the entire area in its calculations; any critical analysis of it should be aware of this methodological decision.

The city’s twin morphology appears to have been established from the earliest observed settlement in the Uruk period, when village and a small town were separated by 2 km (fig. 12.3a). This distance is great

enough that it is probably safe to assume that their residents considered themselves to reside in two separate settlements, although almost certainly with common ancestry and close familial connections.

Urban status came rapidly at the start of the third millennium BC (Early Dynastic I period), when settlement expanded around the southeastern town (Ingharra), and a broad area of settlement appeared to the south of the Uruk village (Uhaimir; see fig. 12.3b). Gibson's collection strategy resulted in two agglomerations of isolated mounds, but he is certainly correct in his assumption that these places were likely to have been fully settled (Gibson 1972b, p. 58). If this assumption is correct, Kish grew from 10.1 ha into almost 140 ha



FIGURE 12.3. Settlement evolution at Kish, Uruk to Old Babylonian periods. Hectare measurements are proposed maximum extents (including areas in gray); measurements in parentheses are based solely on mounded areas collected by Gibson (1972a, b). For spatial data see Ur (2014a).

in the span of a few centuries. This fourteen-fold pattern of growth could only have come at the expense of the countryside, a pattern not seen very clearly in Kish's immediate region but much more apparent on the floodplain to the south (Adams 1981; Ur 2013b). Although Ingharra grew larger, it is clear that both mounds participated in this rapid urban expansion.

Kish reached its political and spatial apogee in the Early Dynastic III period, growing an additional 60% to attain an estimated 230.9 ha (fig. 12.3c). All of this growth came from the northward expansion of Ingharra to include the broad Area 11. Here Mackay excavated a large palace made of plano-convex bricks, and both Japanese surface scraping and high resolution satellite imagery have revealed a vast expanse of



FIGURE 12.4. Settlement evolution at Kish, Kassite to Early Islamic periods. Hectare measurements are proposed maximum extents (including areas in gray); measurements in parentheses are based solely on mounded areas collected by Gibson (1972a, b). For spatial data see Ur (2014a).

dense architecture (Matsumoto and Oguchi 2002; Stone 2013, pp. 164–65). If Area 11 was contiguous with the already-ancient core of Ingharra, it would comprise almost 185 ha. When combined with the continued settlement of Uhaimir, the Kish complex was one of the largest conurbations on the Mesopotamian plain (see below).

Kish lost most of its population at some point prior to Gibson's Akkadian period (likely to be late in the Akkadian sequence), when this northern Area 11 extension was abandoned (fig. 12.3d). Ingharra's core region was reduced as well, with the desertion of the Palace A region, and Uhaimir also contracted. The city maintained this spatial pattern for the next half millennium (figs. 12.3e–f), fluctuating between 70 and 90 ha, most often evenly divided between Uhaimir and Ingharra (now known as Hursagkalama). Although much reduced from its Early Dynastic III high point, the twin settlements of Kish still remained urbanized if we used Adams's arbitrary area threshold—probably never less than 10,000 persons, and probably many more, if one subscribes to the highest persons/ha ratio (e.g., Postgate 1994).

A great disruption in Kish's development came sometime after the late Old Babylonian period; under the Kassite kings, the old core of Ingharra/Hursagkalama was abandoned entirely for the first time since the fourth millennium BC (fig. 12.4a). Only Mound 13 remained occupied, as was most of Uhaimir. At 76.2 ha, Kassite Kish was still a major urban center, despite falling in the shadow of Babylon to the west.

The Neo-Babylonian kings consciously attempted to resuscitate Kish's ziggurats, and this effort was accompanied by a population expansion (fig. 12.4b). The core of Ingharra/Hursagkalama (Area 1) was resettled for the final time. The shape of the city was now unambiguously dictated by a watercourse, stretching 4 km along the "Kish canal" from Babylon.

For the last millennium and a half of its existence as a substantial settlement, Kish was a shifting conglomeration of mounds of variable density, some of which may have been cemeteries rather than residential areas (Gibson 1972b, pp. 59–60). Kish's "twin city" nature was increasingly obscured, as the ancient mounds at Uhaimir and Ingharra lost focus, and new areas in the center (Area 14, Tell Hudhur) and to the far southeast (Areas 4–6) were intensely settled. Kish's Early Islamic town was replaced by villages in the Abbasid and Ottoman periods, which would have been overwhelmed by the bulk of the abandoned ancient city surrounding them.

