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Intrasite Spatial Analysis and the Settlement History of Mādabā

In the modern Middle East, with its long history of urbanism, the consequences of urban continuity present a daunting challenge to archaeological research. Since the priorities that usually guide settlement, such as defensibility, access to routes of communication, and proximity to water and other resources, have changed little over the millennia, the settlement landscape is dominated by sites with long occupational sequences, that sustain—more often than not—modern living communities still today. The stratigraphic succession created by such prolonged settlement activity, of course, is exceedingly complex; a reality compounded by the destructive forces presumed to be an inescapable part of modern development, and all too often sufficient motivation to send prospective projects looking elsewhere for research opportunities. Yet, contrary to this general perception, research conducted in dense urban contexts has consistently found that urban settings are in fact surprisingly good preservers of the archaeological record (Staski 1982: 117-19; see also Salwen 1973; 1978; and Staski 1987). It would seem then, that the ancient urban cores that typically anchor modern Middle Eastern towns and cities deserve a closer look, particularly in those cases where it is clear that the existing city preserves a history central to understanding patterns of sociocultural and economic development for a broader region.

The modern city of Mādabā , located 30 km southwest of 'Ammān amidst fertile rolling plains on the Central Jordanian Plateau, provides just such an opportunity. Continuing an urban tradition of some 4,500 years, the modern town engulfs the ancient settlement that still forms a visible rise in the town center. A growing realization, in the wake of extensive clearing efforts in the 1970s and 1980s, that many of Mādabā's beautiful mosaic treasures faced critical preservation needs finally led, in 1991, to the creation of a program to train skilled local mosaic conservators (Piccirillo 1991). Largely as a result of this impetus, a long-term joint project was conceived between the Ministry of Tourism of Jordan and the United States Agency for International Development (USAID) to preserve the rich cultural heritage of Mādabā (see reports in Bikai forthcoming). Towards this end, in 1993, the author was invited to conduct an intensive and systematic survey of the town in order to assess and document the current state of its existing cultural resources (Harrison, forthcoming b). An important component of this effort involved the systematic collection of surface sherds for the purpose of reconstructing a broad outline of the town's settlement history; an objective that the present paper seeks to accomplish.

Survey Methodology

For an understanding of the archaeological remains to be successful, the survey and sampling methods used in obtaining such a record must be appropriate for an urban context. Archaeologists have long assumed, whether implicitly or explicitly, that some relationship exists between the cultural debris found lying on the surface of a site and that which remains buried below (Redman and Watson 1970: 279). Attempts have been made to determine the sub-surface spatial dimensions of sites by documenting their above ground sherd density distributions, and then excavating to compare results,[1] including two studies conducted in the Mādabā region at the sites of Tall Jalūl (Ibach 1978) and Tall al-'Umayrī (Herr 1989). Among other things, these studies have found, upon excavation, that even in cases where surface patterns had been disturbed by erosion, gravity and modern activity, a general isomorphism still existed between sub-surface artifact distributions and what remained on the surface. Also, because of these disturbances, the probability that sophisticated sampling techniques would produce better results than a simple, systematic survey was not considered very high (Flannery 1976: 62; see also discussion in Lewarch and O'Brien 1981: 328-30).

Thus, in spite of the limitations caused by the presence of the modern town, there was good reason to believe that by intensively and systematically sherding the entire urban core of Mādabā, some sense of the sub-surface spatial dimensions of the site would be possible. Although the presence of the modern town would prevent unrestricted access to the ancient settlement, and preclude the use of random sampling methods, it was nevertheless clear from preliminary study, that a significant percentage

[1] In particular, see Binford, *et al.* 1970; Tolstoy and Fish 1975; Flannery 1976 Whallon 1980; Portugali 1982; and Cowgil, *et al.* 1984.

of the pre-modern town was accessible, and would repay an intensive and systematic sherd collection effort, with the constraints imposed by the layout of the modern town creating a randomness of its own.

