Daystar

Institute of

Archaeology & Biblical History

Academic Monograph Series

No. AR-2

Testing the Factuality of the Conquest of Ai Narrative in the Book of Joshua

Peter Briggs

Testing the Factuality of the Conquest of Ai Narrative in the Book of Joshua

April 12, 2004

Copyright © 2003, Daystar Systems, Albuquerque, New Mexico. All rights reserved. Printed in the United States of America by Daystar Systems. Neither this document nor any part thereof shall be reproduced or copied by any means without express written permission of Daystar Systems.

Unless otherwise noted, all Scripture quotations in this document are from the New American Standard Bible (NASB), Copyright © 1960, 1962, 1963, 1968, 1971, 1972, 1973, 1975, 1977 by the Lockman Foundation. Used by permission.

A section of Figure 1 in this paper is based upon a satellite map projection furnished by Rohr Productions, Ltd., Nicosia, Cyprus, and it is utilized by permission of Rohr Productions. The other section of Figure 1 is based upon a topographical map section are derived from a commercially available, 1:50,000 geodetic survey map of Israel.

Daystar Systems
12504 Candelaria Road NE
Albuquerque, NM 87112
(505) 294-0016

TESTING THE FACTUALITY OF THE CONQUEST OF AI NARRATIVE IN THE BOOK OF JOSHUA [1]

Peter Briggs

ABSTRACT

Summary of the problem. The gamut of views concerning the conquest of Ai narrative in the 7th and 8th chapters of the Book of Joshua can be summarized as follows: the narrative is *factual*, having the weight of eye witness testimony; or, it is an *aetiological legend*, compiled long after the fact, either just before or during the Babylonian exile for the purpose of justifying Israel's presence in the land of Canaan; or, it is a *pernicious myth*, deceptively and skillfully fabricated to correspond with the material time-space context in which it is alleged to have occurred. Is there a method that is capable of objectively arbitrating among these three views?

Summary of the method. The theory of True Narrative Representations propounded by John W. Oller provides the basis for an analytical test of the factuality of the narrative in question, and thereby an arbitration among the three views summarized above. The analytical process begins with the derivation of a fourteen-parameter *criterial screen* from careful exegesis of the biblical text in the Book of Joshua. The criterial screen is the analytical tool whereby the correspondence of the biblical narrative to its material time-space context can be empirically assessed. The first three parameters of the screen form a *predicate criterial screen*, which is applied to the three candidate sites for Joshua's Ai that emerge from past research; namely, et-Tell, Kh. Nisya, and Kh. el-Maqatir. Even this very limited three-parameter screen is sufficiently explicit that only one of the candidate sites, Kh. el-Maqatir, meets all of its requirements. The remaining eleven parameters of the more elaborate and still more demanding criterial screen are then applied to that one surviving site, which entails a careful and detailed correlation of the text of Joshua 7 and 8 with the archaeological, geographical, and topographical context of the site. By this means, the conformity of the narrative in question with the determinacy, connectedness, and generalizability properties of true narratives is empirically tested. Included in the analytical process is the postulation of viable engagement scenarios for the two battles of Ai.

Summary of the conclusion. The result of the analytical process is that, of the three candidate sites for Joshua's Ai, only Kh. el-Maqatir satisfies all fourteen parameters of the criterial screen, thus providing conclusive evidence that the conquest of Ai narrative is a True Narrative Representation and that Kh. el-Maqatir is the site of the fortress of Ai conquered by Joshua. Key aspects of the evidence include the geographical/topographical context of Kh. el-Maqatir, the configuration of its defensive system, its size, its archaeology, and its total conformity with the requirements of the text in Joshua 7 and 8. The view that the conquest of Ai narrative is factual is thereby vindicated, and the aetiological legend and pernicious myth views are refuted.

---

1 This paper is derived from the doctoral dissertation, Briggs (2004).

THE CONQUEST OF AI NARRATIVE: FACT OR MYTH

The Bible as Historical Narrative

The Bible is essentially an historical narrative concerning the nation of Israel, by means of which *Yahweh*, the God of Israel presents his character, his purposes, and his requirements with respect to human personalities. In his introduction to the commentary on the Book of Joshua in (Boling 1982: 5), G. Ernest Wright captures the Jewish concept of history and knowledge as follows:

> Israel had no idea of a two-realm theory of knowledge, one of a supernal, universal Good and one of the world of human beings where they live. There was only one realm where significant knowledge was obtainable. That was their own, their own life as a people in the midst of the nations with whom they had contact. Yet in this world they indeed affirmed that God is good, but they meant by this that definitive actions in their history exhibited a mysterious Power who for his own reasons had acted toward them with remarkable graciousness.

According to Kaiser (1987: 61-79), a substantial cross-section of scholars would agree that the Bible's theological truth claims are suspended on a cable of historical factuality. Moreover, according to the theory of true narratives propounded by John W. Oller [Oller (1996: 199-244); Oller & Collins (2000); Collins & Oller (2000)], only true narratives can support and sustain generalizations. Thus, for valid theological truth to be derived from the Bible, it is essential that the Bible's historical content be true. If the Bible's historical content is fictional or false, as the critics of the Bible would claim, then the theory of true narratives affirms that the theological truth claims of the Bible must be invalid.

Historical Factuality of the Old Testament

Since the focus of this paper is upon a portion of the Conquest episode recorded in the Book of Joshua, how has the factuality or non-factuality of the Old Testament been viewed from antiquity to the present. The straightforward manner in which Jesus handled, referred to, and taught from the Old Testament writings demonstrates that he regarded them as not only theologically true but also historically factual. For example, consider the following statement by Jesus as he was teaching in the temple in Jerusalem toward the very end of his ministry:

> ... Upon you may fall the guilt of all the righteous blood shed on earth, from the blood of righteous Abel to the blood of Zechariah, the son of Berechiah, whom you murdered between the temple and the altar. [Matthew 23:35, NASB [2]]

Concerning this statement by Christ, the following quotation is especially instructive:

> Indeed, from one end of Scripture to the other there was a trail of martyred prophets that included *all* the martyred prophets! For Jesus, therefore, the canon began with Genesis and ended with 2 Chronicles, just as it does in the traditional Hebrew order of the OT, and so the dynamic

---

2 Scripture quotations in this paper are taken from the New American Standard Bible (abbreviated NASB), Copyright © 1960, 1962, 1963, 1968, 1971, 1972, 1973, 1975, 1977 by the Lockman Foundation. Used by permission.

equivalent of Jesus' expression, considering our present English order of the OT books, would be: "all the righteous blood . . . from Genesis to Malachi" (Kaiser 1987: 46).

In like manner, the apostles Peter and Paul regarded the Old Testament scriptures to be God-breathed according to 2 Peter 1:20-21 and 2 Timothy 3:15.

Hayes & Miller (1977: 1-69) trace the evolution in historiography concerning the nation of Israel from the Hellenistic period to the modern era. Through the period of the Reformation, that is, until the middle of the 17th century with the dawn of the Enlightenment, a consensus generally prevailed among biblical and historical scholars that the historical sections of the Old Testament were factual. Moreover, until this time the provenance of biblical interpretation had resided within the community of the church, albeit a church now fragmented by the polemics of the Reformation. However, by the middle of the 18th century, the provenance for critical analysis of the biblical text had been decisively wrested from the community of the church and had come to reside within the community of philosophical and scientific scholars. The momentous shift in scholarly attitude toward the Old Testament text culminated in the Graf-Wellhausen Documentary Hypothesis. Cassuto (1983: 9-11) cites the work of a succession of scholars who contributed to the development of this hypothesis, including the following: Witter (ca. 1711); Astruc (ca. 1753); Eichhorn (ca. 1783); Vater (ca. 1805); Stähelin, Ewald, et al. (ca. 1820-1830); Lachmann (ca. 1840); Hupfeld (ca. 1853); and Graf (ca. 1865). All of this past research was brilliantly combined, further developed, and persuasively articulated by Julius Wellhausen in a series of works published ca. 1876-1901. Wellhausen affirmed the Jahwist-Elohist-Priestly-Deuteronomist multi-source model developed by his predecessors. Moreover, he asserted that the theocratic organization of Israel and the priestly laws of the Pentateuch reflected post-exilic Judaism rather than the state of Israel at the time of Moses. Furthermore, according to Wellhausen, the earliest date for the codification of portions of the Old Testament was the 8th century BC beginning with the prophecy of Amos and his contemporaries. However, according to Wellhausen, the Hebrew text of the Old Testament in its present form was first compiled and integrated during the post-exilic period. Wellhausen dogmatically asserted that the account of the patriarchs in Genesis was entirely legend, being substantially, if not totally, divorced from historical reality. Because the same sources were detected in the Book of Joshua, the idea of the Hexateuch emerged from Wellhausen's research.

According to Cassuto (1983: 1-7), Wellhausen's literary analysis of the Old Testament was so rigorously executed and effectively presented that it came to be regarded as unassailable fact. Having embraced Wellhausen's research, a biblical scholar would be driven to the conclusion that the earliest point at which the historical narrative of the Old Testament could be trusted as essentially factual corresponded to the establishment of the monarchy under Saul. This is exactly the conclusion manifested in the following quotations from Miller & Hayes:

> Literary analysis reveals that this whole Genesis-2 Kings account, from beginning to end, is composite. In other words, many originally independent items (stories, songs, genealogies, collections of laws, and so on), each with its own issues and problems of interpretation as well as historical implications, have been combined to produce the overall account. These various items have been edited, so the resulting composite account has a degree of unity and coherence. Many ragged edges remain, however, which raise glaring questions for the serious reader and which in some cases present what appear to be blatant contradictions [Miller & Hayes (1986: 61)].

> We decline any attempt to reconstruct the earliest history of the Israelites therefore, and begin our treatment with a description of the circumstances that appear to have existed among the tribes in Palestine on the eve of the establishment of the monarchy. Our primary source of information for this purpose will be narratives in the Book of Judges [Miller & Hayes (1986: 79)].

Bright (1981: 129-130) directs attention to the apparent contradictions in the account of the Conquest found in Joshua and Judges. On the one hand, the Book of Joshua describes a concentrated sequence of military campaigns by a unified Israelite army under Joshua that brought at least the central hill country under Israel's control. On the other hand, the Book of Judges describes a fragmented and only partially successful effort by the twelve tribes to subdue the entrenched Canaanites in their various allotments. Factors such as this have motivated most biblical scholars to attribute the account of the Conquest found in Numbers 13:1-Judges 18:31 to multiple literary sources and traditions. The majority opinion in regard to the contour of the actual conquest episode favors the "fragmented model" in Judges over the "unified model" in Joshua. Following is Bright's assessment of these two competing views of the Conquest:

> Both views doubtless contain elements of truth. But the actual events that established Israel on the soil of Palestine were assuredly vastly more complex than a simplistic presentation of either view would suggest [Bright (1981: 130)].

In his chapter on the Israelite occupation of Canaan [Hayes & Miller (1977: 213-221)], J. Maxwell Miller summarizes the two dominant positions of modern biblical scholarship in regard to the Conquest narrative: (a) the Hexateuch model according Wellhausen, et al., which held that Genesis-Joshua is the product of a unified literary tradition; and, (b) the Deuteronomistic History model according to Alt, Noth, and Von Rad, which held that Deuteronomy-2 Kings is the product of a unified literary tradition. According to both models, the historical sections of the Old Testament are the product of multiple authors, compilers, and redactors who integrated oral traditions and fragments of literary and historiographic material to create a more or less coherent biblical history of Israel. Miller's concluding assessment follows:

> Obviously, the final word is yet to be said on the matter, but two conclusions hold regardless of whether one thinks in terms of a 'hexateuch' or a 'Deuteronomistic history'. First, it is clear that the biblical account of the conquest in Numbers 13-Judges 1 is a highly composite construction. Second, when one attempts to disentangle the various literary strata which compose this account, it becomes increasingly apparent that older traditions which seem unaware of an initial conquest of the whole land of Canaan by a unified Israel have been incorporated into later materials which do. In fact, the concept of an initial conquest by all Israel appears to be largely Deuteronomistic... [Hayes & Miller (1977: 220-221)].