DISCUSSION

For most sites, and throughout most of Mesopotamian history, the spatial extent of an archaeological site is the only proxy indicator we have for ancient population. This reassessment of Kish, based on Gibson's field survey and GIS-based spatial analysis, places Kish next to its contemporaries.

Kish experienced explosive initial growth in the third millennium, and while its population declined precipitously by the end of the millennium, it retained urban status until well into the Islamic period (fig. 12.5). At present, no known site approaches the massive walled city of Uruk, in terms of spatial extent, which encompassed some 400 ha in the Early Dynastic I period (Finkbeiner 1991). With a possible extent of almost 140 ha, Kish was its closest rival at this time. There is no evidence for a comparable city wall at Kish, but unlike Uruk, it remained in a heavily irrigated zone long after its apogee, and an unmaintained wall might easily have eroded and disappeared under irrigation sediments.

Late Early Dynastic Kish was one of the largest cities in Mesopotamia. It dwarfed its northern Mesopotamian contemporaries at Ebla, Mari, Hamoukar, and Nagar (Ur, Karstgaard, and Oates 2011), which were faced with environmental and logistical limitations that did not apply in southern Mesopotamia (Wilkinson 1994). At a time of overwhelming urbanization on the southern plains (Adams 1981, p. 138), it was one of the largest. At an estimated 230 ha, its only peers were Lagash (ca. 500 ha; Carter 1989–90), Girsu (ca. 430 ha; Hritz, this volume), and Umma (possibly 260 ha; Ur 2014b). Uruk may have been in excess of 300 ha (Finkbeiner 1991, Beilage 25).

The settlement's growth in the Early Dynastic III period extended north from Ingharra, but did not touch the intervening open space between it and Uhaimir. The avoidance of this intermediate space demands an explanation. If that land had merely been agricultural space, the pressure to exploit it for the growing settlement would have been tremendous, if not already during the Early Dynastic I period, then certainly at some