Consequently, a simple grid system set at 50 m intervals [2] was devised utilizing a topographic relief map (1:1250 scale) to facilitate systematic collection over the entire survey universe, an area of approximately 40 ha (or 400,000 sq. m) encompassing the town's ancient urban core. The survey universe was determined through a careful study of nineteenth century traveler's descriptions, turn of the century aerial photographs and previous archaeological research. The survey was conducted over a 12-day period by a three-man team, with each 50 m square being searched for an average of one man hour.[3]

In all, 166 squares were surveyed, resulting in coverage of an area totaling 415,000 sq. m, or approximately 42 ha, with open and uninhabited space accounting for about 25% of this total.

Survey Results

A total of 8,524 sherds were collected in the course of the survey. After processing and a preliminary reading, 913 diagnostic sherds (or roughly 10% of the entire assemblage) were kept for further analysis, and the remaining material returned to the site. This preliminary reading of the pottery identified material from the Early Bronze Age, Iron Age, Persian/Hellenistic, Nabataean, Early Roman, Late Roman, Byzantine, Umayyad, Abbasid (?), Fatimid (?), Ayyubid/Mamluk, Ottoman and Modern periods. Subsequent analysis of the diagnostic collection largely confirmed the infield preliminary readings, and has resulted in an index of the site's occupational history. The pottery readings of each 50 m square grid unit were then entered into a database created for a computer-digitized map of the city of Mādabā,[4] making it possible to view graphically the spatial dimensions of each period of settlement, and to trace settlement pattern shifts as they occurred from period to period.

Before proceeding, a number of important clarifications must be made regarding the survey results. First, the spatial dimensions portrayed by the distribution maps should be viewed as a reflection of the presence or absence of ceramic remains from a period, and not that of density. Uneven collection due to the nature of the survey universe dictated that density, or frequency, distributions were tilted heavily toward exposed areas, and therefore inherently unreliable. Secondly, it should be kept in mind that uneven temporal divisions, for example the thousand years or more encompassed by the Early Bronze Age as compared to the few centuries covered by the Early Islamic period, tend to skew the settlement picture in favor of the longer periods represented, although the lengthier time spans of earlier periods are compensated for to some extent by the visibility they lose to the later periods that cover and conceal them. Thirdly, the settlement patterns presented here are tied to current understandings of the regional ceramic typological sequence, which continues to undergo refinement,[5] rendering spatial distinctions based on the ceramic record an ongoing affair.

Finally, the surface survey did not attempt to sherd areas that were currently under excavation, as access was difficult, and it was felt that the survey would not be able to add appreciably to what these excavations were uncovering. This means that almost the entire exposed stretch of the Roman cardo was left out of the survey, and full settlement information for this important area must await the final completion of excavations.

Broadly then, the distribution maps created for each period reveal, not surprisingly, that the town was confined to the area of the tall and acropolis during the Bronze and Iron Ages. Settlement then began to expand to the north during the Nabataean and Early Roman periods, reaching its greatest extent during the Late Roman and Byzantine periods, when the town sprawled over most of the survey area. Mādabā began to shrink in size during the Early Islamic period, reaching a low point (and possibly even becoming abandoned) some time in the mid-ninth or tenth century, with what remained of the town concentrated along the Roman cardo. There was little apparent settlement activity over the ensuing centuries, although the limited presence of Ayyubid/Mamluk and Ottoman period pottery indicates that some human activity did occur before the arrival of Christian refugees from al-Karak launched the modern resettlement of the town in 1881.

Documentary Sources

In order to place this broad settlement picture into better perspective, a review of the existing documentary sources is needed.[6] The earliest reference to Mādabā occurs in *Numbers* 21:30 as part of a lament describing the conquest of a series of Moabite cities, of which Mādabā (then known as *Medeba*) was one, by the Amorite King Sihon of Heshbon. Shortly thereafter, the tribes of Israel are credited with defeating Sihon and gaining control over his domain, so that in *Joshua* 13:9 and 16 we find *Medeba*,

2 By way of comparison, the mean area of the provenience units used in the mapping project of the huge prehistoric site of Teotihuacan (over 2000 ha in size) located in the central highlands of Mexico averaged 3600m^2 (Cowgill, *et al.* 1984: 156), while the area of the units used in our survey was 2500 m^2.

