A STUDY OF RAMPARTS IN DAN DURING THE BRONZE AND IRON AGE

by

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DECLARATION

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A study of ramparts in Dan during the Bronze and Iron Age

I declare that *A study of ramparts in Dan during the Bronze and Iron Age* is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

_____   <u>17 September 2021</u>

Donald William Scott   Date

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ABSTRACT

The emergence of ramparts in the Early Bronze Age in ancient Palestine has been debated, whether they were built to counter siege warfare or not. Many wars from the Late Bronze Age into the Iron Age are against walled cities, where bas reliefs of the ancient Egyptians and Assyrians bear witness to the methods employed to break into the fortifications. The research focuses on the role of the Dan ramparts, as a first line of defence, prevention of erosion, protector of the water source and a socio-political structure of hegemony and emulation through its complementary fortifications. The combination of archaeology, anthropology, geography and military strategy explores the following questions: When, by whom, with what and how were the Dan ramparts constructed? What was the main role of the ramparts? What strategies were used to defend and penetrate the ramparts? How effective was the enemy in breaching the ramparts and were the gates the only vulnerable point of entry? A multidisciplinary approach aids in the investigation of the findings in and around the Dan ramparts identifying whether the attacking force sieged the city through conflict, destruction, conflagration, negotiation, capitulation, or annexation. These sieges are tested through theories adopted from war treatises and strategies originating in the East in determining if, at all, the ramparts were penetrated by looking at the evidence at Dan through a different lens.

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CHAPTER ONE

INTRODUCTION

1.1.   BACKGROUND

Over time I became fascinated by the fortifications that were built around the early towns and cities at the various archaeological sites. This was triggered through;

- Old Testament stories of great battles embedded in my head from the days of Sunday School as well as epic Hollywood dramas;

- Controversial viewpoints of Finkelstein and others through my Biblical Archaeological studies toward a Theology degree; and

- My visits to different tels in Israel (archaeological sites) spanning from Dan to Beersheba.

After finishing school, I became a military intelligence officer (8 years) in the South African Defence Force followed by a Chartered Accounting profession in the field of investigative and forensic auditing. I had with this skillset become even more determined to investigate the military battles of the Old Testament.

As a military intelligence officer working together with Israeli military intelligence and more recently my archaeological visits and digs in Hazor, the West Bank and Greece (all with UNISA), I would often wonder whether building a wall around your community was in fact a means of protection or a sentence toward a slow death by becoming isolated from other communities. It correlated with growing up in apartheid South Africa where physical and symbolic walls were created to keep black people in, and in post-apartheid South Africa, individuals had high walls and electric fencing to keep people out.

Walls, fortifications and ramparts have been used interchangeably through the ages and have become synonymous with the need to protect, defend or burn down. This dissertation will investigate ramparts defined by Meriam Webster (1928) as a protective barrier or bulwark, a broad embankment raised as a fortification and usually surmounted by a parapet, a wall-like ridge (as of rock fragments, earth, or debris) or a tall, thick stone or dirt wall that is built around a castle, town, etcetera, to protect it from attacks.

Through my Hazor excavations (and visits to other sites), with a focus on the Middle Bronze Age, I found the Dan ramparts to be an effective example in understanding the evolution of ramparts in ancient Palestine. The Tel Dan Archaeological Reserve is in the north of Israel close to the Syrian and Lebanon

borders with the 1949 Israel-Syrian armistice line on its northern boundary. Another observation for me was whether the ramparts of 4000 years ago (these ramparts in the different areas of Tel Dan seem only to have been constructed during the transition between MB I and MB II), also played the same role that the trenches within these ramparts played during the Israeli 6-day war of 1967. In other words, could one of the purposes of the ramparts also have been to protect the water source? The ramparts at Dan through the extensive excavations will be a model to investigate: Who built the ramparts? How were they built? Why were they built? With what were they built? When were they built? Where were they built – against natural slopes or freestanding?

Looking at the evidence to date and considering that Far Eastern influences may have also impacted on military warfare by rulers coming from the East, I aim to explore the timing of Sun Tzu and his rules for *The art of war* which he documented at the end of the 6th century BCE. This book was translated by Griffith in 1963. Although it is more than 2500 years old it has been used as a military treatise and military strategy throughout the ages, forming part of most military training across the world even in the 21st century. Other recent devotees of Tzu's work include American Gulf War generals Norman Schwarzkopf and Colin Powell. My exposure to Tzu's strategy during my military career, together with the tactics and timing of Tzu around the end of 6th century BCE, became a critical body of knowledge in my investigations in the *modus operandi* of the city sieges in the Iron Age and the means and manner of attack on Dan prior to the strategies becoming a written treatise.

In researching the enemy penetration techniques, a military intelligence methodology will be adopted. This entails the collection, evaluation, analysis, interpretation, and integration of all available information concerning the enemy, weather, terrain and surroundings which are of immediate or potential importance to military planning and operations. Likewise, for those defending the cities surrounded by ramparts a counterintelligence methodology will be applied. This entails the process pertaining to all security control measures designed to ensure safeguarding of information against espionage, personnel against subversion and installations or material against sabotage by sappers or spies.

1.2.   PROBLEM STATEMENT AND RESEARCH QUESTIONS

It is not clear what the role and function of ramparts were in ancient Palestine and specifically Dan.

Research questions associated with the construction investigate whether the structures around the city or

state could be identified as fortifications? Why were they built and how they were built and what materials were used? Where did they originate, who was involved in their construction and how long did they take to build? These questions are investigated by addressing the origins of ramparts, the topologies, the building materials, the geomorphology and the evolutionary process throughout the Bronze (BA) and Iron Age (IA) period. A Tel Dan case study will further unpack the research questions around construction and resource management supported by archaeological site reports in additionally addressing the research question of whether the ramparts were strong and secure as claimed by Bible narrators? This would require addressing the accuracy of the sizing of the ramparts. The Tel Dan case study will also address whether findings supported the role of ramparts, be it political, social, economic, cultic or military in nature, during the BA and IA.

Did the ramparts achieve the purpose of addressing the type and nature of defence? What key defences built into the ramparts or on the ramparts were used in countering enemy threats? These questions focus on the types and patterns as well as identifying freestanding and supplementary ramparts together with the types of walls and fortifications. In support of these defences, did complementary structures such as towers, bastions, gates, fosses, and glacis enhance the rampart defences? The Dan case study will investigate the ramparts as a protection of the water sources: were they merely an object of emulation or did they serve the purpose of curtailing possible attacks and penetration? Finally, the defence of the ramparts at Dan will address the question both through historical archaeological evidence and hypothetical defence theories of whether the ramparts at Dan were able to hold back the enemy.

Was it possible that rampart defenses could be penetrated? If so, how were the enemy able to penetrate the cities surrounded by ramparts and what attacking strategies and methodologies were used to penetrate the ramparts? The role of sappers, ramps, battering rams, catapults, siege towers, ladders, bows and siege ramps would need to be considered to assist the effectiveness of these tactics. In answering this research question the Tel Dan case study will address the question based on the archaeological historical evidence of successful penetration, and the strategy, techniques and tactics considering the influence of Sun Tzu's treatise in hypothetical attack scenarios.

1.3.   AIM AND OBJECTIVES

The main aim will be to investigate what the role and function of ramparts were in ancient Palestine, specifically Dan.

The objective will be to establish the defensive and protective role of ramparts in Dan during the BA and IA. This will be ascertained through critical reflection on earlier archaeologists and biblical scholars who have made scientific discoveries, theories and observations through their excavations. The objective will further be to address the degree of the validity of the knowledge that can be determined through theories, models and typologies in investigating how the ramparts influenced the political, economic, social, cultural, religious and more importantly the military landscape.

This dissertation will investigate the ramparts and their role in using the theory and tools of military intelligence. This will specifically look at the collection, evaluation, analysis, integration and interpretation of both primary and secondary information concerning the enemy, the weather and the terrain which may have been of importance in military planning and operations in both the short term and the long term. This military intelligence will be specifically adopted for an investigative approach to ramparts as huge defence/protection fortifications for the people of the city-states. The investigation will also address the huge city walls surrounding the cities that have been identified by biblical scholars through biblical resources and archaeologists who have opposing theories that the ramparts were not as huge. The study will be narrowed down to the evaluation of the ramparts located at Dan. This will cover the role the ramparts played in influencing the various environmental factors discussed above with a deeper focus in determining whether the military and defensive nature of the ramparts around Dan contributed positively or negatively to the sustainability of the city.

1.4.   HYPOTHESIS

The role of ramparts at Dan during the BA and IA was mainly for defence purposes and could withstand the war machine of the enemy. It only played a secondary role in emulation, water protection, erosion and access control.

1.5.   METHODOLOGY

1.5.1.   Approach

The methodology to be used for the project will be *qualitative and multi-disciplinary* in nature. Qualitative research refers to research where: 'Some of the data may be quantified … but the bulk of the analysis is interpretive' (Strauss 1998:11).

The first step will involve exploratory research to determine what influence ramparts and the development of fortification systems might have had on the city-states and their related communities. This will be done through an extensive literature review into various factors, impacted by the ramparts and historical environmental conditions.

An *anthropological approach* (Pollock 1999:22-24) will be used to determine the social, political and economic implications of the ramparts in Dan. This approach will be complemented by *military strategy* using the methods of Tzu in the 6th century BCE (Griffith 1963) which ties in with the IA period. The military implications of the ramparts at Dan in terms of attack and defence will be approached through a military methodology associated with military intelligence and counterintelligence. Strategy, tactics and techniques will guide the military methodology whereas military intelligence will focus on the collection, evaluation, analysis, interpretation and integration of all available information concerning the enemy, the terrain, weather and environment which are of immediate or potential importance in military planning and operations.

An overarching *archaeological approach* (LaBianca 2006) will be applied that archaeology provides the raw data, processed information and intelligence that will be necessary to determine the construction, fortifications, findings/artefacts, access points as well as the layout of Dan.

Embedded in the *archaeological approach* will be a critical *analytical research* study of the rampart model determined by Biran and Burke for Dan, followed by a re-engineering of the volume and resources used in the BA rampart construction.

1.5.2.   Structure

Chapter Two: Construction, defence and penetration of ramparts. Uziel (2010:24-30) sees the Middle Bronze Age as a period of resurgence of concentrated habitation, an identifying factor being massive earthworks surrounding cities. There has developed a consensus among scholars that the purpose of the *terre pisee* (rammed earth) fortifications was to protect the city walls, that is, to prevent the enemy from approaching and undermining the foundations with the battering rams (Yadin 1955; Dever 1987:154; Mazar 1990:420; Herzog 1989:32-33). In some cases, the earthworks were laid to protect the slope of the mound from erosion and thereby to stabilize the foundations of the defences built on the crest of the slope (Pennells 1983). Some scholars argued that the large enclosures were built to accommodate the growing population of the country, either new immigrants (Yadin 1975:131), or the expanding population of the cities (Wright 1985:54). It was assumed that the construction of the fortifications was stimulated by the threat of Egypt (Dever 1987:174), or hostilities between the Canaanite cities (Mazar 1990:208).

This chapter reflects on the views of different writers and investigates more current research on ramparts addressing the research questions of the security of the ramparts in terms of construction, defence and penetration weapons.

Chapter Three: Tel Dan rampart: construction and fortification. Together with Biran's archaeological reports and others as primary resources and fieldwork visits to Dan, the intention would be to investigate how these ramparts during the BA and IA periods were constructed, resourced and financed including a review of the fortifications such as the city gates and walls, towers and mudbrick walls uncovered to date through probes and soundings.

The 54 years of excavation by Biran (1994), Ben-Dov (2011), Ilan (2019) and Burke (2008) and their teams will be the primary resource when investigating the ramparts at Dan. This will be complemented by other scholars through secondary resources who have further investigated the works of Biran, specifically the theories focusing on the ramparts and a microscopic focus on the gates specifically in the IA. Because Dan had a strong association with cultic activities, findings on the inner walls of the ramparts associated with cultic activities may also be connected with rituals associated with military preparation or the celebration of a successful battle (Ilan 1992:262-263). These activities will be investigated to assess whether such theories are in fact conclusive.

Chapter Four: Uncovering the discoveries along the city fortifications will focus on the findings along the rampart walls, monumental structures and gates which may relate to military activities. The findings will cover weapons (Shalev 2009) cultic activities (Ilan 1992), *bamoth* (Greer 2013), tombs (Biran 1974:34) (Ilan 2018:120), epigraphy and other objects or structures that may be linked to military activities and their associated logistics. A systematic approach following Biran's chronologies (Scheepers & Scheffler 2015:23-24) will assist in determining the dating of the findings so they can be mapped to the defence and penetration events that occurred at Dan. Findings will also be used to paint a possible picture of the political and economic situation at Dan at a given period. The findings will also consider any complementary evidence substantiating or challenging the interpretations of the primary scholars through extra-biblical sources, namely the *Dan Inscriptions* (Biran & Naveh 1993:98), and biblical sources in Joshua and Judges. Influences from the Far East as part of the routes trading in metals (Ilan 1998:311) will be investigated as a channel for the trading of information which could include military strategy (Vandkilde 2016).

Chapter Five: Wars, emulation and water is focused on the impact they have on the role of ramparts at Dan. Wars are analysed to determine where, when and how they took place and the impact they would have on the city of Dan. Where the power attacking Dan was successful in taking over the city, evidence supporting the method of penetration will be addressed to determine if the weapon systems addressed in Chapter Two were used to penetrate the ramparts (Ilan 1995a:313; Burke 2008; Na'aman 1994; Ben-Dov 2011; Arie 2008; Finkelstein 2011 and Ilan 2019a).

Elite emulation emerged in the Eastern Mediterranean after 1200 BCE (Renfrew and Cherry 1986) and saw the ramparts as a sociocultural phenomenon (Bunimovitz 1992); on the other hand, Burke (2008) saw the ramparts as a dedicated defence structure and Ilan saw the ramparts as emulation purposes only as a secondary role (Ilan 2012). Monumental buildings in Dan could also be seen as an act of emulation (Arie 2008), countering the buildings in neighbouring Hazor (Finkelstein 2013). Gates as the entry point to the city and possibly the busiest area of the city will be investigated to determine to what extent this was deemed to be an expression of emulation with its royal inscriptions (cf. Ilan 1999; Arav2009; Biran 1994).

Water as a scarce resource will be studied to determine its importance and the relation between water and the ramparts during both the BA and IA (Ilan 1996, 2019). The climate changes and changing seasons impacting water flow had an impact on the populations at Dan (Kaniewski et al 2017). The ramparts as a

protection for the population and one of the sources of water, lacked drainage initially (Biran 1994) which during slow water flow periods posed a problem, implying that it was not always a favourable option if water management was not part of a transversal management process.

Chapter Six: Hypothesis: The Art of War addresses the defence and penetration strategies, techniques and tactics based on the Hebrew Bible sources as well as the secondary and archaeological evidence of rulers during the BA and IA where military doctrine could identify trends similar to those documented by Sun Tzu (Griffith 1963; Giles 2000). This chapter will be dominated by theories based on existing evidence incorporating hypothetical scenarios in trying to visualize how occupancy of Dan possibly occurred. Periods of destruction, conflagration and earthquakes in the IA (Ilan 2019a) are incorporated in these scenarios. Where gaps in the occupancy of the city have been identified these will be tested against the possibility of capitulation, and vassal states through annexation. Military intelligence principles (Berkowitz & Goodman 1989) and Sun Tzu's treatise will be intertwined with evidence addressed in this thesis into three hypothetical scenarios to test the defence and penetration of ramparts in Dan between its rulers and the opposing enemy.

Chapter Seven: Conclusion

1.6. NAMING OF DAN

The study of the Dan ramparts refers to Tel Dan located in the Tel Dan Nature Reserve which is an archaeological site from the Neolithic era which is also the location of the Bronze Age gate. Dan is also known as Tel Dan, Tell el-Kadi, Tel el-Kady, Tell el-Qadi, Antiochia, Dan-jaan, Danjaan, Daphne, Kefar-Dan, Laish and Leshem. The names used in this dissertation will only refer to the name used at the time and context of an event. This will be Dan when addressed in the context of Abram and in Genesis, and Laish or Leshem when used in the context or period of Joshua or Judges. In all other instances Dan will be used when compared with other cities and when linked with its strata. Tel Dan will be used when it is discussed within the same subject as the tribe of Dan. Tel in the Hebrew rather than Tell from the Arabic will be adopted.

1.7. LITERATURE REVIEW

The preliminary review has been constructed by theme rather than literature listing or chronologically as

this dissertation has overlapping and opposing views of scholars and writers which would create a cumbersome, repetitive preliminary review.

1.7.1. Primary sources

One of the main primary sources that will be used to conduct the research in question is the *Hebrew Bible*. The Bible is the only source that grants insight into some of the battles of those who ruled in the time of the Old Testament by reflecting on the occupied lands, conflicts, lifestyles as well as the physical environment in ancient Palestine. The extracts will specifically refer to the role of ramparts. Biblical events associated with Dan and the surrounding area, specifically the occupation and cultic activities, will also be addressed. The main chapters will focus on Genesis 14:14; Joshua 6:22; 19:47; 24:40-47 and Judges 5:17 and 18:7-29.

Other primary sources that will be used are the dig reports for Dan, such as Biran's 1992, *25 years of excavation at Tel Dan;* 1994*, Biblical Dan*; 1996*, Dan I: A chronicle of the excavations, the pottery Neolithic, the Early Bronze Age and the Middle Bronze Age tombs*; Ben-Dov et al 2002*, Dan II: A chronicle of the excavations and the Late Bronze Age 'Mycenaean' Tomb;* Ben-Dov 2011, *Dan III: Avraham Biran Excavations 1966-1999; The late Bronze Age;* Ilan 2019, *Dan IV: The Early Iron Age levels* and Ilan forthcoming, *Dan V: The Middle Bronze Age levels.* The specific reports covering the ramparts, structure on and around the ramparts or fortifications and material finds on the outskirts of the ramparts including architectural features, installations, and artifacts will be reviewed to identify other purposes that the ramparts also fulfilled. This will cover some of the more relevant artefacts such as volute capitals, high places, thresholds, drain channels, reliefs, orthostats, arrowheads, inscriptions, seals, and metal or stone objects. This will be an important source in investigating the role and purpose of the ramparts as well as the dating, historical and biblical alignment.

Lastly, *tablets*, *reliefs, ostraca, inscriptions, papyri,* and *hieroglyphic depictions* will be referred to as they describe the activities at Dan or ancient Palestine during the related period. These include the *Amarna Letters* from Egypt in the 14th century BCE; *Ebla Texts* from Syria late 3rd millennium BCE; *Execration Texts* from Egypt spanning 2686-1069 BCE; *Mari Texts* from Northern Syria in the 18th century BCE. All of these address military matters which are rampart related. Epigraphic evidence on *ostraca* from Arad, *inscribed limestone votive plaques* from Tel Dan surrounds and the *Mesha stele* will be addressed in interpreting the political environment which influenced Dan and its surroundings.

1.7.2.   Secondary sources

Various books, articles, dissertations, and theses will be used to conduct the research as well as 21st century military methods which may be embedded knowledge and not necessarily available in the public domain.

Uziel (2010) in his article, 'Middle Bronze Age ramparts: Functional and symbolic structures', the MBA as a period of resurgence of concentrated habitation, noted as an identifying factor massive earthworks surrounding cities. Based on media and biblical scriptures, these studies have traditionally been interpreted as revolving around defensive aspects. Several scholars such as Bunimovitz's (1992), *The Middle Bronze Age fortifications in Palestine as a Social Phenomenon*, including Cosgrove's (1984), *Social formation and symbolic landscape* and Finkelstein's (1992), *Middle Bronze Age fortifications: A reflection of social organization and political formations* have called into question the validity of these interpretations, offering alternative explanations revolving around more social reasons.

The study of the ramparts in Dan (the authors and books are discussed later in the review) will give a better indication of whether this was the case or whether the ramparts played a major role in the defence and protection of the city. Elements of Griffith's (1963) translation of Sun Tzu's book: *The art of war* coupled with current military strategy as well as a reflection of the Israeli six-day war will be investigated to support the arguments of whether the ramparts mainly fulfilled a social role or were in fact strategic fortifications in the defence and protection of the city of Dan.

Finkelstein's book 1992, *Middle Bronze Age fortifications: A reflection of social organization and political formations* noted that the issue of the BA fortifications, especially the earthen ramparts and the glacis, was one of the most important themes in Palestinian archaeology from the 1950s to the 1970s. The discussion centred on the questions of classification of the various elements of the defence systems covered by Yadin's (1955), *Some aspects of the strategy of Ahab and David (I Kings 20; II Sam. 11)* and Kaplan's (1975), *Further aspects of the Middle Bronze Age II fortifications in Palestine*, the origin of the *terre pisee* fortifications summarized in Parr's (1968), *The origin of the rampart fortifications of Middle Bronze Age Palestine and Syria*, and the function of the different defensive elements addressed in Wright's (1968), *Tel El Yehūdīyah and the glacis*. A later refreshed look at rampart fortification construction, defence and penetration will be critically reviewed in Burke's (2008) book, *Walled up to heaven: The evolution of Middle Bronze Age fortification strategies in the Levant*.

Dever's (1990), *Recent archaeological discoveries and biblical research,* Mazar's (1990), *Archaeology of the land of the Bible 10 000-586 BCE* and Herzog et al (1987), *Arad – An early Israelite fortress with a temple to Yahweh* agree that the purpose of the *terre pisee* (rammed earth) fortifications was to prevent the enemy from approaching and undermining the foundations with battering rams. This included the threat from or hostilities between the Canaanite cities. In some cases, the earthworks were laid to protect the slope of the mound from erosion and thereby to stabilize the foundations of the defences built on the crest of the slope covered in Pennell's (1983), *Middle Bronze Age earthworks: A contemporary engineering evaluation*. Some scholars argued that the large enclosures were built to accommodate the growing population of the country, either new immigrants, see Yadin's (1975), *Hazor: The rediscovery of a great citadel of the Bible* or the expanding population of the cities and Wright's (1985), *The city gates at Shechem, simple reconstruction drawings*.

Considering new information that has become available through primary resources from the result of excavations integrated with the data on settlement patterns of the period, the role of the ramparts needs to be revisited, especially because of the spatial dimension impacted by the political-territorial background to the erection of the fortifications identified by Pennell's (1983), *Middle Bronze Age earthworks: A contemporary engineering evaluation* and Biran's (1990), *The Middle Bronze Age ramparts of Tel Dan*. The differences between the lowlands and the highlands in respect of political, economic, social and environmental factors may also have impacted on the need for ramparts. This should also be considered around the background of public construction.

The socio-political landscape of the LBA Levant and the changes that occurred during the transition to the IAI have long been topics of intense interest and debate, particularly because of the implications they hold for understanding the historical and biblical data regarding the origins and nature of ancient Palestine as discussed by Benz's (2013), *The varieties of socio-political experience in the Late Bronze Age Levant and the rise of early Israel*. Research into this topic has been influenced by several presuppositions regarding the nature of power, the socio-political makeup of ancient states, and the processes involved in their formation including a belief that this landscape consisted of small city-states in the lowlands of the coast and valleys and larger territorial kingdoms in the eastern highlands. This has therefore influenced the debate of great city walls, fortifications and ramparts which is seen from a different perspective of many of the writers, biblical scholars and archaeologists. Kotter's (1986), *Spatial aspects of the urban development of Palestine during the Middle Bronze Age,* in an examination of the distribution of urban settlements across the landscape, suggests that these cities were not integrated into a regional urban system, but rather were

independent city-states, each with its own supporting region. An examination of rural settlements within the hypothetical supporting region of each urban centre supports this conclusion. Although the inadequacies of surveys done within each of these regions preclude definitive conclusions, indications are that the investigation of the ramparts would be around independent cities spanning into the IA. Based on observation of these tels, it may be possible that together with the above hypothesis it could be concluded that the cities being small in nature, it can be justified economically why ramparts could be constructed around them. The writers of the above books and articles have all expressed their views that focus on the issues spanning from socioeconomic engagement to the desire for power.

Griffiths' (1963) translation of Sun Tzu's 6th century BCE, *The art of war* discusses the strategy that it was always the last option to try and attack the enemy where they are protected by walled cities. He claims it drains resources and involves time wasting in building mounds against the walls. He further claims that to destroy a conquered city through burning it to ashes and killing its inhabitants has no economic value and hence the strategy would be to conquer the city, with minimal damage, and to win the hearts and minds of the people. These strategies will be considered in this dissertation when investigating the battles against Dan. Tzu's strategies from the ancient Far East cannot be investigated in isolation. As an additional source Yadin's (1963), *The art of war in biblical lands in the light of archaeological study* will support the existence or non-existence of perceived weaponry used to attack fortified cities.

The Bible speaks of the David and Solomon era and the United Kingdom, and the question must be asked how much of this conquering of all walled cities brought further economic empowerment and how much was rather due to trade and bartering. Imchen's (2017), *Tensions, interactions and power negotiations between tribes and states in monarchic Israel: Towards a new understanding based on case studies from Middle Bronze Age Mari and Iron Age Moab*, argues that the emergence of a more centralized monarchy in Israel consolidated and legitimized its power through manipulation and coercion by co-opting and weakening the structures of the IA tribal societies, although tribes never disappear because of political centralization.

Jang's (2006), *The Iron Age II city gates in Palestine: The textual and archaeological evidence* reviews the history of various dimensions of research (cultic, judicial and legal, commercial and market, administrative and official, political and social, symbolic, and other miscellaneous uses) of IA city gates in Palestine and the activities along the inner-city walls and ramparts that described the semantic meaning of the city gates in ancient Palestine but not fully addressing the defensive or protective nature of the gates as part of the ramparts. They have in many instances been glanced over as an obstacle that must be conquered to attack

the city or as a means of protection for the inhabitants of the city.

The dissertation of Dorsey (1991), *The roads and highways of ancient Israel* covering lateral and local roads in Samaria and Judea will also be investigated to a limited extent in understanding how they link to the city states with an emphasis on social, economic and military factors.

Finally, one must not ignore the archaeology of ordinary things; Sugarman's (2000), *The archaeology of ordinary things in Late Bronze Age Israel and Palestine* questions many models on the social and economic trade in respect of wine, olives, pottery etc. focused on the cultic and elite which was then adopted for the masses. The models may be skewed as ordinary people were not considered when extrapolating these models. The consideration of findings alongside the city ramparts both on the outside and inside may give a better indication of the lifestyle of the greater population. A sacred precinct (*high place*) and a series of gate complexes dating to the Iron Age II (IA II) represent perhaps the most visible and evocative remains at the site. These features, now partially restored, testify to the importance of Dan as a religious centre for the early Kingdom of Israel.

Ame's (2012), *The Golan Heights: Tel Dan post outlook* describes the water war leading up to the six-day war. This article and research done on the Dan ramparts will be used to investigate if parallels can be drawn between the positioning of Israeli trenches before the 1967 six-day war and the ramparts around the city of Dan both from a defensive and a sustainability environment, taking into consideration the Golan heights and the proximity to the source of the Jordan river.

Scheepers, Scheffler (2015), *From Dan to Beersheba: An archaeological tour through ancient Israel* discusses the archaeological work done on the ramparts in which two cuts identified the rampart base to be 60m with walls as high as 18m which included an inner stone core of 6m supported by earth walls of 40% gradient. With reference to the work of Biran and fieldwork visits to Dan, the intention would be to investigate how these ramparts served to preserve and sustain the economy and the people living in the city during the Bronze and Iron Age periods. Findings from digs on the inner walls of the ramparts will also be investigated to determine if this related to war preparation or military celebration.

1.8. LIMITATIONS

The dissertation is not intended to exhaust all investigations on ramparts in Palestine during the BA and

IA but to rather gain a general and broad understanding of ramparts coupled with a deep investigation into the construction, sizing and role of the ramparts at Dan. It will also not conclude on the finality of the purpose of ramparts but will rather, through the selection of Dan, determine the defence mechanisms adopted against potential enemies and likewise the siege tactics of enemies to penetrate the ramparts.

It is not the intention of this study to do an exegesis of the relevant biblical passages, but the Hebrew Bible is used as a 'primary source' in the absence of other primary sources that record narratives relating to the city of Laish or Dan. These narratives might illuminate some of the archaeological information.

CHAPTER TWO

CONSTRUCTION, DEFENCE AND PENETRATION OF RAMPARTS

2.1   INTRODUCTION

In Chapter One the definition of ramparts was briefly discussed and unpacked. However, the research questions identified needed to be addressed to understand the role of ramparts during the Bronze and Iron Age. This chapter investigates the supporting research questions dealing with the construction, defence, and penetration of ramparts.

Research questions associated with the construction investigate whether the structures around the city or state could be identified as fortifications, and ask why they were built, how were they built and what materials were used? Where did they originate, who was involved in their construction and how long did they take to build? These questions are investigated within this chapter by addressing the origins of ramparts, the topologies, the building materials, the geomorphology and the evolutionary process throughout the Bronze and Iron Age period.

The defence of these ramparts is addressed through the trigger of the following research questions associated with it, considering their intended function, and whether they achieved the purpose of addressing the type and nature of defence? What key defences, built into the ramparts or on the ramparts, were used in countering enemy threats? These questions are addressed in this chapter through the focus on the types and patterns, as well as identifying freestanding and supplementary ramparts together with the types of walls and fortifications. In support of these defences, complementary structures such as towers, bastions, gates, fosses, and glacis will also be evaluated.

Questions have also been raised as to how the enemy were able to penetrate the cities surrounded by ramparts and what attacking strategies and methodologies were used to penetrate the ramparts? In evaluating the methods, the focus will address the role of sappers, ramps, battering rams, catapults, siege towers, ladders, bows and siege ramps.

2.2   CONSTRUCTION

2.2.1 Review of the origins of ramparts

Uziel (2010:24-30) sees the MBA as a period of resurgence of concentrated habitation, an identifying factor being massive earthworks surrounding cities. According to Finkelstein (2013), most archaeologists saw the need for ramparts and their fortifications in the MBA as a need to defend the city and its walls, stopping the attackers from reaching and weakening the foundations with battering rams. He based this theory on the works of Yadin (1955); Dever (1987:154); Mazar (1990:420) and Herzog (1989:32-33). However, this theory has been challenged by Parr (1968:18-45) as he states that the battering ram already existed in the EBA. This was confirmed by Steinkeller (1987:14). Parr in 1968 was possibly not aware that EBA ramparts were eventually identified in Tel Dan (Ilan Forthcoming) in Dan IV (Ilan 2019a:1) which would support his view.

Finkelstein, in his earlier journal contribution in 1992, recognises other scholastic views on the origins of ramparts considering Pennells' view that not all rammed earth structures were associated with defence but rather linked to the need to prevent erosion or to reinforce the base of defences built on the top of the slope (Pennells 1983). Yadin and Wright argued that the large enclosures were built to accommodate the growing population of the country, being either new immigrants (Yadin 1975:131), or the expanding population of the cities (Wright 1985:54). Others, according to Finkelstein (1992:201) claim that it was assumed that the construction of the fortifications was stimulated by the threat of Egypt (Dever 1987:174), or hostilities between the Canaanite cities (Mazar 1990:208).

Many, including Wright (1969), have associated rampart fortifications in Palestine with ancient Iran, but no archaeologist has been able to support this to date. Due to continued military warfare in Syria it has not been accessible in the last decade and the likelihood that historical evidence will be destroyed due to weapons of mass destruction and undisciplined military forces cannot be ruled out.

For the past 60 years Dever and others have linked the Amorites with the emergence and transformation of ramparts. According to Dever it was a defence mechanism amongst attacking forces such as Amorite/Canaanites and Hyksos internal tribes, and as base camps for campaigns into Egypt (1987:77).

Mazar (1990), Kempinski (1992; 2002:37) have concurred that rampart fortifications were associated with defence strategies and no new opinions as to their purpose have since emerged. Exceptions are Finkelstein and Silberman (2002:319-325) and others who question whether large city-states with massive

walls had ever existed.

2.2.2 Typologies of rampart fortifications in the Bronze and Iron Age

Yadin (1955:25ff) identified two rampart types. The first he called 'fortified camps' or 'enclosures' and 'beaten earth fortified towns'. The latter used either the *terre pisee* technique or the construction of battered stone walls. In exceptional cases these techniques were used together in Jericho and Lachish. Yadin (1995:26f) coined the 'Amorite hypothesis' from inhabitants borrowing the *terre pisee* technique for beaten earth fortified towns from the inhabitants of fortified camps.

The terms adopted by Yadin for topology fortifications were initially challenged by many scholars including Kenyon (1979:150) and Kaplan (1975:1-17) as they were coined from the medieval fortifications which had created false certainties. However, over time, the terms became commonly accepted practice where a glossary of archaeological terms emerged which were adopted in relation to their function and historical context.

2.2.3 Building materials across the periods

Different building materials were used in the Bronze Age (BA) and although the Iron Age (IA) saw the introduction of iron it was not a feature or material that was used in building as we know today. Materials used included mudbricks, mud mortar, mud, gypsum plaster, wood, stone and soil. Each material is discussed below, supported by the relevant source.

2.2.3.1 *Bricks made from mud*

From BA through to IA and up to today mudbrick wall construction in Palestine has always been sun-dried, and up to today no evidence can be found that they were baked. Not many studies exist concerning mudbricks so one is not able to source any meaningful data relating to their roots, purpose and type. Despite this I noted in an onsite presentation by Professor Ben Tor at Hazor in 2016 that mudbricks were made using the surrounding material and left to dry in the sun. This had several purposes:

- To create an interest in the history and archaeology of ancient Israel;
- To adopt similar methods of mudbrick making as in the BA; and
- To use the bricks in restoring ancient buildings where the original material was not secure or

available.

The mudbricks of the BA were mostly brown/reddish in colour which indicated that the walls or fortifications were built probably from the surrounding virgin earth outside of the settlements. As mentioned earlier no intensive studies have been made on mudbricks, although according to Oates (1990:388ff) other bricks of a greyish colour would contain occupational debris but would generally be used for walls inside of the settlement. I am of the view that defensive walls using the surrounding virgin soil would also act as one of the first lines of defence. Through camouflage, they would blend in with the surrounding environment for any militants transiting in the distance. This, however, would not hold true for the bigger fortifications due to the glacis complementing the ramparts.

The mudbrick construction at Dan discussed in Chapter Three at the MBA gate in Area K, Homsher addresses the construction, labour and joining for the Gate as well as the fortification walls (Homsher 2012).

Burke in conversation with Gibson claims that the quality of the bricks was inferior compared with greyish bricks which were more impermeable to moisture (2018:75). Based on the mudbrick walls that have been preserved (and which I saw while working on site in Hazor) this was not necessarily the case.

