

**An Archaeological Examination of Towers in Arabia  
in their Social, Economic and Geographical Context:  
Field Survey and Excavation of Purported Roman Military Towers  
Near the Fort at al-Humayma (ancient Hawara), Jordan.**

by

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## **Abstract**

This thesis examines Roman military watchtowers in the *provincia Arabia*. Using archaeological field survey and archaeological excavation at and around the site of ancient *Hawara* (modern al-Humayma, Jordan), this study establishes an architectural typology of towers in the region, suggests tentative dates for their occupation, and places them in their wider military, political, social, economic, and geographical context. New conclusions are drawn about the nature of purported watchtowers in southern Jordan during the Nabataean and Roman periods.

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## List of Abbreviations

<i>AASOR</i>	<i>Annual of the American Schools of Oriental Research.</i>
<i>ABD</i>	<i>Anchor Bible Dictionary.</i>
<i>ACOR</i>	American Center of Oriental Research, Amman, Jordan.
<i>ADAJ</i>	<i>Annual of the Department of Antiquities of Jordan.</i> Amman: Department of Antiquities.
<i>AJA</i>	<i>American Journal of Archaeology.</i> New York: Archaeological Institute of America.
<i>ANRW</i>	<i>Aufstieg und Niedergang der römischen Welt: Geschichte und Kultur Roms im Spiegel der neueren Forschung.</i> Berlin & New York: de Gruyter.
<i>ASL</i>	Above Sea Level.
<i>ASOR</i>	American Schools of Oriental Research, Boston.
<i>BA</i>	<i>Biblical Archaeologist.</i> Now, <i>Near Eastern Archaeology.</i>
<i>BAR</i>	<i>British Archaeological Reports.</i>
<i>BASOR</i>	<i>Bulletin of the American Schools of Oriental Research.</i>
<i>CIL</i>	<i>Corpus Inscriptionum Latinorum.</i>
<i>CV/EMC</i>	<i>Classical Views/Echos du Monde Classique.</i> Edmonton: Classical Association of Canada.
<i>CUP</i>	Cambridge University Press.
<i>DofA</i>	Department of Antiquities of the Hashemite Kingdom of Jordan, Amman.
<i>DOP</i>	<i>Dumbarton Oaks Papers.</i> Washington: Dumbarton Oaks Research Library and Collection.
<i>FGrH</i>	F. Jacoby 1923- <i>Fragmente der griechischen Historiker.</i>
<i>Historia</i>	<i>Historia: revue d'histoire ancienne.</i> Wiesbaden: Steiner.

- HSCP* *Harvard Studies in Classical Philology*. Cambridge, MA and London : Harvard University Press.
- HUP Harvard University Press.
- HWS Humayma Watchtower Survey.
- IEJ* *Israel Exploration Journal*. Jerusalem: IES.
- IGLS* *Inscriptions grecques et latines de la Syrie*.
- ILS* *Inscriptiones Latinae Selectae*.
- JEA* *Journal of Egyptian Archaeology*. London: Egypt Exploration Society.
- JFA* *Journal of Field Archaeology*. Boston, MA: Boston University Press.
- JRA* *Journal of Roman Archaeology*. Ann Arbor, MI: University of Michigan Press.
- JRS* *Journal of Roman Studies*. London: Society for the Promotion of Roman Studies.
- Latomus* *Latomus: revue d'études latines*. Bruxelles: Latomus.
- Levant* *Levant: Journal of the British School of Archaeology in Jerusalem*. London: BSAJ.
- NEA* *Near Eastern Archaeology*. Formerly, *Biblical Archaeologist*.
- NEAEHL* *New Encyclopedia of Archaeological Excavations in the Holy Land*.
- NYU New York University.
- OEANE* *Oxford Encyclopedia of Archaeology in the Near East*.
- PEQ* *Palestine Excavation Quarterly*.
- PPAES* *Publications of the Princeton Archaeological Expedition to Syria*.

- P.Ryl.* J. de M. Johnson, V. Martin and A.S. Hunt (eds.). *Catalogue of the Greek and Latin Papyri in the John Rylands Library, Manchester. II, Documents of the Ptolemaic and Roman Periods*, Manchester: 1915.
- P.Tebt.* A.S. Hunt and J.G. Smyly (eds.), assisted by B.P. Grenfell, E. Lobel and M. Rostovtzeff. *The Tebtunis Papyri*. III, pt. I, (Univ. of California Publications, Graeco-Roman Archaeology III; Egypt Exploration Society, Graeco-Roman Memoirs 23). London: 1933.
- PUP Princeton University Press.
- RB* *Revue Biblique*. Paris: Gabalda.
- SDB* *Supplement au Dictionnaire de la Bible*.
- SEG* *Sylloge Epigraphicum Graecorum*.
- SHAJ 1* Adnan Hadidi (Ed.) 1982 *Studies in the History and Archaeology of Jordan.I*. London: Routledge and Kegan Paul.
- SHAJ 2* Adnan Hadidi (Ed.) 1985 *Studies in the History and Archaeology of Jordan.II*. Amman: Department of Antiquities.
- SHAJ 3* Adnan Hadidi (Ed.) 1987 *Studies in the History and Archaeology of Jordan. III*. Amman: Department of Antiquities.
- SHAJ 4* Safwan Tell, et al. (Eds.) 1992 *Studies in the History and Archaeology of Jordan.IV*. Amman: Department of Antiquities.
- SHAJ 5* Ghazi Bisheh, et al. (Eds.) *Studies in the History and Archaeology of Jordan.V*. Amman: Department of Antiquities.
- SHAJ 6* *Studies in the History and Archaeology of Jordan.VI*. Amman: Department of Antiquities.
- Syria* *Syria: revue d'art oriental et d'archéologie, publiée par l'Institut français d'archéologie du Proche-Orient*. Paris: Geuthner.

- TAPA* *Transactions and Proceedings of the American Philological Association.* Atlanta, GA: Scholar's Press.
- ZDPV* *Zeitschrift des Deutschen Palästina-vereins.* Wiesbaden: Harrassowitz.
- ZPE* *Zeitschrift für Papyrologie und Epigraphik.* Bonn: Habelt.

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It is *de rigueur* to apologize for the inconsistent transliteration of Greek words in the text; unfortunately, I must also apologize for the Arabic. I have tried to strike a balance between using the published transliterations that will be most familiar to the readers, and transliterating others using a single modern system. Finally, I must make it clear that, even though I have benefited from the advice and assistance of many individuals, any errors remaining in the text are undoubtedly my responsibility.

## Introduction

...a work on geography also involves theory of no mean value, the theory of the arts, of mathematics, and of natural science, as well as the theory which lies in the fields of history and myths... Strabo *Geography* 1.19 (Loeb)

This thesis will examine purported military watchtowers along a portion of the Roman frontier in southern Jordan in their local geographical and historical context. Towers and watchtowers of second to fourth-century date have been reported in the area around the fort at al-Humayma (ancient *Hawara*), Jordan. They are considered here in terms of their geographical location, local topography, architectural form, chronology and interrelationships. By placing the emphasis on the towers themselves in their local context, I hope to understand their role in one specific region, and then to attempt to understand them in terms of the frontier as a whole. From the beginning, however, I have taken a broad approach to the evidence, which encompasses a long-term view of the area and its ancient inhabitants.

The current study was prompted by the preliminary investigation of a purported Roman military watchtower (Area A127) by the author at al-Humayma, Jordan, in 1998. After initial cleaning and documentation, the architectural form of the structure seemed incompatible with any function as a tower, watchtower or

observation post. This discrepancy encouraged a more detailed examination of other purported towers around al-Humayma.

The structures called “watchtowers” have long been considered an integral part of the military frontier in Roman Arabia, yet they are poorly understood. There have been few systematic studies of these buildings, and, when they have been examined at all, they have often been relegated to a marginal position within general paradigms for interpreting the entire frontier. Rather than considering what the architectural form and context of towers can tell us about their function(s) and their role in the region, scholars have reconstructed their character from the assumed role of the Roman army in Arabia. This top-down approach to interpreting “watchtowers” has resulted in the proposal of contradictory roles for these buildings by various scholars over the last twenty years.

While a strong case has been advanced for each of these roles, a proper understanding of the towers has been inhibited by the lack of detailed site studies, and by imprecision in the definition of “towers” and “watchtowers”. In fact, the very term “watchtower” prejudices the interpretation of these structures by placing interpretation ahead of identification and by implying a military function, even though many types of non-military towers are mentioned in ancient literary and documentary sources from the region. The absence of a clear definition results in a bewildering array of building types called “watchtowers” by modern scholars, ranging from 30 x 30 m single-storey structures with a central courtyard to 5 x 5 m towers of two or more storeys. Many of the disputes concerning the function of towers seem to stem solely from the fact that scholars are not discussing the same

type of building. These problems of definition have been exacerbated by poor reporting, characterized by minimal description of the sites, and lack of consideration of their immediate geographical context and related nearby features.

Interpretations of towers deduced from broader interpretations of the frontier have also hindered an understanding of the structures on their own terms: rather than examining the structures within their local contexts and then drawing conclusions, scholars have formulated hypotheses concerning Roman strategy, the function of the Roman frontier, or the nature of nomadic life in the region and then imposed these views on the smaller structures along the frontier. As a result, towers have been buffeted from one theory to another and used as evidence to support contradictory interpretations of the region with little regard for the evidence that they themselves provide.

Historians of the Roman army have been quick to understand towers in purely military terms, as the “eyes” of larger Roman forts in the region, placed in suitable locations to warn of impending attack from the deserts to the east (Parker 1986a; Clark and Parker 1987). More recent studies have argued that they should be interpreted in light of the Roman army’s role as a provincial “police force”, making towers the smallest, rural elements in a system for controlling the local population or for discouraging banditry (Isaac 1990). Anthropologists have tended to see towers in relation to the local populations of the region. From this perspective, the towers are either seasonally occupied farmhouses, shelters for semi-nomadic pastoralists, or installations for “monitoring” the seasonal movements of nomads (Banning 1986; 1987; MacDonald 1984a; 1984b; 1988).

The methodology of this study has been heavily influenced, both directly and indirectly, by the historiographical theory of Fernand Braudel and the *Annales* School. In *The Mediterranean and the Mediterranean World in the Age of Philip II* (Braudel 1972; 1980: 3-5), Braudel presented a conception of historical time divided into three stages: a fundamental, and virtually unchanging, relationship between humans and the environment (*l'histoire structurelle*); individual periods of distinct social and economic structures (*l'histoire conjoncturelle*); and short-term events and individual actions (*l'histoire événementielle*). Braudel revolutionized the study of history by emphasizing *la longue durée*, the long-term geographical and environmental factors almost outside of history, rather than events, for understanding historical change. Although recent trends have modified the way in which Braudel's method is employed, the fundamentals of his work persist in the current theoretical approach of the *Annales* School.

I have explicitly adopted Braudel's emphasis on the long-term, rather than an event-oriented approach. Following Le Roy Ladurie (1979; Knapp 1992b: 85), however, I am not as pessimistic as Braudel about the role of events in our understanding of the past. More importantly, perhaps, I accept the important role of culture in the process of historical change, which has been emphasized by post-processualist archaeologists and by some recent scholars of the *Annales* School (Burke 1992: 151-65; Knapp 1992a: 4-13; Preucel and Hodder (eds.) 1996: 214-16).

The approach to history embodied in Braudel and the *Annales* tradition comes naturally to archaeology (Knapp 1992a: 4):

With emphasis on the analysis of rudimentary material culture, on time, place, and social reality, and on the

interdisciplinary study of their covariance, Annalistes share many of the aims and methods of contemporary archaeology. Archaeology, furthermore, provides an obvious link between social-science and humanistic approaches, particularly when the broader material and written record is applied to specific interpretive problems and issues.

My use of archaeological field survey to collect data in southern Jordan is further influenced, if indirectly, by Braudel. In particular, the understanding that the results of field survey constitute evidence for long-term social and economic history owes much to his conception of geography as a determining factor in the historical process (Barker 1991; Bintliff 1991; Alcock 1993: 5-8).

Perhaps the most obvious example of Braudel's impact on field survey is evident in that methodology's theoretical construction of space, what is now generally called "landscape": geography, climate and resources are seen as powerful factors circumscribing and dictating the extent of human activities within the landscape, which is in turn altered by human occupation in the area. Human activity is further influenced by the social and economic structures of each culture. As Alcock puts it (1993: 7):

Landscapes are inherently dynamic and historically sensitive, altering to accommodate change in the political and social order. At the same time, they serve as an active force in promoting and perpetuating cultural change, through their ability to structure and control human activity.

The cultural processes resulting from the interaction of human and environment are visible in the type and distribution of the artifacts recovered by field survey, which constitute material evidence for a long-term history of the landscape (Alcock 1994: 175). Braudel understood that archaeology has a special role to play in the study of

history, but he could not have foreseen the importance of archaeological field survey in particular (Braudel 1980: 29):

The historians of the eighteenth and early nineteenth centuries had been attentive to the perspectives of the *longue durée* in a way in which, afterwards, only a few great spirits...were able to recapture. If one accepts that this going beyond the short span has been the most precious, because the most rare, of historiographical achievements during the past hundred years, then one understands the preeminent role of the history of institutions, of religions, of civilizations, and (thanks to archaeology with its need for vast chronological expanses) the ground-breaking role of the studies devoted to classical antiquities. It was only yesterday that they proved the saviors of our profession.

Part One of the thesis reviews the evidence for towers in ancient Arabia and the Near East in general. Chapter One assembles and defines the Greek and Latin words used to describe towers and presents the literary, epigraphic, papyrological, and archaeological sources for towers in Arabia. A review of the literary and documentary evidence of towers in the Roman and pre-Roman Near East demonstrates the many possible functions of structures defined as towers architecturally. Particular attention is given to known types of non-military towers in the hope that they can be distinguished from military structures in the results of archaeological field survey. Some general typological definitions of towers are presented and preliminary guidelines are established for determining function on the basis of architecture, distribution, and local context.

Chapter Two reviews the various interpretations ascribed to these enigmatic structures by historians and archaeologists of the Roman frontier in Arabia. Special attention is devoted to the evidence for military towers and watchtowers, as they have been defined in previous studies, and to the roles that they have played in various

interpretations of the region. In particular, previous archaeological investigations of towers around the Roman fort at al-Lejjun and along the Wadi al-Hasa are presented and contrasted. The incompatibility of the current, competing interpretations of towers is stressed.

Part Two presents the preliminary results of field survey and excavation of purported towers undertaken in 2000 near the second-to-fourth century Roman fort at al-Humayma, Jordan. Chapter Three presents a summary of the regional landscape of the survey zone. The underlying, and virtually unchanging, geography and resources of the region are emphasized due to their important impact on all human activity. An analysis of the ancient environment, including such factors as precipitation, temperature, the seasonality and variability of rainfall, and natural resources, indicates the unique nature of the environmental niche occupied by al-Humayma. The history of cultural occupation at al-Humayma is summarized and interpreted in light of its position within the landscape.

Chapter Four presents a preliminary interpretation of a survey of previously identified towers conducted by the author around the Roman fort at al-Humayma, Jordan. After delineating the survey zone, the methodology and limitations of the survey are stated and the results are summarized. Towers and possible towers in the region are catalogued and presented in their local and regional context. A preliminary architectural typology is offered in conjunction with chronologies for each site determined from the ceramic samples recovered from the surface. Structures identified as probable towers are assessed with regard to their architecture, chronology, location, and distribution. Finally, conclusions are drawn regarding the

location, form and function of probable towers around Humayma. The results suggest that a chain of four or more towers formed a hypothetical monitoring zone along the al-Shera' escarpment during the Nabataean period, and that they were likely reoccupied, if only briefly, during the Roman period.

Chapter Five presents the results of trial excavations at sites visited by the survey. As a result of the field survey, three structures were chosen for excavation in order to obtain stratified ceramic samples and to elucidate their form and possible functions. One structure was clearly not a tower and another was too badly disturbed to be identified with certainty, but a third site provided excellent architectural evidence and was almost certainly a tower by any definition of the term. As the latter structure was one of the towers identified as part of a hypothetical monitoring zone along the al-Shera' escarpment, the results from the excavation of that structure help to elucidate the architecture and date of all four towers.

In the Conclusion, possible functions of the towers along the al-Shera' escarpment are assessed in relation to their architectural form, location, and interrelationships in light of the evidence recovered by excavation. The possibility of a monitoring zone is established and the system of towers is compared with a previously reported monitoring zone along the Wadi al-Hasa. Tentative conclusions are drawn concerning the date and the motivations behind the construction of a monitoring zone in this particular location.

A contextual analysis of the results of excavation and survey provides the means to evaluate the possible roles of watchtowers in Arabia. Re-examination of the material remains in one small section of the frontier in their geographical and

historical context establishes a new basis for interpreting the towers in the region, with important consequences for the history of Roman involvement in the southern section of the *provincia Arabia*. Limitations of the current study and possible avenues of future research are presented.

## **Part One: Previous Research**

# **Chapter One:**

## **Evidence for Towers in Arabia**

### **Introduction**

The study of towers in Arabia has been plagued by the lack of direct literary and epigraphic evidence for the province. Nevertheless, there are some ancient references to towers in Arabia which, when placed in the context of other evidence from the Near East as a whole, provide an insight into the function of both military and non-military towers. The emphasis is on towers of the Roman and immediately pre-Roman period in Arabia; an investigation of Iron Age precedents is beyond the scope of the study.<sup>1</sup> Unfortunately, the Greek and Latin terminology for towers defines the structures only broadly in terms of architectural form rather than function, while the literary and documentary texts often hint at the function of structures without describing their precise form. For this reason it is difficult to establish the function of structures identified by field archaeologists as towers on the basis of their architectural form alone. This difficulty limits an understanding of the role of towers, even when they are identified as such by provenienced inscriptions. In

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<sup>1</sup> Banning (1992) provides an excellent summary of the evidence for pre-Roman towers in the Levant, with an emphasis on Biblical sources.

addition to military towers, there are examples of tower farm buildings, tower houses, and tower tombs in the ancient Near East and these structures may also exist in the landscape of Arabia.

Archaeologists have identified a number of different types of structures as towers on the basis of their form and perceived function. The fundamental obstacle to interpreting these “towers”, however, is the need to reconcile the archaeological sites with the varieties of towers known from the literary and documentary sources and to formulate a working typology which allows differentiation between structures of varying function. As a result, any examination of military towers must accept that there are non-military towers in the landscape, and attempt to rule out non-military functions before coming to a conclusion about the possible military function(s) of an individual tower.

### **Modern Terminology for Towers**

It is unfortunate that the English word “tower” can be applied to a wide variety of structures, each of a different size, shape and function (*OED*<sup>2</sup>, s.v.). Usually the term is used to describe an architectural form: anything with a small base and proportionately great height can be referred to as a tower. Thus, the word can be used to describe clock towers and water towers, among other non-habitable structures. In another sense, however, the term is applied to any structure which embodies strength or solidity. Thus, we use the term to describe the fortification known as the Tower of London, which is actually a complex composed of numerous towers and walls.

This lack of precision in English terminology has led to some confusion in the definition of towers in ancient Arabia. Archaeologists and historians sometimes use the term rather freely to refer to any tall feature. For example, solid constructions of stone ca. 3.0m high and no more than 3.0m on a side have been labeled as “towers”, despite the lack of any ancient attestation that they were such. In addition, scholars have described as towers large ancient fortifications, which in ancient times would more likely have been referred to properly as *castella* or *castra*. Even small, fortified villages, for example, are sometimes called “towers”. It seems that one scholar’s tower may be another scholar’s stone heap. For the purposes of this study solid features, including cairns and platforms, are not considered to be towers, nor are single structures over 15.0 x 15.0m.<sup>2</sup>

### **Ancient Terminology for Towers**

There are only two main Latin words which denote towers, *turris* and *burgus*. *Turris*, derived from the Greek *tursis* (τούρσις), has the primary meaning of a military tower attached to a city wall or other fortification. The Latin term *turris* seems to have acquired a more generalized meaning in addition and may refer to any tower, whether free-standing or attached to a fortification. Conceptually, both words denote tall, thin structures (*OLD*; *LSJ*).

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<sup>2</sup> Gregory (1997.1: 8) argues that military structures larger than 15.0 x15.0m are properly referred to by other terms.

Another term for towers is more controversial.<sup>3</sup> *Burgi* are attested as Roman military structures by inscriptions and literary sources from the early second century A.D. onwards. The late fourth century military writer Vegetius describes a *burgus* as a free-standing structure particularly designed to protect water sources outside of a main fortification.<sup>4</sup> The predominant view is that *burgus* is derived from *purgos* (πύργος), which was the general Greek term for a free-standing tower of a variety of functions (*OLD*; *LSJ*, s.v.). The change from initial Greek *pi* to Latin *b* is explained by its transmission to Latin via Macedonian Greek, where such confusion of labials is common, perhaps at the time of the Pyrrhic War (Penninck 1940-5).

If this etymology is correct, a *burgus* would be a type of Roman military tower, although it is remarkable that a relatively early borrowing from Greek should be unattested until the second century A.D. It is also interesting that when the Latin word *burgus* is translated back into Greek inscriptions in the eastern Roman empire it is rendered as *bourgos* (βούργος), rather than its presumed etymon *purgos* (Mason 1974). These facts suggest that either the term did not refer to a tower, or that the word had acquired such a specific meaning in Latin that the original, *purgos*, was no longer an appropriate translation.

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<sup>3</sup> See Gregory 1997.1: 9. A detailed summary of the evidence for *burgi* is provided by Isaac (1990: 178-86). Kennedy (2000: 85) writes that, "Later, '*burgus*' was used to mean a fortified settlement, but at this date [AD 371] it was still only a 'small fortification'." cf. Isaac 1990: 180 "...a small garrison, such as could be housed in one fairly large tower. A clear distinction is to be made between such posts and others, also named *burgi*, in the interior [of the provinces] which seemed to police the countryside and roads within the empire."

<sup>4</sup> *Epitome rei militaris* 4.10. Milner (1993): "But if a source is beyond the range of missiles but on the hill below the city, it is advised to build a small fortification which they call a *burgus* between the city and the spring, and station there catapults and archers to defend the water from the enemy." Stelten (1990): "*Quod si ultra ictum teli in clivo tamen civitatis subiecta sit vena, castellum parvulum, quem burgum vocant, inter civitatem et fontem convenit fabricari, ibique ballistas sagittariosque constitui, ut aqua defendatur ab hostibus.*"

Another perspective has *burgus* derived from Germanic *baurg*, a fortified hilltop or village (Ernout and Meillet 1974: 78; Milner 1993: 119, n.2; Gregory 1997.1: 9). The word would have entered Latin during the major period of Roman contact with the Germanic peoples from the first century B.C. onwards. If the word did indeed derive from a German rather than Greek root, there would be no reason to associate a *burgus* with a tower specifically, although any fortification might take the architectural form of a tower. As both the Greek and German terms denote fortifications, it seems impossible to assess the validity of the two approaches without further evidence. For the purposes of this study, *burgi* are considered to be military structures of specialized function which may, or may not, take the architectural form of a tower.

### **Evidence for Non-Military Towers in Arabia**

Ancient sources attest to the presence of agricultural, pastoral, funerary and domestic tower types in Arabia.

#### *Agricultural and Pastoral Towers*

The best evidence for towers as agricultural installations comes from the New Testament. Speaking to priests, scribes and elders in the Temple at Jerusalem, Christ lectures those present (Mark 12:1):<sup>5</sup>

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<sup>5</sup> Καί ἤρξατο αὐτοῖς ἐν παραβολαῖς λαλεῖν, Ἀμπελῶνα ἄνθρωπος ἐφύτευσεν, καὶ περιέθηκεν φραγμὸν καὶ ὠρυξεν ὑπολήνιον καὶ ἐκοδόμησεν πύργον, καὶ ἐξέδετο αὐτὸν γεωργοῖς, καὶ ἀπεδήμησεν. Referred to as the “Parable of the Wicked Tenants”. The parable is repeated in Matthew 21:33. Both passages echo the phrasing of Isaiah 5:2 where the Hebrew term *sukkā* is used (Banning 1992: 622).

Then he began to speak to them in parables. ‘A man planted a vineyard, put a fence around it, dug a pit for the wine press, and built a watchtower [*purgos*]; then he leased it to tenants and went to another country. (NRSV)

It seems from the context that constructing a tower, or watchtower, in a vineyard was a common enough practice that it needed no further comment. Likewise, to emphasize the demands of being a disciple and to encourage self-examination before committing to the cause, Christ asks a number of people following him (Luke 14: 28-30):<sup>6</sup>

For which of you, intending to build a tower [*purgos*], does not first sit down and estimate the cost, to see whether he has enough to complete it? (29) Otherwise, when he has laid a foundation and is not able to finish, all who see it will begin to ridicule him, (30) saying, ‘This fellow began to build and was not able to finish.’

It is clear that the parable was directed at a varied group of common people, which may suggest that the act of building a tower was so mundane that anyone could relate to it. Presumably these towers were situated to overlook the surrounding vines, or other produce, but it is not clear whether it was intended to house a guard to observe the estate or to store implements needed at the site. It is also unclear what precise form or size the structure would have taken.

Papyrological evidence from Egypt documents the widespread agricultural use of towers in that province. For example, a tower is clearly used for storage in a papyrus of AD 34 from Euhemeria (*P.Ryl.* 2.138, 20-4).<sup>7</sup> Located in the middle of the estate, it housed: “5 rakes, 6 hay sickles, 15 measures of flour, other tools and 200 drachmas”

<sup>6</sup> 28 τίς γὰρ ἐξ ὑμῶν θέλων πύργον οἰκοδομῆσαι οὐχὶ πρῶτον καθίσας ψηφίζει τὴν δαπάνην, εἰ ἔχει εἰς ἀπαρτισμόν; 29 ἵνα μήποτε θέντος αὐτοῦ θεμέλιον καὶ μὴ ἰσχύοντος ἐκτελέσαι πάντες οἱ θεωροῦντες ἄρχονται αὐτῷ ἐμπαίξιν 30 λέγοντες ὅτι Οὗτος ὁ ἄνθρωπος ἤρξατο οἰκοδομεῖν καὶ οὐκ ἴσχυεν ἐκτελέσαι.

<sup>7</sup> ...ἱκανὰ ἀργαλεῖ(ῖ)α / ἅμας ε, χωροκοπικὰ / ζ, ἐρίων σταθμῖα ιε / καὶ ἕτερα σκεύη, καὶ ἀργυρ/ρίου (δραξμάς) Σ...

(Husson 1983: 250). Nevertheless, the function of most towers is not mentioned, even in the papyri.



**Figure 1: Modern walled orchard in Ma'an, Jordan. The tower is visible at the left. Photo by author.**

It would appear that towers still serve an agricultural function in certain parts of modern Jordan. While visiting the Ma'an garbage dump, the author located a tower constructed inside a walled orchard [Figure 1]. The structure is a substantial, ca. 5.0 x 5.0m, tower coated in plaster. It is two stories tall and has crenellations along the roof line. Small windows are visible on each side of the second storey. As almost all construction in this area near the wadi is of mud brick, including the wall of the orchard, it seems likely that the tower is also, but the plaster may obscure stone construction. Unfortunately, local informants would not admit to owning the structure or speculate on what it might contain. Guard dogs prevented closer examination.

There also seems to be an long tradition of using towers to observe and perhaps to guard the herds and flocks of pastoralists. Uzziah, King of Judah, is described as constructing such towers (2 Chronicles 26:10):

He built towers [Heb. *migdāl*] in the wilderness and hewed out many cisterns, for he had large herds, both in the Shephelah and in the plain, and he had farmers and vinedressers in the hills and in the fertile lands, for he loved the soil.

Unfortunately, there are no such references dating to the Roman period, except among the graffiti of the Thamudic and Safaitic nomadic pastoralists, who used stone cairns as observation or “lookout” points to watch over their herds and to warn of impending raids.<sup>8</sup> These cairns are often quite large, with some more than three metres in height. While it seems possible that semi-nomadic or seasonal transhumants, or even sedentarized pastoralists in more settled areas of Arabia, might have used more formal architectural constructions for such a purpose also, there is no evidence to indicate that they did. There is also no reason to refer to the cairns of the nomads as “towers”.

### *Tower Houses*

Numerous papyri from Egypt document the presence of towers in and around domestic structures (Nowicka 1970; 1975; Husson 1983: 248-52, fig. 32).<sup>9</sup> Unfortunately it is

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<sup>8</sup> One of the most common verbs in the Safaitic texts is *nzr*, meaning “to look out” or “to watch” (Winnett and Harding 1978: 28) and one interesting text records that it was written, “By Ša‘bān b. HR‘T. He was on the look-out for Nabataeans.” [Winnett and Harding 1978: no. 157. The text reads: *lš'bn bn hr't wtzr nbt*; cf. Winnett and Harding 1978: no. 168; and Zayadine 1999: 311-12 no. 2.] The text, and others like it, need not imply long-term, or even serious, friction between settled Nabataeans and nomadic Safaitic tribesmen; it is even possible that the Nabataeans mentioned were themselves pastoralists. A few graffiti refer to a “look-out” (*mnzr*, *mzr*), literally “a place from which to watch”. Although they are a rarity among the thousands of published inscriptions, these texts may shed some light on the use of observation posts in the region by nomads during the Nabataean and Roman periods.

<sup>9</sup> There are also models of towers, lanterns in the shape of towers, and numerous depictions of towers in landscape paintings and sculptural reliefs (Nowicka 1975: *passim*).

impossible to associate the towers mentioned in the papyri with specific structures on the ground, but it appears that they were substantial features which required considerable expense to construct. Some of them were clearly three or more stories in height and were located at or near a domestic complex, while others were isolated structures in the landscape. It seems probable on the basis of art and artifacts as well as the papyri that tower houses, whatever their precise form, were as common throughout the Near East as they were in Egypt (Nowicka 1975).

The “staircase-tower” is an architectural feature used in a wide variety of Nabataean structures, including houses, known from Mampsis and Oboda in the Negev (Negev 1973). In each case a narrow staircase winds around a square or rectangular central pillar, providing access to the upper floors. Despite the fact that the stairs form an integral part of the building, they seem to be segregated as a clearly distinct unit. These staircases are extremely solid, and therefore durable, and tend to survive even when the rest of the structure has collapsed. For example, the southwestern gate of the acropolis at the site of Oboda in the Negev has a staircase tower preserved to a height of ca. 4.0m and is datable between the end of the first century BC and the middle of the first century AD. That this architectural tradition persisted after the arrival of the Romans is attested to by the presence of a staircase-tower in a building at Oboda identified as a tower itself by an inscription of AD 296, and which identifies the stone mason as originating from Petra

(Negev 1973: 373).<sup>10</sup> It is unclear whether or not these staircase-towers could be one of types of structure referred to as “towers” in the papyri (above).<sup>11</sup>

The physical remains of a staircase tower or tower house should be fairly substantial; even if only the relatively solid tower remains, there should be evidence for a more substantial structure in the immediate vicinity.

### *Tower Tombs and Burial Monuments*

Tombs constructed as free-standing towers are a common feature throughout the Mediterranean basin (Toynbee 1971: 164-72). Perhaps the best known examples in the Near East are those at Palmyra, which often rise to three or more stories (Toynbee 1971: 168-71). Each structure seems to have served as an ossuary or columbarium and contains multiple inhumations in small niches in the walls. A central staircase provides access to the upper floors. It is possible that these structures are a more elaborate architectural expression of earlier cairns or *tumuli* constructed as burial markers. Other tower tombs, of uncertain date but with architectural relief executed in a Hellenistic style, exist throughout the region and may reflect a Persian tradition (Zayadine 1986: 221, and n.15).

Three free-standing “tomb towers” have been identified at Petra, located opposite the Obelisk Tomb near the entrance to the Bab al-Siq (Zayadine 1986: 217-21, figs. 5-7; Mackenzie 1990, Map 4, nos. 8, 9). Tomb number 9 has been excavated by Fawzi Zayadine of the Department of Antiquities of Jordan and the publication makes clear that

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<sup>10</sup> Other staircase towers of first century BC to third century AD date are known from Masada, Jerusalem, Khirbet Qumran; in temples at Dmeir, Qasr Rabbah, Jerash, Palmyra, Wadi Ramm, and ‘Araq el-Emir; the theatre at Shuhbah-Philippopolis; and the east gate at Damascus.

<sup>11</sup> Tower houses were reported at Umm al-Quttein, but have since been disturbed by modern settlement (Kennedy 2000: 76, with bibliography).

this was a regional tomb type executed in the local architectural *koinē*. The feature is ca. 6.0 x 6.0m in plan and has been cut from the living rock. A staircase accessible to the outside only at the second storey descends around a central hub to access the burial chamber. False architectural features such as a stepped base, columns and architrave are carved in relief on the sides of the feature, presumably to simulate the Hellenizing tombs of nearby regions (Zayadine 1986: 220-1). For example, Zayadine points out the remarkably close similarities between Tomb 9 and the so-called “Tomb of Absalom” in the Kedron Valley near Jerusalem which is itself partly cut from the bedrock (Toynbee 1971: 188-9, fig. 70). Based on the style of architectural decoration, Zayadine proposes a date of the second half of the first century AD for the construction of Tomb 9 at Petra.

With three such structures identified at Petra, it is a distinct possibility that other tombs of this style may have existed elsewhere in Arabia, where they need not have been cut from the bedrock, as was common practice for tombs at the Nabataean capital. The fact that they generally have stepped bases and other architectural ornamentation should help to distinguish them from other types of towers.

### *Road Markers*

Conical heaps of stone used as road markers (Ar. ‘*alam*) have often been referred to as towers (Banning 1992: 623). They are usually ca. 3.0-4.0m tall and constructed of loose stones collected from the surrounding landscape. They are most commonly located where roads and tracks are particularly difficult to follow. Similar features, of apparently Roman date, have been reported along the ‘Abu Sha’ar-Nile road in the eastern desert of Egypt and it has been suggested that they served as signaling points as well (Zitterkopf and

Sidebotham 1989). Since these features are solid, however, it seems better to describe them as cairns and not “towers”. They are not considered here.

### **Evidence for Military Towers in Arabia**

The existence of Roman military towers has been well documented on other Roman frontiers, particularly along the Rhine and Danube. Nevertheless, the construction of many of these structures in wood, which does not always survive well in northern Europe, has prevented detailed investigation of their architectural form. In Arabia, the evidence for military towers is even less well preserved than in Europe, although there are some references to military towers.<sup>12</sup> For this reason most scholars have turned to the evidence provided by the pictorial reliefs on Trajan’s Column in Rome (Lepper and Frere 1988).

Trajan’s Column was erected and carved ca. AD 109-113 as a centerpiece of Trajan’s forum. It depicts the events of the Dacian wars of AD 101-2 and 105-6 in a pictorial relief which wraps upwards around the column as if it were a papyrus scroll. In the very first scene of the relief, military towers are displayed along the banks of the Danube river (Lepper and Frere 1988: 47-9, pls. IV-V).

There are five structures in all, the first two of which are usually referred to as “block houses” rather than towers, as they seem shorter and are less detailed in their execution. This may be a result of compression occasioned by the tapering end of the scroll, however, and may not indicate a distinct type of structure. The next three

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<sup>12</sup> Clark and Parker (1987) provide a summary of material relevant to Arabia, but with an emphasis on military signaling, rather than on military towers. An updated and comprehensive perspective on Roman signalling is provided by Wooliscroft (2001). See also below and Chapter Two.

structures are clearly towers. Each is a narrow, two-storied structure with a pitched roof and a wooden balcony at the second storey; they appear to be built of stone and are surrounded by a wooden palisade. A break in each palisade leads to a doorway in the centre of the first storey, while a second door or window provides access to the balcony from the second storey. Each of the towers has a flaming torch projecting from the second level.

While the second and third of the towers are represented alongside soldiers, usually accepted as auxiliary troops because of their equipment, the first tower is supplied with two piles of straw and what appears to be a bier made of logs. These flammable materials are perhaps best interpreted in the light of Vegetius' comment that signals should be sent with smoke during the day and with fire at night and strongly suggest that we are meant to understand a chain of signal stations along the Danube.<sup>13</sup> It is possible that the torch on the second storey was to be used for regular communication while the other materials were to be reserved for emergency messages (Clark and Parker 1987: 166). It is also possible that the towers may have served other functions in addition to signaling.

Vegetius seems to echo the comments of Frontinus (*Strategemata* 2.5.16), who, during the reign of the emperor Domitian (AD 81-96), pointed out that the Arabs in particular were known for signaling using smoke by day and fire by night. Although

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<sup>13</sup> *Epitome rei militaris* 3.5. Milner (1993): "Similarly when forces are divided, they use fires by night and smoke by day to signal to their allies what cannot be announced by other means." Stelten (1990): "*Similiter si divisae sint copiae, per noctem flammis, per diem fumo significant sociis quod aliter non potest nuntiari.*"

Frontinus did not specify the Arabs in question,<sup>14</sup> there is some evidence that the Nabataeans could use such signaling to their advantage: describing events in 312 B.C., after Antigonus Monophthalmus had promised the Nabataeans that his subordinates would not invade their territory again, Diodorus Siculus (19.96.3) reports that:<sup>15</sup>

The Arabs were highly pleased because they seemed to have been relieved of great fears; yet they did not altogether trust the words of Antigonus, but, regarding their prospects as uncertain, they placed watchmen upon hills from which it was easy to see from a distance the passes into Arabia, and they themselves, after having arranged their affairs in proper fashion, anxiously awaited the issue.

The Nabataeans were warned of a further invasion by their watchmen, who used fires to signal the approach of the military force (Diodorus Siculus 97.1).

#### *Literary and Documentary Evidence*

There are relatively few ancient references to military towers in Arabia. A tower (*purgos*) was erected at Dhiban in AD 245-6:<sup>16</sup>

<sup>14</sup> “The Arabians, since their custom of giving notice of the arrival of the enemy by means of smoke by day, and by fire at night, was well known, issued orders on one occasion that these practices should continue without interruption until the enemy actually approached, when they should be discontinued. The enemy, imagining from the absence of the fires that their approach was unknown, advanced too eagerly and were overwhelmed.” (Loeb). *Arabes, cum esset nota consuetudo eorum, qua de adventu hostium interdium fumo, nocte igne significare instituerant, ut sine intermissione ea fierent, praeceperunt, adventantibus autem adversariis intermitterentur; qui cum cessantibus luminibus existimarent ignorari adventum suum, avidius ingressi oppressique sunt.*

<sup>15</sup> οἱ δ' Ἄραβες περιξαραεῖς μὲν ἦσαν ἐπὶ τῷ δοκεῖν ἀπολελεύσθαι μεγάλων φόβων, οὐ μὲν ππαντελῶς ἐπίστευόν γε τοῖς Ἀντιγόνου λόγοις, ἀλλὰ τὰς ἐλπίδας ἔχοντες ἀμφοδοξομένους σκοποῦς μὲν κατέστησαν ἐπὶ τῶν λόφων, ἀφ' ὧν ἦν ῥάδιον συνορᾶν πόρωθεν τὰς εἰς τὴν Ἀραβίαν ἐμβολάς, αὐτοὶ δὲ συνταξάμενοι τὰ περὶ ἑαυτοῦς προσηκόντως ἐκαραδόκουν τὸ ἀποβεσόμενον.

<sup>16</sup> IGLS 21: 179. Ἐκ κελύσεως/ Κλ(αυδίου) Καπιτωλ'ν(ου)/ πρεσ(βευτοῦ) Σεβ(αστοῦ) ἀντισ(τρατήγου)/ ὁ π[ύργος] ἐγέν(ετο) φνζ'.

By order of Claudius Capitolinus, Propraetorian Governor of Augustus, the tower was constructed in the [Seleucid year] 557. (Kennedy 2000: 129)

Recent examination of the site has revealed a possible tower at Dhiban, but there is no way to prove that the inscription refers to that particular structure. A second *purgos* was constructed at Deir al-Kahf in AD 348-9:<sup>17</sup>

Under my Lord Silvinianus, Most Eminent Dux, the tower was built, by provision and effort of Priscus, Prefect. In the Year 243 [of the province]. (Kennedy 2000: 70, fig. 8.10)

Once again, the inscription has been removed from its original site and no connection can be made with an existing structure, although a probable tower has been identified at Deir al-Kahf; the tower is reported to be ca. 2.28 x 1.8m and nearly 6.0m high (Kennedy 2000: 67, fig. 8.6).<sup>18</sup>

The construction of a Roman *burgus* is attested at Umm al-Jimal in northern Jordan (*CIL* 3.88; Kennedy 2000: 84, fig. 9.11). It was erected by *equites nona Dalmatae* in AD 371, but the inscription has been reused in a Byzantine church and no structure at the site can be identified as a *burgus* with any certainty:<sup>19</sup>

For the Health of Our Lords Valentinian, Valens and Gratian, Most Victorious, Forever August, under the direction of the Most Illustrious Julius, Comes, Master of the Cavalry and Infantry, a *burgus* was built from ground level through the efforts of the Most Devoted Equites VIII Dalmatarum, in the charge of the Tribune Vahalus, in the consulate for the second time of our Lord Gratian, Forever

<sup>17</sup> PES III.A.2: no. 224. Ἐπί τοῦ κυρίου μου Σιλουινιανοῦ τοῦ δι(ιασ)η(μοτάτου) δουκὸς ἐγένετο ὁ πύργος, ἐκ προνοίας καὶ σπουδῆς Πρίσκου ἐπάρχου. Ἔτει σμγ'.

<sup>18</sup> The photo makes it appear shorter and much larger in plan.

<sup>19</sup> PES III.A.3: no. 233 = ILS 773. *Salvis d(ominis) n(ostris) Valentiniano, Valente et Gratiano/ victoriosissimis, semper Aug(ustis), dispositione Iuli, / v(iri) c(larissimi), com(itis), magistri equitum et peditum, fabri/catus est burgu[s] ex fundamento mano devo/tissimorum Equitum IX Dalm(atarum), s(ub) c(ura) Vahali trib(uni), / in consulatum d(omini) n(ostri) Gratiani, perpetui Aug(usti) iterum/ et Probi, v(iri) c(larissimi).*

Augustus, and the Most Illustrious Probus. (Kennedy 2000: 84-5)

### *Archaeological Evidence*

Scholars have identified a large number of structures in Arabia as towers. Many have only been published in the most preliminary form but it is clear that they vary significantly in size, shape and construction techniques. Of all the reported towers, only a few stand out as small structures which clearly had a second storey.

A large number of towers have been reported in northeastern Jordan (Kennedy 2000: 59, 62, 64, 66-7, 73-4, 83-4, 97-8). Although it might at first appear that there are more towers in that part of Arabia than elsewhere, the large number of reported towers is actually the result of the intensive examinations which that region has received (MacAdam 1986; Kennedy 1981; 1982a; 1997; Kennedy and Cowie 1984; Kennedy, et al. 1986; Kennedy and MacAdam 1986). The detail and scope of these investigations permit the identification of several probable towers.

At Qasr al-Uweinid a free-standing tower of the Severan period is located within the compound of a much larger structure of probable Islamic date (Kennedy 2000: 59, fig. 7.8). It is square, ca. 9.5m on a side, and rose to a considerable height. Across the wadi from Qasr al-Uweinid is a second tower ca. 12m on a side and more than 4m tall with walls ca. 1.2m thick.

A small (ca. 5.14m square), undatable tower has been identified at Qasr 'Ain al-Beida (Kennedy 2000: 62, fig. 7.12). It has thick (ca. 1.2m) walls, but is only preserved to a height of ca. 1.2m. It appears to be surrounded by an enigmatic rectangular feature. Two towers have been reported along the *Via Severiana*: Rujm Mudawer (7.3 x 6.7m, ca. 3.0m

tall) and Qasr al-Huweinit (ca. 6.35 x 6.2m, 1.75m high). Neither has been published in significant detail (Kennedy 2000: 64, fig. 8.2).

One of the most famous towers in Arabia is that at Qasr Burqu in the basalt desert of northern Jordan (Kennedy 2000: 74-5). It is built of basalt ca. 12.0 x 8.0m and stands almost 12.0m high; the interior has two or three rooms of uncertain plan. No staircase is reported at the site. The tower may have been originally constructed in the third or fourth century AD, but has probably undergone some reconstruction as suggested by an Arabic inscription of ca. AD 700 above the door. Another massive (12.0 x 11.4m) tower with internal rooms has been reported at Umm Quseir in the Madaba Plain (Kennedy 2000: 124, fig. 12.8). It may date to the Nabataean period.

At Umm al-Rasas (ancient *Mefaat*) there is an extremely tall (ca. 15.0m) and narrow tower with an internal staircase which may have served a monastic purpose (Kennedy 2000: 130). An interesting Nabataean or Roman structure at Qasr al-Maqhaz has been referred to as a tower (Kennedy 2000: 143, fig. 14.13). It is ca. 12.7 x 11.7m and has several internal rooms and an internal staircase which winds around a central pillar in the southeastern corner. The unit forming the staircase is extremely similar to the staircase towers of the Negev (above), and it is tempting to suggest that the structure may have been a house.

Near the Roman military fortress at Lejjun are the ca. 11.0m tall ruins of Qasr Abu Rukba (Parker 1986a: 79-82; Kennedy 2000: 152, fig. 15.2). It is ca. 10.5 x 10.90m and has thick (ca. 1.3m) walls and an internal "corbelled" staircase (Koucky 1987b: 26, fig. 31, Pl. 4). Ceramics recovered by excavation suggest that the tower dates to the Roman period. At Qasr al-Bint there is a tower ca. 12.25 x 9.0m with arched rooms on

the main floor and an internal staircase (Kennedy 2000: 159-60, fig. 16.6). A number of secondary rooms have been built against the exterior faces of the tower. Surface ceramics date from the Nabataean period to the fifth century AD, suggesting that the site was consistently reoccupied.

Many other towers have been reported in Arabia. In particular the surveys conducted around the Roman military forts at al-Lejjun and Udhruh have yielded large numbers of possible towers. At Udhruh, the excavator reported nearly a hundred towers in the surrounding landscape with almost no description of individual sites (Killick 1987: 32-4). An examination of the towers in the desert (Clark 1987a) and in the “*limes zone*” (Koucky 1987b) at al-Lejjun, however, has provided a preliminary typology of towers in that area (Clark 1987a; Clark and Parker 1987).<sup>20</sup>

It appears that new towers were constructed near al-Lejjun during the Iron Age, Nabataean, and Roman periods, and that some previously existing towers were reoccupied during subsequent periods (Koucky 1987b: 59-71). The Iron Age towers are generally quite large (from 14.0 x 14.0m to 22.0 x 18.0m), although some smaller examples have been identified. They are all built of “megalithic” blocks laid without mortar and may have reached a substantial height. Many are located at or near wadis and a large number are in close proximity to stone rings or other built features (Koucky 1987b: 64).<sup>21</sup>

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<sup>20</sup> Although, the surveys around al-Lejjun have provided an important typology of towers, only the preliminary report has been released; hopefully, the greater detail of a final report will reveal further details of the individual structures. The chronological terminology used by Parker is detailed in Appendix 2.

<sup>21</sup> The stone rings have been interpreted as campsites (Koucky 1987b: 58-9, 78, fig. 27).

Nabataean period towers near al-Lejjun are generally smaller and shorter than their Iron Age predecessors, ranging in size from 3.0 x 3.0m to 6.0 x 6.0m with walls ca. 1.0m thick (Koucky 1987b: 64, Pl. 1). They are also assembled of rough-hewn blocks without mortar, but display greater care in the selection and dressing of the individual stones. Although the Nabataean towers are not particularly tall when compared to the Iron Age towers, they tend to be located in prominent locations with a good view of the surrounding terrain. Stone rings are located on the slopes below many of the structures, but the towers themselves are not usually part of a larger complex or enclosure (Koucky 1987b: 78).