3 The results of the survey would not have been possible without the dedicated efforts of team members Adeeb Abu Shmeis of the Department of Antiquities and Usama Twal of the Mādabā Society. Thanks are also due to the Roman Road excavation team in Mādabā for the use of their facilities, to Dr Pierre Bikai and Branwen Denton of ACOR for their support, and to Dr Safwan Tell, former Director–General of the Department of Antiquities, for his help in obtaining a survey permit and facilitating the work of the survey. Funding for the survey was made possible by a grant from USAID.

4 A debt of gratitude is owed to Dr Patricia M. Bikai and Glen Peterman of ACOR for their work creating the computergenerated maps, and for seeing to it that I received copies which could be used in this study.

5 Some periods are in greater flux than others, as is the case with the latter part of the Early Islamic period, where considerable revision is currently underway. See in particular, Walmsley 1992 and Whitcomb 1992.

6 More thorough accounts of the documentary evidence concerning Mādabā can be found in Piccirillo 1989a: 316-22 and Harrison (forthcoming a).

and the surrounding tableland (or *Mishor),* being allotted to the tribe of Reuben. This strategically located tableland, with its agriculturally rich fields, would become a highly contested region over the ensuing centuries.

Sometime in the tenth century BC, the Israelite King David is said to have fought and won a pitched battle against a coalition of Aramaeans and Ammonites in the vicinity of Medeba, seizing control of the entire region as a result (*I Chronicles* 19:7ff; cf. *II Samuel* 10). According to the Moabite King Mesha, *Medeba* remained under Israelite control ("the house of Omri") until he took (lines 7-8 of the Mesha Inscription) and rebuilt it (line 30) along with a series of other cities on the tableland sometime during the mid-ninth century BC (either during or shortly after the reign of Ahab, the son of Omri). The region probably remained in Moabite hands until the end of the Iron Age. *Medeba* is listed with other Moabite cities in an oracle by *Isaiah* (15:2) forecasting the future devastation of Moab.

Medeba continued to play a role in regional conflicts during the Hellenistic period. The "sons of Jambri," apparently members of a Nabataean tribe (the Beni 'Amirat?) from *Medeba* (by then known as *Medaba*),[7] were accused of ambushing a passing Jewish caravan and killing John the brother of Judas Maccabeus (*I Maccabees* 9:35-42; cf. Josephus' *Antiquities of the Jews* 13.1.2 and 4) (ca. 160 BC). *Medaba* came into conflict again with the Maccabaeans (or Hasmonaeans), when in 129/28 BC, John Hyrcanus captured the town after a six-month siege in an effort to gain a foothold along the commercially important "King's Highway" (*Antiquities of the Jews* 13.9.1). *Medaba* remained under Hasmonaean control down through the reign of Alexander Jannaeus (103-76 BC) (*Antiquities of the Jews* 13.15.4). His successor, Hyrcanus II, then offered the town, along with eleven other Hasmonaean-held Transjordanian towns, to the Nabataean King Aretas III in return for his help in the civil war between Hyrcanus and his brother Aristobulus II (*Antiquities of the Jews*. 14.1.4).

Inscriptional evidence suggests that Mādabā remained within the Nabataean sphere of political influence until the region was incorporated into the Roman Province of Arabia *(Provincia Arabia)* in AD 106, following Trajan's defeat of the Nabataeans at Petra. By the second or third century AD the town was minting its own coins (Spijkerman 1978: 180-85). The recent discovery of an imperial inscription indicates that Mādabā also underwent physical expansion during this period (Piccirillo 1989b: 105-8). The inscription commemorates the erection of a city gate by the imperial legate Flavius Julianus in year 114, or AD 219/20, during the reign of Elagabalus.