During the IA fewer mudbrick fortified walls were uncovered, but Philistine cities such as Ashkelon continued the use of mudbrick fortification. The outer houses around the towns became the defence walls in newer settlements, known as casemate walls, until the emergence of the united Monarchy in IA II when huge fortification walls again emerged (Finkelstein & Silberman 2007:277).

2.2.3.2   *Mortar or plaster made from mud or gypsum*

Mud mortar was the base to bond bricks in the same way as bricklayers today lay bricks. According to Wright (1985:359ff) the mortar was different in colour which was due to the ash in the mortar which would give it the grey colour differing from the mudbricks. The elements and various life forms impacted on the sustainability of the mud bricks, so it was necessary to counter rain and wind by using mud plaster to cover the bricks (Damluji 1992:148). Although the mud plaster was not long-term protection it was easier to plaster a wall again than to rebuild a wall which had not been plastered with mud. Although the walls were protected from the elements this would not be enough to deter insects such as termites from

building nests (Damluji 1992:148) and wasps who could burrow into the walls through the mud plaster to feed on straw and chaff (Voss 2002:381). Rodents with the intention of building nests also were able to weaken the base structure of walls. Birds were also hazardous to the maintenance of the walls as they would extract the straw for nests or seek out insects for feeding. Options available to BA builders was to use gypsum or to a limited extent lime plaster to counter the elements, insects, rodents and birds (Wright 1985:360). One must also not ignore acts of vandalism through the ages where property damage has always been a challenge. Although plaster *per se* would not add to the defence against the enemy, used together with glacis it would restrict or easily expose the enemy where the plaster was lighter and brighter in colour such as in the Jericho excavations (Emery et al 1979:6).

White mud plaster and gypsum plaster remained in use throughout the IA and was especially used in fosses, possibly for easily exposing the enemy and in some cases for water retention.

2.2.3.3   Wood

During the BA wood was used in the construction of fortifications. This was limited to areas which required bridging (Marchetti 1998:206f). Wood was used predominantly for gates as well as towers. For example, in Jericho, wood remains from a tower beam in the BA were discovered during excavations. The wood or charcoal remains were identified as poplar from a tower on the south fortification (Marchetti 1998:206f).

Varieties of wood became more prominent in the IA, but this again could not be evidenced through archaeological findings, but mentioned in Isaiah 41:19 of cedar, acacia, poplar, olive, cedar, myrtle, cypress, firs and pine are promises by God to the children of Israel.

2.2.3.4   Stone

Although evidence has come to light of large chunks of stone emerging at the end of the Late Bronze Age (LBA) and the Early Iron Age (EIA) such as in Gath, not much data exists in terms of the procurement of stone across long distances. Large stones were used in the foundations of gates. Cyclopean blocks were used in the revetment walls in Shechem (Dever 1987:148) as well as orthostats. Smaller stones were also used in rampart fills, and this would normally have been obtained from riverbeds or during the digging of fosses.

Herr (1997:114ff) stated that although ashlar masonry is documented in Syria, Lebanon, and Cyprus during the LBA, there is no strong evidence that it came to Palestine until the tenth century. 1 Kings 5:18, which records work on Solomon's building activities in Jerusalem as well as Dan where chiseling of the ashlars and the header-stretcher method of laying the blocks was recorded, indicated that it was brought in by the Phoenicians.

2.2.3.5   Soils and soil micromorphology

Not many studies have been made on the geomorphology of the mudbricks and plaster of ramparts from the BA and IA, other than by Bullard (1970) on Gezer, Rosen (1986) covering the subject in general, Lavee et al (1993) on Shiloh. The findings on work done by Cremaschi (2000) at Qatna are still to be published.

Studies will be able to indicate the impact of permeable bricks and plaster on ramparts including glacis and fosses. The greater the impermeable strength, the stronger the fortification would be against the elements, insects, animals as well as the enemy. Strategies could also be determined that would be adopted if the fortifications showed layers of permeability during the construction. It would also be expected that the permeability would also be more compacted in the case of an increased grade of slopes relative to glacis. The data from geomorphological research would also be able to identify the source of the soils and mudbricks, thus giving an indication of the transport of the materials for the construction of fortifications just as archaeologists are able to read pottery in identifying the period, source and use.

The study by Lavee, et al (1993) on the Shiloh rampart provided thought-provoking information on the choice of soil for the building of the rampart and glacis. The fortifications of Shiloh in the BA included a rampart and glacis in Area C and D revealing five different soil materials used which were examined and analyzed through geomorphology of these elements. The benefit of more research in this area would also assist in the reconstruction of ramparts as the size of the grains would identify the level of permeability which then would indicate the number and order of layers in the building of the fortifications spanning the inner revetment walls across the structure to the fosses.

2.2.4   Geomorphology

A study by Neev et al (1987) of the Palestine coast covered the geomorphology of the sites and fortifications. They have argued that the sites experienced subsidence resulting in erosion of the earthen rampart. These sites such as Yavneh-Yam experienced a tectonic movement at the same time as the eruption in Santorini according to Neev et al (1987:65ff). The purpose of this explanation is to identify that not all earthen ramparts were destroyed by deflagration through enemy attack. Geomorphology and the study of soil samples during excavations help us to understand how the sites could have been destroyed, whether fortifications extended completely around a city or in some cases such as coastal cities may have been lacking. Studies continue in this field as technology and maritime archaeology become available to complement these studies before it can be confirmed whether fortification walls fully existed around all cities in the BA and IA. This would in the future also give clarity to some of the conquests in the IA made by Saul, David and Solomon on the so-called great cities. Yadin (1980:62-68) strived to match the fortifications at the gates to be the consistent work of Solomon in Hazor, Megiddo and Gezer. These were challenged by Finkelstein and Silberman (2007:279) based on dating as Ussishkin (2000:248) identified the Megiddo gate to have been built later. Finkelstein and Silberman (2007:279) further highlight that 16km east of Megiddo, Ussishkin excavated a fortification at Jezreel likened to Megiddo which was identified to be the time of the Omride dynasty. Thus, we will be able, through geomorphology, to gain a better understanding of the environment, social, historical and dating context of the fortifications over and above the biblical and extra-biblical texts which will be discussed in detail in Chapter Three.

2.2.5   The evolutionary process

The summary of the rampart evolutionary process was dominant in the MBA but started and expanded from the Early Bronze Age (EBA).

2.2.5.1   *3000 - 2600 BCE (period before ramparts)*

Dikes were the first form of fortification which were walls found near the Euphrates River such as Mari, Terqa, Chuera and Beydar (Van Lerberghe & Voet 2001); being close to rivers it was necessary to keep water away from the mudbrick walls, hence moats became part of the ramparts. Several Palestinian tribal areas had glacis and fosses as fortifications, such as Dan (Ilan 2019:1).

2.2.5.2   *2600 - 1925 BCE (rampart development)*

The Euphrates River saw settlements along its banks expanded with new ramparts, fortification walls and monumental gates while Palestine was still mostly unfortified during this period (Stager 1999:237ff).

2.2.5.3   1925 - 1800 BCE (mature rampart)

Although the rampart had reached maturity in this period, a fortification approach in Palestine only now became evident with various defensive structures. Freestanding ramparts were built in Ashkelon, Burga, Ebla, Kabri and Tuqan with elliptical plans which included fortification walls, fosses, and glacis (Parr 1968). In low-lying areas supplemental ramparts with rectangular towers were frequent with few fortifications in the high-lying areas (Burke 2008:79).

2.2.5.4   1800 - 1550 BCE (late rampart)

Palestine saw settlements that became fortified in the low-lying areas and along the coast with freestanding ramparts which were mostly rectangular or irregular polygons, and which included fosses and the rise of six-chamber gates with added towers and bastions (Burke 2008:80).

High-lying settlements despite being on mounds or raised from the surrounding plains became more fortified with supplemental ramparts which required huge revetment walls. From 1600 BCE fewer walls were erected at new sites, and it is possible that at small settlements only the rear walls of structures served to defend the site on the edge of tells and the apexes of ramparts (Wilkinson 2003:7).

2.2.5.5   1550 - 1000 BCE (post rampart)

With Egypt controlling Palestine over much of this period no new fortifications were built and the maintenance of walls was lacking except the six-chamber gates which were still maintained. Expansion saw fosses falling away or eventually eroded or filled (Herzog 1989:31-37).

2.2.5.6   1000 - 925 BCE (Iron Age IIA)

The timing and debate on the erection of six-chamber gates continued as it was in this Solomonic period that Yadin concludes that the gates were completed in Gezer VIII, Hazor and Megiddo. Confirmation is

also evidenced that no new ramparts were erected as Lachish V became an unfortified settlement and at Dor the brick city walls were predominantly the exterior walls of the houses which acted as a fortification. Dan IV the use of earlier fortification walls was recycled or revamped for continued defence (Freedman & Myers 2000:96).

2.2.5.7   925 - 721 BCE (Iron Age IIB)

This is the period of a divided monarchy as well as the Omri dynasty in the north where Finkelstein and Silberman refer to the period when the Megiddo six-chamber gate was built (2002:342-343). During this period of excavations identified as Dan IVB-II through potsherds, a city wall and gate were uncovered (Biran 1994). A chamber gate as well as an offset-inset city wall were also uncovered at Hazor and Dor IV. Another offset-inset wall with a citadel was excavated at Aram. A two-chamber gate at Gezer as well as gates at Jezreel together with a casemate wall, towers and fosse were excavated, this being the centre of the Jezreel dynasty, and Megiddo also was identified as a city wall and gate built in this period (Freedman & Myers 2000:97).

2.2.5.8   721 - 586 BCE (Iron Age IIC)

New fortifications during this period have not been uncovered in Israel (Northern Palestine) except for a two-entry gate in Gezer and a gate at Dor. In Judah (Southern Palestine) at the City of David the West City emerged which included a massive wall. In Lachish III a city wall was erected with a gate and during Lachish II a siege ramp was built (Freedman & Myers 2000:98).

2.3   DEFENCE

Different mechanisms for defence were used in the BA and not much had changed in respect of siege warfare into the IA. These are discussed below, focusing on size, materials, method of construction, typology and purpose.

2.3.1   Earthen ramparts

Reich and Katzenstein (1992) define the rampart as an earthen mound piled up around a city as a fortification or part of it, typical of the MBA. They define the glacis, however, as 'the outer facing of an

earthen rampart which serves as a fortification of the lower slope of a mound, or the lower outer-sloping foot of the city-wall. Constructed of different materials such as: beaten earth, lime plaster, bricks, stones, etcetera'.

If one considers the huge mine dumps that were prevalent in the 1980s in Johannesburg, this will give one an idea of what a rampart may have looked like in the BA. Those who have not experienced this phenomenon should visualize it as a massive embankment with the purpose of stopping an enemy advance just as it would be difficult to climb riverbanks that cut through the mountains.

Glacis was a cover over the walls of the ramparts to protect them from erosion, but by default this would also act as a deterrent for the enemy. Two rampart groupings can be identified based upon their morphology: the freestanding rampart and the supplemental rampart as illustrated below in Fig 2.1.
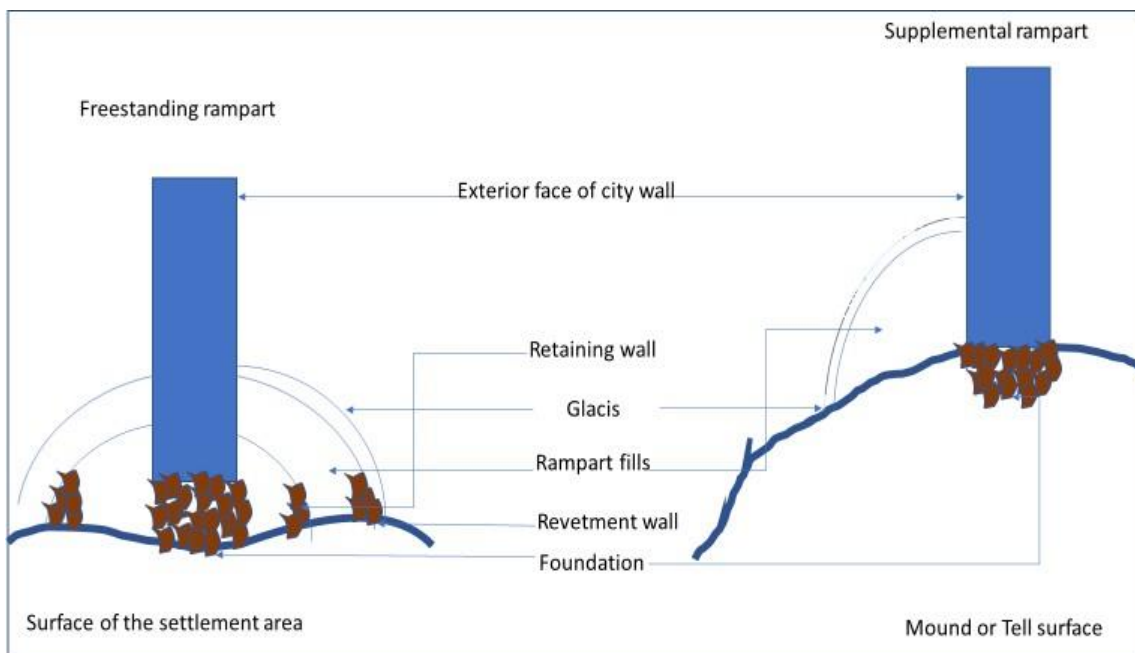
Figure 2.1 Freestanding and Supplemental Rampart (Created by Donald Scott 2019)

2.3.1.1   Freestanding ramparts

Identifying ramparts of a freestanding nature could be easily recognized through the slopes rising from the open landscape when viewed from a distance. On the inner side of the rampart the slope can also be easily observed. Looking from the inside toward the ramparts would give a crater-like impression such as in Dan (Biran 1996) where the walls slope completely around the whole tel. During my excavation tours

and site visits in 2016 and 2019, including digs at Hazor and Ai, with the Department of Biblical and Ancient Studies (UNISA), I like many others became aware of the general topology situation. Often in these situations, although later occupations may have taken place, the ramparts themselves were not buried and remained exposed except where the material may have been used for new building structures. Where ramparts had deteriorated in some sites in Palestine, this would have been caused mostly by erosion over time; the levels of occupation and filling would have eventually reached the height of the rampart and would then blend in with the mound and landscape. It is in such situations that one would either find city gates or saddle areas where once mighty gates stood as depicted in Lamentations 2:8-9.

The general terrain would dictate the plan of any freestanding rampart and it would be easier if the site was new, level and had no earlier occupation, as it would then be easy to apply a systematic plan which could be common for sites with a similar environment generally being elliptical such as Ashkelon (Voss 2002), Byblos (Dunand 1939) and Kabri (Kempinski 2002) or rectilinear such as Hazor (Yadin 1972) observed in 2016 and 2019, Lachish (Tufnell 1953) observed in 2016, and Yavneh-Yam (Kaplan 1969:1504).

In situations where the topology was contoured it would be necessary to adjust for the areas where the ground could not be levelled. These sites would still be low-lying open veld and should not be confused with sites on natural mounds in the high-lying areas. The choice of an elliptical or rectilinear plan would still be applied as in the case of Hazor (Yadin 1972), observed in 2016 and 2019 where it was not level and at Dan (Biran 1996), observed in 2016 and 2019 and Ebla (Pinnock 2001) where previous occupation had existed.

Rectilinear plans only followed later in Palestine from elliptical plans which were the pre-cursor to freestanding ramparts. This was dictated by the morphing of the siege warfare process and the defences to counter this type of warfare. The elliptical plans started in Mesopotamia evidenced by sites in Mari (Margueron 2000) and Terqa (Buccellati & Kelly-Buccellati 1983) later spreading to Palestine after 2500 BCE evidenced by sites in Akko (Raban 1991), Burga (Kochavi et al 1979), Shimron (Raban 1982), Zeror (Kochavi et al 1979), Ashkelon (Voss 2002), and Jericho (Kenyon 1993:679). Elliptical plans could also be found in the high-lying areas such as Shechem (Herzog 1997), Shiloh (Finkelstein 1993), and Hebron (Ofer 1993), except that these sites had supplemental ramparts rather than freestanding ramparts. This would have been expected for high-lying areas on top of mounds or hills since not only would rectilinear plans be more expensive to build, but it is also likely that the area on top of the mound or hill may not be

large and elliptical to ensure that the maximum area is utilised under the protection of the rampart which would also act as an extension of the hill before the fortification walls and structures were also added on top of the ramparts.

The low-lying settlements would have transitioned to the rectilinear ramparts as the protection of the city/town may have been easier than an elongated defence. The straight walls with towers and bastions at different key positions as well as where the ramparts change direction would ensure that the defence is optimized to cover the full range of the area and no blind spots could emerge. This also optimizes the use of the archers.

2.3.1.2   Supplemental ramparts

Freestanding ramparts being common on the lowlands were not the case on hills or mounds (Fig 2.1). The two main reasons for this were the massive workload needed to extend and reinforce the bottom of the hill both from a material and a labour resource. Secondly the expansion of the freestanding ramparts would take away much needed space for dwellings and monumental buildings. By default, sites on hills or mounds already had the advantage of elevation, hence the choice of supplemental ramparts which could either give a second and better line of defence to the city's established wall such as Lachish (Tufnell 1953) and Megiddo (Finkelstein et al 2000) or improve the defence of parts of a site that would be susceptible to enemy attack as in the case of Amman (Zayadine et al 1989).

The methods and substances used for supplemental ramparts were no different to freestanding ramparts. They were only a few metres high compared to free standing ramparts but were just as steep and included glacis. The sites in Palestine in the table below (Table 2.1) indicate whether they had a glacis, the type of rampart and the degree of the slope.

Ramparts and glacis of BA and IA sites.			
Site	**Glacis**	**Rampart Type**	**Slope**
Amman (Zayadine et al 1989)		Freestanding	40
Dan XI (Area B) (Biran 1996)	Yes	Freestanding	43
Dan XI (Area K) (Biran 1996)		Freestanding	14
Dan XI (Area T) (Biran 1996) (Ilan 2008)	Yes	Freestanding	20
Dan XI (Area Y) (Biran 1996)		Freestanding	20
Gezer (Stratum XVIII/Field I) (Dever 1986)	Yes	Supplemental	45

Hazor XVI/3 (N Rampart) (Yadin 1972)		Freestanding	25
Hazor XVI/3 (W Rampart) (Yadin 1972)		Freestanding	18
Hazor XVI/3 (Area G Upper Town Glacis) (Yadin 1972)	Yes	Freestanding	68
Jericho (Period IVc) (Kenyon 1993)		Freestanding	22
Lachish (Level VIII/P–5 and P–4) (Tufnell 1953)	Yes	Supplemental	29
Megiddo XI (Finkelstein et al 2000)	Yes	Freestanding	45
Megiddo XIII (Area AA) (Finkelstein et al 2000)	Yes	Supplemental	16
Megiddo XIII (Area CC) (Finkelstein et al 2000)	Yes	Supplemental	40
Shechem (Stratum XVI) (Herzog 1997)		Supplemental	21
Shechem (Stratum XVII) (Herzog 1997)		Supplemental	15
Shiloh (Stratum VII) (Finkelstein 1993)	Yes	Supplemental	28
Ugarit (LB to IA) (Schaeffer 1939:286)	Yes	Supplemental	45
Yavneh-Yam (Kaplan 1969).		Freestanding	40

Table 2.1: Ramparts and Glacis of BA and IA sites. (Burke 2008 adapted) (Created by Donald Scott 2019)

2.3.1.3   General characteristics of earthen ramparts

Although only a selection of site ramparts is included in Table 2.1 above, the average slope can be determined at 30 degrees, which is slightly higher than the mean at Tel Dan. The range researched in this study for Tel Dan (Biran 1996) is between 14 and 43 degrees.

Heights and widths of ramparts were influenced by the size of the city, as well as whether they were freestanding or supplemental. The average height of ramparts was about 10 metres(m) with the freestanding ramparts in some cases being as wide as 90m (Hazor) (Yadin 1972) and 70m (Ashkelon) (Voss 2002). More details in terms of dimensions and labour specific to Dan will be discussed in Chapter Three.

Both the methods of building and the materials used for building ramparts were wide ranging, therefore in my opinion no strict blueprint was followed. This can be justified by the variation in the morphological and compositional characteristics which differed from site to site. Several archaeologists have documented that the largest ramparts were associated with areas where it was easy to source the raw materials which were in proximity of the sites such as Mari (Margueron 2000), Ashkelon (Voss 2002) and Hazor (Yadin 1972). I question whether the surrounding terrain would have remained constant 3500 years later. However, in support of current scholars, these sites with huge ramparts are located more in the north and the coastal regions where the ground is softer and more claylike, which was confirmed during my

visits to the sites in 2016 and 2019.

Terre pisée ramparts basically consist of mostly beaten earth (Yadin 1955; Tufnell 1958:45ff; Kenyon 1979:165; Van Seters 1966:27ff; Stern 1984:49; Mazar 1990:202) which implies packing earth in a frame (Wright 1985:360f). The various cross cuts of fortification walls found to date were observed to have been built in layers of alternating fills. I find it difficult to ascertain whether the earth fill was necessarily beaten or whether it compacted over time by use, catalysts and pressure.

The rampart fills could consist of any combinations of the following materials, namely alluvium, broken mudbricks, clay, flint, hamra loess, hunwar limestone, kurkar pebbles, mudbrick detritus, plaster lenses, occupational debris which included ash, bones, charcoal and pottery, sandstone, marl, sand and travertine (Pennells 1983). According to Pennells (1983) combinations and choices were decided based on drainage and availability allowing the water to be drained or evaporated through the stony layers. Ash was used purposefully to make the ramparts more solid and heavier allowing for more difficult penetration and was not prone to erosion (Voss 2002:379ff). However, sand was always a last resort, and when used it was combined with glacis as found in Ashkelon (Voss 2002). Excavators have identified that the rampart fill was the same as that found in fosse outside the ramparts: this includes the volume of earth, examples being Ashkelon (Voss 2002) and Hazor (Yadin 1972). In other words, like a c-cut in mining, the earth that was removed to reach the bedrock is the same volume as the stockpile next to it.

Weighing up the arguments of Pennells (1983) and Voss (2002), were they at opposite poles? They would rather seem to be complementary. It would be unlikely that ash was used as a layer as there would not be enough ash available for large ramparts. Ash could have been used as part of occupational debris and used as an absorption layer. This would make sense as ramparts in the drier regions of Palestine did not have ash as part of the rampart fill.

Rampart fills were never consistent in layer for the length of the rampart. This was due to the human resources working in teams at different locations along the ramparts driven by the timing and availability of material resources as described in Nehemiah 2. This was probably the earliest application of *Just In Time* or *Kanban* processes, implying no lead or lag times by using visual cues to keep the process flowing. Rather than keeping a layer consistent with stone, causing bottlenecks and delays, some teams would work at different areas along the wall where a team, while extracting earth from the fosses, another team would be filling, further down a team would be filling with gravel and another might be filling with occupational

debris all along the same layer. Teams might then alternate with another filling as it became available allowing for a different team to continue digging earth from the fosse. This process ensured continued excavation and resulted in the speedy erection of ramparts. Nehemiah 2 gives an indication of teams dedicated to the rebuilding of the fortification walls in Jerusalem working on different parts of the wall with different teams and expertise. Another example was a standard rampart in Achzib: starting from the base it consisted of red fill, dune-sand, brown soil, grey soil with ashes, and dune-sand followed by hardened red-brown soil (Prausnitz 1975:207).

2.3.2   Retaining, core, and revetment walls

To avoid the sliding of rampart fills it was necessary to build revetment walls. In addition, large free-standing ramparts often consisted of small retaining walls with the rampart having a core wall in its centre.

2.3.2.1   Retaining walls

Retaining walls were built from fieldstones beneath the rampart fill such as Jericho (Kenyon 1993) and Dan (Biran 1996) ensuring that the rampart had a stable base especially in areas where the ground was not firm and stable enough to support the rampart.

2.3.2.2   Core walls

Core walls were mainly constructed of stone such as Dan (Biran 1996) and Shiloh (Finkelstein 1993) but mudbrick was also used which was found in Hazor (Yadin 1972; Ben-Tor 2016:47f). These walls were built to anchor the foundations of the town walls and stabilize the ramparts. It is not yet confirmed how this knowledge was introduced but it could have either been brought down from Mesopotamia or it could be that the reinforcement of other sites in Byblos (Dunand 1939), Mari (Margueron 2000) and Terqa (Buccellati & Kelly-Buccellati 1983), where a rampart was built against earlier fortification walls, proved to be more stable and stronger. Although some standards for core walls were applied, at most sites the topography dictated how core walls were built; these core walls therefore would not be built completely around the city, but rather in areas where the support was needed. In Dan (Biran 1996) the strategy was to use the core walls in Area D and Area Y. Although these were freestanding walls it was not restricted to only freestanding walls as in some instances it was necessary to make them stronger and more stable, so supplemental ramparts on the gradients of sites such as Gezer (Dever 1986) and Shiloh (Finkelstein

1993) were erected.

2.3.2.3   Revetment walls

These walls were constructed at the base of freestanding and supplemental ramparts on the outside slope which included a batter. As these were the first walls which the enemy would encounter, if used, they would need to be better constructed than retaining walls. These walls, when used on freestanding ramparts, could be up to 10m high and 4m wide. At this stage no revetment wall has been found to have encircled an entire site. Some have covered half the site such as Hazor (Yadin 1972), Jericho (Kenyon 1993) and Shechem (Herzog 1997). However, these sites generally had natural defences such as the sea, wadi and fosses. Cyclopean masonry in addition to rock with a steep batter indicated a strong defence. This would also act as a safety net for erosion on various exterior parts of the rampart where it is stopped at the base and prevented further sliding.

2.3.3   Glacis

Glacis should be a separate feature from the rampart in its construction, as in my opinion this is an intentionally prepared surface of the rampart slope and/or mound or tel to prevent erosion or improve the fortification defence; however, Wright (1997:366) believes that only if it served a fortification purpose, then it should be termed glacis, otherwise it is merely plaster. Rainfall availability and location were the determining factors as to the choice of materials used in the construction of glacis. Stone and mudbrick were the choice for high rainfall areas, whereas in the east it was other materials if glacis were in fact constructed. As the construction of glacis was few and far between for sites in the east and north, the original intention was more because of erosion rather than an additional line of defence (Pennells 1983). Alternatively, one could argue that due to the slope of the ramparts the glacis by default became a slippery surface which would hinder the enemy and would cause them to be easily identified, especially when travertine or gypsum plaster was used. Cobbles were also used at some sites such as Ashkelon and Byblos (Alex & Wolfner 1984) or ashlars in Ugarit. Inland use of glacis was mostly chipped stone. Drainage systems were also built into the ramparts with the outlets surfacing on the glacis.

2.3.4   Fortification walls

Fortification walls were built on top of ramparts. These could take the form of solid mudbrick walls,

exterior walls of buildings, or casemate walls. Unlike ramparts which came to an end as the Bronze Age morphed into the Iron Age, towers, gates, casemate and other fortification walls continued being built throughout the Iron Age.

2.3.4.1   Solid fortification walls

Fortification walls made from mudbrick have not been easily excavated at many of the sites in Palestine covering the BA period. Sites like Gezer (Dever 1970:19), Hazor (Yadin 1989:169), Jericho (Kenyon 1993:679) and Megiddo (Loud 1948:6f) have been uncovered showing evidence of mudbrick fortification walls. The reason for this is that erosion has had the highest impact especially in areas of high rainfall. One can therefore see a parallel between the level of erosion of mudbrick walls in relation to the volume of rain and moisture in the area. Better preservation has occurred in lower rainfall areas (Spencer 1994).

Preserving of walls on average including foundations is about 2,5m in height and 3m in width, although Tell Habuba Kabira (Heusch 1979:174) has a wall preserved at 5m to 6m high. Palestine has not been able to identify any sites where the height of the walls could be validated, although fortresses in places elsewhere been identified to be up to 15m (Hölscher 1951:1f), and textual sources have been able to give us guidance as to the heights of the fortification walls. The measurements recorded in reeds and cubits equates to 1 reed = 3m and 1 cubit = 0,5m. Detailed measurements specific to Dan will be addressed in Chapter Three.

So, can superstructures be built with different floors at heights of 15m or more with several floors? This can be attested to because till today mudbrick walls are built along the Wadi Hadramaut in Yemen (Damluji 1992) as apartment buildings of 10 stories or 30m in height. This was possible in the MBA based on findings from the Migdol tower temples (Mazar 1968:93f).

It cannot be assumed that larger sites would have larger and thicker fortification walls even though some of the largest sites did have the thickest walls. This could not be correlated with all sites. Because brick size differed as well as walls, construction techniques were not standard. Massive foundation bases allowed for curving walls and walls changing direction at the point where towers or buttresses were built. If a wide foundation was not possible, walls were thickened at turning points such as Shechem (Herzog 1997) and Shiloh (Finkelstein 1993). This would make sense as my own township of West Beach in Cape Town is built on dune land and any wall longer than 6m will crack and shift if a buttress or supporting pillars with a broad foundation are not in place.

As fortification walls would be the highest walls on a site, these would be the first to erode, incorrectly concluding that fortification walls did not exist, and that warfare was non-existent (Herzog 1997:133). Despite erosion, based on the wide foundations on the ramparts, fortification and town wall widths could be extrapolated. Additionally, walls flanking gates would also determine the existence of town walls such as at Ashkelon, Dan and Hazor. On inspection, one may argue that the walls merely anchored the gates, since the walls end after a few metres. This would not make sense, therefore logically they would have followed on as defensive walls (Herzog 1997:134). Terraces were also used in the joining of walls and gates in Middle Bronze (MB) rampart construction.

2.3.4.2   Early casemate-style walls

Sites such as Hazor (Yadin 1972), Shechem (Herzog 1997) and Shiloh (Finkelstein 1993) all featured these casemate-style walls in the BA, some as the fortification wall around the site. The strength of the walls cannot be determined but the widths exceeded regular walls by up to 2m and were at times used for storage. However, these spaces would probably have needed to be filled with rubble or debris during a potential siege. No fills have to date been found inside these casemate walls. The only new casemate walls unearthed to date in the IA have been at Jezreel.

2.3.4.3   Settlements with ramparts but without walls

Usisshkin (1989; 1992), Finkelstein (1992), Gophna (1992), and Herzog (1997) have all argued that no fortification walls existed on ramparts in the BA based on excavations on sites such as Dan, Hazor, Jericho, Megiddo X, Shechem, Shiloh, and Yavneh-Yam. Arguably no evidence has to date been forthcoming except in Jericho. However, this is negative evidence as I earlier stated that erosion would cause such walls to disappear before the erosion of the ramparts. Over the millennia it could also have been possible that new developments, farming and vandalism could have resulted in the removal of these walls. In addition, some of the sites were based on one selected sample of a crosscut and many sites or other parts of sites are yet to be excavated.

It has also been assumed by Ussishkin (1989; 1992), Finkelstein (1992), Gophna (1992), and Herzog (1997) that some sites such as Dan, Hazor, Jericho, Megiddo X, Shechem, Shiloh, and Yavneh-Yam adopted a blueprint, which as discussed earlier was not the case. Based on this assumption if no

fortification walls were found at a site, the conclusion was reached that the deemed similar sites also lacked fortification walls. Research in this area in the future with more advanced technologies may eventually settle this argument. Dan and its fortifications, on and within its ramparts, will be discussed in Chapter Three where the views of Biran are challenged.

2.3.4.4   Exterior walls of buildings as fortifications

There can be no doubt that ramparted settlements in the BA had some sort of defensive wall. The exterior walls of buildings constructed on top of the ramparts possibly also presented a degree of defence against any enemy threat. Yadin (1992) and Wright (1985) indicated that the exterior walls of dwellings were not intended primarily for defences, although Wright (1985:54) does support the idea that certain outbuilding exterior walls were purposefully built together with citadels and towers as defensive structures. In IA IIB houses with their exterior walls acting as defence were built at Dor but were not necessarily built on BA ramparts (Gilboa & Sharon 2008:153).

2.3.5   Towers and bastions

Towers and bastions were two types of structures which have often been used interchangeably but have unique differences in terms of size. Towers were up to 20m long and bastions were far larger in size. They provide proof that ramparts were built for defence and they were connected by a continuous fortification wall. Apart from one exception being a round tower in Tuqan, all towers were rectangular in shape throughout Palestine (Burke 2008:144).

2.3.5.1   Towers

Towers were the most common fortified structure atop the ramparts and were spaced apart at 20m to 35m intervals. Their height varied between 10m and 12m (Loud 1948:7). They mostly protruded on the outside of the defensive walls except in exceptional situations along citadel walls where they protruded inward such as Megiddo (Loud 1948:7f). The distances were probably determined based on the range of the archers' arrows.

2.3.5.2   Bastions

Bastions, like towers, were also incorporated into fortification walls. Tel Ebla bastions were 300m apart and sized at 27m x 13m (Pinnock 2001:22). Gezer had towers between bastions which was also probable in Ebla as a defence range of 150m would not have been possible. Factoring 300m to a ratio of 35m for towers, bastions would have had about seven towers between bastions for archers to protect the city wall from access.

Bastions and towers were used for defence, sentry duties, and signaling. Bastions, because of their size and height, were multi-purpose and used as magazines for weaponry, barracks for soldiers, administrative buildings, residences and general storage (Pinnock 2001:31f). Solid mudbrick rectilinear design ensured that bastions were stronger and stable, unlike apsidal bastions which would restrict concentrated fire for multiple archers. Kempinski's claiming apsidal towers' superiority in many respects over rectangular towers (1992b:72) for me is questionable as a circle would have covered all dead areas such as tower corners but would not have allowed for concentrated fire.

2.3.6   Gates

Gates were generally built in the depressions based on the contours of the site or settlement. From a military strategic point, it would normally be ideal to have built the gates at the highest point. From a practical and social view, it would have been best to have the gates at the lowest point, especially for commuting and logistics (Wilkinson 1993).

Although depressions can normally identify the location of gates, when gates are still fully whole and have been completely buried, it makes it difficult to identify the location and therefore excavation is necessary, at Dan for example. The other means of identification would be if the roads leading to the sites are still possible to identify, giving an indication of the likelihood of gates: the northern gate at Ashkelon which led to the route north towards Jaffa was identified in this manner.

Gates may also have been used for royalty or ceremonial occasions and therefore daily traffic flow may have been non-existent. Covering of gates with fill due to changes in the town planning such as in Dan would allow for good preservation and (Wright 1984; Herzog 1986:37ff; Gregori 1986) have all reported on their research in respect of gates from various archaeological reports from sites including Dan, Hazor, Shechem, Ashkelon and Ebla. As this study is focused on ramparts in the BA and IA, the gates being part of the fortification features will only be addressed as to their types, their origins in line with rampart

morphology and their purpose.