<u>The Conquest of Ai Narrative</u>

John Bright's reconstruction of the Conquest episode [Bright (1981: 140-143)] bears the imprint of literary and historical criticism of the biblical text as well as that of archaeological research by Kelso & Albright at Beitin [Kelso & Albright (1968)], Kenyon at Jericho [Kenyon (1957); Kenyon (1960: 195-220 & 331-332)], and Callaway at et-Tell [Callaway (1970: 10-12)]. Bright envisages a complex, protracted, and multilateral penetration of Israelite elements into Canaan, even including Hebrew

elements that had possibly remained in Canaan during the sojourn of the Israelites in Egypt. His analysis reflects the tension created by the apparently contradictory results of archaeological research. In particular, excavations at et-Tell place in evidence the fact that the Early Bronze city at that site was destroyed ca. 2400 BC, and the site remained unoccupied until a small Iron Age village was established ca. 1200 BC. Commenting upon the apparent conflict between the archaeological data and the biblical narrative, Bright makes the following statement in regard to the conquest of Ai:

> This has led some to question the location, others to regard the story as legendary, and still others to adopt other expedients. Far the most plausible suggestion is that the story of Josh., ch. 8, originally referred to the taking of Bethel, of which we are told in Judg. 1:22-26, but which is not mentioned in Joshua [Bright (1981: 131)].

Bright's reconstruction may seem reasonable in the light of the fragments of evidence, some of which may appear to be mutually contradictory. However, the reader is strongly motivated toward the conclusion that the narrative in Joshua is a vast oversimplification of the Conquest episode and far removed from a straightforward, factual account. In particular, the conquest of Ai narrative in Joshua 7 and 8 is either legendary, or it actually describes a campaign against another location such as Bethel. In either case, the conquest of Ai narrative is substantially nonfactual.

The Emergence Theory

Within the framework of the Finkelstein & Na'aman emergence theory, Na'aman proposes a more radical view of the conquest of Ai narrative.

> In the light of the nonhistorical character of the conquest tradition in the Book of Joshua, one should raise a fundamental question: Where did the author derive the material for his narratives? We have yet to establish whether a vague memory of past events was retained in some stories. It is clear, however, that most of the conquest narratives are devoid of historical foundation. One may assume that the author designed the past descriptions in the light of the reality of his time; since he was well acquainted with the sites and the environment portrayed by him, he composed narratives that outwardly appear authentic (save for the conquest miracle of Jericho). This assumption may be supplemented by another: In order to add a sense of authenticity to his narratives, the author borrowed military outlines from concrete events that had taken place in the history of Israel.
>
> Scholars have suggested that the conquest by stratagem of Ai is a literary reflection of the historical episode of the battle of Gibeah (Judges 20). Unfortunately, the literary relationship between the two narratives was not examined in detail, and it is not clear whether the author of Joshua 8 worked the narrative of Judges 20, or vice versa. The author of the story of Ai was certainly impressed by the prominent ruins of the site (Kh. et-Tell), assuming that it was conquered by the Israelites when they occupied the country. To give this story of the capture of Ai an aura of authenticity, he used military elements of either the capture by stratagem of Gibeah or the conquest of another unknown site, transplanting them within a new environment that he knew very well from personal acquaintanceship. The conquest story of Ai did not emerge from an authentic historical memory of the event, but is rather the outcome of a reworking and adaptation of a conquest story relating to another site [Na'aman 1994: 249-251)].

Thus, Na'aman proposes that not only is the conquest of Ai narrative nonfactual, but that the author of the narrative intentionally and deceptively cloaked it with an "aura of authenticity" based upon his knowledge of the geographical and topographical context of the site in question combined with the artifice of borrowing data from other historical episodes. The site around which Na'aman's hypothetical author formulated the conquest of Ai narrative was the prominent ruins of et-Tell. In his discussion of the literary background of the conquest of Ai narrative, Na'aman proposes that it was actually compiled either in the late 7th century BC, just prior to the conquest of Jerusalem by the Babylonians, or in the early 6th century after the Israelites had been deported to Babylon. In either case, the most ancient historiographic fragments upon which the narrative was based dated to the 10th century BC, that is, the time of David and Solomon [Na'aman (1994: 218-230)]. Moreover, if the composition of the narrative actually took place in the 6th century BC, its author would have been physically insulated from the site, and therefore he would have been forced to rely entirely upon memory for all archaeological, geographical, and topographical detail [Briggs (2004: 48-51 & 77-83)].

Alternative Views of the Conquest of Ai Narrative

Aetiological Legend View

The aetiological legend view of the conquest of Ai narrative that emerges from the tradition of Albright, Callaway, Kenyon, Bright, et al., can be summarized as follows:

a. The first attempt to codify the Joshua narrative occurred during the divided monarchy toward the end of the 10th century BC. Subsequently, it was revised one or more times, ca. 640-540 BC.
b. The narrative of chapters 7 and 8 of Joshua actually derives from the conquest of nearby Bethel and was later applied to the city of Ai by either the original 10th century BC narrator or by one of the later redactors.
c. Thus, the conquest of Ai narrative can be accurately characterized as a nonfactual aetiological legend compiled long after the events in question.
d. The legend was loosely built around the ruins at et-Tell, the supposed site for the city of Ai, and nearby Bethel.
e. The original compilation of the legend together with its later revisions was strongly motivated by political and theological concerns.

The aetiological legend view of the conquest of Ai narrative probably represents the majority opinion of modern biblical scholars.

Pernicious Myth View

The pernicious myth view of the conquest of Ai narrative that derives from the work of Na'aman can be summarized as follows:

a. The formulation of the content of the book of Joshua occurred at approximately the time of the Babylonian exile, that is, either at the end of the 7th century or during the 6th century BC.
b. The fragments of historical data upon which the composition was based dated no earlier than the 10th century BC, that is, to the time of David and Solomon.

c. The author of the conquest of Ai narrative possessed considerable knowledge of the Benjamin hill country context of the battle of Ai, and he employed this knowledge to deceptively impart to the narrative an aura of authenticity.
d. In particular, the author of the narrative in question crafted the story of the conquest of Ai around the prominent ruins of et-Tell.
e. Moreover, this author even borrowed the contours and outlines of certain historical battles of antiquity to further enhance the credibility of the conquest of Ai story.

Eyewitness Account View

In contrast to the above, by far the most straightforward explanation for the incredible amount of detail in the conquest of Ai narrative is that it was compiled during the lifetime of Joshua and was based upon direct, eyewitness contact with the places and events in question.

STATEMENT OF THE PROBLEM

The problem addressed in this paper is the arbitration among the three alternative views of the conquest of Ai narrative summarized above. This is accomplished by testing the correspondence between the narrative in question and the material time-space context it purports to represent. The analytical method is based upon the theory of True Narrative Representations (TNRs) propounded by John W. Oller [3] .

Theological Significance

Given the prevailing scholarly opinion concerning the Conquest narrative in general, and the conquest of Ai narrative in particular, the research summarized in this paper is of great relevance to the ongoing debate concerning the factuality of the historical sections of the Old Testament, and, therefore, the theological truth value that is contained therein. Because the Conquest narrative in Joshua is the historical fulfillment of *Yahweh's* unconditional covenant with the patriarchs Abraham, Isaac, and Jacob to give the land of Canaan to their descendants, the integrity of *Yahweh*, the God of Israel is either established or impugned depending on whether the Conquest narrative in Joshua is factual or nonfactual.

Definition of Terms

Numerical Values

Military force element sizes in the conquest of Ai narrative, and, in fact, throughout the Hebrew Bible, are expressed in terms of אֶלֶף or its plural form, אֲלָפִים (transliterated ʾeleph and ʾelephîym, respectively). Hereafter in this paper, these two Hebrew terms are denoted *eleph* and *elephim* without diacritical markings. Furthermore, the point of controversy is over the numerical equivalence of *eleph*

3 For a fuller discussion of TNR theory and its application to testing the factuality of the conquest of Ai narrative, refer to Briggs (2004: 22-26 & 72-76).

and *elephim*, not over their literary meaning. Therefore, to further simplify the discussion, the numerical equivalent of *eleph* and *elephim* is designated **E**.

This research is narrowly focused on the meaning and numerical equivalence of *eleph* and *elephim* when the terms are used to describe military forces, such as in the military censuses of Numbers 1 and 26 and the conquest of Ai narrative in Joshua 7 and 8. Within the sphere of this specific use of *eleph* and *elephim*, the customary gloss corresponding to **E** = 1,000 men is employed throughout the Hebrew Bible. According to Gottwald (1979: 270), this equivalence is appropriate to the time of David. However, according to the research of Briggs (2004), Fouts (1992, 1997), Gottwald (1979), Humphreys (1998, 2000), Mendenhall (1958), Petrie (1931), and Wenham (1981), the equivalence **E** = 1,000 men may not be appropriate to the time of Moses and Joshua. In particular, Briggs (2004: 55-57) discusses a number of problems precipitated by **E** = 1,000. With regard to the conquest of Ai narrative, the most serious problem is that if the army of Israel was actually of the order of 600 thousand men in accordance with the customary rendering of Numbers 1:46 & 26:51, then it would have been the mightiest fighting force in the ancient world. Compared with the number of Canaanites killed at Ai, Israel would have possessed a 50-to-1 numerical advantage!

The results of past research concerning the meaning and numerical equivalence of *eleph* can be summarized as follows:

a. Within the sphere of the military application, there is general agreement that *eleph* designates a team or troop of men under command of a leader.
b. According to Gottwald, one *eleph* would have been the contribution to the national military muster deriving from a particular tribal subdivision.
c. According to Humphreys, the problematically large size of the army of Israel according to the censuses of Numbers 1 and 26 results from a conflation of terms in the Hebrew text. The value of **E** in both censuses is tribe-dependent and lies in the range of 5 to 17 men with an average value of approximately 10. This means that the army of Israel was actually of the order of 6 thousand men during the time of Moses. Gottwald, Mendenhall, Petrie, and Wenham would probably agree with Humphrey's result, although not necessarily with his method for obtaining it.
d. Fouts argues for a hyperbolic use of numbers in the two censuses to ascribe glory to *Yahweh* as the reigning monarch over Israel. Since the Israelites employed a decimal numbering system, Fouts suggests that the equivalence, **E** = 1,000 incorporates a divine force multiplication factor of 10^4, which means that **E** should be quantified as 100.
e. Because of the consistency with which **E** = 1,000 is assumed throughout the Hebrew Bible, and because of the Pauline reference to a plague incident in 1 Corinthians 10:8, this researcher favors a third resolution to the *eleph* problem; namely, a representational view according to which Moses, as an inspired writer of Scripture, was consistently directed to assume a divine force multiplier of 100 to represent the invincibility of the army of Israel so long as they remained faithful to the covenant with *Yahweh* .

Considering all three proposed resolutions to the *eleph* problem, there exists a two-order of magnitude range of uncertainty applicable to the value of **E**; that is, **E** lies within the range of 10 to

4 Refer to Briggs (2004: 60-61) for a definition of *Force Multiplication.*

1000. Data from the Conquest narrative in Joshua is brought to bear later in this paper in order to shrink the uncertainty band for **E**.

Archaeological Periods

Archaeological periods pertinent to analysis of the conquest of Ai narrative in this paper are defined in Table 1. The dates and nomenclature have been synthesized from LaSor (1979), Amiran (1970), and Finegan (1998). The archaeological period nomenclature and dates defined in Table 1 are used throughout this paper.

Table 1. Archaeological Periods

Archaeological Period	Dates	Biblical Correspondence
Early Bronze Age (EBA) Intermediate Bronze Age (IBA)	3000-1900 BC	Post-diluvian patriarchs
Middle Bronze Age (MBA)	1900-1550 BC	Abraham, Isaac, Jacob, and Joseph
Late Bronze Age (LBA)	1550-1200 BC	
LB I	1550-1400 BC	Moses Joshua Early Judges
LB II	1400-1300 BC	
LB III (or, IIB)	1300-1200 BC	
Iron Age (IA)	1200-586 BC	
IA I	1200-1000 BC	Later Judges and Saul
IA IIA	1000 - 900 BC	David and Solomon

Regnal Periods of 18th and 19th Dynasty Pharaohs

There is a tight linkage between the regnal periods of the Egyptian pharaohs and the dating of archaeological finds in Palestine. Both the 13th century date for the Exodus favored by the majority of scholars, and the 15th century date that obtains from the biblical timeline fall within the LBA and also within the time frame of the 18th and 19th dynasties. Authoritative sources for the names and regnal periods of the 18th and 19th dynasty pharaohs include the following: Hayes (1975), Wente & Van Siclen (1977), and Kitchen (1992, 1996). In Briggs (2004: 18-20) these multiple sources are compiled into a single table by means of a weighted average technique.