Christianity gained an early foothold in the Mādabā region, and by the mid-fifth century, the Christian community had grown large enough to warrant the services of a bishop, a development revealed in the Acts of the Council of Chalcedon (AD 451). Although the town goes unmentioned in the literary sources for the remainder of the period, as the seat of a diocese, the town clearly continued to prosper, and over the succeeding two centuries (ca. sixth- seventh centuries AD) witnessed the construction of numerous churches and other public structures. It was during this period that the many mosaic pavements Mādabā is renowned for were laid, including the famous Map of Palestine.

Following the Islamic conquest and the establishment of the Umayyad Caliphate in the mid-seventh century, Mādabā continued to flourish. Renovations were carried out on a number of Byzantine churches, and the town remained the seat of a bishopric. In AD 719/20, a church was dedicated on the acropolis of the town of Mā'in, southwest of Mādabā (de Vaux 1938: 238-40). During the Early Abbasid period, mosaic dedicatory inscriptions from the Church of St. Stephen at Umm ar-Raṣaṣ mention the names of two bishops from the diocese of Mādabā Bishop Job in AD 756, and Bishop Sergius II in AD 785, when the church was completed (Piccirillo 1987: 180-86). Interestingly, however, in an episode also dating to the Early Abbasid period involving the pursuit of rebellious Umayyad partisans through the Mādabā Plain region, the town of Mādabā fails to receive any mention, in spite of specific references to the nearby towns of Ḥisbān, Masuh, Zīzyā' 'Ammān and Fudayn (?) (Grabar 1964).[8] References to Mādabā including inscriptions, cease entirely by the end of the eighth century, and the town is not referred to again until the early nineteenth century, when western explorers began traveling through the region. Mādabā escaped the attention of the medieval Arab geographers,[9] and does not appear in the tax records (*dafāter*) of the Early Ottoman period (Hütteroth and Abdulfattah 1977).

The Settlement History of Mādabā

When the survey results and documentary sources are combined, a complementary, more complete picture of Mādabā's settlement history emerges. As indicated by the survey, the earliest settlement at Mādabā seems to have occurred during the Early Bronze Age. This was followed apparently by a lengthy occupational gap corresponding to the Middle and Late Bronze Ages, although it is quite feasible that a small settlement existed which the survey simply missed.

7 Bowersock (1983:20) has questioned this Nabataean association, since they were reputed to be on good terms with Jonathan Maccabeus, and it would make little sense for them to attack their own allies. He suggests instead that the Jambri/ Amrai were but one of many nomadic Arab tribes moving in and out of Nabataean controlled territory during this perod. While he may well be right, the Jambri/ Amirat/ Amrai were nevertheless an undeniable presence in the Mādabā region for close to three centuries, receiving mention in a number of inscriptions up until the beginning of the second century AD, or roughly the period of Nabataean hegemony in the region. For more on the Beni 'Amirat, see Milik 1980.

8 D. Whitcomb deserves credit for drawing this reference to my attention.

9 It is particularly telling that Muqaddasi, who is known to have passed through the area in the tenth century (de Goeje, 1967: 54, 155, 173, 178-80, 186, 192 and 252), does not mention any town or site at all.

With the transition from the Late Bronze Age to the Iron Age, both the archaeological and documentary record come into play. Textual sources are unequivocal about the strategic importance of Mādabā and the surrounding tableland, which becomes the scene of a succession of power struggles for control of the region. The survey results, while not definitive, are supplemented by an excavated tomb that bridges the Late Bronze-Iron I transition (Harding and Isserlin 1953), and by the dramatic increase in settlement that occurs in the Mādabā region during this period (Ibach 1987: 160-63). In spite of periodic conflict and alternating political control, Mādabā clearly flourished over the course of the ensuing Iron II period. The surface sherd distribution indicates a site size approaching 13 ha or more, easily making Mādabā one of the largest Iron Age sites in all of highland Transjordan. A tomb dating to Iron I-Early Iron II meanwhile, represents the extent of excavated evidence so far uncovered at Mādabā from this period (Piccirillo 1275; Thompson 1984; 1986). By the end of the Iron Age, settlement intensification and political consolidation in central Transjordan had reached a peak (LaBianca 1990: 154-56; Herr 1992: 176-77; McGovern 1992: 181), and was configured into regionally defined cultural spheres centered around distinct political entities (LaBianca and Younker 1995), with Mādabā probably within the Moabite political realm.