2.3.6.1   Six-pier gates

These were deemed as the flagship gates during the BA. They were known by different names by scholars, tenaille (French meaning with pincers) type gate (Matthiae 1980:120), the three-entrance gate (Gregori 1986), the four-chamber gate (German translated as Vierkammertor) (Weippert 1988:222), the Syrian gate (Kempinski 1992b:197; 1992a:134ff), the fort-gate (Herzog 1997:134), and the triple gate or three-way gate (Kaplan 1975:12ff) sourced from Burke (2008). For purposes of this study, they will be referred to as the six-pier gate or Triple Arched gate when referred to Tel Dan as the names given above were not consistent with all the gates. What is consistent is a direct passage into the city/state, flanked by two rectangular bastions in parallel, each with three piers, which could be closed off with three sets of doors. These could be found around Palestine in Dan, Hazor, Megiddo which I personally observed in 2016 and 2019, Gezer Shechem, Shimron and Yavneh-Yam (Burke 2008).

It has been debated why these gates were so big: Gregori (1986:83) suggested that they were aligned with the size of ramparts and bastions. However, looking at Dan it could also be for ceremonial purposes; alternatively, with the introduction of battering rams and siege ramps, it is possible that they were introduced for added defence.

Several of the six-pier gates may have had smaller gates in front of them which could have been up to four chambers. Elba (Matthiae 1980:119-123) had a four-pier gate in front of its six-pier gate as did Ashkelon. Different views exist as to why these gates were erected. Either they were an additional line of defence or the fact that they were on an angle leading (bent-axis design) to the main gate could have been a means of easing foot traffic entering the city. I am of the view that it was more for defence as roads could have easily just been built leading up to the entrance.

Enough six-pier gates have been excavated to be able to gain an understanding of their development. However, the developments of the invention of the six-pier gate and the timing of when they were built is still a topic of debate amongst scholars and may be referenced to different periods by different scholars in the interest of completeness within the context of the topic within this study. An example is the timing of the six-chamber gate at Megiddo during the Iron Age in which Yadin claims it to be a Solomonic gate and Ussishkin claims that it was built during the Omride dynasty (Finkelstein & Silberman 2007:275-

281).
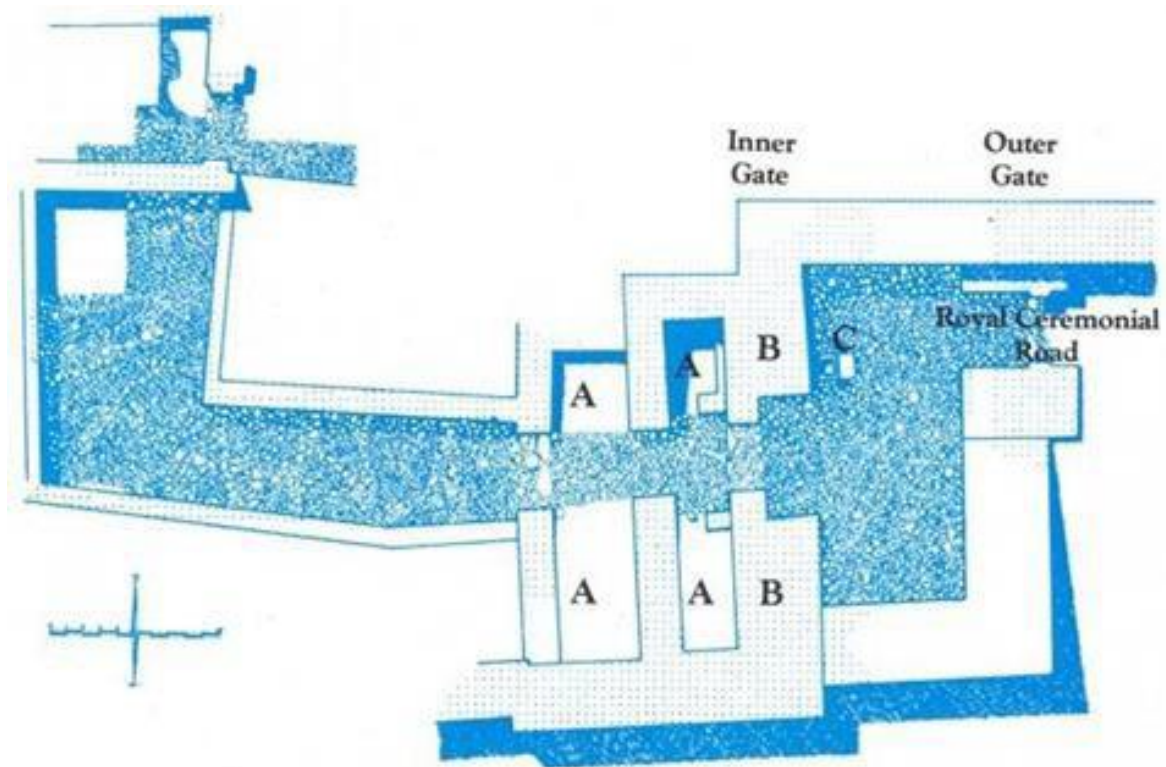
Figure 2.2: Plan of the Israelite gate in Dan. (BAS Library 1981 www.org/biblical-archaeology-review/24/5/2)

The Israelite gate in Dan is approached by a paved ceremonial entry road which passes through an outer and inner gate separated by an open paved area. Four guard rooms (A) and two main towers (B) comprise the inner gateway, measuring overall 29.5m × 17.8m. This gate is discussed in more detail in Chapter Three.

2.3.6.2   Four-pier gates

These gates are the most pervasive of all gates during the BA as they feature the most variation in orientation. They consisted of two main subtypes being either short examples, being Ashdod and Yavneh-Yam, or long examples with an allay such as Ashkelon and Shechem. Although smaller than the six-pier gates they still had wide passages, possibly for purposes of chariots. These gates generally lacked towers on either side of the gate and had no vaulted passages. These could have been the forerunner of six-pier gates but, at this stage, this cannot be determined (Gregori 1986).

2.3.6.3   Postern gates

Postern gates were erected throughout the BA period yet were the least common. These were very simple gates that were narrow in size and used only for foot and hoof traffic and sometimes more like a hole in the wall with no fortified structure associated with it. In my opinion, there are indicators that maybe they were not the least common as they were so simple that excavators would find it difficult to locate such gates as gaps in walls will be assumed to be caused through erosion rather that determining that it was possibly a postern gate and *vice versa*. The openings in ramparts which could have been postern gates have also been misidentified as drains (Dothan 1993:19f). The gate identified at Akko was also built in the Late Bronze Age (LBA) at sites in Anatolia (Von der Osten 1937:27ff).

2.3.6.4   Other gate types

Many non-standard gates have also been excavated throughout Palestine identified in both the periods of the BA and the IA. These gates were unique in appearance and probably served different purposes, an example being the U-turn gate at Beth-el which was excavated on the northwest side of the site (Kelso 1968:13) as well as the so-called Sea Gate at Byblos. This Sea Gate had stairs split going northeast and northwest descending from the site. Other gates like the postern gates were also found but these were wider possibly to accommodate carts and chariots. The northeast gate at Byblos was pierless and had a ramp (Saghieh 1983:66).

2.3.6.5   Eight-pier gates

IA gates with eight piers emerged in this period but as no ramparts have been excavated to date one can conclude, until such time that it is proved otherwise, that there was no need to build bigger and stronger fortification walls to support these gates, according to Burke (2018).

Burke's research has been restricted to MBA but according to Maeir (in Bohstrom 2018) the city gate at Gath is among the largest ever found in Palestine and is evidence of the status and influence of the city during the IA. The city gate of Philistine Gath is referred to 1 Samuel 21:13. The fortification walls around the gate were 4 metres wide unlike the 2,5m in the rest of Palestine at the time. This confirms that large gates, possibly eight-pier, did require larger fortification walls to support them according to Maeir (in Bohstrom 2018).

2.3.6.6   Gates and types of traffic

Most traffic was done on foot, followed by hoof as cattle were stored on the ground floor of dwellings in the BA (Stager 1985:13ff; Schloen 2001:338ff). Wheeled traffic is not as clear as cartwheels and chariots would also need to access the town. It would be necessary to determine the length of the axles of the chariots to determine if they could access the town through the gates. Axle widths ranged between 1.98m and 2.36m indicating that gates wider than 2.5m could allow for chariots (Littauer & Crouwel 1979:78); one can therefore deduce that the Dan gate probably did not allow for such traffic as it was just under 2.5m and had cobbled stairs on either side. Larger gates restricting wheeled traffic would have had obstacles to prevent wheeled traffic, possibly serving the same purpose as a modern-day turnstile.

2.3.6.7   Characteristics of BA and IA gate construction

The foundations of gates had a better quality of material than fortification walls, in that stones were used rather than mudbricks for the orthostats, corners and voussoirs, whereas the rest of the gate entrance, excluding doors, was built of mudbrick, examples being Ashkelon and Dan (Biran 1984) and reconfirmed by Kempinski (1992). Some may have been further dressed in local stone such as Hazor (Ben-Tor 2016:82). According to Gregori (1986:91), the stones were both aesthetic and functional to carry heavy weight, for example at Ebla. The orthostats supported inner roof faces, as those recovered in Dan at a height of 3m. He adds that door sockets evidenced that double doors were used. Although no doors have been found to date, it can be concluded that they were made of wood. The door sockets and gate openings are indicators of determining the door size, each being between 1,25m and 1,5m wide. Locking and bracing mechanisms have not been found so determining the inward or outward opening of doors has not been easy to validate. A socket for a cross bar was found in a Phase 13 gate at Ashkelon, confirming an inward opening (Voss 2002:382).
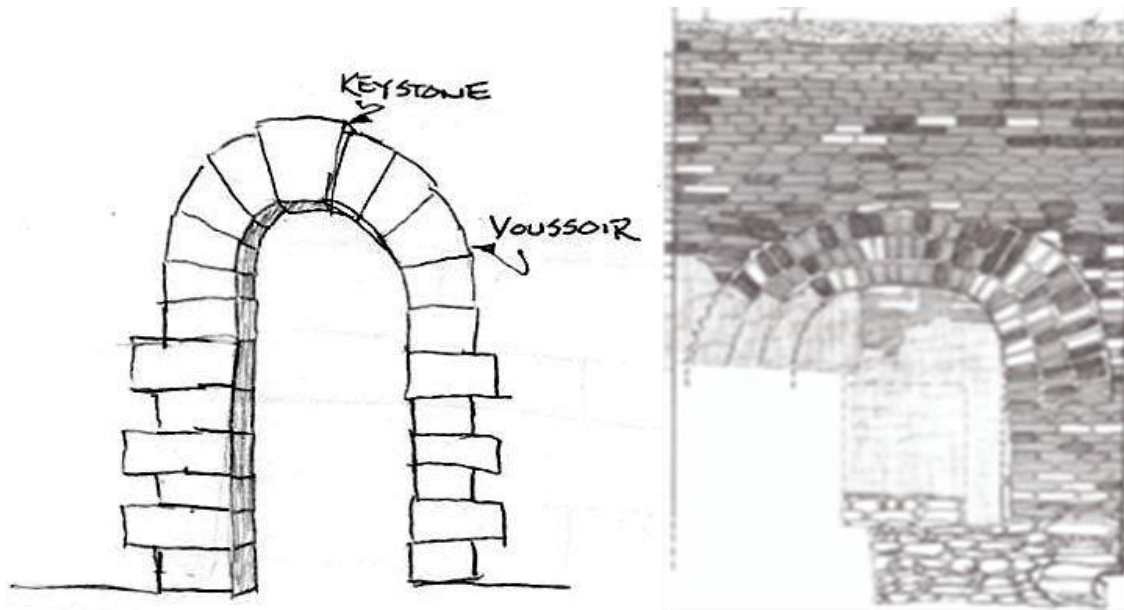
Figure 2.3: Representation of the Voussoir and Dan Canaanite gate (Biran 1984)

I, in my distant past as a military intelligence officer, concur with Burke (2008) that curved or straight walls lacking towers or bastions would normally be the area to attract the enemy as they may have had dead areas. In the same manner the enemy would have avoided the fortified gates due to the high concentration of soldiers defending the entrance. Gates that were small and for general foot access, such as the postern gate, would have lacked fortification so during a siege it would be necessary to fill the gate, or in advance of a potential siege it would be necessary to have hidden the entrance through camouflage or whatever means possible.

The late part of the BA into the IA saw activities by spies (Jos 6:22) and it would have been likely that the city and its defensive walls were scouted, and the military intelligence gathered through the collection, evaluation, processing and integration of all available information concerning the defenders of the city would be used to identify the weak penetration points.

2.3.7   Fosses

Fosse unlike a moat was a dry dip that was dug out around the rampart wall. This should not be confused with moats which were only introduced in the medieval period around castles (Burke 2018:107). Instances where fosses may have held water would only be because of rains or high-water tables, but this is not possible to verify due to climate changes. These ditches can be found with reference to the *Mari texts (ARM 1.90:20).*

The work of Oredsson (2000) is the only work dealing with fosses in Palestine, and some sites that were covered include Ashkelon, Hazor and Lachish. They were probably the most primitive defensive features of fortification structures even if the bedrock was just below the surface such as Ashkelon and Lachish. Some like Hazor were straightforward to excavate. Because the earth was used for ramparts some scholars believe the fosse was just a by-product (Oredsson 2000:52f). This view cannot be agreed with as many sites with freestanding and supplemental ramparts do not have fosses.

I believe the fosse was the first line of defence and that it could serve as a defensive measure that would be applied in any military strategy today. My reasons are:

- Keeping the area clear for the prevention of any snipers or infiltrators during times of war;

- Acting as a fire-break zone for times of war and peace;

- Levelling the topology around the ramparts so no high ground advantage exists for the enemy;

- Winter months may make the access through the ramparts difficult;

- The use of siege ramps and battering rams would also be difficult when crossing the fosses; and

- Springtime may also result in the fosse being muddy which would bog down the enemy.

Non-military benefits of fosses should also not be overlooked as they could act as a reservoir in the rainy season, yet at the same time channel water away from the ramparts when the water table is high. They could also be an area for drinking for the herds and a quick access to water through digging holes rather than traveling to the wadis during the dry season.

Site	6-Pier Gates					4-Pier gates					Fosses (volume in cubic metres)				Mudbrick
	Passage	Width	Entry	Piers	Bastion	Passage	Width	Entry	Piers	Bastion	Depth	Width	Length	Volume	LxBxH
Akko						7000	4400	2000	2000	n/a					
Ashdod						6500	2900	3000	1800	n/a					500x300x200
Ashkelon						29000	7000	5500	n/a	n/a	5500	9000	unknown	unknown	350x350x100
Dan	13500	11000	2500	2000	n/a										300x???x150
Gezer	12900	4600	2750	2700	8700										380x290x100
Hazor	25000	Unknown	2650	3600	11000						15000	60000	600000	540000	400x300x150
Jericho															420x360x150
Lachish											2000	9000	140000	2520	
Megiddo	18000	6800	2800	2800	n/a	6000	4000	1500	1800	n/a					350x350x100
Shechem	18300	7550	2800	2300	5500	13900	8350	3300	3350	5500					380x380x100
Yavneh-Yam	18000	5200	2800	2500	10000										

Table 2.2: Measurements in millimetres of fortified features for a sample of sites in Palestine

Measurements for gates, fosses and mudbricks (Table 2.2) above during the BA and IA were sourced from various site excavation reports with contributions from Biran (1996), Dever (1973), Kaplan (1993), Wright (2002), Yadin (1989), Ussishkin (1989, 1993), Voss (2002), (Burke 2008) and edits on Dan from Ilan (2012) where the brick size should be 56 x 36 x 13cm.

2.4   PENETRATION

2.4.1   Weapons and warfare

Iron Age weaponry has been excavated at many sites throughout Palestine. However, many scholars have applied this weaponry to the penetration of the fortifications and ramparts of the BA which is like comparing apples with oranges. The weapons and tactics used for penetration have been ring fenced to focus on BA weaponry in relation to BA ramparts. The ranges are illustrated in Fig 2.4. Likewise, the development of weapons in the IA will be assessed against the defences of fortifications of the IA period.

2.4.1.1   Chariots

Modern day warfare has weapon systems for specific purposes, and the same applied to BA weaponry. The chariot has been likened to the modern-day tank (Kenyon 1952:71), and some claim that the chariot was not used in siege warfare (Yadin 1955). I concur with Moorey (1986:203ff) where the chariot could be a ground-to-air fighter in that it could speedily approach the ramparts with its firing archers and then speedily retreat. As a moving target, the chariot would be difficult to hit. It could also be used as a distraction or to transport archers and troops (cf. Judges 4).

2.4.1.2   The sling and its projectiles

Reliefs, biblical and other textual references have been the source of the sling and its projectiles rather than excavations. The natural materials used for the sling would have decomposed over time and the projectiles could have been anything from pebbles to small rocks which were camouflaged in the natural environment (Korfman 1973:38) except where they were manmade. Clay sling bullets have been found in Sweyhat in Syria (Stout 1977) and the temple of Dagan at Mari (Parrot 1964:9-11), but nothing has been found to date in Palestine. Likewise, the reliefs identifying the sling have come from Beni-Hasan, and reliefs from Egypt identify the sling being used in BA military battles (Newberry 1894:15). Ramparts at Mari has also revealed stones which could be associated with slings (Margueron 1982:30); the *Mari texts* can therefore be supported based on the physical evidence sourced to date.

Despite the above evidence, the sling as a weapon of war in the BA remains limited. Korfmann (1972:37ff) states that the role of the slinger should not be downplayed as the projectiles were fatal, reaching 200m

at speeds of 100km/h and even penetrating armour, inflicting internal damage to the soldier's body. Yadin (1963:9f) noted that the slingers were always close to the archers, also echoed by Ussishkin (1982:72ff) who stated that the slingers were behind the archers, gathered from the studies of the reliefs of the siege of Lachish. Reliefs can be misleading in terms of portraying military protocols; however, if they were attacking fortifications, or during siege warfare, it would make sense that the slingers were behind the archers as they would be fully exposed when trying to load and launch their bullets. The archers would therefore protect them by keeping the enemy at bay while the arrows were being fired. The bullet would also travel further than the arrow, hence the slingers would be behind the archers.
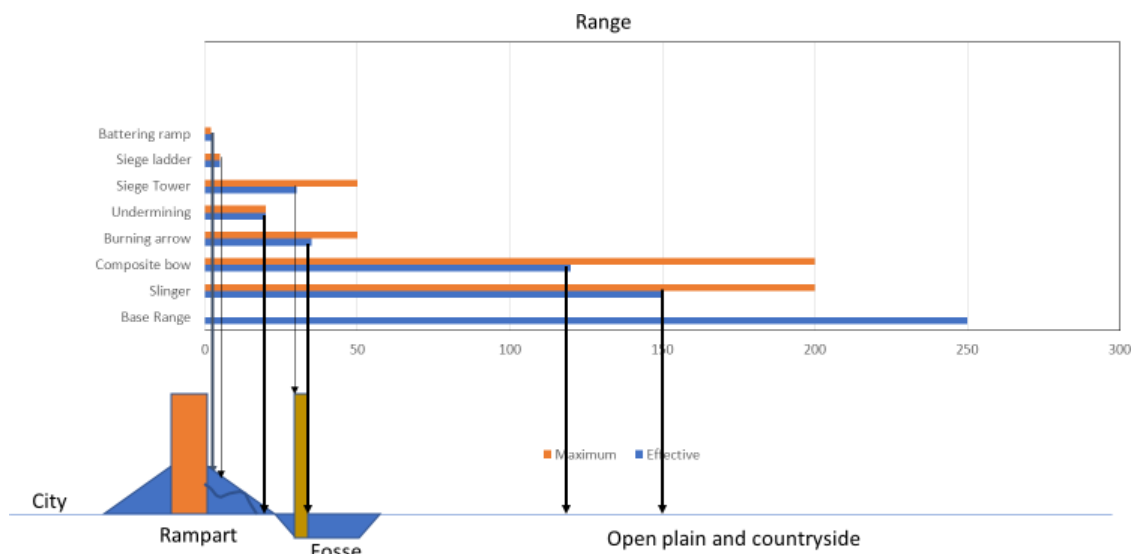
Figure 2.4: Weapon ranges used in the Bronze Age Period siege warfare (Created by Donald Scott 2019)

2.4.1.3   The simple and composite bows

Yadin (1963:62f) has claimed the bow and arrow as the dominant weapon during the BA, which has also been supported by archaeological and iconographic evidence (Fig 2.5). Bow types could be identified through a single arc of between 0,15m and 0,17m and a double convex of the same range length. The variant was called the double convex bow due to its forward bend on either side of the handle. More power eventually came from the composite bow and its arrows which were made from ash wood, sinews, ram horn, tendons and reed (COS 1.103, 346f). The bow and arrow continued through the BA, IA and beyond, only being phased out at the introduction of gunpowder.

With a range of 160m to 175m, and accuracy at 60m, exceptions of 500m were only under specific conditions but would have had no effect on their target due to a loss of velocity and speed (McLeod

1972:8). Modern experiments found that an archer could fire 10 arrows per minute (Miller, et al. 1986:188). For siege warfare, chisel-ended arrowheads were used which could be found in fosse, whereas others were used to maim when soldiers were intended for slaves or taken as prisoners (Newberry 1893:13f).
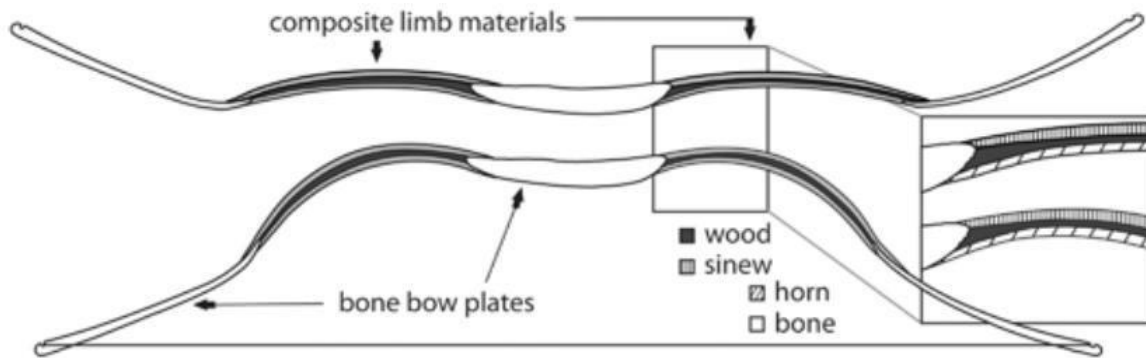
Figure 2.5: Composite bow (Yadin 1972a: Fig 1)

The Scythian bow, named after a tribe of the same name, emerged during the IA, and had a likeness to the composite bow which could be reflexed (Yadin 1972:91).

The LBA and early IA arrowheads were more common than the MBA arrowheads in Palestine. This could be because there were more soldiers with more weaponry. According to Tubb (1985:193) this was due to this period reaching a peak regarding siege warfare, especially as no arrowheads could be found in open warfare which probably was almost non-existent in the BA. Yadin (1963:64) concurs with this but his source comes from *Egyptian reliefs* and *Mari texts*. This would also be possible due to the evolution of the bow where a flyover of burning arrows could set a town or city alight despite massive fortifications (Miller et al 1986:182). The fortifications would have to undergo a morphological change to counter the burning arrows from the composite bow used with a light horse-drawn chariot (Moorey 1986:208).

2.4.1.4   The shield

Shields, like the bow and sling, could not be traced in Palestine during the BA through archaeological excavations as these were made from wood and hide, which would have decomposed over time (Philip 1989:145f). Most sources have come from outside Palestine namely through the *Mari texts* and *Egyptian reliefs* such as depictions of Asiatic shields in the tomb of Intef (Jaros-Deckert 1984:7). Only in the IA did the identification of shields become evident through reliefs and excavations. Reliefs from Egypt in the BA

show archers with shield-bearing soldiers to cover them while conducting siege warfare (Yadin 1972:Fig 1). He also recorded that no Egyptians were depicted on the reliefs having shields in hand-to-hand combat. This could imply that either small shields were probably not yet in use in the BA or it could support the suggestion that no open warfare was conducted in this period. Infantry did have shorter shields, but these were still long, used in defence of archers, rather than a small shield associated with sword-in-hand combat. The requirements of the shields regarding defence and maneuverability would dictate their size and shape (Yadin 1963:14). In a siege scene from Mari in MBA Yadin identified the shield to be long with the upper part bent toward the archers to cover them from arrows coming from the fortifications.

2.4.2   Escalading

Ramparts had steep and sometimes slippery gradients, and fortifications were generally vertical so the use of ladders to ascend the walls was an effective means of entering the town even though it was met with fierce resistance. Although being on top of the city walls would be an advantage in overpowering any further resistance, this method resulted in a high number of deaths and injuries for the aggressors.

Mobile steps or ladders were made from wood and therefore many of the inferences would be from texts and reliefs as well as paintings found in Egyptian tombs of Deshashe and Kaemheset (Yadin 1963:147). Ladders would have decomposed over time and were probably built and transported to the site of the city that would be under siege by means of boats or carts, since no trees grown in Palestine, were large enough to build the ladders.

2.4.3   Breaching

Breaching can take many forms in trying to reach beyond the fortification walls of the town. Other than ladders mentioned above, to bridge the fortification walls, the other options were to either try to break through the wall or to tunnel from the rampart base through the revetment walls or from a distance outside the range of the sling and bow (Schulman 1964:15). Should the plan have been to tunnel closer to the rampart wall, shields were always an option to cover the sappers until they had secured cover from the earth.

Reviewing the evidence, not much has been recorded through reliefs or the *Mari text* as to the extensive use of such techniques during the BA in Palestine. Reliefs from an Egyptian tomb at Deshashe illustrate

the breaking through a town wall with two men using a tool like a crowbar (Schulman 1964:15). The relief also shows a ladder behind them. Whether this was successful or not is not known. It does, however, possibly indicate that while the archers and slingers were keeping the defenders at bay on the wall area where the ladder stood, the infantry would be mounting the ladder to gain access to the top of the fortification wall whilst the sappers underneath were able to try and break through the wall at the base.

Another option was to dig tunnels into the wall, rather than to access, in order to create weak spots in the wall causing it to collapse (Sasson 1969:184). Tunnels have been identified in Hazor and Tel el Ajjul but as these were not in the location of the defences it is not possible at this stage to determine their function (Burke 2008:39). We do know from the *Mari texts* that breaching was either by breaking through a town's wall, creating tunnels with the hope that the walls would collapse, or building a tunnel with the purpose of entering the town. There is also debate as to whether the tunnel at Lachish was created by sappers unless this occurred in the IA (Yeivin 1951). Stager (1991) believed that ramparts and their fosses such as Ashkelon were especially built to counter tunneling by sappers, describing their function by tunneling a safe range from the ramparts they were planning to penetrate, either to trigger an implosion or to quietly enter the settlement during a period of darkness and thereby launching an unexpected method of attack. The question remains that, having to move so much earth, it is highly unlikely that it could be an unexpected attack and the probability is that the defending force may even have smoked them out.

The option of tunneling, if they were to begin out of range of the slingers or archers at about 50m, would not have taken them long to dig a 2m by 2m drop to commence the tunnel. However, the surrounding earth would likely be more difficult to remove as it was compacted and far heavier than the matrix of the rampart walls. So, in all probability, it would have been easier to begin tunneling at the base of the rampart with the cover of shields for protection until the initial pit was completed. This would allow for speedy tunneling as the rampart walls would not be as difficult to bore as the earth outside the city walls. It would therefore seem that ramparts and their fosses were not a primary defence against sappers but rather against the siege towers, which would not have the mobility and were therefore restricted in terms of the distance that they could approach the ramparts.

2.4.4   Breaking through

Until the Dark Ages siege warfare was probably dominated by ladders, tunnels and ramps with very few

new techniques; however, during the BA new weapon systems were introduced. The breakthrough came with the battering ram, featuring prominently in the IA, but little has been reported on it in the BA. Yadin (1955) draws on the writings from the *Mari texts* implying that the need and emergence of the rampart and its fortification features were because of the battering ram. Although no archaeological evidence can be found on the purpose of the battering ram in the BA, according to Steinkeller (1987) it had been recorded in the *Ebla texts* with four references in Akkadian translated as the 'One Horned Bull'. The references in the *Mari texts* are also brief and do not elaborate on its use.
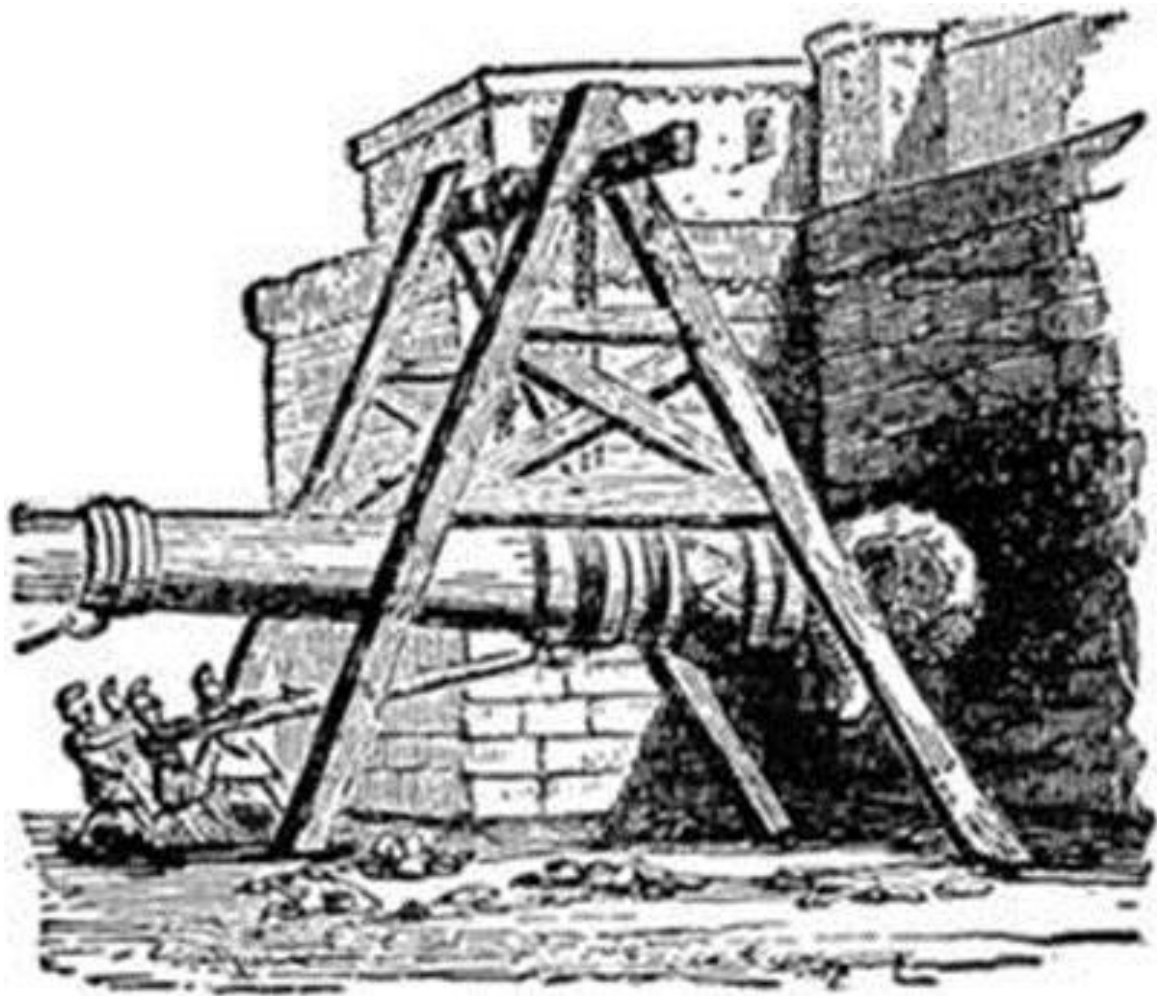
Figure 2.6: Representation of the battering ram. University of South Florida: https://etc.usf.edu/clipart

The Neo-Assyrian Empire was an Iron Age Mesopotamian empire, in existence between 911 and 609 BCE, where text could be used to try to put together a visual description of what the battering ram might have looked like (Scurlock 1989). No evidence to date could be sourced from Palestine or from the period of the BA in terms of clear descriptions and purpose (Scurlock 1989). Figure 2.6 gives an indication as to how the battering ram was used in Palestine during the BA. The device is made of a massive log hoisted onto an A-frame structure. The IA model would have been held in place by chains with an iron pointed

head, but the EBA model would have probably been wood with a softer metal and hoisted possibly with rope.

2.4.5   Siege towers

Another addition to siege warfare in the BA was the siege tower which was referred to numerous times in the *Mari texts*. As siege towers were also made from materials which could easily decompose over time, it has not been possible to source any archaeological evidence in Palestine, and there is little iconographic evidence, making it difficult to reconstruct and determine their exact function. *Mari texts* indicate that they were developed offsite as it would have been unlikely to be able to source wood of the length required to build the siege towers; they would then be transported by carts/wagons or boats. Dalley translated the *Mari text* which supports this statement. '*My lord wrote to me about sending downstream to Mari some ropes to go around siege towers and a battering ram*' (ARM XIV 45:5–7, translation by Dalley 1984:145). Based on the size of the siege towers, to look down on to the fortification walls on top of the ramparts, it is highly probable that the siege towers were transported in pieces and then assembled in proximity to the battle site close to the rampart walls and fosse but out of reach of the slingers and composite bows.

In my opinion the fosses around the rampart walls are a clear indicator that they were a defence mechanism or obstacle possibly purpose built to counter siege towers. The siege towers therefore may have been stationary in most instances acting as a launch pad for the archers and slingers who were protecting the sappers and those scaling the walls. It would also give the attackers an advantage if the towers exceeded the height of the fortification walls where they could fire down on the defenders and on the town with the objective of shooting burning arrows at vulnerable areas in the town.

2.4.6   Siege ramps

The BA was also a period where siege ramps were built to gain access to the city. This tactic was recorded in the *Mari texts* where the town of Nilimmar was besieged. The earth was piled until it reached the top height of the city walls. Where it could not reach the height of the walls, battering rams could be used to break the upper parts of the fortification walls. The *Mari text* translated from (CAD 4, 188) reads:

> The goal was to build a gently sloping ramp up which a siege tower or battering ram could be moved. While such efforts were sometimes successful, they may often have been countered by similar earthworks constructed by the town's defenders against the interior face of the town wall which were intended to buttress the area which was about to be battered by these devices.

Alternatively, as in the case of Lachish, the defenders could build another fortification wall to counter the siege rampart.