The Fortress of Ai

In the Hebrew text of chapters 7 and 8 of Joshua, the site in question is characterized by the Hebrew word עִיר, normally translated 'city'. Frick (1977) and Hansen (2000: 36-42) present detailed analyses of this word, the central aspect of whose meaning is a fortified site. In terms of size, עִיר could designate a broad range of occupied sites from a watchtower or citadel to a fortified city. The configuration of the site described in Joshua 7 and 8 was probably a citadel surrounded by an outer

fortification wall and gate system. The term that is selected for most precisely defining the meaning of עִיר in regard to the site of Ai is 'fortress'.

The Site of Kh. el-Maqatir

This is one of the candidate sites for the fortress of Ai conquered by Joshua. It is located 3.5 kilometers east-northeast of the modern city of El Bireh, 1.6 kilometers southeast of the modern village of Beitin, and 1.1 kilometers west of et-Tell. The precise spelling of the Arabic name for this location is as follows: Khirbet el-Maqāţir. Throughout this paper, the diacritical marks are omitted for the sake of convenience and the name of the site is denoted Kh. el-Maqatir.

Definition of a Narrative

For purposes of this paper, a narrative is a verbal description of an event or an event sequence that is alleged to have taken place in a given material time-space context. An event sequence is designated an *episode*. Note that a delimitation is inherent in the definition; namely, only narratives that are known or alleged to be factual are considered. A fictional narrative is invented or imagined by its author; therefore, it is not known to be factual, and its author makes no claim as to its factuality. Two additional delimitations are imposed as follows: this paper only considers narratives that are, (a) written down, and, (b) linguistically coherent, that is, well-formed in terms of syntax and grammar. Thus, the gamut of narratives to be considered include factual narratives, traditions, legends, myths, and lies. All of these terms are employed in accordance with their normal definitions. A kind of legend that is especially germane to this paper is an *aetiological legend*, that is a story, perhaps partially or even substantially factual, that seeks to define a cause that lies behind an observable effect (e.g., the presence of Israel in the land of Palestine, the prominent ruin of et-Tell, etc.). A kind of myth that is especially germane to this paper is a *pernicious myth*, which is a nonfactual story whose author intentionally and deceptively cloaks with an aura of authenticity in order to make it appear to be factual.

Definition of True Narratives

The *True Narrative Representation*, or TNR, is the perfected and limiting case of a factual narrative, and it is distinguished by a triad of properties: determinacy, connectedness, and generalizability in accordance with [Oller (1996); Oller & Collins (2000); Collins & Oller (2000)]. These properties derive from the fact that a competent observer/narrator maps an episode consisting of a sequence of one or more empirical time-space events into a linguistic representation. According to the delimitations imposed above, only true narratives that are written down are considered. The triad of TNR attributes are defined as follows:

a. Determinacy. Through the perceptive and cognitive faculties of the narrator, the empirical particulars of the episode are mapped into language. Therefore, the surface form of the linguistic representation of the episode is motivated by the material facts of the episode as they are perceived by the narrator, and the linguistic representation determines those material facts in the sense of characterizing them and imparting meaning and relationship to them. In fact, apart from a TNR, the material facts of the episode are empty and meaningless, that is, indeterminate.
b. Connectedness. There are three aspects of this attribute. First, the components of the narrative are connected by the cognitive and linguistic faculties of the observer/narrator to the events that make

up the episode. Second, the trajectory of the episode, which is embodied in the dynamic connections among the events that comprise the episode, is mapped into recognizable components of the narrative. Third, and because of the above, even as the episode is couched in a particular material time-space context, in like manner the TNR and its components are rooted in and tightly coupled to that context. Therefore, all TNRs that describe episodes that have occurred in a given material time-space context accurately reflect the particulars of that context, even though they may describe different episodes. Furthermore, since the episode of which the TNR is a mapping unfolded from event to event, with event-to-event transitions that are physically realizable, correspondingly the TNR accurately describes physically realizable event-to-event transitions.

c. Generalizability. Unlike any other kind of narrative, only TNRs are capable of supporting and sustaining generalizations. Such generalizations encompass the attributes and behaviors of any and all of the entities included in the episode, ranging from material objects to human personalities. For example, the genesis of the law of gravity undoubtedly originated with a TNR that described the falling of an object from a height.

Necessary Correspondence

This is a property of true narratives that derives from the formal properties of determinacy and connectedness defined above. In particular, a true narrative necessarily corresponds with the material time-space context of the episode that it describes.

Empirical Correspondence

Because of the property of necessary correspondence, there ought to be an observed or empirical correspondence between a TNR and the material facts it purports to represent. Whereas necessary correspondence exists by definition, empirical correspondence is subject to the uncertainties that unavoidably attend any operation of quantitative measurement [Oller (1996: 227-229)]. Hereafter in this paper, where the term 'correspondence' is employed without qualification, it shall be understood as empirical correspondence rather than as necessary correspondence.

Criterial Screen

This is the particular measure of empirical correspondence that is selected for use in the present research. Through valid and correctly applied hermeneutical procedure, the parameters of the criterial screen are derived from the text of the narrative. Each of the parameters describes an aspect of the material time-space context of the narrative which must be true if the narrative is a TNR. For example, the fact that the fortress of Ai was a small site with area less than 7 acres is a criterial screen parameter which derives from the statement in Joshua 10:2 where the area of the fortress of Ai is compared with that of Gibeon.

Extending the argument to the general condition, if any given narrative is true, then all of the criterial screen parameters derived from it must also be true. In general, the greater the detail contained in the text of the narrative, the larger the number of criterial screen parameters that can be derived from the text, and, therefore, the greater the confidence factor that is associated with the result of testing the criterial screen against the material time-space context of the narrative.

Mutual Independence

Not only are the parameters of the criterial screen conditions which can be either true or false, but they are also mutually independent. That is, no parameter in the screen is functionally linked or statistically correlated with any other parameter.

Probabilities and Confidence Factors

Suppose that it were possible to assign a probability to each of the parameters in the criterial screen. Considering the example above, one could examine a source for the sizes of Bronze Age settlements in the Benjamin hill country and determine the ratio of the number of sites whose areas are less than 7 acres divided by the total number of sites. This ratio would approximate the probability that any Benjamin hill country site selected at random would be smaller than 7 acres. If a number of parameters in the screen are found to be true, then, in accordance with the product rule for Bernoulli trials [Feller (1957: 183-198)], the joint probability of the combined event is equal to the product of the probabilities associated with each of the individual screen parameters. In fact, the result is the probability that the confluence of factors resulting in multiple screen parameters being true is a purely random occurrence. Generally, as the number of screen parameters that are true increases, the probability that such a confluence of factors is a random occurrence decreases to the point of becoming vanishingly small. In the case of a criterial screen that contains 10 parameters with a probability of 0.5 arbitrarily assigned to each, the probability that all 10 are true as a random occurrence is

$$2^{-10} = (1 / 1{,}024) = 0.000977$$

Thus, the probability that the 10 parameters being true is not a random occurrence is

$$1 - 2^{-10} = 0.999023$$

This exemplifies the logic that is applied later in this paper to develop a confidence factor for the result of the present research.

Reenactment

A corollary to the connectedness and generalizability properties of TNRs is this: a TNR uniquely enables the spatial reenactment of the event sequence of which the episode is comprised. In the case of the conquest of Ai narrative, the gamut of reenactment possibilities range from a detailed, “cast of thousands” portrayal of the battle to the reconstruction of one or more scenario models that fit the narrative’s description of the battle. In effect, a true narrative can be generalized back upon itself and relived in the spatial, but not the temporal, context in which the episode it describes originally occurred. This is true provided that the spatial context of the narrative can be identified and that it has not changed significantly over time. Thus, the ability to reenact the episode described in a narrative is an approach to rigorously testing the correspondence property.

Limited Cases of Reenactment

How does the reenactment property of TNRs apply in the case of the conquest of Ai episode? If the biblical narrative is a TNR, then it is possible to formulate one or more engagement scenarios involving the Israelite and Canaanite force elements described in the narrative. In particular, the traversal on foot of the routes and distances described and in the times allotted would be feasible. Thus, in the case of the conquest of Ai narrative, it is possible to probe the plausibility that a campaign such as that described in the narrative could have been carried out in actuality through a combination of analytical modeling and ground surveys of the topography in question.

Representational Uncertainty

This is a general term that includes the factors of imprecision, approximation, ambiguity, and a finite level of detail. Representational uncertainty has nothing to do with necessary correspondence, as defined above, but only with empirical correspondence. In particular, representational uncertainty can be structured and defined in terms of the criterial screen defined above. In general, the more precise and detailed a narrative, the greater the number of criterial screen parameters that can be derived from it and the lower the uncertainty. Therefore, the more precise and detailed the narrative, the greater the degree to which its factuality can be tested through comparison of its criterial screen with the material time-space context that the narrative purports to represent. The lower the precision and detail, the less amenable the narrative is to testing by this means. The level of precision and detail contained in the conquest of Ai narrative permits the formulation of a 14-parameter criterial screen.

Uncertainty Band

Representational uncertainty is encountered in deriving and evaluating the parameters of the criterial screen. For example, based upon available data, the area of LB I Gibeon is estimated to have been 11 ±4 acres [Briggs (2004: 123-125)]. In this particular case, the median value of 11 acres is the expected value or best estimate of the size of LB I Gibeon. The variation around the median value of ±4 acres is a measure of the representational uncertainty present in the estimate of the area of LB I Gibeon.

Conclusiveness of the Evidence

The larger the number of parameters in the criterial screen, the more conclusive the evidence in favor of a given factuality test result. In the case of the 14-parameter criterial screen derivable from the conquest of Ai narrative in Joshua 7 and 8, if all 14 parameters are found to be true in connection with one of the candidate sites of Joshua's Ai, then the evidence in favor of that being the correct site and the biblical narrative being factual would be conclusive beyond reasonable doubt. On the other hand, if few or none of the parameters are found to be true, then either the site has not been correctly identified, or the biblical narrative is nonfactual, that is, either an aetiological legend or a pernicious myth.

DERIVATION OF THE NUMERICAL EQUIVALENT OF *eleph*

Range of Uncertainty From Past Research

The meaning of *eleph*, together with its plural form *elephim*, is one of the most baffling interpretive issues facing scholars of the Hebrew Bible. For the sake of convenience and simplicity of nomenclature, the symbol **E** is used to designate the numerical equivalent of either *eleph* or *elephim*. In the immediate context of the military censuses of the non-Levitical tribes recorded in Numbers 1 and 26, it has been concluded from the analysis of past research that,

eleph = Troop of fighting men

However, as to the numerical equivalent of **E**, the uncertainty band is very large, extending over two orders of magnitude from **E** = 10 to **E** = 1,000.

Since the sizes of the various Israelite and Canaanite force elements that were involved in the two battles of Ai are described in terms of **E**, a central issue to correctly interpreting the conquest of Ai narrative is an accurate understanding of the numerical equivalent of **E**. Exegesis of the biblical texts pertinent to the conquest of Ai is brought to bear upon estimating the magnitude of **E** that was appropriate to the time of Joshua, and thereby narrowing the band of uncertainty to something in the order of ±50%.

The Army of Israel

The military force mustered at the command of *Yahweh* in Joshua 8:1-3 is described as follows: "Take all the people of war with you." In other words, Joshua was to muster the whole army of Israel, evidently equivalent to that enumerated in the second military census of Numbers 26. Employing the analytical model of Humphreys (1998) [5] as a working hypothesis, the magnitude of **E** under the leadership of Moses was approximately 10. At the time of the census of Numbers 26, the army of Israel numbered 5,730 fighting men organized into 593 troops, each of which consisted of between 5 and 17 men. This was the size and organizational structure of the army of Israel as it was poised on the plains of Moab opposite Jericho prior to the death of Moses. Thus, in accordance with Humphreys' model, the number of fighting men that Joshua took with him for the second battle of Ai was 5,730. However, did Joshua organize his army with the same troop size, that is, with **E** approximately 10, or with a different troop size? In particular, does the text in the Book of Joshua provide clues as to the value of **E** that was appropriate to the time of Joshua?