Towers of the Late Roman and Early Byzantine Period were constructed at wadi crossing points and at important roads (Koucky 1987b: 66). For this reason they may have been concerned with regulating traffic in the area. In general they are 10.0 x 10.0m to 12.0 x 12.0m in size and three or more stories tall. They seem to have been constructed in a still more precise manner using dressed blocks with a lime mortar and the exterior of the towers was plastered.

All but a few of the towers are situated in the "*limes* zone" to the west of the modern desert highway (Clark 1987a: 133), leading the investigators to conclude that they formed part of a military system during the Late Roman and Early Byzantine periods and probably earlier (Clark and Parker 1987). As the authors point out, however, there is no proof that all of the sites were military posts in any given period and their original functions have been obscured by reuse (Clark and Parker 1987: 181). It is difficult to accept the assumption that all of the towers in the zone, including those associated with other features, were military in origin. Nevertheless, the publication of the towers from al-

Lejjun represents an important step in the formation of a typology of towers throughout Arabia.

## **Conclusions**

There is sufficient evidence of both military and non-military towers in the Near East to conclude that they were probably a common sight in the landscape of Arabia. While it is possible to hypothesize concerning the function(s) of structures in the literary and documentary sources, it remains difficult to relate these functions to specific structures. For this reason, any assessment of the role of towers in Arabia must accept that both military and non-military towers are present and attempt to differentiate between these types on other grounds. Chapter Two assembles and assesses previous interpretations of structures identified as towers in Arabia.

## **Chapter Two: Approaches to Towers on the Roman Frontier in Arabia**

### **Introduction**

Traditional interpretations of the Roman frontiers have emphasized the role of the army as a military force protecting the boundaries of the empire from external threats. This purely military interpretation has a long history with regard to the Arabian frontier, where scholars have posited the presence of a nomadic menace in the deserts to the east and south of the province. Military towers and watchtowers are integral to this interpretation, as they would represent the “eyes and ears” of the frontier system and warn the major forts of impending attack.

More detailed examination of the archaeological evidence for the Nabataean and Roman periods, however, has shown that there is little evidence for a nomadic threat during the Nabataean monarchy or the first two centuries of Roman rule. In the absence of an identifiable enemy before the fourth century A.D., some scholars have focussed on

the role of the Roman army as a tool of political and social pacification in newly conquered areas. In this formulation, military towers and watchtowers along the major routes represent the smallest, local elements of a “police” presence required to discourage banditry and political disturbance.

The realization that frontiers are neither strictly linear, nor continuous, has led to a reinterpretation of the frontiers as permeable social and economic zones. A new consensus that the distribution of the army was affected by such basic factors as the availability of materiel and supplies and various administrative requirements provides several new avenues for explaining the role of military towers on the frontier in Arabia. This approach also cautions against identifying over-arching causes for the distribution of the Roman army in any period; the location and function of military installations must be considered in their unique regional and temporal context and must take into account factors such as local topography and the multiplicity of functions of the Roman army.

### **Fear and Loathing: The Nomad Menace and Imperial Grand Strategy**

The fundamental modern work on the frontier in Arabia is S. Thomas Parker’s *Romans and Saracens* (1986a).<sup>1</sup> The work represents a massive synthesis of primary data and a major contribution to scholarship on the frontier. Parker and a team of volunteers visited the major military sites in modern Jordan and collected surface ceramics to provide an

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<sup>1</sup> Preliminary results of the survey were published in Parker 1976; 1980, and in Parker’s dissertation (1979). The latter was republished with corrections as *Romans and Saracens* (1986a).

independent chronology of their occupation in antiquity. In order to ensure that the surface collections were accurate, they were compared with known numismatic and epigraphic dates for selected sites (Parker 1986a: 12). The major fortresses of Udhruh and Lejjun were surveyed, along with 23 *castella*, 11 watchtowers, and several non-military sites, such as caravanserais (Parker 1986a: 10-12). The goal of the survey was to determine the overall pattern of military distribution in Arabia as it evolved over time: “It was hoped that the ceramic evidence would suggest when the forts were occupied and the topographic evidence would indicate the tactical purpose of each fort” (Parker 1986a: 11).

Although Parker admitted other possible motives for the distribution of the Roman army in Arabia, his interpretation focussed primarily on an external threat from the desert (Parker 1986a: 157; Kennedy 1992: 484). His interpretation was based on an understanding of the Roman frontiers of the second century and later as fixed defensive systems, *limes*, designed to prevent incursion (Parker 1986a: 1-2).<sup>2</sup> He argued that incursions from the desert were most often “small-scale, endemic nomadic raids” but that they could develop into substantial conflicts during periods of Roman weakness (Parker 1986a: 157):

These raids were partly the result of continuing nomadic migration from the Arabian peninsula into Syria and Palestine and partly the normal relationship between the nomadic and sedentary populations along the fringe of the desert. Control of these desert tribes was a security problem faced not only by the Romans but by all previous empires of the Near East.

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<sup>2</sup> This conception of the frontiers as static and linear pervades the work, despite Parker’s occasional references to frontier “zones”. Parker’s understanding of the frontiers is deeply indebted to Edward Luttwak’s work *Imperial Grand Strategy* (1976), see Parker 1986a: 1 n.3.

Evidence for the Roman army's presence in Arabia is sparse in the second century (Parker 1986a: 125-29). Parker, however, noted a close correspondence between supposed military sites with second century ceramics and the *Via Nova Traiana*, and this was taken as evidence of a fortified zone based on the road (Parker 1986a: 126). Continuity of occupation from the first century to the second century at some sites suggested that the Romans had taken over many pre-existing Nabataean military structures, including watchtowers (Parker 1986a: 115; 125-27).

Parker also interpreted the Severan military building program in Arabia as a response to external threats (Parker 1986a: 129-31). In particular, he argued that construction near the Azraq oasis by the Severan emperors was a response to a nomadic threat from the Wadi Sirhan (Parker 1986a: 131):

...the construction of new fortifications and sustained road work in the Azraq depression suggest serious nomadic pressure in the late 2nd and early 3rd centuries. The Romans met this threat with a group of forts centered around the Azraq oasis, well east of the *via nova Traiana*. This strategic advance into the desert may be compared to a similar policy in Africa. The advanced line protected both the highly urbanized Decapolis region and the southern flank of the populous Hauran.

Although there are few sources for the history of Arabia during the third century crisis, references to the presence of several new military units at Bostra, the construction of a tower at Dhiban in A.D. 245,<sup>3</sup> and the fortification of 'Adraa in the Hauran suggest increasing militarization throughout the period (Parker 1986a: 131-33). In addition, the

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<sup>3</sup> Parker 1986a: 132; cf. Tushingham 1972: 57 and above, Chapter One.

serious defeats inflicted on the Arabian army by Zenobia and Shapur “...may have encouraged the nomadic tribes to increase their raids” (Parker 1986a: 132).<sup>4</sup>

According to Parker, the Diocletianic period saw a massive military build-up along the frontier in Arabia (Parker 1986a: 135-43). The introduction of new legions and a large-scale building program in Arabia were just one aspect of an elaborate, empire-wide program of defensive works (Parker 1986a: 135-36). The construction of new towers and the reoccupation of Iron Age and Nabataean towers along the *limes* was a fundamental part of the new system (Parker 1986a: 137). Fortifications constructed in the Negev during the same period represented a second fortified zone (Parker 1986a: 142):

This inner line of defense extended from the Mediterranean near Raphia to the southern end of the Dead Sea...Its major function was to guard against Saracen incursions from the Negev and Sinai. This fortified zone also served as a secondary defense if the main *limes* in Transjordan were breached.

The fourth century is seen as a period of increased military activity, which created an elaborate “defense in depth” against nomadic incursions (cf. Luttwak 1976: 127-90).

In *Romans and Saracens*, Parker noted the impossibility of visiting every watchtower in Jordan “...as they number in the hundreds...” (1986a: 12). This omission was partially redressed by later work he undertook in Jordan. Beginning in 1980, Parker conducted excavations at the late Roman fortress of al-Lejjun (*Beththorum*), Jordan

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<sup>4</sup> Parker is not consistent in his terminology and defines the source of the threat variously as “nomads”, “beduin”, and “Saracens”; cf. Kennedy 1992: 485.

(Parker (ed.) 1987).<sup>5</sup> As part of the multi-disciplinary investigations at that important site, surveys were undertaken in the “*limes zone*” (Koucky 1987b) and in the desert to the east (Clark 1987a). One result of the survey work was the location of a number of purported Iron Age, Nabataean and Roman watchtowers, many of which showed evidence of reoccupation in the late-Roman period (Koucky 1987b; Clark and Parker 1987).<sup>6</sup> In their interpretation of these towers, Clark and Parker expanded on Parker’s earlier thesis of a nomad menace and suggested that the towers should be interpreted as an “Observation and Signalling System” for the control of nomadic groups — a thesis which Parker still maintains, at least for the late Roman structures (Parker 2000: 374):

The distribution of Late Roman/Early Byzantine forts and watchtowers in an intensively surveyed area east of the Dead Sea illustrates this phenomenon. What is especially significant is the disposition of these towers. Note that clusters of these towers and some *castella* are located around the eastern shallow entrances to the wadis. Ethnographic evidence and ancient campsites make clear that these wadis were in fact the preferred routes of travel for the nomadic tribes for seasonal transhumance, raiding and warfare. The logical conclusion is that these forts and watchtowers were sited to observe, and presumably control, movement through the wadis.

Although *Romans and Saracens* remains the fundamental modern study of the frontier, it has inherent limitations, and Parker’s interpretation of the frontier was criticized almost immediately from several different perspectives (Graf 1989a; Isaac

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<sup>5</sup> The Central Limes Arabicus Project. Bowersock (1983: 103, n.39) has pointed out that the term *Limes Arabicus* is probably anachronistic. cf. Speidel (1978: 726), who points out that the earliest attestation of the term is in Rufinus’ *Historia Ecclesiastica* 2.6, a late-fourth century work describing events during the reign of the emperors Valentinian and Valens (AD 364-78).

<sup>6</sup> See above, Chapter One. For a comparison of the bewildering terminology used to describe ceramics in Jordan, see Appendix 2.

1990; Kennedy 1992). First, despite its subtitle, *A History of the Arabian Frontier*, the work does not encompass all of the Roman province of Arabia, but only that part which happens to exist in the modern Hashemite Kingdom of Jordan. Thus, the Hauran (including the legionary base at Bostra), the southern Hisma, the Hijaz, the Negev and the Sinai were not directly considered in the study (Kennedy 1992: 477-78).<sup>7</sup> More troubling was the omission of certain military sites in Jordan, especially in the Wadi ‘Arabah, as it is difficult to understand how they might have functioned in a system of defense (Kennedy 1992: 478):

All of this is not to be explained as oversight or ignorance on the part of Parker but largely as deliberate exclusions determined by his view of the frontier...Parker apparently did not view their inclusion as relevant to his thesis on the frontier and they were not visited.

In addition, no attempt was made to find new military structures, except along the presumed line of the *limes*.

Second, there is no historical or archaeological evidence that the Nabataeans had significant confrontations with the nomadic groups in the area (Graf 1989a; MacDonald 1993: 313, 326-35).<sup>8</sup> The lack of such evidence for conflict before the coming of Rome makes it questionable to interpret the Roman, and especially late Roman, reuse of Iron Age and Nabataean forts and “watchtowers” around al-Lejjun as defence against nomads. If the evidence suggests that there was no reason for the Nabataeans to deploy their

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<sup>7</sup> Kennedy’s review of *Romans and Saracens* provides a list of the most important *corrigenda* (1992: 474 n.3, 475-76) and *addenda* (478 n.4).

<sup>8</sup> It is not even clear to what cultural distinctions may be made between sedentarists and nomads: they may all have identified themselves as “Nabataeans”.

military in order to monitor or prevent nomadic incursions, it seems a remarkable coincidence that the towers were located in positions suitable for that use during the late Roman period. There are three main possibilities: the towers served other “military” purposes during the Roman period; the structures were reoccupied during the Roman period, but not by the Roman army; or the towers did not have any military function at all.

A third problem with Parker’s interpretation is that there is mounting evidence that the Romans enjoyed relatively peaceful relations with the nomadic peoples of Arabia, just as the Nabataeans had before them. Re-analysis of the Greek and Latin sources (Graf 1989a), and the Safaitic inscriptions (MacDonald 1993) has shown that they provide little evidence for serious conflict during the Nabataean and Roman periods (*contra* Parker 1986a: 118). In particular, the belief that the corporate noun *’l rm*, common in Safaitic inscriptions detailing small-scale conflict, refers to the Romans has been seriously questioned (MacDonald 1993: 328-35). In addition, ethnographic studies have demonstrated that economic and social “mutualism” was more common between nomads and agriculturalists than once believed (Banning 1986; 1987; Isaac 1990: 68-77; *contra* Parker 1987a). Many of the literary references to nomads in ancient literature may betray the cultural and personal biases of their authors or literary *topoi* rather than the realities of life on the periphery of the empire (Shaw 1982). If there was occasional conflict between isolated groups of nomads and sedentarists during the fourth century, as seems inevitable, it was just as likely the result of sedentarists intruding into the desert of Arabia during a

period of agricultural expansion and rural growth as *vice versa* (Villeneuve 1989; Isaac 1990: 216; Kennedy 1992: 486).

Fourth, there are significant reasons for doubting that there was a major military build-up in Arabia during the Diocletianic period (Graf 1989a; Kennedy 1992: 485). Parker has recently written that, "It can no longer be questioned that Diocletian initiated a major military buildup along the eastern frontier, including Syria, Arabia, and Palestine" (Parker 2000: 372). Nevertheless, the evidence is far from clear: especially if the size of the late Roman legion were the smaller number of 1,000-1,500 troops proposed by some authors (Coarelo 1996; Southern and Dixon 1996: 30-33), rather than the figure of *ca.* 5,000 troops commonly accepted for an early imperial legion. In that case the later province of Arabia, with *legio IV Martia* stationed at Lejjun and *III Cyrenaica* at Bostra, would have had a combined legionary garrison of 2,000-3,000 men, while Palestina Salutaris, assuming that the latter province gained both *VI Ferrata* (at Udhruh?) and *X Fretensis* at 'Aqaba, would have boasted approximately 2,000-3,000 legionaries, approximating the garrison (*ca.* 5,000) of the united province in earlier periods. There is no significant increase in the number of troops in the Roman province.

There was considerable military construction in Arabia under Diocletian, as attested by inscriptions from several forts, but the nature of the reworking is far from clear; and it is dangerous to date fortifications solely on the basis of their architectural form (Gregory 1996; *contra* Parker 1995). The "new" fourth century distribution of the army might just as well reflect the altered hierarchy of the garrison or the new

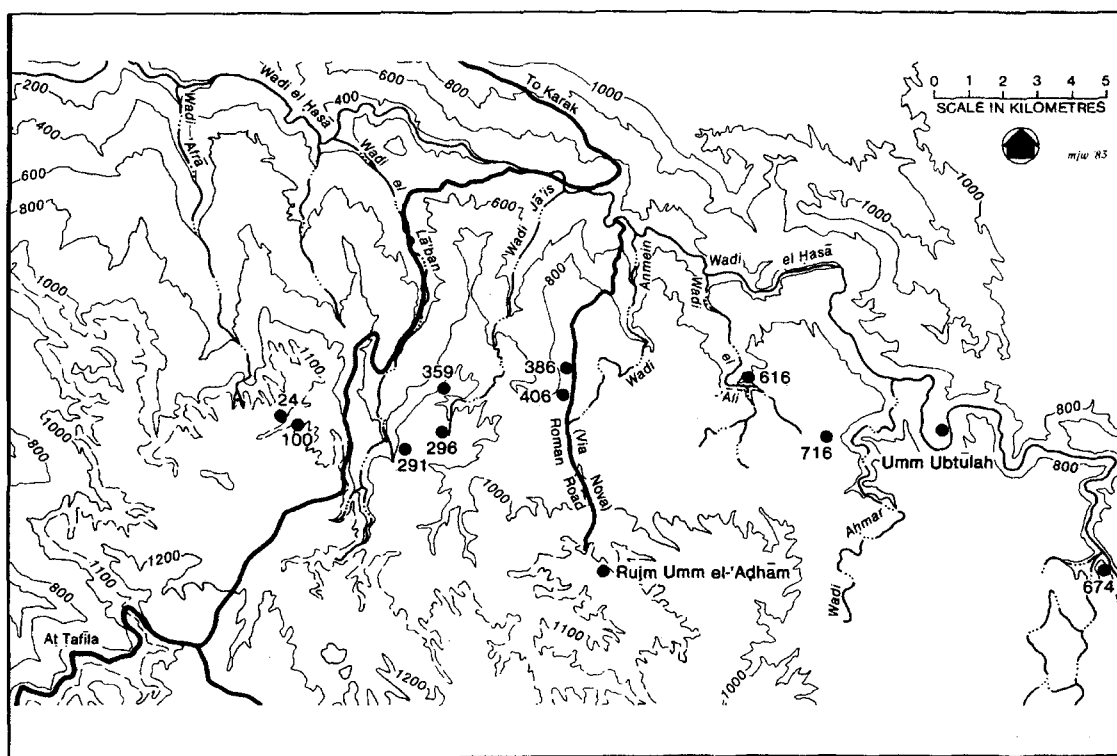
administrative structure of the two provinces, as suggest the emergence or intensification of a threat.

### **A Monitoring Zone along the Wadi al-Hasa**

A number of Nabataean military sites have been identified near the Wadi al-Hasa in southern Jordan: Rujm Faridiyyeh (Roller 1983: 181-82, and n. 42; MacDonald 1984a: 326, fig.4; 1988: 226, fig.59; Kennedy and Riley 1990: 86-89, figs.34-35), al-Ruweihhi (MacDonald 1984a: 228-29, fig.5; 1988: 210, fig.55, photo 15) and Umm 'Ubtulah (MacDonald 1984a: 231, fig.6, pl.6; 1984b; 1988: 292, fig.75; Kennedy and Riley 1990: 223-24, figs.178-79). These large sites may be Nabataean structures reused in the Roman period, perhaps as part of a "monitoring zone" of Nabataean or Roman watchtowers (MacDonald 1984a; 1984b; 1988: 292, fig. 74; Figure 2), but the individual sites still have not been excavated or examined in greater detail. A possible Nabataean fortress has also been identified at Umm al-Tawabin in the Wadi 'Arabah by the Southern Ghors and Northeast 'Arabah Archaeological Survey (MacDonald 1992: 86, fig.17, photos.13-14.).

The Nabataean or Early Roman "monitoring zone" along the southern bank of the Wadi al-Hasa is an interesting example of the military interpretation of rural sites in the Nabataean kingdom (MacDonald 1984a). The Wadi al-Hasa is one of the major wadis of the central and southern Jordanian Plateau; it runs west from the desert and descends rapidly into the Rift Valley, where it enters the Dead Sea near the modern town of Ghor

as-Safi (MacDonald 1988: fig. 1). The main wadi is fed by a number of deep tributary wadis, which enter from the south and cut the surface of the plateau sharply to produce an extremely irregular landscape. The Wadi Hasa Survey (WHS) intensively and systematically examined the southern bank of the Wadi al-Hasa between the modern desert highway and the western extremity of the central Jordanian Plateau (MacDonald 1988: 1-2).



**Map 1: Hypothetical Monitoring Zone along the Southern Bank of the Wadi al-Hasa (MacDonald 1988: fig. 74). Used with permission of B. MacDonald.**

Of the 1,074 sites visited by the WHS, twelve possible Nabataean or Early Roman period sites have been identified as belonging to a hypothetical monitoring zone along the

southern bank of the wadi (Fig. 2; MacDonald 1984a: Table 1).<sup>9</sup> A combination of one “military camp”, five “forts”, and six “towers” or “watchtowers”, the structures are located between the tributary wadis in good locations to view the entrances to the tributaries, the main North-South arteries that cross the Wadi al-Hasa (including the King’s Highway/*Via Nova Traiana*), and each other (MacDonald 1984a: 232 and n.24).

Bowersock, at a time when a nomad menace from the desert areas was a commonly accepted hypothesis, interpreted the monitoring zone along the Wadi al-Hasa as a defensive network of structures “...forming part of a deep frontier looking toward the desert, at the same time as they also protected traffic along the Wadi al-Hasa” (*pers comm.* cited in MacDonald 1984a: 233; cf. Bowersock 1983: 105). It is difficult to understand how such a system could have functioned, as the most densely occupied part of central Jordan would already have been overrun before the westernmost structures of the zone would have been of any use against an invasion from the east. At any rate, current scholarly consensus no longer supports a nomadic threat from the east during the Nabataean period and these structures require detailed re-examination.

The smaller structures of this monitoring zone have not been published in detail, but there seems to be considerable variety in the size of the sites designated as “towers”, which range from 4.0 x 4.0 m to 8.5 x 8.5 m (MacDonald 1984a: *passim*). Even if all of

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<sup>9</sup> WHS site numbers 24, 100, 291, 296, 359, 386, 406, 616, 674, 716, Rujm Umm el-‘Adham, and Umm Ubtulah (the latter have no site numbers). For the surface sherd collections on which the dating of each site is based, see MacDonald 1984b: Table 1 and *passim*, or 1988 under the appropriate site numbers. For the limitations of dating these sites by surface collection alone, Macdonald 1984b: 233. Banning (1986; 1987; 1988: 24-25) points out that the towers rarely had large surface samples, and argues that these smaller structures probably date to the Roman period.

the structures documented by the WHS were, in fact, contemporary and were constructed and occupied by the Nabataean military, their function seems far from clear. Especially important is the fact that the monitoring zone makes sense as a defensive formation only if the threat were from the west.

The one piece of evidence relating to Nabataean observation posts concerns a threat to the kingdom from the west, when Antigonus Monophthalmos' attempted invasion of the Nabataean kingdom was thwarted by watchmen who signalled his arrival with fires (see above, Chapter One). As the forces of Antigonus camped at the southern end of the Dead Sea on their return journey from Petra (Diodorus Siculus 98.1-100.3), it is extremely likely that one of the "passes" mentioned was the Wadi al-Hasa itself.<sup>10</sup> Nevertheless, no reference is made to towers or fortifications in this early source, only to watchmen.

Banning (1986) and MacDonald (1992: 160) have emphasized the profound connections between population and geography along the top of the Wadi al-Hasa, as well as the importance of seasonal transhumance between the top of the plateau and the region of the Southern Ghors and Northeast 'Arabah to the west.<sup>11</sup> Just as the wadis were the natural routes taken by invading armies, they were also the standard routes of population movement used by the inhabitants of the region. This close bond between population and

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<sup>10</sup> The other major routes which provide access to the Nabataean heartland from the west are the Wadi al-Mujib, the Wadi as-Sabra (leading directly into Petra), and the route along the Wadi al-Dilaghah from Gharandal to as-Sadaqa. There are, however, many smaller routes.

<sup>11</sup> The latter region was also surveyed by MacDonald (1992) as part of the Southern Ghors and Northeast 'Arabah Archaeological Survey. MacDonald's latest project, the Tafila-Busayra Archaeological Survey, will link the two survey zones and should provide considerable insight into contemporary settlement patterns on the plateau and in the Rift Valley.

landscape led Banning to propose that the towers were seasonally occupied outbuildings maintained by pastoralists or agriculturalists on the marginal land at the edge of the wadi (1986; 1987). The fundamental problem is one of interpretation: is it possible to distinguish between military and civilian functions based on the fragmentary surface remains of these small structures? This question will be re-examined when considering a similar system of late-first and early-second century A.D. towers, discovered by the Humayma Watchtower Survey along the al-Shera' escarpment in southern Jordan (Chapter Four; Conclusion).

### **Defining the *limes***

The most damning criticism of any paradigm which presents the distribution of the Roman army as a response to external threat has been put forward by Benjamin Isaac (1988; 1990; 1998: 345-87). In a review of the ancient use and meaning of the word *limes*, Isaac has concluded that the term was used infrequently in the second and third centuries and that, when used at all, it referred merely to the boundary of a province (1998: 380). Following the reforms of Diocletian, the army was reorganized under territorial commanders (*duces*), and the term *limes* eventually came to have "a formal and administrative sense" with respect to those territories, but even then it did not represent a defended border (Isaac 1998: 380). Colloquial use of the term designated nothing more than a broad "frontier zone" (Isaac 1998: 382).

Parker's understanding of the frontier was based heavily on the idea that the Romans were attempting to prevent or control the entry of nomadic groups through the use of a military system. As Isaac has pointed out, however, "If there was no term in second-century Latin for what modern archaeologists call a 'limes' it is quite possible that the entire concept is an anachronism" (1998: 380). Discussing Arabia specifically, Isaac has also questioned the role of the *Via Nova Traiana* in the second and third centuries: "The road did not serve to keep out nomads. A road is not a barrier" (Isaac 1998: 135).<sup>12</sup>

### **Bandits and Revolutionaries: An Army of Occupation**

Isaac has articulated a wide-ranging re-analysis of the Roman army's presence in the East in his book *The Limits of Empire* (1990). Fundamental to the argument is a belief that Roman ideology and military policy were based on conquest and expansion, rather than on defense (1990: 19-53), although the latter did play a minor role (1990: 394):

This is not to argue that protection against foreign aggression was considered unimportant, but merely that it may have been less important, in Roman opinion, than is sometimes thought.

In addition, decision making was based on limited intelligence (Isaac 1990: 377-87), and considerations of personal gain on the part of administrators, including the emperor

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<sup>12</sup> Parker (1986a: 129) took exception to this view in *Romans and Saracens*. The road would certainly have facilitated the movement of troops along the frontier.

himself (Isaac 1990: 401-18). As a result, there was no “Grand Strategy” executed by the Roman empire (Isaac 1990: 372-418).<sup>13</sup>

The lack of priority given to defensive thinking by the Romans led to greater emphasis on more mundane considerations when determining frontier lines (Isaac 1990: 387-94). As Isaac stresses (1990: 416-17):

The choice of military frontier lines was hardly ever dictated by the desire to establish rational systems of defense. If they were chosen rationally at all, they were meant to afford good communications and logistics. But often they were simply the frozen forward lines of advance that could be held following military campaigns.

As a result, military structures cannot be interpreted simply in terms of strategy and tactics (1990: 418):

A proper understanding of the organization of the Roman army will have to take into account the realities of an army in peacetime. These include numerous tasks, including suppression of local unrest, police duties, periodical action beyond the provincial boundary in order to keep ‘the barbarians’ quiet, the maintenance of logistics and food-supplies, taxing the civilian population, and preparing for the next war.

Once an area had been subjugated, the Roman goal was to ensure political and financial control of the region (Isaac 1990: 54-67), a goal more easily fulfilled by locating troops in the cities (1990: 101-60). Although the evidence is sparse in the province, inscriptions demonstrate a significant Roman military presence in the cities of northern Arabia during the second century A.D. (Isaac 1990: 123-26; 156).

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<sup>13</sup> A view which complements the understanding of the emperor’s role given by Millar (1977).

In place of an external nomadic threat, which he correctly denies (Isaac 1990: 68-77), Isaac has placed the emphasis on internal political and administrative concerns, especially the suppression of “banditry”, whether it was politically or economically motivated, and the maintenance of order (1990: 77-99). There is no evidence of a military “defence in depth” against an external threat during the second century or later (Isaac 1990: 122).

Under the Severan emperors, Rome began to expand further into the desert, especially around the Azraq oasis, where water was easily accessible, but the “extraordinary visibility of the structures in the desert has resulted in an exaggerated view of their importance” (Isaac 1990: 133), and they are not indicative of the general distribution of the army at that time.<sup>14</sup>

The distribution of the army in the east changed more fundamentally during the late third and early fourth centuries (1990: 161-218). There was increased military presence in the deserts after Diocletian, but this development is to be seen primarily in terms of “policing and road-security” (1990: 214), although there may have been increased conflict between nomads and sedentarists from that time onwards as the growing population of sedentarists expanded into the steppe (1990: 216-18).

For Isaac, watchtowers are a fundamental part of the Roman police presence along the roads, protecting travellers from banditry (1990: 176-86). In Arabia, this function is

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<sup>14</sup> “There is good evidence from quite a number of Roman and Byzantine forts to support the view that they can be described better as road-stations or police-posts than as forts belonging to a system of frontier defence” (Isaac 1990: 132).

discernable in the distribution of towers around the fortress at al-Lejjun, where the landscape provides an opportunity for brigandage as the *Via Nova* crosses the Wadi al-Mujib (Isaac 1990: 185). Isaac stresses, however, the difficulty of establishing the function of a military structure, or even of differentiating a military structure from a civilian structure, on the basis of architectural form alone (1990: 172-73; 207).

The fundamental objection to Isaac's hypothesis is that there is little evidence of banditry, whether politically or economically motivated, in Arabia.<sup>15</sup> As Parker (1992) has pointed out, almost all of the evidence for banditry cited by Isaac comes from Judaea, which was certainly not a "typical" Roman province, if such a thing ever existed.<sup>16</sup> Thus, it is difficult to accept that the conditions in Judaea, motivated as they were by indigenous religious and social phenomena, can be meaningfully applied to Arabia. Banditry certainly was endemic in the ancient world and likely played some role in Arabia, but it does not present a persuasive motivation for the distribution of the Roman army. To suggest otherwise is to replace an invisible external threat with an invisible internal threat.

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<sup>15</sup> Except, of course, in the Leja' which was notorious as a haven for cutthroats and brigands (Bowersock 1983: 33, 51). The Leja' was, however, an addition to Arabia at the time of the annexation, formerly considered part of Judaea, then of Syria.

<sup>16</sup> Acknowledged by Isaac (1990: 77). Unfortunately, Isaac was also unable to visit Syria, Jordan and Saudi Arabia for political reasons (1990: i).

## Current Approaches to the Frontiers

More recent studies of the Roman frontiers have taken a comparative approach which emphasizes the social and economic aspects of military distribution. The most comprehensive of these studies is Whittaker's *Frontiers of the Roman Empire* (1994), a fundamental addition to the discipline. Whittaker argues for an understanding of the frontiers as permeable social and economic zones of cultural interaction, rather than as purely military zones.

Whittaker argues that the concept of linear, military frontiers is a modern creation which did not emerge until the nineteenth century, but which has been anachronistically applied to the ancient world (1994: 1-9). Roman ideology did not envision rigid boundaries between Roman and non-Roman regions, although there was differentiation between areas which were formally organized as provinces and those which were not (1994: 10-30). The location of the frontiers was consciously and subconsciously dictated by the economic and ecological limits of the terrain (1994: 85-97). The limit of expansion was determined by the availability of supply and communication rather than by any grand strategy (1994: 62-70). The Roman military presence stimulated economic and social transformations on both sides of the frontier and created zones of interaction, in which hybrid cultures emerged through the process of acculturation (1994: 113, 130-31).

Whittaker sees the Arabian frontier as little more than a road studded with forts, which was never intended to keep out nomads (1994: 79). In this respect, Roman Arabia

is most easily compared with the north African provinces, where similar systems of roads were established by the Romans (Whittaker 1994: 79-84, 118, 214). The comparison is valid and places the Arabian frontier in a broader perspective (Whittaker 1994: 93-94):

Although we know less about the eastern frontier, it is fairly clear that the road of Trajan in the Jordanian sector was rather like the Africa[n] desert frontier. It was not a line between desert and sown ... The Roman frontier road [in Arabia] did not run along a “natural frontier” on the edge of the desert as is sometimes claimed. It cut through a region where life was sustainable, but only seasonally, and that was usually pastoral. It was just because lands beyond the frontier were marginal that the decision where to stop was equivocal, though not accidental. Nor did history stand still ... In that sense, as has been claimed of the African frontier, all frontiers were “unfinished”.

From this perspective the Arabian frontier installations fulfilled the same functions as the *fossata* and *clausurae* of Africa, long but intermittent linear barriers designed to regulate and maximize the economic impact of transhumant movement through the frontier zone (Whittaker 1994: 79-84; cf. Fentress 1979). Towers were distributed along the roads “to protect collection and transportation of supplies” along the roads from small-scale raids, especially from the late third century onwards (Whittaker 1994: 209).

Comparisons between Arabia and the African provinces have been taken further by Rushworth (1996) with similar conclusions. Having emphasized the physical and structural similarities of the Roman army’s distribution in both areas, Rushworth argues against an overarching interpretation of the the African barriers as part of a general strategy of controlling nomadic movements (1996: 306-8); instead, he views them as *ad hoc* responses to local circumstances which must be considered in their local context

(1996: 309). In this formulation, towers, which in Africa are found mainly along rough sections of road, could not have been part of an effective monitoring system concerned with movement across the roads (1996: 302-3). Rushworth concludes that the role of military towers in Africa (1996: 303):

...was to facilitate the monitoring and protection of travellers, officials, and soldiers, progressing *along* routes. In such cases the objects of surveillance – travellers – can be kept under continuous observation. It would have been far more difficult to use watch-towers to detect small groups slipping across the line of the road, even during daylight, unless the towers were associated with some form of linear barrier or were very closely spaced (which would have been expensive in manpower). Moreover, at night highway towers would have been largely useless in such a rôle but could still serve to protect travellers by giving overnight shelter to those caught in the open as darkness fell.

## **Conclusions**

With the emergence of each new theory concerning the Roman frontier in Arabia, towers have been forced to fulfill a different role. Initially, they were considered to form linear chains of observation posts and signalling stations, whose purpose was to warn the forts of impending attack. Later, they were considered to be military police posts located along roads in dangerous areas to discourage political and economic banditry throughout the province. Anthropologists have been more likely to accept the view that there was a symbiotic relationship between sedentarists and transhumants. They have provided

models in which towers monitor and observe, but do not prevent, migratory movements. Finally, on the basis of comparisons with Africa, towers have been interpreted as part of a system for protecting and facilitating official travel and transport along the roads. All of these theories remain current to some extent or another.

Yet many of the interpretations seem mutually exclusive. Unfortunately, the presence and distribution of towers have been used to support theories argued at a much broader, regional level and very little attention has been given to the information that towers themselves provide concerning the nature of the frontier. Surely, the towers in Arabia either are or are not distributed along the roads, between the forts or across traditional pastoral migration routes? It is also surprising that there has been so little discussion of the non-military functions of towers in Arabia; it is a common assumption that all towers identified in the landscape must have served a military function. What is required are detailed examinations of specific areas along the frontier to obtain concrete evidence for the presence and distribution of towers in Arabia. Hopefully, studies that focus on towers will permit a reassessment of the prevailing theories.

## **Part Two: Survey and Excavation**

## **Chapter Three:**

# **Landscape and Culture History at al-Humayma**

### **Introduction**

The natural world has a direct impact on culture. While it is no longer fashionable to suggest that ecology “determines” the historical development of a culture, there is no question that every culture must “adapt to” its surroundings (Evans 1978: 9-10; Baly 1985: 20). This fact is so obvious that it has often been overlooked in studies of the ancient world, but it is absolutely necessary to examine the environment and its impact on life in order to come to an understanding of a region and its peoples over the long term.

Geography is of particular importance in understanding the culture history of ancient al-Humayma and its hinterland. Specific aspects such as geology, soil quality, climate, natural resources, and indigenous flora and fauna have all played important, interrelated roles in the historical development of the region (Oleson 1997b).<sup>1</sup> Long-term

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<sup>1</sup> In the following discussion, I follow the basic divisions of the environment given in Evans (1978: 1-12), with only a few changes in structure, which reflect my preferences and local circumstances. The order of the discussion does not necessarily imply any priority among what are interrelated factors.

human impact on the ancient environment may also have been a key factor in shaping the landscape, but little evidence remains with which to assess its role at al-Humayma.

Unfortunately, there is considerable ambiguity concerning the nature of ancient environmental conditions. Vita-Finzi, for example, has suggested that the modern climate of Jordan is not a good indication of past climate, even of the conditions of 100 years ago (1982: 23).<sup>2</sup> Other scholars, mainly archaeologists, have argued on the basis of ecofacts recovered through excavation that there has been little substantive change since antiquity, although there have been many short-term cyclical variations in environmental conditions (Koucky 1987a: 11; Harlan 1988: 40-47; MacDonald (ed.) 1992: 15-21; 2001a: 596-9). Where substantial changes have occurred, they may be the result of activity by humans and domesticated animals (Barker, et al. 2000).

While we might expect significant changes to have occurred since ancient times, the fact that climate is based principally on such immutable factors as latitude or elevation suggests a certain amount of continuity since antiquity (Evans 1978: 3-5). For instance, the forested regions around modern 'Ajlun in Northern Jordan were not substantially different in antiquity; similarly, the Hisma desert of southern Jordan was a marginal landscape in antiquity, although we cannot know to what degree without further evidence. Given certain reservations, it is possible then to come to a general understanding of the ancient environment based on a comparison with modern conditions, even if it will only be valid in relative terms. The modern geography and

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<sup>2</sup> Vita-Finzi cites, among other evidence, extreme swings in the level of the Dead Sea recorded during the last one hundred and fifty years to suggest considerable variation (1982: 25-6).

environment of the region will be described below in order to provide a general understanding of the geography and environment of ancient al-Humayma. An understanding of the ancient environment will provide the basis for interpreting human activity in the region.

### **The Landscape of Arabia**

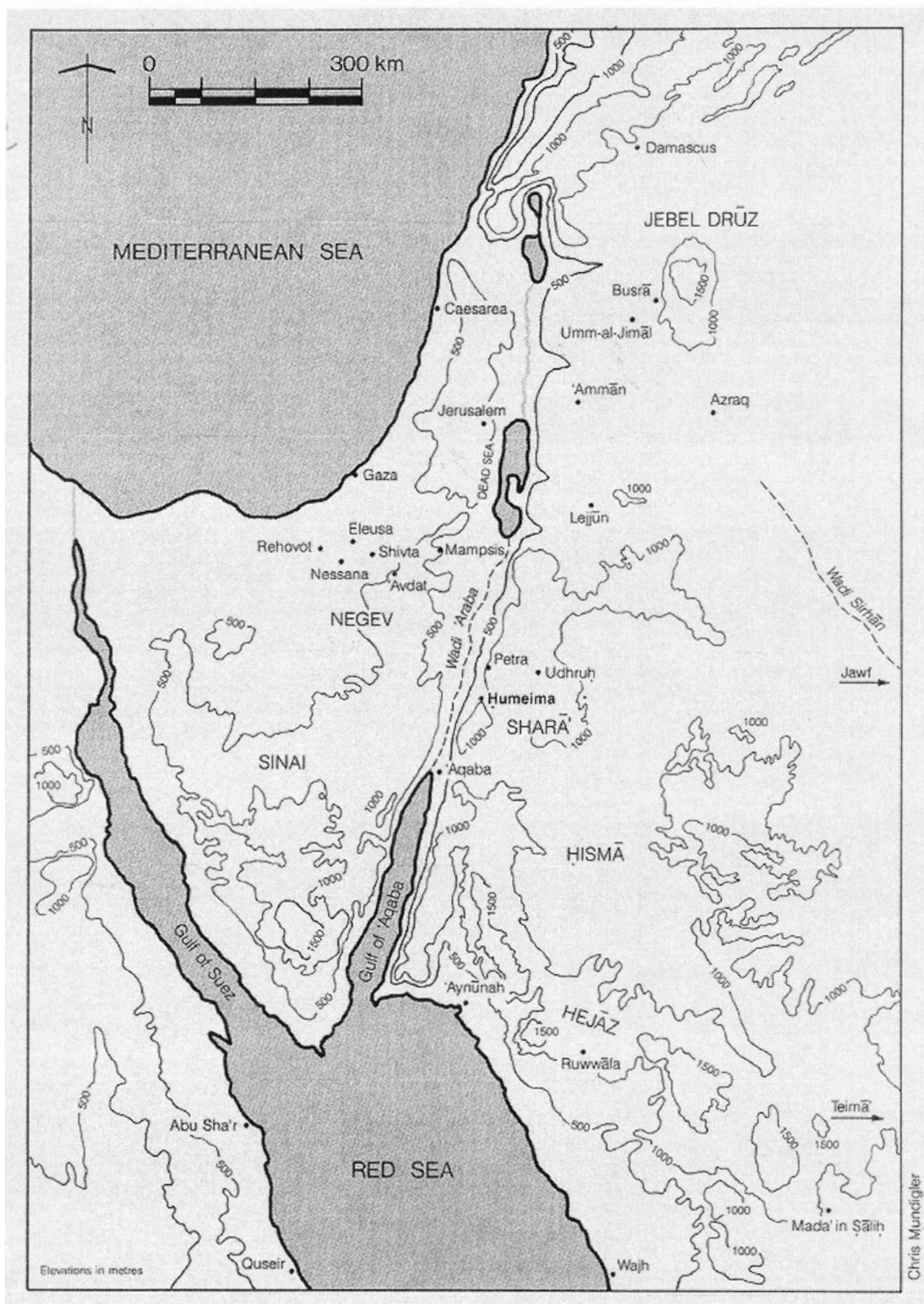
Arabia lies at the crossroads of two continents [Map 2].<sup>3</sup> Located at the convergence of the East African-North Syrian fault system (Bender 1974: 121), the area provides the only land bridge between Africa and Asia and has always been an important means of communication and migration between the two (Baly 1985: 22).

Arabia is also situated just east and south of the western end of the Fertile Crescent, placing it at the juncture of three major climatic and environmental zones: the Mediterranean climate, the Saharo-Sindian desert, and the Irano-Turanian steppe (Baly 1985: 22).<sup>4</sup> The presence of three distinct zones provides remarkable variety among the regions within Arabia, and creates numerous “ecotones,” niches at the convergence of zones incorporating characteristic features of both, each of which has a consequently greater variety of resources (Evans 1978: 9).

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<sup>3</sup> Most, but not all, of Nabataean territory lies within the current borders of the Hashemite Kingdom of Jordan. For ease of discussion, I employ the term “Arabia” to refer to the geographical space occupied by the Nabataeans and, later, the Romans. “Saudi Arabia” will be used to designate the modern country with that name and “the Arabian Peninsula” will be used for that geographical entity to avoid ambiguity with the ancient province.

<sup>4</sup> al-Eisawi (1985: 50) adds a fourth, the “Sudanian” region.



Map 2: Nabataean and Roman Arabia. Used with permission of J. P. Oleson.

The region has few perennial watercourses and does not receive as much rainfall as the Fertile Crescent. For this reason, the whole area is generally considered marginal in opportunities for human occupation, with the implication that individual micro-environments are extremely important to interpretation of the ancient landscape (Baly 1985: 23).

### *The Regional Landscape*

Arabia may be broken into a few distinct regions based on geographical factors. The three principal regions are the Rift Valley, the Plateau and the Deserts.<sup>5</sup> Nevertheless, it is important to remember that each region contained numerous sub-regions with important local variations, which are obscured in a general survey (Baly 1985: 23).

In many ways, the defining geological feature of Arabia is the Rift Valley.<sup>6</sup> A northward continuation of the Great Rift Valley of Kenya, it runs from 'Aqaba in the south to Lake Tiberias (Sea of Galilee) in the North and onwards into Lebanon (Bender 1974: 121). The Rift physically separates Transjordan from the coastal Levant to the west, but it also provides opportunities and should not be seen only as a barrier. The northern and southern portions of the Rift, usually called the Jordan Valley and Wadi 'Arabah respectively, form a major north-south route, which was important for trade and travel in historic and prehistoric times (Raikes 1985: 96; Smith et al. 1997).

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<sup>5</sup> Simplified here. Macumber (2001; following Bender 1974) lists the Jordan Rift Valley, the Central Plateau, the Northern Basalt Plateau, the Southern Mountain Desert Region, and the Western Highlands.

<sup>6</sup> Various called the "Wadi Araba-Jordan Rift"; the "Wadi Araba-Dead Sea-Jordan Depression" (Bender 1974: 121); the "Jordan Valley" (Bowersock 1983: 5-6 and *passim*); the "Jordan Rift"; the "Jordan-Dead Sea Rift"; the "Dead Sea Rift"; or the "Jordan-Araba Rift" (Abed 1985: 81).

### *The Plateau*

To the east of the Rift Valley are the mountains that form the highest elevations in the region. The mountains and the great plateau to the east of them were the heartland of ancient human occupation. The plateau itself is a massive limestone formation, covered in loess and calcareous soils that may be used for cereal cultivation or pasturage (Bender 1974: 189-90). A few areas around the northern and central mountains, where rainfall is the highest and temperature is the lowest, have the fertile, red (*terra rosa*) and yellow (*rendzina series*) soils common to the Mediterranean basin (al-Eisawi 1985: 50). The red Mediterranean soils are suitable for the cultivation of cereals, fruits and vegetables, olives and grapes, while the yellow soils provide opportunities for the dry farming of cereals, or more intensive and diversified production if the fields are irrigated (Bender 1974: 188-89). The only remaining forests in modern Jordan are concentrated in areas of red Mediterranean soil near 'Ajlun, West Amman and Ras al-Naqb (al-Eisawi 1985: 51-54; Beaumont 1985: 294). Numerous, and often major, wadi systems transect the western edge of the plateau, scoring the surface as they run into the Rift Valley. East and south of the main portion of the plateau are transitional steppelands, followed by the deserts.

### *The Deserts*

As the plateau extends eastward, it gradually decreases in elevation and becomes part of the Great Syrian Desert. In the North East, the most striking part of the desert is a vast

expanse of black basalt-strewn terrain commonly known as the Jebel al-Druze Basalt Highlands or the "Harra" (Arabic *Harrat al-Shaba*) (Bender 1974: 6). On the southwestern margin of the Harra is the Azraq-Wadi Sirhan Depression, a large catchment area below the level of the surrounding terrain, which has numerous springs and pools that support diverse wildlife (Bender 1974: 8; Kennedy 1982a: 69-71). The Wadi Sirhan, actually a major geological depression some 500-700 m lower in elevation than the desert surrounding it rather than a true "wadi" (Glueck 1944: 11-12; Bender 1974: 8), runs southeast from Azraq for *ca.* 400 km towards Jawf in Saudi Arabia. The Wadi Sirhan has been an important route for trade and travel between Syria and Central Arabia in all periods (Glueck 1944; Bowersock 1983: 154-59).

The desert of central Jordan occupies a large expanse of the eastern plateau between the Azraq Depression in the north and the al-Shera' escarpment in the south, to the east of the 150 mm rainfall line. From the mountains along the Wadi 'Arabah in the west, the entire desert area slopes gently toward the east, leading runoff water to the mudflats at al-Jafr (Bender 1974: 8). In general, this portion of the desert is characterized by "Grey Desert" soils, which support only scant bushes suitable for grazing, although there are also broad, forbidding patches of flint covered desert soils - known as *hammadas* (Bender 1974: 8, 190-92; Koucky 1987a: 11-13). The desert rises gently towards the al-Shera' mountains and the Tubeiq Highlands in the south and southeast, respectively. While the land along the southern mountains shares the precipitation and soils of the northern mountains, the Tubeiq region is a virtually waterless expanse of

sandstone *cuestas*, gentle slopes that terminate in steep drops, covering approximately 10,000 km<sup>2</sup> (Bender 1974: 8-9).