2.5   IRON AGE DEVELOPMENT

The transitional period from the LBA to the IA was a dark period or a period where no clear cut-off could be identified between the two periods. It is also a time when city-states began to crumble as well as the might of the Egyptian and the Hittite empires were coming to an end. Finkelstein and Silberman (2002:86) identify this as the infiltration of the Sea People or possibly inland conflict over agricultural land and peasant villages or a gradual economic collapse (Finkelstein & Silberman 2002:88ff). Added to these traditional archaeologists and scholars, are being questioned as to the periods of the IA pushing it later by 50 to 100 years challenging the biblical characters successes especially of David and Solomon. Some questioning the accuracy of the biblical texts or the timing and allocation of the conquering of city-states, the establishment of huge fortifications and city gates as well as monumental buildings and temples. Scholars are divided such as Ben Tor (1998), Dever (1982), Fritz (1995), Yadin (1958) and Ussishkin (1980) among many and those who are reinterpreting what has gone before such as Finkelstein and Silberman (2007), Gilboa & Sharon (2001), Ilan (2012) and Stern (1998).

Due to large number of controversies the IA developments associated with ramparts will only be studied for Dan and will be covered in Chapters Three to Six.

2.6   CONCLUSION

The construction of ramparts or fortifications originated in the east along the Euphrates River and was a revolutionary process emerging from 2600 BCE. By 1925 BCE ramparts began to emerge in Palestine. Scholars are split into three schools of thought, some identifying ramparts as part of the defence of the town, others in addition to defence identified the role of ramparts as preventing erosion within the city, whilst others saw them as an enclosure to contain and manage the access of people. Most ramparts were built from stamped earth, stone, debris and mudbrick supporting the fortification walls.

The defence systems of the towns and cities in the BA and IA relied on a barrier between them and the enemy. This took the form of freestanding or supplementary ramparts which were supported by core walls in the centre supported by retaining and revetment walls. Fortification walls which were either of

a casemate type or a solid wall were also used in defence either atop the ramparts or on their own. In some instances, the fortification wall may have consisted of buildings where the boundary or exterior wall would act in a dual role as a fortification wall. The rampart may have been lined with a glacis to prevent the enemy from ascending the rampart as it would be slippery. The rampart as an extra defence would have been surrounded by a fosse, like a moat which would have been filled with water in the rainy season becoming muddy and thus restricting heavy weaponry. Towers and bastions were also key to defence and were spaced based on the range of the weapons used in defence. Access to the cities and towns was through gates that had different levels of control. These gates had either four, six or eight piers depending on the size of the city and the pedestrian throughput. The larger gates included guard chambers with several sets of doors at the arches or piers which could control access and deter or delay the advancing enemy.

The penetration by the attacking force would adopt different strategies or a combination of strategies to execute a siege. This could be through escalading where ladders would be used to ascend the sloping ramparts and fortification walls. A second strategy would be breaching which could either be through tunneling or breaking the wall with the use of sappers. The third strategy, namely breakthrough, was introduced using the battering ram. Due to the nature of war in the BA and IA siege warfare was most common and, because of the heavy fortification structure methods that were used, could also be through siege towers and siege ramps especially where the city was situated on a hill. Other than the supporting aids already mentioned the most common weapons used in siege warfare were the chariot, sling, bows and the shield.

This chapter identified the construction, defence and penetration of cities with rampart fortifications. The following chapters will do an investigation into the city of Tel Dan to identify how ramparts played a role in the defence of the city and its socio-economical role in the rampart architecture, development and purpose.

<div align="center">

CHAPTER THREE

TEL DAN RAMPARTS: CONSTRUCTION AND FORTIFICATION

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'All I will say, is that if there is a reference in the Bible to a city, Dan,
what at an earlier time was called Laish, in the second millennium B.C.,
I have such a city.' Avraham Biran 1999

</div>

3.1   INTRODUCTION

This chapter discusses in further depth the questions raised in Chapter Two through primary excavation reports and research carried out by scholars on Tel Dan. The rampart discoveries at Tel Dan are predominantly from the MBA but where applicable EBA, LBA and IA will address the platforms that may have been uncovered during excavations as well as gates, city walls and other related fortifications such as the mudbrick walls and towers.

The research questions that will be addressed under the construction and fortification of the ramparts at Tel Dan will include the initiation or drive to build the ramparts. If they were claimed to be strong and secure by the Bible narrators, what have archaeologists uncovered through their soundings that can support this narrative? How were they constructed and what material was used in their construction? What human resources were used to build the ramparts and fortifications? How were they remunerated and how long could they have taken to build the ramparts? Was the intention of the ramparts solely to be used in defence or were there any other socio-economical purpose for the ramparts and city walls?

The questions will be approached in a methodical manner through firstly understanding the background of Dan and the plan of Dan by Biran (1998:89). The mapping of his excavations will be used as an orientation, unpacking the rampart structures, gates and towers in the BA and the IA to address the research questions.

3.2   THE BACKGROUND OF DAN

The Bible refers to Dan, Leshem and Laish as the same place starting in the book of Genesis 14:14 where Abram heard that his relative had been taken captive, and went in pursuit as far as Dan. In Joshua 19:47 the people of Dan went up and attacked Leshem, and renamed it Dan. In Judges 18:29, they named it

Dan, though the city used to be called Laish. Dan today is also known by the Arabic name, Tell El-Qadi, meaning Mound of the Judge. This is the same place in all instances as the location is always in the same area which can be supported by extra-biblical texts such as the *Egyptian Execration Texts*, as well as in the records of Thutmose III. From the *Mari texts* we also know that tin was exported to Laish, probably for the manufacture of bronze weapons (Biran 1994:21).

The identification of Dan-Laish with Tel Dan at the foot of Mount Hermon and on one of the main sources of the river Jordan, has long been established. It is an 18-hectare (ha) site (Fig. 3.1) with steep slopes and an unusual shape (Scheepers & Scheffler 2015:19). Instead of the usual flat top found on most mounds, the upper surface of Tel Dan is concave - it slopes inward like a bowl. This peculiar shape gave rise to the speculation that the mound might be an extinct volcano. An archaeological excavation was necessary to provide an explanation. Moreover, only an archaeological excavation could verify whether the site was inhabited during the 2nd and 1st millennia BC, when Dan-Laish appears in written records (Schoville 1977:170).

Fig 3.1: Aerial view of Dan (Ilan 2019a:8)

Rescue and salvage operations in 1966 resulted in the discovery of potsherds and other artefacts while digging trenches (Biran 1994:23). This was the start of excavations at Tel Dan on the Syrian border which

were triggered by the possibility of fortifications being erected over Tel Dan due to the continued conflicts with the Syrian defence force in the Golan heights. Biran, in his desperate attempt to determine if the area had been inhabited in antiquity, seized the opportunity after negotiations with the Israeli Defence Force to excavate the southern part of the mound before attacks which would eventually lead to the six-day war (Schoville 1977:170) further escalated.

3.3   CONSTRUCTION OF THE MBA RAMPART AND FORTIFICATION TYPES IN DAN

3.3.1   Architectural patterns

Meyer (1996:144-146) describes the towns and cities within Palestine under different architectural patterns, namely fortified towns, fortresses, and unfortified villages. The fortified towns were grouped into those with freestanding ramparts, supplementary ramparts, and fortified walls. The freestanding rampart fortified towns were classified into three different tiers, of which Dan was identified as a medium tier fortified town (Ilan 1995a:305). These tiers were part of various kingdoms in the MBA and Dan belonged to the Kingdom of Hazor. The Kingdom of Hazor consisted of the districts of Hazor (67 ha), Dan (10 ha), and possibly Shimron (25 ha). Hazor, Beth-Shean and Megiddo appear to have taken shape only at the start of the MB IIB (Ilan 1995a:306).

3.3.2   Dan occupation through the BA and IA

Stone walls and stratified phases in Biran's Area B and T as well as pottery below the ramparts identify Dan as an occupied territory from the Neolithic period leading into the EBA. No further material could be found dating from this period to the EB II, indicating that the site was abandoned for 1500 years (Scheepers & Scheffler 2015:23f).

EB II and III have been uncovered throughout the site, showing it to be a very large city. It is at this point that one can become confused as Dan is presumed to be very large and Hazor being smaller but if one were to visit the sites today a very different picture is experienced, based on my observations during my site visits in 2016 and 2019. This is due to the transition from EBA moving to the late MBA, when Dan was in the process of consolidating and Hazor was in the process of expanding. Dan occupation area would consolidate into the crater-like shape of the site with an area of 18 ha and by the time the ramparts were complete this was reduced to 11 ha (Burke 2018:254).

The MBA with the wide 60m-plus rampart widths at the base resulted in the flat area for habitation creeping onto the inner slopes of the ramparts as the city expanded. The houses, burials and other finds along and on the slopes of the ramparts will be discussed in Chapter Four. The ramparts' construction dating, currently assumed to be at the end of the nineteenth century BCE, has emerged as another debate with new primary evidence forthcoming, possibly in 2021/2022 (Ilan Forthcoming).

Following an MBA destruction, the city was rebuilt in the LBA, and much of what has been discovered in Area B below the IA installations was LBA gates and city walls (Ben-Dov 2011:15).

The IA saw complete urbanization of the city with the end of nomadic life for its people. In the 9th century BCE, Dan again experienced destruction but was rebuilt, surviving for centuries despite the destruction of the city gates in the 8th century BCE (Biran 1974:47).

3.3.3   The plan of Dan

The plan below of Tel Dan, plan I which was taken in 1996, identifies the various areas which Biran had uncovered or excavated. The areas identified on the plan are T, Y, M, A-B, H and K. The focus on the ramparts is specifically around the areas of T, Y, A-B and K. Other complexes to note which will be addressed in this thesis are indicated in Area K being the Canaanite gate, in Area A-B the four Israelite gates, and the High Place in Area T. The fourth Israelite gate is not reflected on the plan as it was uncovered in more detail after the plan was completed. This is known as the outer outer gate. It is in Area A on the south just off the map.

The surface of the mound at Tel Dan is estimated according to Scheepers and Scheffler (2015:19) as 18 ha, but the area is not consistent with that identified by various other excavators who put it at 16.1 ha (Broshi 1986:86). If we consider the size of the ramparts which cover an area of about 5 ha, the actual livable area where development could take place was about 11.1 ha.
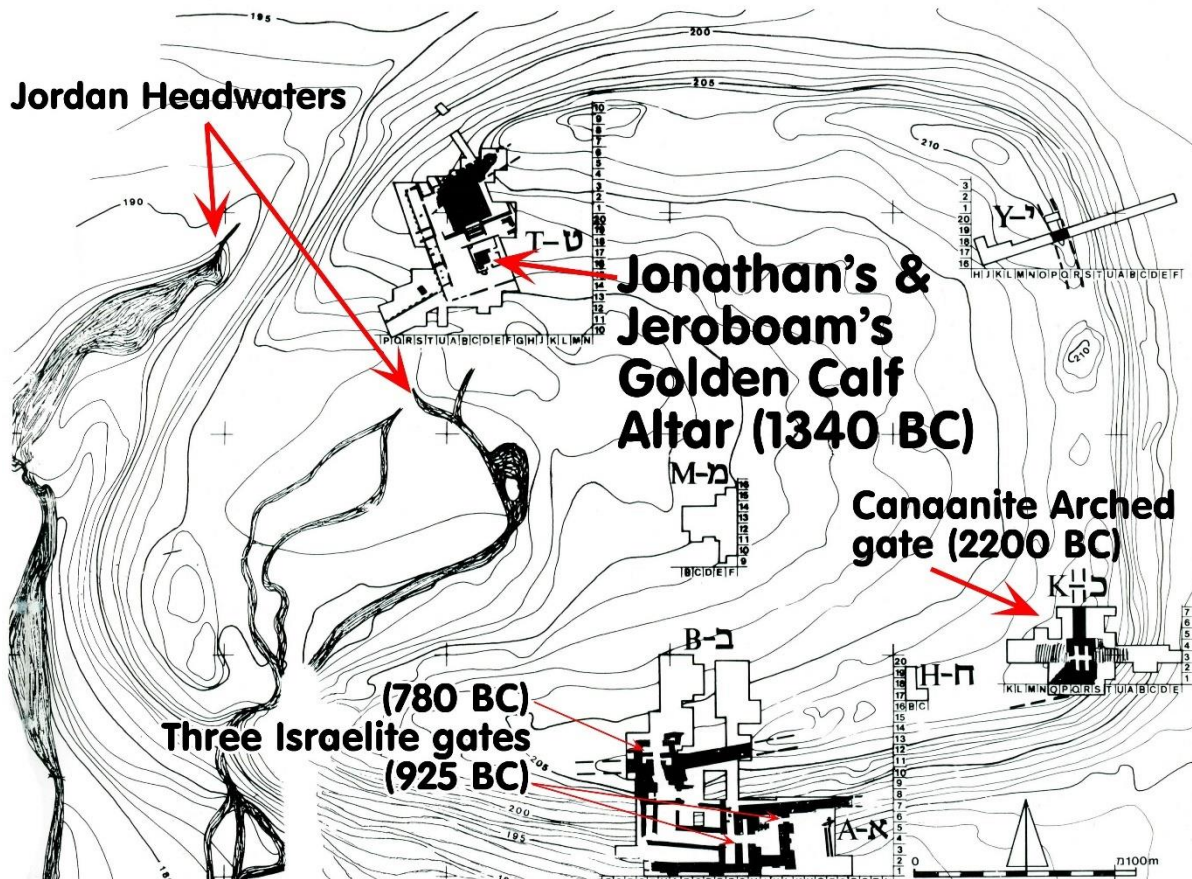
Figure 3.2: Plan of Tel Dan (Biran et al 1996:plan 1)

According to Biran (1994:30), Dan was a very large city during the EBA which stretched far beyond the impressive MBA ramparts. Herzog (1997:269) put Tel Dan in the category of extended cities like Hazor and Haror as it was inhabited long before the EBA, and its MBA ramparts were built on the foundations or using debris from the EBA. It was these EBA structures which would become the core of the sloping earthen layers of the MBA ramparts. Defences were found to be different in each area of excavation, but a common core wall of fieldstones could be identified around the perimeter of the city with earth piled against it forming the inner structure and construction of the rampart. Biran et al (1996:18f) found the core wall to measure 6.5m thick and 10m high. If Biran claimed that the slope of the rampart was around 42 to 45 degrees and Scheffler & Scheepers (2015:25) put it at 40 degrees, it can be deduced that the core wall could range from an additional 6m to as much as 15m depending on how flat and wide the top of the rampart was.

An observation that should also be noted is that it is likely the core wall was constructed in line with the ramparts' layers as the core wall in the cross section can be seen to be leaning backwards which indicates that it was never completed independently of the sloping ramparts. Biran (2000) uncovered and traced

the wall for 22m from the southeast corner of the city boundary.

The length of the MB ramparts around the city which had been determined by Biran conflicted with Burke, who estimated a length of 815m including the triple-arched Canaanite gate which was embedded into the ramparts. The volume of the ramparts as determined by Biran (1990:65) was estimated at 1 000 000 cubic metres. Burke had estimated the volume of the Dan ramparts at 236 250 cubic metres. This wide range raises concerns for me as to whether archaeologists have applied their mathematical rules correctly, accurately and consistently. Furthermore, inaccurate information on the volume of the Dan ramparts can impact on the interpretation of the defence and penetration techniques and their successes in infiltrating the city. It is for this reason that the data will be assessed below to determine why they have reached such varied volumes and identify who may be more reliable in addressing the research questions for determining the labour required and the time taken to construct the ramparts.

The ramparts as computed by Biran in terms of volume considered the height, length, and width in determining the volume. The length was based on the outer circumference of 1700m (Scheepers & Scheffler 2015:27). Using the outer circumference to determine the volume would be mathematically incorrect. Burke (2008:254) had considered the reduced volume of the core wall as it was terraced, but as this was the core, it was filled by the rampart debris which would not have reduced the volume unless the slope was also terraced. The evidence associated with a slope and travertine lining as a deterrent would indicate that the terraced core wall was back filled with debris which would have required the rampart walls to have been understated in volume by Burke. This would also be impacted by the rampart on the west (Burke 2008:254) not having been included in his calculations as he deemed it to be entirely built in the EBA (Ilan 2012:8). The MBA rampart works in Area T were later identified by Burke as a supplemental rampart wall and not a freestanding rampart as an interior slope was lacking (2008:251). The absence of an interior slope was not lacking but was leveled out to facilitate the IA high place which will be discussed later (Biran 1996:43f).

Scheffler & Scheepers (2015:27) refer to Biran measuring the ramparts at 1700m in circumference which is more than double the length/circumference as determined by Burke which was computed as 815m (Burke 2008:254).

One cannot build a frame of reference as to the rampart plan and design with such varied measurements in terms of length/circumference and volume. These ratios for length and volume between Biran (1994)

and Burke (2008) reflect the length as a 2:1 ratio and a volume as a 4:1 ratio.

The plan of the ramparts will be recomputed so a more representative sizing of the volume of the rampart walls can be determined. Before addressing the computation, the following factors have been considered which would either decrease Biran's volume of the ramparts or increase Burke's volume of the ramparts:

- Area T cannot be considered as an MB rampart as Biran had not suggested a rampart on the west side of the site, and the topography also does not allow for one. Any walled defence embedded in the topography on the west side probably existed in the EBA. This would effectively reduce the circumference of the ramparts determined by Biran (1994:59-73). However, in a counter-argument, Ilan (2012:6) has clarified this problem in that an EBA existing rampart was rehabilitated during the build of the MBA ramparts and the slopes were lined with travertine after it was first sloped with earth on a broader embankment and was raised higher than the EBA rampart. Burke, however, identifies the extension as part of the MBA mudbrick fortification wall and not as a freestanding MBA rampart (2008:251).

- The factoring of the Canaanite triple-arched gate as well as any other openings would also reduce the rampart length. The counter-argument for this would be because the gates are cut into the ramparts (Biran 1980:90f) and therefore the gate entry would not materially impact the rampart volumes.

- It is also unknown, when Biran determined the circumference of the ramparts, whether he worked on the outer base, the inner base or the centre of the core wall. Considering Burke (2008:254) has a measurement of 815m excluding the rampart along the western side of the site, and a fortification wall of 1200m which would be centred atop the ramparts, it is highly probable that the 1700m was the outer circumference.

- Burke (2008:254) likewise determined the length of the ramparts separately; it is assumed that it was measured based on the inner perimeter of the rampart walls as the point mentioned above.

- The volume determined by Biran (1994:71) and Finkelstein (1992:208ff) was influenced by the height of the rampart in Areas A-B and K which included the fortification wall built with clay bricks which is not supported by Burke. Burke (2008:254) identifies the mudbricks as part of the fortification walls, which probably connected the towers, and separate from the ramparts.

- Burke estimated the rampart in Area K, because of an outer terraced core wall, at 35% less than a sloping wall (2008:253). However, he did not consider the backfill which would fill the terraced core wall to complete the gradient or slope which would have been covered with travertine. The same would apply for the western rampart.

3.3.4   Analyzing the ramparts

3.3.4.1   Analyzing the length of the ramparts

It is necessary to first reconcile the rampart lengths as determined by Biran and Burke. Biran estimates the circumference of the ramparts around Dan at a length of 1700m (1994). According to Burke (2008:254), by eliminating the boundaries of the city which did not have MB ramparts, as well as the ramparts/topographical area which existed in the EBA, only 815m of actual MB rampart was constructed around the city. The northwestern face of the city identified as area T by Biran was not part of the MBA ramparts according to Burke but was included in the circumference as measured by Biran.

The measurements of the length of the three ramparts identified in Figure 3.1 and 3.3 as estimated by Burke (2008:254) can be analyzed as follows. Area K identified by Biran (1994:75) has the triple-arched gate built into it and the length of this rampart was 200m covering the southeast face of the city. On the northeast face identified by Biran as Area Y, the rampart has a length of 315m. The remaining face to the south identified as Areas A and B is defended by a rampart of 300m. The total length of the MBA ramparts is 815m as measured by Burke and not the measurement of the circumference of the city as recorded by Scheffler & Scheepers (2015:27) and Biran (1994:59f), who probably included the EB structures as part of the 1700 m circumference. These measurements are important to understand the defence, penetration and findings related to the MBA period. Refer to section 3.3.5 for further explanation of the correct length to measure the ramparts volume.

3.3.4.2   Analyzing the width of the ramparts

The width of the ramparts as identified by Biran (1994:59f) has not been challenged by scholars in determining the base and the core stone centre; however, the gradient has been challenged by some and with it the volume, which will be addressed after the dimensions of the ramparts have been discussed. The rampart in the Area A-B is 60m at the base, and the slope varies between 40 and 45 degrees depending on the archaeologist reporting on their findings. Scheepers measures the slope at 40 degrees (in Scheepers & Sheffler 2015:25), and Biran measures the slope between 42-45 degrees (1994:59f). The core wall had a width of 6,5m which consisted of fieldstones. It should again be noted that the core wall, because of its backward leaning, was never built independently of the revetment walls and rampart but was built simultaneously as the core wall was extended (Biran 1994:79).
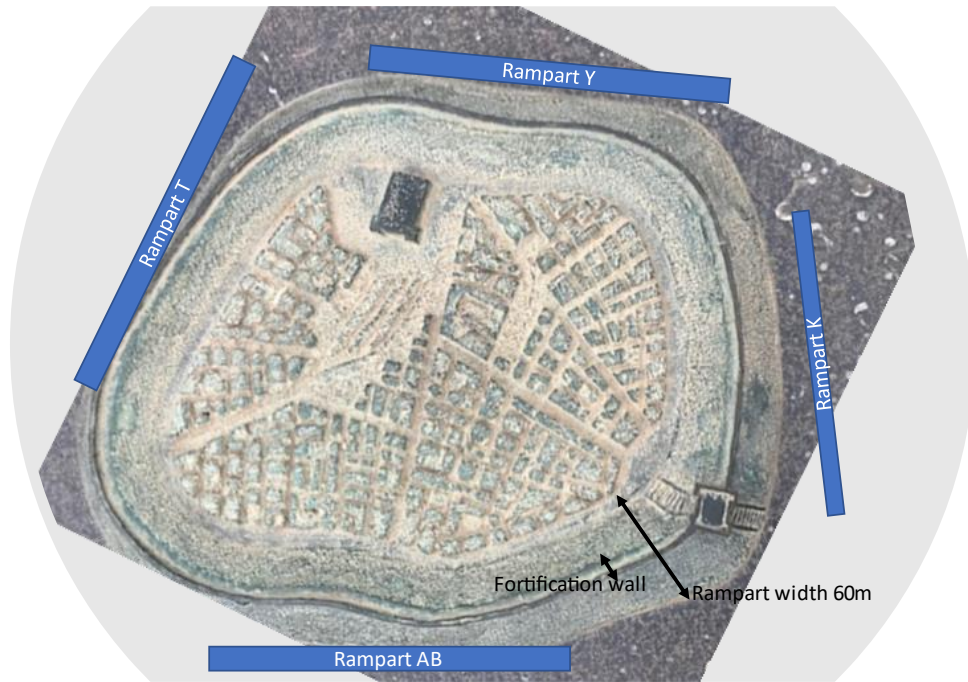
Figure 3.3: Photograph taken of the Dan rampart model (Donald Scott 2019)

The rampart in Area K as identified by Biran has a width of 81m at its base, and it is difficult to determine the accuracy of this width as the slope was determined by Biran to be 14 degrees. Although not mentioned by Biran, Burke (2008:253) had identified the rampart to be terraced which could be the reason for the low gradient coupled with the positioning of the rampart on the mound which had the advantage of a high, steep gradient. The terraced rampart would also question the volume as determined by Burke as this would have been overstated considering the terrace impact on the calculated volume. However, if it had been covered with virgin earth and then eventually with travertine, the volume would have been correctly determined based on half the base multiplied by the height, then multiplying the length to determine the volume.

3.3.4.3   Analyzing the height of the ramparts

The big debate between Biran (1994), Finkelstein (1992), Scheepers (2015) and others is whether the heights of the ramparts have been correctly determined. As the rampart gradients and widths at the base were not consistent, several soundings would need to have been made to settle this debate. Although base width and gradient have not been the subject of debate, and the length can be argued based on logic, the height raises the issue of whether fortification walls were built on the ramparts. Mudbrick walls which have been identified by Biran (1994:59f) as part of the rampart have justified the reason for the heights being higher than the heights as determined by Burke (2008:254). The arguments for or against the

mudbrick being part of the rampart will be discussed under a separate heading (cf. 3.3.9).

The Area A-B is determined by Biran (1994:66f) to have a height of 16m; this differs from Burke's determination and Burke believes that the amount of erosion has been too excessive to have removed over 6m off the height.

3.3.4.4   Computation of the MBA ramparts

The tables below have been analyzed as follows:

- Area represents the ramparts in the area of excavations:

- R. h (m) represents the rampart height in metres;

- R. w (m) represents the rampart height in metres;

- R. l (m) represents the rampart length in metres;

- Total Volume is the computation in cubic metres;

- AB represents the rampart along the south of the tel;

- K represents the rampart along the east of the tel;

- Y represents the rampart along the north of the tel; and

- T represents the rampart along the west of the tel.

The first table contains the figures as determined by Burke which represent a critical review on the ramparts as documented by Biran. The second table reflects the different MBA ramparts identified by Biran giving the measurements as determined by Biran and his team through two decades of excavations. The third table is a revision of the two scholars, adjusting the measurements either based on incorrect formulae, interpretation or ensuring measurement is like with like. The third table will sum up the reasons for the variances and why they may have occurred.

Until it is possible to source the workings to determine how Biran determined that the volume of the ramparts totaled 1000 000 cubic metres (Biran 1994:65) and how Finkelstein likewise concluded that the total volume of the ramparts was 1000 000 cubic metres, I have made assumptions based on the limited information on the heights, widths and lengths in some instances for these ramparts in order to reconcile the possible outcome of why Burke reached a volume four times less than Biran and Finkelstein.

Burke rampart computation				
Area	R. h (m)	R. w (m)	R. l (m)	Total Volume
AB	10	45	300	67 500
K	8	81	200	64 800
Y	11	60	315	103 950
TOTAL			815	236 250
Biran and Finkelstein rampart computation				
Area	R. h (m)	R. w (m)	R. l (m)	Total Volume
AB	18	60	454	245 526
K	18	81	320	233 280
Y	18	60	469	253 260
T	16	73	457	267 934
TOTAL			1 700	1 000 000
Revised Computation				
Area	R. h (m)	R. w (m)	R. l (m)	Total Volume
AB	10	60	381	114 471
K	8	81	260	84 240
Y	11	60	388	128 040
T	11	73	397	160 020
TOTAL			1 426	486 771

Table 3.1: Rampart volume models (Created by Donald Scott 2020)

The revised computation I believe correctly reflects the most accurate volume of the ramparts which would give the most accurate information for the enemy attempting to assess a strategy for penetrating the city defence. The rampart in Area T does not have a separate measure for its volume as the MBA rampart was built atop the EBA rampart. The figures were calculated based on the following equations and assumptions to solve the unknowns:

- Finding the length of T (western rampart): T = 1700 – 454 – 320 - 469;

- Finding the height of T: following the height of AB and Y; and

- Finding the width of T: computing all knowns to find the factor equal to one million cubic metres.

Secondly T (western rampart) was not considered by Burke (2008:254) as he could not evidence an MBA rampart having been constructed on the west of the site, possibly due to it being assumed a natural

raised area sloping from the river or possible remains of an EBA rampart. However, according to Ilan (2012:8) the rampart was built in the MBA atop the remains of an EBA rampart and was covered in travertine like that of the rest of the Dan ramparts. Ilan (2012:8) also challenges Burke stating that the ramparts were not compacted with *hamra* (reddish soil), but rather *terra rossa* (virgin soil) from the surrounding plains. In the revised computation of the volume the western rampart was included.

Thirdly the heights as determined by Biran (1994:59f) and Finkelstein (1992:208ff) refer to mudbricks which indicated the estimated height, and this was further justified through the discovery and reconstruction of the Triple-Arched gate with its two flanking towers. The overall heights are not debated by these scholars but rather Burke sees the extension of the ramparts with mudbricks to be the fortification wall on top of the rampart, hence the connection to the towers which would have been erected along the rampart, like those at the gate in Area K. I am of the opinion, based on the research by Burke, that his measurements of the height of the rampart are more appropriate.

Based on the area size of the crater shape of Dan as determined by Biran (1994:59ff), one can conclude that the circumference considers the length of the ramparts from the outer rampart base of the city. Burke, on the other hand, with his measured length of the three ramparts and the area size available for habitation, measured the rampart lengths from the inside of the city (2008:254).

One can therefore conclude, other than Burke excluding the western rampart, that both scholars agreed on the length of the ramparts; however, measuring from inner and outer rampart base, different lengths were determined, which is justified, but not correct in determining the volumes as the inner length would not consider the bulked corner rampart joining the four ramparts in the case of Burke. In the Finkelstein and Biran measurement, which considered the outer base of the ramparts, this would have double accounted for the bulk built at the point where the four ramparts met. The heights differed due to the interpretation of whether the mudbricks were deemed to be part of the rampart or not. Lastly the one interior core wall of the AB rampart that was terraced would have been filled to achieve the gradient and therefore the reduction in volume of 35% by Burke cannot be justified.

Based on the revised measurements and following sound mathematical computations the revised figure of 486 771m³ is double the volume determined by Burke and half the volume as determined by Biran and Finkelstein.

3.3.5 Mathematical models for rampart volume determination

3.3.5.1 Sizing of Tel Dan by Biran

Table 3.2: Tel Dan sizing model using Biran's inputs (Created by Donald Scott 2020)

- Tel Dan is a 50-acre or 20-hectare site (Biran 1974) and has a circumference of 1700m;

- The computations clearly show that a 20-hectare site will have an outside circumference of 1585m; should the circumference be 1700m then the area would be 23-hectares.

- Even if we assume the site had a circumference of 1700m, based on the hectare size, the circumference would have been based on the outside perimeter at the base of the rampart which was used to compute the volumes, which makes the rampart volume of one million cubic metres incorrect.

- Proof: The diameter of 541m less the width of the rampart in Area K 81m and Area T 73m has a balance of 387m. The diameter as determined by Burke was 383m. This proves that the measurements by Biran as well as Finkelstein were based on the outer perimeter.

3.3.5.2   Sizing of Tel Dan by Burke

circumference C = 1200	area A = 115000
Let pi π = 3.1415926535898	Let pi π = 3.1415926535898
Units m	Units m
Significant Figures auto	Significant Figures auto
Clear Calculate	Clear Calculate
Answer:	Answer:

radius	r = 190.98593171027 m
diameter	d = 381.97186342055 m
circumference	C = 1200 m
area	A = 114591.55902616 m²

radius	r = 191.32599643315 m
diameter	d = 382.65199286629 m
circumference	C = 1202.1366896702 m
area	A = 115000 m²

Table 3.3: Tel Dan sizing model using Burke's inputs (Created by Donald Scott 2020)

- Tel Dan is a 16-hectare site and after accounting for the rampart size the living area is 11,1 hectares (Burke 2008) and has a circumference of 1200m.

- The computations clearly show that a 11,5-hectare site will have a circumference of 1200m, which has correctly been computed by Burke. His base for 16 hectares is sourced from Broshi (1986).

- Even if we assume the site had a circumference of 1200m based on the hectare size, the circumference would have been based on the inside perimeter at the base of the rampart which was used to compute the volumes, which makes the rampart volume of 236 000 cubic metres incorrect.

- Proof: The diameter of 383m adding the width of the rampart in Area K 81m and Area T 73m has a balance of 537m. The diameter as determined by Burke was 541m. This proves that the measurements by Burke were based on the inner perimeter.

3.3.5.3   Revised perimeter length for determining rampart volumes

circumference C =	1426
Let pi π =	3.1415926535898

Units m

Significant Figures auto

Clear   Calculate

Answer:

radius	r = 226.95494884904 m
diameter	d = 453.90989769808 m
circumference	C = 1426 m
area	A = 161818.87852937 m²

diameter d =	452.5
Let pi π =	3.1415926535898

Units m

Significant Figures auto

Clear   Calculate

Answer:

radius	r = 226.25 m
diameter	d = 452.5 m
circumference	C = 1421.5706757494 m
area	A = 160815.18269415 m²

Table 3.4: Tel Dan sizing model using revised inputs (Created by Donald Scott 2020)

- Reasoning for using 452.5m: The diameter should be 462m as the midpoint reading from east to west, but the site was not a perfect circle, therefore considering north to south, Area A-B is 60m and Area Y is 60m, giving a diameter of 443m. The mean between the two axes is therefore 452.5m.

- The computations clearly show that a 452.5m site will have a circumference of 1422m, likewise the circumference as determined by a revised adjustment of 1426m computes a diameter 454m.

- Solution: The midpoint of the ramparts around the site should have been determined to compute the volume of the ramparts. It is therefore proven that the length or perimeter used to determine the ramparts is not the inner perimeter of the ramparts nor the outer perimeter but the centre point which is 1426 metres considering a 0.3% variance, which nevertheless gives one a 99% confidence level.

3.3.6   Socio-economic impact of the rampart build

The socio-economic impact of the fortifications at Dan focuses on the labour in building the fortifications in relation to the population within the district. Scholars have over the last two decades tried to calculate

the labour and resources that would be required to construct these fortification projects and in particular the free-standing ramparts which are the basis for the Dan fortification.

Scholars have tried to determine the number of labourers required, the sourcing of workers from nearby populated villages and towns, the time taken to build, as well as the material quantities required to build the ramparts and fortification defences (Biran 1994:71f; Bunimovitz 1992:226; Finkelstein 1992:208–210; Herzog et al 1989:32f; Mazar 1997:250). Using archaeological, ethnographic, and historical sources from various site estimates as well as revisiting the work of Biran and Finkelstein, I believe it would be possible to present a more accurate assessment of the build structure of Dan. Unlike ancient Egypt and Mesopotamia, Palestine lacks detailed and sufficient textual evidence to easily determine the bill of quantities.

In South Africa, as in many countries in the modern age, it was not uncommon for males entering their twenties to do military service and supplementary service of about 30 days per year in the community or military. This was also common in the ancient Near East as was determined by the Babylonian Empire where there was an obligation for a public labour service (Klengel 1987:161), known as *corvée* labour. It was also common for the military to do part of their service in building fortifications, such as the Hammurabi soldiers who build the wall of Suppar (RIME 4.3.6.2) and Kis and its fortifications (RIME 4.3.7.7). *Mari texts* also indicate that general labour was sought to help at settlements for a wage (ARM XIV 24) where 200 labourers from Terqa were required to rebuild a collapsed section of wall. CAD (7,74) also refers to *ilku* which is a service that the locals were obliged to work along the above groups especially in times of crises such as the rebuilding of the wall in Jerusalem as discussed in Nehemiah 3:12.