In fact, clues as to the numerical equivalent of **E** can be derived from the spies' report in Joshua 7:2-3 combined with the size of Ai as compared with that of Gibeon in accordance with Joshua 10:2.

Content of the Spies' Report

In Joshua 7:2-3, the spies commissioned by Joshua assessed the size and defensive capability of Ai in terms of the size of the attack force needed to conquer the fortress. Their recommendation was

5 Refer to Appendix A in Briggs (2004: 183-190) for a critical analysis and review of Humphreys' model.

that a force of only 2**E** or 3**E** would be adequate. While it is later suggested that the spies underestimated the size of Ai, it is reasonable to assume that they had in mind a significant numerical advantage in Israel's favor. Therefore, their estimate of the number of military-aged males at Ai would have been of the order of 1**E** so as to provide Israel with a 2-to-1 or 3-to-1 numerical advantage. Assuming that the median age of the male population of Ai was 20 years in agreement with Humphreys, the total number of males in the population of Ai would have been 2**E**. Assuming that the population of Ai was equally divided between males and females, the total population of Ai, according to the spies' assessment, would have been of the order of 4**E**.

Implications of the Spies' Report

The implications of the spies' report with respect to the population and size of Ai depend upon the value selected for **E**. Table 2 presents the results that obtain from three values of **E**: $\mathbf{E}_1 = 10$, the minimum value associated with the range of values appropriate to the time of Moses; $\mathbf{E}_2 = 1{,}000$, corresponding to the customary gloss for *eleph* throughout the Hebrew Bible; and $\mathbf{E}_3 = 100$, which is the geometric mean between $\mathbf{E}_1$ and $\mathbf{E}_2$. For each value of **E**, the total population of Ai according to the spies' report is listed in Table 2. The size of Ai is estimated from the population by application of a population density of 162 persons per acre [Broshi & Gophna (1986)].

Table 2. Population and Size of Ai According to the Spies' Report and for Three Values of **E**

Value of E	Population of Ai	Size of Ai (acres)	Comments
10	40	0.25	Population and size are implausibly small.
1000	4000	24.7	Size exceeds the maximum value for the estimated area of LB I Gibeon by 65%.
100	400	2.5	Size is 36% of the minimum value for the estimated area of LB I Gibeon.

Size of Ai According to the Spies' Report

According to Joshua 10:2, Ai was smaller than Gibeon. Based upon available data, the area of LB I Gibeon is estimated to lie between a minimum value of 7 acres and a maximum value of 15 acres, that is, 11 ±4 acres [Briggs (2004: 123-124)]. The equivalence of $\mathbf{E}_1 = 1{,}000$ persons yields an area estimate for the fortress of Ai which exceeds the maximum value by 65%, and, therefore, which blatantly contradicts the statement in Joshua 10:2. Accordingly, the value of **E** appropriate to the time of Joshua must be smaller than $\mathbf{E}_1 = 1{,}000$.

If the biblical requirement in Joshua 10:2 is interpreted to mean that the maximum value for the area of Ai must be less than the minimum value for the area of LB I Gibeon, that is, the uncertainty bands for the two areas must be disjoint with that for Ai falling below that for Gibeon, then the maximum value for **E** can be derived as follows:

(1) $\mathbf{E}_{MAX}$ = (162 x 7) / 4 = 283.5, or approximately 300 [6]

As noted in Table 2, $\mathbf{E}_1$ = 10 yields a population and area of Ai that is implausibly small. Therefore, the value of **E** applicable to the time of Joshua must lie between 10 and 300. Suppose that the minimum value for the area of Ai is taken to be 10% of its maximum value of 7 acres, that is, 0.7 acres. Based upon available data concerning the area of the candidate sites of Ai, this value appears to be very conservative, that is, much smaller than a minimum plausible area for the fortress of Ai. Nevertheless, employing it to calculate a minimum value of **E** according to the pattern of equation (1),

(2) $\mathbf{E}_{MIN}$ = (162 x 0.7) / 4 = 28.4, or approximately 30

Thus, the uncertainty band for the value of **E** applicable to the time of Joshua is estimated to be from a minimum value of **E** = 30 to a maximum value of **E** = 300. The geometric mean of 30 and 300 is

(3) $\mathbf{E}_{MEAN}$ = (30 x 300) ^{½} = 94.9, or approximately 100

Referring to Table 2, the value $\mathbf{E}_{MEAN} = \mathbf{E}_3$ = 100 yields 2.5 acres for the area of the fortress of Ai, that is, 36% of the maximum allowable value of 7 acres. The areas of the two most plausible candidates for Joshua's Ai, Kh. Nisya and Kh. el-Maqatir, lie within the range of 3 to 6 acres; therefore, the value of 2.5 acres is plausible, albeit on the small side. In conclusion, **E** = 100 is selected as the best estimate for the value of **E** applicable to the time of Joshua.

Size of Ai According to the Canaanites Killed in the Second Battle

According to Joshua 8:25, the total number of Canaanites killed in the second battle was 12**E**. From Joshua 8:17, this number included the entire population of Ai plus, evidently, the fighting men from Bethel, who had joined the men of Ai in pursuing Israel. How can the constituent parts of the 12**E** be estimated? Let us assume that the spies underestimated the population of Ai by 50% so that there were actually 1.5**E** fighting men there, and the total population, including women, children, and aged men was 6**E**. This yields an area of 3.7 acres for the fortress of Ai, which accords very well with the measured sizes of Kh. Nisya and Kh. el-Maqatir. As a byproduct, the fighting men from Bethel would have numbered 6**E**.

Conclusion with Respect to the Magnitude of **E**

The equivalence **E** = 100 is adopted as being appropriate to the time of Joshua. This equivalence is subject to an estimated uncertainty band of ±50%. That is, the value of **E** is considered to range from a minimum value of **E** = 50 to a maximum value of **E** = 150 at the time of Joshua. While the size of the army that Joshua inherited from Moses was 5,730 fighting men, he organized this force into troops of 100, each under its own leader. The attack force deployed in the first battle of Ai was 3**E** = 300 men, and the attack force that Joshua personally led into the second battle was 5,730, or approximately 57**E**. The primary ambush force that Joshua deployed according to Joshua 8:3-9 was 30**E** = 3,000 men, that is, 53% of the entire force. The secondary ambush force mentioned in Joshua 8:12 was 5**E** = 500 men.

---

6 In this equation, 162 persons per acre is the population density from Broshi & Gophna (1986), 7 acres is the maximum value for the area of Ai, and 4 is the multiple of **E** that represents the total population of Ai according to the spies' estimate.

The residual attack force that Joshua led to a place of encampment north of Ai according to Joshua 8:10-13 was 22**E** = 2,200 men or 39% of the total force. The total number of Canaanites that were killed in the second battle numbered 12**E** = 1,200 people, including the following constituent parts according to the reasoning presented above: (a) fighting men of Ai = 1.5**E** = 150; (b) remaining population of Ai, including women, children, and aged men = 4.5**E** = 450; and, (c) fighting men of Bethel = 6**E** = 600.

THE BIBLICAL TIMELINE

Material facts of all kinds, including artifacts from an archaeological locus, are devoid of meaning, that is, they are indeterminate. Meaning is ascribed to them solely by a narrative representation of a determinate kind [Oller (1996: 216); Oller & Collins (2000); Collins & Oller (2000)]. Thus, archaeological research should always operate within the framework of a determinate narrative, that is, a TNR. In the case of archaeological research of the Bronze Age Canaanite cultures in Palestine, and because of the paucity of epigraphic or historiographic material unearthed from these cultures, the Bible assumes the role of the primary source of historical data. There simply is no other source of comparable scope and integrity.

The Contribution of the Biblical Timeline to the Criterial Screen

A necessary component of the criterial screen is the establishment of the temporal location of the conquest of Ai according to the biblical narrative. The conquest of Ai, as recorded in chapters 7 and 8 of Joshua, would have occurred near the beginning of the Conquest. Therefore, the date of the conquest of Ai would be determined in relationship to that of the Exodus. As summarized in Briggs (2004: 64-71), the selection of the date for the Exodus is the object of intense debate, much of which is precipitated by archaeological findings. However, for determining the temporal location of the conquest of Ai we must insist on allowing the Bible to speak for itself and prevent the confounding of biblical data by archaeological data. This is true because the parameters of the criterial screen must be in strict accord with the biblical text.

Date of the Exodus

An Exodus date of ca. 1450 BC derives from the following biblical sources: (a) 1 Kings 6:1; (b) the letter from Jephthah to the king of Ammon summarized in Judges 11:26; (c) the genealogy of Heman in 1 Chronicles 6:33-43; and, (d) chronological data dispersed throughout the books of Judges and 1 & 2 Samuel. The fourth source for the date of the Exodus is not weighted significantly. An uncertainty band of ±10 years reflects the scatter in the three primary sources of biblical information [Briggs (2004: 64-68)]. Steven Collins has carefully analyzed the historical synchronism between the account in the Book of Exodus vis-a-vis the profiles of the pharaohs of the 18th and 19th dynasties in Egypt [Collins (2002)]. He demonstrates the substantial correlation that exists with the profile of the reign of Tuthmosis IV as the Pharaoh of the Exodus. In contrast, correlation with the reigns of 19th dynasty pharaohs, which would be needed to corroborate a 13th century BC date for the Exodus, is conspicuously lacking.

Timeline of the Wilderness Journey

According to Numbers 33:3, the Israelites set forth from Egypt on the 15th day of the 1st month, that is, the day after Passover. According to Exodus 19:1, the Israelites arrived at the base of Mt. Sinai on the 15th day of the 3rd month, that is, 2 months after leaving Egypt. From Exodus 40:17, they received the law and directions for constructing the tabernacle through Moses, and they completed the construction of the tabernacle by the end of the 1st year. According to Exodus 40:17, the tabernacle was actually erected in the 1st month of the 2nd year. From Numbers 10:11, the tribes of Israel broke camp and departed from Mt. Sinai exactly 13 months and 5 days after their departure from Egypt. Based upon available chronological data in the Book of Numbers, the date of the Israelites' arrival at Kadesh Barnea is placed in the 15th month after their departure from Egypt. The estimate of 2 months for the duration of their trip from Mt. Sinai to Kadesh Barnea is partially based on the fact that, according to Numbers 11:20ff, the people received the miraculous visitation of quail to satisfy their hunger for meat over a period of 1 month.

The Kadesh Barnea Episode

The Kadesh Barnea episode is recorded in chapters 13 and 14 of Numbers. While encamped at Kadesh Barnea, Moses dispatched the twelve spies to survey the land, the spies returned with their report, and the people responded to the report by refusing to trust the promise of *Yahweh* that he would give them victory over the tribes of the Canaanites. The apostasy of the people at Kadesh Barnea precipitated the period of wilderness wanderings, which, according to Deuteronomy 2:14, consumed 38 years. By the end of the 38 years, the entire generation which had experienced the Exodus from Egypt had died. Chronologically, the key event in the Kadesh Barnea episode is the promise given to Caleb, which is stated in Numbers 14:24. According to this promise, he would survive the 38 years of wandering in the wilderness and would enter the land of Canaan. Allowing 2 months for completion of the spies' reconnoitering mission, the timing of the promise to Caleb is placed in the 17th month after the Exodus.

Timeline of the Wilderness Wanderings

From Exodus 7:7, Moses was 80 years old at the time of the Exodus, and from Deuteronomy 34:7, he was 120 years old when he died while the Israelites were encamped on the plains of Moab opposite Jericho. Another data point is derived from Exodus 16:35, where the period of the people's dependence on manna is stated to be 40 years. According to Joshua 5:10-11, the Israelites observed Passover after having crossed the Jordan and just prior to the attack on Jericho. This Passover was precisely 40 years after the one observed at the time of the Exodus. According to Joshua 5:12, the daily provision of manna ceased at the same time. Thus, the period of time from the Exodus until the people were encamped at Gilgal nearby Jericho and ready to initiate the Conquest is determined to be precisely 40 years.

Timeline of the Conquest

On the basis of the chronological data summarized above, the Conquest would have commenced 40 years after the Exodus from Egypt, that is, ca. 1410 BC. In Joshua 14:10, Caleb states that 45 years had elapsed from the time of *Yahweh's* promise to him at Kadesh Barnea to the conclusion of the

Conquest. Based on the estimate above that the promise to Caleb was delivered in the 17th month after the Exodus, the end of the Conquest would have occurred approximately 46½ years after the Exodus. Therefore, the duration of the Conquest was 6½ years. This would place the Conquest near the end of the LB I archaeological period [7] .