At the southern edge of the Jordanian Plateau, there is a dramatic drop in elevation from the al-Shera' escarpment, which reaches heights of 1500 to 1800m ASL, to the sandy, red desert known as the Hisma (Macumber 2001: 19). The escarpment is highest at its western end, where it is some 600-700 m above the southern desert, and declines slowly in height as it extends to the east (Bender 1974: 9; Osborne and Duford 1981). The Hisma has very sandy soils, except along the mountains and the escarpment, and becomes even sandier to the east and south, although there are a few mudflats (Arabic: *Qa* or *Bajada*) at the base of the highest elevations. The landscape is striking because of the large numbers of red sandstone inselbergs, steep geological formations similar to *mesas*, which evoke a "Martian" landscape when seen from the top of the escarpment (Bowersock 1983: 8). The Hisma extends southwards from the escarpment for *ca.* 300 km into the Hijaz, the western coastal region of the Arabian Peninsula. The Hijaz is very similar to the Hisma in character, but the mountains are of an older, granitic stone.

The desert regions, even those that are not rocky, exhibit very poor soils with low organic content (Bender 1974: 190-93), except where exogenous loessal soils blew in and accumulated during the late Pleistocene period, as in the basin around al-Humayma (Oleson 1997b: 177). Varying from sandy to saline to *hammada* in type, at best they

support only minimal scrub brush, but animals, especially camels, are able to graze on the sparse desert plant life, at least seasonally (al-Eisawi 1985: *passim*).

### **The al-Humayma Region**

The site of al-Humayma is located just below the al-Shera' escarpment at the juncture of three geological zones: the Jordanian plateau, the Rift valley mountains, and the Hisma desert.<sup>7</sup> This places the site at the heart of an important regional nexus, allowing inhabitants of the site to exploit the resources of the mountains to the east, the plateau to the north, and the desert to the south. Al-Humayma also occupies an environmental ecotone and benefits from the three major climatic zones, which roughly correspond to the geological divisions.<sup>8</sup>

#### *Climate*

Climate is the "primary environmental control" on human occupation (Evans 1978: 3), and must form an important part of any assessment of the ancient landscape. Based solely on the fact that Arabia endures long, dry summers and short, wet winters, the area is usually classified as a part of the "Mediterranean Climate" (Bender 1974: 11; al-Eisawi 1985: 47). This characterization is somewhat misleading, however, as it

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<sup>7</sup> Called by Macumber (2001): the Western Highlands, the Southern Mountain Desert, and the Central Plateau.

<sup>8</sup> MacDonald's Mediterranean, Semi-Arid, and Arid regions (2001a: 595).

obscures regional differences in climate, which are established by the local effects of (often dramatic) changes in elevation on precipitation and temperature (Evans 1978: 5-6). It is more useful to recognize that there are Mediterranean, Semi-Arid, and Arid zones within the region (MacDonald 2001a: 595).

### *Precipitation*

In general, annual precipitation decreases in Arabia as one moves east and south (Shehadeh 1985: 30). The Mediterranean climates of the north receive more than 600mm of precipitation per year, while those of the south receive 300-600mm. The Semi-Arid zones receive 50-300mm, and the Arid zones receive only 50mm or less (MacDonald 2001a: 595-6). Elevation is, however, the principal factor influencing precipitation, and certain mountainous areas of the south, such as the al-Shera' escarpment, defy the general trend (al-Eisawi 1985: fig. 1). Currently, the region at the top of the plateau receives an average annual precipitation ranging from 300mm at al-Shawbak to 150mm in more southerly areas. The Hisma, however, receives an average of only 50mm or less (MacDonald 2001a: 595-6 and fig. 1), although the site of al-Humayma receives ca. 80mm thanks to its location near the mountains (Oleson 1997a: 121).

It is reasonable to assume that there were periods of drier and wetter climate during historical times, but the absence of empirical data for ancient Arabia has forced climatologists to infer the nature of each period from the perceived amount of human occupation (Shehadeh 1985: 27). This poses significant problems for archaeologists

seeking to establish the impact of climate on occupation, but the broad outlines of past climate seem clear: annual precipitation was higher than present levels during the fifth century B.C., but declined slightly until a resurgence in the first century B.C. A significant drop in rainfall occurred between the third and seventh centuries A.D. (Shehadeh 1985: 27-28). One hopes that the recovery of faunal and palynological remains from archaeological contexts will help to clarify the nature of the ancient climate (Vita-Finzi 1982: 27), for instance through the identification of “indicator species” which can only survive in certain climates (Evans 1978: 4).

### *Temperature*

Temperature is closely linked to precipitation (Evans 1978: 3), and is also affected primarily by elevation (Shehadeh 1985: 31). In Arabia, the mountain regions are the coolest while the low-lying desert and coastal areas are the hottest, providing a general picture of increasing temperature as one travels east or south (Shehadeh 1985: 32). Once again, the al-Shera’ mountains at the southern edge of the plateau are an exception, enjoying the coolest winters in Arabia (al-Eisawi 1985: fig. 2). Average maximum temperatures (April to October) are 38.8 C in the Mediterranean zones, but 40.0 C in the Semi-Arid regions. Average minimum temperatures (November to March) are 0.5 C and -1.6 C, respectively (MacDonald 2001a: 595-6). Temperatures are even more extreme in the arid desert regions.

### *Seasonality and Variability*

Rainfall is seasonal in the region, with almost all precipitation occurring between October/November and May (Shehadeh 1985: 30), and most of that during the month of January (al-Eisawi 1985: 45). Hard downpours, which cause flash flooding in the wadis, are responsible for the dramatic landscape of Arabia, and are also a major cause of soil erosion, carrying away precious topsoil without penetrating the surface to moisten the underlying soil. A short rainy season produces a correspondingly short growing season (Evans 1978: 5).

Rainfall is also extremely variable in Arabia, as current drought conditions attest. It is not surprising that variability increases as one travels east and south — away from the Mediterranean Sea, which provides most of the precipitation (Shehadeh 1985: 25). Nevertheless, there is a higher probability of late rainfall, which favours summer crops, in the east and south. Early rainfall, which is essential to dry farming, is more likely to occur in the northern, mountainous regions (Shehadeh 1985: 30).

### **Water Sources in Arabia**

Water is the most valuable resource in a marginal environment and the position of stable water sources has had a major impact on settlement location in Arabia (Macumber 2001: 2). The Jordan, Yarmouk and Zarqa rivers are perennial courses, and the Wadi al-Mujib has a small but constant flow (Bender 1974: 181-82). Elsewhere in Arabia, however,

water supply is seasonal unless supplied by springs or collected in artificial or naturally occurring basins, such as the Azraq Depression.

Natural springs represent an emergence of the aquifer from the bedrock under the pressure of gravity. For this reason, elevation is an important factor in the location of springs. Most springs in Arabia occur along the mountains on the east side of the Rift Valley and along the al-Shera' escarpment in the south, where steep cliffs provide access to the appropriate geological strata (Bender 1974: 177-81). Particularly important local sources include 'Ain Jammam, 'Ain Shera', and 'Ain Qana, all located along the al-Shera' escarpment to the north of al-Humayma (Oleson 1991; 1995). Farther to the east, a natural catchment basin at the Muqawwar Cascades collected water runoff from the escarpment and was exploited by ancient populations (Jobling 1989; Oleson 2001a: 606).

### **Ancient Populations**

Access to water has been the major factor influencing the size and nature of human occupation in Arabia in all periods. The presence of stable water sources directly affected the geographical positioning of population centres, but additional factors, such as the location of natural resources and convenient routes of communication, have also played a role.

### *Settlement*

The highest rainfall in Arabia occurs in the mountains along the eastern side of the Rift Valley and runoff water is most easily available in the adjacent areas. As a result of the higher moisture content, better soils, which support diverse flora and fauna, are found in those regions, making them desirable locations for human settlement. The limestone of the plateau makes good building stone, and timber was most easily available on the mountain slopes. It comes as no surprise, then, that the most densely occupied part of Arabia during the Nabataean and Roman periods was the plateau of central and southern Jordan.

Evans has pointed out, however, that while "...ease of tillage and high fertility were important factors..." for ancient sedentarists when choosing a settlement site, sedentarism also "...is bound up with all sorts of factors...as well as human land use strategies — which may be in part culturally determined anyway — and with the level of man's technological development" (1978: 6-7). Nabataean technological developments, which aided in the conservation of water, had an important impact on settlement location and size (Evenari, et al. 1982; Oleson 1995). Using adaptive strategies, the Nabataeans were able to increase the amount of land available for cultivation in central Jordan and to expand into what had been marginal areas, especially in the Negev and the Hisma. The result of this growth in arable land was an increase in settlement density throughout Arabia and increased population in the already existing centres.

### *Pastoralism*

The land along the desert fringe was not suitable for agriculture but could support a nomadic or semi-nomadic, pastoral lifestyle. Plentiful scrub brush and desert grass in the steppe were able to sustain sheep, goats and camels, but the marginal environment, which was easily affected by seasonal and cyclical changes, forced humans to adopt transhumant strategies to survive. Arabia is particularly well suited to transhumance because of its frequent and extreme changes in elevation, which place contrasting climatic zones in close proximity, so that short seasonal migrations could maximize the available resources (Evans 1978: 5). The nature of transhumance requires contact between pastoralists and sedentarists in annual cycles (Donner 1989), but the small geographical area of Arabia intensifies the interaction between them.<sup>9</sup>

### **Human Impact on the Environment**

It is always difficult to assess the nature and extent of human impact on the environment (Evans 1978: 11-12), but researchers are beginning to assess its role in ancient Arabia (Baly 1985: 20-21; Karg 1996: 356; Barker, et al. 1996; 1998; 1999; 2000). Given current conditions in the region, a great deal of attention has focussed on deforestation and overgrazing of the landscape in antiquity, but there is less in the way of concrete evidence than there is in Britain, for example (Barber, et al. 1993). Overgrazing,

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<sup>9</sup> For a brief discussion of the beneficial nature of pastoralist-sedentary interaction, see Chapter Two.

however, has been blamed for numerous problems in modern Jordan (al-Eisawi 1985: 56; Jones 1985), and it is tempting to suggest that widespread pastoralism effected similar results in antiquity.

Even if the climate of Arabia has changed little since antiquity, the long-term impact of human occupation may have been substantial, and irreversible. Deforestation and overgrazing, in particular, can have a substantial influence on the local environment in a very short span of time, but can only be reversed after a long interval. While the landscape is denuded of its vegetation, natural forces such as wind and runoff from winter rains exacerbate the situation by carrying away topsoil and nutrients. The result is a landscape that can never fully regain its previous fertility (Beaumont 1985: 295-96).

### **Landscape and Culture History at al-Humayma**

Although there were earlier inhabitants in the al-Humayma region, significant settlement did not begin until the first century B.C. (Oleson and Eadie 1986; Oleson 2001b). A fragment of Uranios preserved in Stephanus of Byzantium (*FgrH* 675A.1.b), provides the foundation legend of ancient al-Humayma. Apparently, the Nabataean King Obodas I (ruled ca. 96-85 B.C.) commanded his son (later Aretas III, ruled 85-62 B.C.) to found a town in response to an oracle. According to the legend, the oracle directed that the town should be located at a place called “white” (Greek *leukē*, *Auara* or *Hawar*). After searching for some time, Aretas was inspired by the sight of a white-clad man on a white

camel and founded al-Humayma (ancient Auara) on that spot. It is well-documented that oracular commands are a common *topos* of foundation legends in general and it seems clear that one purpose of this particular legend is to provide an aetiological explanation for the name of the town (Oleson 2001b: 570-1).

In fact, the legend may preserve another element of al-Humayma's early history. In modern Arabic the word *hawāra* can mean "white", especially in reference to chalky stone, but can also refer specifically to the white, or light-coloured, coat of yearling camels.<sup>10</sup> If there was a similar connotation in ancient times, the presence of a man on a white camel in the legend might be taken to indicate that the town was intentionally situated at a seasonal campsite or regional gathering point of camel pastoralists. This interpretation accords well with the theory that the Nabataean kings of the last two centuries B.C. were engaged in a deliberate policy of trying to sedentarize the population rapidly (as Oleson 2001b: 571).

The site of the ancient town was certainly well chosen. It is located along the King's Highway, the major north-south route of the Nabataean kingdom and an important artery for trade, which may have existed since the Persian period (Graf 1993). It is also in an advantageous location within the region as a whole: the proximity of the al-Shera' escarpment suggests the possibility that short-range, seasonal transhumance would have been extremely effective in antiquity, just as it is today.

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<sup>10</sup> The association of the word with "white" is discussed by Oleson (2001b: 570-1, and n.3). For the association with young camels, see Doughty 1888: I, 355. For a site of the same name at Meda'in Saleh (coincidentally, another Nabataean settlement), see Doughty 1888: I, 170-1, 481, 500.

Al-Humayma receives significantly more rainfall than areas to the east or south (avg. 80mm per annum versus only 50mm or less), but it is also located at the heart of a catchment area of ca. 240 km<sup>2</sup> (Oleson 1997a: 121). As a result, the area can be considerably more lush than might be inferred from the precipitation figures alone, particularly when water conservation schemes are used to maximize the effectiveness of the water for human and agricultural consumption.

It is no surprise, then, that the earliest remains yet recovered from al-Humayma are those associated with hydraulics. Two large, roofed Nabataean cisterns at the centre of the site collected surface runoff from the nearby hills, while more than fifty other cisterns, reservoirs, dams, and diversions are scattered across the site and throughout the region (Oleson 1997a: 122; 1997b: 176, figs. 1-2). Although many of the cisterns could have been built for the use of individual families or groups of families, the sheer size of the two central cisterns may suggest construction by a central authority for public use, as was certainly the case with the al-Humayma aqueduct.

The aqueduct, an in-ground, stone channel which carried water ca. 26.5km from three springs along the al-Shera' escarpment to a large reservoir at the northern end of the site at al-Humayma, is of a common Nabataean design and was probably constructed during the first century B.C. (Oleson 1991; 1995). The addition of a steady supply of spring water to the site would have greatly increased the maximum human and animal population at al-Humayma beyond the natural carrying capacity of the land. One estimate based on average water consumption figures for humans and animals, and assuming that

all cisterns were functional at the same time, suggests that al-Humayma and its hinterland could have sustained a population of approximately 817 people, 183 camels, and 1649 sheep or goats, based on standard consumption estimates for each (Oleson 1997b: 177).

Although tombs and surface material demonstrate Nabataean occupation at al-Humayma throughout the first century B.C. and the first century A.D., intact evidence for Nabataean domestic structures has been sparse due to the constant reoccupation and rebuilding of the site and many may remain buried under later deposits (Oleson, et al. 1999: 412). Despite the scattered evidence, however, it is clear that sedentarization progressed at al-Humayma, and a small structure in Field E122 may be a Nabataean stone house reused during the Roman period (Oleson, et al. 1999: 426-7).

It should also be recognized that many individuals may have chosen to live in tents for cultural or practical reasons, even after having settled at al-Humayma. For example, a large sherd scatter around a cistern at the southern end of the site (Field C124) seems to represent a heavily-used and long-lived campground or semi-permanent settlement of the first century B.C. and the first century A.D. (Oleson, et al. 1999: 414; Oleson 2001b: 571-2). In addition, numerous Thamudic inscriptions, broadly datable to the Nabataean and Roman periods and associated with camel pastoralists, have been located around al-Humayma, especially to the east and south of the site (Graf 1983b: 661; 2000b: 810; Jobling 1986; King 1988)

Following the Roman annexation of the Nabataean Kingdom in A.D. 106, a *castrum* was established at al-Humayma. This large fortification (ca. 206 m x 148 m) was

built early in the second century A.D. and remained in use until some time in the fourth century A.D. (Oleson, et al. 1999: 414-5). A newly discovered inscription attests to the presence of a vexillation of III *Cyrenaica*, the original garrison of the province, at al-Humayma and confirms the early date of the fort (Oleson, et al. 2002).

The decision to establish a garrison at al-Humayma could have been influenced by any number of factors, but the availability of plentiful fresh water and proximity to the newly built Via Nova Traiana (following the route of the earlier King's Highway; Graf 1995a; 1995b) may have been major considerations, as was the fact that al-Humayma was the largest population centre in the Hisma (Oleson 1997b: 175). The presence of a large reservoir in the northwest corner of the fort, which was fed by a newly installed branch from the Nabataean aqueduct, may explain the precise location of the fort at the northern extremity of the site, despite the fact that visibility is hindered in that area by hills to the northeast and southeast.

With the arrival of Roman soldiers at al-Humayma came other changes. A Roman-style bathhouse (Field E077) was built in the town, a luxury made possible only by the abundant supply of water and, presumably, fuel to burn in the hypocaust (Reeves and Oleson 1997). In addition, a large warren of mudbrick rooms (Field E125) may have served as a *vicus* for camp-followers, or supported an industry related to the fort (Oleson, et al. 1999: 423-4).

At some time before the *Notitia Dignitatum* was compiled in the early-fifth century A.D., a unit of locally recruited, mounted troops (*equites sagittarii indigenae*)

were stationed at al-Humayma (Or. 35.25). Mounted troops were probably the most efficient means of patrolling the large area of broken ground around Humayma, and it would make even more sense if those troops were mounted on dromedaries, a possibility which has been raised (Oleson 2001b: 573 and n.14).

Prosperity seems to have continued at al-Humayma during the Byzantine period as demonstrated by the presence of at least five churches in Fields B100, B126, C101, C119, and F102. Although the construction of such substantial structures, some of them utilizing imported marble, implies economic prosperity, it is unclear why such a small town would require so many churches, even if not all of them were exactly contemporary (Oleson, et al. 1999: 430-2; Oleson 2001b: 576-7). The late-fifth-century A.D. Beersheba Tax Edict also suggests considerable economic activity in the area, as al-Humayma was assessed a higher tax than all other Transjordanian sites in the newly reorganized province of Palestina Tertia, with the exception of Udhruh (Mayerson 1986a: 143; Oleson 2001b: 576). Nevertheless, the decline of al-Humayma must already have begun. Several blocks from the aqueduct conduit were reused in late Byzantine and early Islamic contexts, such as the farmhouse at A127 (Oleson, et al. 1999: 428), suggesting diminished water resources and a lower limit on the maximum population possible at the site.

In the early Islamic period, al-Humayma was purchased by 'Ali ibn 'Abd Allah ibn al-'Abbas, founder of the Abbasid caliphate. He constructed an imposing and lavish *qasr* and mosque at the site (Field F103), and his son was said to have planted 500 olive

trees (Oleson 2001b: 578). However, after the Abbasids overthrew the Umayyad caliphate and abandoned al-Humayma, the site seems to have dwindled into obscurity.

## **Conclusions**

The marginal landscape surrounding al-Humayma and the limited water resources available there indicate that population size was low, even during periods of high settlement density. Rather than seeing the marginal climate of al-Humayma as restricting or prohibiting certain types of human activity, however, we should view it as encouraging other specific opportunities, such as pastoralism. More importantly, the close proximity of multiple environmental zones in the region suggests important links between human groups living in the region. As Evans puts it, "...there is really no such thing as a good or a bad environment, only the familiar and the unfamiliar. Man is often stimulated by the unfamiliar to closer, more interlocking, adaptations with the environment" (1978: 12). The fact that various groups exploited the resources of distinct environmental niches indicates a close relationship between humans and the landscape and also suggests frequent, dynamic relationships between groups, especially between nomads and sedentarists throughout the history of ancient al-Humayma.

## **Chapter Four: The Humayma Watchtower Survey**

### **Introduction**

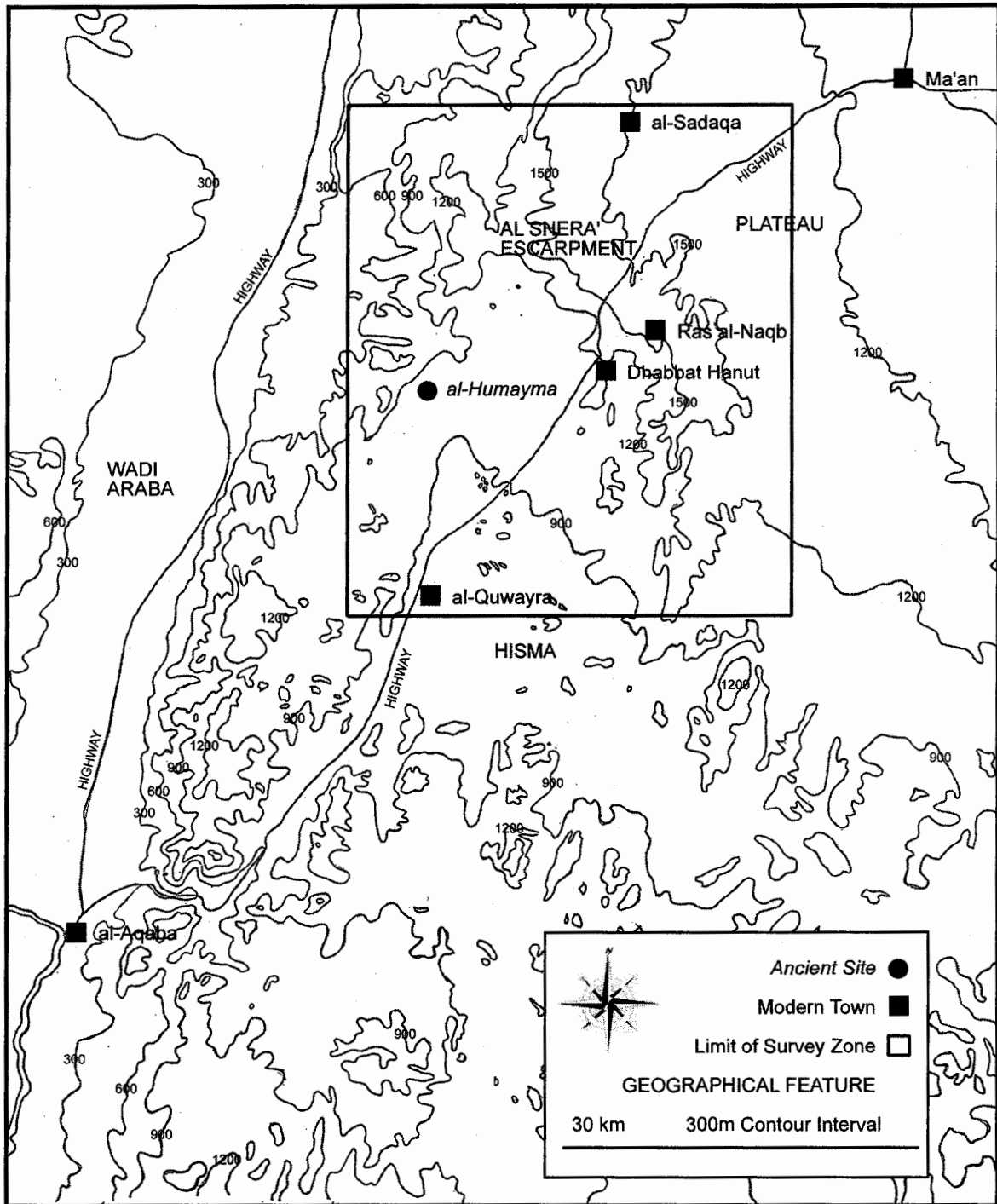
The confusion surrounding the definition of towers in Arabia make generalizations about their purported functions tentative at best (see Chapter One). The goal of the Humayma Watchtower Survey (HWS) was to alleviate this ambiguity by documenting a discrete number of towers through survey and excavation. These architectural and chronological data would allow assessment of the validity of the competing interpretations of “towers” and “watchtowers” along the Roman frontier in southern Jordan.

The specific objectives of the Humayma Watchtower Survey were to locate, examine, document, and assess structures in the region around the Roman fort at al-Humayma which had been previously identified as towers or watchtowers. The survey was not a systematic and intensive investigation of the landscape at large, and no attempt was made to document the numerous small, rural sites encountered haphazardly during the season. The tentative chronology of occupation at the purported towers was

determined by collecting surface artifacts at each site, while the structural remains were examined to establish possible architectural typologies. The area around each tower was also examined for possible clues as to the function of each structure; for example millstones, graffiti, or agricultural terracing walls. As a result of the survey, three sites were selected for excavation in hopes of clarifying the date and function of the structures (Chapter Five).

### **The Survey Zone**

The survey zone was arbitrarily established in order to examine structures in reasonable proximity to al-Humayma, while crossing regional geographical and ecological boundaries. The survey zone extended from the village of al-Sadaqa in the north to the town of al-Quwerra in the south; the mountains which separate the Wadi 'Araba from the Hisma desert formed a natural boundary to the west, while the modern highway served as a crude demarcation from the desert to the east, but one that in fact reflects ancient occupation patterns [Map 3]. In effect, the zone extended from one Roman military site to the north and to another one south of Humayma, as documented in the early-fifth century AD *Notitia Dignitatum* (Or. 35.25). These sites are all within an easy day's march of each other. Theoretically, this approach should have allowed for the examination of any chain or system of Roman military structures between the forts at al-Sadaqa, al-Humayma, and al-Quwerra. The extension of the survey zone to the north of the al-Shera' escarpment also permitted the examination of structures on the plateau of southern Jordan in order to establish whether there were different patterns of site



**Map 3: Map of Southern Jordan Illustrating Approximate Limits of Survey Zone. Based on the Hashemite Kingdom of Jordan 1:250,000 Archaeological Map, Sheet 3: Ma'an.**

distribution between the Arid/Semi-Arid climate of the Hisma desert and the more intensively inhabited Semi-Arid/Mediterranean climate of the plateau.<sup>1</sup>

### *Previous Research*

Rudolf Brünnow and Alfred von Domaszewski were the earliest scholars to study systematically the Roman *limes* in Jordan by visiting the physical remains. The results of their travels were published in *Die Provincia Arabia* (1904-09), which remains a fundamental source for the study of the frontier. Unfortunately, Brünnow and Domaszewski were unable to visit the southernmost portion of the frontier between Ma'an and 'Aqaba, although they did compile and re-publish the relevant descriptions of that region made by earlier antiquarian travelers.

The lack of coverage provided by Brünnow and Domaszewski is offset, to a great degree, by the studies of Alois Musil, a Czech scholar who published detailed descriptions of the military structures along the southern portion of the frontier (1907; 1927). Now somewhat outdated, the massive survey of ancient monuments undertaken by the American scholar Nelson Glueck on behalf of the American Schools of Oriental Research also provided an important contribution to the study of the region (1934-51). Fritz Frank, better known for his extensive surveys in the Wadi 'Arabah, commented on the area (1934), and Albrecht Alt contributed an important study on the route of the *Via Nova Traiana* through the region (1936a; 1936b). The aerial photographs taken by Sir Aurel Stein during and after the Second World War have been recently republished and

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<sup>1</sup> The landscape and culture history of ancient al-Humayma are discussed in detail in Chapter Three.

provide amazing views of selected military sites before they were damaged by modern development (Gregory and Kennedy 1985).

A modern survey of the *limes* was conducted by S. Thomas Parker in 1976 and published as *Romans and Saracens; a History of the Roman Frontier* (1986). This book is a major work of historical and archaeological synthesis which has, in many ways, set the agenda for the study of the frontier in Jordan. Parker visited all of the previously identified military structures along the *limes* and collected ceramics at each, but was primarily concerned with major military structures and generally only mentioned towers in passing.

A survey of the *Via Nova Traiana* in southern Jordan was conducted by Graf in 1978 (Graf 1979a; 1979b; 1980; 1981). Further studies have elaborated on the Persian, Nabataean, and Roman road systems (1989b; 1993; 1995a; 1995b), published epigraphic discoveries from the area (1983a; 1992b), and commented on Nabataean occupation of the Hisma (1983b). Graf's emphasis on the road and on smaller structures in the region, including towers, make these works indispensable for any study of the Nabataean and Roman periods in southern Jordan.

The southern end of the Edomite plateau was the subject of a survey by Stephen Hart and Robin Falkner in 1984-1985 (Hart and Falkner 1985a; 1985b). Although the emphasis of the project was primarily the Iron Age (Hart 1987a), publications have focussed on the occupation of the area in the Nabataean and Roman periods as well (Hart 1986a; 1986b). Another unpublished survey of the plateau was conducted by Benjamin Saidel, some results of which are on file at the Department of Antiquities in Amman (Saidel, n.d.).

The 'Aqaba—Ma'an Archaeological and Epigraphic Survey (1980-1985) focussed on the region east of the modern highway and promised interesting and important discoveries, but the death of the principal investigator, William Jobling, has prevented publication of the results, except in preliminary form (Jobling 1981a; 1982a; 1983a; 1983b; 1985; 1986; 1989). An epigraphic survey of the Wadi Juddayid has also received preliminary publication (King 1982; 1988). The Archaeological Rescue Survey of the Ras al-Naqb—'Aqaba Highway Alignment was conducted in 1992 in order to assess the impact of highway construction on the cultural landscape (Bisheh, et al. 1993). As a result of the survey, the Department of Antiquities conducted salvage excavations at several sites along the modern highway (Waheeb 1996).

By far the most important, ongoing research in the region has occurred at al-Humayma. Following initial publication of the site (Eadie 1984; Eadie and Oleson 1986a; 1986b), Oleson conducted a hydraulic survey of the region and the long aqueduct which fed the ancient site (Oleson 1984; 1986; 1988; 1992). This in turn was followed by extensive excavation at the village (Oleson, et al. 1993a; 1993b; 1995; 1999). Detailed description of the landscape and culture history of al-Humayma is provided in Chapter Three.

### **The Survey**

Between May 30 and June 8, 2000, the author and a team of three volunteers visited previously identified Roman watchtowers between al-Sadaqa and al-Quwerra, Jordan. The goals of the survey were to examine and record these small rural structures; to create

a typology of towers in the region; and, if possible, to relate the towers geographically and chronologically to the second-to-fourth century AD Roman fort at al-Humayma. Given the limitations of time and resources, team visits were initially confined to previously identified towers within the survey zone. However, the presence of several conspicuous, tower-like structures in the immediate vicinity of al-Humayma obligated the team to identify and record them.<sup>2</sup>

### *Methodology*

In order to accomplish these goals, the survey was divided into several stages. First, the survey team sought to locate and visit all previously identified towers in the survey zone. Given the lack of standard terminology for these structures in the literature, structures identified as “towers”, “watchtowers”, “watch posts”, “road stations”, “fortlets”, and “forts” were considered. These structures were identified from published reports of fieldwork in the area and from unpublished site reports stored in the Jordan Antiquities Database and Information System (JADIS) at the Department of Antiquities in Amman. In total, 31 sites in the survey zone were considered.

Second, the survey sought to document the towers in greater detail than had been possible for other projects which did not have an emphasis on towers. Once located, each site was plotted on 1:25,000 and 1:50,000 scale maps of the region using a hand-held

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<sup>2</sup> Volunteer team members were Mr. George Bevan (University of Toronto), Mr. Alain Saumure (University of Victoria), and Mr. Andrew M. Smith II (University of Maryland, College Park). The survey was supported by a generous grant-in-aid from the Committee on Archaeological Policy of the American Schools of Oriental Research to the Humayma Excavation Project. Travel and research expenses were provided to the author in the form of a Harrell Family Fellowship and a Pierre and Patricia Bikai Fellowship, both provided by American Center of Oriental Research, and by a Margareta Von Rudloff Travel Scholarship, provided by the Department of Greek and Roman Studies of the University of Victoria, Canada. Prof. J. P. Oleson and the Humayma Excavation Project provided equipment and logistical support.

Geographical Positioning System (GPS) with an accuracy of  $\pm 4\text{m}$ . Individual sites were given elevations and UTM coordinates using a Garmin 48 Handheld GPS, while Palestine Grid coordinates were established using compass bearings applied to the Hashemite Kingdom of Jordan 1:50,000 Geological Maps.<sup>3</sup> A unique identification number, consisting of a letter and a sequential two-digit number, was assigned to each site.<sup>4</sup>

All sites were photographed with colour slide and black-and-white print film, and wall lines were sketched, where these could be discerned. The team also attempted to estimate the extent of each site, including the gross internal and external dimensions, the preserved height, and the physical orientation of the structure. Particular attention was paid to the construction techniques employed at the sites.

Third, the team made a brief examination of the landscape around each site in order to assess the possible relationships between individual structures and their topographical location. The survey placed particular emphasis on locating nearby water sources, such as cisterns, and on identifying possible evidence of agricultural exploitation, such as field walls and sheep pens. Clear visibility between sites was also considered and recorded. All written assessments of the structures and their surroundings were recorded on standard forms designed for the survey.

Fourth, the team collected surface artifacts in order to establish the major chronological periods of human occupation at each site. In general, only those sites which

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<sup>3</sup> The removal of the "Selective Availability" built-in satellite error by the United States Government on May 1, 2000 allowed an estimated positional error of only  $\pm 4.0\text{m}$  on all readings. Thus, the UTM coordinates should always be preferred to those of the Palestine Grid.

<sup>4</sup> The letters differentiated between the three main regions considered by the survey. A was used for the northern region between al-Sadaqa and the al-Shera' escarpment; B for the region between the al-Shera' escarpment and al-Humayma; and C for the southern region between al-Humayma and al-Quwerra. See Map 4.

had not been excavated or surveyed previously were subjected to surface sharding.<sup>5</sup> Given the relatively low sherd density at most sites and the highly erosive nature of the hilltop sites in particular, the team abandoned any attempt to collect sherds in a random, statistically valid manner. Instead, arbitrary “grab samples” were made at each site. Although the team members attempted to collect sherds of all types and all periods, there was a bias towards diagnostic sherds, especially fineware. A catalogue of the sites, a preliminary reading of the ceramics, and a detailed assessment of each structure is provided in Appendix 1.

Finally, on the basis of the ceramics and architectural features of the sites documented by the survey, Cook prepared a preliminary typology of the “towers” in the region. An initial determination was made concerning the nature of each site on the basis of the visible remains, and those structures which did not show evidence of a second storey, or which had obviously non-military functions, were eliminated from consideration. Next, the team identified and grouped together sites of similar size and construction techniques that the ceramic finds suggested were contemporary. The result was a group of four structures forming a distinct architectural type. The fact that all of the structures were located in close proximity to each other and in a specific region of the survey zone supports the hypothesis that they formed a distinct type of structure.

#### *Limitations of the Survey*

The findings of the Humayma Watchtower Survey are limited by several factors which must be considered when interpreting the results. Most importantly, it was much more

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<sup>5</sup> Except B02, etc. See below under individual sites.

difficult than anticipated to relocate previously identified sites. Despite the fact that surface visibility is excellent throughout the region during the summer months, the recognition of sites was hampered by the broken and hilly nature of the landscape. Even in close proximity, it was often impossible to see structures which were not sufficiently well-preserved to be raised above the level of the surrounding terrain. This difficulty was exacerbated by the often vague reports of previous visitors. For example, countless hours were spent seeking structures "ca. five kilometres east of the road." It is possible, therefore, that some of the structures visited by the HWS may not have been the same structures reported by earlier visitors, although every attempt was made to verify the identifications.

A dearth of sherds at many of the sites also hindered interpretation. It is well established that the results of surface collection do not always reflect every period of occupation at a site. The low sherd density at many HWS sites, particularly those on hill-tops and outcroppings, may have caused the team to miss evidence for occupation in some periods. Compounding this factor was the nature of the architectural remains at many sites. Particularly in the case of what were relatively tall structures with a small ground plan, almost all of the rubble from the structure had collapsed in a large mound of boulders or slabs, sometimes several meters high. Not only did this prevent close inspection of architectural details, it also obscured the ground for several meters on all sides of the structure, making artifact collection more labour intensive and less rewarding.

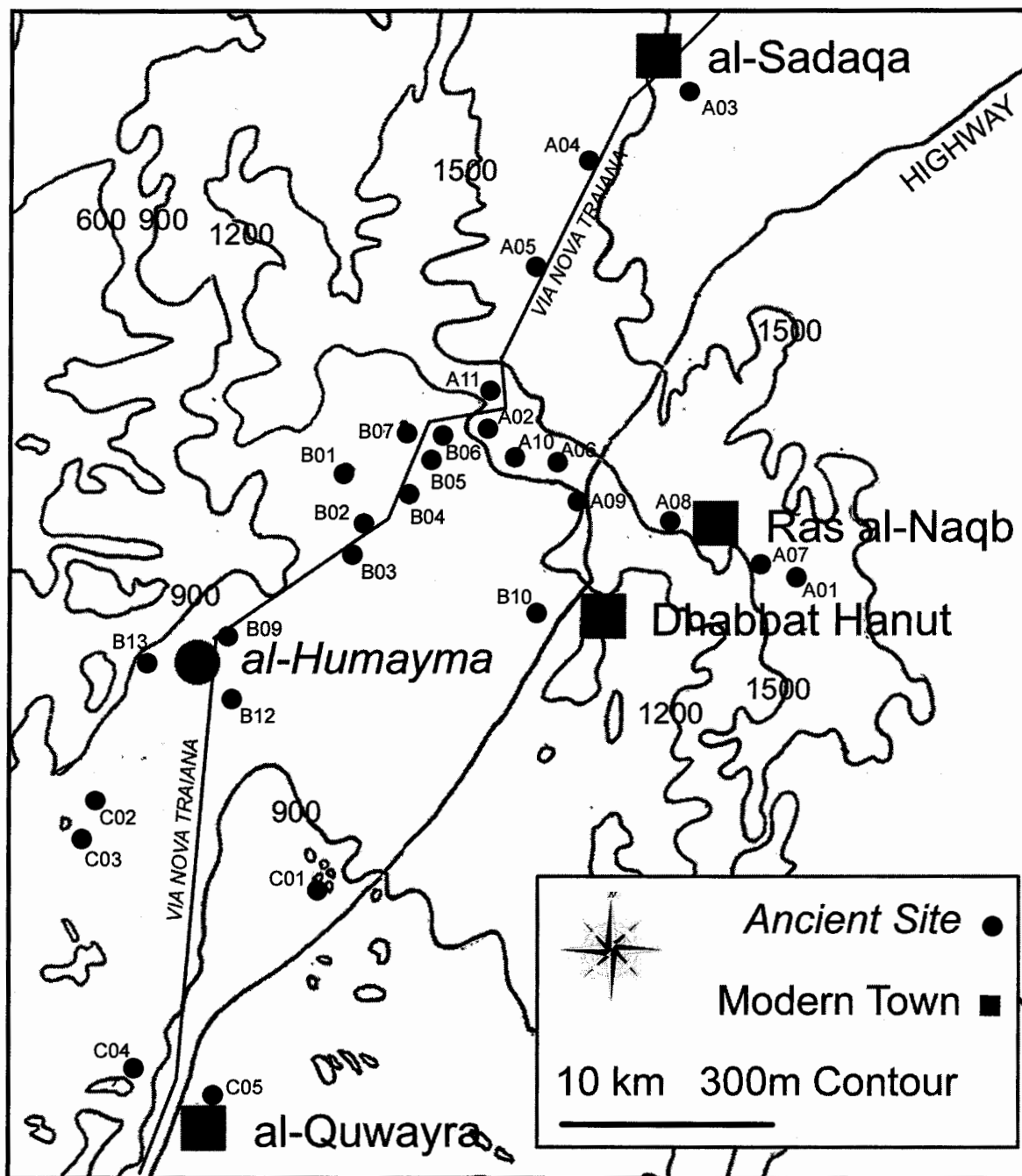
Where the architectural remains were not clearly visible, the function of the structures was also difficult to establish. Apart from documentary evidence, such as

inscriptions, papyri, or ostraka, there are relatively few diagnostic artifacts which could demonstrate Roman military occupation at a site. None of these diagnostic artifacts, such as arrow-heads, spear points, nails or armour fragments, were recovered by the survey, although there was little expectation that they would be discovered in a surface sample. As a result, possible military functions of the sites must be inferred from other evidence or established by excavation.

In addition, it is possible that there are many more towers in the region beyond those visited by the survey team. The stated objective of the project, to visit only previously documented towers, precluded the inclusion of new sites. The fact that several new towers were easily identified by the team despite that objective suggests that there could be many more awaiting discovery. The arbitrary nature of the survey zone also limits the conclusions which may be drawn; it is possible, for instance, that a large number of towers could exist on the desert fringe or along the escarpment immediately to the east of the survey zone.

### **Summary of Survey Results**

The results of the Humayma Watchtower Survey are briefly summarized here by region [Map 4]. More detailed descriptions of each site and the relevant bibliography are provided in Appendix 1. Many of the structures visited by the survey team could not be construed as towers by any definition, and several have been destroyed by modern activity since the initial report of their presence. Nevertheless, a group of towers was discovered in the survey zone and is documented below.



Map 4: Map of Survey Zone and Sites Visited by the Humayma Watchtower Survey. Based on the Hashemite Kingdom of Jordan 1:250,000 Archaeological Map, Sheet 3: *Ma'an*.

*Region A: Between al-Sadaqa and the al-Shera' Escarpment.*

Of all the sites in the survey zone, the structure known as Rujm al-Sadaqa (**HWS A03**) is perhaps the one most frequently referred to as a watchtower (Parker 1986a: 99-100; Graf 1995a: 250). It is a large (ca. 20 x 18m) and reasonably well-preserved stone edifice originally at least two stories tall located on a hill to the east of the modern village of al-Sadaqa. A depression in the centre of the rubble indicates the possibility of a courtyard. Previous visitors had suggested that because the remains of a larger Roman fort are visible in the village below, Rujm al-Sadaqa must have served as an observation post. As Graf (1995a: 250) has proposed, however, it may be more reasonable to suggest that the fort in the village and the structure at Rujm al-Sadaqa were occupied during different periods. Surface ceramics reported from both sites spanned the Nabataean, Roman and Byzantine periods making this hypothesis unverifiable without excavation. Nevertheless, it is difficult to reconcile the large size of the structure with a function as an observation post, and it seems awkward to refer to it as a tower.

Likewise, the road stations or small forts at Khirbet Dhor (**HWS A04**) and Khirbet Sweimireh (**HWS A05**) seem too substantial to be referred to as towers (Graf 1995a: 251). Khirbet Dhor is a large (ca. 28 x 24 m) two-storey structure composed of numerous rooms around a central courtyard [Figure 39]. It has clearly been reused, if not rebuilt, in the modern period and may have served as an Ottoman police post. The Road Station at Khirbet Sweimireh was reported by Graf to be ca. 17 x 45 m, and thus too large for consideration as a tower. Surprisingly, it could not be located by the survey team during the 2000 season. No sherds were collected at either large, multi-period site.

Several towers had been reported at the top of the escarpment near the fourth century AD Roman fort at Khirbet al-Qirana. A tower (**HWS A01**) closely associated with the fort by Parker (1986a: 102-4) could not be easily identified, although a structure ca. 5.65 x 5.65m, built of large (ca. 0.50 x 1.0m), un-worked boulders, is located in approximately the correct position on a spur overlooking the escarpment and the Wadi Juddayid below [Figures 2, 35]. What appears to be a small extension (ca. 1.90 x 5.65m)



**Figure 2: Site HWS A01 showing preserved NE corner. Photo by author.**

on the north side of the structure may have been added later. The structure has been heavily robbed and the area around it used for burials in recent times. The survey team found no reason to conclude that this structure was a tower. There is insufficient rubble to suggest a second storey, although this might have been removed by robbers, and, although there is an excellent view of the landscape below the escarpment to the south, sight lines are hindered to the east, west, and north. Very few ceramics were recovered from the site: two sherds date to the first century AD and two to the second-to-fourth centuries AD.

A purported Nabataean or Roman watchtower (**HWS A07**) built on top of the Iron Age fortress at Khirbet al-Shuddayid, a few kilometres to the west of Khirbet al-Qirana, could not be located amid the extensive ruins of that site. The highest elevation at the site is now occupied by a microwave tower, the construction of which seems to have disturbed several ancient structures (Parker 1986a: fig. 38; Bisheh, et al. 1993: 125-6).

The well known, but poorly documented tower at Ras al-Naqb (**HWS A08**), a few kilometres further west, at the side of the old highway, was destroyed by the construction of a government rest house and is now used as a tuberculosis clinic (Graf 1979b: 125). No ancient remains are visible.

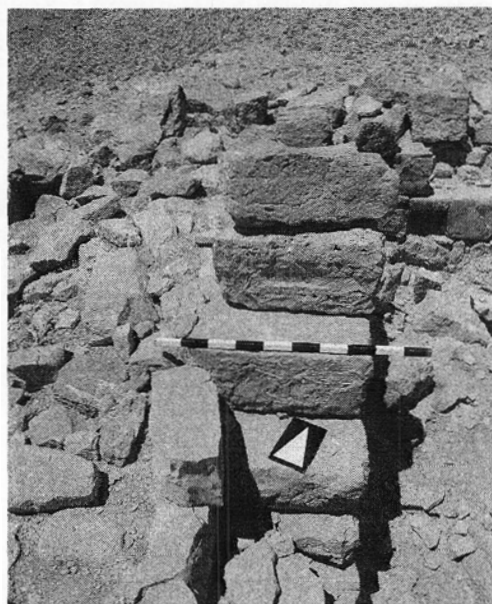
Two towers have been reported near the modern highway beside perennial springs on the face of the escarpment (Bisheh, et al. 1993: 121, sites 13, 16). The small and roughly square remains at 'Ain al-Jammam 2 (**HWS A09**) were initially reported as a tower by the Archaeological Rescue Survey of the Ras al-Naqb—'Aqaba Highway Alignment in 1992, but salvage excavations conducted by the Department of Antiquities of Jordan later demonstrated that the sites was in fact a farmhouse (Waheeb 1996: 344). The site at 'Ain Abu Insor (**HWS A06**) was described as a village by Bisheh, but closer examination by Waheeb suggested that one structure might have served as a tower (1996: 345). It seems that the purported tower was destroyed by the Highway construction. Both sites are closed to the public and no ceramics could be collected.

A small, circular structure (**HWS A10**) was identified as a possible tower by Oleson during his hydraulic survey of the Humayma region (Oleson, forthcoming). Located 2.91 km along the Nabataean aqueduct from 'Ain al-Jammam, was a structure ca. 10m up the escarpment from where the conduit spanned a small valley. It appears that the structure has been bulldozed in order to create a dirt track linking 'Ain Qanah, 'Ain al-Jammam, and 'Ain Abu Insor. No identifiable remains could be found. The structure was the only circular tower reported in the region.

The site of Ras al-Qanah (HWS A11) lies half way down the escarpment in the Wadi al-Qanah, immediately beside the ancient *Via Nova Traiana* and just up the road from the spring known as 'Ain Qanah (Graf 1995a: 252, fig.6). The road narrows here as it turns sharply to follow the contour of the escarpment and runs between the structure and the cliff face. HWS A11 is ca. 6.0 x 6.0m and is constructed of roughly hewn limestone boulders (ca. 0.43 x 0.38 x 0.32m). The relative absence of rubble at the site, particularly inside the structure, may suggest that it has been looted or reused recently. While the remains of some larger slabs are visible in the rubble, all are fragmentary and no accurate dimensions can be established.

The walls are ca. 1.0m wide except on the West, where the wall is

significantly thickened to ca. 1.60m wide by the addition of a staircase bonded with the interior face [Figures 3, 40]. The stairway is ca. 0.58m wide with treads ca. 0.28m long, except for the lowest tread, which is 0.64m long and may have formed a landing. A



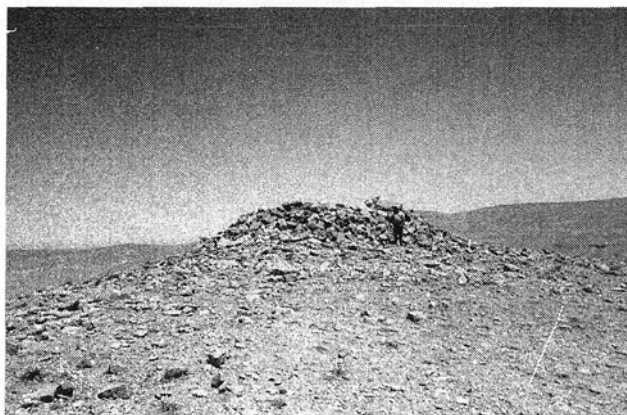
**Figure 3: HWS A11 Detail of staircase in West wall, facing North. Photo by author.**



**Figure 4: HWS A11 Interior detail, facing south. Doorway is clearly visible in South wall and stairs may be seen ascending West wall at right. Photo by author.**

doorway (ca. 0.94m wide) is visible in the south wall [Figure 4]. Ceramics collected at the site date primarily to the second and third centuries AD, although a few sherds were of probable fourth-century AD manufacture. The awkward location of the structure strongly suggests that it was meant to monitor or regulate traffic on the road.