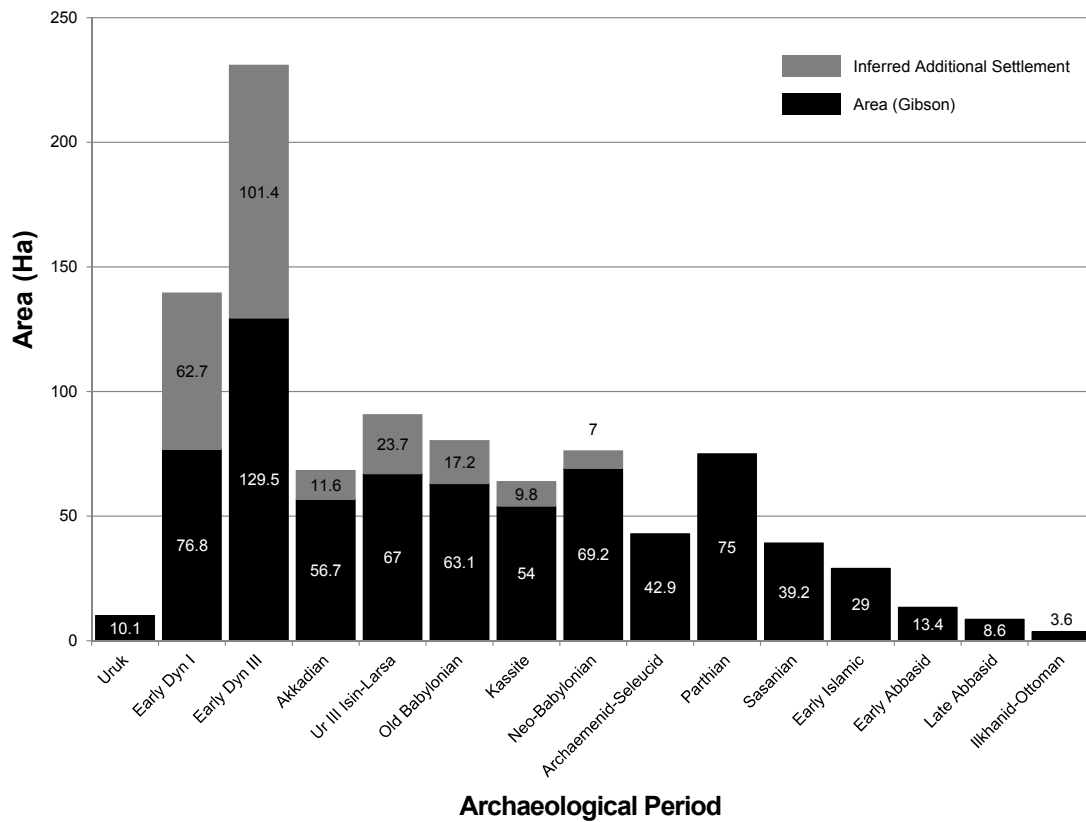


FIGURE 12.5. The evolution of settlement area at Kish. Black bars are settlement areas collected by Gibson and re-measured via satellite remote sensing; gray bars are inferred additional settlement areas (see figs. 12.3–12.4 for locations). All measurements in hectares.

time subsequently. Certainly, this sort of infilling seems to have characterized the growth patterns of Uruk, another hypothesized early twin city. Yet Uhaimir and Ingharra/Ḫursagkalama remained spatially discrete for about two and a half millennia, until the settlement of Tell Hudhur (Area 14) in the Achaemenid/Seleucid period. It is possible that Kish's durable twin morphology is a function of taphonomic processes; deposition of sediments from natural flood alluviation or late irrigation practices could have buried low-lying settlement areas.

On the other hand, avoidance of this space may have been real. Patterns of land tenure are closely related to patterns of settlement expansion, but it is very difficult to imagine a continuous pattern of ownership over this land that lasted for some two thousand years. A more likely reason is that this space was simply uninhabitable, probably because the Euphrates (initially) or a major canal from it (subsequently) ran between Uhaimir and Ingharra. This interpretation is not without difficulties—for example, the major branches of the modern Euphrates are 100–150 m between banks, and the space between Uhaimir and Ingharra is about 1 km. With the present state of knowledge, however, the presence of a major watercourse is the most reasonable explanation for why Kish maintained a dual morphology for such a long time. No trace remains today of this early Euphrates levee (see below).

The evolving shape of the city (or cities) of Kish is also remarkable. Its twin-city morphology may be rare (if not unique) in Mesopotamian history, but early settlement on Uhaimir and Ingharra does appear to conform to known patterns of urbanism on the plain. For one, they are nucleated settlements, based around durable temple households and with densely occupied residential quarters. For Uhaimir and Ingharra proper, we know little of their internal structure beyond monumental architecture. For the Early Dynastic III northern extension of Ingharra into Area 11, however, satellite imagery shows a dense urban fabric, similar to what is known from excavations at Ešnunna and Ur (Stone 2013). Both settlements grew to, and maintained, the ovoid shapes characteristic of other early cities, which suggests that decisions about turning agricultural land into settlement space were not wholly defined by proximity to river or canal.

With time, southern cities were more likely to exhibit linear growth patterns, a tendency borne out at Kish. Linear cities, the growth of which was heavily influenced by canals or rivers, first appear unambiguously