Implications of the Biblical Timeline

In accordance with our analytical method for deriving the criterial screen for the conquest of Ai narrative, the biblical timeline is postulated to be true from the Exodus until the beginning of the Conquest. This establishes the temporal context for the conquest of Ai narrative as lying near the end of the LB I archaeological period in accordance with Table 1. The conquest of Ai narrative is then subjected to a detailed analysis based upon the TNR formalism, and, in particular, upon empirical correspondence as manifested in the criterial screen. If it turns out that all of the criterial screen parameters are satisfied, then the narrative is determined to be factual. As a byproduct of this determination, the biblical timeline would be confirmed. It would then be possible to move forward or backward along the biblical timeline to consider other narratives where a similar analytical approach could be applied. On the other hand, if the conquest of Ai narrative is found to be nonfactual, then at least that portion of the Bible should be regarded as either a remarkable, erroneous conception or worse: a deliberately and maliciously fabricated myth which is tantamount to a lie. Furthermore, the credibility of other portions of the Bible that rely upon the conquest of Ai narrative would be called into serious question.

DERIVATION OF THE CRITERIAL SCREEN

The criterial screen derived from exegesis of the conquest of Ai narrative is the measure of empirical correspondence between the narrative and the material time-space context it purports to describe. In fact, the criterial screen is the desired end-product of the exegesis of the text. Table 3 defines each parameter of the criterial screen, including a symbolic definition of the associated probability and the principal passage in the text from which it is derived. The following paragraphs summarize the derivation of each of the fourteen criterial screen parameters from the biblical text [8] .

Predicate Criterial Screen

The first three parameters of the criterial screen in Table 3 form a predicate criterial screen. These particular parameters constitute the minimum set that is capable of discriminating between viable and non-viable sites for Joshua's Ai. Even though the predicate screen consists of only three parameters, it is sufficiently explicit that only one of the three candidate sites for Joshua's Ai survive its application. That single site is then subjected to the still more demanding requirements of the remaining eleven parameters of the criterial screen.

---

7 In Briggs (2004: 126-127) the factors contributing to temporal uncertainty are analyzed, which leads to the conclusion that the tolerance band associated with the date of the Exodus, and therefore that of the Conquest, is ±50 years.

8 Refer to Briggs (2004: 89-120) for the detailed exegesis of the biblical text in support of the formulation of the criterial screen.

Table 3. Criterial Screen for the Conquest of Ai Narrative

Number	Parameter	Probability	Derivation
1	**Site located in the Benjamin hill country and occupied during LB I**	**P_1**	**The biblical timeline**
2	**Small site with area less than 7 acres**	**P_2**	**Joshua 10:2**
3	**Fortified site with wall and gate**	**P_3**	**Joshua 7:5, 8:1-2 & 8:11-13**
4	Gate facing north to northeast	P_4	Joshua 8:11-13
5	High ridge north of the fortress within 2 kilometers and intervening shallow valley north of the fortress within 1 kilometer	P_5	Joshua 8:11-134
6	Ambush hiding place approximately southwest of the fortress within 3 kilometers	P_6	Joshua 8:3-9
7	Suitable location for feigned retreat maneuver north or northeast of fortress within 3 kilometers	P_7	Joshua 8:14-17
8	Viable egress route with descent and *shebarim* within 3 kilometers	P_8	Joshua 7:3-5 (refer to page 31)
9	Trafficable routes to location	P_9	Joshua 8:9-11
10	Viable engagement scenarios	P_{10}	Joshua 8:14-17
11	Ceramic artifacts appropriate to small highland fortress	P_{11}	Joshua 7:3
12	Object artifacts appropriate to small highland fortress	P_{12}	Joshua 7:3
13	Convenient line-of-sight to Bethel	P_{13}	Joshua 8:17
14	Evidence of conflagration	P_{14}	Joshua 8:19 & 28

Explanation of the Criterial Screen

The following paragraphs describe the derivation of each of the parameters of the criterial screen listed in Table 3.

Site located in the Benjamin hill country and occupied during LB I. This first parameter is of primary importance, for it culls out from further consideration all candidate sites for Joshua's Ai that are not properly located in space and time according to the biblical text. Spatially, Joshua's Ai was situated in the Benjamin hill country of Israel. (Refer to Figure 1 on page 24 for a more precise definition of the portion of the Benjamin hill country indicated by the biblical text and the results of past research.) Temporally, Joshua's Ai was occupied during LB I. On what basis is this temporal requirement asserted? According to the biblical timeline presented above, the Conquest began ca. 1410

BC and concluded 6½ years later, ca. 1403 BC. In particular, the conquest of Ai occurred near the beginning of the 6½ year period of the Conquest. Therefore, in accordance with traditional archaeological periods for dating (see Table 1), the conquest of Ai took place at or near the end of the LB I period.

Small site with area less than 7 acres. According to Joshua 7:2-3, the fortress of Ai appeared to be so small that the spies recommended that only a contingent of 2**E** or 3**E** would be sufficient to take it. In accordance with Joshua 10:2, the area of Ai was smaller than that of Gibeon. Analysis of the area of LB I Gibeon presented in Briggs (2004: 123-125) based upon available data in Broshi & Gophna (1986: 82) and Finkelstein & Magen (1993) yields the estimate of 11 ±4 acres, that is, its area lay between a minimum value of 7 acres and a maximum value of 15 acres. Accordingly, the requirement that the area of the fortress of Ai be less than that of Gibeon is interpreted to mean that the maximum value for the area of the fortress of Ai must be less than the minimum value for the area of LB I Gibeon, that is, 7 acres.

Fortified site with wall and gate. There is no specific and direct biblical statement that Ai was fortified. However, a number of statements in the text of Joshua 7 and 8 present conclusive evidence that it was indeed fortified. In particular, the lines of evidence supporting fortification are as follows:

a. In Joshua 7:5, the flight of the Israelites after the first battle of Ai is described as having started from before or in front of the gate of the fortress. The existence of a gate implies that of a wall as well.
b. An unfortified location would not have a "front" face. The fact that Joshua 8:11 describes the residual attack force under Joshua's command as "arriving in front of the city" is only reasonable if the Israelites acquired a position that was before or in face-to-face opposition to the principal wall face and gate of the fortress of Ai.
c. The divinely mandated ruse is not reasonable unless it was necessary for the Israelites to trick the Canaanites to leave the fortress open. If the site of Ai was unfortified, the overwhelming Israelite offensive force (5,730 versus a Canaanite defensive force estimated to be 750, a 7.6-to-1 numerical advantage) could have entered it with impunity from any direction without employing a feigned retreat and ambush strategy.

The result of applying the predicate criterial screen. If **S** is the set of all sites in Israel, without regard to geographic location or period of occupation, then the parameters of the predicate criterial screen progressively narrow the set of candidate sites for Joshua's Ai. As a result of requiring that a candidate site for Joshua's Ai be located in the Benjamin hill country, the set **S** is reduced to **S'**. How should the set **S'** be represented for purposes of calculating a probability associated with the first criterial screen parameter? The approach adopted in what follows is to define the set of six sites that have been considered at one time or another as candidates for Joshua's Ai as being representative of **S'**. As a result of completing the application of the first parameter, the set of potentially viable candidates is reduced to $\mathbf{S_1}$, the sites in the Benjamin hill country that were occupied during LB I. Application of the second parameter narrows the set of candidates further to $\mathbf{S_2}$, those members of $\mathbf{S_1}$ that are smaller than 7 acres. Application of the third parameter narrows the set of candidates still further to $\mathbf{S_3}$, those members of $\mathbf{S_2}$ that were fortified with wall and gate. In fact, as is demonstrated in the next section, $\mathbf{S_3}$ is populated by just one site. The function of the parameters of the criterial screen which follow, that is, the 4^{th} through the 14^{th}, is to confirm the correct identification of that one

site as Joshua's Ai. For purposes of calculating a number of the probabilities $\mathbf{P_4}$ through $\mathbf{P_{14}}$ associated with the remaining 11 criterial screen parameters, the candidate sites for Joshua's Ai are treated as a representative microcosm of the set of all fortified Benjamin hill country sites occupied during the LB I.

Gate facing north to northeast. According to Joshua 8:11, the residual attack force "arrived in front of the city, and camped on the north side of Ai." Thus, the principal gate of the fortress, or perhaps the only gate, was in the north or northeast face of the wall.

High ridge north of the fortress within 2 kilometers and intervening shallow valley within 1 kilometer. According to Joshua 8:11, most of the 22**E** residual attack force was encamped north of the fortress in a location which was hidden from the view of the men of Ai. Joshua 8:11 further states that there was an intervening valley between this camp and the fortress. Hence, the Israelite camp must have been located on a high ridge, probably forested, which lay north of Ai. Moreover, Joshua and his immediate subordinates would have required an elevated location close to the fortress of Ai from which to direct the battle. The value of 2 kilometers is set for the threshold of proximity of the high ridge relative to the fortress. Ridges that were more distant than this could not satisfy all of the biblical requirements. Furthermore, according to Joshua 8:13, Joshua made his camp and "spent the night in the midst of the valley," probably taking with him a small detachment of men from the residual attack force. Thus, from Joshua 8:11-13, two separate but related aspects of the topography north of Ai are derived. First, there must have been a high ridge north of the fortress, and then there must have been an intervening valley where Joshua and his men spent the night. The fact that the valley in question was shallow is indicated by Joshua 8:14, which states that the king of Ai was able to observe all of Joshua's movements and the place where he and his men set up camp. The value of 1 kilometer is set for the threshold of proximity of the valley relative to the fortress.

Ambush hiding place approximately southwest of the fortress within 3 kilometers. While the Canaanites were fixated on Joshua's visual presentation of the detachment from the residual attack force on the north side of the fortress [9], it was essential that the 30**E** primary ambush force of Joshua 8:3-9 remain hidden from view. The topography surrounding the site of Ai had to be such that the primary ambush force could not be seen from either Ai or Bethel, the neighboring Canaanite city to the west. Based upon the combination of mildly contradictory directional indicators provided in the text ("behind" Ai, to the west of Ai, and "between" Ai and Bethel), it is concluded that the place of ambush was approximately southwest of the fortress [Briggs (2004: 105-106)]. A proximity factor of 3 kilometers is selected because Joshua instructed the primary ambush force to acquire a position that was not far from the fortress according to Joshua 8:4.

Suitable location for the feigned retreat maneuver north or northeast of the fortress within 3 kilometers. According to Joshua 8:14ff, the Israelite force deployed frontally against the north-facing wall and gate of the fortress allowed itself to be driven back as in the first battle of Ai, and it feigned retreat toward an "appointed place before the desert plain," that is, a location which commanded a view of the Jordan valley to the east [Briggs (2004: 110-112)]. The location was such that once the men of

---

9 This detachment, denoted the *ruse attack force*, was perhaps 3**E** in size to emulate the attack force of Joshua 7. It is noteworthy that if the king of Ai had accurately assessed the magnitude of the threat to the north, he would have secured the fortress and forced the Israelites to engage in a prolonged siege, for which they were neither trained nor equipped. Thus, Joshua would have kept most of the residual attack force hidden from view.

Ai had been drawn into pursuit of the Israelites, they would have been prevented from quick return to their fortress, thus opening a significant window of opportunity for the primary ambush force to penetrate the fortress and set a fire. Accordingly, the topography to the north and northeast of Ai would have been characterized by an expanse suitable for maneuvering armies, a view of the Jordan valley, and a natural barrier obstructing the rapid return of the Canaanites to their unprotected fortress. A proximity factor of 3 kilometers is selected for this parameter since the location in question could not be so far to the east as to obscure Joshua's raised weapon signal in accordance with Joshua 8:18.

Egress route with descent and *shebarim* within 3 kilometers. According to Joshua 7:5, the Canaanites chased the fleeing Israelites as far as a specific location or landmark designated 'the Shebârîym', a term which is unique to this passage. Based upon available lexical data, this term denotes a prominent feature characterized by broken or jointed rock, quarrying, or possibly a ruin. To simplify nomenclature, the specific landmark spoken of in Joshua 7:5 is denoted 'the *Shebarim*' without diacritical marks, and candidate features observable in the region that may correspond to this specific one are denoted '*shebarim*' or '*shebarim* formations'. According to Joshua 7:5, the features of a descent and the *Shebarim* were present along the egress route traversed by the Israelites in the first battle of Ai described in Joshua 7:4ff. Since these features characterized the route along which the men of Ai pursued the fleeing Israelites, they would necessarily have to exist within a short distance of Ai. A proximity factor of 3 kilometers is selected [10] .