Focusing on the construction of the ramparts and fortifications at Tel Dan, where multiple sections had been excavated, suggests that, like in the building of the wall in Jerusalem in Nehemiah 3, separate labour teams were used in building the ramparts; and, as the different ramparts differed in structure other than because of the topology, it could be possible that the inhabitants of different quarters of the town could have been responsible for the ramparts. At Dan the western ramparts could have been built by the residents in the western part of the town coupled with tribal inhabitants in the area and military, especially the basic rampart development of the core field stones and slopes. Although little evidence is available for specialized labour, *itinnum* (CAD 7,296f) known as house builders were probably used for the integration of gates, towers, and bastions into the ramparts as well as the complicated features of barrel-vaults for the gate construction.

Although textual evidence from the *Mari Texts* indicates that more specialist labour may have been required for the gates, it has not been possible to source any reliable estimates for the labour required for the construction of the gates during the BA in Dan or any other site in the ancient Near East.

3.3.7   Tax collection for military and installations

A soldier cannot be a soldier without training, nutrition and weapons, nor can a city be protected without fortifications and control. All of this requires money and funding. The ancient world had two ways of taxing the population and it also needed to redistribute goods and services to military personnel, builders, priests and clerks (Garfinkel & Mendel-Geberovich 2020:168).

Taxation could be collected through *corvée* labour as discussed above. This would have been an option for the building of the ramparts in the MBA and would have continued through to the IA where the fortification walls and gates were built. The recruitment for military service would also be paid in a form of tax by offering a service (Na'aman 2005; Snell 1992). Epigraphic evidence is found in Arad, *ostracan 24* which ordered troops to be sent from Arad and Qina to Ramat Negev (Aharoni 1981:48-51) in support of defence and fortification building.

Tax in kind may have been in the form of agricultural goods. "He will take a tenth of your grains and vineyards and give it to his officers and his servants" (1 Sam 8:15), "and at the harvests shall give a fifth to Pharaoh" (Gen 47:24). *Ostraca* in the region was evidence of taxation of wine and oil to the administrators (Ahituv 2008:258-310). In the south of Palestine in the desert areas, tax was levied in the form of pieces of silver, evidenced by the hoards found in Arad and the epigraphic finds (Beit-Areih 2015:511-13).

Dan being a city of abundant water and green pastures would have paid taxes by the locals in the form of grains, oils, wines, and *corvée* labour rather than silver as cattle farming was more restricted to the desert nomadic areas. The findings along the ramparts and gates at Dan covered in Chapter Four will address any epigraphic evidence of taxation.

The physical state of the ruins showed many pits in IAI at Tel Dan used for grain storage (Finkelstein 1988: 264-9). These pits were mostly shaped in the form of a cylinder with stone lining, mud plaster, basketry or having been embedded in hard packed pebble to protect them from rodents or insects (Currid & Navon 1989:70). The pits in Area B were easy to identify as they were embedded in the LBA pebble

layer (Ilan 2008:90). In Stratum VI, within an area of 975 square metres, 45 pits were identified, which may have related to the process of economic redistribution especially in instances where they were closely grouped. Sunken pits could also have been an indicator of hiding grain from robbers, enemy and tax collectors (Ilan 2008:95-96). Evidence has also been found of grain being stored in large pithoi which would have been indicative of a more stable environment with no military threats which would occur during difficult times during the harvest (Redford 1992:211). The use of pits by Stratum V had decreased in Dan, and by Stratum IV a room with no windows was identified which could have possibly been a grain silo with fewer pits, pithoi and bins (Ilan 2008:101). We can see that the taxation and redistribution through the grain pits were necessary to ensure that the military and administrative community were accommodated in terms of their welfare. In addition, the timing of the bulk storage and the building of the IA gate could have been indicators of better food security and having more central economic, political and military control (Ilan 2008:102).

3.3.8   Time period for the BA rampart construction

The building of the ramparts at Dan has been addressed by Biran, Finkelstein and most recently Burke; all have varied, wide-ranging estimates in determining the number of manhours required to build the ramparts and the fortifications. Before critically looking at the possibility of what could be the most accurate, it is necessary to understand the basis of their assumptions and how they could determine the measures.

As recorded by Finkelstein (1992), through an archaeological experiment conducted in England (Cotterell & Kamminga 1990) using antler picks and shoulder blade shovels with wicker carrying baskets about $1.42m^3$ of solid chalk could be excavated, transported, and deposited by one person in a ten-hour day. With modern tools still using manual labour this was basically doubled to $2,84m^3$ per person per ten-hour day. However, in Mesopotamia the rate of excavation was similar to the $2,84m^3$ output, yet Biran (1994:71) and Finkelstein (1992:208ff) relied on the lower Neolithic tools in extracting solid chalk.

In 2016, excavations were conducted in Hazor, where filling, moving and depositing 450 buckets every 40 minutes by an average team of 24 people, (buckets averaged 6-7kg of soil), equated to the excavation, transporting and depositing of $2,88m^3$ of soil per person per ten-hour day. This together with the landscape of upper Mesopotamia where the rate was $3m^3$ would support the argument that both Biran's and Finkelstein's measurements were out of context. Burke, however, supported the leaning toward the

$3m^3$, which I believe is more representative as currently today, as has been during the BA and IA, Syria and Iraq labourers are still moving about $3m^3$ of soil in 2020, as recorded by a conversation with Burke and Gibson (Burke 2008:145).

The rate of brick construction, according to Powell's (1990:490f), Mallowan's study, shows that although the production of bricks varied between 2 to 4 times in volume to the laying of the bricks, it has been determined that the size of the MB age mudbricks assumes that, together with the mortar between the bricks, an average of $0.9m^3$ of mudbrick wall construction could be completed per person per day.

3.3.9   Labour estimates for Dan ramparts

Sourcing from the archaeological reports from Biran (1990:65; 1994:71) the volume was determined to be one million cubic metres with a rate of deposition of $1m^3$ per day per person estimated at 1000 workers taking 1000 days to complete, thus requiring one million man days to build.

Finkelstein (1992:208ff) based on the same rampart volume of 1 million cubic metres determined a rate of $0,56m^3$ which estimates the number of workers to be 2000 completing it in 900 days thus requiring 1,8 million-man days to complete. Finkelstein determined the same measures for Hazor which is a far bigger site than Dan (Finkelstein 1992:210).

Burke (2008:254) as discussed earlier determined the volume of the ramparts to be 236 250m³ and determined a rate of deposition to be $3m^3$ which equates to 78 750 man days to complete the building of the ramparts. Finkelstein's estimate of man days to build the Dan ramparts is twenty-three times greater than that of Burke. Burke believed that the volume of the ramparts had been grossly inflated by Finkelstein (2008:148).

As discussed earlier two factors which Burke (2008:254) used in determining the completion period was the low volume associated with the ramparts as well as the source of manpower used for the completion. The types of manpower will be discussed separately further in this chapter. I believe one million cubic metres was too high an estimate of the volume of the ramparts which would have reduced the man days required to build the rampart; however, one can argue that Finkelstein (1992) and Biran's (1994) volume considered the fortification walls on top of the ramparts which was probably still overstated by 50% considering that the outer circumference was the measurement used in computing the volumes. Burke as

discussed earlier only considered 815m length for the ramparts and therefore the volume was grossly understated; hence the man days are equally understated.

As the basis for the determination of the labour estimates based on the rate per day, I would support Burke (2008:145) at 3m^3 per man day, rather than the 1m^3 as determined by Biran and 0,56m as determined by Finkelstein (1992:208ff) where they have grossly overstated the man days based on the production volume per man day. Based on Burke's productivity per man day and the revised volumes, the computed man days would therefore have been 162 250 which is double the number determined by Burke and far less than the figures determined by Biran (1994:71) and Finkelstein (1992:208ff) of 1 million and 1.8 million respectively. Biran and Finkelstein include the mudbrick fortification walls as part of the rampart volume. We will therefore look at the volumes again at the conclusion of this chapter comparing the revised computation with the addition of the mudbrick fortification walls to determine the total man days required as well as the source of the possible manpower.

Ilan recognized the MBA ramparts as one complete structure, as did Biran and Finkelstein. He recognized that the MBA ramparts were built with wider and higher platforms for the construction of crowning walls as found in Area T at Tel Dan, indirectly at the same time agreeing with Burke (Ilan 1995a:316). These ramparts would often have a fosse at the base, as in the case of Dan which would be flooded to form a moat as it was near a water source, as hypothesized by Kempinski (1992b).

3.3.10 Fortification walls

3.3.10.1   Mudbrick wall atop the ramparts

The MBA ramparts in Dan lacked any mention of city walls or fortification walls erected atop them. This is interesting as the MBA Triple Arched gate has been presented as having high walls above it with adjoining towers having crenelations all around the structure (Biran 1980:91). Although Dan has been excavated extensively, some of the reasons in my opinion why there has been negative evidence could be because of:

- Limited soundings resulting in the absence of evidence;
- Not considering the linking of the gates and towers with other towers, citadels and bastions;
- The assumption that ramparts were more associated with a cultural rather than a defence structure to protect and safeguard the city's citizens;

- Erosion would have destroyed the fortification walls as these would have been made from mudbrick; and

- Scholars reaching the wrong conclusion when encountering remains of structures with few or no mudbrick structures that can clearly be interpreted as a fortification wall.

Additional walls have been identified at the Triple Arched gate but these are more revetment walls and walls to support the flanking towers (Biran 1984:8).

Figure 3.4: Model of Canaanite mudbrick gate at Dan (photograph by Donald Scott 2019)

In Area Y, mudbrick remains could be seen in the section of the excavations, but these have been disregarded as an extension of the fieldstone core of the rampart (Biran 1974:30). Later the variances in

the rampart volumes between Biran, Finkelstein and Burke as well as my own measurements will be unpacked and explained. Biran assumed the ramparts to be higher than the core stone wall based on the brick finds, which had been eroded (1974:30). Burke argues that the extended height is in fact a fortification wall (2008:253). I will concur with Burke as the area is very generous with the volume of fieldstones so it would have been unlikely that they would have stopped using fieldstones and have continued with the use of mudbrick for the core. In Area T, built on a stone foundation were seven courses of mudbrick wall and this was not seen as such, yet it was evidence to the MB fortification wall at Dan. Despite the intensive excavations in Dan, should this debate need to be finally settled, it may be necessary to strip a complete rampart to source the possibility of mudbrick structures to support the likelihood of fortification walls in the MBA, the lack of which could also be the result of possible gates or erosion, whereas the presence could also be the existence of towers or citadels as surmised by Burke (2008:252).

3.3.10.2   Mudbrick wall construction

The drastic variances in the man days needed to build the ramparts between Biran, Finkelstein and Burke were initially confusing until I unpacked the logic. The same could be said for the mudbrick wall construction as the computations had not been sufficiently documented in the reports of Biran (1994:71) and Finkelstein (1992:208ff). However, I have since discovered, although no source directly makes this statement, that Biran and Finkelstein, I assume, saw the mudbrick construction as part of the rampart, whereas Burke (2008:145f) had clearly distinguished between the top of the rampart and the commencement of the mudbrick fortification wall. This can be justified by the rampart heights in the different areas; for example, in Area AB the height of the rampart was estimated as 16m by Biran (1994:61), considering the plain was lower in the MBA period by about 2m; hence Scheepers noted the height to be 18m, supporting Biran (in Scheepers & Scheffler 2015:25). Burke in his analysis splits the two as the rampart height being 10m (2008:254), added to the rampart is the mudbrick fortification wall of 6m. The five main studies forming the basis of my thesis, namely Biran, Burke, Finkelstein, Ilan and Scheffler & Scheepers all agree on the total height as 18m. The confusion comes in the reporting and understanding of the measurement. The 18m can be subdivided into a 2m contour drop, 10m of core stone wall and sloped landfill making up the rampart, and 6m of mudbrick wall atop the core wall of the rampart.

The mudbrick walls at Dan had a thickness range from 3m to 7m which gives an average thickness of 4m

with an average height of 10m. Based on the length of the walls of 1200m, the volume can be computed at 48000m^3 according to Burke (2008:254). It is again necessary to validate and understand why Burke determines the length of the walls to be 1200m, yet he only recognizes the rampart lengths to be a total of 815m. As Ilan points out, Area T which Burke did not consider for the rampart total length, was initially an EBA rampart that was later further sloped in the MBA and covered with travertine and then extended with mudbricks (2012:8). Burke recognized the mudbrick extension as part of the mudbrick fortification wall built in the MBA, hence the length of the walls determined as 1200m if Area T is included. Understanding how the wall length was determined as 1200m, it is now necessary to confirm the accuracy of the length of the wall as the rampart measurements were based on the inner perimeter of the city. Burke used the same method adding 385m for the wall on the rampart of Area T (2008:254). The fortification walls atop the ramparts would have been erected on top of the core wall serving as a foundation for the mudbricks, and therefore this length would have been understated and would have been 1426m as discussed under the rampart lengths. This figure increases the length of the walls by 20%, equally increasing the volume. As the walls are vertical and not sloping the formula would be length multiplied by width multiplied by height effectively 1426m x 4m x 10m = 57 040m^3 volume.

The revised volume of the mudbrick fortifications added to the revised rampart volume of 486 771 cubic metres gives a total of 543 811 cubic metres which can now be compared with volumes as determined by Biran and Finkelstein.

Finally, one needs to question the size of the mudbricks used in the construction of the walls. According Burke the size identified for Dan was 30cm x ? x 15cm (2008:76), the ? represents an unknown length. Due to the current rehabilitation of the towers at the Triple Arched gate, see Figure 3.5, I was able to observe the mudbricks that had been cast to restore part of the towers and the gate based on the original brick dimensions (Dan: November 2019). The measurements were much larger than that used by Burke as the basis of his computations, roughly 55cm x 35cm x 13cm. These were confirmed by Ilan (2012:8) where the bricks were generally 56cm x 36cm x 13cm indicating that a bigger area would have been covered in the laying of the bricks.

1. Mudbrick construction as in MBA   *2. Mudbricks ready to be laid.*

3. Mudbrick wall in progress   *4. Mudbrick wall plastered*
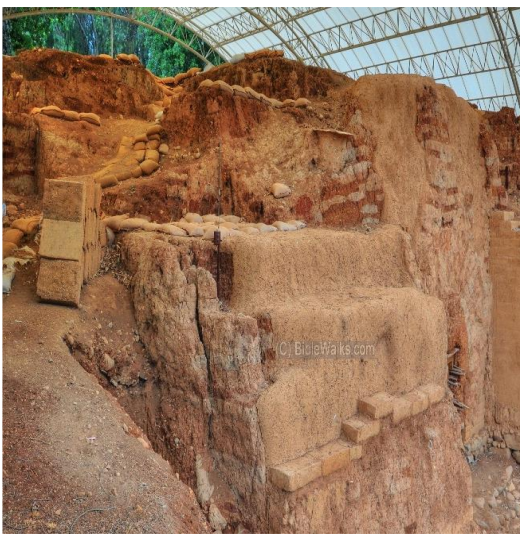
Figure 3.5: Restoration: Making, laying and plastering of the mudbrick gate at Tel Dan (Biblewalks.com/DanCanaaniteCity#bricks)

The construction of the mudbrick wall varied between sites throughout the ancient Near East; this makes it difficult to determine the average number of cubic metres that would be laid within a given day by the average labourer. Burke determined on the average based on the data gathered that an estimate of 0,9m^3 would be appropriate production level per man day (2008:146). In this instance it was not necessary to reinvent the wheel in addressing how Burke reached this decision, but it is important to understand his logic as the mudbrick size he identified for Dan was possibly not complete and accurate. Using Mallowan's study for brick size of 40cm x 40cm x 15cm the manufacture, mortar and laying of the bricks produced 2.3m^3 of finished product (wall) in two and half days. This equates to 0.9m^3 per man day.

3.3.11 Social complexity of labour resource

The total man days as determined by Burke, with 60% allocated to the ramparts and 40% allocated to the mudbrick walls, estimated the fortification to take 132 085 man-days.

Reflecting on the types of labour and the estimated population of Dan, the man days as computed by Burke (2008:152) would have taken 8 years to complete. This is based on *corvée* or *ilku* labourers where they are committed to one month of service per year. This would account for a labour force of 555 based on the eligible males able to perform the work which is estimated to be 20% of the population of Dan (Mendelssohn 1977; Renfrew 1984). The population was determined based on an occupancy of 250 people per hectare (Burke 2008:153).

Should the military have been required to rapidly build the ramparts and fortifications, and assuming the military was representative of the eligible males in the settlement, it would have taken 8 months of fulltime employment to have completed the fortification construction (Burke 2008:152).

Hired labour would have been unlikely as they would also have had their own labour to attend to resulting in the project taking as long as the use of *corvée* or *ilku* labour.

It is extremely difficult with lack of textual evidence to determine exactly at which point it was possible that a fortification wall was built around a settlement. The social complexity of whether it was built by the army, following a settlement process, in other words colonization, or whether the settlement grew and at a point in time needed fortifications, remains a hypothesis that is supported by little evidence. In the case of Dan, the choice of settlement, prior to the Iron Age settlements, was possibly to protect the water source and the people which points toward a rapid construction which would possibly have been completed by soldiers rather than *corvée* or imported/hired labour.

An estimate of the complete building of the MBA ramparts, including fortification and gates as well as the upgrading of the EBA rampart on the west of the site, is presented in the table below. This compares the number of labourers and the period based on the different sources of labour as determined by Finkelstein, Biran, Burke and the calculations as determined by the revised figures and computations (Biran 1990:65; 1994:71; Burke 2008:152f; Finkelstein 1992:208ff; Scheepers & Scheffler 2015:27).

Labour Requirements					
	Man days	**Months**	**Years**		
Burke	132 085	4 403	367		
Biran	1 000 000	33 333	2 778		
Finkelstein	1 800 000	60 000	5 000		
Revised	**233 412**	**7 780**	**648**		
Limitations	Assumptions: 250 inhabitants per hectare; Able men - 20% of the population				
	City Population	**Able Men**	**Military**	**Hired Labour**	**Corvee**
Burke	2 775	555	555	1 Mnth per yr	1 Mnth per yr
Biran	5 000	1 000	1 000	1 Mnth per yr	1 Mnth per yr
Finkelstein	10 000	2 000	2 000	1 Mnth per yr	1 Mnth per yr
Revised	**2 775**	**555**	**555**	1 Mnth per yr	1 Mnth per yr
Completion Period		**Years to build**			
	Able Men	**Military**	**Hired Labour**	**Corvee**	
Burke	555	8 Mnths	8 Yrs	8 Yrs	
Biran	1 000	3 Yrs 3 Mnths	3 Yrs	10 Yrs	
Finkelstein	2 000	2 Yrs 6 Mnths	3 Yrs	10 Yrs	
Revised	**555**	**1 Yr 2 Mnths**	**14 Yrs**	**14 Yrs**	
Revised Mix		**Years to build**			
	Allocation	**Military**	**Hired Labour**	**Corvee**	
Able men	555	185	185	185	
Man Days	233 412	200 010	16 701	16 701	
Commitment	Months/Man	36	3	3	
Years to build	**3 Yrs**	**86 Percent**	**7 Percent**	**7 Percent**	
Average of 216 men daily building the rampart over a three year period					

Table 3.2: Models of the completion time for ramparts and fortifications (Created by Donald Scott 2020)

Of note in the table are the inflated calculations for labour requirements by Finkelstein in deeming ramparts to be more difficult to build than fortification walls (1992:213).

3.3.12   The Triple Arched gate plan, method of construction and date of the gate complex

For Biran, this was one of his most remarkable finds. In the southeast of the site within the ramparts the MBA Canaanite gate was found (Biran 1984:1). The mudbrick superstructure was buried under the same natural soil used for the ramparts thereby preserving its structure for 3 700 years (Scheepers & Scheffler 2015:29). This gate with amazing arches is second only to the gate at Ashkelon in terms of age (Stager et al 2008:231).

The gate is flanked by two towers, each 5.15m wide, on the north and south sides of the arched gateway. The gate which is 7m high has 47 courses of preserved mudbrick (Biran 1984:4). The outer face of the towers has identical basket shaped arches spanning 2.4m. The arch on the eastern side is recessed from the towers at 1.8m with the arch structure consisting of 3 layers of mudbrick in a radial formation. The same can be observed on the west side, but the gateway is recessed only 0.8m from the towers entering the city. The gateway has a passage of 10.5m with the complete structure spanning 13.5m. The passage arches on the east and the west are 1.85m thick with the centre arch 1.7m, allowing for the chambers to be 2.5m with a depth of 4.5m (Biran 1984:4). The passage height is 3m at the eastern gate entrance to the city but drops to 2.5m at the centre which remains at this height till you leave the western end which enters the city. Steps continue to decline into the city plain and street (Biran 1984:4-7).
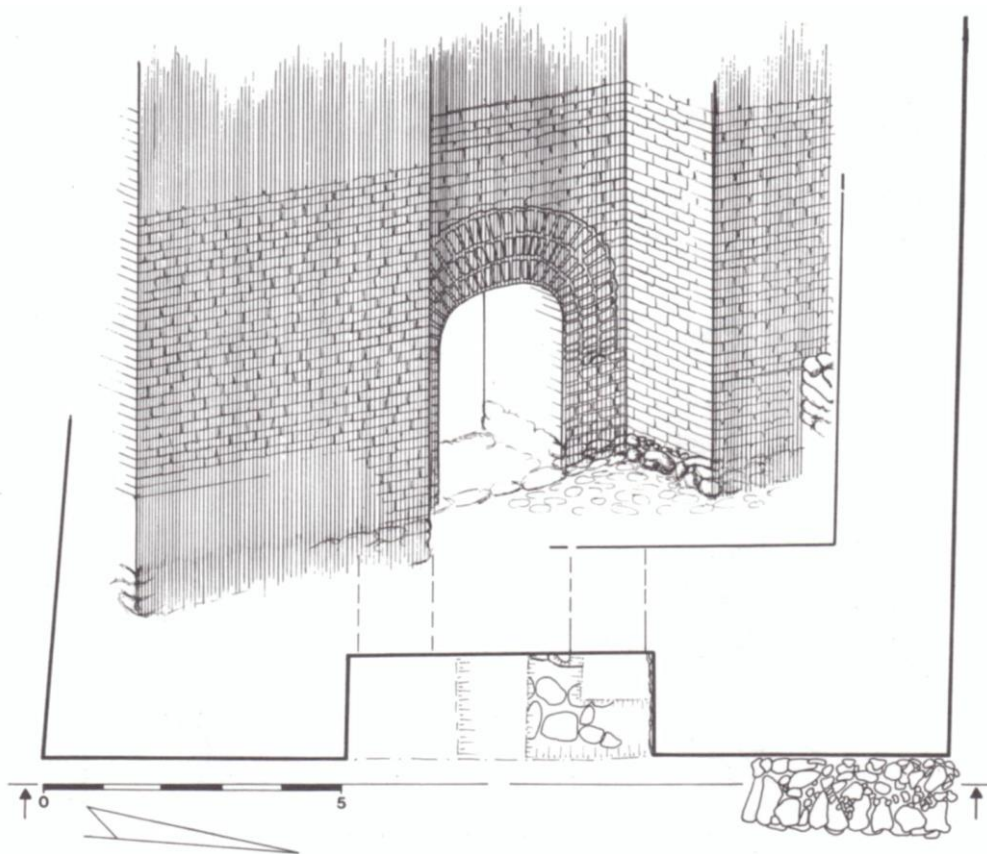
Figure 3.6: Isometric view of the Canaanite mudbrick gate (Biran 1980)

The gate stands on a base of 201m above sea level and was built into the rampart several metres higher than the base of the rampart. As discussed earlier the rampart in which the gate is set has a 6.5m core in the centre which extends 2.8m from the northern face of the tower standing on a stone foundation. Two walls at 3m apart and 2m wide anchored the rampart at the gate area. The gate was estimated to have been built about 12m from the lowest point of the rampart giving additional defence (Biran 1984:9). The

builders would have had to bring in virgin soil to create a pseudo hill to build the gate which was layered in line with the rampart. This building was aided by the existence of an EB wall and gate which was found at its base (Biran 1984:8). The outer walls and the stone core eventually rose to about 20m above the plain. This height and the slope of 45 degree strengthened defence and access into the city which will be discussed under access control.

The positioning of the MB Canaanite gate between the rampart in Area A and the rampart in Area K as determined by Biran (1994:75) creates a large amount of debate among Biran, Burke (2008:253) and Finkelstein (1992:208ff) as to how it would have been embedded into the ramparts due to the volume variances, the base and the heights as well as interpretation of the computations.

The gate itself, flanked by the two towers, is assumed to have a roof height of 4m with the walls around it rising to 7m. Biran believes the arches were built to level flat walls and bridged with cedar wood beams. These would have been supported by the thick walls at the east and west arches which were 2.5m apart from the central arch of 1.7m thick (Biran 1984:12). The reasons for the gate being blocked and the findings around the gate from the EBA through to the IA will be discussed in a separate section.

The strategic positioning of gates played an important role in their location. This may not necessary have been from a military defence perspective but could also be influenced by the direction in which people travelled. This would make sense as we in South Africa, having a high unemployment rate, have many people travelling from far by foot who would automatically make their own paths through the shortest route to their destination and may not necessarily use the dedicated roads. They would even, if necessary, break down a fence or barrier to create an opening or gateway to their destination. This being the case in MBA Dan the Triple Arched gate was in the southeast where the rampart running north-south met the rampart running west-east. It was not expected that the rampart would have been in the middle of the eastern rampart according to Kempinski (1992a). In the case of Dan, it was probably an existing trade route which could have been in existence before the gate was built, as Biran (1984:8) suggested that an EBA wall as well as an EBA gate possibly existed under the Triple Arched gate.

Although it cannot be clear what the Triple Arched gate may have been used for before it was closed off and sealed, it is possible that royalty, military, trade, and the inhabitants made use of the gate. It may have been that Abram after chasing down the enemy (Gen 14:14), may have spent time at the city gates (Biran 1994:90). The puzzling question is whether any wheeled payloads entered or left the city. This could

either be from a military point of view such as chariots or other means used by the locals, merchants, and traders. The gate was 2.5m wide and chariots or carts had an axle width which varied between 1.98m and 2.36m (Littauer & Crouwel 1979:53f) which would have made it possible for them to pass through. This would be provided that the height was below 2.5m which was the height of the gateway at its lowest point. Despite this the cobbled stairs leading up to the gate and within the gateway passage would not have allowed for the access of chariots and carts as each of the steps were 10-17 centimetres in height (Biran 1984:4)

Although the gate was triple arched, it is highly likely that doors were only mounted on the east and west entrance and that the centre arch did not have doors. Although no documented evidence has been unearthed at this stage for Dan, the opening of the tunnel by South African mining engineers was of 3m and a height of 1.8m and 1m wide (Scheepers & Scheffler 2015:31). My observations of photographs of the entrance shows the mined tunnel supported by beams to have been tunneled in the centre of the gateway. For the excavation team under Voss, it would have been tunneled at an angle in order to determine the thickness of the arches and the spacing between them. No indication has been given if the doors at this gate opened inward or outward. Logically because of the arch it would have opened outward with two doors having a width of 1.5m. The gate is recessed at 1.8m, therefore the doors would have been secured against the towers' inner side face. As the doors were arched it would not be possible to open the doors inward as the highest point of the gate would jam up against the arch when opening the door. The way the doors are locked could not be evidenced as all wood type structures would have been eroded or reused for other purposes. The only known evidence of a socket for a cross bar was found at Ashkelon (Burke 2008:69).

The gate also would have been a strong indication that it was put in place for defence, otherwise the likelihood of a four-pier gate or postern gate would have been used. Other than the battering ram no other specific weapon would have guided the engineering of gates in the MBA period. Because of the stepped incline into the city, battering rams would not have been effective on this gate especially as it would have been necessary to climb the rampart and to charge or ram at an angle, after having first crossed the moat. These hypothetical tactics and strategies will be addressed in Chapter Six.

3.3.13 MBA Towers

In Area T a tower was found with a length of 8m and a width of 5m. This tower differs in size from the

towers found in Area K flanking the north and south of the Triple Arched gate (Kempinski 1992a:68f). The gate towers were similar in width at 5.15m but the length spanned 13.5m, 5.5m longer than the tower in Area T. It is likely that all the towers in Dan built on the MBA ramparts would be regular in shape as this was the base unit of construction since the EBA which was linked to the gates and walls (Kempinski 1992a:68f).

In Area A-B, discovered through excavations of the Israelite gate which was built at the foot of the MBA ramparts, another tower was discovered from MBA which was built following the ramparts and formed part of the fortification system (Biran 1974:49). Ilan (1996) has proposed the existence of a later MB gate in this area to replace the gate in Area K. This was based on Hazor gate plans.

At this stage more excavations are necessary to determine the number of towers and the spacing around the city along the top of the ramparts. As discussed in Chapter Two, the field of fire gained from having towers at strategic intervals would prevent dead areas along the rampart, which would allow the enemy to penetrate the fortifications without being under fire. It would therefore also support the assumption that there were several more towers spaced according to the range of the most effective attacking weapons from two adjacent towers.

The current model of the MBA gate located at the historical site of Dan in front of the mudbrick gate that was uncovered by Biran's team shows crenellation along the flanking towers and atop the gate. Evidence of the tower in Area Y also confirmed that crenellation was part of the fortification walls atop the ramparts around the city as pieces of the crenellation were in secondary use in the building of the IA *bamah* in Area T (Greer 2013:114).

Should the most effective weapon used as defence for the approaching enemy be the composite bow, the likelihood of another five MBA towers or more may still be discovered along the fortification walls atop the ramparts.

3.4   THE ISRAELITE GATE AND THE CITY WALLS OF THE ISRAELITE PERIOD

3.4.1   Gate architecture and design

The IA Israelite gate, which was built on the southern slope of the mound 900 years after the MBA

ramparts, consists of three different gates. The Israelite city gates are in Area A-B (Biran 1974:44). Biran's report at the time had only just identified the 8th century gate leading into the city which is illustrated in the figure below as shown in this isometric construction, labelled as the upper gateway. This can be mapped to Area B in Figure 3.7. The other three gates can be sited on the map in Area A in Figure 3.2.
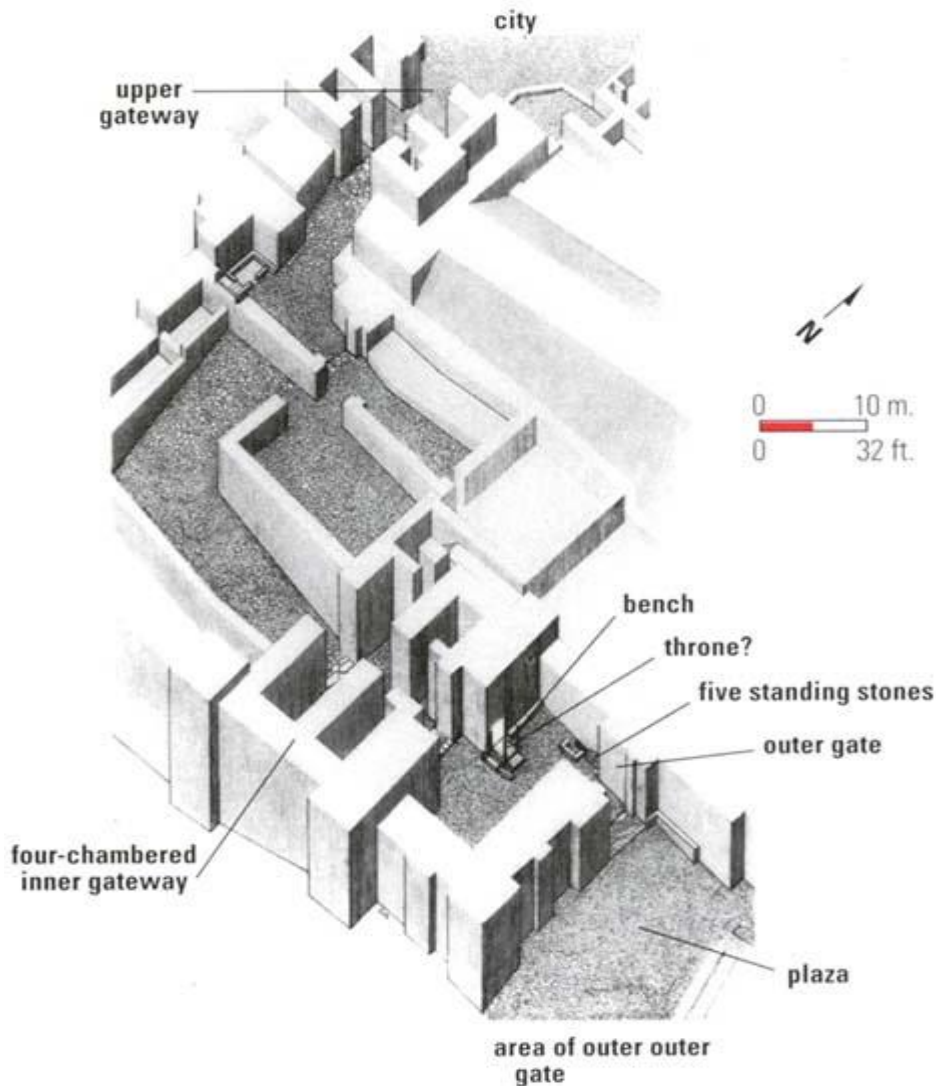
Figure 3.7: Israelite gates at Dan (BAS Library 1994)

The gate is divided into three complexes: the third complex which was built at a later stage, a century after the lower gate was completed, will be discussed separately. The inner gate complex is built with stone about 30cm in size consisting of basalt. It was built with two flanking towers and four guard rooms with a span of 17.8m between them. The gate threshold is 4m wide, leading west into the city, turning north with an incline of 28 degrees (Biran 1974:43). The main gate had some structures of interest which will be discussed in the next chapter. The outer city gate threshold is slightly smaller than the inner gate

at 3.7m wide consisting of a doorstop with two large basalt blocks on either side and door sockets on the floor. The ashlar pier on the north of the gate was recovered but, on the south, only the basalt foundations and one ashlar were found beneath an 8th century BCE wall. The city wall joining the pier running east to west is 4m wide, built of huge basalt stones to a height of 3.5m above the street where an initial 25m were excavated (Biran 1974:48).

A piazza was discovered within the two gates which is 19.5m x 9.4m, secured by the city wall on the north which had been excavated, and although not discovered the same could be assumed for the south (Biran 1974:48). The gates and the piers/walls enclosed the piazza on the east and west. The role and purpose of the piazza will be discussed in Chapter Four. In my opinion, on my 2019 visit I could, wearing my defence lenses, observe that the thickness and height of the walls at the foot of the MBA ramparts are indicative of the strength of the intended defence at these gates, as there were three access points, with the entry point of the outer gate on the southeast end of the piazza and the main gate with the four guard rooms on the northwest side of the piazza. The enemy, if they did not do any reconnaissance, would have entered the outer gate expecting to be in the city and would be trapped in the 200m² piazza.