The Jebel Qanah tower (HWS A02) is a large and well preserved structure located on a massive jebel to the south of the spring [Figures 5, 36].<sup>6</sup> The site has an unsurpassed view of most of the desert floor 600m below as far as al-Quwerra, and can itself be seen from many kilometres away.



**Figure 5: Site HWS A02 facing North. Photo by author.**

However, the rounded form of the jebel precludes any observation of the foot of the hill from the top. Previously unidentified, HWS A02 is clearly an imposing structure of more than one storey and bears striking architectural similarities to HWS A11.

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<sup>6</sup> Local informants occasionally refer to HWS A02 as Khirbet Ras al-Qanah. Unfortunately, this can be easily confused with HWS A11 Ras al-Qanah, which is located in a much better position to deserve the name “head of the aqueduct”.

The structure is constructed of large, roughly hewn limestone blocks (ca. 0.40 x 0.40 x 0.20m) forming double-faced walls ca. 0.85m thick. The exterior dimensions are obscured by tumble but the interior is at least ca. 4.0 x 4.5m in size, and one wall is preserved to a height of at least 0.91m. Two probable arch springers (ca. 0.50m wide) are visible in the northern wall and a probable door can be seen in the western wall. There is a massive quantity of rubble at the site considering the relatively small ground plan of the structure,



**Figure 6: Site HWS A02 Interior Detail facing North. Possible roofing slabs are visible on top of the far wall. Photo by author.**

suggesting that it was quite tall. In addition, a number of massive limestone slabs (ca. 1.30 x 0.80 x 0.12m) are strewn throughout the rubble and may have served as roofing or as flooring for a second storey [Figures 6, 37]. A few ceramics date to the Iron Age but most are of the late-first and early-second centuries AD. The location of the structure, its good architectural preservation, and the seemingly undisturbed nature of the site encouraged the team to choose HWS A02 for excavation in the second phase of the project (Chapter Five).

*Region B: Between the al-Shera' Escarpment and al-Humayma.*<sup>7</sup>

Graf reported a tower (ca. 2.9 x 5.2m) where the *Via Nova Traiana* turns south after exiting the Wadi Qanah (Graf 1995a: 252). HWS B04, B05 and B06 are all small structures within reasonable proximity to the ancient road which were recorded in an attempt to identify the tower, but none can be positively associated with the structure mentioned by Graf. HWS B04 is a badly robbed structure along the line of the *Via Nova Traiana*. It appears to be ca. 4.5 x 4.5 m in size, but no clear wall lines can be established and there is no evidence to suggest a tower. Ceramics date to the late-first or early-second century AD. HWS B05 has also been disturbed [Figure 44]. Although it is close to the ancient road and there are many un-worked stones (ca. 0.50 x 0.25m) in the area, there is no evidence that the structure was ever very substantial, and it is possible that it was a tomb or other small feature. The few coarseware ceramics date to the late-first or early-second century AD.

HWS B06 seems the most likely candidate for Graf's structure [Figures 7, 45].

The site is right at the hypothetical curve of the *Via Nova Traiana*, although a Bedouin burial ground seems to have reused portions of the paving and curbing, making precise location of the road



**Figure 7: Site HWS B06 facing East. Photo by author.**

<sup>7</sup> Site HWS B08, Khirbet Abu al-Nusur, was discovered to be identical to HWS A06, 'Ain Abu Insor, and is discussed above. Site HWS B11, Rujm al-Mizfar, was not within the survey zone as initially thought. The site was not visited.

difficult. Located near the head of the Wadi al-Helwa, the site has been robbed and some clothing and garbage suggest that it has been reoccupied in recent times. Only the western portion of the structure is intact (ca. 6.2 x 0.73m), but where it is still visible it is preserved to a height of ca. 0.55m. There is no obvious reason to refer to this structure as a tower. Ceramics date to the second and possibly early-third centuries AD.

While searching for the tower reported by Graf, the survey team discovered a previously undocumented structure (**HWS B07**) at the top of a high, flat-topped jebel known as Twail al-Zattar [Figure

8]. The jebel rises from the floor of the northern Hisma and has a remarkable view south to al-Humayma and up the Wadi Qanah to HWS A02 and HWS A11 to the



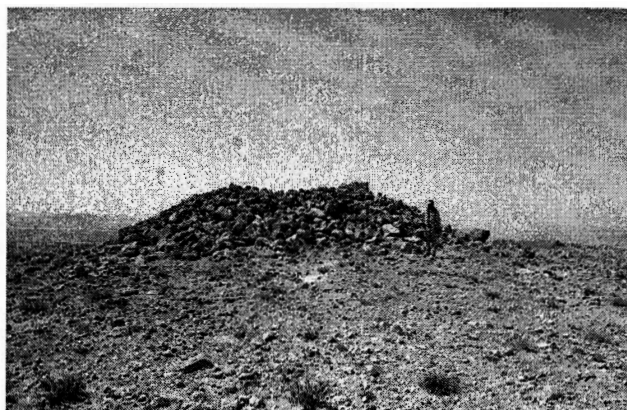
**Figure 8: Site HWS B07 facing South. Photo by author.**

east. The interior dimensions of the structure are ca. 4.26 x 3.90m, and

the walls all appear to be ca. 0.70 thick, except for the western wall which is at least 1.30m thick. All are constructed of boulders and roughly hewn limestone blocks. The extraordinary thickness of the western wall suggests a built-in shelf or staircase (ca. 0.60m wide), part of which is partially visible in a recent robber pit [Figure 16]. There is sufficient rubble at the site to suggest a tall structure and the presence of a possible staircase built into the western wall is intriguing, particularly given the fact that it is almost the same width as the staircase at HWS A11. A door is visible on the eastern side of the structure [Figure 47], and is also of the same dimensions as the door at A11 (0.94m

wide). Arch springers (ca. 0.57m wide) can be discerned on the north and south. Although some possible flooring/roofing slabs are visible, they are not as substantial as those at HWS A02 and accurate dimensions could not be obtained. HWS B07 is architecturally similar to both HWS A02 and HWS A11 and has clear lines of sight to both sites. The few body sherds recovered at the site could be dated only very generally to the second-to-fourth centuries AD.

To the west of Twail al-Zattar (HWS B07) is another previously undocumented feature at the summit of Jebel Helwa (**HWS B01**). Constructed of the same roughly hewn limestone blocks as HWS A02, A11, and B07, the massive rubble pile suggests that the structure may be preserved to a height of ca. 2.5-3.0m [Figures 9, 41]; one portion of the eastern interior wall is preserved to a

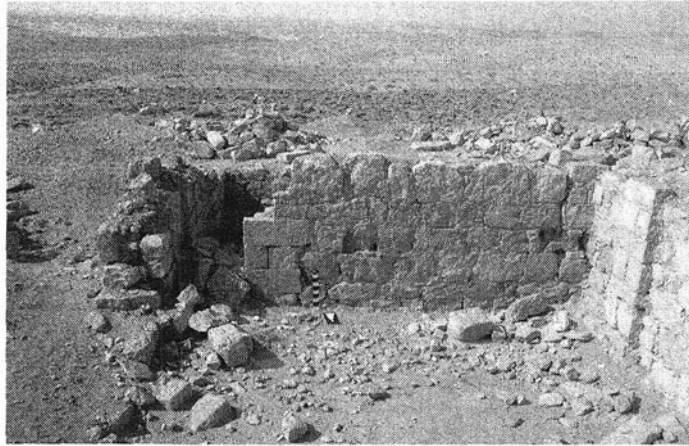


**Figure 9: Site HWS B01 facing South. Photo by author.**

height of at least 2.15m. Average wall thickness appears to be ca. 0.98m. The exterior dimensions are ca. 6.1 x 5.3m, and it is possible that the longer north-south axis includes one thicker wall as at HWS B07. A doorway seems possible only along the southern wall, which would place the thicker wall opposite the door, on the north side [Figure 42]. The very few ceramics recovered from the site could not be easily identified.

A few kilometres to the south of the Wadi Qanah is the site known locally as Rujm al-Shugg or Rujm Abu Hashem (**HWS B02**). The site lies directly on the *Via Nova Traiana* north of the Wadi al-Bayda and several milestone fragments are visible in the

vicinity.<sup>8</sup> There are numerous burials in the area, and one carefully finished, subterranean barrel-vaulted chamber tomb constructed of well-cut ashlar blocks and a barrel-vault has been exposed by recent clandestine activity.<sup>9</sup> The main feature at the site is a large, square structure ca.



**Figure 10: Site HWS B02 facing South. Interior of northern robbed room with door at left and arch springer at right. Photo by author.**

30.0 x 30.0m which probably served as a caravanserai, *mansio*, or small fort. Wall lines visible on the surface indicate a number of rooms surrounding the central courtyard. Two rooms have been emptied at the south-eastern corner of the building and display architecture similar, but not identical, to that at HWS A02, A11, B01 and B07. The walls (ca. 0.70m thick) are built of rubble courses, and arch springers are visible in both rooms [Figures 10, 43]. Artifacts recovered at the site include a coin of Constantius II and Constans (AD 337-350) and a substantial amount of ceramics. The late-first and early-second centuries are well represented as are the fourth and early-fifth centuries AD. No sherds were recovered from the late-second or third centuries. The importance of HWS B02 became apparent during the course of the survey: it is impossible for wheeled traffic to enter the northern Hisma and ascend the escarpment past 'Ain al-Qanah without passing the site and all modern desert tracks converge on the structure. This is the key

<sup>8</sup> This seems to be the site referred to by David Graf as Beida (1979a: 125; 1995a: 256).

<sup>9</sup> This tomb may be the source of a fragmentary Nabataean inscription of post-Trajanic date, which records the dedication of a tomb by a Marcus Ulpius Su'aidu. See Hayajneh 2001 and HWS B02 in Appendix 1.

site for controlling movement in the area. The possible relationships between HWS B02 and other sites are considered below.

Approximately one kilometre south of Rujm al-Shugg (HWS B02) are the remains of a small structure known locally as Rujm Helwa (HWS B03). It is situated on a small



**Figure 11: Site HWS B03 facing Northwest. The presumed line of the *Via Nova Traiana* descends into the Wadi Baydah to the right. Photo by author.**

rocky spur on the south side of the Wadi al-Bayda just to the west of the *Via Nova Traiana* where the latter re-emerges from the Wadi [Figure 11]. Graf (1995a: 256) referred to the site as a probable “watchpost” ca. 8m<sup>2</sup>. The structure is constructed of what were once well-formed white sandstone blocks which have become extremely friable as a result of weathering. The extensive debris from the structure forms a low mound ca. 17.3m in diameter. Sherds from the site date to the late-first and early-second centuries, as well as the fourth and early-fifth centuries AD. No clear wall lines can be discerned but the location of the structure at an important wadi crossing encouraged the team to select HWS B03 for excavation in the second phase of the project (Below, Chapter Five).

A possible watch post was suggested by Stein along the *Via Nova Traiana* just north of the fort at al-Humayma (Gregory and Kennedy 1985: 326). Presumably, he postulated the need for such an installation because a significant jebel blocks all views to the north from the fort. Although Stein described a mound of stones to the west of the

track, no such structure could be discovered by the survey team and local informants did not recall any such feature. However, a large sherd scatter was noticed and recorded on a low mound just to the *east* of the track (**HWS B09**). The large number of sherds from the site date exclusively to the late-first and early-second centuries AD. No stone is visible at the site and the light-colour and hard surface of the ground may indicate the presence of mud brick. Apart from its location, there is no reason to believe that this site was a tower or watch post.

Just as a *jebel* blocks the view to the north from the al-Humayma fort, another *jebel* blocks the view to the southeast. Remains on the hilltop (**HWS B12**) were previously interpreted as those of a late Roman tower (ca. 11.0 x 15.0m) by Eadie (1984: 5-6) and Parker (1986a: 104-5). Wall definition work and the excavation of a small probe in 1998 (Humayma Area A127) strongly suggest that the site is in fact a Late-Byzantine farmhouse. A later feature cut into the western wall may have served as an Islamic period tomb. The results of cleaning and excavation at the site are presented in Chapter Five.

In the hills to the west of the main site at al-Humayma are the remains of one or two undocumented structures which have been badly damaged by recent bulldozing [Figures 12, 49]. They were examined briefly to determine if they could represent an Iron Age tower (**HWS B13**). The architecture of the site has been obscured by recent activity with the exception of a single wall line ca. 8.0m long. Ceramics from the site are

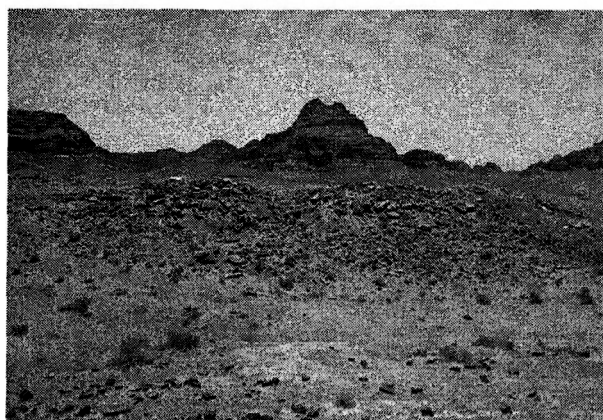


Figure 12: Site HWS B13 facing West. Photo by author.

primarily Iron Age with a few late-first or early-second century AD Nabataean finewares. Some of the Iron Age ceramics suggest a possible cult function for the structure, however, and it seems unlikely that it could have been a tower of any kind. Further study will be required to determine the precise date and function of this site.

At the foot of the escarpment west of the modern highway is the site of Dabbat Sumay'ah (HWS B10). The structure is actually on a small spur at the southern end of the outcropping properly known as Dabbat Sumay'ah [Figures 13, 48]. It was identified as a tower by the Archaeological Rescue Survey of the Ras an-Naqb—Aqaba Highway Alignment and was subsequently excavated by the Department of Antiquities of Jordan (Waheeb 1996: 346). Measuring ca. 4.53 x 4.73m, the structure is built of large boulders

laid as headers across the wall line (ca. 0.60m wide). No arch springers or other internal features can be discerned and the doorway cannot be located despite the previous excavation of the structure. There is no evidence to support an



interpretation of the building as a tower. Readings of the ceramics

**Figure 13: Site HWS B10 facing Southwest. Photo by author.**

were inconclusive but a date in the late-first or early-second centuries AD seems possible.

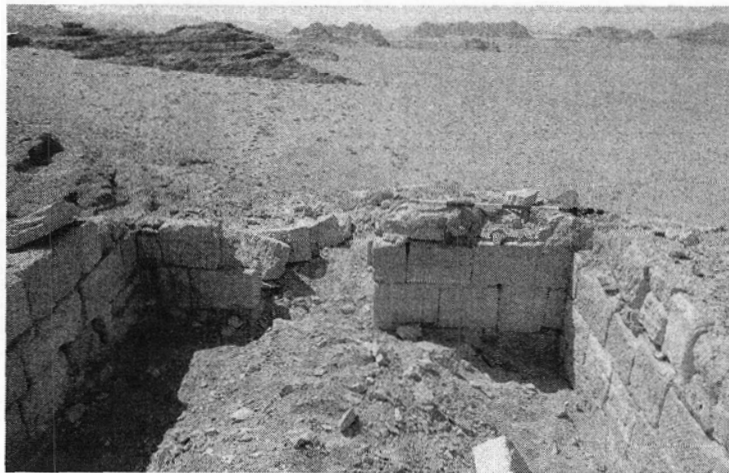
*Region C: from al-Humayma to al-Quwerra.*<sup>10</sup>

A tower was reported by Oleson (forthcoming) on a rocky outcropping at the southern end of the Hudeibat Umm Dureira (HWS C01), where it overlooks two large



**Figure 14: Site HWS C01, facing South. The structure is located atop the jebel in the centre. Photo by author.**

Nabataean reservoirs [Figure 14]. HWS C01 is a small structure ca. 4.15 x 3.50m constructed of dressed Nabataean ashlar blocks in two faces preserved to a height of 4-5 courses. The average wall thickness appears to be ca. 0.97m. A doorway (ca. 0.87m wide) is visible on the southern side of the structure [Figure 15]. The feature was built directly on the exposed bedrock and, as a result, there are no visible sherds or stratigraphy. The remains of a recent burial are visible inside the tower. Ceramics of all periods litter the ground around the reservoirs below the structure, but the bulk of them date to the late-first or early-



**Figure 15: Interior detail of Site HWS C01 facing South. Ashlar construction and a doorway are visible. Photo by author.**

<sup>10</sup> HWS C06, Jebel Ratama was located outside the survey zone and was not visited by the survey team.

second centuries AD. Although the structure could also have served as a tomb, it seems likely that it was located to observe or control access to the reservoirs. In this respect it could be referred to as a watch post, but it is impossible to establish further details about its form and function given the lack of evidence. Some local informants referred to this site as Rekhemtein, which could make the site identical to the tower reported by Graf (1979a: 125) at a site of that name (**HWS C07**). The relationship of this possible tower to other towers in Arabia is discussed in the Conclusion.

Two sites to the south of al-Humayma were located by Oleson (forthcoming) during his hydraulic survey and suggested as possible houses or towers (**HWS C02** and **HWS C03**). HWS C02 is a rubble scatter some 5.0m in diameter with no discernable wall lines on the left bank of the Wadi Shubeika [Figure 50]. The absence of sufficient rubble for a tower and the presence of good farmland around the site suggest that it would be best interpreted as a house or outbuilding of some kind. HWS C03 is an enigmatic site with stairs cut into the bedrock. There is no evidence to suggest that it could have been a tower, although it may have been a tomb.

Graf proposed that the structure known as Qasr al-Qorbah (**HWS C04**) was a guard post of Nabataean, Roman and Byzantine date ca. 3.0km north of al-Quwerra along the ancient road (1995a: 258). The only site which could be located in the specified area is inside the grounds of a quarry used by the engineering firm Condotte Roma to supply the expansion and resurfacing of the desert highway. Visible walls are built of massive boulders, some as much as 0.75-1.0m in diameter, but visitors are not welcome at the site and no detailed examination was undertaken. Another purported watchtower at Jebel

Quwerra (HWS C05) was also not visited, as it is now located inside the perimeter of a military installation (Graf 1979a; 1995a: 258; Parker 1986a: 105-8).

### **A Possible Monitoring Zone along the al-Shera' Escarpment**

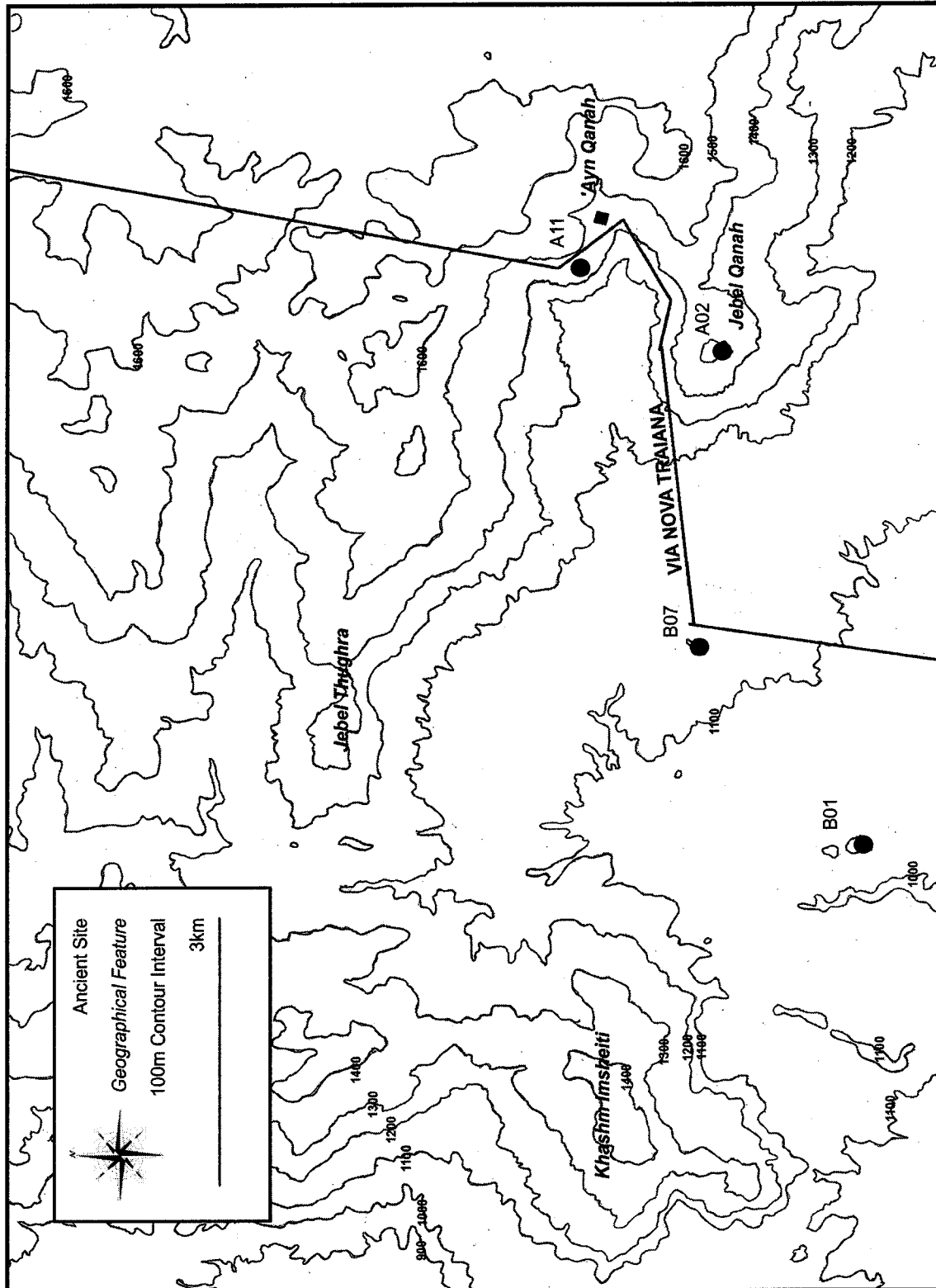
The presence of four structures (HWS A02, A11, B01, B07) of roughly similar size, construction, location and chronology along the al-Shera' escarpment suggests that they should be interpreted as a group [Map 5].

#### *Architecture*

The four possible towers identified by the HWS show remarkable architectural similarities, despite the fact that their collapsed state has prevented detailed examination [Table 1]. All four structures were built to roughly the same exterior dimensions (ca. 5.0-6.0 x 4.6-6.0m), although rubble often prevented precise measurements. Where interior dimensions could be established, at HWS A02 (ca. 4.5 x 4.0m) and HWS B07 (ca. 4.6 x 3.9m), the internal measurements were also quite close. Average wall thickness varied significantly (0.70-1.0m), but this discrepancy may be the result of splaying at the top of the walls or of error in recording amid the masses of rubble. HWS



**Figure 16: Site HWS B07. Interior detail of western (thickened) wall. Some possible roofing slabs are visible in the rubble. Photo by author.**

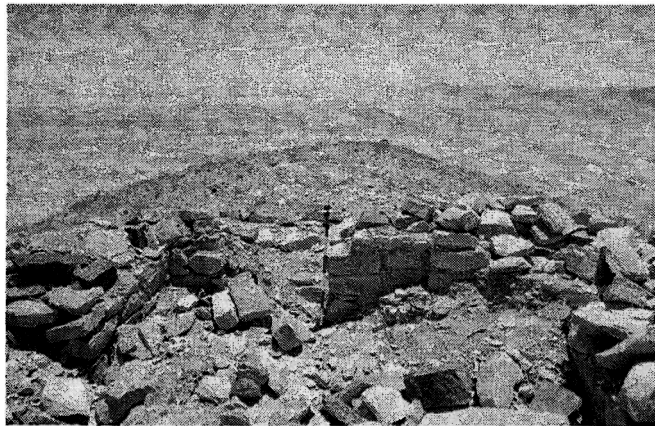


**Map 5: Map of Sites Comprising a Hypothetical Nabataean and/or Early Roman Monitoring Zone along the al-Shera' Escarpment. Based on the Hashemite Kingdom of Jordan 1:25,000 Topographical Map Series, Sheet 180/935: *Jebel Thughra*.**

A02, B01 and B07 all displayed a rectangular shape caused by the presence of one wall markedly thicker than the others. At HWS B07, the western wall was clearly almost double the thickness (ca. 1.30m) of the other three walls (ca. 0.70m) and a built-in feature, possibly a staircase, was visible in the wider wall face [Figure 16]. HWS A11, displayed a thickened wall (ca. 1.60m wide) on the western side, with an obviously identifiable staircase (0.58m wide) along the interior face [Figures 3, 40].

HWS A02 and B07 had obviously identifiable arch springers (ca. 0.50-0.57m wide) visible on at least one wall [Figures 17, 36]. Rubble prevented closer examination at HWS B07. At HWS A02, B01, and B07, the structures appeared to have a single doorway located opposite the thickened wall and at a right angle to the axis of the springers. The door was not situated opposite the thickened wall at HWS A11, a fact perhaps related to the absence of arch springers at that site.

All of the structures were constructed of the same dolomitic limestone, which occurs only at the top of the escarpment, although many large fragments have broken free and rolled down the slope. Neither strata nor fragments exist in close proximity to either HWS B01 or B07, implying that the stone was brought to the site from a source on or near the escarpment. The use of this particular stone might have been an important consideration in the construction of a multi-storied



**Figure 17: Site HWS B07 Interior facing south. Possible arch springer is visible at right, abutting the southern wall. Photo by author.**

building, as it is significantly stronger and less friable than the more easily available sandstone and marl found in the area. The weight and intractable character of the material and the size of some of the stones suggest that coordinated effort by a group was required to quarry and transport the stones and to erect the towers. Of the sites, only HWS A11 did not have sufficient rubble to account for a second storey, but it was clear that the structure had been emptied of rubble at some point and much of the debris must have tumbled down the steep cliff to the west. The massive (1.30 x 0.80 x 0.12m) slabs visible in the rubble at HWS A02 may have served as roofing or as a floor for the second storey [Figure 5], but slabs located at other sites were often fragmentary and not as large as those identified at A02.

Sites HWS A02, A11, B01, and B07 share a remarkable number of features [Table 1]. On the basis of their architecture, it seems reasonable to refer to these structures as towers and the remarkable similarities in size and construction technique imply erection during the same period, if not at the same time. Nevertheless, excavation would be required to provide an accurate chronology for the occupation of each.

	<b>A02</b>	<b>A11</b>	<b>B01</b>	<b>B07</b>
Interior Dimensions (m)	4.5 x 4.0	4.01 x 3.55	-	4.3 x 3.9
Exterior Dimensions (m)	-	6.16 x 6.14	6.1 x 5.3	-
Orientation of Longer Side	North-South	None	North-South	East-West
Average Wall Thickness (m)	0.85	1.05	0.98	0.70
Thickened Wall Visible?	No	Yes, West	Yes, North	Yes, West
Thickened Wall Width (m)	-	1.60	-	1.30 or more
Stairs Visible?	No	Yes	No	Possible
Stair Width (m)	-	0.58	-	0.60
Arch Springers Visible?	Yes, West	No	No	Yes, North and South
Arch Springer Width (m)	0.50	-		0.57
Roofing/Flooring Slabs Visible?	Yes	Possible	Possible	Possible
Door Visible?	Yes, South	Yes, South	Probable, South	Yes, East
Door Width (m)	?	0.94	-	0.94
Door Opposite Thickened Wall?	Yes	No	Yes	Yes
Ceramic Chronology	Iron, late 1st-early 2nd AD, possible 3rd AD.	2nd and 3rd AD, possible 4th AD	unidentifiable	2nd to 4th AD

Table 1: Summary of Architectural Similarities Among Probable Towers Identified by the Humayma Watchtower Survey. All measurements approximate.

### *Chronology*

Little can be said concerning the chronology of the towers on the basis of the surface survey. At HWS A02 the team collected one possible Iron Age sherd and ceramics from the late-first and early-second centuries AD, with a few possible second and third century AD examples. The sherds from HWS A11 could only be broadly dated to the second or third centuries AD, with a couple of possible fourth century pieces. The ceramics from

HWS B01 were virtually unidentifiable handmade wares which could date anywhere between the Iron Age and the Late-Islamic period. HWS B07 produced only four body sherds broadly datable to the second to early-fourth centuries AD. The most common sherds from the towers as a group are those of the late-first and early-second century AD. The Nabataean and Roman periods are, however, the best represented periods at almost all sites in the Hisma.

It may be significant that sherd density was extremely low at the sites in question, even by comparison with other small sites in the area. One possibility is that the towers served a function which did not involve significant occupation, or which required only intermittent occupation over time, such as agricultural outbuildings or tombs. Another possibility is that they were built, occupied only briefly, and then abandoned. It is, of course, possible that individual structures were reoccupied after their initial abandonment or were reused for different purposes.

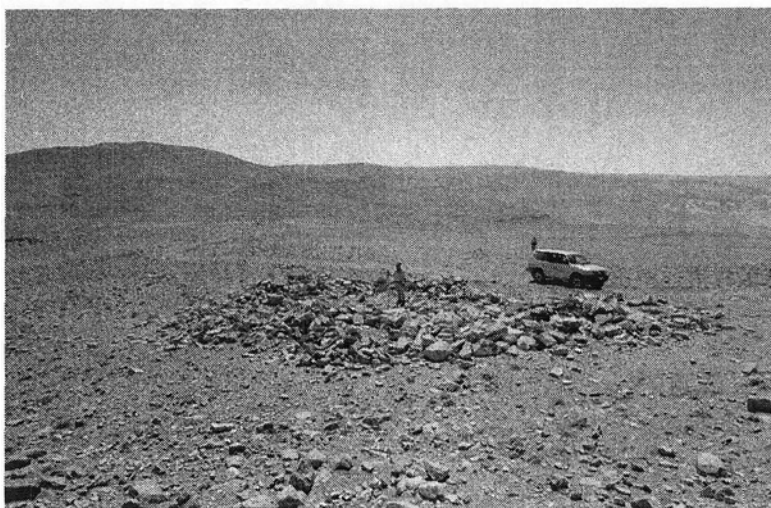
### *Location*

Three of the towers (HWS A02, B01 and B07) were located at the summit of isolated, barren hilltops and were not in close proximity to water or other resources [Map 5]. HWS B07 is in a particularly desolate location with only bedrock and drifting sand surrounding the jebel known as Twail al-Zattar. An un-datable agricultural terracing wall was noted on the north side of the jebel at HWS B01, but it is difficult to believe that the site was ever a very good one for agriculture, as there are numerous stony wadis on all sides. Jebel Qanah affords better opportunities for farming, and there are modern plowed fields down slope from HWS A02. There are, however, also the remains of a probable ancient

farmhouse to the north of HWS A02 [Figure 18], suggesting that the tower itself need not have been involved in farming. HWS A11 is located on a small spur separated from the cliff face by the ancient road making any agricultural or domestic purpose improbable.

HWS A01, A11, B01, and B07 also have clear sightlines among them. Only HWS

A11 does not have a clear view of the Hisma, as Jebel Qanah blocks a view to the south. It does, however, have an excellent view of the Wadi Qanah and the spring at 'Ain Qanah and



completely commands the ancient road, particularly

**Figure 18: Possible farmhouse structure to the north of HWS A02 facing Northeast. Photo by author.**

where this is not visible to the other sites. The location of the towers at the very summit of their respective hills exposes them to considerable wind and sun throughout the day. This could have been alleviated to some extent without diminishing their sight-lines by locating them on the forward slopes of the jebels. The fact that this was not done may indicate an intentional desire for the towers themselves to be seen from a distance, although it is not obvious for what psychological or functional reasons this may have been the case. The structures are clearly distinguishable from several kilometres away even in their current, reduced state and they must have formed an impressive and imposing chain of silhouettes in antiquity.

*Function*

Although, numerous functions have been ascribed to towers in southern Jordan (Chapter One), few seem appropriate to the towers along the al-Shera' escarpment. The location of the structures on barren hilltops precludes their use as agricultural outbuildings and they seem overly substantial to be mere shelters for pastoralists. The absence of water in the immediate vicinity of three towers mitigates against any domestic function or association with water resources, and the aqueduct branches which run from springs on the escarpment to Humayma are not nearby. While tombs are often built on hilltops and near roads, it seems extremely unlikely that tombs would be so large or display such close architectural similarities, even if built in the same period. The most likely explanation for the location of the towers is that they were placed at points best suited for the observation of the surrounding landscape.

The striking similarities among the towers, along with the fact that large amounts of stone had to be brought to HWS B01 and B07 from a distance, suggest centralized organization and planning. It is difficult to believe that farmers, for example, would have had the time and resources or the inclination to go to such lengths. Of all the attested groups known from the region in antiquity, only cities and armies commonly had such resources and enforced such standardization. Since southern Jordan seems to have been remarkably undeveloped in antiquity and to have had numerous small villages rather than large cities, military construction seems more probable. But more cannot be said without precise dating of the structures.

The distribution of the towers as a group is revealing: HWS B01, B07 and A02 form a chain running east-west across the line of the ancient road just below the escarpment [Map 5]. Although HWS A11 is closely associated with the road and is located in a position capable of monitoring or preventing the ascent of the escarpment, the location of the other towers may indicate a broader intent. If the purpose of the towers was simply to monitor traffic on the *Via Nova Traiana*, there are other locations which would have been closer to the road. In addition, HWS B01 is extremely far to the west and virtually every portion of the road can be seen by the other towers. The redundancy of HWS B01 can most credibly be explained by a desire to provide visual coverage of the many deep wadis to the west of the *Via Nova Traiana*.

In this respect, the location of the small fort or caravanserai at Rujm al-Shugg (HWS B02) could be important. The abundant evidence from HWS B02 indicates occupation during the late-first and early-second centuries, a gap, and then reoccupation during the fourth and early-fifth centuries AD. As mentioned above, HWS B02 occupies the key position in this corner of the Hisma. Owing to the many deep and rocky wadis which form at the foot of the escarpment, all modern desert tracks in the area converge on the site and then branch out again in various directions across the landscape to the north. Although it is possible to traverse the landscape and in places even to ascend the escarpment on foot, heavy traffic and wheeled vehicles would have been forced to pass HWS B02 or make an arduous detour to the east, perhaps as far as Ras al-Naqb. Placing a tower at HWS B01 effectively prevented any person or group from avoiding HWS B02 unobserved by traveling in the wadis to the west, while the other towers kept watch over any circuitous route to the east.

Although little is known concerning the function of HWS B02, it does share some architectural similarities such as wall thickness and the presence of arch springers with the towers [Figures 10, 43]. It is an intriguing possibility that this imposing structure may have formed part of an observation or monitoring system in the region. Nevertheless, more evidence is necessary even to conclude that the towers were occupied at the same time as HWS B02.

### **Preliminary Conclusions**

Very few of the structures visited by the Humayma Watchtower Survey displayed evidence that they were, in fact, towers. Some structures were simply too large to be considered as towers in any meaningful sense. At some sites, the lack of sufficient rubble or other evidence for a second storey prevented the identification of small structures as towers on architectural grounds. At others, local topography seemed to preclude any of the usual functions ascribed to towers, such as observation posts, garrison outposts, houses, agricultural outbuildings, or checkpoints. It is unclear, then, on what basis the term "tower" was ascribed to these structures by previous visitors. Many of the sites documented by the survey were small rural structures which could have served any number of functions. This is especially true of sites which exist along the *Via Nova Traiana* in the northern Hisma. A site along a major road would have been a desirable location for many types of structures, including tombs and farms, and mere association with the road need not imply a strictly military function. Greater terminological precision could have been exercised when recording sites during previous surveys, the results of

which have been used frequently to support competing theories concerning the nature of the Roman frontier (Chapter Two).

The survey also highlighted the difficulty in relocating many small sites which were recorded in the past. Vague descriptions and often inaccurate map references made relocation extremely difficult and added to the confusion surrounding the form and function of specific towers. Hopefully, the introduction of inexpensive and easily accessible GPS units has eliminated this problem.

Another part of the difficulty with studying towers lies in the fact that previous investigations were preoccupied with issues which limited their ability to identify towers in the region accurately. Roman military scholars posited the existence of towers near al-Humayma because of the presence of a Roman military fort at the site. For example, it appears that HWS B12 (Humayma A127) was identified as a tower solely on this basis. At the same time, an emphasis on larger military structures made the recording of towers a secondary concern. In fact, although there are several towers in the survey zone, there do not appear to be any Roman military towers within five kilometres of the fort at al-Humayma.

Likewise, the preoccupation of some scholars with the ancient and modern highways forced them to look in specific areas while ignoring the landscape at large. In this respect also, towers have usually been an afterthought of projects concerned with larger structures or with broader themes. It is particularly remarkable that three of the five possible towers located by the Humayma Watchtower Survey were previously unrecorded, despite the fact that they could be easily seen from the ground in relative proximity to the road. One clear conclusion of the Humayma Watchtower Survey is the

need for an intensive and systematic survey of the region as a whole to record the numerous small rural sites and sherd scatters which dot the terrain and to interpret them in terms of the landscape at large. This need is particularly acute given the large number of sites in the survey zone which have been destroyed or damaged during the last twenty or thirty years and the number of sites in the area which are currently endangered.

The presence of an organized and planned system of towers along the al-Shera' escarpment is now demonstrable. However, difficulty in ascertaining the date of the structures precludes the formation of firm conclusions concerning their function. In order to obtain further evidence, probes were excavated at the Jebel al-Qanah tower (HWS A02), Rujm Helwa (HWS B03), and at Humayma Area A127 (HWS B12). The results of the excavations are presented in Chapter Five and are interpreted in light of the survey and previous interpretations of towers on the Roman frontier in the Conclusion.

## Chapter Five: Excavation

### Introduction

Three sites were chosen for excavation on the basis of the Humayma Watchtower Survey (Chapter Four). The primary objective was to articulate the architectural form of these structures, which, as at most of the survey sites, was obscured by rubble and wind-blown sand. An additional objective was to obtain a stratified ceramic sample from each site in order to provide firm chronological conclusions about their occupation history and to assess the accuracy of the surface collections made during the survey.

Site **HWS B12** (Humayma, Area A127) had been previously reported as a Late Roman military watchtower. The author cleaned and recorded the structure in 1998, and a small probe begun at that time was completed in 2000.<sup>1</sup> Site **HWS B03** (Rujm Helwa) was selected as a result of the survey, in great part because of its previous identification as a probable watchtower and its location at the point where the *Via Nova Traiana* crosses the Wadi al-Baydah ca. 6.0km to the north of al-Humayma. Site **HWS A02** (Jebel Qanah Tower) was selected for closer examination

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<sup>1</sup> This report supercedes the preliminary publication of work conducted in 1998 (Oleson, et al. 1999: 427-30).

because it appeared to be the best preserved, and least disturbed, of the structures identified by the survey as a probable system of towers along the al-Shera' escarpment. The results of excavations at these three structures are presented below.<sup>2</sup>

### **Site HWS B12: al-Humayma, Area A127**

During the 1998 season of the al-Humayma Excavation Project the author conducted wall definition work and a small sounding at **HWS B12** (Humayma, Area A127). The probe was completed in 2000. Originally thought to be a Roman watchtower contemporary with the fort, excavation revealed that the visible remains are composed primarily of a Byzantine-Umayyad complex, possibly a farmhouse or other domestic structure. Further work will be necessary to define the entire structure completely, to date the foundations of the proposed architectural phases, and to investigate several wall lines visible outside the structure, particularly to the west.

Structure HWS B12 is situated on the northern end of a low, windswept rise ca. 970m above sea level, to the east of the Abbasid *qasr* and ca. 1500m south-east of the Roman fort, both of which lie on the opposite bank of the Wadi Qalka. The hill is approximately 20m higher than the surrounding landscape and provides clear views of Ras al-Naqb and the al-Shera' escarpment to the north and the Quweira/Wadi Ramm region to the south, as well as a clear vista over the entire site of al-Humayma.

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<sup>2</sup> For the relevant bibliography and a more detailed description of these sites before excavation, see Chapter Four and Appendix One.

A scattering of flint cobbles gives the hill a distinctive dark colour not seen in other parts of the site.<sup>3</sup>

Before definition work, B12 appeared to be a large walled enclosure roughly 16.0 x 12.0m with a large courtyard and at least two interior rooms. While wall lines were clearly visible in several areas, particularly in the north-east corner, the structure was not significantly preserved above topsoil at any point. Tumble was heaviest along the north and east sides of the structure, where the hill is steepest. Only one clearly defined feature was visible, a circular installation ca. 2.10m in diameter, located along the western edge of the structure (Feature 05). Judging by the soil heaps around it and by the four courses of stones visible on the interior face, it appeared that this feature had suffered intense robbing in recent times.

Beginning ca. 5.0m to the south of the structure there are at least five, and possibly as many as seven, stone rings ranging from 1.5 to 3.0m in diameter. As they appeared to be modern Bedouin burials, they were not investigated in detail, but two pecked Arabic inscriptions were noted and interpreted as tombstones. All of these burials appear to have suffered robbing.

Definition and excavation were conducted from June 28 to July 30, 1998 by the author and Mr. Mohammed Salamin, Representative of the Department of Antiquities of Jordan, under the Direction of Dr. John Oleson. Mr. Sean Fraser drew the plan of the structure. Work was conducted at the site to test the hypothesis that HWS B12 was a Roman watchtower associated with the fort. The goals were to

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<sup>3</sup> The 1:50:000 Geological Map of the Area (*Al-Quweira*, 3049.I) shows the hill as an isolated outcropping of the Umm-Rijam Chert-Limestone Formation. For a concise discussion of the geological formation, see Rabba (1991).

define and record the limits of the structure, and to conduct a test sounding to obtain stratified ceramic material.

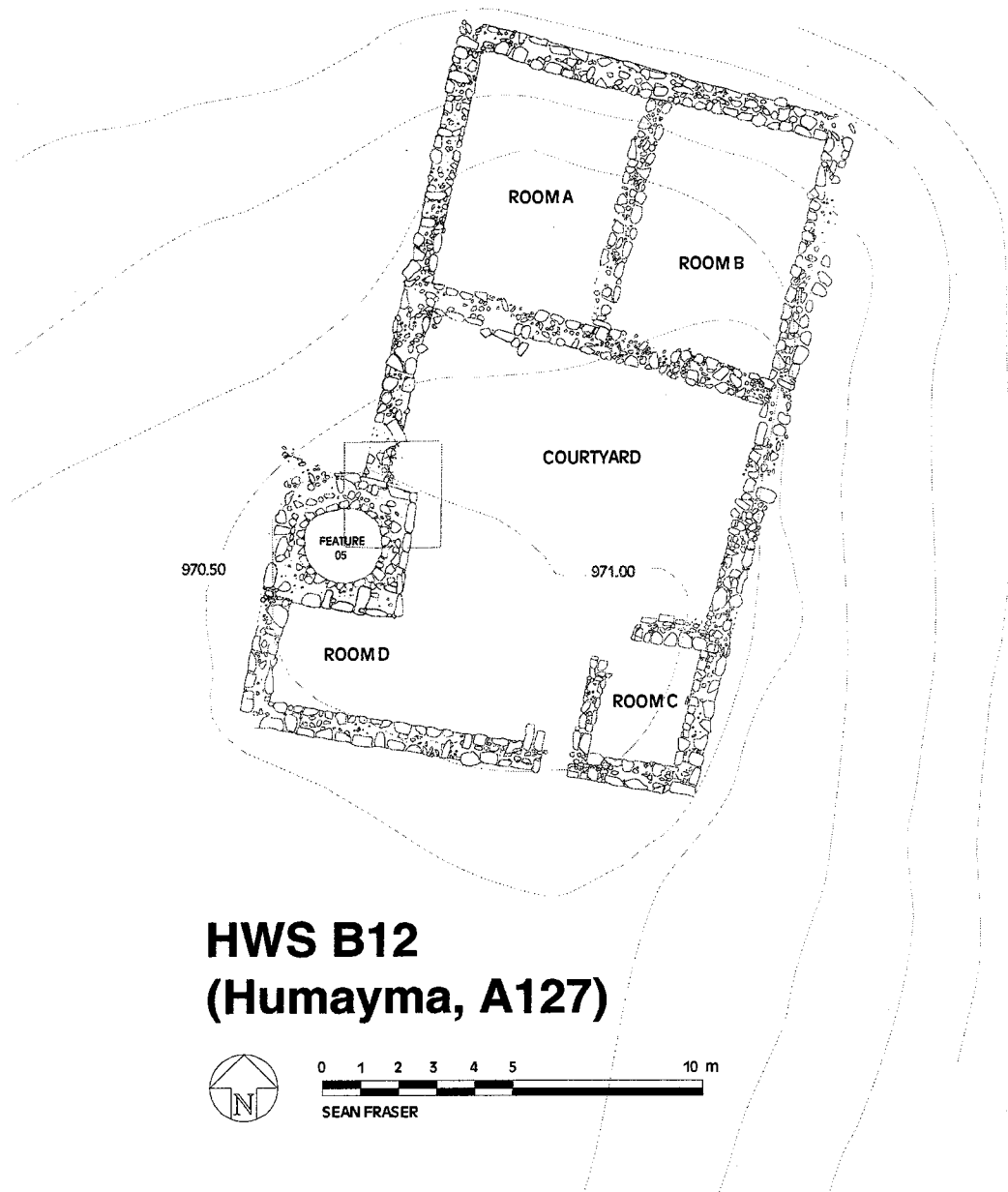
To facilitate excavation, a North-South running grid of 6.0 x 6.0m squares was established over the hilltop. A site datum (A127: 971.587m ASL) was situated on the highest preserved architectural element in B12, one of the stones along the internal face of Feature 05 (see below). Owing to the large number of previous visitors to the site and the sherding that they conducted, few surface sherds were visible, and it was not deemed advantageous to conduct a systematic surface collection.

#### *Wall Definition*

Wall cleaning was conducted by brushing or trowelling and, occasionally, by removing topsoil to articulate the features in greater detail. No work was conducted below topsoil, except in Probe 01 (below). Sherds found during the cleaning process were kept and labelled with their provenience (ex. Locus 00, around Wall 06) in the hope that there might be some noticeable patterns in chronology or wares.

All of the walls in B12 were ca. 0.72m wide [Figure 19]. Several walls included dressed Nabataean limestone blocks and three pieces of yellow marl from the Nabataean aqueduct were found in the rubble around the northern walls of the structure. Wall 01 is the southern exterior wall of the structure. It runs east from the south-west corner for 12.22m, where it forms a bonded corner with Wall 03, which runs north from the south-east corner of the structure. 3.40 m from the eastern end of Wall 01 is a doorway ca. 0.90m wide, which appears to be the main entrance to the

structure. Like the other exterior walls of B12, Wall 01 is constructed of flint-cobbles packed in mud-mortar and faced on both sides with reused stones.