Trafficable routes to location. According to Joshua 8:3, Joshua and the entire army of Israel left the camp at Gilgal near Jericho and marched to a staging encampment close to the fortress of Ai. According to Joshua 8:9, the 30**E** primary ambush force initiated a nighttime march toward their assigned place of ambush close to and southwest of the fortress. In fact, they probably completed their ingress under cover of darkness to minimize observability from actual or potential enemy positions. The next morning, according to Joshua 8:10-11, Joshua led the residual attack force along a different route to a point north of the fortress, a march that was completed in a single day. Thus, there needed to be a well-defined, trafficable route, such as an existing road or a wadi network, to support each of these three marches [11] .

Viable engagement scenarios. The battle strategy described in the conquest of Ai narrative must be viable with respect to the geographical and topographical context of the site of Joshua's Ai as well as with respect to the military technology possessed by the Israelite army [12] . The key elements of the strategy are the feigned retreat maneuver, Joshua's raised weapon signal, the role of the secondary ambush force of Joshua 8:12, and the primary ambush force assault described in Joshua 8:14-17. While the biblical text is unusually detailed, certain aspects of the engagement are not specifically addressed. This can be overcome by formulating an engagement scenario model that effectively interpolates the missing detail between the data points supplied by the text. It is essential that the engagement scenario model be realizable in its topographical context, given times, distances, available lines-of-sight, degree of forestation, etc. In particular, there must have been a viable means for Joshua's raised weapon signal

---

10 Refer to Briggs (2004: 102-104) for illustrations of candidate *shebarim* formations; refer to Briggs (2004: 146-149) for candidate engagement scenarios for the first battle of Ai.

11 Refer to Briggs (2004: 150-157) for the postulated engagement scenario for the second battle of Ai.

12 Refer to Briggs (2004: 60-63) for a review of ancient military technology pertinent to this research.

to be relayed to the 30**E** primary ambush force, and the ambush force must have been able to quickly penetrate the unprotected fortress once the signal was delivered. A key aspect of the Israelite's military technology was the fact that they were neither trained nor equipped for siege warfare. In other respects, their military technology and strategy would have been a derivative of that manifested in the campaign of Tuthmosis III against Megiddo, ca. 1479 BC.

Ceramic artifacts appropriate to a small highland fortress. Not only must the ceramic artifacts be diagnostic to LB I, but the kinds of wares represented must be appropriate to a small military outpost, that is, principally large storage vessels and common wares for cooking and serving food. One would not expect to find exotic imported wares at the fortress of Ai.

Object artifacts appropriate to a small highland fortress. In addition to the appropriate kinds of ceramic artifacts, one would expect to find objects that attest to a military location, such as gate post socket stones, sling stones, and possibly flint arrow and spear heads.

Convenient line-of-sight to Bethel. Since, according to Joshua 8:17, the fighting men of Bethel joined those of Ai in pursuing the Israelites, there must have been a means for the king of Ai to signal his counterpart at Bethel. The location of the fortress and the topography between it and Bethel would have allowed signal passing between the two locations.

Evidence of conflagration. According to Joshua 8:19, the 30**E** primary ambush force set a fire as soon as they had penetrated the fortress. Moreover, according to Joshua 8:2 & 28, the Israelites burned the entire fortress after they had removed "its spoil and its cattle," making it a permanent heap of ruins. Therefore, evidence of a conflagration would be expected.

APPLICATION OF THE PREDICATE CRITERIAL SCREEN

Three candidate sites for Joshua's Ai emerge from past research as follows: (a) the traditional site, et-Tell; (b) Kh. Nisya; and, (c) Kh. el-Maqatir. Depicted in Figure 1 is the portion of the Benjamin hill country of interest to this research (namely, the 16 square kilometer tract bounded by grid coordinate 144,000 on the south, 148,000 on the north, 171,000 on the west, and 175,000 on the east) and the location of the three candidate sites for Joshua's Ai with respect to each other and other geographical and topographical features in the vicinity [13] [14] . The predicate criterial screen consists of the first three parameters listed in Table 3, of which the first is of primary importance. These three parameters constitute the minimum set which suffices to cull out the non-viable candidates for Joshua's Ai, leaving only a single, viable candidate.

---

13 For additional detail concerning the results of past research in regard to the site of Joshua's Ai, refer to Briggs (2004: 51-53).

14 For additional detail concerning the locations and topographical contexts of the three candidate sites for Joshua's Ai, refer to Briggs (2004: 129-141).

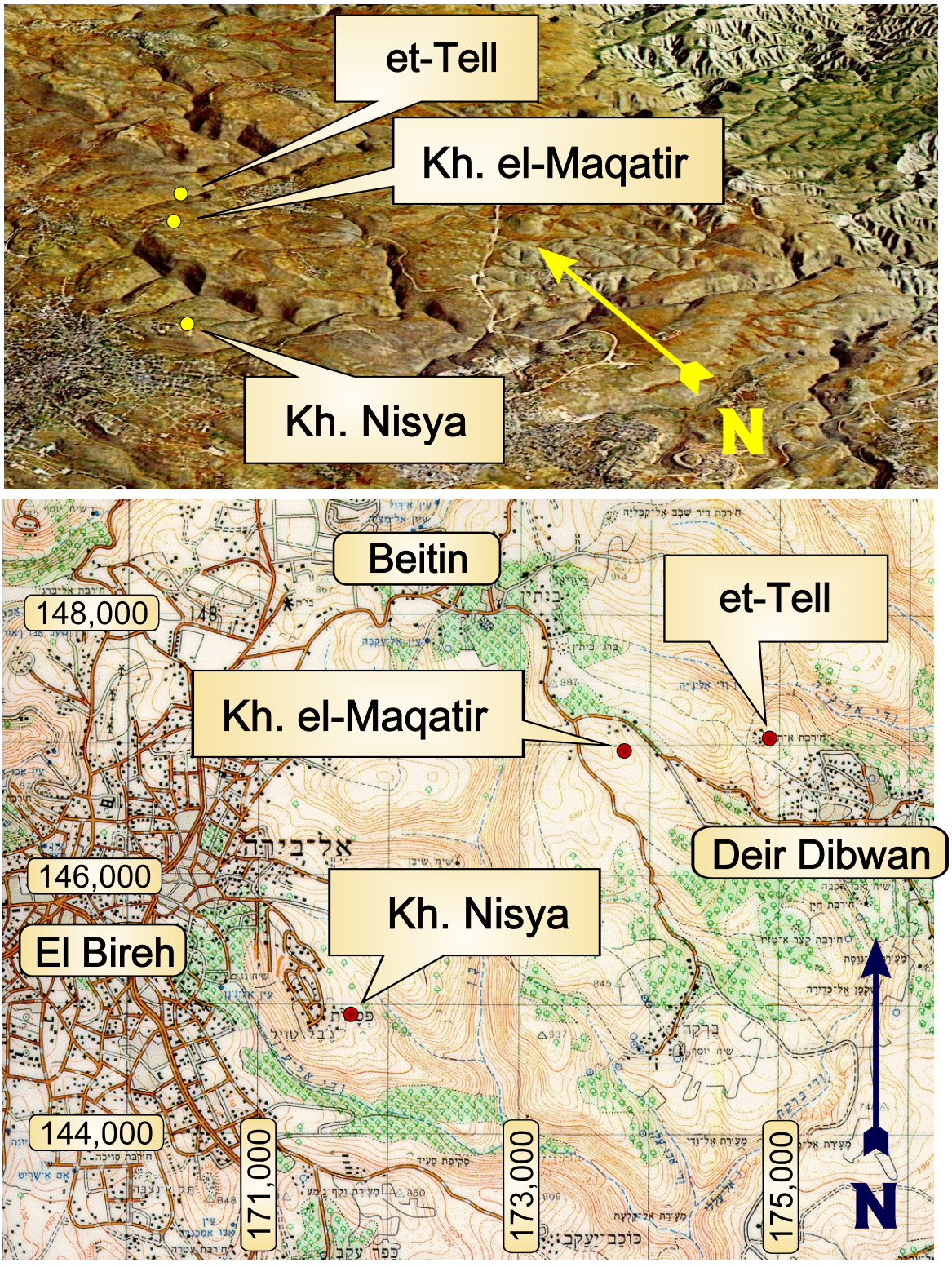

Figure 1. Locations of the Three Candidate Sites For Joshua's Ai

Application of the Predicate Criterial Screen to et-Tell

While et-Tell is properly located in the Benjamin hill country, there is universal agreement among archaeologists that the site was not occupied during LB I (Callaway 1993: 39-45); therefore, it fails to satisfy the first critical screen parameter. Moreover, the area of the EBA city at et-Tell is 27.5 acres, that is, nearly 4 times the screen value of 7 acres. In fact, it is nearly twice the size of the maximum estimated area of LB I Gibeon, that is, 15 acres. Finally, while the EBA city at et-Tell was fortified, the only exposed gate structures are in the south or southeast sectors of the city, which contradicts the fourth parameter of the criterial screen in Table 3. Hence, the site of et-Tell satisfies, at best, only one out of three predicate criterial screen parameters, and therefore it is not a viable candidate for Joshua's Ai.

Callaway's hypothesis. Joseph Callaway postulates that the conquest of Ai described in chapters 7 and 8 of Joshua actually took place during IA I [Callaway (1968: 312-320)]. He identifies the small, unwalled IA village that was situated on the acropolis of et-Tell as the Ai of Joshua, the area of that site being approximately 3 acres and thus satisfying the second criterial screen parameter. While Prof. Callaway is free to speculate on a skirmish at the site of et-Tell which might have occurred during the IA, such does not correspond with the battle described in Joshua 7 and 8. Rather than taking liberties with the biblical text in an attempt to harmonize it with archaeological evidence, the present analysis is directed toward identifying a site that corresponds precisely with the biblical text as written.

Zevit's hypothesis. Zevit (1985) postulates a battle scenario for the conquest of Ai as it might have played out at the site of et-Tell. Actually, there are a number of factors in the topography surrounding et-Tell which fail to correspond with the narrative of Joshua 8. In particular, there is no suitable hiding place for the 30**E** ambush force southwest of the site in accordance with Joshua 8:2-9 [15] . While there is a high ridge to the north, the intervening valley is the Wadi el-Gayeh, which is deep and steep-walled at that point. Thus, the topography north of the site precludes the playing out of the battle scenario as described in Joshua 8:9-28.

Application of the Predicate Criterial Screen to Kh. Nisya

There are a few artifacts that have been unearthed at Kh. Nisya that suggest some occupation during LB I. Moreover, the size of the site satisfies the screen parameter of being less than 7 acres. However, there is absolutely no evidence that the site was fortified during LB I [Livingston (1999: 13-20)]. Hence, the site of Kh. Nisya satisfies two of the three predicate criterial screen parameters. Because it fails to satisfy all three, it is not a viable candidate for Joshua's Ai.

Livingston's hypothesis. According to Livingston (1999: 15), the topography surrounding the site of Kh. Nisya perfectly matches the biblical requirements. While there is a valley to the west of the site for the 30**E** primary ambush force to lie in wait, the head of that valley is adjacent to the spring at El Bireh, which Livingston (1970, 1971, 1994) identifies as the location of ancient Bethel. Moreover, the ingress of the ambush force would have been visible from the site of Kh. Nisya itself. While there is

15 For the detailed exegesis of the biblical text in regard to the location of the encampment of the primary ambush force, see Briggs (2004:105-106). The combination of directional indicators in the text require that this encampment be approximately southwest of the fortress of Ai.

a high ridge to the north of the site with a shallow intervening valley, there is no suitable place for the playing out of the feigned retreat maneuver in accordance with Joshua 8:14-17 because the deep and steep-sided Wadi Sheban lies immediately beyond the ridge in question to the east [16] .