The IA sherds found in the surrounds of the gate confirmed the gate to have been built in the 10th century BCE during the time of Jeroboam I (Biran 1974:49). Biran, however, questions that it may be the work of Ahab, which tends to be the view of Finkelstein which will be discussed in Chapter Four with reference to the *Dan Inscription*.

Outside the outer gate a stone-paved plaza of 400m was uncovered, and within it a piazza measuring 20m x 10m, identified as a raised flagstone pavement (Biran 1994:254). The plaza consisted of buildings around the piazza which was used mainly for markets and general trade. On the southeastern side of the piazza was an outer outer gate which was discovered while cleaning debris: two door sockets were found in situ with four of the five threshold stones still in place, but the second stone from the western side was missing (Biran 2002:4-6; Herzog 1997:222).

3.4.2   The 8th century upper gate

The four-chamber gate connecting to the 9th century gate complex reinforced the fortification of the IA city. This gate was associated with Jeroboam II which was at the top of the inclined path in Area B (Ilan 2019b:126). The gate complex was 18m x 12m, with chambers on the east measuring 4.2m x 3.1m and

on the west 4.8m x 3.1m. The walkway between the chambers was 4m (Biran 1994:250f). Pottery found at the gate dated it to the 850-860 BCE (Blomquist 1999:58).

3.4.3   Military defensive use

If Dan were destroyed by war, weapon remains of sorts would have been found during the excavations. This is likely to have included traces of conflagration, which would identify the military use of the gate (Glock 1968). In the case of Dan, the indicators of finds such as slingshot, arrows, swords or human bones identified within the area of city gate, do not lead to the conclusion that the gate was for military use primarily but rather as an indicator of the possible weakest point of the city's defence and fortification, showing why it was clear that city governors would concentrate their army at guard houses within the city gates (Barnett et al 1998).

The towers at the main gate were a change from MBA where large towers or bastions flanked the gates such as the Triple Arched gate in Area K. The people of IAII tried to make gates more difficult to penetrate by moving the gate towers from projecting outward to an internal tower (Chapman 1995:337).

The gate complex with the L-shaped entrance also filled several roles in military defence to hinder the enemy and make them vulnerable, and to counter the perception that the gate is the weakest point of the city fortifications. The main gate entrance as seen in Figure 3.7 is offset from the entrance of the outer gate. The use of the battering ram which was one of the major penetration methods would be neutralized in the case of the Israelite gate at Dan, as space in the piazza would be too short to gain momentum in destroying it with the battering rams and assaulting infantry. The enemy would be exposed as the defenders from the inner towers could launch an attack with limited resistance from the ground forces within the piazza (Arav & Freund 1995:26). Although the gate at Dan did have an L-shape following through to the inner-city gate it was unlike those of Batash, Megiddo and Lachish which were designed to function primarily for military defence (Jang 2006:202). At Dan, because of the piazza and various other structures including shrines, the gate although designed for military defence was used for judicial, cultic, social and economic purposes based on the findings discussed in Chapter Four.

3.5   BIBLICAL DESCRIPTION OF RAMPARTS

Although there are many translations of the Bible the International Standard Version refers to rampart in

14 instances, ramparts in 20 instances and walls in 255 instances. All instances of rampart and ramparts are in the Old Testament.

The archaeological findings on rampart strength and defences collectively, although not specific to Dan, in many instances correlate with the Hebrew Bible (cf. 2.3).

2 Samuel 5:9 mentions the fortress surrounded by the terraced ramparts with reference to the City of David. 1 Kings 9:15 refers to a summary of the conscripted labour that King Solomon required to build the ramparts and walls in the City of David, Jerusalem, Hazor, Megiddo and Gezer. 1 Kings 9:24 and 11:27 continue with additional fortification of ramparts followed by 1 Chronicles 11:18 and 2 Chronicles 26:15 and 32:5 where ramparts are built in a complete circle …siege engines placed on the towers and corner ramparts that could fire arrows and very large stones….Hezekiah rebuilt the walls, erected watch towers, fortified the ramparts and prepared a large number of weapons and shields. Psalms 48:13 and 122:7 speak of ramparts and citadels with peace within your ramparts and prosperity within your fortresses. According to Joel 2:7-9 they run like elite soldiers, climbing ramparts like men trained for war…running upon its ramparts, atop houses entering windows.

All these verses attest to the various solidity and structure of ramparts as discussed in Chapter Two and expanded in Chapter Three. The detailed discussion of the size, shape and construction of the Dan ramparts is not out of context from what the Bible refers to in instances of ramparts and fortifications. It would also not be uncommon for the labour force required to build the Dan ramparts to have been conscripted labour either of a *corvée* type or military conscripts.

3.6   DAN RAMPARTS AND FORTIFICATIONS REVISITED

Ilan, in the release of the fourth archaeological report of Dan IV, claimed the ramparts were constructed in the EBA and supplemented in the MBA (2019a:1). In the forthcoming Dan V, the fifth archaeological report, whose release may be after 2021, Ilan will present a detailed case that an EBA earthen embankment and the pottery outside of the ramparts were from the Neolithic Age and not the EBA as reported by Biran (2019a:1). A megalith stone field existing in antiquity may have been dismantled within Dan which was possibly during the construction of the MBA fortifications and temple (Ilan 2019a:4). Further primary evidence which may impact on the interpretation of findings in the past may change due to higher chronologies as Ilan addresses new complementary findings in forthcoming books on primary

excavation reports due at a later date in the current decade, in Dan V and Dan VI (2019).

3.7   CONCLUSION

Ramparts at Dan discovered from the beginning of the EBA served the purpose of defence and containment of its citizens till the end of the IA and beyond. During the MBA the ramparts were built mostly with the base on virgin soil, except in Area T and limited in Area A-B and Y. Extra defence in the form of fortification walls and huge city gates were built atop the ramparts. Additional fortification walls followed in the IA with the addition of new four-chamber city gates for added protection and fortification where the towers no longer protruded outward but were set back toward a second set of gates for added defence, with the second gate entrance offset from the outer gate entrance. These structures are evidence that the ramparts and huge city gates served the purpose of defence and protection of the inhabitants of city. During the research, the structures and activities within the city gates also indicated that the gates and the ramparts had a socio-economical role which we will discuss in Chapter Four in more detail based on the findings along the rampart slopes and the city gates.

The huge ramparts built around Dan, with rampart widths ranging from 60m to 81m and heights of up to 18m when including the mudbrick walls, attest to the biblical narrators who spoke of huge city gates and ramparts during the Canaanite and Israelite periods. The excavations in Area A-B around the Israelite gate built in the 9th century BCE and the extended inner-city gate that followed in the 8th century BCE support the huge defensive structures mentioned in the Bible, where the walls of the main gate were so thick that they could be used for towers flanking the gates.

Excavations have identified that the MBA ramparts were built with stone, occupational debris and travertine. An inner stone core wall averaging 6m was sloped with earthworks consisting of *terra rossa*, virgin soil and debris from earlier periods against the core walls. The slopes were compacted, and revetment walls of stone were built to secure the sloping ramparts. This was then covered with travertine to withstand erosion and to make the walls difficult to ascend by enemy forces.

The Dan rampart definition has been split by scholars such as Biran and Finkelstein who deem the mudbrick walls atop the ramparts to be part of the rampart construction, whereas Burke sees this as a fortification wall atop the ramparts which would include the defence towers and city gates. The divergent views have impacted on the size of the ramparts as well as the volume of the ramparts which impacts on

the resources and time taken to build them. Additionally, the base measurements used by Biran and Finkelstein may not have been mathematically sound as the circumference midpoint should have been used to determine the volumes. Considering the revised volumes of the ramparts excluding the mudbrick fortification walls, the estimated volume of the ramparts in my opinion is 486 771m³.

The human resources for the building of the ramparts have had estimates as high as 1.8 million man hours as determined by Finkelstein. Burke, combining the ramparts and fortification walls, estimated the total man hours at 132 085. Based on revised volumes for the ramparts and the mudbrick walls including the supporting fortifications, the man days estimated for the completion of the MBA fortification is estimated at 233 412.

The taxation and the distribution of grain, oils and wine was a means of collection of goods for redistribution to the administration, priests and military. In Dan this was more evident in the IA, but the same principle was adopted in the BA. Services in kind could also have been paid in lieu of taxation in the construction of ramparts, fortifications, public buildings and the military; alternatively, where the nature of such services was not possible, silver was the means of paying one's taxes.

Where *corvée* labour was used this could have possibly been one month of the year or a period equal to a tenth as associated with tithes. In my opinion the paying of twenty percent to Pharaoh following the harvest could also indicate that non-farming traders may have had to offer their services for more than one month to moderate the tax collection, probably for as many as three months.

The period required to build the Tel Dan MBA ramparts and fortifications varied between 1 year and 10 years depending on the labour source. The lower figures were based on dedicated military staff whereas the higher figures were associated with hired or *corvée* labour which would be 1 month of the year. A revised estimate with a mix of military, hired and *corvée* labour based on recalculated figures interpreted from primary excavations determined the estimate to be three years for completion of the ramparts. Furthermore, this would be the most appropriate manner as the tax burden on a population of only 2 775 inhabitants and an able workforce of 555 would make it impossible for families to feed themselves and contribute to a tax to service the rampart build, administration, priests and military.

In concluding Dan should not be viewed in the BA and the IA only as a city with huge ramparts and city gates, or as merely a propaganda statement, or in competition with its greater neighbours Hazor and

Megiddo but should rather be seen in the context of social, economic and political developments throughout the ancient Near East. The need for cities to protect their citizens and the threat of weapons of mass destruction emerging from far off powers from all directions could probably justify the investment in labour and materials in erecting monumental fortification structures.

CHAPTER FOUR

UNCOVERING THE DISCOVERIES ALONG THE CITY FORTIFICATIONS

'You know the famous dilemma—an archaeologist always tries to find something unique and then he complains bitterly because he cannot compare it to anything else.' Avraham Biran 1987

4.1   INTRODUCTION

Cities of the ancient Near East during the BA and IA would often have evidence through archaeological excavations of the economic, political, social, cultural and military activities over time. This dissertation, addressing the study of ramparts in Tel Dan, focuses on the findings along the rampart walls, monumental structures and gates which may relate to military activities. This will include cultic activities, bamoth, tombs, epigraphy and other objects or structures that may be linked to military activities and their associated logistics. A discourse will be investigated within the proximity of Tel Dan in understanding trade and knowledge from the Far East through dental DNA to discover if military strategy could have been imported by enemies from the East to counter the defences in Northern Israel and particularly Tel Dan which will be addressed in Chapter Six.

Many of the research questions overlap through the chapters as they are investigated from a different angle. By addressing the findings through the different strata between the BA and the IA, I hope to uncover the changing purpose of the ramparts and fortifications and how they have morphed for the inhabitants and the rulers of the city and Northern Israel particularly within greater Palestine. It would therefore require a focus on the cultic activities, the dating and other findings to interpret the political, economic, social and technological experiences at Dan together with other biblical and extra-biblical resources. This methodology will determine how long the fortifications functioned and whether villages existed outside of the rampart walls or whether the whole community was accommodated. Findings along the city ramparts will also identify if the nature of the walls and ramparts at Dan supports the evidence in Chapters Two and Three that many of the monumental structures at Dan acted as fortifications in the BA and IA.

Chapter Five will investigate several of the remaining research questions where the evidence will address how the ramparts fulfilled the purpose of protection during wars, controlling the water source and emulation between Israel and Aram Damascus. Chapter Six will address strategy and theories of penetration and defence in determining how ramparts and their fortifications in hypothetical situations

could defend the city and its people against the enemy and their war engines. Did the ramparts serve their purposes or were they a fruitless and wasteful expenditure?

4.2   BIRAN'S BRONZE AGE STRATA

4.2.1   Tel Dan stratification

Biran observed 16 different strata for Tel Dan based on ceramic dating beginning at Stratum XVI, the Neolithic period through to the 7th century IA period, Stratum I (Ben-Dov 2011:8). Ten of the strata represent the BA and six are related to the IA (Scheepers & Scheffler 2015:23-24). The IA strata are discussed separately in section 4.4.2. Discoveries that have been questioned including their related events, due to high or low chronologies, will be discussed in brief if the interpretation impacts the military campaigns and occupancy of Dan through the BA and IA. Otherwise the absolute chronologies based on Biran's strata will be adopted for purposes of this study.

4.2.2   Early Bronze Age and the period of rampart development

Strata XV to XIII were identified during this period by Biran as EBA II and III dated as $2700 - 2400$ BCE as no record of habitation of the site for 1000 years before 2700 BCE could be traced (in Greenberg 1996:96ff). In Strata XV and XIV, remains were found under the MBA ramparts and outside of them indicating that Dan was at that time larger than what the city within the ramparts reflects. Stratum XIII's scattered remains indicated that the city was in decline (Biran 1994:33-45). One of the research questions raised is whether people lived outside of the city ramparts? Although remains were found outside of the MBA ramparts the people were not necessarily living outside of the city during Stratum XV and XIV as the city was much bigger during the EBA and it had the shape of a crater covering 18 hectares (Scheepers & Scheffler 2015:19).

4.2.3   Middle Bronze Age and the period of mature and late ramparts

Strata XII – IX is the MBA IIA through to MBA IIC period spanning 2000 BCE to 1550 BCE (in Scheepers & Scheffler 2015:23f). EBA fortifications were reused for MBA houses, and existing EBA ramparts in the west were improved in line with the new ramparts (Ilan 1996:163-164). Stratum XI is the period in which the MBA ramparts as well as the mudbrick arched Canaanite gate, addressed in Chapter Three, were

built.

4.2.4   Late Bronze Age and the period of post–rampart build

Strata XIII – VII B is the LBA I to LBA II B period spanning 1550 BCE to 1200 BCE (in Scheepers & Scheffler 2015:23f). The LBA findings indicate that this period was contained within the MBA ramparts (Ben-Dov 2002:35, 222). This implies that the city growth and expansion forced people to build at the foot of the rampart and into the rampart walls and fortifications. No further rampart building took place. The early part of the LBA showed growth and prosperity but degenerated during the transitional phase (Biran 1994:120).

4.3   CULTIC ACTIVITY THEORIES

4.3.1   Middle Bronze Age Dan

Many cultic activity events have been recorded and noted from biblical and extra-biblical sources for Dan, playing a pivotal role in both the BA and the IA. This study focuses on the activities and theories that occurred along the ramparts and gates of the city as well as activities or rituals associated with war, protection, and fortification of the city.

The cache found in 1972 in Area Y by Biran has had several interpretations. The interpretation from the works of Ilan (1992) is of relevance. This cache was set into the battered stone at the foot of the rampart's earthen embankment. Ilan believes this cache with the presence of seven weapons was a ritual to further empower the fortification with strength or an offering to the deity of war for protection of the city indicated by the female, dagger-shaped figurine. The positioning of this cache based on the construction of the ramparts may merely have been discarded debris from the EBA or the pre-fortification MB period which would therefore not have been military related (Burke 2008:251).

It is also unlikely that the cache found in Area Y was from a decimated tomb deposit as the lack of skeleton bones or burial structures could not be found in proximity. Smelting tools or any ash also indicates that metallurgical activities could not have taken place as complete figurines rather than metal pieces were found. Ilan noted that because there were not several figurines of the same kind, it is unlikely that it was a merchant's hoard (1992:247).

Ilan reached the conclusion that the cache found in Area Y as uncovered by Biran related to cultic activities as the same figurines, tools etcetera was found, clustered in small, secluded areas with only the quantities differing. He concluded that this correlated with other sites in terms of the same general cultic or social purposes reported by Philip (1988:191). According to Bradley (1985:31) and Philip (1988:202-203) metal at the time was for the elite and was controlled and regulated. This would therefore have indicated that the cultic activity of offering the figurines to the deity was a gift of sorts associated with the reciprocation of gifts given by the deity such as rain, healthy birth, or a victory. The water source for the Jordan and the natural springs narrows this down to possibly military related (Levy 1982:20). The sheet-metal figurine found in the cache according to Ilan may be the key link as it may be one of the Western Semitic goddesses which was linked to fertility and warfare (Wyatt 1984). In my opinion this cache, having weapons together with the goddess, points towards an association of warfare, more so as the ramparts may still have been in the construction process. Miron (1985:109-111) and Philip (1988:195) also examined the cache as additional symbolic aspects embodied in weapon deposits. This argument is discussed further in paragraph 4.5.1.5.

4.3.2   Iron Age Dan

4.3.2.1   Bamot

After the split of the United Kingdom, Jeroboam became the first King of the North. In 1 Kings 11-12, where, for fear of losing his people to the rule of the Davidic dynasty and still wanting to make sacrifices at the Jerusalem Temple, he set up two shrines, one in the north at Dan and the other in the south at Bethel. Biran believes that the Area T of the high place is the royal shrine where the calf once stood (1982:38). This area, consisting of a large platform about 18m x 7m wide and made up of large blocks of stone, was known as a *bamah* or high place as mentioned in Leviticus 26:30. Although the site is near one of the sources of the Jordan river it was probably chosen by Jeroboam because it was elevated, and archaeological evidence shows that the site had been used for previous cult activities (Biran 1974:43).

Several archaeological structures, such as the stone layout of headers and stretchers as well as the possibility of cedar beams inserted between the rows of stones, including the long rooms, indicated that the building was intended to blueprint sacred portions of the Jerusalem Temple (Ezra 8:29) thereby keeping the people from migrating to Jerusalem to offer sacrifices (Greer 2013:43). The complex identified from Stratum IVA occupied an area of 60m x 40m and gained additions during Stratum III.

Crushed travertine, 20cm thick, known as the yellow floor, covered the base of the platform and rooms. The platform was raised with new outer walls three metres high and a centralized reconstructed altar of 8m x 7m. Stratum II introduced steps leading up to the platform structure from the south. Only the western area showed evidence of conflagration, which was likely to have taken place during the Assyrian assault (Biran 1994:168, 181-189, 204). This cultic site was bigger than any other found in cities such as Megiddo, Arad and Lachish which were much larger cities than Dan (Greer 2013:14).
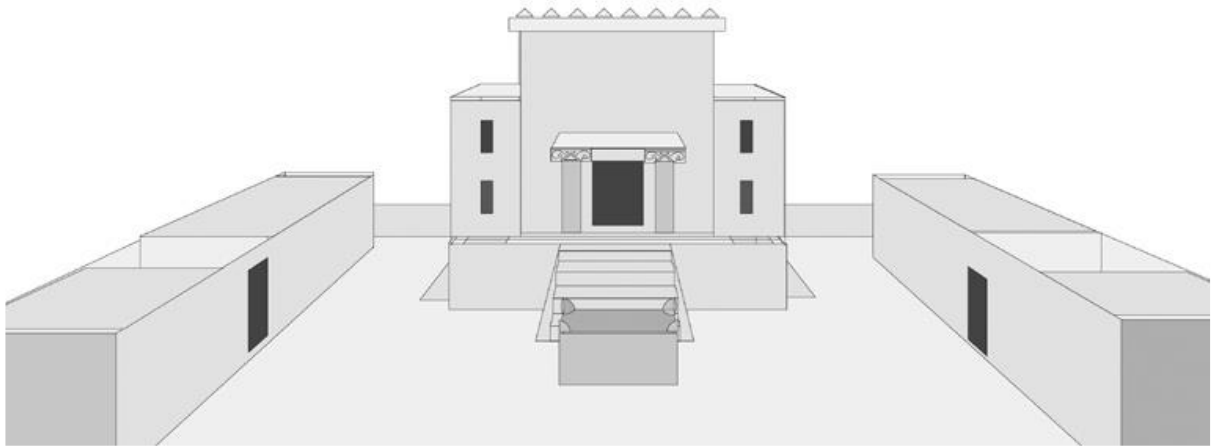
Figure 4.1: A composite structure of the bamah during Strata IV, III and II (Greer 2013)

The soundings made on the west and north face of this platform assessed them to have been built on the inner slope of the MBA rampart (Ilan 1996:165). A layer of ash which was discovered while executing the soundings on the western side of the platform dated to the MBA II A at 3m below the surface (Biran 1996:45-46). Further digging would be required to determine if this possibly related to a military campaign. Many other questions have been raised as to what lies beneath the platform but high-water tables and preservation of the *bamah* are issues that will first have to be addressed before this can be discovered. At this stage Ilan believes that an MBA temple existed beneath the IA II platform as basalt boulders have been identified at its foundation which relates to the Migdal temples in Hazor, Megiddo and Shechem (Ilan 2018; 1999:60). The figurines found in the area date to MBA and LBA, taking the shape of Egyptian-style goddesses which could indicate that the area was public or religious (Packman & Daliah 2003). Could this not have been an area in the MBA which represented a military ritual gathering to mentally condition the soldiers for battle whilst under Egyptian rule?

4.3.2.2   The Israelite gate complexes

The Israelite gate has also identified shrines/cultic activities. Between the outer and inner gate, a raised

platform represented the shape of a throne, which had a covered shade, as four socket bases were found at the four corners of the raised platform. Because of the basalt monolith alongside, it could have possibly been a standing stone symbolizing deity according to Biran (1974:45-47). On the paved square between the gates, five standing stones were found abutting the city wall with a bench/table in front of them. On the west end of the row of stones was a much larger stone; these were thought to be sacred pillars as nearby were found several votive vessels such as oil lamps and incense bowls as well as the bones of sacrificed animals. The raised platform, standing stones and votive vessels were all part of the same shrine located in the plaza between the gates (Biran 1996:56f). This archaeological finding could possibly be linked to 2 Kings 23:8 where King Josiah condemned all shrines outside Jerusalem and ordered the destruction of the 'high places of the gates'.

Figure 4.2: Photograph of the Israelite gate (Donald Scott 2019)

Outside of the outer gate along the city wall, westwards about 38m, another set of five standing stones was discovered, at the foot of the city wall set on a solid foundation of flat stones. (Biran 1998:4). Another set of five standing stones was found at the crest of the site following the paved path leading from the main city gate to the upper gate. This shrine was like the one in the plaza between the inner and outer

city gates with a raised platform and next to it a 4.5m by 2.5m structure with a limestone ashlar block broken in two inside of it. The stone with a carved rectangular depression and a groove running from the depression to edge of the stone was probably used in a libation ceremony. Unlike the plaza shrine, the standing stones were on the east of the upper gate on the opposite side rather than next to the raised platform. This had four stones standing and one fallen, again a reference to a high place of the gate (Biran 1998:4).

The shrines discussed above were consecrated in the middle of the 8th century BCE, following the attack by the Assyrians on Israel and the attack on the city defences by Tiglath-pileser III where the gate and the city wall rather than the city itself were destroyed (Biran 1998:9). The city's wealth grew and peaked in the 7th century BCE where a new shrine was built on the ruins of the city wall. It was situated 18m from the threshold of the outer city gate and 3m south of the wall. Three, possibly four, standing stones were identified at the shrine: the largest stone had a basalt bowl full of ashes on a carved stone, two small juglets and three broken oil lamps. These were probably cult related (Biran 1998:6).

Although this dissertation is focused on the ramparts, a possible shrine was also identified just outside the city walls about 24m away; however, it is possible that this could have been a guard room, bazaar or a waiting area for people wanting to enter the city – what we would today call a security checkpoint. This shrine related to the same period as the others found around the Israelite gate prior to it being destroyed by the Assyrians.

Shrines have been found all over the city of Dan with a focus on those around the city gates and walls, and all of them had standing stones. A large royal shrine near the source of the Jordan River within the city of Dan has created much confusion, and although its cultic practice continued well into the IA, it lacked standing stones which was unlike all the other shrines. Perhaps it is too early to make this conclusion as the area around the shrine once excavated may still uncover many more surprises as well as standing stones. I believe that, as this was recorded as the royal shrine, it more than likely played a bigger and greater role than the other shrines. Palestine being a desert land overall, water was probably a life gift to all who had access to it or possession of it. As the shrine was at one of the sources of the Jordan river, this on its own would possibly have been a symbol or gift from the deity, and therefore standing stones would have downplayed the importance of the water source and it could possibly have been decreed that no other symbols should be present.

4.4 CULT, INSCRIPTION DISCOVERIES: OPENING A POLITICAL OWNERSHIP DEBATE

4.4.1 Dating Events

In the late IA IIA Dan was left as a barren ghost city (Finkelstein 2013:66; Arie 2008). During the occupied periods of the IA, it becomes a challenge to determine if Dan was part of Israel or ruled by the Tirzah Polity as 1 Kings 12:29 references Jeroboam I as the founder of the cultic place at Dan and 1 Kings 15:20 mentions Ben-Hadad king of Damascus as having conquered Dan (Finkelstein 2013:74).

Arie has downplayed the Jeroboam I cult at Dan tradition based on renewed pottery dating evidence (2008). He claims that Dan was destroyed at late IA I, deserted till IA IIA, the time of Jeroboam I, and became Israelite around 800 BCE (Arie 2008). This would mean that the *bamah* was linked to Jeroboam II (Finkelstein 2013:75). Chapter Five will address the wars and battles associated with Dan, revisiting the dating, timing and the kings that were involved especially in the IA, with a focus on biblical scripts contrasted with extra-biblical sources.

New theories are emerging where the traditional understanding of Dan throughout the IA as an Israelite city is being questioned. Arie suggests that King Hazael of Aram Damascus rebuilt Dan in the second half of the ninth century (2008). Although in the Elijah-Elisha cycle in 1 Kings 16:21 to 2 Kings 13, we read of the Omride dynasty in the northern kingdom as far north as Megiddo, no mention of the Israelites in Hazor and Dan is made, and all clashes between the Aram Damascus and Israel were south of the sea of Galilee (Kempinski 2002:375-378, 397-399).

In the *Dan inscription* in line 3-4, Hazael states that the king of Israel entered previously in my father's land, implying that Dan belonged to Damascus, was annexed, and is now reclaimed (Finkelstein 2013:106). This seems difficult to comprehend as in this period Damascus and Israel had combined their forces against Assyria. Although Omride architecture was visible in Hazor, this was not the case in Dan which was more Aramaean as found near the gate (Finkelstein 2013:106; Sharon et al 2007) which includes the basalt column bases and the *Dan Stela* (Biran 1994).

4.4.2 IA carbon dating

Arie (2008), Finkelstein (1999) and others in the new millennium have begun questioning events at Dan

as well as the construction of gates, *bamoth* and other monumental structures, which impact on the kings who may have been responsible for the building and those who may have destroyed it. Ilan, together with Bruins, Van der Plicht and Werker (2005:323-334) had taken samples from Biran's excavation Areas A, B, T and Y to determine the accuracy of the dating, through more sophisticated technology, which was available, spanning the 40 years of excavations. Area K had no samples as it was the area of the MBA mudbrick gate and disturbances on top of the gate would be too risky because of the gate's exposure to the elements.

The Stratum V was dense settlement that was destroyed by fire through the site as the destruction layer was excavated and found throughout Dan (Biran 1994). The pottery was similar in Stratum V and VI (Bruins et al 2005:329). Sherds of bichrome Philistine ware occurred in all the IA I levels (Ilan 1999:93ff). The table below refers to Biran's dating the strata at Tel Dan (1994:11), compared with Ilan (1999:137), Finkelstein (1999:61-67) and Bruins et al (2005:329) who had used more sophisticated carbon dating. The samples covered all areas except for Area K. The sample included sherds, wood and short-lived material such as olive pits (Bruins et al 2005:323-328).

Comparison of dating of stratums at Dan						
Stratum/ Period	VIIA/ LB II	VI/ IA I	V/ IA I	IVB/ IA I and II	IVA/ IA II	Assessed
Biran	1300 - 1200 BCE	1200 - 1150 BCE	1150 - 1050 BCE	**1050 - 950 BCE**	950 - 875 BCE	1994
Ilan	1300 - 1200 BCE	1200 - 1150 BCE	1150 - 1050 BCE	**1050 - 950 BCE**	950 - 850 BCE	1999
Finkelstein			1000 - 900 BCE		900 - 835 BCE	1999
Bruins et al			1256 - 1045 BCE		1046 - 906 BCE	2005

Table 4.1: Scholar comparison of Dan strata (Created by Donald Scott 2021)

The stratigraphy compares the results from the 2005 testing through radiocarbon methods with the pottery dating through conventional methods used by Biran and Ilan together and the low chronology used by Finkelstein in 1999. The carbon dating aligns more with the conventional dating. Reading from the table, the mean based on the range of probabilities for radiocarbon testing leans more to a slightly higher chronology than that identified by Biran and Ilan. It is important to have confirmed the dating of the findings as a low chronology outcome will differ from a high chronology when addressing the military campaigns impacting Dan, such as the deserted periods, and who the gods, kings and enemies were at a given period. The dating adds value where the biblical text and extra-biblical text are not aligned.

4.5   OTHER DISCOVERIES

4.5.1   Weapons

4.5.1.1   Mace

According to Gibson (1964:8-13) the mace was replaced by the axe as the main weapon for face-to-face combat and the mace continued as a ceremonial weapon. The findings in Area K at Dan challenge this as in the period 1500 BCE the casting head of a mace was found and it was argued that the mace was not a once-off but was produced in large quantities (Minoff 1992). This was unlikely to have been a ceremonial mace-head mould as it was plain and simple unlike that found in Ebla (Matthiae 1980:Fig 6). This would therefore have been used for mass production for military purposes, possibly more as a security force within the city and for guarding the gates to manage and control civilian access. It is unlikely that the mace would have been used as a fortification defence in Dan beyond the time of the building of the MBA ramparts.

4.5.1.2   Daggers

Daggers were found in Dan in Area Y where Biran's team uncovered an assumed hoard or cache. This was identified as a flat-bladed rather than the veined type (Gerstenblith 1983:93-94). The daggers had the highest percentage of tin in relation to the spears and axes as the outer edges were required to be thin, sharp and hardened in order to perform their function in personal combat (Shalev 2009:77).

4.5.1.3   Spears

Only the remains of spearheads were identified, having a shaft, hollowed out possibly for a wooden stick with a narrow midrib and tapering form (Gerstenblith 1983:91-92). The socketed spearhead, unlike the daggers and axes, lacked lead and had a low amount of tin but the arsenic copper content tended to be higher than the axe or dagger (Shalev 2009:77).

4.5.1.4   Axes

A shafted duckbill axe was found all over the north of Palestine (Miron 1985:93-112; 1992:58-71) and as far as Mari in the east, but only found in tombs in the case in Dan. The axe consisted of copper with tin added to harden the axe and lead to make it more pliable due to its thickness, allowing for a reliable

effective weapon (Shalev 2002:311).

Two other types of axes were also found, the hafted flat axe and adzes; it was difficult to distinguish, because of the degree of erosion, if they were possibly the same type (Ilan 1992:242). Their content differed from the duckbill axe having little or no tin and lead. This could indicate that they were possibly older than the duckbill type (Shalev 2009:73)

4.5.1.5   Interpretation of weapons

The type of weaponry found in the tombs requires an analysis especially as the weapons found to date have not identified any slingshot or arrowheads. This is because a distinction should be made between personal combat and actual warfare (Philip 1989:145f). The weapons found in the tombs are those of men who possibly had military rank or status and not the common soldier who would have been equipped with bows or slings or part of a more huge or non-personal engine of war. Philip explains this as arrows and bolts were the weapons of soldiers, who were low level individual conscripts who were used for construction and agricultural work (Philip 1989:150). Daggers, axes and spears were the warrior's status symbols, weapons of personal combat, associated with a traditional heroic society. The ranking of the individuals in the tomb could even be identified by the ranking as the axe was at the top, being a higher ranking, followed by the dagger and then the spear (Ilan 1995a:312).

In my opinion ritualistic practices as well the burning of cities may explain the reason for so few weapons having been found in the destruction layers despite centuries of occupation. The metal content combined with wood would have been destroyed by the fire, and the lead and copper easily melted from the extreme heat. The likelihood of metals being collected and recycled cannot be ruled out, despite little research in this area. Bolts or slingshot may be found eventually in unexcavated areas of Tel Dan, but the likelihood is that these too could have eroded over time and be mistaken for just another stone especially due to the pressure of destruction layers caused by fires. The personal combat weapons, as the evidence shows, have been found in tombs and burial sites indicating the numbers could be more significant as the possibility of tomb raiders should not be underestimated.

4.5.2   Benches at city gates

The benches identified at Dan were dated to the IA; outside of the main gate a bench, the length of 5m,

was built against the wall on the east, consisting of groomed stone and limestone masonry (Biran 1981:24).

Many views have been expressed as to the purposes and use of the benches at the city gates. The benches were generally 0.3m in height and could have been used for judicial purposes and legal matters (Jang 2006:210); in my opinion should it have been over 0.5m in height it would have been more associated with ritual or tax collection and not for sitting. The only evidence of legal and judicial usage would be through biblical references and possibly epigraphy through potsherds and ostraca (Sasson 1978:60). Amos 5:7-15 refers to the city gate as a court, as well as in Ruth 4:1-2 (Anderson & Freedman 1989:499), where Boaz called for a legal quorum. In Job 29:7 he occupies a seat in the council in the city gate complex.

It would be a challenge to determine through archaeological means the use of benches in cultic activities unless the cultic artefacts are *in situ* to support such a possibility, and secondly, the bench seating platform is higher than a sitting position (Blomquist 1999:57).

4.5.3   Podiums

At the city gate main entrance, a rectangular raised platform was uncovered *in situ* against the wall with a width of 1.2m and length of 2.2m, built with limestone ashlars (Biran 1981:143). At each corner of the podium was a decorated stone base, two of which were still found *in situ* and which had holes in which poles were inserted to possibly support a canopy on which was mounted a seating structure, possibly a throne (Biran 1981:41f).

A niche with a raised plastered floor measuring 5m x 2.5m was uncovered at the upper gate complex. In its centre was a limestone ashlar 30cm breadth x 82cm width x 98cm length, and half the length formed a face with the other half the base (Biran 1994:26).

The steps of possibly a similar structure to that of the podium found at the main gate was also discovered at the upper gate which leads into the city (Biran 1984:19).

The platform at the main gate was for the king or judge who sat at the city gate (Biran 1994:329) to rule on local or national matters (2 Sam 19:8-9). The canopy would cover the king when present and the podium would be the raised platform on which the throne would stand when a meeting was in session

(Blomquist 1999:63). The bench alongside the platform was the support for the king's business with the outer gate as protection which was supported by guards (Biran 1994:239).

4.5.4 Metallurgical remains

Metallurgy activity was evidenced in Area B during Stratum V next to the BA ramparts (Biran 1994:147-157). Many ring or half-moon, partly sunk furnaces with stone and baked clay were found in a poor state, with the lower part well preserved. This could have been due to the recycling of the last metal remains. Metallurgy activity was large scale with blowpipes pushing the heat up to 1000 degrees (Ilan 2019a:27). Most of the rooms and courtyards in this area evidenced that these were the metal workshops based on the vast find of metallurgical tools such as crucibles, bellow pots, blowpipe nozzles and slag fragments in almost all rooms. Cuboid pounders, pestles, grinders, pithoi possibly containing water for cooling the weapon-making process and weapon fragments were also found around the surfaces and workshops (Ilan 2019a:43). During Stratum IVB the western part of Area B became more prominent for metal making possibly indicating that this was an industrial zone for weapon production (Ilan 2019a:52).