As the textual sources indicate, Mādabā continued to play a prominent role in regional events during the Hellenistic period; a reality substantiated by inscriptional remains, but only limited evidence from the survey. Following an end to the political stability enforced by the Neo-Assyrians in the seventh century BC, and the collapse of the various Transjordanian nation-states in the sixth century BC, Mādabā went into an extended period of decline along with the rest of the region. The trend finally began to reverse itself during the latter part of the Hellenistic period, when powerful groups such as the Nabataeans and Hasmonaeans began reasserting political hegemony over large portions of the southern Levant, and vying for strategic control of vital commercial corridors. The Mādabā survey data reflects the renewed settlement activity generated by these developments, although subsequent expansion during the Roman and Byzantine periods probably obscures its full extent.

With the transfer of political power to Rome, and the administrative realignment of Transjordan into the Roman Province of Arabia in AD 106, Mādabā entered a period of even greater growth, as both the documentary sources and survey results attest, expanding to its largest extent ever. Spurred on by the political stability afforded under the "Pax Romana," the town experienced a prolonged period of economic prosperity, marked by the construction of public structures and the minting of its own currency. This prosperity continued under Byzantine rule, reaching its peak in the sixth and seventh centuries AD, when Mādabā was serviced by no less than eight churches.

Settlement patterns for the broader region mirror the developments in Mādabā. Regional site surveys reveal a widespread return to sedentism at the end of the Hellenistic period, a trend that continued into the Early Roman period (Ibach 1987: 168-74; LaBianca 1990: 168-73; see also Hart 1986: 54-55; Mattingly 1990: 317-24; and Graf 1992: 254-56). By the time of Roman annexation in AD 106, settlement density in much of the region had returned to levels comparable with those reached at the end of the Iron Age. The introduction of Roman military power, and formal integration into the Roman imperial realm, only intensified this ongoing sedentarization process, accelerating the region's transformation into a highly urbanized landscape. At the center of this resurgence were numerous newly founded or revitalized cities bearing distinctly classical, orthogonal layouts (Barghouti 1982; Will 1985), of which Mādabā seems to have been one, with its central cardo and flanking public structures. Settlement intensity persisted through the Late Roman and Byzantine periods, with extensive agricultural activity and rural development fueling productivity (LaBianca 1990: 184-87).

Towards the end of the sixth century however, a variety of factors, including persistent Sassanid attacks from the east, natural disasters and plagues, and a deteriorating imperial administrative system, converged to threaten the stability and economic prosperity the region had enjoyed for so long. Their cumulative effect is evident in the gradual onset of urban decline witnessed at many of the great urban centers in the east (Kennedy1985a; Liebeschuetz 1992). Yet all was not lost. Some areas continued to thrive, even as others fell into decline. Indeed, central Transjordan seems to have flourished in particular, including Mādabā and its surrounding hinterland. Thus, a more accurate depiction of developments during this transitional period might be one of urban change (Kennedy 1985b; 1989), rather than of decline, as one era came to an end and another began.

The arrival of Islam, and the establishment of the Umayyad Caliphate in Damascus, brought both change and continuity to the region, resulting in a hybrid culture that incorporated pre-existing institutions and new ones to form a remarkably heterogeneous society. However, the tranquillity of this "new age" was short-lived, and by the mid-eighth century political intrigue had successfully undermined the Umayyad regime and shifted the balance of power to the east. This precipitated a lengthy period of declining and contracting settlement throughout the Levant, which eventually stabilized into a rural settlement configuration that persisted until the Ayyubid/Mamluk period (Kennedy 1991; Walmsley 1992: 382).[10] In the

[10] This view of a decline in settlement should be distinguished from that of an outright occupational gap; a widespread assumpiton that has been rightfully challenged in recent years. As earlier, see Walmsley 1992 and Whitcomb 1992.

case of Mādabā this decline apparently was never fully reversed until the late nineteenth century arrival of the Christian settlers from al-Karak, as both the survey data and documentary sources attest.

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