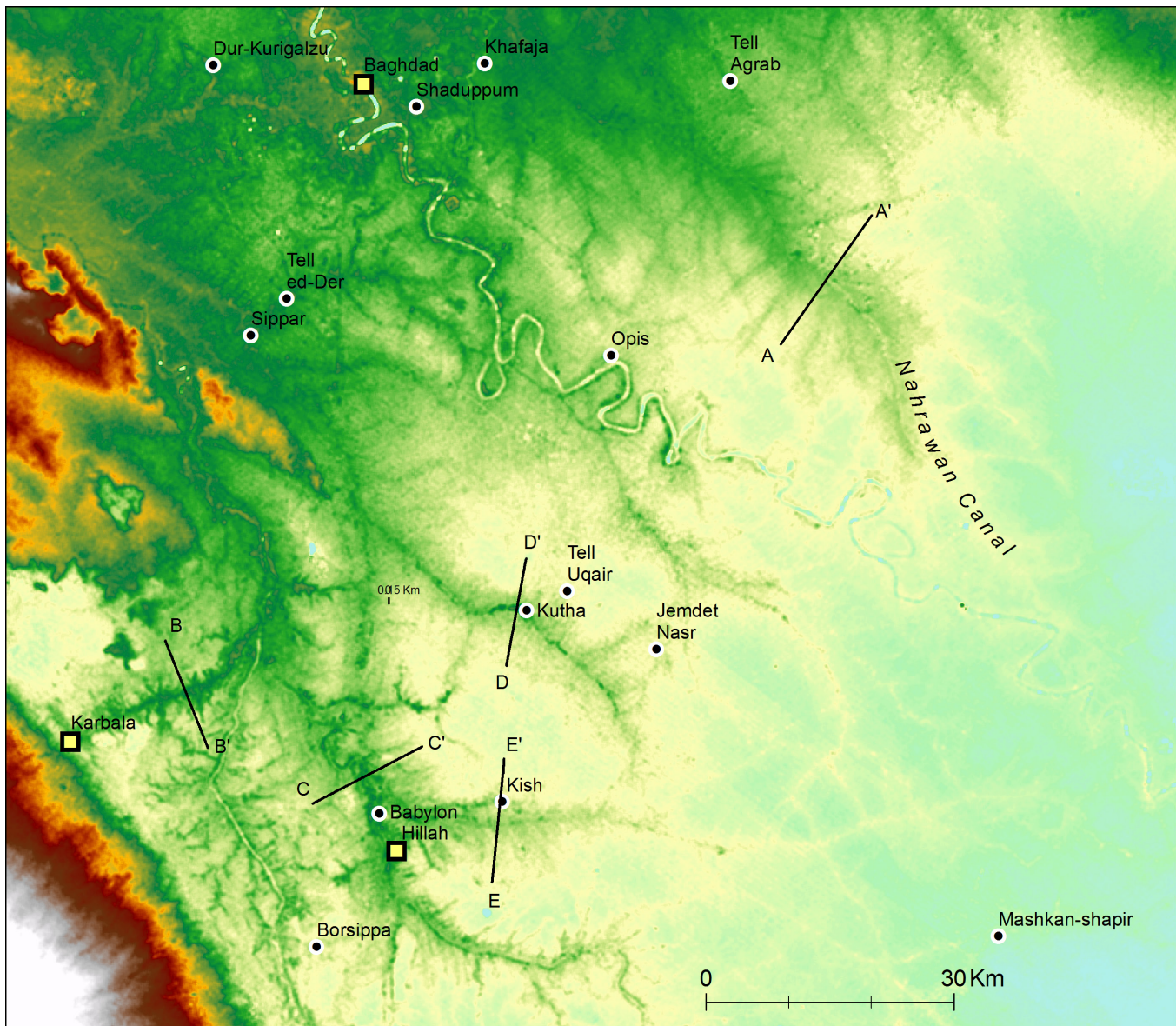


FIGURE 12.6. Topography of the northern Babylonian floodplain, including relict levees, based on the Shuttle Radar Topography Mission (SRTM) dataset. See figure 12.7 for levee profiles.

in the Late Bronze Age, for example at Dur-Kurigalzu (see sketch plan in Gibson 1972b, p. 191) or Kar-Tukulti-Ninurta. Starting with the Neo-Babylonian occupation (fig. 12.4b), Kish began a pattern of elongated growth that culminated in the Early Islamic town (fig. 12.4f), which extended 2.8 km along a hypothesized canal, but rarely exceeded 400 m in width. The reasons for this general spatial evolution are unclear, but almost certainly are related to changing customs of land ownership, field patterning, and water control.