Application of the Predicate Criterial Screen to Kh. el-Maqatir

According to Wood (2000a, 2000b, 2000c), evidence of LB I occupation at Kh. el-Maqatir is abundant, the area of the site satisfies the screen parameter of being smaller than 7 acres, and the LB I fortification system is truly impressive, especially along the north face where the foundations of the gate have been exposed. Therefore, of the three candidate sites, only Kh. el-Maqatir unequivocally satisfies all three predicate criterial screen parameters, and it is subjected to the detailed analysis in the following section.

APPLICATION OF THE CRITERIAL SCREEN TO KH. EL-MAQATIR

The formulation of engagement scenario models for the first and second battles of Ai provides the framework in which the empirical correspondence between the biblical text and the archaeological, geographical, and topographical contexts of the site of Kh. el-Maqatir can be tested [17] . The test is actually carried out by subjecting Kh. el-Maqatir and its context to the rigors of the remaining 11 parameters of the 14-parameter criterial screen of Table 3. The results of applying the full 14-parameter criterial screen of Table 3 to Kh. el-Maqatir are summarized in Table 4.

Criterial Screen Analysis

In the following paragraphs, the satisfaction of each of the criterial screen parameters is addressed, and, to the extent possible, the associated probability defined in Table 3 is evaluated. All of the estimated probability values are listed in Table 4. For each of the criterial screen parameters, the associated probability reflects the likelihood that the satisfaction of that parameter could occur accidentally, that is, at a randomly selected site in the Benjamin hill country. Thus, the product of the 14 probability values represents the likelihood that the confluence of satisfaction of all 14 parameters of the screen is the result of a random event, that is, akin to 14 consecutive coin tosses producing 14 heads. This, in fact, is the probability that Kh. el-Maqatir is not Joshua's Ai.

Preliminary discussion of the selection of probabilities. While there are available data to support the estimation of probabilities for a number of criterial screen parameters, the rigorous estimation of probabilities for others would have required archaeological, geographical, and topographical data that has been inaccessible since September 2000 due to the serious state of unrest in Israel. In particular, access to the region of the Benjamin hill country defined in Figure 1 for continuing archaeological and topographical research has been prevented. However, in every case, a probability value is selected based upon available data, but not necessarily with the rigor that this aspect of the analysis deserves.

16 For further discussion of Livingston's hypothesis and the topographical context of Kh. Nisya vis-a-vis the requirements of the biblical text, see Briggs (2004: 134-137).

17 For the details of the engagement scenarios, refer to Briggs (2004: 145-157).

Table 4. Probability That Kh. el-Maqatir Is Not Joshua's Ai

Parameter	Satisfied?	Probability	Combinatorial Probability
Site located in Benjamin hill country and occupied during LB I?	Yes	0.1667	0.1667
Small site with area less than 7 acres?	Yes	0.7778	0.1297
Fortified site with wall and gate?	Yes	0.7692	0.09973
Gate facing north to northeast?	Yes	0.1250	0.01247
High ridge to north within 2 kilometers with intervening shallow valley within 1 kilometer?	Yes	0.6667	0.008312
Ambush hiding place approximately southwest within 3 kilometers?	Yes	0.1250	0.001039
Suitable location for feigned retreat maneuver to north or northeast within 3 kilometers?	Yes	0.1250	0.0001299
Viable egress route with descent and *shebarim* within 3 kilometers?	Yes	0.6667	0.0000866
Trafficable routes to location?	Yes	0.6667	0.0000577
Engagement scenarios viable?	Yes	0.3333	0.00001924
Ceramic artifacts appropriate?	Yes	0.5000	0.000009620
Object artifacts appropriate?	Yes	0.5000	0.000004810
Convenient line-of-sight to Bethel?	Yes	0.3333	0.000001603
Evidence of conflagration?	Yes	0.3333	0.0000005343

Site located in the Benjamin hill country and occupied during LB I. An abundance of ceramic artifacts diagnostic to LB I have been unearthed at Kh. el-Maqatir. A total of 6 Benjamin hill country sites have been considered at one time or another as candidates for Joshua's Ai [18] . Of these, only Kh. el-Maqatir manifests substantial LB I occupation. On this basis, $\mathbf{P_1}$ is estimated to be 1/6 = 0.1667.

Small site with area less than 7 acres. The estimated area of the LB I fortress that existed at Kh. el-Maqatir is 3.1 acres [Briggs (2004: 123-125 & 137-141)], which is believed to be accurate to within ±62%. To calculate a probability for this parameter, the MB II sites listed in Table 7, Judea Sites, of Broshni & Gophna (1986: 82) are analyzed. Both Bethel (i.e., Beitin) and Gibeon are included in this

18 In addition to the three candidate sites for Joshua's Ai examined in this paper, the following three sites have been considered as candidates at one time or another in past research: Kh. Khaiyan, Kh. Khudriya, and Kh. Raddana. Refer to Briggs (2004: 51) for a summary of the archaeology of these three sites.

table. Of the 44 entries in the table, 8 are cemeteries, leaving 36 occupied sites. Of these, 8 are equal to or larger than the threshold value of 7 acres. On this basis, $\mathbf{P_2}$ is estimated to be (36-8)/36 = 0.7778.

Fortified site with wall and gate. Very substantial LB I fortification walls have been unearthed at Kh. el-Maqatir. In fact the foundation of the wall on the north face of the fortress is an impressive 4 meters thick. Based upon a customary 3-to-1 height-to-width ratio, this translates to a mudbrick superstructure that would have risen to a height of 12 meters (i.e., approximately 40 feet). Hansen (2000: 80-172) presents a comprehensive analysis of the fortification status of LBA sites in Palestine. In particular, on page 171 of Hansen's work, a summative table is presented, on page 172 a map identifying the location of the sites is presented, and on pages 80-166 an analysis of all the sites is set forth. Of the sites examined, 13 are situated in the central hill country, and of these 13, 10 were fortified during the LBA. On this basis, $\mathbf{P_3}$ is estimated to be 10/13 = 0.7692.

Gate facing north to northeast. The foundations of a chambered gate have been exposed on the north side of Kh. el-Maqatir [Briggs (2004: 137-141)]. Sealed loci adjacent to the gate foundation stones date to LB I. On the assumption that the direction in which city gates face is uniformly distributed over a range of 0-360°, the value of $\mathbf{P_4}$ is estimated to be 45°/360° = 0.125.

High ridge to north within 2 kilometers and intervening shallow valley within 1 kilometer of the site. The summit of Jebel Abu Ammar, the highest point in the local area, is 1.4 kilometers due north of the gate of Kh. el- Maqatir [Briggs (2004: 137-141 & 159-160)]. The valley in question is the mouth of the Wadi el-Gayeh, lying immediately east of the modern village of Beitin [Briggs (2004: 159-160)]. It is broad and shallow north of Kh. el-Maqatir, lying within 0.8 kilometer of the site. How should one go about estimating the probability, $\mathbf{P_5}$, associated with this parameter? The most logical approach, given the available data, is to employ the three candidate sites for Joshua's Ai as representative of Benjamin hill country sites in general. While all three have high ridges to the north of them, only Kh. Nisya and Kh. el-Maqatir have shallow intervening valleys. On this basis, $\mathbf{P_5}$ is evaluated as 2/3 = 0.6667.

Ambush hiding place approximately southwest within 3 kilometers of the site. The probable location of the primary ambush force encampment has been determined by means of ground surveys of the Wadi Sheban [Briggs (2004: 154-155)]. It is located 2.6 kilometers south-southwest of the gate structure. It can reasonably be assumed that most sites in the Benjamin hill country would be characterized by an ambush hiding place within 3 kilometers. Furthermore, it can reasonably be assumed that the direction in which an ambush hiding place would be located relative to a randomly selected site is uniformly distributed over a range of 0-360°. Therefore, the value of $\mathbf{P_6}$ is estimated to be 45°/360° = 0.125.

Suitable location for the feigned retreat maneuver to north or northeast within 3 kilometers of the *site*. The location in question lies 2.2 kilometers east-northeast of Kh. el-Maqatir and commands an unobstructed view of the Jordan Valley [Briggs (2004: 155-156)]. The probability of finding such a location nearby a randomly selected site in the Benjamin hill country is judged to be no greater than 45°/360° = 0.125. Accordingly, $\mathbf{P_7}$ is evaluated as 0.125.

Viable egress route with descent and shebarim within 3 kilometers of the site. With respect to Kh. el-Maqatir, two candidate egress routes have been defined [Briggs (2004: 146-149)]. Both are

characterized by a descent and *shebarim*. In the case of the first option, the *shebarim* formation lies 2.8 kilometers southeast of the site, and in the case of the second option, it lies approximately 2 kilometers east of the site. As was done with $\mathbf{P_5}$, the three candidate sites for Joshua's Ai are regarded as a representative microcosm of randomly selected Benjamin hill country sites within the tract depicted in Figure 1. In the case of both Kh. Nisya and Kh. el-Maqatir, viable egress routes characterized by descents and *shebarim* formations exist within 3 kilometers. However, in the case of et-Tell, egress back toward Jericho from the north side of the site would have required a precipitous descent down the steep walls of the Wadi el-Gayeh, which is not regarded as particularly viable, either for the defending Canaanite force or for the fleeing Israelites. Hence, $\mathbf{P_8}$ is evaluated as 2/3 = 0.6667.

Trafficable ingress routes to location. The trafficability of ingress routes to Kh. el-Maqatir has been verified by ground surveys conducted by the author and colleagues from the Kh. el-Maqatir excavation project. As was done with $\mathbf{P_5}$ and $\mathbf{P_8}$, the three candidate sites for Joshua's Ai are regarded as a representative microcosm of randomly selected Benjamin hill country sites within the tract depicted in Figure 1. Trafficable ingress routes are available in the case of both Kh. Nisya and Kh. el-Maqatir. However, approach to et-Tell from the north is complicated by the steep walls of the Wadi el-Gayeh. Accordingly, $\mathbf{P_9}$ is evaluated as 2/3 = 0.6667.

Engagement scenarios viable. With respect to Kh. el-Maqatir, all aspects of the engagement scenarios for both battles are militarily viable, given the assets Joshua had at his disposal. However, such is not the case for either Kh. Nisya or et-Tell. In the case of Kh. Nisya, the ingress of the primary ambush force to its place of encampment would have been visible from enemy positions. In the case of et-Tell, an attack from the north of the site is not viable on account of the steep walls of the Wadi el-Gayeh. Hence, $\mathbf{P_{10}}$ is evaluated as 1/3 = 0.3333.

Ceramic artifacts appropriate. The LB I pottery that has been unearthed at Kh. el-Maqatir is suited to a small military outpost, including large, commercial-grade pithoi for storage of grains, water, and olive oil, and common ware for cooking and table service [Briggs (2004: 161)]. For purposes of evaluating $\mathbf{P_{11}}$, Kh. Nisya and Kh. el-Maqatir are considered to be a representative microcosm of LB I sites in the Benjamin hill country. Since the pottery unearthed as Kh. el-Maqatir is representative of a small highland fortress, while that unearthed at Kh. Nisya is not, $\mathbf{P_{11}}$ is evaluated as 1/2 = 0.5.

Object artifacts appropriate. By the end of the 2000 excavation season at Kh. el-Maqatir, more than 100 slingstones and 3 gate post socket stones have been unearthed [Briggs (2004: 161-162)]. Employing the same approach to evaluating $\mathbf{P_{12}}$ as was applied to the evaluation of $\mathbf{P_{11}}$, the probability of finding this combination of objects at a Benjamin hill country site picked at random is judged to be no greater than 1/2. Hence, $\mathbf{P_{12}}$ is evaluated as 1/2 = 0.5.

Convenient line-of-sight to Bethel. A direct line-of-sight exists from the hilltop above Kh. el-Maqatir to El Bireh, the probable location of Bethel. Moreover, at a height of 12 meters, the parapet of the wall near the westernmost extremity of the wall perimeter would have afforded line-of-sight contact with Bethel = El Bireh from the protection of the fortress [Briggs (2004: 162-163)]. In fact, this is true even if one should insist that Bethel = Beitin. However, the topography surrounding et-Tell and Kh. Nisya denies equivalent line-of-sight contact with either of the candidate locations for Bethel. On this basis, the probability of a randomly selected site in the Benjamin hill country affording a

convenient and direct line-of-sight to Bethel is judged to be no greater than 1/3. Accordingly, $\mathbf{P_{13}}$ is evaluated as 1/3 = 0.3333.