**Figure 19: Plan of Humayma Area A127 (HWS B12). Produced by Sean Fraser for the Humayma Excavation Project and used with permission of J. P. Oleson.**

Wall 03a runs north from the south-east corner for 11.45m where it bonds with Wall 07, which heads west, and is abutted by Wall 3b, which continues north for 6.45m to the north-eastern corner of the structure; Wall 03 is very poorly preserved along its northern 5.0-6.0m. Wall 03a is abutted by Wall 09, which runs west, 3.98m from its southern end.

At its northern end Wall 03b bonds with Wall 04, an East-West wall which represents the exterior of the structure on the north. Running west for 10.56m, it is abutted 4.65m from its eastern end by Wall 08, an interior wall which runs south to abut Wall 07. Wall 04, while clear in its lines, has collapsed badly, with the northern face generally preserved one course lower than the other walls. The lower height of the wall is consistent with the large amount of tumble outside the northern limit of the structure, where the wall must have fallen.

Wall 04 bonds with Wall 06b in the north-west corner of the structure. Wall 06b runs south for 7.12m to abut Wall 06a. Wall 06a bonds with the western end of Wall 07 and continues south towards Feature 05. Hypothetically, the wall should meet Feature 05 ca. 2.25m east of the latter's badly damaged western face, although the last 1.56m of the wall could not be defined by surface inspection.

Feature 05 is a square structure (ca. 3.70 x 3.70m) framing a circular-walled internal opening ca. 2.10m in diameter. The square exterior wall appears to be built entirely of ashlar blocks of a distinctive red sandstone (0.65 x 0.22 x 0.20m). Between

the circular wall and the outer wall is a cobble and mud-mortar packing.



**Figure 20: HWS B12. Interior of Feature 05 before excavation. Photo by J. P. Oleson.**

Occasionally, headers enter the fill between the walls from the exterior to provide stability and support. The inner face is constructed of roughly hewn stones in courses ca. 0.30-0.40 m thick alternating with levelling courses of flat stones ca. 0.10m thick [Figure 20]. While the interior, circular wall is less carefully constructed than the exterior, the small cobbles and chinking stones are better suited to the construction of a tight curve than the ashlar on the exterior. The minimum distance between inner face and outer face is ca. 0.75m at the the centre of each side, but increases towards the corners. The construction materials and method of assembly differentiate this feature from all other architecture in B12, as does its orientation, which is noticeably different from that of the rest of the structure.

Wall 02 extends south from a presumed abutment with the western face of Feature 05. After 3.65m, Wall 02 bonds with Wall 01 to form the south-west corner of the structure. The area bounded by Wall 01 to the south, Wall 02 to the west and Feature 05 to the north has been defined as Room D, despite the fact that no eastern delineation was discovered.

Wall 07 is an East-West running interior cross wall which separates the courtyard from the rooms to the north. It runs 10.56m from Wall 06a to Wall 03a. A poorly defined section of wall, ca. 1.85m from Wall 06a, could be a doorway ca. 0.90m wide, which would have provided access from north to south.

4.95 m from the East face of Wall 06, Wall 07 is abutted by Wall 08, which continues north 6.30 m to its abutment with Wall 04. The area to the north of Wall 07 and west of Wall 08 has been defined as Room A (internal dimensions: ca. 4.95 x 6.45m), while the area north of Wall 07 and east of Wall 08 has been defined as Room B (internal dimensions: ca. 4.22 x 6.30m). At the extreme southern end of Wall 08 is a doorway ca. 0.75 m wide which provides access from Room A to Room B.

Wall 09 and Wall 10 are ill-defined features in the south-east corner of the structure which appear to form a room (Room C, internal dimensions: ca. 2.98 x 3.25m) just to the east of the main entrance. Due to their poor state of preservation, it can only be said that Wall 09 appears to bond with Wall 03a.

Most of the pottery recovered during wall definition work dates to the sixth- and seventh-centuries AD, but some first- or second-century AD sherds were strewn across the site and late African Red Slip (ARS) fragments were recovered in the vicinity of Feature 05.

*Probe 01* [Figure 21]

Probe 01 (2.5 x 2.5m) was located to reveal the north-west quadrant of Feature 05 and a portion of the courtyard outside it as well as to elucidate the relationship between Wall 06 and Feature 05 [Figure 19]. Work inside Feature 05 began with a small surface collection, locus [00], which provided one piece of ARS and a number of sixth-century storage wares. Removal of the topsoil, a sandy locus [01] with granular inclusions and many pebbles and cobbles provided similar dating. Bone was not kept from locus [01] as modern garbage was clearly visible around the site.

Locus [02] was a reddish-brown, loose sandy soil with pebble and cobble inclusions. Differing from [01] only in its consistency, [02] may equal [01]. Late ARS and sixth century AD sherds were recovered. Considerably more plaster/mortar and bone were found as well as several pieces of modern garbage including a spent shotgun casing, a lid from a can, and the possible remains of a cigarette lighter.

Locus [03], below, was of the same consistency as [01] and [02] but contained very large quantities of human and animal bone as well as glass, plaster, and some sixth-century AD pottery. An interesting find was a large (0.20 x 0.10 x 0.10m) piece of wood, tentatively identified as Palm wood. Locus [04] was a dark brown loam with some pebbles and occasional red clay and white chalk inclusions. Sixth and seventh century AD pottery bagged from this locus was an obvious contamination from Locus [03]—this stratum contained no finds.

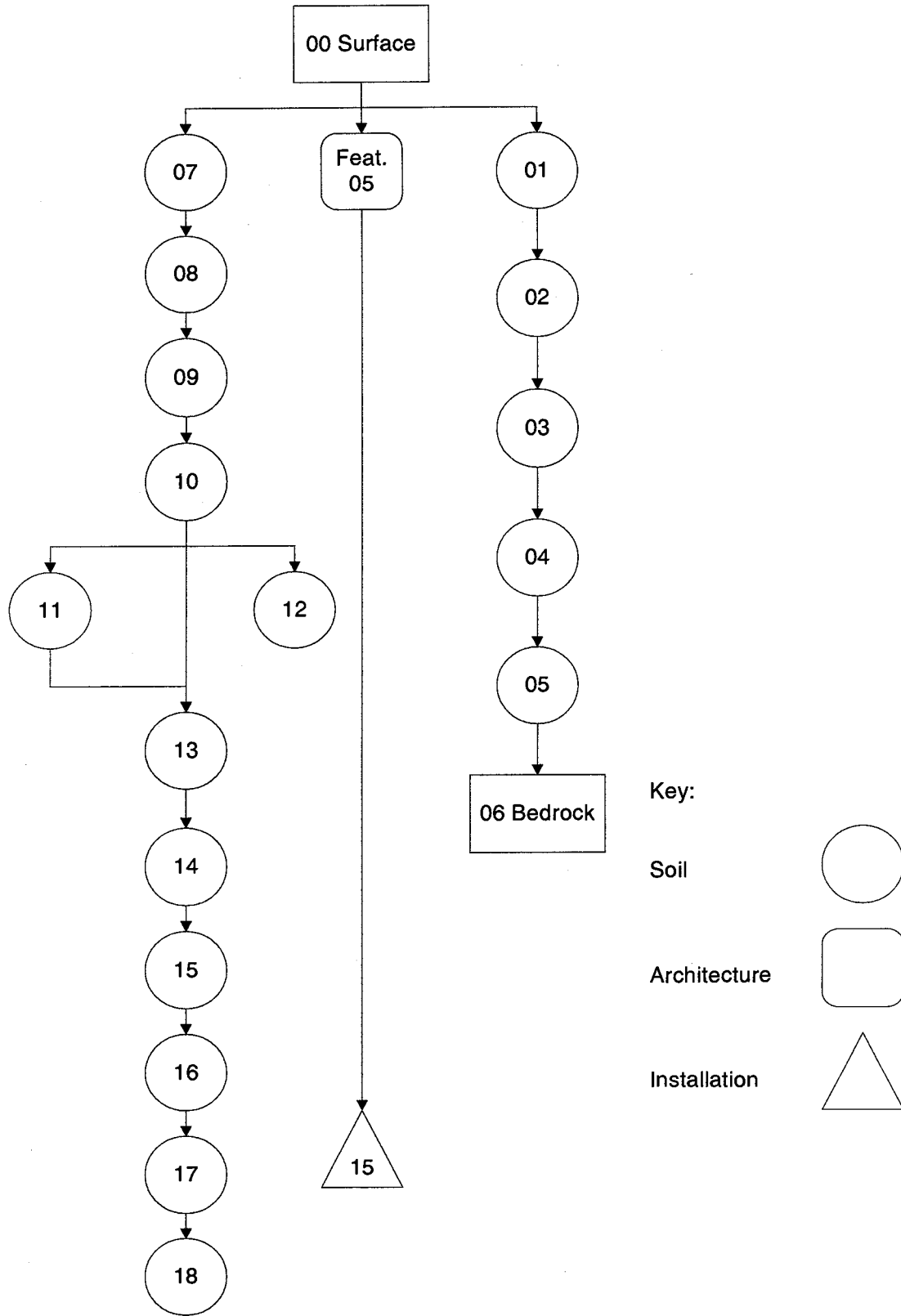
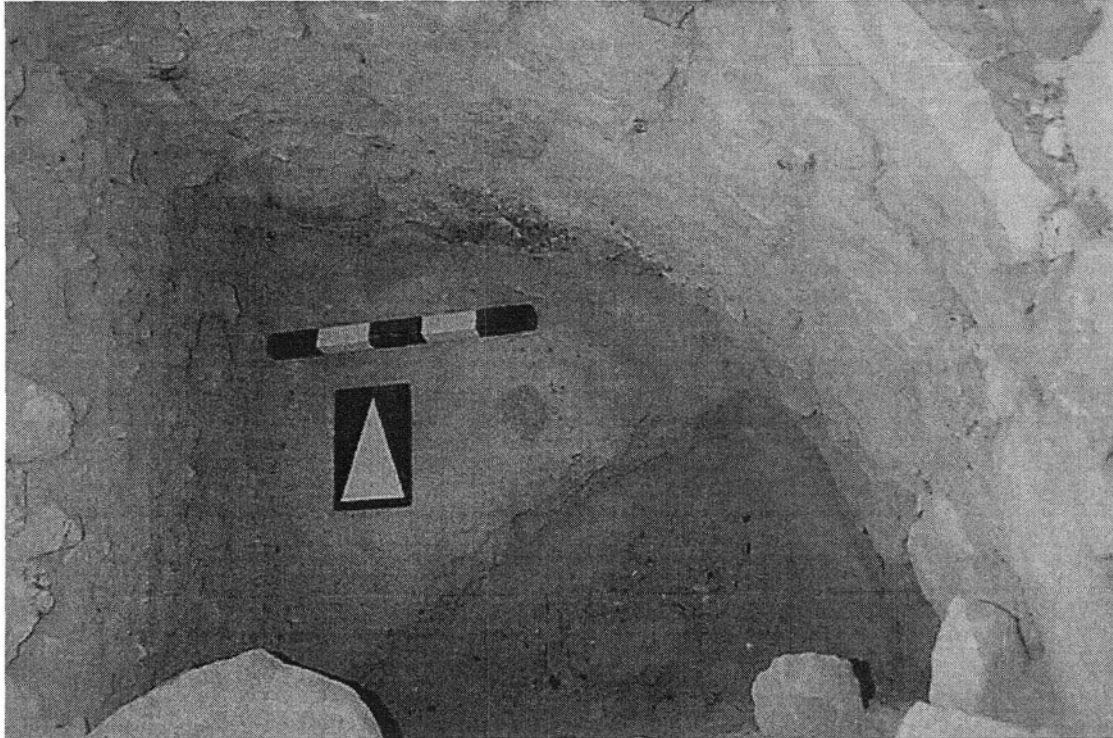


Figure 21: HWS B12 (Humayma, Area A127). Modified Harris Matrix.

Locus [05] was a sterile layer of hard-packed red clay with numerous white inclusions. The abundant chalky white inclusions found here may represent small amounts of locus [06] churned up during the digging of the foundation for Feature 05.

Locus [06] was a soft, white, powdery material with numerous inclusions of flint cobbles (average top elevation: 969.97m ASL). Analysis revealed that this was a layer of badly decomposed limestone rich in calcium carbonate, undoubtedly the top of the Umm Rijam Chert-Limestone Formation indicated on geological maps of the area. Locus [06] was, therefore, the bedrock in Probe [01]. Partial removal of [06] revealed the final course of the circular wall. There were 11 preserved courses in total, alternating between courses of blocks and courses of flat levelling stones. In profile the wall could be seen resting on a sterile layer of yellow clay [15], on top of the bedrock. Therefore, Feature 05 was founded on a levelling course of hard yellow clay in a trench cut into the bedrock. The wall was preserved to a total height of ca. 1.62m above bedrock [Figure 22]. Any earlier cultural material inside the circular feature would have been removed or disturbed by this process.

Excavation of the probe continued outside of Feature 05. During the removal of topsoil [07] in the region north and east of Feature 05, it became obvious that much of the topsoil was composed of material thrown out of the circular feature by robbers. The initial clue was the presence of very large amounts of mortar not found at a greater distance from the circular feature. Ceramics from the locus date to the sixth and seventh centuries AD.



**Figure 22: HWS B12. Interior of feature 05 after excavation of Probe 01. Photo by J. P. Oleson.**

Locus [08] was a slightly harder layer of sand than [07]. Composed entirely of sand and a few pebbles with no ceramics, it appeared to be wind-blown deposition left during a very long period of abandonment. Presumably it constituted the topsoil before the robbing of Feature 05.

Locus [09] was another layer of wind-blown red sand. It contained only a miniscule amount of sixth- and seventh-century AD pottery. Locus [10] was below [09] throughout the probe but was removed only in the area north of Feature 05 due to space limitations. Composed of a granular reddish-brown soil, it contained numerous sandstone blocks, which had fallen from Feature 05, cobbles, pebbles and a very large quantity of rodent bone. No ceramics were recovered.

Below locus [10] in the north were three loci: [13], in the east, [11] along the presumed line of Wall 06a, and [12] west of [11]. Locus [11] turned out to be a spill

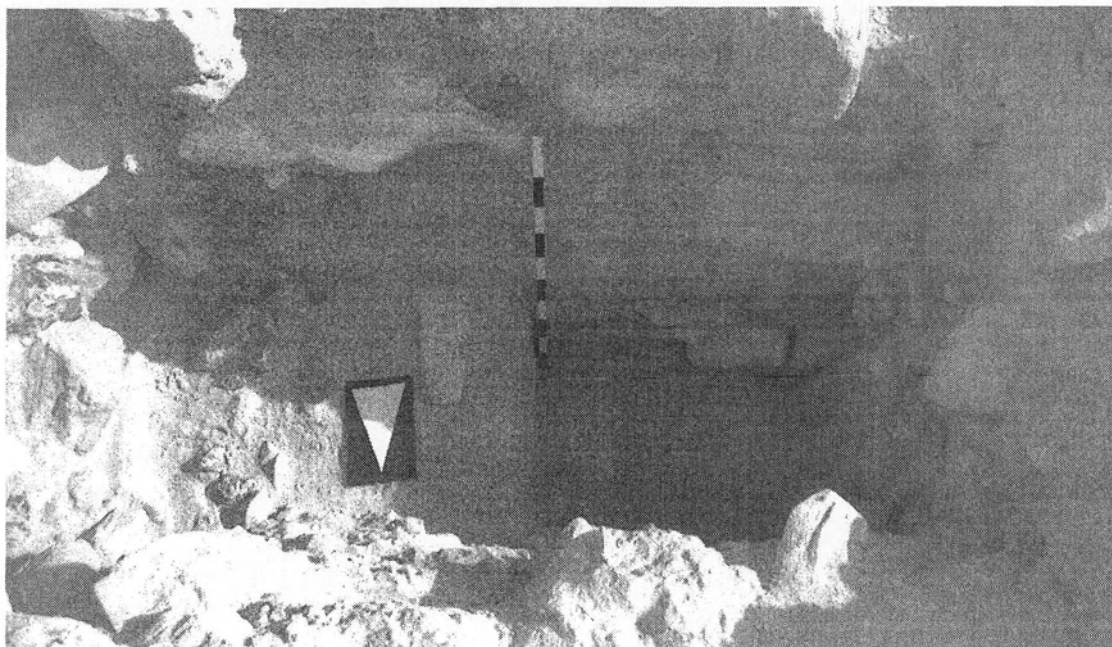
of mortar and packing from Feature 05 which had collapsed into locus [10]. It contained no finds and was removed to expose more of locus [13]. Locus [12], which appeared to be more wind-blown deposition, but beyond the hypothetical line of Wall 06 and therefore outside the structure to the west, was not excavated.

Locus [13] was a hard clay material with sand and pebble inclusions. The many mortar fragments indicated that this locus was the detritus from an early collapse of Feature 05. One undatable sherd was found. Removal of this locus revealed two stones on line with Wall 06a, which may have represented its eastern face. Even if this interpretation is correct, the wall is too badly damaged at this point to draw final conclusions about its relationship with Feature 05. It may be pointed out, however, that concrete was visible on the face of the feature only where Wall 06a is presumed to have met it.

Below Locus [13], east of the presumed line of Wall 06a, was a sandy locus [14] which was partially excavated. It contained only one late sixth-century sherd but large amounts of the same concrete found on the face of Feature 05 at its hypothetical intersection with Wall 06a. Due to time restrictions, excavation was halted at Locus [14] in 1998.

Excavation continued at HWS B12 in 2000. Removal of locus [15] (a continuation of locus [14]) produced one rim sherd of unpainted Nabataean fineware and two body sherds of probable late-sixth-century AD date. Locus [16] contained one rim sherd of unpainted Nabataean fineware of the late-first- or early-second-century AD and eight body sherds of a pithos known to date to the fourth to sixth

centuries AD at Petra, but which may have earlier parallels at 'Aqaba.<sup>4</sup> Locus [17] did not produce any artifacts but revealed the external foundation course of the structure [Figure 23].



**Figure 23: HWS B12, Probe 01. Removal of locus [17], left, has exposed locus [18] and revealed the foundation course, visible at right. Photo by author.**

Locus [18] contained ten small body sherds, which could only be dated broadly to the second to sixth centuries AD. After additional excavation in 2000, it seems clear that Wall 06 did not bond with Feature 05. This fact suggests that Feature 05 is a later addition to the site, which cut the line of the earlier wall.

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<sup>4</sup> B. Dolinka and Y. Gerber (pers. comm.).

*Analysis of Probe 01*

The largest problem in interpreting Probe 01 stems from the small number of sherds in many loci and the obvious contamination of others. In fact, the excavators were able to identify fragments from the same vessels in Loci [01], [02], [03], [04], and [07], clearly illustrating that the interior of Feature 05 had been robbed and the spoil from that disturbance strewn over the surrounding areas. It seems probable that Bedouin accustomed to locating burials within a circular rings of stones (as visible just south of B12) noticed the circular feature and interred a body within it. Later, robbers, also working on the assumption that all of the rings represented burials, disturbed the grave.

The pottery from Probe 01 is interesting, however, as only fifth- through seventh-century sherds were found inside Feature 05, while first- or second-century AD and fifth- to seventh-century sherds were recovered outside. The fifth-century sherds inside Feature 05 were entirely late ARS, and possibly all from the same vessel, making their presence less significant than might be thought at first sight. The available evidence suggests that Feature 05 was a late addition to the structure.

*Phasing of HWS B12*

As only one probe was excavated and little pottery was recovered from it, phasing for the B12 structure is difficult and tentative. Based on the architecture and ceramics, however, a few preliminary conclusions are possible.

**Phase 1:** Walls 01, 02, 03a, 06a and 07 (all 0.72 m wide) appear to bond with each other and thus to have been constructed in a single phase. It seems probable that

initially the structure was composed solely of the courtyard and Room D. Walls 09 and 10, which enclose Room C, may also date to this phase, but they were too poorly articulated to establish their relationship with the exterior walls. Surface ceramics indicate a foundation date no later than the second century AD and additional occupation in the fifth through seventh centuries AD. It is also possible, however, that the early sherds represent evidence for an original structure destroyed by the construction of B12 in the Byzantine period. Only continued excavation could clarify the precise foundation date of the structure as a whole.

**Phase 2:** Walls 06b and 03b, North of 07, and Walls 04 and 08 appear to be of a later phase, which extended the structure to the North by creating Rooms A and B. The presence of reused marl blocks from the Nabataean aqueduct may suggest that this occurred quite late in the occupation of al-Humayma, after the aqueduct had fallen into disrepair; presumably this could not have occurred before the Byzantine or early-Islamic period.

**Phase 3:** Possible abandonment of B12 (see below).

**Phase 4:** The skewed orientation of Feature 05 to the rest of the structure, its unique construction materials, and the presence of concrete on its face (not otherwise found in B12), suggest that it was constructed in a different phase than the rest of the structure. The fact that no bond or abutment could be established between Feature 05 and Wall 06 in the probe, suggests that it was a later structure which cut the wall line when it was erected. It appears that no attempt was made to rebuild the wall to meet Feature 05 after the wall was cut, so a gap would have remained in the courtyard wall. This may suggest that Feature 05 was not erected until after the rest of B12 had gone

out of use. As the feature was founded on bedrock and ceramics of only the fifth to seventh centuries AD were recovered from the interior, it is possible to establish a *terminus post quem* of the fifth century (the sixth century, if the Roman ARS sherds, which are all from the same vessel, came from an intrusive source).

**Phase 5:** Abandonment of the site indicated by windblown deposition, locus [13], outside of Feature 05.

**Phase 6:** A partial collapse of the exterior of Feature 05 is indicated by the mortar in locus [11] and by the numerous red sandstone blocks in locus [10].

**Phase 7:** Abandonment of the site as displayed by the windblown deposition of loci [08] and [09].

**Phase 8:** Reuse of Feature 05 as a burial, followed by robbing of the feature. The removal of material from the interior of Feature 05 created the spoil layer [07] outside of the feature.

**Phase 9:** Abandonment of the site.

#### *Interpretation of HWS B12*

There is no evidence to suggest that HWS B12, or any part of it, was ever a military tower. The architectural form of B12 indicates that it was probably a domestic structure which enjoyed a long period of occupation. Small houses with rooms ranged around a walled courtyard are well known in the Near East. On the basis of his extensive survey of domestic architecture in the Nabataean kingdom, Kolb (2000) sees this type of plan as a generic Nabataean house plan which appears throughout the region from the first to fifth centuries AD. One such structure (Humayma, Area

E122) has been completely excavated at the main site of al-Humayma [Figure 24].

There also, a doorway provided access to a small courtyard, which was probably open

to the sky, and small rooms

were located on the east and

north sides. The overall

dimensions of the structure at

E122 are ca. 16.0 x 12.5m,

almost exactly the same as the

dimensions of HWS B12 (ca.

16.0 x 12.0m). There are other

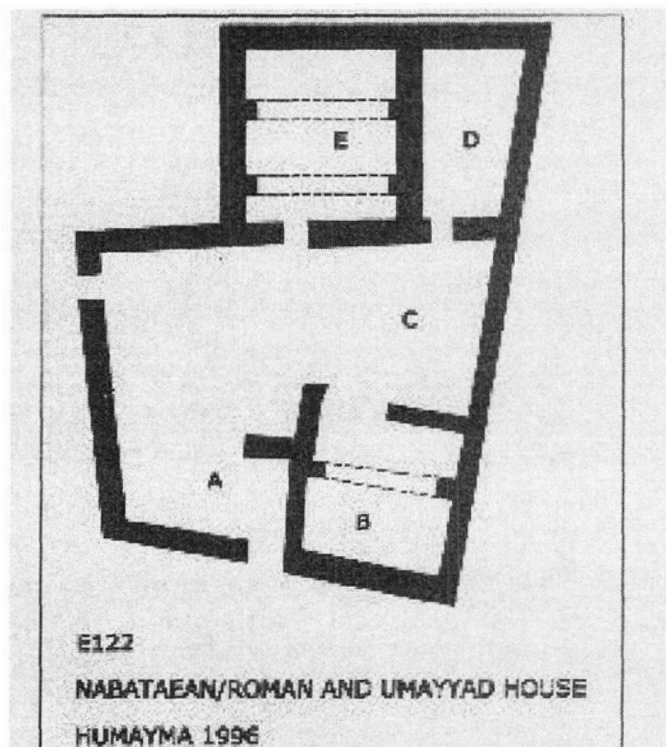
obvious similarities, including

the placement of rooms along

the eastern and northern sides,

and the presence of a room

immediately east of the entrance



**Figure 24: Humayma, Area E122 (Oleson, et al. 1999: 426-7, fig. 11). Prepared by Sean Fraser for the Humayma Excavation Project and used with permission of J. P. Oleson.**

along the southern wall. The cursory examination of HWS B12 did not locate any evidence for arches in the individual rooms, but they are a common architectural feature at Humayma and may be present in some or all of the rooms.

While the overall dimensions and layouts of the structures are similar, the occupation history of these two structures may be somewhat different. The house at al-Humayma was likely founded during the late-second-century AD and occupied continuously until the mid-third-century AD. Following a period of abandonment, it was reoccupied in the late-seventh-century AD (Oleson, et al. 1999: 426-7). Based

solely on the presence of surface ceramics, B12 may also have been constructed as early as the first- or second-century AD. There was certainly some activity at the site during the sixth- and seventh-centuries AD, but this may be associated solely with the construction of Feature 05. There are a few reported sherds of the intervening periods at B12, but further excavation would be required to prove a period of abandonment. The early date of E122 may support the conclusion that B12 was also an early foundation, but it is also clear that courtyard houses enjoyed a long history in southern Jordan and only broad dating may be determined on the basis of architectural form.

The function of Feature 05 is not clear. It is obvious that it was designed to be quite substantial and, perhaps, to support a great amount of weight. The volume of tumble around the feature suggests that it was of considerable height: at least 10-12 courses (ca. 2.0-2.4m) above the bedrock. The circular plan of the interior is reminiscent of a cistern, but no hydraulic mortar was found on its face or in the fill, and the rough interior coursing would have made it difficult to seal. In addition, given the miniscule catchment area available in the immediate vicinity, it could only have been filled with water carried to the site by hand or by a collection system attached to the roof.

Feature 05 would have had more utility as a granary or silo, and the large number of storage sherds found in and around it may support this conclusion. It is interesting to note that the land south-west of the hill is the best agricultural land visible in the area today because of the natural water catchment capabilities of the slope. It is not clear, however, why someone would damage, and not repair, the

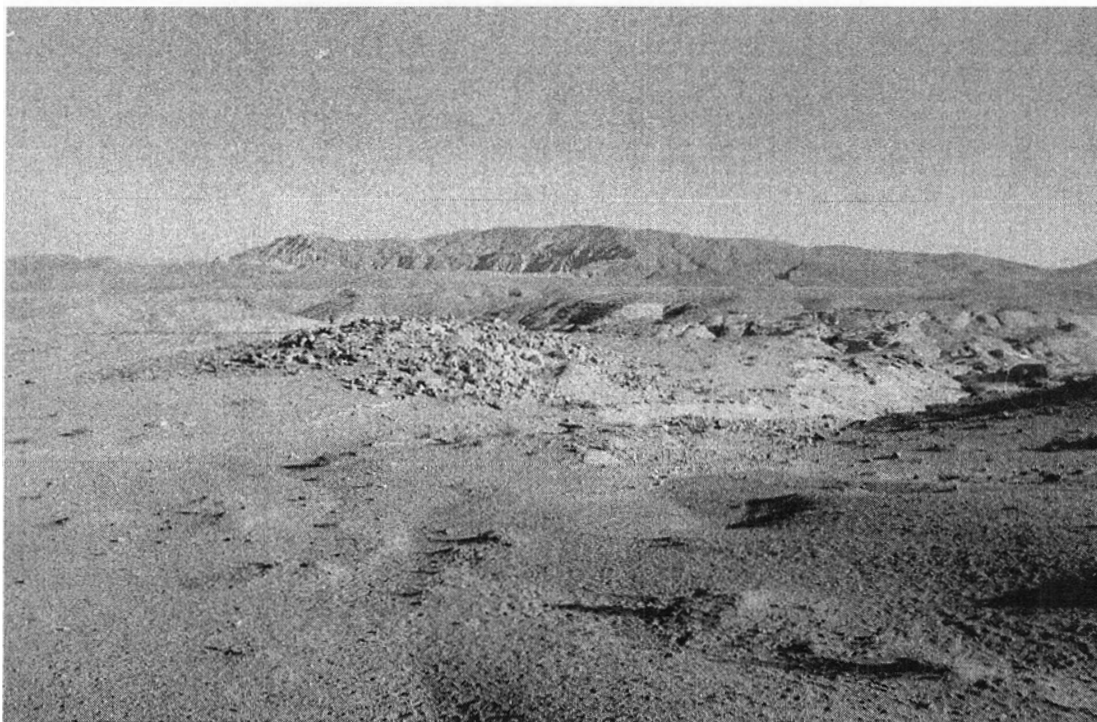
exterior wall of the structure in order to erect a storage installation. The relative care with which the exterior of the feature was constructed using only new ashlar blocks (unlike the rest of B12) is also not indicative of a utilitarian function.

Another possibility is that Feature 05 served as a tomb. There are no obvious parallels for such a structure in southern Jordan before the early-Islamic period. Some small Islamic tombs, known as *qubbas*, have a square ground plan with a central dome, but are generally later in date than the early-Islamic period (Diez 1986; Milwright, *pers. comm.*). They also appear to be used for the inhumation of distinguished or holy individuals. It is interesting to note that these structures are traditionally plastered on the exterior, as was Feature 05. If Feature 05 were an Islamic tomb, then the internal circular wall would have enclosed the burial chamber and provided a transitional foundation wall for the dome. The location of Feature 05, on a hilltop in a location visible from the *qasr* of the Abbasid family, may support this conclusion. It is also common for *qubbas* to be surrounded by later inhumations, presumably in an attempt to link the deceased with the tomb of a distinguished personage; it is noteworthy that there are several burials just to the south of the feature. Without further evidence, the most likely conclusion is that Feature 05 served as a tomb.

### **Site HWS B03: Rujm Helwa**

Site B03 is a purported watch-post located atop a small rise on the southern bank of the Wadi Baydah, ca. 6.0km to the north of al-Humayma. The *Via Nova Traiana* is

visible as it descends into the wadi only a few metres to the east of the structure. An initial examination of the site suggested that it had been a substantial structure and that considerable architectural remains were preserved below the surface. A number of large (ca. 0.51 x 0.47 x 0.11m) white sandstone blocks were strewn across the site, particularly on the northern side of the hill, but had deteriorated considerably due to weathering [Figure 25]. Ceramics included painted and unpainted Nabataean finewares and coarsewares of the late-first and early-second centuries AD, three rim sherds of the fourth- or early-fifth-century AD, and an amphora fragment of the second- to mid-fourth-century AD.



**Figure 25: Site HWS B03 before excavation, facing northwest. Photo by author.**

*Excavation of B03 [Figure 26]*

The author and a team of local workmen excavated the square between June 26 and June 30, 2000. Mr. Sean Fraser produced the plan of the preserved architectural remains. The excavators laid out a square (4.0 x 3.0m) across the highest portion of site B03, where a faint wall line could be discerned. Topsoil [01] removed throughout the square yielded ceramics of exclusively late-first- or early-second-century date. Locus [02] was a layer of mixed sand and rubble which extended throughout the square, except in the northwest corner, where a possible robber pit [08] was filled with windblown sand. Locus [10], beneath locus [08], was composed of only more windblown sand, and excavation was halted in that area. Locus [02] contained ceramics of the late-first- or early-second-century AD.

The removal of locus [02] confirmed the presence of a northwest to southeast running wall [04]. The wall (ca. 0.70m wide) was composed of two faces of roughly cut sandstone and limestone blocks with a cobble and mud fill between the crude faces. The wall could only be traced for ca. 3.30m as it has been cut by a robber pit [08] at its northern end and faded away to the south. Below locus [02] to the east of the wall [04] was an extremely hard, brown clay-like material with many pebble and plaster inclusions [05]. It appeared to be decomposed mudbrick and was not excavated.

To the west of the wall [04] and south of the robber pit [08] was a layer of firmly packed sand [03] which did not contain any artifacts. The removal of [03] revealed a coarse white mortar [06] on the face of the wall [04]. From the wall, the mortar curved outwards to form a horizontal surface which was interpreted as a floor

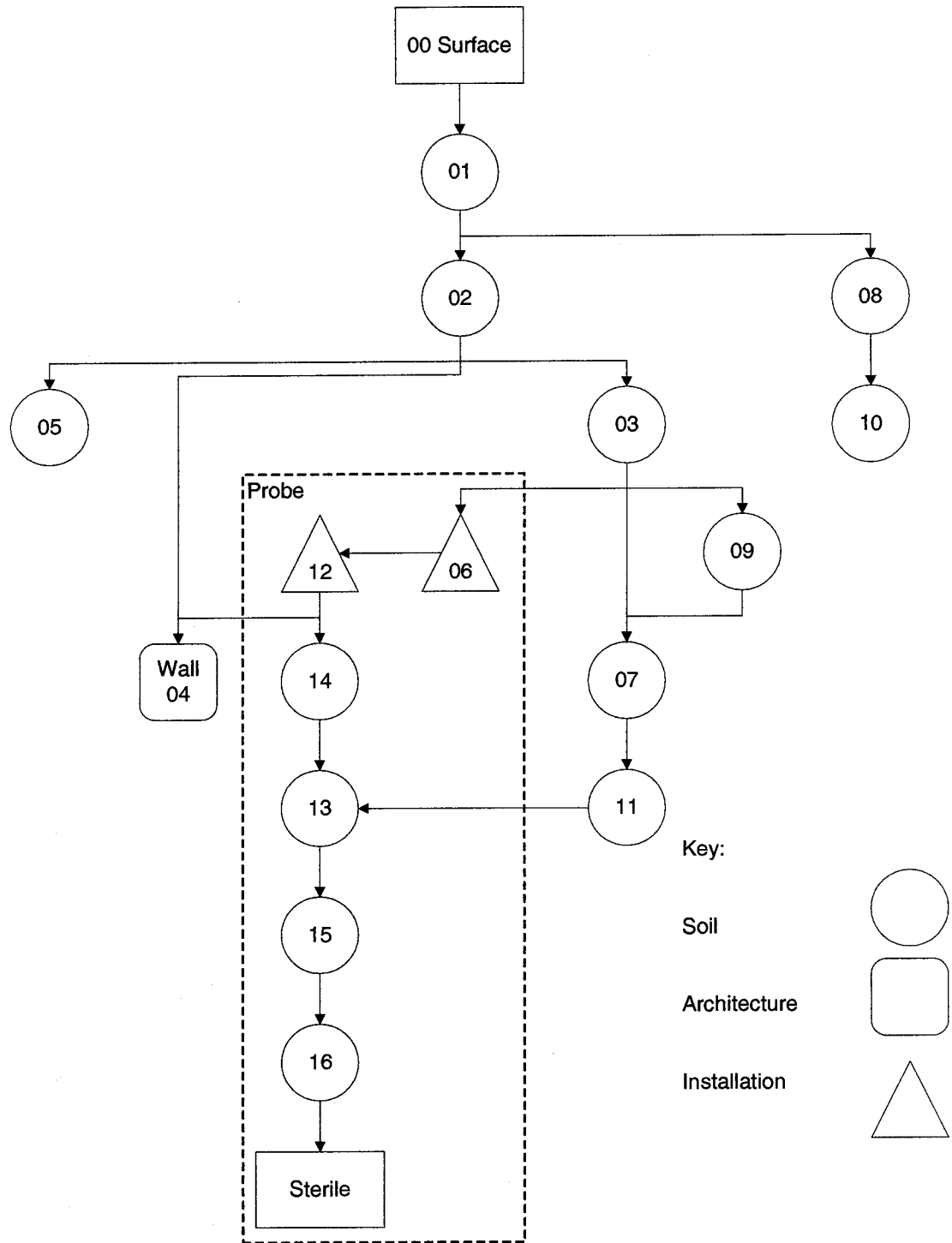


Figure 26: HWS B03. Modified Harris Matrix.

[Figure 27]. Little of the mortar remained and it was preserved only ca. 0.20m outwards from the wall at its greatest extent.



**Figure 27: HWS B03. Wall 04 and mortar floor [06]. Photo by J. P. Oleson.**

Despite the fact that no discernable change could be seen in locus [03] below the mortar, an arbitrary new locus [07] was declared at the level of the floor in the northern area west of the wall [04]. The partial removal of locus [07] resulted in the collection of seven body sherds of the late-first or early-second century AD and revealed a hard-packed clay [11] which extended under the mortar [06] and may have formed a levelling course for the mortar floor. In the southern area west of the wall a mixture of rubble and windblown sand [09] was removed yielding two body sherds of the late-first or early-second century AD. Locus [07] appeared to extend under locus [09].



**Figure 28: HWS B03. Showing Wall 04, mortar floor [04] and Probe. Photo by J. P. Oleson.**

Although it was clear that that the structure had been badly robbed and that there were considerably fewer architectural remains preserved at B03 than had been hoped, an attempt was made to obtain stratified ceramics by excavating a small (0.50 x 0.50m) probe against the western face of wall [04] in the middle of the preserved mortar flooring [Figure 28]. The mortar [06] inside the probe was designated locus [12] and was removed to expose a thin lens of brown sandy material [14] on top of locus [13], which was identical to the clay levelling-course [11] identified outside the probe. Locus [14] contained five body sherds of the late-first or second century AD. Below [11] two arbitrary 0.05m loci [15 and 16] were removed. Locus 15 contained a few worn sherds, possibly of the late-first or early-second-century AD. Locus [16] was sterile and excavation was halted.

*Interpretation of HWS B03*

It is difficult to interpret the scanty remains of B03. Judging by the surrounding rubble, the structure must have been fairly substantial, but very little architecture has been preserved, even at the highest elevation at the site. Locus [05] appeared to be collapsed mud brick east of the wall [04]. The presence of mud brick may suggest that the stone wall was never very high, but formed a plinth or foundation course for a mud brick superstructure. To the west of the wall, the presence of a mortar floor indicates occupation in what was presumably an interior room of the structure. Ceramics from the site, and from the probe, date almost exclusively to the late-first- or early-second-century AD, although the surface ceramics indicate some occupation in the fourth-century AD. It would not be profitable to speculate on the function of the site given its poor state of preservation.

**Site HWS A02: Jebel Qanah Tower**

HWS A02 was selected for excavation as a result of the survey. The site seemed an excellent candidate for excavation for two main reasons. First, it appeared to be well-preserved and shared elements characteristic of the three other sites (HWS A11, B01, and B07) with which it forms the hypothetical “monitoring zone” identified during the survey (above, Chapter 4). Second, a large heap of rubble filled the interior of the structure, almost to the preserved height of the walls, and extended outwards for several metres in all directions. The massive quantity of rubble, prevented accurate measurement of the external dimensions of the tower and obscured the occupation

layers within. However, the author hoped that the volume of heavy rubble had prevented the wholesale robbing seen at other sites.

*Excavation of HWS A02 [Figure 29]*

The author and a team of workmen excavated HWS A02 from July 10 to July 16, 2000. Mr. Sean Fraser produced the architectural plan. The objective was to clear the western half of the structure of rubble in order to articulate the architecture and to reveal possible occupation layers below the tumble. A surface collection conducted amid the rubble produced sherds of the late-first or early-second century AD and the second or third century AD. A number of hand-made wares were difficult to evaluate and could date to the Iron Age or the Ottoman period. Several more sherds of these periods, along with a possible grindstone fragment, were recovered during the removal of rubble [01] in the western half of the structure.

The removal of locus [01] revealed the western end of a wall [05] ca. 0.75m wide which emerged from the rubble in the east to abut Wall 03 in the west. The wall was poorly constructed of loose, flat stones and a few larger blocks from the rubble. It appeared to abut Wall 03 at the point where a preserved arch springer (0.69m wide), projected ca. 0.15m from the wall face. Wall 05 was preserved to a height of only ca. 0.50m and clearly formed a late addition to the structure. It appeared to rest on locus [08]. To the north of Wall 05, the removal of rubble [01] revealed a layer of loose

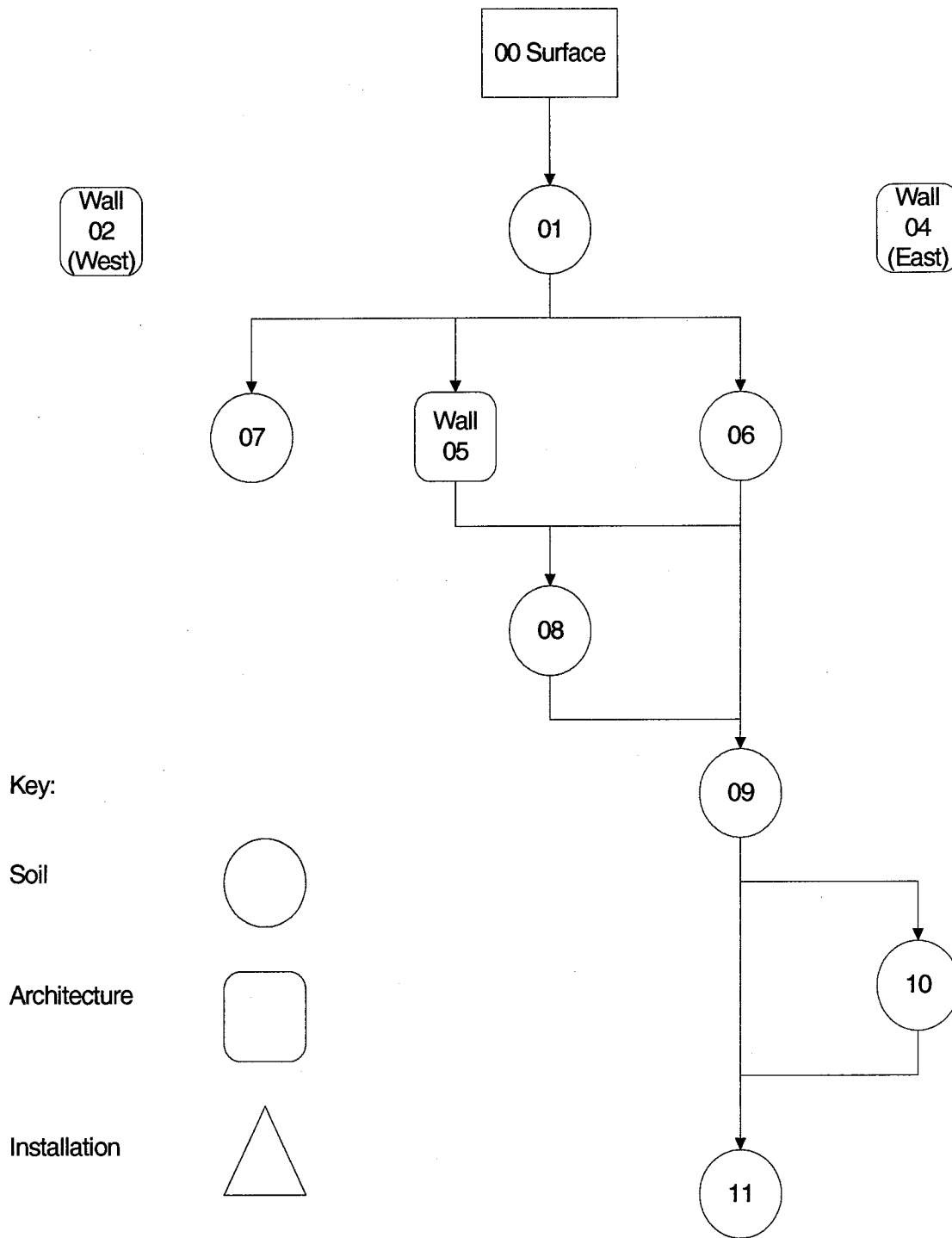


Figure 29: HWS A02. Modified Harris Matrix.

windblown sand with a few pebble and cobble inclusions [06] which had undoubtedly accumulated during a long period of abandonment. Thin ash lenses appeared to dot the surface of [06], but they were ephemeral and could not be recorded in any detail. It seems likely that they represent temporary occupation inside the structure after its abandonment. Excavation of [06] produced sherds of probable first- or second-century AD date [Figure 30].



**Figure 30: HWS A02 interior facing West, after removal of loci [01] and [06]. Wall 05 is visible at left of centre, arch springers are visible in the face of the western wall. Photo by author.**

Below [06] and against the face of Wall 05 was a larger ash lens [08] (ca. 0.92m x 0.51m), which appeared to extend under Wall 05. The ash contained bone, burnt bone, and seven sherds of the second or third century AD. Elsewhere north of Wall 05 and under loci [02] and [08] was another layer of brownish-red windblown sand [09], which was similar to locus [08] but which contained numerous boulders

and cobbles. Five body sherds of the late-first- or early-second-century AD were recovered.

The removal of locus [09] revealed locus [10] a blackened ash lens ca. 0.15m in diameter at the eastern end of the trench. As a fire could only be built on an occupation surface, locus [09] was arbitrarily changed to locus [11] at the elevation of locus [10]. Continued removal of locus [11] revealed that some of the boulders in the layer extended under Wall 03 and Wall 04, suggesting that they were below the level of the structure's foundation [Figure 31]. Seven body sherds were recovered but could only be broadly dated to the late-first- to third-centuries AD.



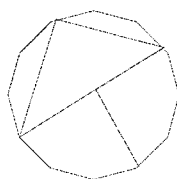
**Figure 31: HWS A02. Interior of structure north of Wall 05 after the removal of locus [11]. Boulders and cobbles appear to extend under the foundations of the exterior walls. Photo by author.**

To the south of Wall 05, the removal of tumble [01] revealed a loose sandy soil [07] which was probably equivalent to locus [06] north of the wall. Locus [07] produced sherds of the second-to-fourth centuries AD and was seen to rest on a slightly grey and ashy soil [12], which was not excavated owing to time constraints, but which probably corresponded to the the ash lens [08] seen running under Wall 05 from the north.

#### *Architecture of HWS A02 [Figure 32]*

Excavation of the western portion of A02 revealed several important architectural features. All of the exterior walls of the structure bonded with each other and were built of two faces of rubble blocks around a central mud and cobble core. All of the walls were ca. 1.0m wide, except for the northern Wall 04 which was substantially thicker, ca. 1.35m wide.

Along the western wall of the structure, Wall 03, were two arch springers [above, Figure 30]. Each was ca. 0.70m wide and projected ca. 0.15m from the wall face. Above each springer was a niche, ca. 0.70m wide x 0.50m tall, and approximately 0.30m deep. It is possible that the first few voussoirs of the arches collapsed outwards leaving these empty spaces. A matching arch springer could be discerned along the eastern wall of the structure in the north, but the southern portion of that wall was obscured by rubble and by the presence of the late crosswall, Wall 05. It is interesting to note that the distance between the springers and between the springers and the walls was ca. 1.30m on centre. This is roughly the same dimension as the numerous large slabs (ca. 1.30 x 0.80 x 0.12m) which could be seen throughout



# HWS A02 Jebel Qana

July 2000  
S. Fraser

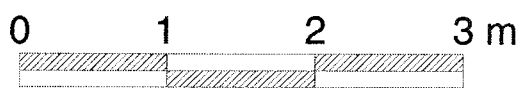


Figure 32: Plan of HWS A02. Prepared by Sean Fraser and used with permission.

the rubble. This coincidence strongly suggests that the slabs were used to roof the lower storey of the structure.