This shift to a linear pattern raises the issue of Kish's watercourse. Gibson, Adams, and others have reconstructed early rivers and channels based on perceived linearities in settlement patterns, since the physical traces of early watercourses are almost always erased by later ones (Gibson 1972b) and the taphonomic processes of aggregation and deflation (Wilkinson 2003). Gibson suggested that the canal from Babylon began only in the early first millennium BC. The topographic data for the plain (fig. 12.6; see also Hritz and Wilkinson 2006) suggests that the Kish canal was substantial, and perhaps therefore of earlier origin. If one considers vertically exaggerated profiles across major levees of northern Babylonia, the Kish levee (fig. 12.7e) is similar in width and height to the Kutha levee just upstream from that site (fig. 12.7d) and not much smaller than the Euphrates levee immediately north of Babylon (fig. 12.7c). On the other hand, it is much broader than the levee of the recent canal branch leading to Kerbala (fig. 12.7b), which is aggrading rapidly on a narrow levee. It is, however, dwarfed by the massive levee of the Nahrawan Canal (fig. 12.7a), which is likely to be the former Tigris, reused as a canal in the Sasanian and Early Islamic periods (Hritz

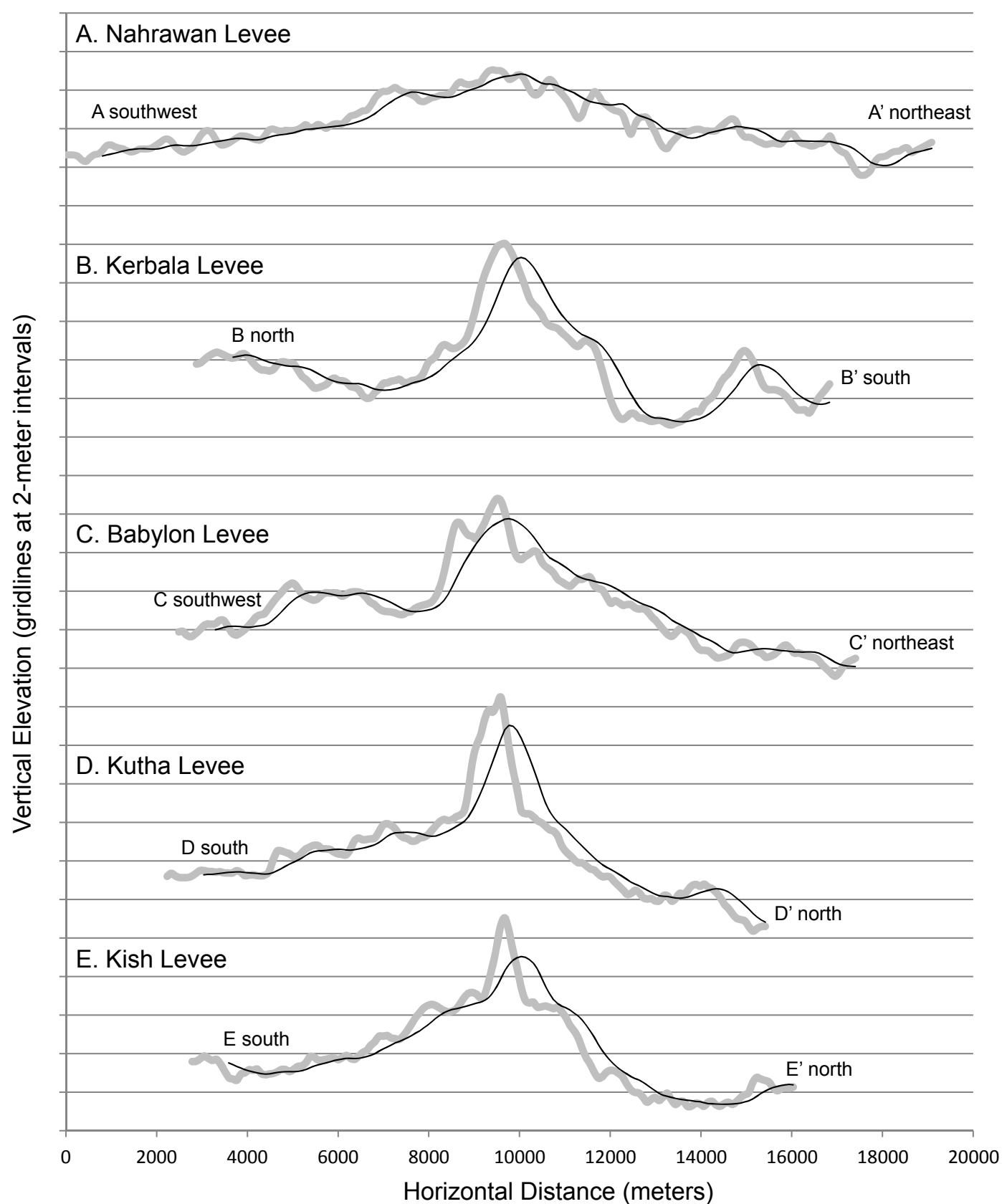


FIGURE 12.7. Vertically exaggerated profiles across major northern Babylonian levees, based on elevation data from the Shuttle Radar Topography Mission (SRTM). Gray lines are uncorrected SRTM elevation data; black lines are ten-point running averages. See figure 12.6 for profile locations.

2010). An earlier date for the Kish branch would contradict the above proposal that Uhaimir and Ingharra were separated by a Euphrates branch. The resolution of this issue must await geomorphological fieldwork (Gasche and Tanret 1998).

CONCLUSIONS

Kish was a remarkably large and durable city that remained urbanized for more than three millennia. During that span, it fluctuated in size, from a top-tier megacity in the third millennium BC, to smaller mid-sized cities in its later phases. It also evolved spatially, from nucleated ovoid forms to its final linear arrangement. For much of its history it maintained a rare and possibly unique “twin-city” morphology, anchored by two temple households. As at other Mesopotamian cities, they appeared to have been the cosmological anchors that kept people settled there, and brought them and their kings back, even when social and environmental conditions might have been discouraging. This overview was already established through the research of McGuire Gibson in the 1960s, and can now be quantified and extended with new geospatial methods.