4.5.5 Epigraphy

The epigraphy at Dan has been predominantly from the IA, but only the epigraphy related to socio-economic or political matters that could possibly be associated with power, military or war will be addressed.

4.5.5.1 The god at Dan

During the 1976 season dig in Area T, an inscribed limestone votive plaque was discovered written in Greek and Aramaic from the 2nd century BCE with some reconstruction text, which, translated into English reads: '*To the god, the god who exists at Dan Zoilus gives this votive tablet the vow of Zilas to the god of Dan*' (Schoville 1977:174). Although the finding is out of the scope of study, this is important as it confirms the site to be the ancient city of Dan.

4.5.5.2 The Dan inscription

Possibly Biran's team's most famous find what is now known as the *Dan inscription* from the 9th century

BCE that refers both to the '*House of David*' and to the '*King of Israel*' (Biran & Naveh 1993:98). This finding in 1993 was soon followed up with two additional pieces found in June 1994. These were found in Area B at the Israelite fortifications east of the square where the outer and outer outer gate are situated. Like the first fragment, the second was found in debris unearthed 0.8m above the pavement where the first fragment was found. A third fragment was found 8m north of the second fragment: its use was secondary as a flat stone for the pavement (Biran & Naveh 1995:5).

The second and third fragment letters were clearly separated by dots. Both were covered by debris from the Assyrian destruction, which confirms that they could not have been set in place later than the conquest of Tiglath-Pileser III as pottery found in the area dated the fragments to the beginning of the 8th century BCE. The builders who used the fragments were probably unaware that they came from a stele erected by an Aramaean king (Biran & Naveh 1995:8). Jehoash may have been the king who destroyed the stele, which was possibly erected by Hazael; this will be debated further in Chapter Five.

The two later joined-together pieces had inscriptions which changed the course of some of the opinions which emerged from the first fragment, including Biran's opinion (1995:9). Could the first fragment fit, and is it part of the two joined pieces? This problem was handed over to the restorers Cohen, Weiner and Yekutieli (Biran & Naveh 1995:12), who concluded that the joined fragment at the left upper edge and the earlier found fragment's lower right edge fitted along a straight line with missing letters in between. None of the lines, however, were complete even though they were aligned, when the text was reconstructed by Yardeni (Biran & Naveh 1995:10).
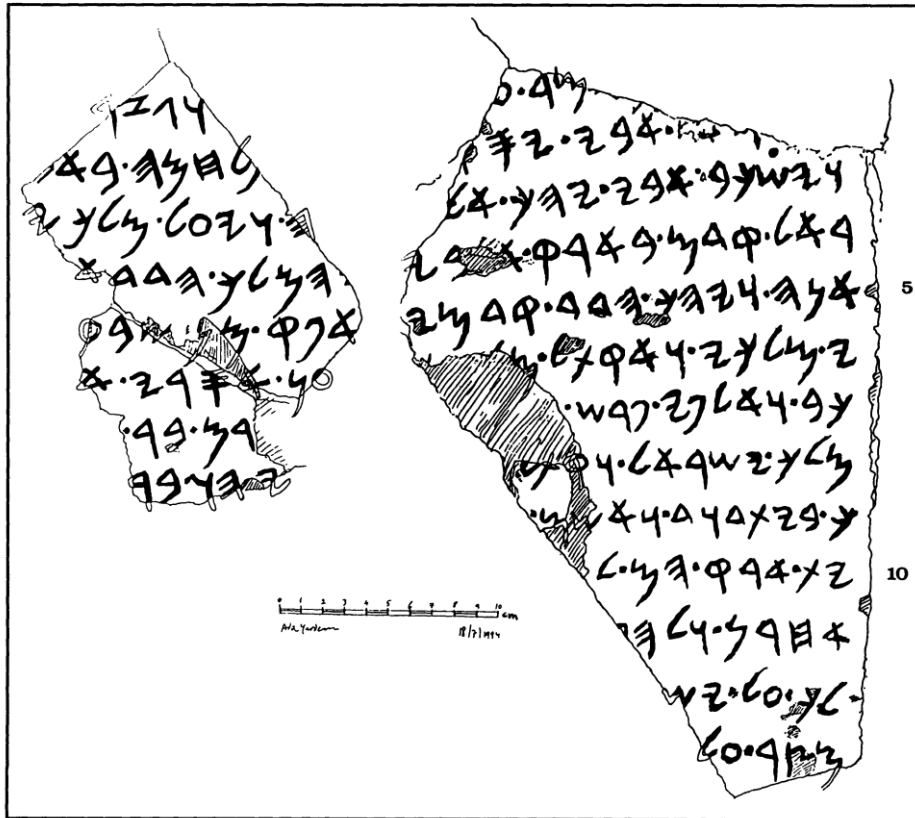
Figure 4.3: Representation of the 3 fragments of the *Dan inscription* (Biran and Nevah 1995)

Translation

1. [...   ...] and cut [...   ]
2. [...] my father went up [against him when] he fought at [...]
3. And my father lay down, he went to his [ancestors] (*viz.* became sick and died). And the king of I[s-]
4. rael entered previously in my father's land. [And] Hadad made me king.
5. And Hadad went in front of me, [and] I departed from [the] seven [...-]
6. s of my kingdom, and I slew [seve]nty kin[gs], who harnessed thou[sands of cha-]
7. riots and thousands of horsemen (or: horses). [I killed Jeho]ram son of [Ahab]
8. king of Israel, and [I] killed [Ahaz]iahu son of [Jehoram kin-]
9. g of the House of David. And I set [their towns into ruins and turned]
10. their land into [desolation ...   ]
11. other [...   and Jehu ru-]
12. led over Is[rael ...   and I laid]
13. siege upon [...   ]

Figure 4.4: Translation of *Dan Inscription* (Biran and Naveh 1995)

As the fragments remain part of a whole, until more fragments have been excavated questions will remain concerning its date, complete meaning and reasons for its erection.

Lemaire set out in 1994 to prove that the *Mesha stele* also referred to the '*House of David*' by working with the tablet which had been destroyed in the ninth century BCE and the squeeze that was made before it was destroyed. Lemaire's success was challenged in 2019 by Finkelstein, Romer and Na'ahman (2019:3), leaving Dan the only city that has archaeologically identified the existence of David outside of the Bible.

4.5.5.3   The upper gate

At the upper gate in Area B, a handle of a jar was found. It had the name *zkryw* stamped on it which could have been a name of a person possibly Zecheriah from the 8th century BCE (Biran 1989:4). The name split into a verb *zkr* and *yw* bearing the name of God (Biran 1994:255) found in 1988. In 1986 another seal was found on a stamped jar handle also referring to the god *Yahweh* (Biran 1994:201). Another two potsherds had been found twenty years earlier, one not in the same area but rather in the northern part of the mound referred to as *Baalpelet*, (Biran 1994:262). All three potsherds from around the same period are indicative of Yahweh and Baal both being worshipped at Dan.

A seal with its rider and two passengers from the 8th century BCE was also found in the upper gate with a depth and diameter of 2cm (Biran 1980).

4.6   MORTUARY PRACTICES

4.6.1   Understanding mortuary site locations

The identification of mortuary sites at Tel Dan has shown to date to have four locations in Area A, ten locations in Area B and six locations in Area Y (Ilan 1995b:120). The lack of sites in Area T is possibly due to it being a cultic site in the IA and, still unconfirmed, the MBA, possibly where only rituals to support burials took place (Ilan 1995b:121). With the building of the MBA ramparts, the shortage of space created the need to make use of the interior slopes of the ramparts for tombs and burial places (Bunimovitz 1992). Area B had the highest concentration of development on the rampart's inner slopes, except for Area T where the inner interior walls were leveled to allow for the cultic complex in the IA period. Over and above the increased population, as a contingency for a possible siege, space was required

so that farming could take place in the city on the level grounds near the water sources. Possible winter flooding could also be the reason for burials taking place on the slopes (Ilan 1995b:120).

The MB stages of burial samples are of significance as MB I was found under the earthen embankments, MB II was found at the foot of the slope of the ramparts whist the MB III the burials penetrated the rampart walls up the slopes of the rampart. In my opinion this may have been a possible strategy for the penetration of sappers based on intelligence gathered by spying, in which the sappers could enter the city. This will be discussed in Chapter Six. However, a larger sample would have to be excavated to test this hypothesis. The soundings have been deep probes which lacked the identification of the size of floor space identifying how high and deep the chamber tombs were. Some have indicated as many as eight skeletons in the chamber tombs, but findings have revealed cist tombs, shafts and jar burials. Interment was generally in courtyards or under the floors in dwellings (Ilan 1995b:121). In my opinion the importance of this in assisting the research is that penetration of the earthen walls from the outside may have been possible without collapsing, as the tombs dug in the inner rampart walls remained secure.

4.6.2   The Mycenaean tomb

An LBA II period tomb was discovered built into the inner earthen rampart. The tomb was 2.4m x 2.2m with a height of 2.4m (Biran 1974:34). The floor was paved with flat stone slabs, and the walls were built at an incline of 32 degrees with basalt stones. Forty-five skeletons were found in the tomb among many other items and burial gifts. Items relevant to the scope of study, namely bronze swords and arrowheads, were found in the tomb as well as precious metals such as gold and silver jewelry (Biran 1974:34). Biran, 20 years later, revised the skeletons to a total of forty, not Canaanite, but their foreign origin remains a mystery (1994:114).

4.6.3   Mortuary evidence for siege warfare

Tel Dan to date has not uncovered any physical, archaeological, primary evidence of human bodies to indicate that siege warfare had taken place. This would make sense considering the span of time from the BA periods to date. Due to the influence of Egyptian penetration in Palestine during this period, it is possible, based on sources from Egypt and the north Levant, that siege warfare took place during this period across the Levant.

In Egypt during the MBA, Winlock noted that fifty-nine mummified soldiers found in a communal tomb had sustained mortar wounds from arrows with ebony heads, with the point of entry having been fired from above and at close range, indicating that it was high up fitting that of a siege attack. Fourteen had skull wounds indicating that they could have been caused by a club or mace and that the arrows did not necessarily kill them in the first instance. Some of the wounds, however, were blunt which could have been caused by stones or overhead objects. The different angles on the head may have been from hurling stones or slings. Missing flesh on these soldiers indicates that they were initially left at the outside fortification walls where they were pecked at by carrion birds, as speculated by Winlock, before they were removed (1945:9-14).

The physical evidence of wounds, on what part of the body they were wounded, the angle of the wound or blow, and the depth of the wound, are all indicators of whether the soldiers died from face-to-face combat, field battle or siege warfare.

Jarry (1939) also reported at LBA Ugarit where a young soldier was killed by an arrow fired at close range from a composite bow. The arrow which was lodged in his chest indicated that it was from high up and within a range of 50m. Although the above is mortuary evidence, the *Mari texts* and *Egyptian reliefs* of BA periods indicate that siege warfare did exist at the time.

It is also possible to conclude that the fortifications were not just a means of access or control of the citizens of the city but played a role in the protection and defence of the city and its people.

Other means of identifying siege warfare during the IA at Dan through other archaeological means have been addressed in this study as no burial remains have been directly evidenced to substantiate siege warfare during IA.

4.7 FINDINGS OUTSIDE THE RAMPARTS WALLS

4.7.1 Bronze Age Period

During the MBA and the LBA no archaeological evidence has so far been discovered to give an indication of a settlement outside of the rampart walls (Biran 1974:34). The people chose to live within the ramparts according to Biran as it would be a guarantee of their safety, and the walls with their high gradients and

travertine lining and massive widths and heights would make it difficult to penetrate or break through (Biran 1974:34). Even the five Danite spies reported that the people who lived there felt content and secure as mentioned in Judges 18:7.

4.7.2   An absence of evidence

The focus in this section is to determine if the people living in the city during the IA were the only population or if there were people unlike the EBA who lived outside of the city ramparts.
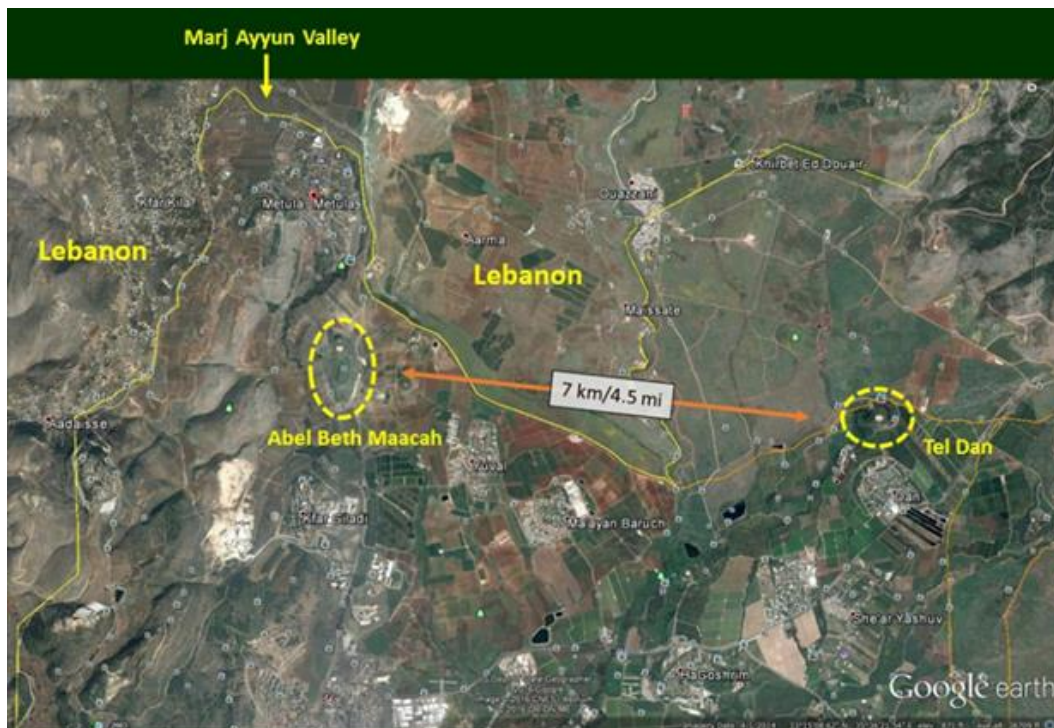
Figure 4.5: Location of Dan to Abel Beth Maacah (https://www.asor.org/anetoday/2019/01/Northern-Exposure-Tel-Abel-Beth-Maacah)

At this stage the only findings are a distant 7km at Abel Beth Macaah where recently found sherds and assembled pottery pieces, the *leBenayau inscription,* shows Galilee not empty in the 10th century BCE (David 2020), also supporting that there was no Aramaean destruction in 830 BCE, but that it was abandoned in the 8th century BCE when Dan prospered following the Assyrian occupation. This indicates that during this warring period, people were living in fortified cities hence no evidence can be found of scattered dwellings close to the Dan ramparts.

4.7.3   Dan in the Bible

The conquest of the Danites, king David's census, as well as the oracles in Amos and Jeremiah and the Ben-Hadad attack on Dan are discussed in short passages in the Bible, not giving clear evidence of habitation outside of the city walls. The battles will be discussed in Chapter Six, but from biblical sources are there any texts that support that people lived outside of the rampart walls of Tel Dan who were part of the city's population?

The conquest of the Danites in the Hebrew Bible makes no mention of people living outside of the city during this period. The Greek Septuagint in Joshua 19:47 speaks of cities and villages, but this refers to the original land allocation. The area they later chose to attack was a city named Lachish (Josh 19:48). In the Hebrew text, no mention is made of villages or surrounding dwellings outside of the rampart walls during the transition to the IA and beyond.

4.8   EVIDENCE OF FAR EAST INFLUENCE

4.8.1   Trade and knowledge

Many sources have emerged of trade between the East and the ancient Near East from the BA and well into the IA. Recent periods of archaeological research and the more scientific technological advances mean that stronger evidence of trade had taken place earlier in the BA (Vandkilde 2016:103-123). The increased importance of metal accelerated the trade (Linduff 2004). However, raw materials, finished products, technologies, practices, and knowledge were also exchanged over massive distances. It is likely that defence weapons as well as military strategies were channeled into the ancient Near East in this manner. The existence of exotic foods from the Far East in Palestine and the time in which they could be traced support the evidence of trade, including knowledge and technologies.

4.8.2   Dental evidence

The identification of staple and exotic foods remains in BA and IA dental calculus found in Megiddo represented imported logistical routes coming from Mari via Dan and Hazor. Direct evidence of sesame, soybean and turmeric using molecular and microscopic techniques enabled the verification of foods found and grown only in south and east Asia to be present in the teeth of bones examined from the tombs found in Megiddo in the MBA (Scott et al 2020:1-10). An iconographic representation of a zebu on a bichrome ceramic vessel from Tel Gerisa around 1600 BCE is also evidence of livestock that was transported over

long distances from Asia (Chen 2010:1-6). This was also supported in Megiddo by genetic evidence of the zebu and inferences from ancient DNA of pigs and cattle (Meiri et al 2017:701) and vanillin residues coming from Asia which were used as mortuary offerings in MBA Canaan (Linares et al 2019:77-84). The protein of the foods was extracted from 14 individuals of which several were identified with exotic/staple foods such as at Tomb 14/K/49 identifying sesame as well as wheat circa 1688-1535 BCE; others from Tomb 100 were soybean and turmeric *circa* 1630-1550 BCE (Scott et al 2020:4).

The confirmation of food produced in the Far East is evidence of the trade activities during the MBA, and the same tests showed evidence during the IA at Tel Erani (Scott et al 2020:6). Based on this information the trading of knowledge would no doubt have flowed from East Asia and South Asia across to the early Babylonians, the Hyksos, and Hittites. Military activity from Egypt, and Cushites from the south, as well as the Myceneans and Sea Peoples from the West, would also have had an influence on city defences in Palestine especially in the IA.

It is difficult to determine when the influence of trade from the Far East begun. From the dental calculus evidence, we know that the trade existed already in the MBA, but when did it start? Having looked at food molecules it is possible just by examining pottery, which has been used for dating, to determine if certain types of pottery were common within various cities in Palestine during the BA and IA. To determine when trade may have become more common and global it is necessary to examine the findings of scholars based on the research done on the pottery of Dan and its closest great city Hazor during the EBA.

The dominant impression created by the review of EBA ceramics from Dan and Hazor showed differences in the ratios of quantities of metallic ware, Khirbet Kerak ware and dribble-painted ware as well as the detailed topology of the common ware, as well as the variety of the many different types of vessels available to the user to do the same function (Philip & Baird 2000:193). The division showing pottery unique to a specific site and no common pottery between the two sites indicated that the sites had their own production processes. More importantly this reflected a disintegration of broad regional unity. Dan and Hazor according to Finkelstein became part of a broad web of rival peer polities (1995). In the Hula valley, of the twenty-three sites made up of villages and towns by EBA III, only three sites remained, two being Dan and Hazor. The rivalry was reflected by huge investments in fortification such as the buttressed fortification line at Dan (Biran 1996: Plans 7, 8). Such investment served as an ideological defence against rival cities (Philip & Baird 2000:194). The outcome of this resulted in increased urbanization, creating

bureaucracies and organs of authority (Friedman & Rowlands 1978; Eisenstadt & Shachar 1986). This cocooned development is an indication not only of the little trade that earlier existed but also an indication that during the EBA no distant trade routes yet existed between the Far East and Palestine. Conflicts and wars were more localized between the various cities, and self-production seemed to become the means of survival and adaption.

4.8.3 Metals, metallurgy and manufacturing

The socio-political environment during the BA would sway between warlike or peaceful depending on the degree of conflict. The MBA was deemed on one hand to be warlike because of the number and size of the fortifications and ramparts (Ilan 1995a:311) which in the case of Dan has been unpacked in Chapter Three, as well as the weapons in tombs and cultic offerings which has been addressed in this chapter. On the other hand, one cannot deny that peace was also maintained for long periods due to the lack of evidence around the gates and fortification walls of any slingshot, arrowheads and other types of weapons (Ilan 1995a:311). However, one would need to understand the different consequences of siege warfare in which conquest and destruction are not interrelated actions and city siege may not necessarily result in the evidence of bows and slings, as negotiation and different strategies could also contribute to the overthrow of the defending force (Kreimerman 2016:229). The MBA was more a period where new technology was emerging to better address military effectiveness, and the intelligence and resources flowing from the East required new ways of responding including tactical and operational techniques of fortification, armour, strategy and tactics (Ilan 1995a:312).

Instead of copper, tin and bronze ensured harder, longer, sharper, more deadly and protective weapons. The ability to work better with bronze, because of its pliability, made it easier to mould or cast into more structured forms. Chariots, using these metals, could be built more speedily than wood, and together with horses they could maneuver more light powerful weapons more quickly and easily to locations where they were needed. Firing a more powerful bow from a moving base would make the combination a more effective weapon in siege warfare as well as the improvement of battering rams (Yadin 1963:4-9, 58-75).

As discussed earlier, Stratum IVA became an industrial quarter consisting of metallurgical workshops to process the raw materials imported from the East into finished goods such as weapons of war, requiring skills, supply and effective logistics between Dan and the East. Copper was easily obtainable, but tin was sourced from the Taurus mountains (Yener & Ozbal 1987), Iran and Afghanistan (Muhly & Wertime

1973) to mix with copper to make bronze. The *Mari texts* describe the channel from the East to Dan and Hazor about foreign exchange, the channels of information and the high demand for tin flowing from the East (Dossin 1970).

Although no indications have yet been found inside the metallurgical areas of Dan indicating the production of bigger engines of war such as chariots, especially due to the stepped entrance and exit to the city, it was necessary to protect the city beyond the ramparts for possible theft of metals, hence the need for logistics, patrols, blockades, countering siege techniques and military equipment which has been scripted in the *Mari texts* (Philip 1989:155).

4.9   CONCLUSION

The uncovering of the discoveries along the fortifications and ramparts may not have directly addressed the research questions, but it does provide leading evidence in contributing to the understanding of the role of ramparts in the BA and IA in Dan.

In adopting Biran's stratification for Dan, many anomalies and challenges emerged during the research as debates emerged on high chronologies, absolute chronologies, and low chronologies. As most of Biran's work had been released as articles or preliminary excavation reports, much of the detail had a window period of thirty years before a comprehensive study of the BA and IA findings in Tel Dan were released, supported by evidence of related findings within the Levant. Recent releases such as Dan III (Ben-Dov 2011) and Dan IV (Ilan 2019a), as well as forthcoming books, namely Dan V and Dan VI, where the ramparts have now been linked to the EBA rather than the MBA, are reconfirming or adjusting the chronologies. Considering the shift in dating, this chapter considered the findings about whether Biran's absolute chronology and Finkelstein's low chronology should be adopted in relation to siege warfare. Ilan and his team with reference to their carbon dating samples, including short lived material, supported Biran's stratification and dating. The most monumental structure at Dan, being the ramparts, with new emerging findings, indicates that they were built and supplemented throughout the BA and not just the MBA as previously reported by Biran and Burke.

Cultic activities were more evident in the IA at Dan based on findings to date, and although earlier cultic activities have been surmised, no finite evidence to date has been discerned. The royal shrine or high place in Area Y was built on the inner slopes of the BA rampart with findings in the area supporting military

rituals either in preparation for war or thanksgiving for military success. The location of the high place, although not much has been written about it, could also have contributed to the physical vulnerability of the rampart in that area, with the inner walls no longer offering as much resistance; but evidence of crenellations indicates a tower in the area which was possibly stronger in the BA, but weaker in the IA, as the crenellations were used in a secondary role within the high place. Cultic activities were also evident at the IA gate in Area B and Area A which supported a wide range of customs including social, religious, economic and military activities.

Epigraphy found at the gates identified the site to be the biblical Dan as well as evidencing the *House of David inscription* which has been debated by many. These inscriptions found between the outer gate and the outer outer gate in secondary use identify possible battles which took place, possibly associated with the United Kingdom, Omride dynasty, Nimride dynasty, Aram Damascus and the Assyrians. This will be unpacked further in Chapter Five before final conclusions are reached. Secondly the epigraphy, although not many weapon findings were evident, supported the evidence of destruction where the gates tend to be the weakest defence link in cities with freestanding ramparts and fortification walls.

Lack of findings on the outside perimeters of the ramparts as documented by Biran supports the research question that during the BA all inhabitants of Dan stayed within the city ramparts or within the outer boundaries of the site. No evidence has yet been forthcoming regarding villages or families staying outside of the city during the IA; this will be further investigated in Chapter Five.

The extension of the dwellings during the LBA onto the city walls and the evidence of tombs both into the city walls and beneath the floors of the dwellings are evidence of the inner slopes being weakened with cavities and holes into the ramparts from inside of the city. Furthermore, the indications of the walls remaining stable despite disturbances are indicators that sappers and spies working together would make the penetration of the walls possible. This hypothesis will be unpacked further in Chapter Six.

Evidence of sling bolts and arrowheads would normally be found at city gates, especially because of magazines being close to the guardrooms. This has not been evident at Dan, possibly due to the city still being in use beyond the Hellenistic and Roman periods, where such weapons would have been removed, recycled or are yet to be identified. Podiums and guard rooms are, over and above ceremonial purposes, indicators of the gates being prominent for military purposes; however, judicial and other administrative purposes may also have been conducted at the city gates with the plazas indicating economic activity. The

number of gates in Area A-B at the IA is also deemed to be added security to counter siege rams by keeping the entrances offset at different angles and the towers set back in the IA gates to trap and attack the enemy, who may be confined to a restrictive area within the piazzas, from a safe height. The BA gate was backfilled and became part of the BA ramparts, ensuring optimal defences were maintained in this area of the rampart.

Weapons were found in tombs which consisted of daggers, spears and axes, which were associated with the military higher-ranking officials as they were symbols of their warrior achievement. The more common siege weapons such as bows and slings, because of their material which could naturally decompose, were not evident in Dan. Other weapon evidence could be identified through the metallurgical activity in Area B where workshops and furnaces were identified. This was complemented by evidence of imports from the East such as tin in Afghanistan which was mixed with copper to produce bronze. Dan like Hazor was an important producer of military machinery; however, larger military engines such as chariots were possibly unlikely due to the ascent and descent into and out of the city, which had cobbled steps in both the BA and later IA gates.

With imports from the East, and routes passing Dan from Mari and Damascus to Hazor and Megiddo, evidence of movement to these cities was not only through metal imports but could also have been through other trade goods such as exotic foods, cattle as well as knowledge. Food types at the time, only available from the East, were evident through dental DNA testing which identified foods from as far as China during the BA. The evidence of trade which came from the West, North and South opens the subject of military strategy and whether, following the invasions of Palestine by the Hittites, Egyptians and the Philistines, the Assyrians and Babylonians, together with traders from the East, brought military tactics and strategies which could have emerged from China and India. Given that knowledge could also have emerged from the East, Chapter Six will address hypothetical scenario planning of siege warfare based on military strategy from the East during the IA.

CHAPTER FIVE

WARS, EMULATION AND WATER

5.1   INTRODUCTION

The emergence of ramparts was first identified by Albright and Yadin as a protective wall around charioteers and horses by the Hyksos, and as they emerged, those looking back in history may have argued that they were used in the role of defence, protection against erosion, securing natural resources such as water and merely for emulation. This chapter will cover the role of ramparts at Tel Dan addressing wars, emulation and water through investigating the research questions which support the overall role of ramparts in Tel Dan.

In identifying the wars or battles that happened at Dan during the BA and the IA, the question whether the ramparts were purposefully built for defence against an opposing enemy will be assessed.

The subject of emulation has also been raised by scholars in recent research and articles, which expands on the purpose of the ramparts and monumental buildings as possible works of the kings and rulers of the region. Emulation will be reviewed in the context of the rampart role.

Finally, water, the source of life, has a connection to Dan that would make this site a treasure under any king or ruler as it would be the life and sustainability of any powerhouse in an environment such as Palestine. Could the ramparts have been built as a protection of this bountiful water source? Would it have been possible that the inhabitants of the city could have sustained themselves within the parameters of the rampart and city walls during a time of siege if water had ever become a scarce resource?

5.2   WARS

5.2.1   Early Bronze Age

The EBA is absent about wars and conflicts at Tel Dan and its surroundings, yet change was happening through the continued change of major powers. Through the period 30th century BCE and 23rd century BCE the Eblaite Kingdom dominated the northern Levant (Chandler 2000:90). During this period, the

Kingdom of Nagar also emerged in the 26th century BCE ending at the same time as the Eblaite Kingdom. The other Kingdom was the Mariote Second Kingdom which emerged in the 25th century BCE and ended at the 23rd century BCE. Following the demise of these three Kingdoms the Akkadian Kingdom emerged at the tail end of the EBA around the 22nd century BCE (Richard 1987:22-43). This period was broad in terms of leading powers and the areas of occupation, with no microscopic focus on Dan or any of its neighbouring states such as Hazor and Megiddo. Biran, for lack of a better term, classified the occupants of Dan as Canaanites (1994:40).

During this period, the Euphrates River saw settlements along its banks expanded with new ramparts, fortification walls and monumental gates, while Palestine was still mostly unfortified during this period (Stager 1999:237f). Biran (1974) and Burke (2008) claimed that the Dan ramparts were predominantly MBA, while Ilan (Forthcoming) claimed that the ramparts were in fact EBA. This would make Dan one of the sites in Palestine having fortification walls and ramparts in EBA, as mentioned by Stager (1999:237f). The reason for the EBA ramparts is still not clear, which would probably require further future investigations, and which will be addressed by Ilan in the forthcoming Dan V. As the ramparts were extensively improved and widened with huge fortification walls in the MBA, attention will be given to the reasons for possible wars under the MBA paragraphs. According to Richard the massive fortifications of EBA implied conflicts, trade breakdowns and an agricultural slow-down, placing stress on the army and labour force and collapsing urbanization (1987:34).

5.2.2 Middle Bronze Age

The Amorites became the powerhouse which ruled much of the ancient Near East from the start of the second millennium BCE. This reign of the Amorites continued till the 16th century BCE where the region of the North Levant was divided into three sub-regions, namely Mari, Yamhad and Qatna. Qatna was the sub-region in which Tel Dan was located with the monumental rampart build completed in the late 19th century BCE (Biran 1994:72). Although the ramparts at Tel Dan were identified as being erected at the end of the mature rampart stage, evidence of lower keyed EBA ramparts indicate that Tel Dan was also part of the rampart development emerging west of the Euphrates River (Biran 1994:60). Although no records of any warring activity could be traced to Tel Dan prior to the 18th century BCE, the identification of ramparts before this date is a possible indicator that Dan was part of the warring activities that happened in the EBA (Richard 1987:34).

This massing and grouping as discussed in the EBA had a similar breakdown of Amorites over the MBA period where the Amorites morphed into different Amorite groups (Dever 1976) focusing on a paradigm shift to exogenous forces. However, this has later been deemed to be an oversimplification of a misinterpretation of the archaeological evidence (Gerstenblith 1983:123-6). According to Ilan it is rather a complicated mix of exogenous and endogenous factors (1995:297). The Peer Polity Interaction model indicates that the process of emulation created cultural homologies speeding beyond the archaeological records (Renfrew 1986:7-8). However, these varied between the lowlands and highlands of Canaan, creating a contrast between the two (Ilan 1995a:299).

The MBA, in trying to source evidence for possible dominance or conquest in Dan, has not been forthcoming, yet at the same time it is only a small part of the exogenous factors that contributed to the culture formation in Canaan as well as the make-up of the Amorites (Ilan 1995a:301). Other contributing factors were the immigrating populations, trade and migrating craftsman. This was coupled with endogenous factors such as environmental change and adaption, where the Triple Arched gate was sealed and covered within a short period of time at Dan. Independent invention attracting skilled craftsmen for metal implements and weapons as well as large structures as lumber and stone would ensure better, safer and stronger gates, with remaining factors such as agricultural intensification and population growth (Ilan 1995a:302-307). These factors were indicators of the changing dynamics in Dan where Canaanites, Syrians (through their emergence of pottery in the form of monochrome painted cream ware) and Amorites amongst others moved in and out the region including Dan. Whether conflict through dominance or conquest was the driver for a change of guard or leadership is yet to be discovered.

Textual references make it clear that warfare was not unknown in the MBA in Palestine, with the sources referring to logistics, siege techniques and equipment, patrols, blockades and other means to secure and protect the trade routes (Philip 1989:155; Ilan 1995a:312). No MBA destruction layers could be identified in Tel Dan and this was not uncommon in other areas of the Levant. A possible explanation is that it is not necessary that war was absent but rather the ritual nature of warfare possibly at the time did not allow certain practices such as the burning of settlements (Ilan 1995a:313).

As the transition emerged from the MBA to the LBA endogenous structures began to collapse (Bienskowski 1989:176; Hoffmeier 1989) coupled with exogenous factors such as the Egyptian excursions where an occupation destruction level possibly by Thutmose III was suggested at Dan around the 15th century BCE (Scheepers & Scheffler 2015:24). Another course was likely the impact of a major drought

which triggered trade and economic collapse (Finkelstein et al 2015:217-235). According to Bunimovitz (1989) much of Canaan, although finally becoming fully Egyptian at the end of the MBA, retained many of its social and political structures.

The Hebrew Bible gives the first indication of war at Dan, namely Genesis 14:14 which was followed by (v. 18-20) welcoming Abram by Melchizedek into Dan. This event was perceived by Zimmerli (1976:35) as an isolated episode that interrupted the engagement between the king of Sodom and Abram. The occurrence of Dan in Genesis has been explained as an anachronism as the city was called Dan only after the conquest of the Danites in Judges 18:19 (Zimmerli 1976:41). Westermann believes the story was created at the time of Judges and therefore there is no anachronism (1986:201). In my opinion this was part of the message by the biblical writers to create and emphasize the boundaries of the Promised Land, as mentioned twelve times in the Bible, representing the size of Israel as promised to the descendants of Abraham.

5.2.3   Late Bronze Age

Dan, in the biblical narratives and chronology in Judges and Kings, appears only from the time of the conquest (Jdg 18:29; 20:1) to the first few kings of Israel, namely Jeroboam (1 Kgs 12:29-30) and Baasha (1 Kgs 15:17-20) followed by Jehu (2 Kgs 10:29) who are all associated with the IA. The conquest of Dan by the Danites followed the situation report by the five spies, who claimed the city to be 'quiet and secure…far from the Zidonians and had no business with any man' (Jdg 18:7).