South of Wall 05, the removal of tumble revealed the presence of a doorway ca. 0.95m wide in the middle of Wall 02 [Figure 33]. A damaged but *in situ* stone threshold block was preserved in the doorway at roughly the same elevation as locus [11]. Only the continued excavation of locus [11] could establish whether or not this was the original floor level of the structure.



**Figure 33: HWS A02, interior south of Wall 05. The doorway and threshold block are visible at left. Photo by J. P. Oleson.**

While drawing the walls of the structure, it became obvious that the thickened northern wall, Wall 04, included an internal staircase as at site HWS A11. Unfortunately, the staircase was located in the unexcavated area at the eastern end of

the structure, but it was clarified by removing a few blocks in its immediate vicinity [Figure 34]. There are five preserved steps ascending westwards from the eastern end of Wall 04. Each tread is ca. 0.50 m wide and rises ca. 0.25m, except for the lowest step which is larger and may have formed a landing (as at HWS A11) or floor level. The lowest tread was ca. 0.20m lower than the level of the threshold in the doorway of the southern wall, so no conclusion could be reached concerning the original floor level on that basis.



**Figure 34: HWS A02 interior facing North. Four stairs ascend from right to left. A possible landing or floor slab is visible at the lower right. Photo by author.**

### *Phasing of HWS A02*

**Phase 1:** The exterior walls of HWS A02 all form bonded corners and appear to have been built in the same phase. The staircase at the southern end of Wall 04 is bonded

to the face of the wall and must have formed part of the original plan of the structure. Likewise the arch-springers were an integral part of the architectural design. The earliest closely identifiable sherds recovered from the foundation layers date to the late-first or early-second century AD. The structure was almost certainly built at that time.

**Phase 2:** Loci [08] and [11] were extensive ashy layers along the southern side of the building, near the door. Sherds from locus [08] date to the second or third century AD, while [11] was not excavated. Both loci are at almost the same level as the threshold of the doorway and may represent a late occupation (or even destruction) layer. Further work would be required south of Wall 05 to confirm this hypothesis. If true, however, it would mean that some of the area north of Wall 05 had been disturbed by robbing in a later period and that this robbing had cut locus [08].

**Phase 3:** The windblown sand of locus [09] represents a period of abandonment.

**Phase 4:** Robbing and re-use of the area north of Wall 05 is indicated by an ash lens [10] resting on locus [11] and by numerous small ashy deposits in locus [07]. The presence of hand-made wares only in the upper layers (loci [00] and [01]) probably suggests that they are late-Islamic in date, rather than Iron Age, and that they are associated with a late, and probably temporary, reoccupation.

**Phase 5:** Continued collapse of the structure followed by abandonment.

### *Interpretation of HWS A02*

The architectural form of HWS A02 indicates that it was a tall structure with a small groundplan. The interior layout, with the staircase in the wall opposite the entrance and with the arches running at ninety degrees to the axis of the doorway, seems to be paralleled at HWS B07 and possibly at HWS B01. The presence of arch springers and a staircase support the conclusion that there was a second storey, and that access to the roof was provided for in the original design of the structure. As no clear stone or clay floor level could be discerned to the north of wall 05, it seems possible, if not probable, that the structure had a dirt floor. Given the available architectural evidence it is reasonable to conclude that HWS A02 was a tower constructed in the late-first- or early-second-century AD.

### **Preliminary Conclusions**

The excavation of HWS B12, B03, and A02 provided mixed results. It would appear that B12 was never a tower and could not possibly have served as one. Most probably B12 was a Byzantine or early-Islamic farmhouse. The enigmatic Feature 05, located on the western side, appears to be a late addition to the structure and could have served as a tomb. Site B03 has been so badly disturbed that only the traces of a single wall line remain. There is no reason to believe that the structure ever served as a tower, but the evidence is simply too scanty to arrive at a firm conclusion.

HWS A02, however, provided spectacular results. Not only does the structure clearly resemble a tower architecturally, but excavation revealed numerous points of

similarity with other towers forming a proposed monitoring zone along the al-Shera' escarpment. The discovery of a well-preserved internal staircase, clearly-defined arch springers, and an obviously identifiable doorway, provided clear parallels with such features at other sites, but also helped in turn to interpret the remains at other sites in the proposed monitoring zone. The Conclusion provides an assessment of the implications of the excavated material in light of the survey.

## Conclusions

The Humayma Watchtower Survey visited 29 sites between al-Sadaqa and al-Quweira, Jordan (Chapter Four). While most of the sites did not display any evidence to suggest that they were towers in the architectural sense of the term, a discrete group of probable towers was identified along the al-Shera' escarpment. The form of the structures, buildings of at least two stories with a small ground plan and internal staircases, demonstrates that they were towers in an architectural sense. In addition, the close similarities between the sites suggest a coherent chain or system of towers established in a single period.

Excavation at one of the structures (HWS A02) has established a probable date for the construction of that tower, and therefore the rest of the monitoring zone, sometime in the late-first or early-second century AD (Chapter Five). Although the periods represented at the individual sites varied, each structure was also occupied in later periods, ranging from the second to fourth centuries AD. While it would be impossible to prove the precise function of the monitoring zone without documentary evidence, an examination of the architectural form, location, and distribution of the structures raises some interesting avenues of investigation. Comparison with a similar series of towers along the Wadi al-Hasa suggests that towers may have served similar functions in both areas and provides avenues for further research.

*Architectural Form of the Towers*

All four of the towers identified along the al-Shera' escarpment share characteristic architectural features. Although many similarities were apparent following the initial

	<b>A02</b>	<b>A11</b>	<b>B01</b>	<b>B07</b>
Interior Dimensions (m)	4.50 x 4.00	4.01 x 3.55	-	4.30 x 3.90
Exterior Dimensions (m)	6.50 x 6.35	6.16 x 6.14	6.10 x 5.30	-
Orientation of Longer Side	North-South	None	North-South	East-West
Average Wall Thickness (m)	1.00	1.05	0.98	0.70
Thickened Wall Visible?	Yes, North	Yes, West	Yes, North	Yes, West
Thickened Wall Width (m)	1.35	1.60	-	1.30 or more
Stairs Visible?	Yes	Yes	No	Possible
Stair Width (m)	0.50	0.58	-	0.60
Arch Springers Visible?	Yes, West	No	No	Yes, North and South
Arch Springer Width (m)	0.70	-	-	0.57
Roofing/Flooring Slabs Visible?	Yes	Possible	Possible	Possible
Door Visible?	Yes, South	Yes, South	Probable, South	Yes, East
Door Width (m)	0.95	0.94	-	0.94
Door Opposite Thickened Wall?	Yes	No	Yes	Yes
Ceramic Chronology	Iron, late 1st-early 2nd AD, possible 3rd AD.	2nd and 3rd AD, possible 4th AD	unidentifiable	2nd to 4th AD

**Table 2: Summary of Architectural Similarities Among Probable Towers Identified by the Humayma Watchtower Survey, Including the Results of Excavation at HWS A02. All measurements approximate.**

survey of sites, excavation at HWS A02 elucidated the architecture of that structure and added further detail to the list of similarities [Table 2; cf. Table 1].

HWS A02, B01, and B07 are massive stone structures roughly 6.0 x 6.0m on the exterior and 4.5 x 4.0m on the interior, but each has one longer side. It seems that in each case this elongation is caused by the presence of a staircase built against the interior face of the wall located directly opposite the doorway (ca. 0.95m wide). The walls of each structure are between 0.70 and 1.00m wide, while the thickened walls are 1.30m, or more, wide. Arch springers ca. 0.60-0.70m wide are visible at both A02 and B07 and may have existed at B01. At both of the sites with visible springers, the arches span the interior at ninety degrees to the axis formed by the doorway and staircase. Slabs of sufficient length to extend between the arches are present at A02 and are probable at the other sites. Stairs alone might indicate access to the roof or a parapet, but the presence of arches and roofing slabs strongly indicates the existence of a second storey.

HWS A11 shares the general features of the other towers, but has some obvious differences. Despite the presence of a thickened wall (ca. 1.60m) with a visible staircase, the structure is square (ca. 6.1 x 6.1m) rather than rectangular. The doorway is not opposite the staircase as at the other sites, and clear visibility of the interior walls permits the conclusion that A11 did not have any arches. It is tempting to suggest that the differing architectural details of A11 reflect a function different from the other towers and related to its particular location immediately adjacent to the *Via Nova Traiana* (see below).

The construction of a chain of nearly identical towers would have involved a massive expenditure of time and resources and a sophisticated level of organization. This is particularly evident at HWS B01 and B07, where the construction materials

were brought from a considerable distance. As the south of Arabia was comparatively underdeveloped in antiquity, even when compared with areas only a short distance farther north, it is difficult to believe that local village authorities would have had the wealth and skill required for the task. For this reason the most probable candidates for the construction of the towers are the Nabataean or Roman armies, which constituted the main agent of central control in their respective periods.

As Arabia was annexed by the Romans in AD 106, and the ceramics from the towers, particularly those from the foundation deposit of HWS A02, date to the late-first or early-second century AD, it is not possible to come to a firm conclusion concerning which group erected these structures on purely ceramic grounds. The towers, however, do exhibit certain features, such as the width of the doorways, the presence of arches, and the style of staircases, which are executed in the local, Nabataean architectural *koinē*. As a result, it is more likely that the towers were constructed by, or under the direction of, the Nabataean army, although their occupation may have continued into the Roman period, if only briefly. There is some evidence to indicate that individual towers were reoccupied during the third and fourth centuries, but there is no way to ascertain whether they served the same functions in those later periods.

#### *Location of the Towers*

The four probable towers identified along the al-Shera' escarpment are all located in relatively inaccessible locations (See above, Map 5). HWS B01 and B07 are on isolated hilltops in the northwestern corner of the Hisma plain, where there are few water sources and the landscape is poorly suited to agriculture. It seems that they

could only have been constructed on these remote hilltops because of the outstanding views of the surrounding terrain their setting provided.

Site HWS A02 is also located at the summit of a jebel with a view of the Hisma desert below. In fact, the view from A02 extends from the modern village of Dhabbat Hanut and Jebel al-Jil in the east to the mountains in the west, and from the escarpment in the north to al-Quweira and Jebel Thaur in the south. Jebel Qanah is one of the massive outlying jebels which extend southwards from the main face of the escarpment; as such, it is lower in elevation than the top of the escarpment, but significantly higher than the jebels occupied by B01 and B07. Although there is some evidence of agricultural activity in the area, it seems unlikely that the tower, which is relatively distant from the spring and constantly exposed to the wind and sun, was a domestic or agricultural feature. HWS A02, B01 and B07 seem to have been located in places suitable solely for the observation of the surrounding landscape.

Only HWS A11 is not located on an isolated hilltop. Instead, it is situated beside the *Via Nova Traiana* on a small bluff just above the spring of 'Ayn Qanah. All traffic on the road would have passed between the tower and the cliff-face, which strongly suggests that the function of the structure was closely associated with the road. The site may have functioned as a checkpoint or similar installation in collaboration with the other towers. It may also be noteworthy that all of the towers, including A11, have a direct line of sight to at least two other towers; the location and interrelationships among the structures indicate a probable function as observation posts, but no concrete statement can be made concerning possible signaling or other communication between the towers without further evidence.

*Distribution of the Towers*

As HWS A11 seems to be associated with the road, it is tempting to suggest that the other towers were positioned to observe the road also. One important factor should be pointed out, however: the towers do not run along the line of the road, but across it. This East-West distribution of sites would not have permitted close observation of all points along the road as it weaved its way among the many wadis which scar the surface of the northeastern Hisma. In addition, HWS B01 is too far west to be useful in monitoring the road. A North-South distribution of towers would have been much more effective in observing the road, whether to discourage banditry or for some other reason. Similar considerations preclude the possibility that the towers were aligned to observe or protect the Nabataean aqueduct. Despite the fact that HWS A11 is very near 'Ayn Qanah and A02 overlooks 'Ayn Jammam, the other towers are too far west to have been related to the aqueduct.

It is conceivable, however, that the towers were located to ensure that all traffic followed the road. If this were the case, B01 would have fulfilled an important observation role at the western end of the chain, where small jebels and deep wadis would otherwise prevent observation from a distance. Likewise, A02 could have monitored any ascent of the escarpment, or Jebel Qanah itself, from the east.

Many towers in Arabia have been interpreted as military structures situated to observe perceived threats along the frontier. There are several reasons to reject an interpretation of the towers along the al-Shera' escarpment as military outposts placed to warn of enemy movements or of an impending attack. First, the towers are located

too far west to have warned of incursions by nomads or others from the desert and it would have been relatively easy for a raiding party, or even a larger group, to have skirted the towers by traveling farther to the east.<sup>1</sup> Secondly, they form a chain running East-West within the settled zone north of al-Humayma. For this reason, they would not have been effective in monitoring the deserts to the east, nor could they have sighted raiders until after they were already in the settled area.

Third, when the towers were erected in the late-first or early-second century AD, both the top and the bottom of the escarpment were inside the boundaries of the Nabataean kingdom. It is difficult to believe that a defensive system would have been established and maintained within the boundaries of the Nabataean kingdom and the later Roman province.

In this context it is important to reiterate that the al-Shera' escarpment is not a natural barrier to movement in the area (Chapter Three). In fact, most movement in the area runs along a North-South axis because of the distribution of local resources and habitation centres. Although it is easier to make an ascent in certain areas rather than others, individuals still move back and forth across the escarpment on a daily basis. One reason for this constant movement, less obvious today thanks to the introduction of vehicles and the modern highway, is that the change in elevation at the escarpment forms an important ecological boundary. Many local inhabitants continue to change their campgrounds and move their flocks a few kilometres north or south across the escarpment seasonally. The top of the escarpment offers cooler temperatures, more plentiful water sources and better forage in the summer and fall;

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<sup>1</sup> Although, of course, there could be additional unidentified towers further east along the escarpment.

the bottom of the escarpment provides warmth and accessible grazing lands during the winter and spring.

### *Comparisons*

It seems, then, that the towers are located for the purpose of observation and are distributed along a major ecological boundary across the line of the ancient road. There are close parallels between the distribution of towers along the al-Shera' escarpment and a purported Nabataean and/or Roman monitoring zone identified along the Wadi al-Hasa (see Chapter One, Chapter Two, and Map 1). There also a chain of towers forms a line running East-West across the line of the *Via Nova Traiana* on the southern bank of the Wadi al-Hasa. The broken nature of the ground in the area, and the fact that a number of towers in the chain are too far east or west, preclude the use of the system for monitoring the road. The individual towers comprising the system are of roughly the same dimensions as those discovered along the al-Shera' escarpment, but there is greater variation between them. They have not been published in sufficient detail to withstand a detailed architectural comparison.

The hypothetical monitoring zone along the Wadi al-Hasa is also located primarily within the settled zone of the province, although the eastern extremity of the system touched on the desert. It appears that the goal of the system was to monitor movement into and out of the numerous tributary wadis which descend into the Wadi al-Hasa from the plateau. The Wadi al-Hasa provides an easily traversed ascent from the Wadi 'Arabah in the west, to the settled areas of the plateau and the desert in the east. As such it crosses several environmental zones and, because of its sudden drop

in elevation, forms an important ecological boundary. For this reason it has served, in much the same way as the al-Shera' escarpment, as a natural transhumance route for centuries.

It may also not be mere coincidence that both systems of towers straddle the *Via Nova Traiana*, particularly if both are somehow related to transhumance. At the al-Shera' escarpment and the Wadi al-Hasa the *Via Nova* follows the natural route across an otherwise steep landscape. It is reasonable to assume that these locations would also be ideal points for the movement of transhumant pastoralists. It may also be relevant that larger, probably military installations, seem to be related to the tower systems: B02 in the northern Hisma below the al-Shera' escarpment and Umm Ubtulah at the Wadi al-Hasa (MacDonald 1984a; 1984b; see also Chapter Two).

The towers along the al-Shera' escarpment also share certain features with those identified in the limes zone near the Roman legionary fortress at al-Lejjun (above, Chapter One, Chapter Two). The Nabataean period towers identified by Koucky, Clark, and Parker are of similar dimensions and employ similar construction techniques; they are also generally located on hilltops with a good view of the surrounding terrain in the vicinity of the ancient road and along the important ecological boundary created by the Wadi al-Mujib. As Koucky (1987b: 71-5) has stressed, there were important seasonal transhumant and trade routes through the area in antiquity.

*One Possible Function of the Monitoring Zone*

The hypothetical monitoring zone along the al-Shera' escarpment appears to be concerned with monitoring or controlling movement, perhaps primarily transhumant movement, across an important ecological boundary. The fact that other systems of towers of contemporary date display similar locations and distribution suggests that they served the same function(s). But what function or functions were performed by the towers? If we accept that the monitoring systems could not have served military purposes in the defensive sense of the term, why exactly would the Nabataean and Roman armies wish to observe, monitor, or control these areas? What exactly do we mean by "control"?

It is a possibility that the towers served one of the more mundane tasks of the ancient world: taxation. It is clear from recent models of interaction between sedentary, seasonally-sedentary, and transhumant groups that interaction is frequent, mutually beneficial, and essential to the production of foodstuffs and other products within a society (Chapter Three). However, as transhumant pastoralists spend a great deal of their time dispersed in the less populated, and therefore less easily controlled, areas inside and outside the province, it would be extremely difficult for a central authority to exact taxes from them.

Apart from the occasional congregations at rural or urban markets, the natural place to tax the production of transhumants would be at the bottlenecks formed along their traditional migration routes. By establishing systems of towers at key vantage points, a relatively small number of soldiers, or others, could confirm that the transhumants were funneled to a central location where taxes would be collected.

Presumably, the authorities would have issued some form of receipt which could later be produced to prove payment.

Close observation would prevent individuals or small groups from sneaking around the checkpoint with their animals. In such a case the towers would only be garrisoned during the annual migrations. Such a seasonal occupation of the towers along the al-Shera' escarpment may be indicated by the relatively low sherd density encountered at the individual sites; if the towers were only occupied during the annual migrations of the transhumant pastoralists, fewer sherds would have been discarded at the sites.

While a wide scale review of ancient taxation is beyond the scope of this paper, a few examples demonstrate that the taxation of pastoralists was clearly a concern of administrative officials in the ancient world and that tax collection was often a task of the army. In a papyrus from Ptolemaic Egypt (246-222 BC) found in Tebtunis, a *dioiketes* writes to an *oikonomos* to suggest the best time to tax pastoralists (*P.Tebt.* 703, ll. 165-174):<sup>2</sup>

As the revenue from the pasture dues is among the most significant, it will be particularly increased if *you conduct* the census in the best way. The most suitable time for it is around the month of Mesore, for, at this time, because the [whole] land is covered by the flood waters, the herdsmen send their herds to the highest places, as they are unable to disperse them to *other places*... (Burstein 1985: no. 101)

<sup>2</sup> *P.Tebt.* 703, ll. 165-74: οὐσης δὲ καὶ τῆς κατὰ τ[ὸ] ἐνόμιον προσόδου ἐν ταῖς πρώταις, μάλιστ' ἂν εἰς ἐπίδοσιν ἔλθο[ι] εἰ τὴν ἀναγραφὴν ἀπὸ τοῦ βελτίστου [ποιή]σα(ι)σθε. εὐφύεστατος δὲ ὁ καιρὸς ἐστὶν τῷ περὶ τ[αῦ]τ' ὄντι περὶ τοῦ Μεσορῆ μηνῶ. ἐγ γὰρ τούτω[ι] τῆ[ς] πάσης χώρας ἐπεχομένης ὑπὸ τῶν ὑδάτω[ν] σ[υ]μβαίνει τοὺς κτηνοτρόφ[ου]ς εἰς τοὺς ὑψηλοτάτους τόπους ἀποστεῖλ[αι τὴν] λε[ί]λαν, οὐκ ἐχόντων ἐξουσίαν εἰς ἄλλ[λους] τό[που]ς διαρίπτειν.

See also Rostovtzeff 1941: under *P.Tebt.* 703. Turner 1984: 147-52, 158.

At Zarai, in Roman Africa, a fragmentary tax document of the early-third century AD (*CIL* 8.4508) shows that standard taxation rates were applied to those entering or leaving the area, and many of the products listed are the products of pastoralists. (Cherry 1998: 66).<sup>3</sup> Likewise, a bilingual tax document of AD 137 (*OCIS* II.3, 3913; *IGRR* 3, 1056) lists individual commodities, including sheep, fleeces, camels, camel skins, and animal fat, and their taxation rate when transported to market within the *territorium* of Palmyra (Mathews 1984; Millar 1993a: 325; Pollard 2000: 175).

In Egypt, tax collection fell to a civilian administrative official, and tax collection may have been conducted by a specialized official in Palmyra also. At Zarai, however, the Roman army seems to have played the primary role in tax collection, perhaps because of the absence of any municipal or regional authority in the immediate area (Cherry 1998: 55, 66).<sup>4</sup> The latter may be a particularly apt comparison with the situation in the southern part of Arabia, where the landscape was primarily composed of villages rather than larger towns or cities (Gawlikowski 1997: 41-5) and there would not have been the requisite municipal infrastructure to which the province could devolve such responsibility.

The newly discovered *Monumentum Ephesinum* (*SEG* 39, 1180) has had a profound impact on how ancient customs dues are perceived. The document is a Greek inscription from Ephesus in the Roman province of Asia, which preserves the text of the provincial customs law. The right to collect customs dues in the province

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<sup>3</sup> cf. the similar early-third century AD inscription from Lambaesis (*AE* 1914: 234). See also Shaw 1982: 42-3. Pollard (2000: 48) points out the fundamental importance of pastoralism to the economy of the army and society at large in Roman Syria.

<sup>4</sup> Cherry goes so far as to write (1998: 66): "My conclusion then is that the Romans built the *fossatum* mainly to facilitate the collection of taxes brought north towards the Tell. The real objective, I imagine, was to enable the army to help pay for itself." For summaries of the evidence for tax collection by the Roman army see MacMullen 1963: 58, 60-2; Isaac 1990: 104, 409; Pollard 2000: 100-4.

was sold to groups of publicans for five-year terms. The publicans collected a fixed amount, one-fortieth of the declared value, on goods entering and leaving the province (s. 2), subject to certain exemptions.

In Asia, the primary onus was on the importer/exporter to find and pay the collector, or a local city official if the former could not be located (ss. 4, 16). Nevertheless, the publicans were given the right to erect and man guard-posts in order to facilitate collection (ss. 12-13). They were specifically granted the right to occupy structures previously erected for this purpose (s.28):<sup>5</sup>

With respect to the buildings and royal [---] which King Attalus the son of Eumenes [had] for the purposes of collection of dues, [the publicanus is to use] and enjoy (them); and he is to hand over *uiri boni arbitrato* to [the incoming] *publicanus* whatever of these he may take over. (Levick (ed.), forthcoming)

Furthermore, the publicans could erect new structures for this purpose, although their location was strictly controlled (ss. 12-13). Only one building could be erected in each city and the number and location of guard-posts on the frontier was also proscribed by the law. Even the size of the structures themselves was regulated (ss. 13-15):<sup>6</sup>

Whatever place of this province [there is, where it is necessary to declare, if in] these [places] a harbour lies by the sea, [they are to have] by each harbour in

<sup>5</sup> ἐποίκια / [--- βασι]λικούς οὓς βασιλεὺς Ἄτταλος Εὐμένους υἱὸς τελωνίας χάριν εἰ[---]η σ λλ ομλ καρπευέσθω· ταῦτά τε ὅποια ἂν παραλάβῃ / [--- δημο]σιῶν ἄνδρὸς ἀγαθοῦ ἐπικρίσει παραδιδότωι. Cf. s.14: Whatever building there exists beforehand, [they are to use it; but if they build a new one, they are not] indeed to have one built with a wall nearer than a hundred feet nor in each of these guard-posts are they to have [more than ??? men], provided that the distance between these guard-posts is of eighty *stades*. (Levick (ed.), forthcoming). For the Greek text, see note 6.

<sup>6</sup> [--- τ]ούτοις θαλάσση λιμὴν πρόκειται τούτων ἐν ἐκάστῳ λιμένι ἀνά μίαν παραφυλακὴν ἐκ περι[---]ου ἐὰν / [---]ν καὶ ἐπὶ τῆς ἀγχιθαλάσσου δὲ παραποντίας καὶ περὶ τοὺς ἐλευθέρους ὄρους τῆς ἐπαρχείας, ἐὰν βουλων / [---]ν ἑνὸς ἐνὸς τόπου μῆκος ποδῶν τριάκοντα ὀκδομημένον ἢ περιπεφραγμένον ἔχωσιν καὶ ἐφ' ᾧ μῆτε / [--- μ]ῆτε ἐν τόπῳ ἀνετῶι μῆτε ἐγγυτέρῳ ἐποικίῳ ποδῶν ἐνενήκοντα ὃ ἐποίκιον πρότερον ὑπάρχη ὀκδομημένον / [---]μην ἐγγυτέρῳ τείχει ποδῶν ἑκατὸν ὀκδομημένον ἐχέτωσαν μῆτε ἐν ἐκάστῃ τῶν παραφυλακῶν τούτων / [---]ων ἐχέτωσαν, ἐφ' ᾧ τῶν παραφυλακῶν τούτων τὸ μεταξὺ διάστημα ὀγδοήκοντα σταδίων ἔσται ἐκτὸς τῶν / [---]τε μῆν ἦττων παραφυλακῆ ἀπὸ παραφυλακῆς μείζονος τεσσαράκοντα σταδίων μηδὲ ἀποτέρῳ τῶν τῆς ἐπαρχείας / [---]ν σταδίων διεστηκετω. Cf. s. 29. It appears that buildings constructed in parts of the province which were not part of the former Attalid Kingdom could be slightly larger, up to forty feet on a side.

these (places) up to one guard-post in sequence, if [they wish for the sake of collection of dues, and also on the coast by the sea; and around the (free) boundaries of the province, if they wish [to use one; provided that] they have, built or fenced, [(a building)] nearer [to where it is necessary to declare than ??? feet], one in each place, thirty feet from front to back, <thirty feet from side to side>, and provided that it is not [built in a temple or *temenos*] or a sacred place or with (a) building nearer than ninety feet. (Levick (ed.), forthcoming)

Such structures would have been relatively small, less than 10.0 x 10.0m in plan.

Although, the customs law from Ephesus concerns a different province, and is primarily concerned with the taxation of goods traveling across provincial boundaries, it provides some important insights into the mechanisms of collection and their complexities.

Systems of direct taxation were extremely variable between provinces within the Roman empire (Brunt 1990; 325-7). In part, this may have been the result of the Roman tendency to adopt pre-existing, indigenous techniques of administration which took particular local circumstances into account (Garnsey and Saller 1987: 21). It is well known that Nabataean officials with military titles were involved in the collection of taxes (Graf 1994a). In particular, a Nabataean tax collector, identified as a *centurion*, was posted at the port of Leukē Komē in the Hijaz to collect a 25% duty on goods (*Periplus Maris Erythraei* 19).<sup>7</sup> If Roman provincial officials had wanted to assess a tax on pastoralists in southern Arabia, they would probably have been forced to rely on publicans or the army to do so, perhaps by adopting the techniques employed by the Nabataean army before them.

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<sup>7</sup> Sidebotham (1986) and Young (1997: 266-8) argue that the centurion is a Roman officer sent to prevent traders from avoiding Roman tariffs by traveling through the Nabataean kingdom. Bowersock (1983: 70-1), Casson (1989: 145) and Graf (1994a: 289) convincingly demonstrate that the officer is a Nabataean.

Many questions remain concerning the possible function of the towers along the al-Shera' escarpment. The natural boundary provided by the escarpment would have been a logical location to collect tolls or dues on goods moving between ecological zones within the Nabataean Kingdom and the later Roman province. It is not clear, however, whether the tolls would have been royal/imperial as in Asia, municipal as at Palmyra, or regional as at Zarai. It is also not clear whether collection would have been the responsibility of the army, private contractors, municipal officials, provincial Procurators, or some combination of the above.

## **Conclusion**

There is little evidence to support the identification of most previously identified towers and watchtowers around the fort at al-Humayma, Jordan. However, the Humayma Watchtower Survey located a chain of towers along the al-Shera' escarpment. Excavation at one of the towers established a foundation date of the late-first or early-second century AD for that structure and, as they seem to have been built during a single period, probably for all of them. The structures display numerous features commonly associated with towers, and were probably constructed by the Nabataean army and reused, at least briefly, during the Roman period, but their location and distribution preclude their interpretation in traditional defensive terms.

An assessment of the towers in their immediate topographical and broader regional contexts suggest that they are situated to monitor the area where the King's Highway and, later, the *Via Nova Traiana* ascended the escarpment. Although towers

have traditionally been interpreted in defensive terms, it is probable that the towers along the al-Shera' escarpment served some more mundane administrative function, such as the seasonal collection of tolls or dues from transhumant pastoralists along what must have been an important migration route, rather than as military signaling stations.

## Bibliography

- Abed, Abdulkader M.  
 1985 "Paleoclimates of the Upper Pleistocene in the Jordan Rift," *SHAJ* 2: 81-93.
- Aharoni, Y.  
 1963 "Tamar and the Roads to Elath," *IEJ* 13: 30-42.
- Alcock, Susan E.  
 1993 *Graecia Capta: the Landscapes of Roman Greece*. Cambridge: CUP.  
 1994 "Breaking up the Hellenistic World: Survey and Society," in Morris (ed.) 1994: 137-70.
- Alcock, Susan E. (ed.)  
 1997 *The Early Roman Empire in the East*. (Oxbow Monograph 95). Oxford: Oxbow Books.
- Alt, Albrecht  
 1921 *Die griechischen Inschriften der Palaestina Tertia westlich der 'Araba*. (Wissenschaftliche veröfentlichungen des Deutsch-türkischen Denkmalschutz-kommandos, Heft 2). Berlin & Leipzig: W. de Gruyter.  
 1935 "Aus der Arabah II: Römische Kastelle und Straßen," *ZDPV* 58: 1-78.  
 1936a "Der südliche Endabschnitt der römischen Strasse von Bostra nach Aila," *ZDPV* 59: 92-111.  
 1936b "Aila und Adroa im spätrömischen Grenzschutzsystem," *ZDPV* 59: 181-93.
- Baly, Denis  
 1985 "The Nature of the Environment, with Special Relation to the Country of Jordan," *SHAJ* 2: 19-24.
- Banning, Edward B.  
 1986 "Peasants, Pastoralists and *Pax Romana*: Mutualism in the Southern Highlands of Jordan," *BASOR* 261: 25-50.  
 1987 "*De Bello Paceque*: A Reply to Parker," *BASOR* 265: 52-54.  
 1988 "Methodology," in MacDonald (ed.) 1988: 13-25.  
 1992 "Towers," in Freedman (ed.) 1992: 622-4.

- Barber, Keith E., Lisa Dumayne and Rob Stoneman  
 1993 "Climatic Change and Human Impact during the Late Holocene in Northern Britain," in Chambers (ed.) 1993: 225-36.
- Barghouti, Asem N.  
 1982 "Urbanization of Palestine and Jordan in Hellenistic and Roman Times," *SHAJ* 1: 209-29.
- Barker, Graeme  
 1991 "Introduction: Methods and Problems," in Barker and Lloyd (eds.) 1991: 1-9.
- Barker, Graeme and John Lloyd (eds.)  
 1991 *Roman Landscapes: Archaeological Survey in the Mediterranean Region*. (Archaeological Monographs of the British School at Rome 2). London: British School at Rome.
- Barker, Graeme W., O. H. Creighton, D. D. Gilbertson, C. O. Hunt, D. J. Mattingly, S. J. McLaren and D. C. Thomas, with an appendix by G. C. Morgan  
 1996 "The Wadi Faynan Project, Southern Jordan: a Preliminary Report on Geomorphology and Landscape Archaeology," *Levant* 29: xxx.
- Barker, G. W., R. Adams, O. H. Creighton, D. D. Gilbertson, J. P. Grattan, C. O. Hunt, D. J. Mattingly, S. J. McLaren, H. A. Mohamed, P. Newson, T. E. G. Reynolds, and D. C. Thomas  
 1998 "Environment and Land Use in the Wadi Faynan, Southern Jordan: the Second Season of Geoarchaeology and Landscape Archaeology (1997)," *Levant* 30: 5-25.
- Barker, G. W., R. Adams, O. H. Creighton, D. Crook, D. D. Gilbertson, J. P. Grattan, C. O. Hunt, D. J. Mattingly, S. J. McLaren, H. A. Mohammed, P. Newson, C. Palmer, F. B. Pyatt, T. E. G. Reynolds, and R. Tomber  
 1999 "Environment and Land Use in the Wadi Faynan, Southern Jordan: the Third Season of Geoarchaeology and Landscape Archaeology (1998)," *Levant* 31: 255-92.
- Barker, G. W., R. Adams, O. H. Creighton, P. Daly, D. D. Gilbertson, J. P. Grattan, C. O. Hunt, D. J. Mattingly, S. J. McLaren, P. Newson, C. Palmer, F. B. Pyatt, T. E. G. Reynolds, H. Smith, R. Tomber and A. J. Truscott  
 2000 "Archaeology and Desertification in the Wadi Faynan: the Fourth (1999) Season of the Wadi Faynan Landscape Survey," *Levant* 32: xxx.
- Beaumont, Peter  
 1985 "Man-induced Erosion in Northern Jordan," *SHAJ* 2: 291-96.

Beit-Arieh, Itzhaq (ed.)

- 1995 *Horvat Qitmit: an Edomite Shrine in the Biblical Negev*. (Monograph Series of the Institute of Archaeology, Tel Aviv University, 11). Tel Aviv: Institute of Archaeology, Tel Aviv University.

Bender, Friedrich

- 1974 *Geology of Jordan*. M. K. Khdeir and D. H. Parker (trans.) (Contributions to the Regional Geology of the Earth 7) Berlin: Borntraeger.

Bignasca, Andrea, Nathalie Desse-Berset, Regine Fellmann Brogli, Rudolf Glutz, Sabine Karg, Daniel Keller, Bernhard Kolb, Christiana Kramar, Markus Peter, Stephan G. Schmid, Christoph Schneider, Rolf A. Stucky, Jacqueline Studer, and Ivo Zanoni.

- 1996 *Petra. Ez Zantur I: Ergebnisse der Schweizerisch-Liechtensteinischen Ausgrabungen 1988-1992*. (Terra Archaeologica 2). Mainz am Rhein: Philipp von Zabern.

Bintliff, John L.

- 1991 *The Annales School and Archaeology*. Leicester: Leicester University Press; New York: New York University Press.

Bintliff, John L., Donald A. Davidson and Eric G. Grant (eds.)

- 1988 *Conceptual Issues in Environmental Archaeology*. Edinburgh: University Press.

Birley, Eric and Michael Jarrett (eds.)

- 1974 *Roman Frontier Studies 1969: Eighth International Congress of Limesforschung* Cardiff: University of Wales Press.

Bisheh, Ghazi, Suleiman Farajat, Gaetano Palumbo and Mohammad Waheeb

- 1993 "The Cultural Resources Management Project in Jordan. Archaeological Rescue Survey of the Ras an-Naqab — Aqaba Highway Alignment, 1992," *ADAJ* 37: 119-33.

Bosworth, C. E., E. van Donzel, B. Lewis, and Ch. Pellat (eds.)

- 1986 *The Encyclopedia of Islam*. New Edition. Volume 5. Leiden: E. J. Brill.

Bowersock, Glenn W.

- 1971 "A Report on *Provincia Arabia*," *JRS* 61: 219-42.  
 1976 "*Limes Arabicus*," *HSCP* 80: 219-29.  
 1983 *Roman Arabia*. Cambridge, MA: HUP.

Braudel, Fernand

- 1972 *The Mediterranean and the Mediterranean World in the Age of Philip II*. Trans. Siân Reynolds. London: Collins. [Originally Published 1949 as *La Méditerranée et le monde Méditerranéen à l'époque de Philippe II*. Paris: Librairie Armand Colin. Second Revised Edition 1966.]

- 1980 *On History*. Trans. Sarah Matthews. Chicago: University of Chicago Press. [Originally Published 1969 as *Écrits sur l'histoire*. Paris: Flammarion.]
- Brünnow, Rudolf E.  
1909 "Die Kastelle des arabischen *Limes*," in *Florilegium Melchior de Vogüé*. Paris: Imprimerie nationale.
- Brünnow Rudolf E. and Alfred von Domaszewski  
1904-9 *Die Provincia Arabia*. 3 vols. Strassburg: Trübner.
- Brunt, Peter A.  
1981 "The Revenues of Rome," *JRS* 71: 161-72. [Reprinted as Brunt 1990: 324-46.]  
1990 *Roman Imperial Themes*. Oxford: Clarendon Press.
- Burke, Peter  
1992 *History and Social Theory*. Ithaca, NY: Cornell University Press.
- Burns, Thomas S. and John W. Eadie (eds.)  
2001 *Urban Centers and Rural Contexts in Late Antiquity*. East Lansing, MI: Michigan State University Press.
- Burstein, Stanley M.  
1985 *The Hellenistic Age from the Battle of Ipsos to the Death of Kleopatra VII*. (Translated Documents of Greece and Rome 3). Cambridge: CUP.
- Butler, Howard Crosby  
1909 "Ancient Architecture in Syria," *Southern Syria. PPAES. II.A.2* Leiden: Brill.  
1911 "Trajan's Road from Bosra to the Red Sea," *PPAES III.A.2* Leiden: Brill. vii-xvi.
- Casson, Lionel  
1989 *Periplus Maris Erythraei: Text with Introduction, Translation and Commentary*. Princeton: PUP.
- Cherry, David  
1998 *Frontier and Society in Roman North Africa*. Oxford: Clarendon Press.
- Clark, Vincent A.  
1987a "The Desert Survey," in Parker (ed.) 1987.1: 107-64.  
1987b "The Roman *Castellum* of Qasr Bshir," in Parker (ed.) 1987.2: 457-96.
- Clark, Vincent A. and S. Thomas Parker  
1987 "The Late Roman Observation and Signalling System," in Parker (ed.)

1987.1: 165-81.

Coello, Terence

1996 *Unit Sizes in the Late Roman Army*. (BAR International Series 645).  
Oxford: BAR.

Donner, Harold

1989 "The Role of Nomads in the Near East in Late Antiquity (400-800 C.E.),"  
in F. M. Clover and R. S. Humphreys (eds.) *Tradition and Innovation in  
Late Antiquity*. Madison, WI: University of Wisconsin Press. 73-88.  
[Reprinted as F. E. Peters (ed.) 1999.2]

Doughty, Charles

1888 *Travels in Arabia Deserta*. 2 vols. London: Butler and Tanner.  
(Republished 1921, New York: Boni & Liveright.)

Eadie, John W.

1984 "Humayma 1983: The Regional Survey," *ADAJ* 28: 211-24.

Eadie, John W. and Josiah Ober (eds.)

1985 *The Craft of the Ancient Historian: Essays in Honor of Chester G. Starr*.  
Lanham/London.

Eadie, John W. and John P. Oleson

1986a "The Nabataean Hydraulic System in the Area of Humeima," *ADAJ* 35:  
17-30.  
1986b "The Water-Supply Systems of Nabataean and Roman Humayma,"  
*BASOR* 262: 49-76.

al-Eisawi, Dawud M.

1985 "Vegetation in Jordan," *SHAJ* 2: 45-57.

Ernout, A. and A. Meillet

1979 *Dictionnaire étymologique de la langue latine*. Fourth Edition. Paris.

Evans, John G.

1978 *An Introduction to Environmental Archaeology*. London: Paul Elek.

Evenari, Michael, L. Shanan and N. Tadmor

1982 *The Negev: The Challenge of a Desert*. Second Revised Edition.  
Cambridge, MA: HUP.

Fahd, T. (ed.)

1989 *L'Arabie Préislamique et son environnement historique et culturel. Actes  
du Colloque de Strasbourg 1987*. (Travaux du Centre de Recherche sur le  
Proche-Orient et la Grèce Antiques 10.) Leiden: Brill.

- Fentress, Elizabeth W. B.  
 1979 *Numidia and the Roman Army: Social, Military and Economic Aspects of the Frontier Zone*. Oxford: OUP.
- Frank, Fritz  
 1934 "Aus der Araba I: Reiseberichte," *ZDPV* 57: 191-280.
- Freedman, David Noel (ed.)  
 1992 *The Anchor Bible Dictionary*. New York: Doubleday.
- Freeman, Philip W. M.  
 1996 "The Annexation of Arabia and Imperial Grand Strategy," in Kennedy (ed.) 1996: 91-118.  
 2001 "Roman Jordan," in MacDonald, et al. (eds.) 2001: 427-59.
- Freeman, Philip W. M. and David L. Kennedy (eds.)  
 1986 *The Defence of the Roman and Byzantine Near East*. (BAR International Series 297). Oxford: BAR. 2 vols.
- Freeman, Philip W. M., J.Bennett, Z.T.Fiema and B.Hoffmann (eds)  
 2002 *Proceedings of the XVIIIth International Congress of Roman Frontier Studies held in Amman, Jordan (September, 2000)*. 2 vols. (BAR International Series 1084). Oxford: Archaeopress.
- French, David M. and Colin S. Lightfoot (eds.)  
 1989 *The Eastern Frontier of the Roman Empire. Proceedings of a Colloquium Held at Ankara in September 1988*. (British Institute of Archaeology at Ankara Monograph No. 11 - BAR International Series 553(i)). Oxford: BAR.
- Garnsey, Peter and Richard Saller  
 1987 *The Roman Empire: Economy, Society and Culture*. Berkeley: University of California Press.
- Gatier, P.-L.  
 1986 *Inscriptions grecques et latines de la Syrie. Inscriptions de la Jordanie*. Volume 2. Paris: Paul Geuthner.
- Gawlikowski, Michael  
 1997 "The Syrian Desert Under the Romans," in Alcock (ed.) 1997: 37-54.
- Gerber, Yvonne  
 1997 "The Nabataean Coarse Ware Pottery: A Sequence from the End of the Second Century BC to the Beginning of the Second Century AD," *SHAJ* 6: 407-11.

1998 Review of Clamer 1997. *BASOR* 312: 86-88.

Gerber, Yvonne, and Regine Fellmann Brogli.

1995 "Late Roman Pottery from az-Zantur, Petra," *SHAJ* 5: 649-655.

Glueck, Nelson

1934 *Explorations in Eastern Palestine, I.* (AASOR 14). New Haven: ASOR.

1935 *Explorations in Eastern Palestine, II.* (AASOR 15). New Haven: ASOR.

1937/9 *Explorations in Eastern Palestine, III.* (AASOR 18-19). New Haven: ASOR.

1944 "Wadi Sirhan in North Arabia," *BASOR* 96: 7-17.

Graf, David F.

1979a "Southern Jordan Survey," *BA* 42: 72.

1979b "A Preliminary Report on a Survey of Nabataean-Roman Military Sites in Southern Jordan," *ADAJ* 23: 121-27.

1980 "Survey of the Hismā Desert, Southern Jordan, 1980," Unpublished Report on File at the Department of Antiquities of the Hashemite Kingdom of Jordan, Amman.

1981 "Hismā Survey," *ASOR Newsletter* 7: 9-13, 5 figs., 1 map.

1983a "Dedanite and Minaean (South Arabian) Inscriptions from the Hismā," *ADAJ* 27: 555-69, figs.1-4, pls.121-22.

1983b "The Nabataeans and the Hismā: In the Footsteps of Glueck and Beyond," in Meyers and O'Connor (eds.) 1983: 647-64.

1989a "Rome and the Saracens: Reassessing the Nomad Menace," in Fahd (ed.) 1989: 341-400. [Reprinted as Graf 1997a.x].

1989b "Les routes romaines d'Arabie Pétrée," *Le monde de la Bible* 59: 54-56.

1992a "Nabataean Settlements and Roman Occupation in Arabia Petraea," *SHAJ* 4: 253-260.

1992b "The 'God' of Humayma," In Z. J. Kapera (ed.) *Intertestamental Essays in Honor of Józef Tadeusz Milik*. Kraków: Enigma Press. 67-76. [Reprinted as Graf 1997a.vii].

1993 "The Persian Royal Road System in Syria-Palestine," *Transeuphratène* 6: 149-68.

1994a "The Nabataean Army and the *cohortes Ulpiae Petraeorum*," in Dabrowa (ed.) 1994: 265-311. [Reprinted as Graf 1997a.v].

1994b "Hellenisation and the Decapolis," *Aram* 4: 1-48. [Reprinted as Graf 1997a.iv].

1995a "The *Via Nova Traiana* in Arabia Petraea," in Humphrey (ed.) 1995: 241-67. [Reprinted as Graf 1997a.vi].

1995b "Milestones with Uninscribed Painted Latin Texts," *SHAJ* 5: 417-25.

1997a *Rome and the Arabian Frontier: from the Nabataeans to the Saracens.* (Variorum Collected Studies Series CS594). Brookfield, VT: Ashgate.

1997b "Camels, Roads and Wheels in Late Antiquity," in Dabrowa (ed.) 1997: 43-49.

2000a Review of Negev 1997. *AJA* 104: 154.

- 2000b "Khirbet es-Samra in Arabia: Christian Stelae in Melkite Aramaic and the *Via Nova Traiana*," [Review of Humbert and Desreumaux 1998] *JRA* 13: 801-11.
- 2001a "Town and Countryside in Roman Arabia During Late Antiquity," in Burns and Eadie (eds.) 2001: 219-40.
- 2001b "First Millenium AD: Roman and Byzantine Period Landscape Archaeology and Settlement Patterns," *SHAJ* 7: 469-80.

Gregory, Shelagh

- 1996 "Was There an Eastern Origin for the Design of Late Roman Fortifications? Some Problems for Research on Forts of Rome's Eastern Frontier," in Kennedy (ed.) 1996: 169-209.
- 1997 *Roman Military Architecture on the Eastern Frontier*. 3 vols. Amsterdam: Adolf M. Hakkert.

Gregory, Shelagh and David L. Kennedy (eds.)

- 1985 *Sir Aurel Stein's Limes Report*. (BAR International Series 272.). 2 vols. Oxford: BAR.

Hanson, W. S. and Lawrence J. F. Keppie (eds.)

- 1980 *Roman Frontier Studies 1979*. (BAR International Series 71(iii)). Oxford: BAR.

Harlan, J. R.

- 1988 "Natural Resources," in MacDonald (ed.) 1988: 40-47.

Hart, Stephen

- 1986a "Some Preliminary Thoughts on Settlement in Southern Edom," *Levant* 18: 51-58.
- 1986b "Nabataeans and Romans in Southern Jordan," in Freeman and Kennedy (eds.) 1986: 337-42.
- 1987a "The Edom Survey Project 1984-1985: The Iron Age," *SHAJ* 3: 287-90.
- 1987b "Five Soundings in Southern Jordan," *Levant* 19: 33-47.

Hart, Stephen and Robin K. Falkner

- 1985a "Edom Survey, 1984," *Trasus* 3: 1-2, plate 64.
- 1985b "Preliminary Report on a Survey in Edom, 1984," *ADAJ* 29: 255-78.

Hayajneh, Hani

- 2001 "Marcus Ulpius Su'aidu in einem Bruchstück einer nabatäischen Inschrift aus Süd-Jordanien," *ZDPV* 117: 171-85.

Henry, Donald O.

- 1982 "The Prehistory of Southern Jordan and Relationships with the Levant," *JFA* 9.4: 418-444.