This reassessment says more about Kish than just that it was large. Problematic though it is (Postgate 1994), site area is the only metric useful for comparison of sites across regions and between periods, and it is the only proxy for population. In the case of Kish, the spatial assessment complements what we know from the early historical record: Kish was not only a major political center in the Early Dynastic period, it was also a major demographic center. These two roles are not always correlated. In northern Mesopotamia, for example, the known political centers at Ebla and Nagar (Tell Brak) both fell in the range of 60–70 ha, but were dwarfed by Hamoukar, Leilan, and Mozan, each of which exceeded 90 ha but never held political sway, as far as we can tell at present (Ur, Karsgaard, and Oates 2011, pp. 9–10). In southern Mesopotamia, the city of Ur at the time of the Third Dynasty was merely 50 ha (Wright 1981, pp. 329–30), despite dominating a large swath of Mesopotamia and western Iran.

The reassessment of Kish’s urban dimensions relies on a model of Mesopotamian urbanism that is supported by the available evidence but desperately requires verification. We assume that early cities were dense and nucleated, without substantial intra-urban open space. We assume that cities grew outward from their densely settled cores, converting the immediately adjacent agricultural land into settlement. There is substantial but potentially nonrepresentative evidence for these assumptions (see recent reviews in Stone 2007, 2013; Ur 2012), but they need dedicated testing. For northern Mesopotamia, an initial “proto-urban” phase was characterized by dispersed low-density settlement (Ur, Karsgaard, and Oates 2007; Al Quntar, Khalidi, and Ur 2011), but whether such a phase also characterized the southern floodplains remains unknown. Resolution of these important questions will require further intensive surface observations, including artifactual, topographic, and geophysical surveys combined with horizontal excavations.

ACKNOWLEDGMENTS

I owe a great intellectual debt to McGuire Gibson. Mac’s dissertation fieldwork provided the data for this reassessment; he also supervised my 2004 University of Chicago PhD dissertation, which in hindsight was remarkably similar to *The City and Area of Kish*. I am only one of a generation of graduate students that were inspired by Mac’s enthusiasm for the archaeology of Mesopotamia. This study also benefited from imagery provided by Elizabeth Stone (a QuickBird satellite image) and Paul Collins (an early aerial photograph). CORONA photographs and SRTM data are courtesy of the United States Geological Survey (USGS). CORONA mission 1104 data was derived from scenes available at the CORONA Atlas of the Middle East (<http://corona.cast.uark.edu>). I thank Carrie Hritz for valuable critical commentary on an early draft of this chapter.

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