Evidence of conflagration. During the 1999 excavation season at Kh. el-Maqatir, materials derived from Area G, that is, the area of the gate structure and an LB I context, were subjected to testing for remanent magnetization, which is an indication of superheating. Three of the samples manifested statistically significant levels of remanent magnetization, affording positive evidence of a conflagration in antiquity. Also during the 1999 season, an ash layer was exposed in square G24 that lies 80 meters southeast of the gate. Continued work in G24 and neighboring F24 during the 2000 excavation season revealed an extended ash layer superimposed on what appears to be an LB I pavement. The thickness of the ash layer was 10 centimeters (= 4 inches) in some places. In square R14, which lies 17 meters west of the gate, a similar condition was uncovered, including a thin layer of ash (2 to 3 centimeters) along with clumps of burned and flaking limestone. Also during the 2000 excavation season, widespread evidence of a conflagration was uncovered in the form of superheated and calcined limestone bedrock and LB I pottery that had been subjected to superheating to the point of metallic hardness [Wood (2000c: 68-69)]. The probability of finding evidence of an LB I conflagration at a Benjamin hill country site picked at random is judged to be no greater than 1/3. Accordingly, $\mathbf{P_{14}}$ is evaluated as 1/3 = 0.3333.

Factors militating against preservation of ash layers. Militating against finding extensive ash layers at Kh. el-Maqatir is the fact that the entire site has been exposed and under cultivation for centuries. Furthermore, over most of the site, the soil depth above bedrock is no more than a meter and in many places bedrock is actually exposed. With such shallow stratification and extensive and ongoing cultivation, the probability that extensive ash deposits would be preserved *in situ* is remote.

Concluding remarks on the selection of probabilities. Based upon available data, values for probabilities $\mathbf{P_1}$ through $\mathbf{P_{14}}$ have been selected that are believed to be reasonable and generally somewhat conservative. That is, the combinatorial probability result of 5.343×10^{-7} is probably larger than the value that would result from a rigorous analysis with unrestricted access to all necessary archaeological, geographical, and topographical data concerning Benjamin hill country sites. The primary objective of this aspect of the analytical process has been to demonstrate a method for estimating a confidence factor associated with the factuality test result. This objective has been achieved. A secondary objective has been to select probability values with adequate credibility to demonstrate the high degree of confidence that can be placed in the result of the analysis. Refinement of the probability values is an important goal of future research.

Concluding remarks on the combinatorial probability result. Given the selected probabilities for the set of criterial screen parameters, the computed value for the probability of all 14 parameters being satisfied by a single site selected at random in the Benjamin hill country of Palestine is 5.343×10^{-7}, that is only 1 chance in almost 2 million. If a randomly selected site could satisfy the criterial screen, then there would be no basis for asserting that a particular site, Kh. el-Maqatir, is Joshua's Ai. The complement of the above probability is the confidence factor placed in the assertion that Kh. el-Maqatir is Joshua's Ai; that is, $(1 - 5.343 \times 10^{-7}) = 0.9999994657 = 99.99994657\%$.

CONCLUSIONS

The result of applying the 14-parameter criterial screen of Table 3 to the archaeological, geographical, and topographical context of Kh. el-Maqatir is summarized in Table 4. In particular, evidence has been brought forward that Kh. el-Maqatir is Joshua's Ai. Moreover, this same body of evidence demonstrates that the conquest of Ai narrative is a TNR. The strength of evidence is judged to be conclusive beyond reasonable doubt based on the probability values selected for the 14 criterial screen parameters. Accordingly, the eye-witness account view of the conquest of Ai narrative is confirmed, and the aetiological legend and pernicious myth views are both refuted by this analysis.

In addition to demonstrating a method for testing the factuality of the conquest of Ai narrative in the Book of Joshua, a method has been mapped out for calculating an associated confidence factor. The confidence factor is based upon probability values that represent the likelihood of an accidental satisfaction of the criterial screen parameters. Based upon available data, all 14 probabilities are evaluated, but not necessarily with the desired rigor in a number of cases. Thus, the more precise evaluation of some of the probabilities and the rigorous working out of confidence factor calculation is relegated to future research. While some of the probabilities may need to be increased above their presently estimated values, such adjustments should not be expected to materially affect the overall conclusion, however. Even if the combinatorial probability result in Table 4 were to be increased by a factor of 10, the confidence factor associated with the result of this research is still virtually 100%.

Finally, this research has demonstrated the appropriate method for allowing interaction between biblical and archaeological data. Because archaeological findings are almost always indeterminate, they inherently rely upon a determinate narrative for interpretation. Therefore, one should always proceed from the narrative to the archaeological data instead of the reverse.

REFERENCES

Amiran, R.
1970 *Ancient Pottery of the Holy Land*, p. 12. Rutgers University Press.

Boling, R.G.
1982 *The Anchor Bible: Joshua*. New York: Doubleday.

Briggs, P.
2004 *Testing the Factuality of the Conquest of Ai Narrative in the Book of Joshua*, 3rd ed. Academic Monograph Series, AR-1. Albuquerque, New Mexico: Daystar Systems. Contact **Daystar@swcp.com** to order a copy.

Bright, J.
1981 *A History of Israel*, 3rd ed. Philadelphia: Westminister Press.

Broshi, M. & Gophna, R.
1986 Middle Bronze Age II Palestine: its settlements and population. *Bulletin of American Schools of Oriental Research*, Vol. 261, pp. 73-95.

Callaway, J. A.
1968 New evidence on the conquest of ʿAi. *Journal of Biblical Literature* , Vol. LXXXVII, No. III, pp. 312-320.

Callaway, J. A.
1970 The 1968-1969 ʿAi (et-Tell) excavations. *Bulletin of American Society for Oriental Research*, Vol. 198, pp. 10-12.

Callaway, J. A.
1993 Article on Ai in, *The New Encyclopedia of Archaeological Excavations in the Holy Land*, Stern, E. (Ed.), pp. 39-45. New York: Simon & Schuster.

Cassuto, U.
1983 *The Documentary Hypothesis and the Composition of the Pentateuch*. Translated by I. Abrahams. Jerusalem: Magnes.

Collins, S.
2002 *Let My People Go: Using Historical Synchronisms to Identify the Pharaoh of the Exodus*, AMS/TSU AR.1. Albuquerque, New Mexico: Trinity Southwest University Press.

Collins, S. & Oller, J. W., Jr.
2000 Biblical history as true narrative representation. *The Global Journal of Classical Theology*, Vol. 2, No. 2. Visit **www.trinitysem.edu/journal/journalindex.html**.

Feller, W.
1957 *An Introduction to Probability Theory and Its Applications*. New York: John Wiley & Sons, Inc.

Finegan, J.
1998 *Handbook of Biblical Chronology*, p. xxxv. Peabody, Massachusetts: Hendrickson Publishers, Inc.

Finkelstein, I. & Magen, Y. (Eds.)
1993 *Archaeological Survey of the Benjamin Hill Country*, p. 46. Jerusalem: Israel Antiquities Authority.

Fouts, D. M.
1992 *The Use of Large Numbers in the Old Testament, With Particular Emphasis on the Use of ʾelep*. Doctoral dissertation, Dallas Theological Seminary, Dallas, Texas.

Fouts, D. M.
1997 A defense of the hyperbolic interpretation of large numbers in the Old Testament. *Journal of the Evangelical Theological Society*, Vol. 40, No. 3, pp. 377-388.

Frick, F. S.
1977 *The City in Ancient Israel*, pp. 25-55. Missoula, Montana: Scholars Press.

Gottwald, N. K.
1979 *The Tribes of Yahweh*, pp. 270-276. Maryknoll, New York: Orbis Books.

Hansen, D. G.
2000 *Evidence for Fortifications at Late Bronze I and II Locations in Palestine*. Unpublished doctoral dissertation, Trinity College & Seminary, Newburgh, Indiana.

Hayes, W. C.
1975 Chronological tables (A) Egypt. *Cambridge Ancient History*, Vol. II, No. 2, p. 1038.

Hayes, J. H. & Miller, J. M. (Eds.)
1977 *Israelite and Judean History*. Philadelphia: Trinity Press International.

Humphreys, C. J.
1998 The number of people in the Exodus from Egypt: decoding mathematically the very large numbers in Numbers I and XXVI. *Vetus Testamentum*, Vol. 48, pp. 196-213.

Humphreys, C. J.
2000 The numbers in the Exodus from Egypt: a further appraisal. *Vetus Testamentum*, Vol. 50, pp. 323-328.

Kaiser, W. C., Jr.
1987 *Toward Rediscovering the Old Testament*. Grand Rapids, Michigan: Zondervan Publishing House.

Kelso, J. L., & Albright, W.F.
1968 The excavation of Bethel. In Kelso, J.L. (Ed.), *Annual of American Schools of Oriental Research*, Vol. XXXIX, Cambridge.

Kenyon, K. M.
1957 *Digging Up Jericho*. London.

Kenyon, K. M.
1960 *Archaeology in the Holy Land*. London: Benn.

Kitchen, K. A.
1992 History of Egypt (chronology). *The Anchor Bible Dictionary*, Freedman, D. N. (Ed.), Vol. 2, pp. 322-331. New York: Doubleday.

Kitchen, K. A.
1996 The historical chronology of ancient Egypt: a current assessment. *Acta Archaeologica*, Vol. 67, pp. 1-13.

LaSor, W. S.
1979 Article on archaeology in, *The International Standard Bible Encyclopedia*, Bromiley, G. W. (Gen. Ed.), Vol. One, pp. 235-244. Grand Rapids, Michigan: Eerdmans Publishing Company.

Livingston, D. P.
1970 Location of Bethel and Ai reconsidered. *Westminister Theological Journal*, Vol. 33, pp. 20-24.

Livingston, D. P.
1971 Traditional site of Bethel questioned. *Westminister Theological Journal*, Vol. 34, pp. 39-50.

Livingston, D. P.
1994 Further considerations on the location of Bethel at El-Bireh. *Palestine Exploration Quarterly*, Vol. 126, pp. 154-159.

Livingston, D. P.
1999 Is Kh. Nisya the Ai of the Bible? *Bible and Spade*, Vol. 12, No. 1, pp. 13-20.

Mendenhall, G. E.
1958 The census of Numbers 1 and 26. *Journal of Biblical Literature*, Vol. 77, pp. 52-66.

Miller, J. M. & Hayes, J. H.
1986 *A History of Ancient Israel and Judah*. Philadelphia: The Westminister Press.

Na'aman, N.
1994 The 'Conquest of Canaan' in the Book of Joshua and in History. In Finkelstein, I. & Na'aman, N. (Eds.). *From Nomadism to Monarchy*. Washington: Biblical Archaeology Society.

Oller, J. W., Jr.
1996 Semiotic theory applied to free will, relativity, and determinacy: or why the unified field theory sought by Einstein could not be found. *Semiotica*, Vol. 108, No. 3 & 4, pp. 199-244.

Oller, J. W., Jr. & Collins, S.
2000 The logic of true narratives. *The Global Journal of Classical Theology*, Vol. 2, No. 2. Visit **www.trinitysem.edu/journal/journalindex.html**.

Petrie, W. M. F.
1931 *Egypt and Israel*, pp. 40-46. London: Society for Promoting Christian Knowledge. Originally published in 1910.

Wenham, G. J.
1981 *Numbers: An Introduction and Commentary*, pp. 56-66. Downers Grove, Illinois: Inter-Varsity Press.

Wente, E. & Van Siclen, C., III
1977 A chronology of the New Kingdom, Table 1, p. 218. *Studies in Ancient Oriental Civilization No. 39.* Chicago: The Oriental Institute.

Wood, B. G.
2000a Khirbet el-Maqatir, 1995-1998. *Israel Exploration Journal*, Vol. 50, pp. 123-130. Jerusalem: Israel Exploration Society.

Wood, B. G.
2000b Khirbet el-Maqatir, 1999. *Israel Exploration Journal*, Vol. 50, pp. 249-254. Jerusalem: Israel Exploration Society.

Wood, B. G.
2000c Kh. El-Maqatir 2000 Dig Report. *Bible and Spade*, Vol. 13, No. 3, pp. 67-72.

Zevit, Z.
1985 The problem of Ai: new theory rejects the battle as described in the Bible but explains how the story evolved. *Biblical Archaeology Review*, Vol. XI, No. 2, pp. 58-69.