- 1987 "Topographic Influences on Epipaleolithic Land-use Patterns in Southern Jordan," *SHAJ* 3: 21-27.
- 1992 "Seasonal Movements of Fourth Millenium Pastoral Nomads in Wadi Hisma," *SHAJ* 4: 137-141.
- Henry, Donald O., F. A. Hassan, M. Jones and K.-C. Henry  
 1981 "An Investigation of the Prehistory and Paleoenvironments of Southern Jordan (1979 Field Season)," *ADAJ* 25: 113-46, figs.1-14.
- Henry, Donald O., Stephen A. Hall, Harold J. Hietala, Yuri E. Demidenko, Vitalie I. Usik, Arlene M. Rosen, and Patricia A. Thomas  
 1996 "Middle Paleolithic Behavioral Organization: 1993 Excavation of Tor Faraj, Southern Jordan," *JFA* 23.1: 31-53.
- Hodder, Ian (ed.)  
 1987 *Archaeology as Long-Term History*. (New Directions in Archaeology). Cambridge: CUP.
- Homes-Fredericq, D. and J. B. Hennessy (eds.)  
 1989 *The Archaeology of Jordan. II/1. Field Reports: Surveys and Sites A-K*. (Akkadica Supplementum, 7). Leuven: Peeters.
- Hopwood, Keith  
 1986 "Towers, Territory and Terror: How the East was Held," in Freeman and Kennedy (eds.) 1986: 343-56.  
 1989 "Consent and Control: How the Peace was Kept in Rough Cilicia," in French and Lightfoot (eds.) 1989: 191-201.
- Humphrey, John H. (ed.)  
 1995 *The Roman and Byzantine Near East: Some Recent Archaeological Research*. (JRA Supplementary Series, 14.) Ann Arbor, MI: JRA.  
 1999 *The Roman Near East: Some Recent Archaeological Research, Volume II*. (JRA Supplement 31.) Portsmouth, RI: JRA.
- Hunt, A.S. and J.G. Smyly (eds.), assisted by B.P. Grenfell, E. Lobel and M. Rostovtzeff.  
 1933 *The Tebtunis Papyri*. III, pt. I, (Univ. of California Publications, Graeco-Roman Archaeology III; Egypt Exploration Society, Graeco-Roman Memoirs 23). London.
- Husson, Genviève  
 1983 *OIKIA: Le vocabulaire de la maison privée en Égypte d'après les papyrus grecs*. Paris: Publications de la Sorbonne.
- Isaac, Benjamin  
 1980 "Trade-Routes to Arabia and the Roman Army," in Hanson and Keppie (eds.) 1980: 889-901.

- 1981 "The Decapolis in Syria, a Neglected Inscription," *ZPE* 44: 67-74.  
[Reprinted with postscript as Isaac 1998.20: 313-321.]
- 1984 "Bandits in Arabia and Judaea," *HSCP* 88: 171-203. [Reprinted with postscript as Isaac 1998.10: 122-158].
- 1988 "The Meaning of the Terms *limes* and *limitanei*," *JRS* 78: 125-147.  
[Reprinted with postscript as Isaac 1998.23: 345-387].
- 1989 "Luttwak's "Grand Strategy" and the Eastern Frontier of the Roman Empire," in French and Lightfoot (eds.) 1989: 231-34.
- 1990 *The Limits of Empire: the Roman Army in the East*. Oxford: Clarendon Press. [Revised Edition 1993].
- 1998 *The Near East Under Roman Rule: Selected Papers*. Leiden: Brill.

Jaussen, A.

- 1903 "Voyage du Sinai," *RB* 12: 100-14.

Jaussen, A. and R. Savignac

- 1909 *Mission archéologique en Arabie. I*. Paris: Leroux.
- 1914 *Mission archéologique en Arabie. II*. Paris: Leroux.

Jobling, William J.

- 1981a "Preliminary Report on the Archaeological Survey Between Ma'an and 'Aqaba, January to February 1980," *ADAJ* 25: 105-12, pls. 26-32.
- 1981b "The 'Aqaba-Ma'an Survey," *Liber Annuus* 31: 328-29.
- 1982a "'Aqaba-Ma'an Survey, Jan.-Feb. 1981," *ADAJ* 26: 199-210, figs. 1-4.
- 1982b "The 'Aqaba-Ma'an Archaeological and Epigraphic Survey 1982 Season," *Liber Annuus* 32: 467-70, pls. 111-13.
- 1983a "The 1982 Archaeological and Epigraphic Survey of the 'Aqaba-Ma'an Area of Southern Jordan," *ADAJ* 27: 185-96, figs. 1-3, pls. 39-49.
- 1983b "Preliminary Report on the Fourth Season of the 'Aqaba-Ma'an Archaeological and Epigraphic Survey, 1982/1983," *ADAJ* 27: 197-208, figs.1-2, pls.39-49.
- 1985 "Preliminary Report of the Sixth Season of the 'Aqaba-Ma'an Epigraphic and Archaeological Survey," *ADAJ* 29: 211-20.
- 1986 "North Arabian (Thamudic) Inscriptions and Rock Art from the 'Aqaba-Ma'an Area of Southern Jordan," *ADAJ* 30: 261-84.
- 1989 "Aqaba-Ma'an Archaeological and Epigraphic Survey," in Homes-Fredericq and Hennessy (eds.) 1989: 16-24.

Johnson, J. de M., V. Martin and A.S. Hunt (eds.).

- 1915 *Catalogue of the Greek and Latin Papyri in the John Rylands Library, Manchester. II, Documents of the Ptolemaic and Roman Periods*, Manchester.

Jones, Arnold H. M.

- 1964 *The Later Roman Empire 284-602: A Social, Economic, and*

*Administrative Survey*. 2 vols. Baltimore: Johns Hopkins University Press.

Jones, Barclay G.

- 1985 "Interregional Relationships in Jordan: Persistence and Change," *SHAJ* 2: 297-314.

Karg, Sabine

- 1996 "Die Pflanzenreste aus den nabatäischen und spätrömischen Schichten," in Bignasca, et al. 1996: 355-58.

Kennedy, David L.

- 1981 "Preliminary Report of a Survey of Roman Military Installations in North-Eastern Jordan," *ADAJ* 25: 21-24.
- 1982a *Archaeological Explorations on the Roman Frontier in North-East Jordan*. (BAR International Series. 134) Oxford: BAR.
- 1982b "The Contribution of Aerial Photography to Archaeology in Jordan: with Special Reference to the Roman Period," *SHAJ* 1: 29-36.
- 1992 "The Roman Frontier in Arabia (Jordanian Sector)," [Review of Parker 1986a and Parker (ed.) 1987] *JRA* 5: 473-89.
- 1996 "The Roman Army in the East," in Kennedy (ed.) 1996: 9-24.
- 1997 "Roman Roads and Routes in North-east Jordan," *Levant* 29: xxx.
- 2000 *The Roman Army in Jordan. A Handbook Prepared on the Occasion of the XVIIIth International Congress of Roman Frontier Studies, Amman, Jordan, 2-11 September, 2000*. London: CBRL.

Kennedy, David L. (ed.)

- 1996 *The Roman Army in the East*. (JRA Supplement. 18.) vols. Ann Arbor, MI: JRA.

Kennedy, David L. and R. Cowie

- 1984 "Archaeological Explorations on the Roman Frontier in North East Jordan: Some Further Notes," *ADAJ* 28: 321-22.

Kennedy, David L., Henry I. MacAdam, and David N. Riley

- 1986 "Preliminary Report on the Southern Hauran Survey, 1985," *ADAJ* 30: 145-54.

Kennedy, David L. and Henry I. MacAdam

- 1986 "Southern Hauran Survey, 1985," *ADAJ* 30: 411-14.

Kennedy, David L. and David N. Riley

- 1990 *Rome's Desert Frontier from the Air*. London: Batsford.

Killick, Alistair C.

- 1987 "Udhruh and the Trade Route through Southern Jordan," *SHAJ* 3: 173-79.
- 1989 "Udhruh," In Denise Homès-Fredricq and John B. Hennessy (eds.)

*Archaeology of Jordan II.2: Field Reports, Sites L-Z.* Leuven: Peters.

Killick, Alistair C. (ed.)

- 1987 *Udhruh – Caravan City and Desert Oasis: A Guide to Udhruh and Its Surroundings.* Amman: al-Kutba.

King, G.

- 1982 "Preliminary Report on a Survey of Byzantine and Islamic Sites in Jordan 1980," *ADAJ* 27: 85-96.  
1988 "Wadi Judayid Epigraphic Survey: A Preliminary Report," *ADAJ* 32: 307-17.

King, G., C. Lenzen, and G. Rollefson

- 1983 "Survey of Byzantine and Islamic Sites in Jordan: Second Season Report, 1981," *ADAJ* 28: 385-436.

King, G., C. Lenzen, A. Newhall, J. L. King, and J. Deemer

- 1987 "Survey of Byzantine and Islamic Sites in Jordan. Third Season Preliminary Report (1982): The Southern Ghor," *ADAJ* 31: 439-59.

Knapp, A. Bernard

- 1992a "Archaeology and Annales: Time, Space, and Change," in Knapp (ed.) 1992: 1-21.  
1992b "Independence and Imperialism: Politico-Economic Structures in the Bronze Age Levant," in Knapp (ed.) 1992: 83-98.

Knapp, A. Bernard (ed.)

- 1992 *Archaeology, Annales, and Ethnohistory.* (New Directions in Archaeology 27) Cambridge: CUP.

Kolb, B.

- 2000 *Petra - Ez-Zantur II. Ergebnisse der schweizerisch-liechtensteinischen Ausgrabungen. Teil 2. "Die spätantiken Wohnhausbau in Palästina vom 4.-6. Jh. n. Chr."* (Terra Archaeologica Bd. IV. Monographien der Schwizerisch-Leichtensteinischen Stiftung für Archäologische Forschungen im Ausland.) Mainz: Verlag Philipp von Zabern.

Koucky, Frank L.

- 1987a "The Regional Environment," in Parker (ed.) 1987: 11-40.  
1987b "Survey of the *Limes* Zone," in Parker (ed.) 1987: 41-106.

Kuhrt, Amélie

- 1995 *The Ancient Near East c. 3000 - 330 B.C.* 2 vols. (Routledge History of the Ancient World). London and New York: Routledge.

Kuhrt, Amélie and Susan Sherwin-White (eds.)

- 1987 *Hellenism in the East: Interaction of Greek and Non-Greek Civilizations from Syria to Central Asia after Alexander*. Berkeley and Los Angeles: University of California Press.
- Kurdi, Hanan  
1972 "A New Nabataean Tomb at Sadaqah," *ADAJ* 17: 85-87.
- Lander, James  
1986 "Did Hadrian Abandon Arabia?" in Freeman and Kennedy (eds.) 1986: 447-53.
- Lepper, Frank and Sheppard Frere  
1988 *Trajan's Column: a New Edition of the Cichorius plates*. Gloucester: Alan Sutton.
- Le Roy Ladurie, Emmanuel  
1979 *The Territory of the Historian*. Chicago: UCP.
- Levick, Barbara (ed.)  
forthc. *The Tax Law of Asia: Text, Translation, Commentary, and Essays*. Oxford: OUP.
- Lewin, A.  
1996 "The Organization of Roman Territory: the southern section of *provincia Arabia*." In Dabrowa (ed.) 1996: 109-18.
- Luttwak, Edward N.  
1976 *The Grand Strategy of the Roman Empire from the First Century A.D. to the Third*. Baltimore: Johns Hopkins.
- MacAdam, Henry Innes  
1986 *Studies in the History of the Roman Province of Arabia: the Northern Sector*. (BAR International Series. 295) Oxford: BAR.
- MacKenzie, Judith  
1990 *The Architecture of Petra*. Oxford and New York: Published for the British Academy, the British School of Archaeology in Jerusalem and the British Institute at Amman for Archaeology and History by Oxford University Press.
- MacDonald, Burton  
1984a "A Nabataean and/or Roman Military Monitoring Zone along the South Bank of the Wadi el Hasā in Southern Jordan," *CV/EMC* ns 3.2: 219-34.  
1984b "Umm Ubtulah: A Nabataean and/or Roman Military Site Along the North Side of Wadi el-Hasā in Southern Jordan," *ADAJ* 28: 183-89.

- 2001a "Climatic Changes in Jordan through Time," in MacDonald, et al. (eds.) 2001: 595-601.
- 2001b "Relation Between Paleoclimate and the Settlement of Southern Jordan During the Nabataean, Roman and Byzantine Periods," *SHAJ* 7: 373-8.

MacDonald, Burton (ed.)

- 1988 *The Wadi el Hasā Archaeological Survey 1979-1983, West-Central Jordan*. Waterloo: Wilfrid Laurier University Press.
- 1992 *The Southern Ghōrs and Northeast 'Arabah Archaeological Survey*. (Sheffield Archaeological Monographs 5.) Sheffield: University of Sheffield.

MacDonald, Burton, Russell Adams and Piotr Bienkowski (eds.)

- 2001 *The Archaeology of Jordan*. Sheffield: Sheffield Academic Press.

MacDonald, Michael C. A.

- 1993 "Nomads and the Hawrān in the Late Hellenistic and Roman Periods: A Reassessment of the Epigraphic Evidence," *Syria* 70: 303-413.

MacMullen, Ramsay

- 1963 *Soldier and Civilian in the Later Roman Empire*. Cambridge, MA: HUP.

Macumber, Philip G.

- 2001 "Evolving Landscape and Environment in Jordan," in MacDonald, et al. (eds.) 2001: 1-30.

Mason, H. J.

- 1974 *Greek Terms for Roman Institutions: A Lexicon and Analysis*. (American Studies in Papyrology 13.) Toronto: Hakkert.

Matthews, J.F

- 1984 "The Tax Law of Palmyra: Evidence for Economic History in a City of the Roman East," *JRS* 74:157-80.

Maxfield, Valerie and Michael Dobson (eds.)

- 1991 *Roman Frontier Studies 1989. Proceedings of the XVth International Congress of Roman Frontier Studies*. Exeter: University of Exeter.

Mayerson, Philip

- 1986a "The Saracens and the Limes," *BASOR* 262: 35-47.
- 1986b "Nea Arabia (P.Oxy.3574): An Addendum to ZPE 53," *ZPE* 64: 139-40.

Meyers, Carol L. and M. O'Connor (eds.)

- 1983 *The Word of the Lord Shall Go Forth: Essays in Honor of David Noel Freeman*. Philadelphia: ASOR.

Millar, Fergus

- 1977 *The Emperor in the Roman World (31 BC – AD 337)*. London: Duckworth.  
 1993a *The Roman Near East: 31 B.C.—A.D. 337*. London & Cambridge, MA: HUP.  
 1993b “The Greek City in the Roman Period,” in Hansen (ed.) 1993: 232-60.

Milner, N. P.

- 1993 *Vegetius. Epitome of Military Science*. Translated with notes and Introduction. Liverpool: Liverpool University Press.

Musil, Alois

- 1907 *Arabia Petraea. II: Edom. Topographischer Reisebericht*. Wien. [Reprinted: Hildesheim: Georg Olms, 1989].  
 1926 *The Northern Hegaz: A Topographical Itinerary*. New York: American Geographical Society.  
 1927 *Arabia Deserta*. New York: American Geographical Society.

Negev, Avraham

- 1973 “The Staircase-Tower in Nabataean Architecture,” *RB* 80: 364-83.  
 1997 *The Architecture of Oboda: Final Report*. (Qedem 36.) Jerusalem: Institute of Archaeology, Hebrew University of Jerusalem.

Nowicka, Maria

- 1975 *Les maisons à tour dans le monde grec*. Wrocław: Wydawn. Polskiej Akademii Nauk.

Oates, John F., Roger S. Bagnall, Klaas A. Worp, Joshua D. Sosin, Sarah J. Clackson, Terry G. Wilfong, Alexandra A. O'Brien

- 2000 *Checklist of Editions of Greek, Latin, Demotic and Coptic Papyri, Ostraca and Tablets*. Revised November 30, 2000. <http://www.lib.umich.edu/pap/>.

Oleson, John P.

- 1984 “Survey and Excavation at the Nabataean and Roman City of Humayma (Jordan),” *CV/EMC* ns 3.2: 235-48.  
 1986 “The Humayma Hydraulic Survey: Preliminary Report of the 1986 Season,” *ADAJ* 30: 253-60.  
 1988 “The Humayma Hydraulic Survey: Preliminary Report of the 1987 Season,” *ADAJ* 32: 157-69  
 1991 “Aqueducts, Cisterns, and the Strategy of Water Supply at Nabataean and Roman Auara (Jordan),” in A. Trevor Hodge (ed.) *Future Currents in Aqueduct Studies*. Leeds: Francis Cairns. 45-62.  
 1992 “The Water-Supply System of Ancient Auara: Preliminary Results of the Humeima Hydraulic Survey,” *SHAJ* 4: 269-75.  
 1995 “The Origins and Design of Nabataean Water-Supply Systems,” *SHAJ* 5: 707-19.  
 1997a “Humeima.” *OEANE*. 3: 121-22.

- 1997b "Landscape and Cityscape in the Hisma: The Resources of Ancient Al-Humayma," *SHAJ* 6: 175-88.
- 1998 Review of Harper 1995. *AJA* 102: 641-42.
- 1999 Review of Bignasca, et al. 1996. *BASOR* 315: 85-87.
- 2001a "Water Supply in Jordan through the Ages," in MacDonald, et al. (eds.) 2001: 603-14.
- 2001b "King, Emperor, Priest, and Caliph: Cultural Change at Hawara (Ancient al-Humayma) in the First Millennium AD," *SHAJ* 7: 569-580.
- Oleson, John P., Khairieh 'Amr, Robert Schick, Rebecca Foote, and John Somogyi-Csizmazia.
- 1993a "The Humeima Excavation Project, Jordan: Preliminary Report of the 1992 Season," *EMC/CV* 12: 123-58.
- 1993b "The Humeima Excavation Project: Preliminary Report of the 1991-1992 Seasons," *ADAJ* 37: 461-502.
- Oleson, John P., Khairieh 'Amr, Rebecca M. Foote, and Robert Schick
- 1995 "Preliminary Report of the Humayma Excavation Project, 1993," *ADAJ* 39: 317-54.
- Oleson, John P., Khairieh 'Amr, Rebecca Foote, Judy Logan, M. Barbara Reeves, and Robert Schick
- 1999 "Preliminary Report of the Humayma Excavation Project, 1995, 1996, 1998," *ADAJ* 43: 411-50.
- Oleson, John P., Barbara J. Fisher, and M. B. Reeves
- 2002 "New Dedicatory Inscriptions from Humayma (Ancient Hawara), Jordan," *ZPE* 140: 103-21.
- Osborne, G. and J. M. Duford
- 1981 "Geomorphological Processes in the Inselberg Region of South-Western Jordan," *PEQ* 113: 1-17.
- Palumbo, Gaetano
- 1994 *JADIS: The Jordan Antiquities Database and Information System: A Summary of the Data*. Amman: DofA and ACOR.
- Parker, S. Thomas
- 1976 "Archaeological Survey of the *Limes Arabicus*: A Preliminary Report," *ADAJ* 21: 19-31.
- 1979 *The Historical Development of the Limes Arabicus*. PhD Dissertation, UCLA.
- 1980 "Towards a History of the *Limes Arabicus*," in Hanson and Keppie (eds.) 1980: 865-78.
- 1986a *Romans and Saracens: A History of the Arabian Frontier*. (ASOR Dissertation Series 6.) Philadelphia: ASOR.

- 1986b "Retrospective on the Arabian Frontier after a Decade of Research," in Freeman and Kennedy (eds.) 1986: 633-60.
- 1995 "The Typology of Roman and Byzantine Forts and Fortresses in Jordan," *SHAJ* 5: 251-60.
- 2000 "The Defense of Palestine and Transjordan from Diocletian to Heraclius," in Stager, et al. (eds.) 2000: 367-88.
- Parker, S. Thomas (ed.)  
 1987 *The Roman Frontier in Central Jordan: Interim Report on the Limes Arabicus Project, 1980-1985*. (BAR International Series. 340.) 2 vols. Oxford: BAR.
- Penninck, E.  
 1940-5 "L'origine hellénique de burgus," *Latomus* 4: 5-21.
- Peters, F. E. (ed.)  
 1999 *The Arabs and Arabia on the Eve of Islam*. (The Formation of the Classical Islamic World 3). Brookfield, VT: Ashgate.
- Pippidi, D. M. (ed.)  
 1974 *Actes du IXe Congrès International d'Études sur frontières romaines*. Bucharest: Editura Academiei.
- Pollard, Nigel  
 1996 "The Roman Army as 'Total Institution' in the Near East? Dura-Europos as a Case Study," in Kennedy (ed.) 1996: 211-27.  
 2000 *Soldiers, Cities, and Civilians in Roman Syria*. Ann Arbor: University of Michigan Press.
- Preucel, Robert W. and Ian Hodder (eds.)  
 1996 *Contemporary Archaeology in Theory: A Reader*. Oxford & Cambridge, MA: Blackwell.
- Raikes, Thomas  
 1985 "The Character of the Wadi Araba," *SHAJ* 2: 95-101.
- Rast, Walter E. (ed.)  
 1987 *Preliminary Reports of ASOR-Sponsored Excavations 1982-85*. Baltimore: Johns Hopkins University Press.
- Reeves, M. B. and John P. Oleson  
 1997 "Baths of the Hisma Desert," *Balnearia* 5.1: 2-4.
- Robinson, George  
 1838 *Voyage en Palestine et en Syrie*. 2 vols. Paris: A. Bertrand.
- Roller, Duane W.

- 1983 "The 'Ain La'ban Oasis: A Nabataean Population Center," *AJA* 87: 173-82, pls. 24-27.
- Rostovtzeff, Michael.  
1941 *The Social and Economic History of the Hellenistic World*. Three Volumes. Oxford.
- Rushworth, Alan  
1996 "North African Deserts and Mountains: Comparisons and Insights," in Kennedy (ed.) 1996: 297-316.
- Saidel, Benjamin  
n.d. Unpublished Manuscript on File at the Department of Antiquities, Amman, Jordan.
- Sauer, James A.  
1973 *Heshbon Pottery 1971*. Berrien Springs, MI: Andrews University.
- Seeger, J. D. (ed.)  
1996 *Retrieving the Past: Essays on Archaeological Research and Methodology in Honor of Gus W. Van Beek*. Winona Lake, IN: Eisenbrauns.
- Shaw, Brent D.  
1982 "Fear and Loathing: the Nomad Menace and Roman Africa," in Colin M. Wells (ed.) *Roman Africa/L'Afrique romaine. The 1980 Governor General Vanier Lectures*. (Revue de l'Université d'Ottawa 52). Ottawa. [Reprinted in Shaw 1995.vii].  
1995 *Rulers, Nomads and Christians in Roman North Africa*. (Variorum Collected Studies Series CS497). Brookfield, VT: Ashgate.
- Shehadeh, N.  
1985 "The Climate of Jordan in the Past and Present," *SHAJ* 2: 25-37.
- Shipley, Graham and John Salmon (eds.)  
1996 *Human Landscapes in Classical Antiquity*. (Leicester-Nottingham Studies in Ancient Society 6). London & New York: Routledge.
- Sidebotham, Steven E.  
1986 *Roman Economic Policy in the Erythra Thalassa, 30 BC – AD 217*. Leiden: E. J. Brill.
- Smith, Andrew M., II, Michelle Stevens and Tina M. Niemi  
1997 "The Southeast Araba Archaeological Survey: A Preliminary Report of the 1994 Season," *BASOR* 305: 45-71.
- Southern, Pat and Kate Dixon

- 2000 *The Late Roman Army*. New Haven: Yale University Press.
- Speidel, Michael
- 1978 "The Roman Army in Arabia," *ANRW II.8*: 687-730. [Republished as Speidel 1984: 229-72].
- 1984 *Roman Army Studies, Volume I*. Amsterdam: J. C. Gieben.
- 1987 "The Roman Road to Dumata (Jawf in Saudi Arabia) and the Frontier Strategy of *Praetensione Colligare*," *Historia* 36: 213-21.
- Stager, Lawrence L., Joseph A. Greene, and Michael D. Coogan (eds.)
- 2000 *The Archaeology of Jordan and Beyond: Essays in Honor of James A. Sauer*. (Studies in the Archaeology and History of the Levant 1.) Winona Lake, IN: Eisenbrauns.
- Stelten, Leo F.
- 1990 *Flavius Vegetius Renatus. Epitome Rei Militaris*. Edited with an English translation. (American University Studies, Series XVII: Classical Languages and Literatures, volume 11) New York: Peter Lang Publishers.
- Teixidor, J.
- 1984 *Un port romain du désert: Palmyre et son commerce d'Auguste à Caracalla*. Paris: Librairie Adrien-Maisonneuve.
- Toynbee, Jocelyn M. C.
- 1971 *Death and Burial in the Roman World*. Ithaca, N.Y.: Cornell University Press
- Turner E.
- 1984 "Ptolemaic Egypt" in *The Cambridge Ancient History*. Second Edition. Cambridge: CUP. 7.1: 118-74.
- Tushingham, A. D.
- 1972 *The Excavations at Dibon (Dhiban) in Moab: The Third Campaign (1952-1953)*. Sheffield: Sheffield Academic Press.
- Unz, C. (ed.)
- 1986 *Studien zu den Militärgrenzen Roms. 3*. Stuttgart: Theiss.
- Villeneuve, François
- 1989 "Citadins, villageois, nomades: Le cas de la *Provincia Arabia*," *Dialogues d'histoire ancienne*. 15/1: 119-40.
- Vita-Finzi, C.
- 1982 "The Prehistory and History of the Jordanian Landscape," *SHAJ* 1: 23-27.
- Waheeb, Mohammad

- 1996 "Archaeological Excavation at Rās an-Naqab—'Aqaba Road Alignment: Preliminary Report (1995)," *ADAJ* **40**: 339-48.
- Weber, E.  
1974 *Tabula Peutingeriana*. Graz.
- Weippert, Manfred  
1979 "Nabatäisch-römische Keramik aus Hirbet Dor im südlichen Jordanien," *ZDPV* **95**: 87-110.  
1992 "Remarks on the History of Settlement in Southern Jordan During the Early Iron Age," *SHAJ* **1**: 153-62.
- Whittaker, C. R.  
1994 *The Frontiers of the Roman Empire: A Social and Economic Study*. Baltimore & London: Johns Hopkins University Press.  
1996 "Where are the Frontiers Now?" in Kennedy (ed.) 1996: 25-41.
- Winnett, Fred V. and G. Lankester Harding  
1978 *Inscriptions from Fifty Safaitic Cairns*. Toronto: University of Toronto Press.
- Wooliscroft, D. J.  
2001 *Roman Military Signalling*. Charleston, SC and Stroud, UK: Tempus.
- Young, Gary K.  
1997 "The Customs-Officer at the Nabataean Port of Leuke Kome (*Periplus Maris Erythraei* 19)," *ZPE* **119**: 266-68.
- Zayadine, Fawzi  
1999 "Two North-Arabian Inscriptions from Jordan," *ADAJ* **43**: 311-19.
- Zitterkopf, R. and Steven Sidebotham  
1989 "Stations and Towers on the Quseir-Nile Road," *JEA* **75**: 155-89.
- Zwickel, W.  
1990 *Eisenzeitliche Ortslagen Ostjordanland*. Wiesbaden.

## Appendix 1: Catalogue of Previously Identified Roman Watchtowers Between al-Sadaqa and al-Quwayra, Visited by the Humayma Watchtower Survey in 2000.

The following format is used in the catalogue:

**Site Number:** An arbitrary Humayma Watchtower Survey (HWS) Site Number, composed of a capital letter designating the region (A = North of the al-Shera escarpment, but South of as-Sadaqa; B = Between the escarpment and al-Humayma; C = South of al-Humayma, but North of Quwayra.) and a sequential two digit number designating sites within each region for easy map reference.

**Name:** *Modern names* of sites are given in bold italics. Many sites have multiple names among the local inhabitants.

**UTM Coordinates:** Universal Transverse Mercator (UTM) Coordinates were obtained with a Garmin 48 handheld Geographical Positioning System. Thanks to the removal (May 1, 2000) of the "Selective Availability Error" previously imposed for the purpose of military security by the government of the United States of America, accuracy of the unit became an estimated  $\pm 4$  meters. The format of the entry is the standard UTM order of Geographical Zone designation, followed by a seven digit Northing, a comma, and a seven digit Easting: e.g. 36R 1234567, 8901234.

**PG Coordinates:** The Palestine Grid (PG) system was established by the British Army during the British Mandate in the Middle East. Now largely defunct, it is a plane coordinate system, which does not account for the curvature of the Earth. For this reason, map error increases with the distance from Cairo, the origin of the system. Nevertheless, many of the older maps of the Hashemite Kingdom of Jordan (HKJ) utilize the system, and many previous surveys provide site locations using the PG. The HWS obtained these values by compass bearings applied to the HKJ 1:50,000 Geological Map Series. The format is a four digit Northing, a comma, and a four digit Easting: e.g. 123.4, 567.8.

**Elevation:** Absolute elevation in meters (m) Above Sea Level (ASL) was obtained from the Garmin GPS unit discussed above, and allegedly shared the same  $\pm 4$ m error, although field testing suggested that elevation was the least accurate of the measurements and could vary significantly depending on available satellite coverage.

Maps: References are to the following map series, as appropriate: the Hashemite Kingdom of Jordan 1:250,000 Archaeological Map Series, "Ma'an" Sheet 3 (revised 1982); the Hashemite Kingdom of Jordan Natural Resources Authority 1:50,000 Geological Map Series (Produced 1986-present); the Hashemite Kingdom of Jordan Ministry of Economy/United States Agency for International Development K737 1:50,000 Topographical Map Series (based on aerial photographs dated 1961); or the Hashemite Kingdom of Jordan Ministry of Economy/U.S.A. Operations Mission to Jordan 1:25,000 Topographic Map Series (based on aerial photographs dated 1953.).

Ceramic Collection: Where possible, a range of dates will be given rather than periods. The ceramic collections provided in previous studies are presented in their original format. Refer to Appendix II, for a brief discussion of the ceramic chronology of southern Jordan, its implications and limitations, as well as a critique of ceramic terminology.

Where necessary, chronological periods are abbreviated as follows:

Ir		Iron Age.
	Ir I	Iron Age I.
	Ir II	Iron Age II.
N		Nabataean.
	EN	Early Nabataean.
	MN	Middle Nabataean.
	LN	Late Nabataean.
RO		Roman.
	ER	Early Roman.
	LR	Late Roman.
BYZ		Byzantine.
	EBYZ	Early Byzantine.
	LBYZ	Late Byzantine.
OM		Ommayad.
AB		Abbasid.
AY		Ayyubid.
MA		Mamluk.
FA		Fatimid.
OT		Ottoman.

References: Citations of previously published descriptions of each site are given, and refer to the work by author, date, and page references, as listed in the bibliography. Where appropriate, the catalogue numbers of other survey projects are provided.

## A. Sites Between al-Sadaqa and the al-Shera' Escarpment.

Site Number: A01.

Name: *Khirbet al-Qirana Watchtower*.

UTM Coordinates: 36R 0745079, 3319938

PG Coordinates: 200.200, 933.500.

Elevation: 1662m ASL.

Maps: *Jibal el Batra* 3149.IV (1:50,000, K737); *Jebel el Batra* (1:25,000, 195/925).

References: Musil 1907: 229-30; 1926: 50; Glueck 1935: 62, pl.18; Gregory and Kennedy 1985: 330-3; Parker 1986a: 102-4; 106; Gregory 1997.2: 400-1.

Ceramic Collection: only 1 rim sherd and 1 bottom sherd Nabataean fineware unpainted (1st century AD); 2 body sherds 2nd - 4th centuries AD possible (?) Data compiled by Yvonne Gerber, Basel.

Presumably the tower mentioned by Parker in his discussion of the late Roman fortress at Khirbet al-Qirana: "Only to the west is visibility limited, but the construction of a watchtower ca 5km to the west compensated for this."<sup>1</sup> The site is on a spur extending southwards from the Edomite Plateau, between the modern village of Ras an-Naqb and the Roman fortress of Khirbet al-Qirana [Figure 35]. There is an excellent view of the Wadi Juddayid to the south as far as al-

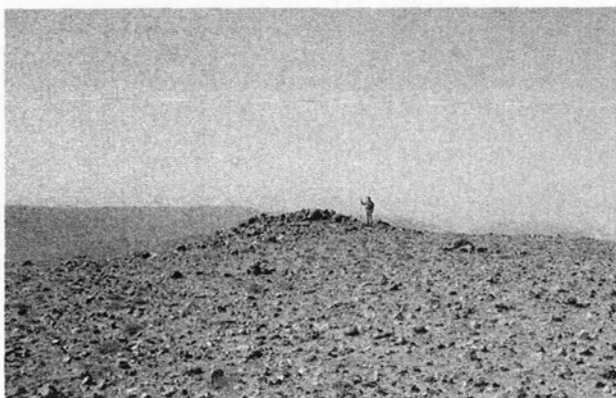


Figure 35: Site HWS A01 facing South. Photo by author.

Quwayra and a good line of sight to the fortress at Khirbet al-Qirana, but local visibility remains somewhat limited by the higher hills to the west.

<sup>1</sup> Parker (1986a: 102-3) describes Khirbet al-Qirana as being ca. 9km southeast of Ras al-Naqb. A watchtower ca. 5km to the west of al-Qirana could be located at Khirbet al-Shuddayid (HWS A07), although he does not specify the precise location of the tower. In fig. 38, however, he indicates one watchtower very close to Khirbet al-Qirana and another at Khirbet al-Shuddayid. The latter is not otherwise mentioned in the text, and he makes no mention of the purported tower site at Ras al-Naqb (HWS A08).

The structure is ca. 5.65 x 5.65 m, with what could be a later addition ca. 1.90 x 5.65 m on the north side. The walls appear to be ca. 0.74 m thick and are built of large (ca. 0.50 x 1.0 m), un-worked boulders of chert-bearing limestone, assembled without mortar. The northwest corner is particularly well preserved [Figure 2].

Recent robbing in the northeast quadrant of the building did not seem to have unearthed any artifacts. There is relatively little in the way of rubble at the site, although stone may have been removed for reuse elsewhere. While it is possible that the extension on the north side may have served as a foundation for a staircase as at A02, this would be difficult to ascertain, even after excavation, given the degraded state of the remains. Several burials to the west and northwest of the site are probably modern.

Glueck (1935: 62, pl. 18) visited a purported tower near Khirbet al-Qirana, but did not recover any sherds. Strangely, Parker (1986a: 104) recovered 276 sherds from what he believed to be the same site, 44 of which were datable: 1 possible Ir, 11 Nab, 5 LR IV, 26 EByz I-LByz I, 1 LByz II-III. Our collection yielded only 4 sherds: 2 of the first century AD and 2 possibly of the second-to-fourth centuries AD.

Parker suggests (1986a: 104): "An important duty of the garrison of this fort and watchtower was to keep watch over the Hisma to the south and southeast." There is little evidence to conclude that A01 was a tall structure or tower and the limited visibility to the west may also argue against the function of this site as a watchpost, although the view of the eastern Hisma is almost unparalleled.

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Site Number: A02.

Name: *Jebel al-Qanah Watchtower; Khirbet Ras al-Qanah; Rujm 'Ain al-Qanah.*

UTM Coordinates: 36R 0734132, 3324167.

PG Coordinates: 191.000, 937.500.

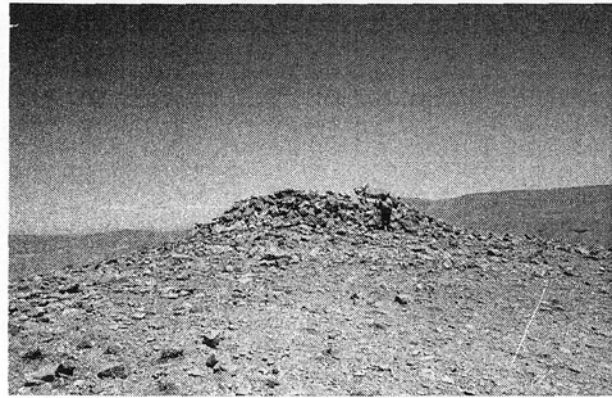
Elevation: 1506m ASL.

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Thughra* (1:25,000, 180/935).

References: Glueck 1935, "Rujm al-Qana"; Graf 1983b: 649, map 1.

Ceramic Collection: mixed; 1 rim sherd probably Iron Age; one part Nabataean commonware (later 1st century - early 2nd century AD); another part 2nd/3rd century AD?; 1 rim sherd and 3 body sherds Umayyad (?) Data compiled by Yvonne Gerber, Basel.

This large, well-preserved structure is located at the summit of Jebel al-Qanah, where it holds a commanding view of the entire Hisma plain west of the modern highway [Figure 36; Figure 5]. The convex shape of Jebel Qanah, however, precludes observation of the area at the



**Figure 36: Site HWS A02 facing North. Photo by author.**

foot of the hill. Referred to as Khirbet Ras al-Qanah by some local informants, that name is probably more appropriate to HWS A11, which is situated literally at the "head of the aqueduct." Glueck discovered a "settlement" at Rujm al-Qana, but he must have been referring to one of the numerous larger sites in the area, perhaps at the top of the escarpment. Not described by previous visitors, A02 has several features suggesting a possible tower.<sup>2</sup>

<sup>2</sup> Graf (1995a: 252) writes: "[The Via Nova] swings by Ras al-Qana, the location of a small structure (6m2) that perhaps served as a checkpoint for regulating traffic emerging from or descending into the Hisma desert below the escarpment." The description of a checkpoint (presumably on the road), and the name "Ras al-Qana", are both more indicative of HWS A11 than of HWS A02. However, Graf's fig. 6 clearly shows a structure at the location of A02 and not at the location of A11. Another structure marked, but not labeled, at the top of the escarpment on Graf's fig.6 could not be located. A "Rujm 'Ain al-Qana" is also indicated on the 1:250,000 Archaeological Map of the region, although it is not clear which particular site is captioned. See also HWS A11, below.

The walls are constructed of two faces of rubble blocks (ca. 0.40 x 0.40 x 0.20m), some of which have been roughly hewn, and a thin cobble core in mud packing. No lime mortar is visible. Wall thickness appears to be ca. 0.85m. The interior dimensions are 4.0 x 4.5m, but the exterior face of the wall cannot be ascertained without removing considerable tumble. One section of interior walling is preserved to a height of ca. 0.91m. A probable doorway is visible in the western wall, but precise dimensions cannot be established. There is an extremely large volume of rubble for a structure with such a small ground plan.

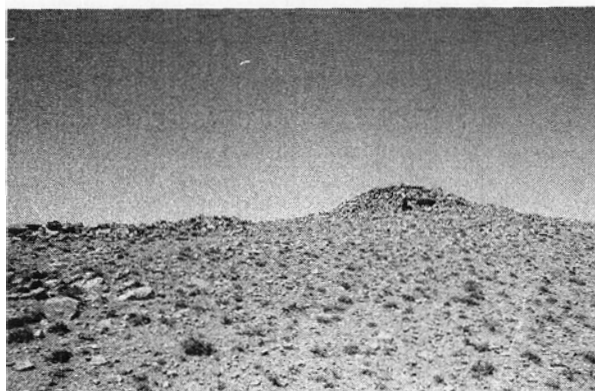
A number of extremely large (ca. 1.30 x 0.80 x 0.12m), limestone slabs may have served as roofing or as flooring for a second storey and two slabs (ca. 0.50m wide) projecting from the western wall of the structure probably served as cantilevered arch-springers and are presumably matched



**Figure 37: Southeast Corner of HWS A02. Photo by author.**

by others on the eastern wall. One section of the northern interior wall is preserved to a height of at least 0.91m [Figure 6], while the southeastern exterior corner was preserved to 0.80m [Figure 37]. Identifiable ceramics from the site date primarily to the late-first or early-second century AD and possibly the later-second or third century AD. One possible Iron Age sherd and four possible Ommayad sherds were also recovered. Given the absence of any obvious disturbance, this site was chosen for excavation during Phase II of the project (Chapter 5).

A second site ca. 10.0m northwest of A02 appears to be an ancient domestic structure [Figure 38; Figure 18]. It is composed of a central courtyard ca. 7.0 x 5.0m with rooms around the exterior on the north, northeast, and west sides.



**Figure 38: Site HWS A02 (right) facing South, with possible domestic structure (left). Photo by author.**

Constructed of flat field-stones without the use of mortar, there may have been

several periods of construction, especially in the southwest corner. Significant soil deflation is likely, and it is possible that only the foundations of the original structure remain. Ceramics were not collected at the farmhouse but appeared to be almost entirely of the late-first and early-second centuries AD, including a large amount of fineware.

Site Number: A03.

Name: *Rujm al-Sadaqa; Tell 'Ain Sadaqa* [Stein].

UTM Coordinates: 36R 741326, 3339423.

PG Coordinates: 197.000, 954.000.

Maps: *Ma'an* 3150.III (1:50,000, K737); *Khirbet el Mureigha* (1:25000, 195/945).

Elevation: 1552m ASL

References: Robinson 1838.1: 168; Brünnow and Domaszewski 1904: 468-9, fig 544; Musil 1907: 232; Glueck 1935: 71-2, 76, Site 82; Bowersock 1971: 238; Zayadine 1972, unpublished; Kurdi 1972: 85-7; Hart & Falkner 1985b: 270, site 082; Gregory and Kennedy 1985: 334; Parker 1986a: 99-100, fig. 44; Hart 1986a: 51, site 082; Graf 1995a: 250; Gregory 1997.2: 395-7, figs. F34.1b-c; Kennedy 2000: 176-7.

Ceramic Collection: None.

Located on a hill just east of the village of al-Sadaqa and its spring, this imposing structure has an impressive view of the region between Ma'an and the escarpment. The site is named in the *Notitia Dignitatum* (Or. 34.24) as *Zodocatha* and in the *Peutinger*

*Table* and the *Geography* of Claudius Ptolemy (5.16.4) as Zadagatta. Previous visitors felt that it must have functioned as an observation post because the remains of a much larger fort are visible in the town below (Parker 1986a: 100). However, given the size and quality of construction, it does not seem that Rujm al-Sadaqa should be referred to as a mere watchtower, although Gregory's suggestion, based on the plan produced by Brünnow and Domaszewski, that it may have been a shrine reused as a watchtower is at best unsubstantiated (1997.2: 397; Kennedy 2000: 177). Instead, it seems possible that the two military structures simply date to different periods. Graf has conducted soundings in the lower fort, but they remain unpublished (1995a: 250).

Byzantine inscriptions from southern Sinai mentioning a *castra Zodocatha*, undoubtedly refer to the larger fort in the modern village (Graf 1995a: 250). The *Notitia Dignitatum* records a unit of *equites promoti indigenae* (Or. 34.24) at Zodocatha, but there is no obvious reason to think that they were stationed at Rujm al-Sadaqa rather than in the village or fort below the hill. The size of Rujm al-Sadaqa, its location on a rather large hill, and the lack of suitable grazing land in the immediate vicinity may have made it inconvenient for the stabling of more than a very few horses.

The remains of Rujm al-Sadaqa suggest a substantial structure (ca. 19.5 x 17.75m) of at least two stories with a possible parapet and corner towers, although these remain hypothetical, given the massive quantity of rubble across the site. A depression in the rubble at the centre of the structure may indicate a courtyard or similar feature. Brünnow and Domaszewski (1904: 468-9, fig 544) could not locate the eastern wall of the structure, despite being able to identify several internal rooms. Stein suggested a possible gate in the eastern wall (Gregory and Kennedy 1985: 334), but this could not be

verified during our visit. The tops of arched doorways are dimly visible through the rubble and appear to be preserved to their full height. If this is the case, there is no reason to believe that the structure had no entrance and had to be accessed by ladder (Parker 1986a: 99). It also seems unlikely that the arched passages, are the remains of cisterns or substructures (Gregory 1997.2: 396; fig. 34.1c), as the rubble of the structure stands several metres above the surrounding ground. A large Nabataean, loculus tomb of first century date has been excavated on the hilltop ca. 0.5 km west of Rujm al-Sadaqa (Kurdi 1972). But a large number of modern burials dot the rubble of the structure, making investigation difficult and outsiders unwelcome. Repeated attempts to survey the site in detail were discouraged by police and local residents.

Unfortunately, reported surface sherds from both forts run from the Nabataean through Early Byzantine periods, with some Ottoman occupation, so only excavation could determine accurately the foundation dates for the structures. Glueck (1935: 72) felt that the “tower” was Nabataean in date. Hart and Falkner (1985b) reported sherds of Iron Age date, a “fortress” of first or second century AD, and possible Ottoman sherds. Hart (1986a: 51) concluded: “Rujm Sadaqa is a Nabataean/Roman fortress but a few Iron Age sherds were found and the superb defensive position and field of vision from this hill suggest it was also utilized by the Edomites.” Parker (1986a: 100) collected 236 sherds at the site, of which 47 were datable: 3 Nab, 1 possible LR III, 9 LR IV, 30 EByz, 4 Late Ottoman. Graf (1995a: 250) reported second century pottery as well as Roman, Byzantine and “Medieval Arabic” sherds. The HWS did not collect surface artifacts at the site.

Site Number: A04.

Name: *Khirbet Dhor; Dor.*

UTM Coordinates: 36R 0738888, 3335105.

PG Coordinates: 195.900, 948.400.

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Khirbet el Mureigha* (1:25,000, 195/945).

Elevation: 1480m ASL.

References: Glueck 1935: 70-71, site 75; Weippert 1979; Hart & Falkner 1985b: 271, site 35; Hart 1986a: 54; Graf 1995a: 250-1.

Ceramic Collection: None.

Located ca. 5km south of Rujm al-Sadaqa along the line of the *Via Nova*, the site of Khirbet Dhor extends up a hillside on the western side of the modern road. Graf mentions a “small fort at Dor (28 x 24 m) on a hill surrounded by a Nabataean-Roman-Byzantine settlement.” The structure in question seems to have been occupied in modern, perhaps Ottoman, times. There are several arched rooms surrounding a small courtyard [Figure 39], with many of the walls preserved to a full storey in height. It is constructed of rubble, but the lower courses display many reused ashlar blocks, including



some with Nabataean dressing,

**Figure 39: Site HWS A04 showing interior of courtyard. Photo by author.**

especially at the southeastern corner. It seems reasonable to believe that there is an earlier structure below the foundations, from which some of the construction materials may have been robbed.

Weippert (1979) published Nabataean and Roman pottery from the site. Hart and Falkner (1985b: 271) felt that the village as a whole dated to the first and second centuries AD. Hart (1986a: 54) went so far as to suggest that it was a military site in the

Nabataean period and that it was probably reused in the Roman *limes*. Graf (1995a: 250-1) reported Nabataean, Roman and Byzantine ceramics. Without excavation, it would be impossible to determine the occupation history of the structure more accurately; as it is located in the center of this large multi-period site, it is surrounded by sherds from all periods and an additional surface sample would be of little, or questionable, value. No collection was made. There is, however, no obvious reason to suggest that the structure ever functioned as a Roman fort or tower. It is more likely that it functioned as an Ottoman police post.

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Site Number: A05.

Name: *Khirbet Suweimira / Sweimreh*.

UTM Coordinates: 36R 738503, 3331122.

PG Coordinates: 195.300, 944.300.

Elevation: 1512m ASL.

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Tawil el Hamar* (1:25,000, 195/935).

References: Musil 1907: 231; Glueck 1935: 71, site 80; Zwickel 1990: 22-23; Graf 1995a: 251.

Ceramic Collection: None.

The ancient site is located on the eastern slope of a low rise, ca. 1.0 km west of the modern village, overlooking the path of the *Via Nova Traiana*. Graf reported, "...an impressive structure (17 x 45 m) of late Roman to Byzantine date [which] may have served as another of the intermediary stations along the *Via Nova* between Sadaqa and Humayma," but no such structure could be found during the 2000 survey. No sherds were collected.

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Site Number: A06.

Name: *'Ain Abu Inzor*. ("Spring of the Father of Eagles.")

UTM Coordinates: 36R 0738814, 3322877

PG Coordinates: 195.400, 935.700.

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Tawil el Hamar* (1:25,000; 190/935).

Elevation: 1415-1440 m ASL.

References: Glueck 1935: 65, site 44; Graf 1983b: 649, Map 1; Bisheh, et al. 1993: 121, fig. 4-8, Site 13; Waheeb 1996: 345. Oleson, forthcoming: Chap II, Site 7.

Ceramic Collection: None.

Discovered to be identical with HWS B08 "Khirbet Abu an-Nusur." Directly threatened by a highway project, the site was surveyed by the Department of Antiquities. Bisheh described a large village of Nabataean, Roman and Byzantine date and published some pottery from the site (Bisheh, et al. 1993: 121, fig. 7.4-8). Waheeb conducted excavations at the site and reported: "A square-shaped structure of 4 x 4.2m was discovered in the western part of the site. It was built of well-dressed limestone blocks. The structure possibly served as a watch-tower overlooking the al-Humayma plateau" (Waheeb 1996: 345). As at Ain al-Jammam 2 (HWS A09), most of the artifacts from the excavations dated to the Byzantine period. The structure could not be located by the survey team, and it is possible that it has been destroyed by the road expansion.

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Site Number: A07.

Name: *Khirbet al-Shuddayid; Khirbet Shtar* [Stein].

UTM Coordinates: 36R 0741721, 3321225.

PG Coordinates: 198.400, 934.300.

Elevation: 1655m ASL.

Maps: *Jibal el Batra* 3149.IV (1:50,000, K737); *Jebel el Batra* (1:25,000, 195/925).

References: Musil 1907: 230-1; Glueck 1935: 60, site 34; Graf 1979b: 123, 125, fig. p. 123; Eadie 1984; Gregory and Kennedy 1985: 329-30; Hart & Falkner 1985b: 269, site 001; Hart 1986a: 51; Jobling 1989: 192; Bisheh, et al. 1993: 125-6, site 12.

Ceramic Collection: None.

Just 5 km east of A.08 (Khirbet Ras al-Naqb), under the modern microwave tower are the remains of a large Iron Age fortress (ca. 160 x 70m), which may have been reoccupied during the Nabataean, Roman and Byzantine periods (Bisheh et al. 1993: 125-6). Stein (Gregory and Kennedy 1985: 329-30) must have been referring to the site when he described a massive pre-Roman fortress at the top of the escarpment towering above the line of the pre-modern road, although the name “Khirbet Shtar” more properly describes a site at modern Ras al-Naqb. He wrote that, “A small isolated debris heap some 24 yards to the south-east of the circumvallation possibly marks a watch-tower.” Graf (1979b: 125) collected 92 sherds during his survey. In the fort he recovered 17 Iron Age, 6 Iron II, and 23 Nab; below the fort he obtained 19 Iron Age, 3 Iron II, 15 Nab, 2 LR and 1 Modern. Hart and Falkner (1985b: 269, Table 1) dated the fortress to Iron IIc and reported sherds of Ayyubid, Mamluk and possibly Ottoman date. They seem to suggest that the “isolated building or watchtower” dates to the first or second century BC. Our brief visit provided no evidence for the presence of a Nabataean or Roman watchtower, although one is also indicated by Parker (1986a: fig. 38).

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Site Number: A08.

Name: *Khirbet Ras al-Naqb; Fuweilah* [Glueck]; *Khirbet Neqb esh-Shtar* [Hart and Falkner].

UTM Coordinates: 36R, 0739829, 3321099.

PG Coordinates: 196.600, 934.400.

Elevation: 1588m ASL.

Maps: *El Quweira* 3049.I (1:50,000, K737) and *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel el Batra* (1:25,000, 195/925).

References: Glueck 1935: 62, pl.18; Graf 1979b: 125, fig. p. 123; Hart and Falkner 1985b: sites 004, 005; Hart 1986a: 51.

Ceramic Collection: None.

The watchtower reported by Glueck at the top of the escarpment was destroyed by the widening of the highway and the construction of a rest house along the old Ras al-Naqb highway between Dabat Hanut and Ras al-Naqb. Graf (1979b: 125) collected 87 sherds, 19 of which could be dated to the Nabataean period. Hart and Falkner (1985b: Table 1) recovered sherds of Iron Ia-IIc and the Ottoman period; they identified a fortress of the first to second century AD and an isolated structure or tower of Iron IA-IIc. Hart (1986a: 51) interprets the remains as an Edomite military site reused in the Nabataean and Roman periods. The structure is now a medical clinic and off-limits to visitors.

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Site Number: A09.

Name: *'Ain al-Jammam 2; Khirbat 'Ayn al-Jammam 2.*

UTM Coordinates: 36R 3323900, 0737800

PG Coordinates: 194.600, 937.000.

Elevation:

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Thughra* (1:25,000, 180/935).

References: Hart and Falkner 1985b: site 007; Bisheh, et al. 1993: 121, Site 16; Waheeb 1996: 344-5.

Ceramic Collection: None.

Hart and Falkner (1985b: Table 1) described the site as a “hamlet” of uncertain date. A structure (ca. 20 x 20 m) at the site was tentatively interpreted by Bisheh (1993: 121) as a Nabataean or Roman watchtower during his survey. Later excavation by Waheeb (1996: 344-5) revealed the remains of a large house, undoubtedly located on the slope in order to exploit the spring. Besides basalt grinding stones, a lamp and some small bronze arrowheads, a considerable quantity of Late Roman-Early Byzantine pottery was unearthed by the excavation. The site is now fenced-off and access is limited.

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Site Number: A.10.

Name: ***Jammam Aqueduct Km 2.901.***

UTM Coordinates: 36R 0733875, 3324304

PG Coordinates: ca. 192.200, 936.700.

Elevation:

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Thughra* (1:25,000, 180/935).

References: Oleson, forthcoming: Chapter II.

Ceramic Collection: None.

This site was discovered on the face of the escarpment by Oleson during his hydraulic survey of the Jammam aqueduct: "The [aqueduct] conduit turns inward and crosses the foot of a gentle valley that leads up to the col on the ridge leading to Jebel Ghana. There are traces of what might be a circular watchtower 10m above on a little spur."

The structure could not be located despite repeated attempts. The shallow nature of the small valley in question makes it a natural point for crossing from east to west along the slope of the escarpment and it seems possible that a new, crudely-bulldozed track running from 'Ain Qanah to 'Ain Jammam may have destroyed the feature. Oleson could not relocate the tower in 2001 (*pers. comm.*). This feature was the only reported circular watchtower in the survey zone.

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Site Number: A11.

Name: ***Ras al-Qanah.***

UTM Coordinates: 36R, 0735210, 3325729.

PG Coordinates: 192.700, 938.500.

Elevation: 1513m ASL.

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Thughra* (1:25,000, 180/935).

References: Frank 1934: 235-6; Glueck 1935: 65-66, site 47; Graf 1995a: 252, fig. 6.

Ceramic Collection: the bigger part 2nd/3rd century AD, 2-3 rim sherds more probably 4<sup>th</sup> century AD (?); closing date: end of 3rd century AD possible, but quite uncertain Data compiled by Yvonne Gerber, Basel.

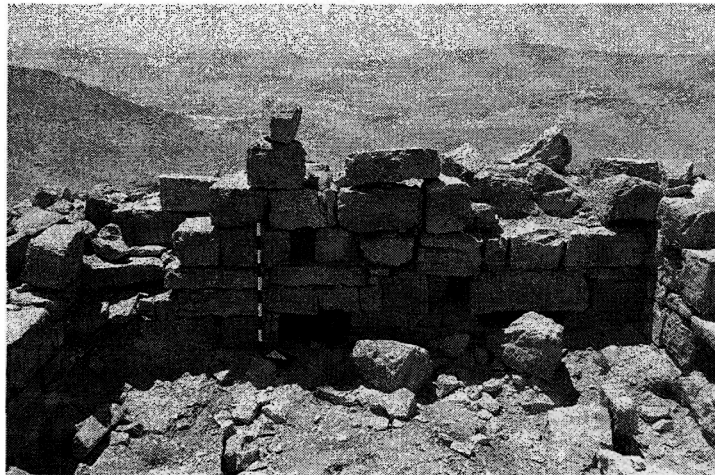
Graf (1995a: 252, fig. 6) mentioned, "...a small structure (6m<sup>2</sup>) that perhaps served as a checkpoint for regulating traffic emerging from or descending into the Hisma desert below the escarpment." Several un-named structures are indicated on his figure 6, including one at the top of the escarpment, which might be the one referred to here, but

no structure is marked near HWS A11. It seems likely that Graf's structure is synonymous with a tower reported by Fritz Frank (1934: 235-6):

“Im wadi et-tor sah ich viele kleinere Ruinen und Reste einer alten Strasse, die weiter sudlich auf der Wasserscheide zwischen wadi et-tor und wadi 'en el-kana noch deutlicher sichtbar wurde und sich als Romerstrasse erwies. Auf der Wasserscheide liegt an ihr die Ruine eines kleinen quadratischen Bauwerks, wahrscheinlich eines Wachtturms, mit gerippter Keramik.”

Both descriptions fail to indicate whether the tower is part of the way down the wadi al-Qanah, so they may or may not refer to HWS A11.

Located approximately 1.0 km up the modern track from 'Ain Qanah towards the Darb al-Rasif road, HWS A11 overlooks the route of the ancient *Via Nova*, the spring of 'Ain Qanah, and the aqueduct. HWS A11 is a small structure (ca. 6.0 x 6.0m) located on a spur on the



**Figure 40: HWS A11 interior facing west. The remains of three or four steps are visible ascending from left to right on the western (thickened) wall. Photo by author.**

western side of the track in such a way that all road traffic must pass between the structure and the hillside. A11 bears striking similarities to A02, B01, and B07. It is constructed of the same limestone boulders (ca. 0.43 x 0.38 x 0.32m) as the other structures, with walls ca. 1.0m thick, except on the western side where the wall has been thickened to ca. 1.60m by the addition of a staircase ca. 0.58m wide on the interior face

[Figure 40; Figure 3]. The treads of the individual steps are ca. 0.28m long except the lowest, which is ca. 0.64m long and which may have formed a landing or a stone floor-paver. A doorway (ca. 0.94m wide) is easily identifiable in the southern wall [Figure 4], but no arch springers could be seen despite clear visibility of the interior wall faces.

The absence of arch springers but the presence of a staircase at A11 makes the nature of the second storey enigmatic; perhaps it was less substantial than at other sites. A few larger slabs, similar to those hypothesized as roofing slabs at HWS A02, were visible outside of the structure, but they were fragmentary and the original dimensions could not be ascertained. The interior of A11 is virtually devoid of rubble suggesting that the site has been frequently reused and the stone carted away or jettisoned over the nearby cliff. Ceramics from the site date to the second and third centuries AD, with a few possible fourth century AD sherds. The inconvenient location of the structure may suggest that it was placed so as to be close to the road.

## B. Sites Between the al-Shera' Escarpment and al-Humayma.

Site Number: B01.

Name: *Jebel Helwa Watchtower*.

UTM Coordinates: 36R 0728628, 3322463.

PG Coordinates: 185.400, 935.900.

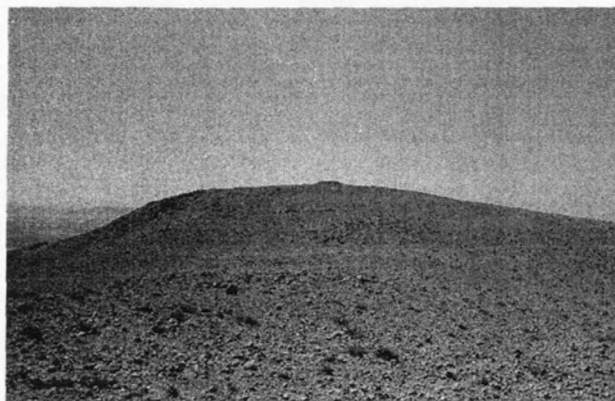
Elevation: 1130 m ASL.

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Thughra* (1:25,000, 180/935).

References: None.

Ceramic Collection: HWS B 01 00 HWS, B 01, Surface, 23.07.2000: Date : 1 rim form (= 3 rim sherds) Late Byzantine - Abbasid possible (?); body sherds, handmade, some could be even prehistoric, and others, which straw tempering, are probably Late Islamic (Mamluk ?) Data compiled by Yvonne Gerber, Basel.

Located on Jebel Helwa in the northwest corner of the Hisma plain, 6.94km North of the Humayma fort, and just south of the modern village of Thuggra, this watchtower was previously undocumented [Figure 41].



**Figure 41: Site HWS B01 atop Jebel Helwa, facing South. Photo by author.**

The structure bears striking similarities to A02, A11 and B07. The tower is ca.

6.1 x 5.3m, built of un-worked boulders of local dolomitic limestone. The interior wall face is visible on the east, while the exterior can be discerned on the west and north sides; a good corner is preserved in the north-west [Figure 42]. The walls on the east and west are ca. 0.98m thick. No clearly identifiable roofing slabs are visible as at A02, although there are a few fragments of large flat stones. The slightly longer north-south axis of the building, comparable to that at B07, may suggest an internal staircase as at A11, probably

along the northern wall. The door of the structure probably exists on the south, as the other wall lines do not permit an entry.

Based on the level of the surrounding terrain, the structure is probably preserved to a height of ca.



**Figure 42: Site HWS B01. Detail showing preserved Northeast corner, facing Southwest. Photo by author.**

2.5-4.0 m, although the interior wall

face is exposed to a depth of only ca. 2.15 m in a recent robber pit. The presence of bone fragments in the pit may suggest a modern burial in the southwest corner. A few possible water diversion features were visible on the southwestern side of the jebel but may be modern. A more substantial terrace or diversion wall on the north side of the jebel runs east-west for at least 75-80 m. Ceramics collected at the site are unidentifiable.

Site Number: B02.

Name: *Rujm al-Shugg; Rujm Abu Hashem; Beda* [Graf].

UTM Coordinates: 36R 0729531, 3321321.

PG Coordinates: 186.800, 935.100.

Elevation: 1065m ASL.

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Thughra* (1:25,000, 180/935).

References: Musil; Frank; Graf 1979b: 125; 1995a: 256, fig. 6; Gregory and Kennedy 1985: 328.

Ceramic Collection: HWS B 02 00 HWS, B 02, Surface, 23.07.2000: Date : mixed; Nabataean fineware, painted and unpainted, Nabataean commonware and lamp (later 1st - early 2nd century AD); but several rim sherds and a few body sherds are 4th (- early 5th century AD), but no Late Byzantine. The 2nd/3rd century AD seems to be missing. Data compiled by Yvonne Gerber, Basel.

A large *mansio* or road station on the northern bank of the Wadi al-Bayda, 6.22km north of the fort at Humayma, along the line of the *Via Nova*. Graf (1995a: 256)

reports, "...a large building (29.4 x 31.9 m) whose environs are covered with Nabataean, Roman and Byzantine sherds. It ... must have served as a regular stop for traffic between this settlement and Qana." Graf refers to the site as "Beda" but this does not conform to current local usage, although the wadi al-Bayda is in close proximity to the structure. Well-preserved curbing and a milestone ca. 100 m south of the site confirm the presence of the ancient road, which must have passed only 2.0-3.0 m to the east of the building. The structure consists of a number of rooms surrounding a large courtyard. The courtyard wall is ca. 0.68 m thick and is composed of small cobbles forming two faces on either side of a mud and rubble core. The difference in construction technique between the courtyard wall and visible rooms in the southeastern corner suggests more than one period of construction.

Two rooms in the southeastern corner have been completely emptied to the foundations and local inhabitants are dismantling the eastern wall of the rooms for building stone. Local informants suggest that the Department of Antiquities originally excavated the rooms in the 1960's or 1970's, but no records are



**Figure 43: Site HWS B02. Detail of interior of southern room facing North. Arch springers are visible along the Northern wall. The door is at right. Photo by author.**

on file at the Department offices in Amman. The southeastern rooms are large and both display obvious arch springers 0.52 m wide [Figure 43; Figure 10]. Although the walls are ca. 0.70 m wide, like the walls of the courtyard, they are constructed of well-coursed

rubble, with nicely dressed Nabataean door-jambs, although the latter may have been reused. The connecting doorway between the rooms is 1.02 m wide (0.78 m at the jambs).

There are numerous burials of indeterminate date to the south and southwest of the structure, some of which have been disturbed by plowing immediately to the south. A large amount of human bone is visible in the plow zone. There are also several ancient tombs to the north of the building, including one large, barrel-vaulted tomb constructed of well-dressed ashlar blocks. The tomb was looted sometime between 1998 and 2000 by visitors using metal detectors, according to local informants.<sup>3</sup> Unfortunately, a recent infant burial in the tomb prevented closer examination.

While surveying the region, it became apparent that Rujm al-Shugg occupies an important location in the northern Hisma plain. Most of the modern desert tracks in the area converge at the structure, and those that do not must skirt the wadis in the area by a long detour to the east. In fact, Stein (Kennedy and Gregory 327-8) believed that the Roman road followed the line of the aqueduct and so missed the only opportunity to drive into the Wadi al-Qanah; he was forced to return to Quwerra and ascend the escarpment at Ras al-Naqb (cf. Graf 1995a: 257). The structure's location at this important crossroads undoubtedly explains its apparent longevity as a road station or caravanserai.

Although it was suggested that the structure was once excavated by the Department of Antiquities and Graf (1979b: 125) collected 50 sherds, 12 of which could be identified as Nabataean, a surface collection was made to ensure that this endangered

site would be better documented. Surface finds included ceramics datable from the Nabataean and Late Byzantine periods, with a clearly discernable gap in the third and early fourth centuries. A coin of Constantius II and Constans (AD 337-350) was found in the robber spoil near the southeast corner.

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Site Number: B03.

Name: *Rujm Helwa*.

UTM Coordinates: 36R 0729640, 3320457.

PG Coordinates: 186.200, 934.000.

Elevation: 1048m ASL.

Maps: *El Quweira* 3049.I (1:50,000, K737); *Wadi el Gharid* (1: 25,000, 180/925).

References: Graf 1995a: 256, fig. 6.

Ceramic Collection: mixed; Nabataean fineware, painted and unpainted, and Nabataean commonware (later 1st - early 2nd century AD); but 2-3 rim sherds are 4th (-early 5th century AD); 1 body sherd of an amphora probably 2nd - mid-4th century AD; but no Late Byzantine. The 2nd/3rd century AD seems to be missing. Data compiled by Yvonne Gerber, Basel.

The site is located on a small rise on the west side of the *Via Nova* where the road exits the Wadi al-Bayda, 0.87km south of site B02. Graf (1995a: 256) followed the road south from Rujm al-Shugg to the edge of the Wadi al-Bayda, where, "...the road disappears over a section of badly eroded terrain (exposed sandstone). Then the Roman road reappears, emerging near a small structure (8m<sup>2</sup>) that must have been a post for assisting travelers across this precarious rocky stretch. The crossing of this rocky area seems to demand the use of wooden scaffolding or a bridge of some kind."

The remains of the structure are badly disturbed and now resemble a low mound ca. 17.3 m in diameter with a concentration of large, friable, white sandstone blocks just

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<sup>3</sup> Hayajneh (2001) has published a fragmentary Nabataean inscription of Trajanic or Hadrianic date from the vicinity of al-Humayma. Although no precise provenance is provided, Oleson thinks it likely that the inscription, which records the construction of a tomb by a Marcus Ulpius Su'aidu, originated at this looted tomb.

east of its centre. Surface ceramics from the site date to the late-first and early-second centuries AD and to the fourth and early-fifth centuries AD. The remains of the *Via Nova* can be seen descending into the wadi just below and to the east of the remains [Figure 11]. No wall lines are discernable, but because the structure holds a strategic position at this important wadi crossing, it was chosen for excavation in Phase II of the project (Chapter 5).

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Site Number: B04.

Name: *Unnamed*.

UTM Coordinates: 36R 0730349, 3322415.

PG Coordinates: 188.900, 936.300.

Elevation: 1090m ASL.

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Thughra* (1:25,000, 180/935).

References: Graf 1995a: 252: fig. 6.

Ceramic Collection: difficult, not enough 'diagnostics'; late 1st century - 2nd century AD (Roman) Data compiled by Yvonne Gerber, Basel.

Just 1.36km northeast of B02 (Rujm al-Shugg) are the remains of a badly robbed structure ca. 4.5 x 4.5m. Three badly eroded milestone fragments were visible around the site as well as some curbing of the *Via Nova*, just west of the structure. A few ashlar blocks were visible at the bottom of a ca. 1.0 m deep robber pit, but no wall lines could be established. The site was examined in an attempt to identify a tower in the area mentioned by Graf and because of its proximity to the ancient road. Ceramics date exclusively to the late-first or early-second century AD. There is no reason to believe that this structure was a tower. See also HWS B05, B06, B07.

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Site Number: B05.

Name: *Unnamed*.

UTM Coordinates: 36R 0730609, 3323081.

PG Coordinates: 188.000, 936.800.

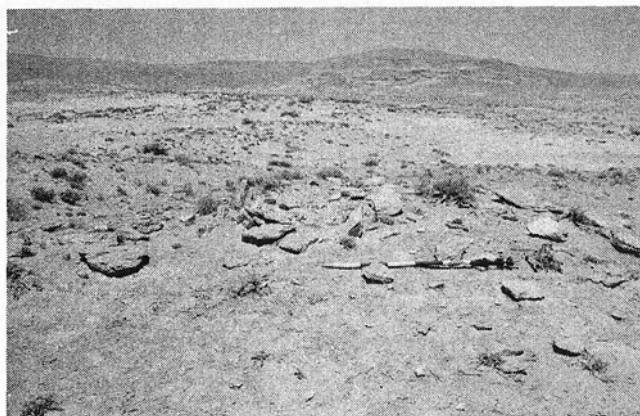
Elevation: 1129m ASL.

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Thughra* (1:25,000, 180/935).

References: Graf 1995a: 252: fig. 6.

Ceramic Collection: only 3 body sherds; late 1st century - 2nd century AD (?) Data compiled by Yvonne Gerber, Basel.

Possibly a tomb, the site was visited in an attempt to locate a tower mentioned by Graf. The site is in close proximity to the ancient road, just west of a large wadi and in sight of A02, B01, B02, B04 and B07.



Numerous large, unworked stones (0.50 x 0.25 m) litter the surface but

Figure 44: Site HWS B05. Photo by author.

no wall lines are visible [Figure 44] and it seems likely that the site has been robbed recently. There is no reason to believe that the structure was ever substantial enough to be a tower. See also HWS B04, B06, B07.

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Site Number: B06

Name: *Unnamed*.

UTM Coordinates: 36R 0731622, 3324207.

PG Coordinates: 188.400, 937.600.

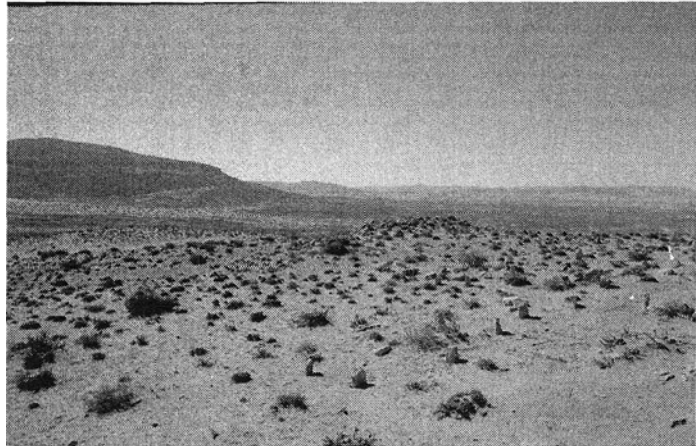
Elevation: 1192m ASL.

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Thughra* (1:25,000, 180/935).

References: Graf 1995a: 252, fig 6.

Ceramic Collection: difficult, no 'diagnostics'; according to the fabric probably 2nd century AD, extension into 3rd century AD possible, but not necessarily. Data compiled by Yvonne Gerber, Basel.

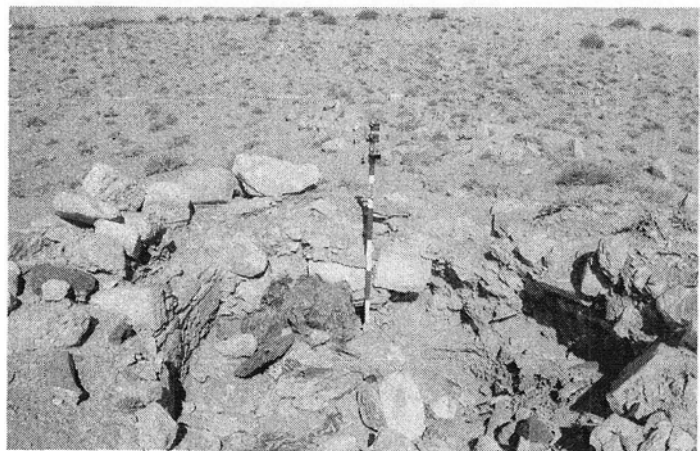
Graf reported that, “After reaching the floor of the Hisma valley, the paved road became visible again, and at this point heads over a small bridge, then veers W to pass a small watchpost (2.9 x 5.2 m) before heading almost due south to Humayma.”



**Figure 45: Site HWS B06 facing West. Standing stones in the foreground may indicate the line of the *Via Nova Traiana*. Photo by author.**

It is unclear whether or not HWS B06 is the watchpost located alongside the *Via Nova*, as the survey team was unable to locate the road in this area; although, a small Bedouin cemetery beside the structure at B06 could easily be mistaken for the curbing of the ancient road, and indeed may have used portions of it [Figure 45; Figure 7]. It is also possible that Graf was describing HWS B04, B05, or B07.

Located near head of wadi al-Hilwa, 3.56km northwest of B02. The site has been extensively robbed and perhaps briefly reoccupied, given the relatively large amount of modern clothing and trash inside the structure. Only the western portion of the building



**Figure 46: Site HWS B06. Southwest interior corner. Photo by author.**

remains, measuring 6.2 m (N-S) x 0.73 m (E-W). It is constructed of rubble masonry with

some chinking preserved to a height of ca. 0.55 m [Figure 46]. Ceramics collected at the site date to the second and possibly early-third centuries AD. It is difficult to believe that this structure could have been a tower.

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Site Number: B07.

Name: *Twail az-Zattar*.

UTM Coordinates: 36R 0730832, 3324229.

PG Coordinates: ca. 187.600, 937.700

Elevation: 1226 m ASL.

Maps: *Ras en Naqb* 3050.II (1:50,000, K737); *Jebel Thughra* (1:25,000, 180/935).

References: Graf 1995a: 252, fig 6.

Ceramic Collection: only 4 body sherds; 2nd century - probably early 4th century AD possible (?), no Byzantine Data compiled by Yvonne Gerber, Basel.

Twail az-Zattar is a high flat-topped jebel in the center of the northern Hisma plain between the modern village of Thuggra and Jebel Qanah [Figure 8]. The surrounding area is comprised of barren rock and sandy patches. Located approximately 1.0-1.5 km west of the hypothetical line of the *Via Nova*, HWS B07 enjoys an excellent view of the entire region as far south as Humayma and has direct line of site to HWS A02, A11, B01, B02, B04, B05 and B06. It is also remarkably close to the location provided by Graf (1995a: 252) for a watchpost along the *Via Nova*, but he did not state that his site was located on a jebel, as is B07, and his map clearly shows a tower on the opposite (eastern) side of the road. See also HWS B04, 05, 06.

Previously undocumented, HWS B07 shares typological similarities with HWS A02, A11, and B01. The walls of the structure are constructed of local limestone boulders and cobbles, with the use of some chinking stones; one leveling-course is visible in the west wall in particular. The interior dimensions of the structure are ca. 4.26 m (N-S) x 3.90 m (E-W). The exterior wall lines cannot be ascertained with certainty, but the wall

width appears to be ca. 0.70 m, except on the west side where the wall is ca. 1.30m wide, possibly due to the inclusion of a staircase or shelf (ca. 0.60m wide), which was partly visible due to recent robbing [Figure 16]. A doorway ca. 0.94m wide is visible in the middle of the eastern wall [Figure



**Figure 47: Site HWS B07. Interior of eastern wall with door at centre. Photo by Author.**

47]. Arch springers (0.57m wide, 0.15m deep) can be seen against the northern and southern walls [Figure 17].

There is a substantial amount of rubble at the site, particularly given the relatively small ground plan of the structure. No obvious flooring slabs are visible, as at HWS A02, but it does seem likely that there was once a second storey. HWS B07 shares obvious architectural traits with HWS A02, A11, and B01. Ceramics recovered from the site may only be broadly dated to the second-to-fourth centuries AD.

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Site Number: B08.

Name: *Khirbet Abu an-Nusur*.

UTM Coordinates: 36R 0738600, 3322600

PG Coordinates: 195.400, 935.700.

Elevation:

Maps:

References:

Ceramic Collection:

See HWS A06 ('Ain Abu 'Insor).

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Site Number: B09.

Name: *Unnamed*.

UTM Coordinates: 36R 0727064, 3316625.

PG Coordinates: 183.700, 929.800.

Elevation: 993m ASL.

Maps: *El Quweira* 3049.I (1:50,000, K737); *Wadi el Gharid* (1: 25,000, 180/925).

References: Musil 1926: 58; Gregory and Kennedy 1985: 326 and n. 9.

Ceramic Collection: homogeneous, later 1st century - early 2nd century AD. Data compiled by Yvonne Gerber, Basel.

Stein reported a possible watchpost north of the Roman fort at Humayma. He perhaps hypothesized the existence of such a site because a low jebel effectively blocks any view from the fort to the north. Describing an area roughly 800 yards north of the fort, Stein (Gregory and Kennedy 1985: 326) notes the presence of several milestone fragments near a small mound: "The little mound of broken stones probably marks the position of a completely decayed watchtower; sherds of ancient type lay in numbers around it. It lies close to the west of a track leading to Wadi al-Qena'."

The only site in the area defined by Stein is a low mound just to the east (rather than west) of the modern track and 1.2 km north of Humayma. It is only ca. 10m from the *Via Nova* and the Humayma aqueduct, which are on the opposite side of the modern road, but no significant architecture can be seen. The white, barren nature of the mound combined with the massive quantity of exclusively late-first and early-second century AD pottery collected suggest that this may have been a Nabataean mud-brick structure of some kind. There is no reason to think that this was a tower, but it is uncertain whether or not B09 is the structure described by Stein.

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Site Number: B10.

Name: *Dabbat Sumay'ah*.

UTM Coordinates: 36R 0737483, 3319150

PG Coordinates: 192.800, 931.800.

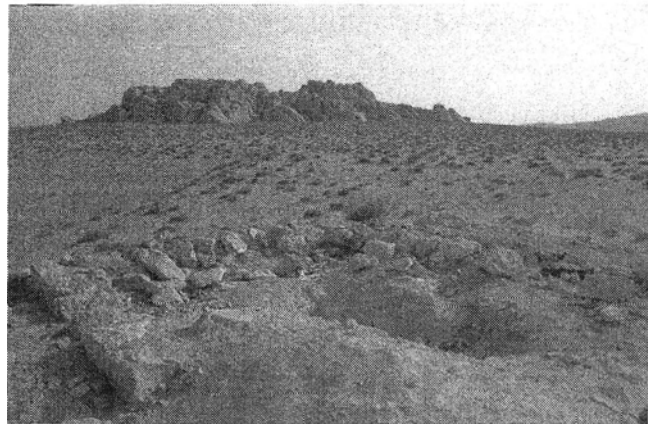
Elevation:

Maps: *El Quweira* 3049.I (1:50,000, K737); *Wadi el Gharid* (1: 25,000, 180/925).

References: Waheeb 1996: 346.

Ceramic Collection: uncertain; later 1st century - 2nd century AD (?) Data compiled by Yvonne Gerber, Basel.

Not actually on the rocky outcrop known as Dabbat Sumay'ah, B10 is actually 0.75km south of the peak on a rocky spur, just west of the Wadi Hanut [Figure 48]. The structure was excavated by the Department of Antiquities despite the fact that it was not directly threatened by the highway expansion project.



**Figure 48: HWS B10, facing North. The structure is in the foreground, in the background is the outcropping known as Dabbat Sumay'ah. Photo by author.**

Waheeb (1996: 346) dates the structure to the Nabataean period and concludes: “The preliminary assessment of the material recovered from the site revealed that it functioned as a watch-tower to protect the agricultural fields in the al-Humayma plain.”

After excavation, the structure was backfilled, but has since been looted, making assessment difficult. The structure is small and measures ca. 4.53m (E-W) x at least 4.73m (N-S). It is constructed of large boulders laid as headers to form both faces of the wall (ca. 0.58m wide); no mortar was seen. The wall is preserved to at least two courses in the northeastern corner [Figure 13]. Interestingly, most of the stone is a chert-bearing limestone, not found in the immediate vicinity. No evidence of arch springers or a door can be seen, although the latter must have been in the southern wall. Unfortunately, the

entire southern portion of the structure may have been robbed out. Ceramics collected by the HWS cannot be closely dated but seem to belong to the late-first or early-second century AD.

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Site Number: B11.

Name: *Rujum al-Mizfar*.

UTM Coordinates: 36R 0710600, 3276200

PG Coordinates: 889.800, 166.500.

Elevation:

Maps:

References: Waheeb 1996: 346.

Ceramic Collection: None.

Confusion surrounding the name of this site led to its inclusion. In fact, it lies in the Wadi Yitm, beyond the southern boundary of the survey zone. It was not visited.

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Site Number: B12.

Name: *Humayma, Area A127*.

UTM Coordinates: 36R 0726926, 3315211

PG Coordinates: 183.7.000, 928.700.

Elevation:

Maps: *El Quweira* 3049.I (1:50,000, K737); *Wadi el Gharid* (1: 25,000, 180/925).

References: Brünnow and Domaszewski PA 1904: 476; Frank 1934: 236-7, pl. 35B; Musil 1926: 59-60; Alt 1921: 4; 1935: 28; 1936a: 110; Aharoni 1963: 41; Bowersock 1971: 239; Graf 1979b: 125; 1983b: 659; 1995a: 257; Eadie 1984: 219; Gregory and Kennedy 1985: 326; Parker 1986a: 104-5; Kennedy and Riley 1990: 146-8; Gregory 1997.2: 398-9; Oleson, et al. 1999; Kennedy 2000: 182-6, figs. 3-5, 7; Cook, forthcoming.

Ceramic Collection:

Described as a watchtower by numerous visitors, B12 is located on a low hill southeast of the Roman fort at Humayma on the eastern side of the Wadi al-Amghar near the modern wadi-crossing. Eadie (1984: 219) suggested that, "The function of the watchtower (11.00 m. x 15.00 m) two kilometres southwest [sic] of the town, near the probable route of the *Via Nova*, is clear enough, but nothing can be said on present evidence concerning its relationship to the larger military installations in Humayma or to

other watchtower/stations on the *via nova*.” He also reported ceramics, including African Red Slip ware, of late Roman-early Byzantine date.

The identification of B12 as a watchtower was presumably based in part on its position on an isolated hilltop and in part on the fact that the hill obscures any view from the fort to the southeast. Several authors, including Graf, also mention that the structure is located near the presumed course of the *Via Nova* south of Humayma, suggesting that such a structure should be associated with the road.

The author mapped the visible wall lines and excavated a probe at B12 (Humayma Area A127) in 1998 and 2000 to determine the nature of the structure [Figure 19]. Preliminary results indicate that the structure is actually a late Byzantine farmhouse with an early Islamic cupola tomb built into the western wall [Figures 20, 22, 24]. The presence of Nabataean ceramics may suggest earlier occupation of the site, but no architecture of that period could be identified. Further details are provided in the excavation portion of this report (Chapter 5).

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Site Number: B13.

Name: *Unnamed*.

UTM Coordinates: 36R 0724788, 3316694

PG Coordinates: ca. 181.500, 930.600.

Elevation:

Maps: *El Quweira* 3049.I (1:50,000, K737); *Wadi el Gharid* (1: 25,000, 180/925).

References: None.

Ceramic Collection: HWS B13A: mixed; a lot of probably Iron Age; only a very few Nabataean fineware unpainted (later 1st century - early 2nd century AD) (?). HWS, B 13B: Most is Iron Age; 1 rim sherd und 2 body sherd probably 2nd century AD (?) Data compiled by Yvonne Gerber, Basel.

This site is a possible Iron Age “tower”, set on a low mound 2.0-3.0 m above the bottom of a valley just to the west of Humayma [Figure 12]. The site was previously undocumented, but noticed by Oleson. Actually two separate structures, recent bulldozing has reduced the southern part of the site (B13A ca. 26.5 m N-S x 21.5 m E-W) to floor level, which was visible in a small robber pit in the northeast corner [Figure 49].

The northern part of the site (B13B), a small hill ca. 30m north of B13A, has one preserved rubble wall line (ca. 0.95m wide) running North-South for ca. 8.0 m.



**Figure 49: HWS B13. Exposed flooring. Photo by author.**

Many Iron Age sherds, including an intact pomegranate-shaped vessel of Edomite

manufacture (possibly Negev Ware), and some second century AD wares were collected. The presence of a pomegranate-shaped vessel, usually used as pendant decoration on votive chalices, implies a cult function for the site, perhaps as a rural Edomite shrine. Parallels for the ceramics come from Horvat Qitmit in the Negev desert and suggest a 7<sup>th</sup> century BC date (Beit-Arieh, ed. 1995: 155-61). This may be the first recorded pomegranate-vessel found in the Edomite homeland itself.

Local informants claim that the area has often been used as a major Bedouin campground. The location of a shrine in this otherwise barren valley may suggest that the area was also used as a campground during the Iron Age (and later?). Further study will be required to assess the nature of this site.

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### C. Sites South of Humayma.

Site Number: C01.

Name: *Hudeibat Umm Dureira; Rekhemtein.*

UTM Coordinates: 36R 0727345, 3307924.

PG Coordinates: ca. 184.300, 921.400.

Elevation: 934m ASL.

Maps: *El Quweira* 3049.I (1:50,000, K737); *Wadi Hanut* (1:25,000, 180/915).

References: Graf 1979a: 125; Oleson, forthcoming: Chapter II, Site 27.

Ceramic Collection: No ceramics were found.

The tower is on top of a steep, rocky jebel at the western end of the Hudeibat 'Umm Dureira, overlooking two large Nabataean reservoirs [Figure 14]. At least one local informant referred to the site as "Rekhemtein", which would make the site identical to HWS C07. HWS C01 is a small structure of dressed Nabataean ashlar blocks in two faces with no discernable core which is preserved to a height of 4-5 courses above the bedrock on which it is built. The structure is built directly on the bedrock with no associated stratigraphy. No ceramics were recovered from the immediate vicinity of the tower, but many sherds, especially late-first and early-second century storage vessels were noted in proximity to the reservoirs below.

The exterior measures ca. 4.15 (N-S) x 3.50 m (E-W), while the interior dimensions are ca. 3.15 x 2.71 m. The walls appear to be ca. 0.97m wide; a doorway 0.87m wide was visible in the middle of the southern wall [Figure 15]. A second opening in the north east corner appeared to have been caused by modern robbing. There is no evidence to suggest that C01 had a second storey, but the location of the structure atop a large jebel may have made one redundant. A large pile of loose soil in the centre of the structure appears to be the result of a recent inhumation. Although the structure may also

have served as a tomb in antiquity, it seems more likely that it was situated to observe or control access to the reservoir below. The site is probably identical to HWS C07.

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Site Number: C02.

Name: *Unnamed*.

UTM Coordinates: 36R 0724117, 3308350.

PG Coordinates: 180.400, 922.000.

Elevation: 943m ASL.

Maps: *El Quweira* 3049.I (1:50,000, K737); *Wadi Hanut* (1:25,000, 180/915).

References: Oleson, forthcoming: Chapter II, Site 14.

Ceramic Collection: only 7 body sherds; 2nd - 4th centuries possible (?); 1 body sherd, handmade? Data compiled by Yvonne Gerber, Basel.

Suggested as a possible tower by Oleson on, "...the left bank of Wadi Shubeika at the mouth of the valley, 60m south of a low hill next to the main dirt road between Humayma and Quweirah... The badly-disturbed remains of an ancient house or small watchtower can be seen on top of the hill." Located on a small sandstone jebel west of the

Hudeibat 'Umm Dureira, the site is a small heap of rubble with a diameter of ca. 5.0 m, with no discernible wall lines [Figure 50]. There is good farmland around the hill, especially to the East. Given the absence of enough rubble for the structure to have had significant height, it seems likely that



Figure 50: Site HWS C02. Photo by author.

the site is a small farmhouse or other rural structure.

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Site Number: C03.

Name: *Unnamed*.

UTM Coordinates:

PG Coordinates:

Elevation: 895 m ASL.

Maps: *El Quweira* 3049.I (1:50,000, K737); *Wadi Hanut* (1:25,000, 180/915).

References: Oleson, forthcoming: Chap. II, Site 16.

Ceramic Collection: Not yet read.

An enigmatic feature including stairs cut into the bedrock. Suggested as a possible tower by Oleson, there is no evidence that this site could have been very substantial. It was not recorded in detail.

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Site Number: C04.

Name: *Qasr al-Qorbah*.

UTM Coordinates: 36R 0723500, 3303600.

PG Coordinates: 180.000, 917.000.

Elevation: ca. 890m ASL.

Maps: *El Quweira* 3049.I (1:50,000, K737); *Wadi Hanut* (1:25,000, 180/915).

References: Graf 1995a: 258.

Graf described the remains of, "...a small structure (12 x 15m) known as Qasr al-Qorbah was discovered just 3 km N of Quweira that may have been a guard-post along the road. Nabataean, Roman and early Byzantine sherds were found nearby." It seems possible that the site has been destroyed by the new Condotta Roma quarry installed during the expansion and resurfacing of the new desert highway. The only site matching Graf's location is inside the grounds of the quarry and has suffered extensive damage. Some sections of walls, visible in a modern trash heap, appear to be constructed of boulders ca. 0.75-1.0m in diameter.

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Site Number: C05.

Name: ***Jebel Quweirah Watchtower.***

UTM Coordinates: 36R 0724000, 3298900.

PG Coordinates: 180.300, 912.300.

Elevation:

Maps: *El Quweira* 3049.I (1:50,000, K737); (1:25,000, 180/905).

References: Glueck 1935: 57-8; Jaussen 1903: 106; Musil 1926: 62-4, 80, fig. 21; Alt 1936a: 96-8, fig. 2; Graf 1983b: 652-3; 1995a: 258; Gregory and Kennedy 1985: 315-7; Parker 1986a: 105-8; Bisheh, et al. 1993: 125, site 6/3; Gregory 1997.2: 404-6; Kennedy 2000: 186-7.

Ceramic Collection: None.

Jebel Quweira is located 18 km south of Humayma and 18 km north of Khirbet el-Khalde. A *castellum* or *mansio* (ca. 32.5 x 31.5m) is discernable near a large reservoir at the foot of the jebel and has been commented on by numerous visitors. It appears to be almost completely buried. Pottery of the Nabataean, Roman and Byzantine periods has been recovered from the site. Graf conducted soundings at the *castellum*, but they have yet to be published (1995a: 258).

The watchtower on Jebel Quweirah was identified by Glueck, but he failed to recover any sherds (1935: 58). Graf (1983b: 652-3) revisited the site and reported, "...a few possible Nabataean sherds and some well-cut stone blocks with Nabataean diagonal dressing." The site is now surrounded by a military base and was not visited.

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Site Number: C06.

Name: ***Jebel Ratama.***

UTM Coordinates:

PG Coordinates:

Elevation:

Maps: *El Quweira* 3049.I (1:50,000, K737); (1:25,000, 180/905).

References: Harding; Graf 1979b: 125.

Ceramic Collection: None.

Graf (1979b: 125) identifies the site as, "A small caravan post located about 10 km East of Quweira; no traces were found of the makeshift observation post observed by Harding." Jebel Ratama is actually a massive outcropping composed of numerous small sandstone hills spanning several square kilometres. The site could not be located.

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Site Number: C07.

Name: ***Rekhemtein***.

UTM Coordinates:

PG Coordinates:

Elevation:

Maps:

References: Graf 1979b: 125.

Ceramic Collection: None.

There appear to be quite a few places named Rekhemtein in the area. One is apparently identical to HWS C01 (Hudeibat 'Umm Dureira). Another is just north of the road into Wadi Ramm, ca. 5 km east of the Highway and outside of the survey zone.

## Appendix II: Ceramic Chronology in Southern Jordan.

Unfortunately, some archaeological projects have used similar terminology to refer to different ceramic periods. This has led to confusion surrounding such terms as “Late Roman”. Table Three provides a summary of the correspondances between various ceramic dating systems used by major excavations and surveys in Jordan.

	<b>Parker<sup>1</sup> /Sauer<sup>2</sup></b>	<b>MacDonald<sup>3</sup></b>	<b>Schmid<sup>4</sup></b>	<b>Oleson</b>	
		<b>LHell:</b> 198-63 BC	<b>1:</b> 125 -50 BC	<b>EN:</b> 4th century BC-50 BC	
	<b>ER I:</b> 63-37 BC	<b>ERom:</b> 63 BC-AD 135	<b>2:</b> 50 BC-AD 20	<b>MN:</b> 50 BC- AD150	<b>ER:</b> 63 BC-AD 106
Augustus 27 BC - AD 14	<b>ER II:</b> 37-4 BC				
	<b>ER III:</b> 4 BC - AD 73		<b>3a:</b> AD 20- 70/80		
	<b>ER IV:</b> AD 73-135		<b>3b:</b> AD 70/80- 100		

<sup>1</sup> As outlined in Parker 1976: 21;

<sup>2</sup> Sauer 1973: 1-7.

<sup>3</sup> MacDonald 1988: viii; 1992: xii.

<sup>4</sup> Schmid: 1995: 637-647, specifying Nabataean Fine Ware.

			<b>3c:</b> AD 100-106/7?		
	<b>LR I:</b> AD 135-193	<b>LRom:</b> AD 135-324		<b>LN:</b> AD 150-4th century	<b>RO:</b> AD 106-235
	<b>LR II:</b> AD 193-235				<b>LR:</b> AD 235-324
	<b>LR III:</b> AD 235-284				
	<b>LR IV:</b> AD 284-324				
	<b>EByz I:</b> AD 324-363	<b>EByz:</b> AD 324-491	<b>Late Roman:</b> AD 350?-363.		<b>EB:</b> AD324-400
	<b>EByz II:</b> AD 363-392				
	<b>EByz III:</b> AD 392-450				<b>BY:</b> AD400-550
	<b>EByz IV:</b> AD 450-491				
	<b>LByz I:</b> AD 491-527	<b>LByz:</b> AD 491-640			
	<b>LByz II:</b> AD 527-565				<b>LB:</b> AD 550-640
	<b>LByz III:</b> AD 565-614				
	<b>LByz IV:</b> AD 614-640				
					<b>UM:</b> AD 640-750
					<b>AB:</b> AD 750-969

**Table 3: Correspondences of Chronological Systems Used in the Study of Arabia.**