Archaeologists have a different theory: Ilan and Bohstrom have found new evidence that supports what was theorized by Yadin and Astour in the 1960's evidence that Danites morphed from mercenaries hired from the Aegean and Syria by the Egyptians to police the occupied territories (2016). The *Danunu* was a mysterious kingdom mentioned in ancient writings from southern Turkey where a slab from 8th century BCE engraved in *Luwian script* was found. A letter found in the *El-Amarna archives* also mentions a country called Danuna sent from the king of the Phoenician city of Tyre to Pharoah Amenhotep IV. *Denyen* is a group of Sea Peoples according to Egyptian sources and *Danoi* is a Greek tribe. Bohstrom suggests that the evidence found at Dan is that these are all one and the same, questioning the biblical narrative of the origin of the Danites. Ilan believes that the Danites in part originated in the Aegean coastal region where Turkey and Syria meet today (Bohstrom & Ilan 2016).

The Hebrew Bible does not mention any resistance which the Danites faced when entering the city (cf. Judges 18), although many were killed by the Danite sword which links with the possibility that if Aegean mercenaries came to Dan, they would have been hired by the Egyptian overlords in Canaan to maintain order through force and intimidation, implying that the biblical narrative showed that the occupants of Dan or Laish took the path of least resistance. The reason for the mercenary hire was possibly due, according to Ilan, to the Egyptians' concern that the Hittite threat, through deal making with vassal kings in Syria and Lebanon, would eventually penetrate Canaan, hence the need for professional soldiers to defend Dan (Bohstrom 2016). The Egyptians maintained a *Pax Aegyptianca*, a method using military force, wielded ruthlessly and savagely (Goldworthy 2016:409) or aggressive warfare against a foreign nation (Cornwell 2017:32).

Were the Danites a hybrid people, made up of *Danuna* being hired mercenaries? Or Egyptians who remained in Dan after their forces withdrew from Canaan? Or Canaanites and various others, being refugees resulting from political and military wars of LBA powers such as the Egyptians, Hittites, Sea Peoples, Hurrians, Assyrians and Amorites (Burke 2008:233-234)? Ultimately, they also included the emergence of new groups such as Israel mentioned in the *Merneptah Stele* (Scheffler 2001:35), who would eventually become the Danites of the Hebrew Bible.

5.2.4   Time chart of military history and the Tel Dan strata

The time chart of military history (Chandler 2004:24f) covers the wars and battles centered around the Middle East from the beginning of the BA to the end of the IA. The dateline is shown at the top and bottom of the pages with the dark red bar indicating the wars and the crossed swords the battles. The dates are mostly approximate covering predominantly the great empires of Egypt, Assyria and Persia between the 30th century BCE and the 5th century BCE. This time chart allows the reader to follow the strata at Dan in the context of the surrounding wars in the ancient Near East and the influences of the Egyptians and Mycenaeans which would impact Dan at certain strata as well as the collation of information and possibly military strategy from the East.

Each stratum has been mapped to the specific dateline (created by Donald Scott 2021) in line with the dating of Biran (1994:11) highlighting cryptic discoveries and remarks (Scheffler & Scheepers 2015:23f) in the context of the prevailing wars at the time. Referring to Fig 5.1 and Fig 5.2 when reading the wars and battles in Chapter Five and Chapter Six allows the reader to be aware of conflict situations within the

ancient Near East which impacted on Laish/Dan.

Fig 5.1: Dan strata mapped to the BA time chart of military history (Chandler 2004), overlay (Scott 2021).

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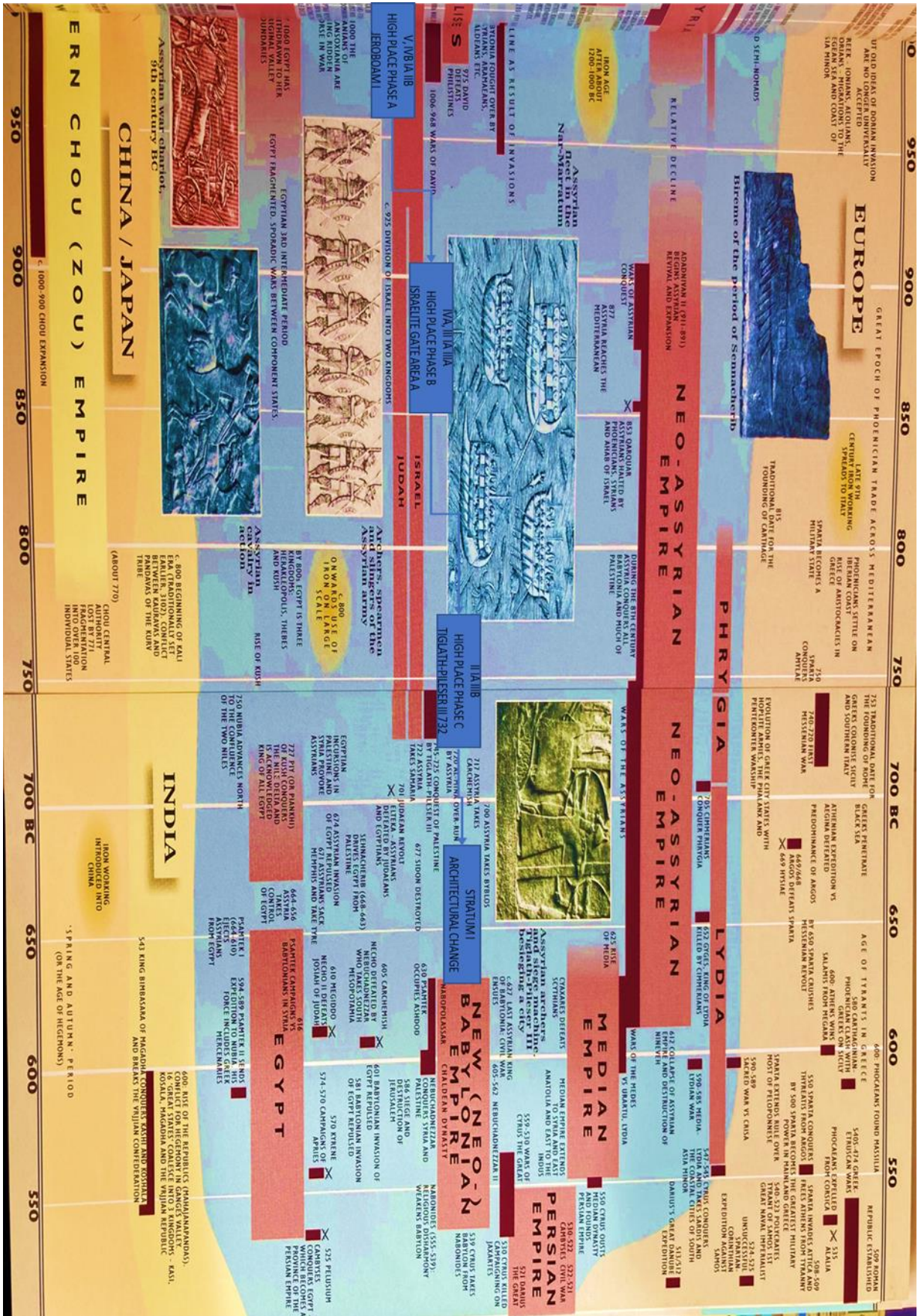
Fig 5.2: Dan strata mapped to the IA time chart of military history (Chandler 2004), overlay (Scott 2021).

5.2.5   Iron Age I

Scholars after many decades are still debating the chronology of the early IA, specifically IA I leading into IA IIA. This raises questions over the timing of wars, conflicts and rulers in Dan. For the sake of consistency these will be discussed in line with the strata as determined by Biran, considering others such as Finkelstein where it may be necessary, as well as those determined in Dan IV as recorded by Ilan in 2019 as shown in the table below. This revised chronology which Ilan has published differs from his 1999 dating as discussed in 4.4.2 and assists in the determining of the dates of destruction of Dan in IA I (Table 5.1).

Site	Late LBIIB, Egyptian 19th Dynasty (ca. 1300-1200)	Transitional LB-Iron I, Egyptian 20th Dynasty (ca. 1200-1150)	Iron 1A (ca. 1150-1100)	Iron IA (ca. 1100-1000)	IAIB (ca. 1000-950)	IAIIA (ca. 950-850)
Tel Dan	VIIA2	VIIA1	VI	V	IVB	IVA
Hazor	XIII	—	XII	XI	—	X-IXb

Table 5.1: Tel Dan IA chronology aligned with Hazor. (Ilan 2019a:20)

Linking the stratum with the areas the table below identified the period, the degree and the extent in which destruction occurred in Tel Dan during IA I (Table 5.2).

Stratum	B-west	B-east	M	Y	T	H	K	A
end VIIA1	not clear	scattered destruction remains	no sign of destruction	light destruction remains	destruction	no remains	destruction	no remains
beginning VI	some reuse of VIIA architecture many pits	reuse of VII architecture, some pits	pits, some reuse of VII architecture	reuse of VII architecture, some pits	pits, some reuse of VII architecture	pit	pits	no remains
end VI	destruction	destruction	destruction	destruction	destruction	?	?	no remains
beginning V	new construction and leveling of VI	reuse of VI and new construction	new construction and leveling of VI	reuse VI and new construction	reuse VI and new construction	new construction	no remains	pit 5009
end V	massive conflagration/ destruction.	massive conflagration/ destruction	massive conflagration/ destruction	massive conflagration/ destruction	massive conflagration/ destruction	massive conflagration/ destruction	no remains	?
beginning IVB	construction over V	construction over V	construction over V	construction over V	construction over V (fragmentary)	construction over V	no remains	no remains
end IVB	earthquake?	earthquake?	destruction	earthquake?	?	?	no remains	no remains

Table 5.2: Construction and destruction between LBA and IA 9 II (Ilan 2019a:19)

No defined wars between tribes and nations associated with Dan outside of the Bible through any extra-biblical texts during IA I has yet been recorded. The strata VI, V and IVB are the only indicators of possible conflicts. At the end of Stratum VI, a destruction layer was identified across Areas B, M, Y and T, and at the end of Stratum V, massive conflagration and destruction were identified in the same areas as Stratum VI with the addition of Area H (Table 5.2).

In the words of Ilan at the end of Stratum V a large area was obliterated in a massive conflagration with a burnt layer of 40-70cm. Although a great deal of living floor material was entrapped *in situ* no human remains or signs of war, through weapons, could be identified (2019:47). Knowing that the residents were out of their neighbourhood when this happened, it is unlikely that the cause could have been an earthquake or a possible military conflict. As large metallurgical activity had taken place in Area B, the lack of health and safety standards could possibly have resulted in fire spreading across the city in a northwesterly direction thus sparing the southwestern Area A and Area K (Ilan 2019a:1). The southeastern Area K, which is the location of the BA mudbrick gate, has been preserved and no excavations have taken place around the gate.

Na'aman has indicated that the renaming of sites such as Laish to Dan may indicate an early conquest tradition (1994:280). This should not come as a surprise as today in South Africa it is common to rename streets and cities as the apartheid/colonial structures are dismantled. Na'aman claims that the Laish-Dan renaming lends itself to some echoes of battles conducted in the early IA I (1994:280).

Strata VI, the period from the 12th century BCE to the 11th century BCE, is identified according to Scheepers (in Scheepers & Scheffler 2015:24) as the first Israelite period represented mainly by pits used as silos. Archaeological evidence does not question the pits and silos, but whether it was an Israelite level is debatable. According to Bloch-Smith, earliest Israel remains terra incognita (2003:401) and Finkelstein identified only hamlets and farmsteads as possible tented Israelite settlements. Between the LBA and the IA a thin destruction layer dated around the 12th century BCE was caused by fire (Junkkaala 2006:298). Biran saw this as a period of dramatic change (1994:125-128).

Whether the name change from Laish to Dan and the finding of a thin destruction layer caused by fire can justify that a war had taken place is questionable, even more so because it was the Israelites who conquered Dan. The focus in this section is more whether a war or conquest had occurred during this period at Dan during IA I; this is lacking in Dan during this period as the thin layer of ash identified, in my opinion,

could likely have accumulated over the years within the area of the furnaces where copper weapons were produced or triggered by a domestic fire. No archaeological seismology evidence has recorded any possible evidence of an earthquake during this period, except during the transition into IA II.

5.2.6   Iron Age II

The chronology of Dan identifies Stratum IVA to I as the start of IA II, dating this period from the first half of the 10th century to the early 6th century (Ben-Dov 2011:8). The information for the table below has been sourced from a series of preliminary documents (Biran 1982; 1993; 1994; 1996; 2002) as final reports for IA II have not been published. This is forthcoming from Ilan, in *Dan V*. The dates below in the table have been accepted by most scholars (Finkelstein 1999:63; Ben-Tor 2000:11; Mazar 2005) (Table 5.3).

					Chronology	
Stratum	Period	Event	Engagement	Israelite King	High Biran	Low Others
Stratum IVA	IAIIA	Destruction	Arum Damascus - Hazeal	Jeroboam I	Late 10th to Early 9th	9th - 8th
			Ben-hadad		840BCE	840BCE
Stratum III	IAIIB	Earthquake	None	Ahab - Jehu dynasty	9th - 8th	8th
Stratum II	IAIIB	Destruction	Assyrian: Tiglath-pileser III	Joash and Jeroboam II	8th -732BCE	8th - 732BCE
Stratum I	IAIIC		Assyrian City		732BCE - 6th	732BCE - 6th

Table 5.3: IA II stratigraphy for Tel Dan (created by Donald Scott 2021).

5.2.6.1   Aram Damascus War

The timing of this war is linked to Stratum IVA where evidence of fire on the red burnt stones at the *bamah*, ash in the storerooms and scattered ceremonial cult objects according to Biran were as result of a military campaign by King Ben-Hadad while Jeroboam I the king of Israel was in power (1994:183). Ben-Hadad invaded Israel, and Dan was among the cities he 'smote' (1 Kgs 15:16ff), but according to Stratum IVA, the city was not entirely destroyed. Biran focused his research aligned to biblical chronology.

Current thought is that the chronology according to Arie associates Stratum IVA with the period around 830 BCE based on his interpretation of the pottery reading (2008:32). This puts the military campaign under the command of Hazael to Adad-nirari with the Israelite king as Joash. At this point it must be noted that Arie was possibly limited to the available pottery and restricted areas as it is known that the final reports on IA II are yet to be published. He possibly also took his lead from Finkelstein describing Dan as having been transformed from a declining city in Jehu's realm to a thriving city constructed by

Hazael, where the chronology was dropped by 40 years from 880 BCE to 840 BCE (2011:227). Finkelstein states that Dan was under the control of the Israelites only from the first half of the 8th century BCE. In 1 Kings 12:29 the Israelite king is Jeroboam I who set up the bull cult at Dan referencing Ben-Hadad, the king of Damascus as conquering Dan. He then claims this as retrospective from a reality of the first half of the 8th century BCE using the Arie (2008) argument as well as Berlejung who claims that I Kings 12:26-33 is a polemic fiction (2009:1-42). The other school of thought is still the traditional view of Biran, supported by Bolen's dissertation (2013) and Ilan (forthcoming) who is yet to publish the IAII final report on Dan excavations.

Finkelstein (2011:236) further argues, irrespective of the dates of the Israel and Aram Damanscus battles, that no conflicts took place north of the Sea of Galilee between these two nations. Archaeological evidence has shown that the Israelites were north of the Sea of Galilee during this period, as according to Ben-Tor (2016:134) a six-chamber gate in Hazor was identified to have been built during Solomon's reign, which was challenged by Finkelstein to be from the Omride dynasty (in Finkelstein & Silberman 2002). Finkelstein now acknowledges that the Aram Damascus border with Israel did extend further north but was restricted till Tel Hazor. Dan lay barren as a no man's land during this period (Arie 2008).

The Israel Aram Damascus war, centred around Dan, leaves one with more questions than answers. Was it in the hands of the Israelites according to Biran? Was it left deserted according to Arie? Was it in the hands of the Aramaeans? When exactly did the war take place? Was the war associated with the Solomonic dynasty? Was the war associated with the Omride dynasty? Was the war associated with a post-Omride dynasty? Was it linked with King Ben-Hadad? Was the war linked with Hazael? Who was the King of Israel during this time? So many questions which have different views from different scholars. Until the final report on IA II is published by Ilan these questions will remain speculative or supported by selective and limited samples and artefacts. Not all the pottery uncovered in the IA II period has been officially recorded and no inscriptions have been found as complete or *in situ* which at this stage means that all supporting evidence has largely been drawn from related sites or sites in proximity. A view by Finkelstein is discussed in 5.3 under emulation which may in the future become the accepted view of most scholars.

Although the Israelite gates were discussed in Chapter Three, a revisit to these gates may assist in determining who, when and what was the cause of any destruction or capitulation. Gate 3 at Tel Dan was constructed in the second half of the 9th century and destroyed in the 8th century (Ilan 2019b:126).
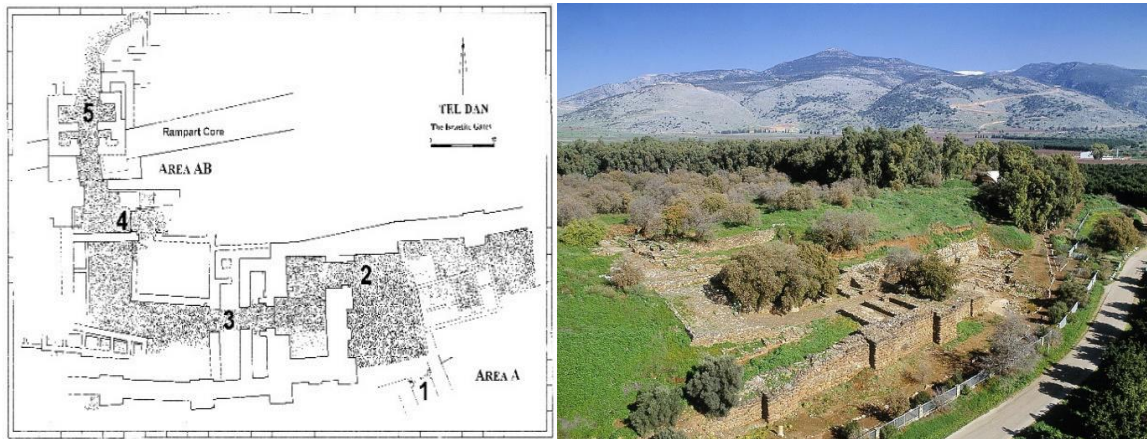
Fig 5.3: Plan of Tel Dan 9th century BCE gate and aerial photo of the gate complex (Ilan 2019a:8)

According to the Hebrew Bible and the Tel *Dan inscription*, the ruling power shifted between Aram Damascus and Israel several times during the lifetime of the gate complex (Ilan 2019b:126). Gate 3 has now been archaeologically proved to be the same gate structure as et-Tell which was built by the Aramaeans probably during the time of Hazael. The question is, who destroyed Gate 3? Was it Joash and Jeroboam II, which seems to be the general view? In other words, was it built in the 9th century BCE and destroyed in the early 8th century BCE, rebuilt as an Israelite gate and again destroyed by Tiglath-Pileser III (cf. II Kings 15:29)? Although the area is mentioned, Dan is not mentioned by name. According to Ilan (2019b:126) the ceramics dating cannot be determined accurately at this stage and may possibly be 50 years too late, impacting on the accuracy of exchange of powers at Dan, and thus impacting on the destroying and construction of the gates. Perhaps the Tel Dan IA II awaiting publication can give the answers.

5.3   EMULATION

Renfrew and Cherry (1986) describe a process of elite emulation that emerged in the Eastern Mediterranean after the 12th century BCE over a period of up to 200 years especially in Israel and Judah. This could be evidenced in the monumental buildings and gates as well as the cultural dynamics, technologies, styles from Phoenician expansion, and Israel and Aram Damascus conflicts which continued through to the 6th century BCE (Joffe 2002:435). However, the ramparts over and above defence already presented themselves as structures of emulation from the MBA.

5.3.1   Ramparts

Bunimovitz (1992:228) saw the MBA fortifications and ramparts as a sociocultural phenomenon,

downplaying the defensive role. He, like Finkelstein and Herzog, saw this as a process of competitive emulation between neighbouring tribal groups in Judah during this period to reinforce the leaders' power, a strategy flowing from Syria to Palestine. Burke rejected the idea of rampart construction as competitive emulation, associating it as primarily as a defence role, with competitive emulation playing only a secondary role (Ilan 2012:7).

The other views of the roles of ramparts are gaining popularity. Other than defence, a social and political role has been implied in MBA rampart conception and construction, and the other role is of an expression of the emulation and competition common to per-polity interaction (Ilan 1995a:317). Other than the military strategic and tactical purpose, they played a propaganda role in proclaiming the power and strength of the rulers and the elite (Dever 1987:154-6; Finkelstein 1992). As discussed in Chapter Two, the ramparts were the 'pyramids' of Canaanite civilization, a great achievement of consumption of society's most valuable resource: human energy (Ilan 1995a:317). Dan can be compared with Hazor where the ramparts comprised $1,000,000m^3$ of earth according to Finkelstein, where a worker was assumed to be moving a cubic metre per day (1992:209). Although not fully agreeing with his measurements, he determined the same for Dan. Based on Finkelstein's measurements a million man-hours were invested in the building of these ramparts at each site. The important point is that Dan was so much smaller than Hazor, hence the ramparts were massive in comparison, showing the extent of emulation between the cities in the north of Palestine.

Such emulation would have required smaller sites like Dan to have sourced labour from other areas through political and economic control over the ruling territory (Finkelstein 1992). The promise of protection in lieu of labour in many instances may have been an unfulfilled promise which eventually saw the socio-political collapse in the late MBA (Ilan 1995a:307).

5.3.2   Monumental buildings

The monumental building technology around Dan was more evident in the IA. Based on the timing of the Aram Damascus onslaught one may theorize that Hazor Stratum X was built by King Hazael, who also built Dan (Arie 2008). According to Herzog and Singer-Avitz (2006) the pottery of Hazor X belongs to an earlier phase of Iron Age IIA, dating it to the first half of the 9th century aligning with the Omride dynasty. This gives one the impression that Hazor X, under Israelite control, rebuilt the city and Hazael later rebuilt Dan with monumental buildings to challenge those of Hazor. Hazor X featured Omride

architectural characteristics which were not the same as those of Dan and Bethsaida, which reflect Aramaean characteristics in their architecture (Finkelstein 2013:74).

According to Finkelstein (2013:79) the might of the Omride dynasty with its monumental buildings and fortifications, mostly constructed with casemate walls, spread across the north from the coast at Dor up to the southern part of the Upper Galilee into the Jordan valley as far north as Hazor. Beyond Hazor, Dan lay abandoned in the first half of the 9th century which later became Aramaean like Bethsaida, also boasting monumental buildings with walls being solid unlike those built by the Omrides (Finkelstein 2013:106). The map below represents the Omride territory as well as the expansion to the north, east and west (Fig 5.4).
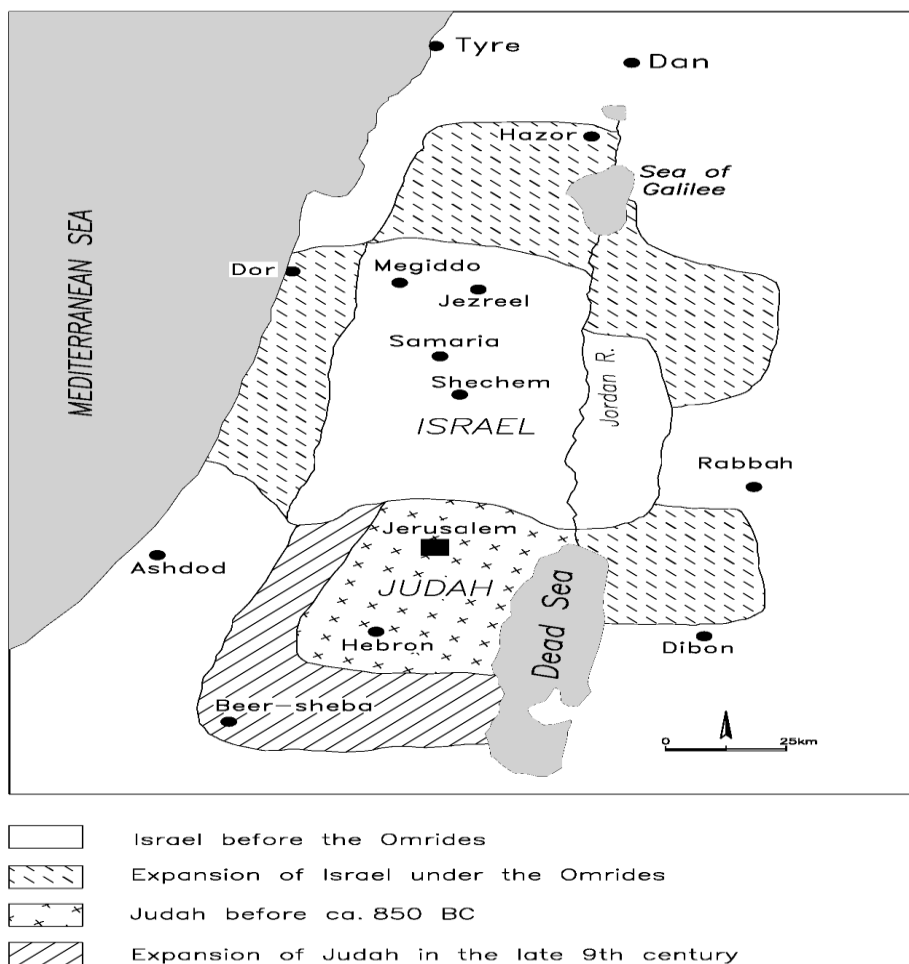
Fig 5.4: Omride expansion in the 9th century (Finkelstein 2013:79)

The ongoing territorial disputes around Hazor and Dan, evidenced through the Tel Dan Stela and the destruction layers at these sites, the Israelites and Aramaeans would have been aware, controlling the

people of the valley, would yield profit through agricultural output, be a source of manpower for further military exploits, and ultimately dominate the trade routes (Finkelstein 2013:111). In my opinion military campaigns would not be sustainable and would impact on long-term stability, therefore winning the hearts and minds of the people was also critical to maintain power.

Monumental building activities for the country's needs and propaganda were not sufficient for stability and economic growth, and rulers had to manage the rural environment without upsetting the status quo. Judah, unlike Israel, remained underdeveloped whereas Aram Damascus pursued aggressive emulation in Bethsaida and followed with a similar design in Dan to compete for the loyalty of the people in the region (Finkelstein 2013:110-112). The *Mesha* and *Tel Dan inscriptions* (Sass 2005) were monumental inscriptions commemorating the building activities and the emulation to challenge probably the Omrides.

5.3.3   Gates

The city gate was probably the busiest place of the ancient city. During the 2019 UNISA Excavation, the team led by Professor Le Roux with the support of Professor Boshoff commuted daily through the Damascus gate of the Old City of Jerusalem and it remained a hive of activity throughout the day. Like the Damascus Gate, the Israelite Gate at Dan was, in the words of Walsh (2014:50), a liminal place between the town's inner life and the outside world. One can, reflecting on these words, understand why gates had to emulate the might and power of the city rulers. Other than access control, the gate together with its fortifications was a means of protecting and therefore a place to project power (Frese 2015:81).

A way of expressing this power visually was through building the gates with monumental proportions as well as the placement of royal inscriptions (Ilan 1999:112). The discussion of the layout and design of the so-called Israelite Gate in Chapter Three and its role as well as the ritual installations echo the emulation that was common at the Gate in Bethsaida as well as its close neighbour, Hazor. The four-chamber gates and gate complexes of Bethsaida and Dan were built initially by Hazael and were very similar in layout, structure and features. A virtual view of the courtyard of the gate complex below shows the monumental wooden gates in relation to the size of a person (Fig 5.5).

Fig 5.5: Virtual view of courtyard of gate complex (Seevers 2006:11)

The renewed city of Dan erected by Hazael included a four-chambered gate like Bethsaida displaying unique broad proportions; the front wall is the long one and the axis short, unlike the Omride gates which have the front wall shorter and the axis longer (Fig 5.6). The two carved basalt stones, one a possible reconstruction, in front of the gate were common in Syria (Biran 1994:238-240).
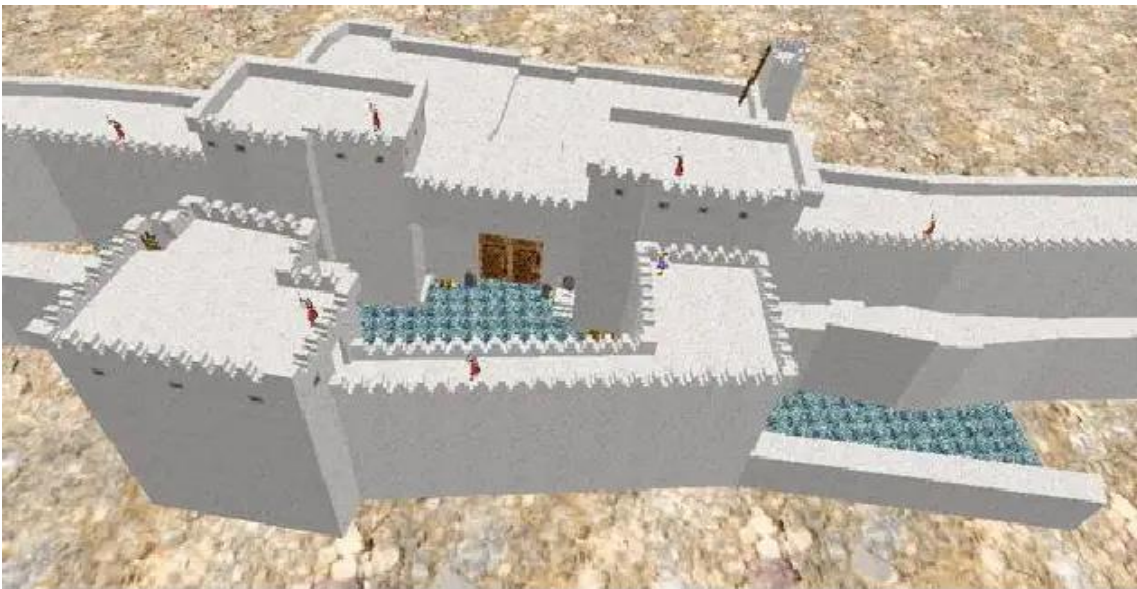
Fig 5.6: Virtual City Gate of IA II Bethsaida similar to Dan (Seevers 2006:10)

5.3.4   Israel vs Aram Damascus

In the period before the Omride dynasty the boundary between the Israelites and Aramaeans was limited to northeastern Gilead. No indication of conflicts could be determined during this period (Finkelstein 2016:22). Territorial emulation and growing military powers of Israel and Aram Damascus triggered conflicts only in the first half of the 9th century BCE. The map below on the left reflects the pre-Omride northern occupation where Hazor did not even feature, let alone Dan. The thick black line (Fig 5.7) reflects the boundary between the Israelites and the Aramaeans (Finkelstein 2016:21).
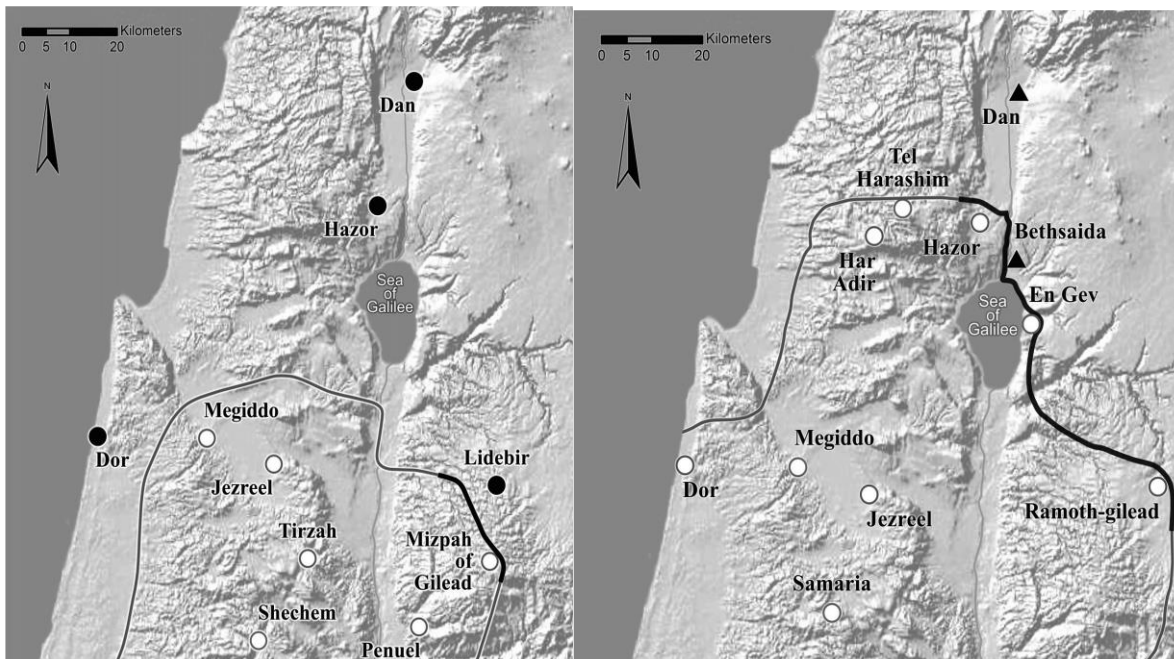
Fig 5.7: Pre-Omride territory and Omride first stage of expansion (Finkelstein 2016:21, 23)

Focusing on the above map on the right, archaeology identifies the expansion of the Omrides into the new territory of the upper Jordan Valley. This is supported by the *Dan inscription* where Hazael claims that the king of Israel entered his father's land (Na'aman 2006:177). At this stage Dan was still not in the hands of the Israelites but remained with the Aramaeans. In my opinion the *Dan inscription* does not refer to Dan *per se* but rather to the increased territory which the Omride dynasty gained and which the Aramaeans would later retrieve. The black line (Fig 5.7) which is extended in the right map shows the line of ongoing conflict stretching from Ramoth-gilead to Hazor.

The map below to the left shows the Aramaeans under Hazael in the late 9th century where the white triangle indicates the construction of the cities by Hazael, namely Dan, Hazor and Bethsaida, and the black

triangle the cities destroyed by Hazael and the Aramaeans (Fig 5.8). Hazor was both partly destroyed and partly rebuilt by the Aramaeans. This Damascene hegemony has a contradiction of the territorial gains and the building activities (Na'aman 1995). It is possible that winning the hearts and minds of the people was not possible in the deep south and Hazael, in my opinion, would rather invest in the territories that would fortify and secure the protection of his own people than spread his resources too wide at the risk of losing all. This hypothesis will be tested in a scenario in Chapter Six.
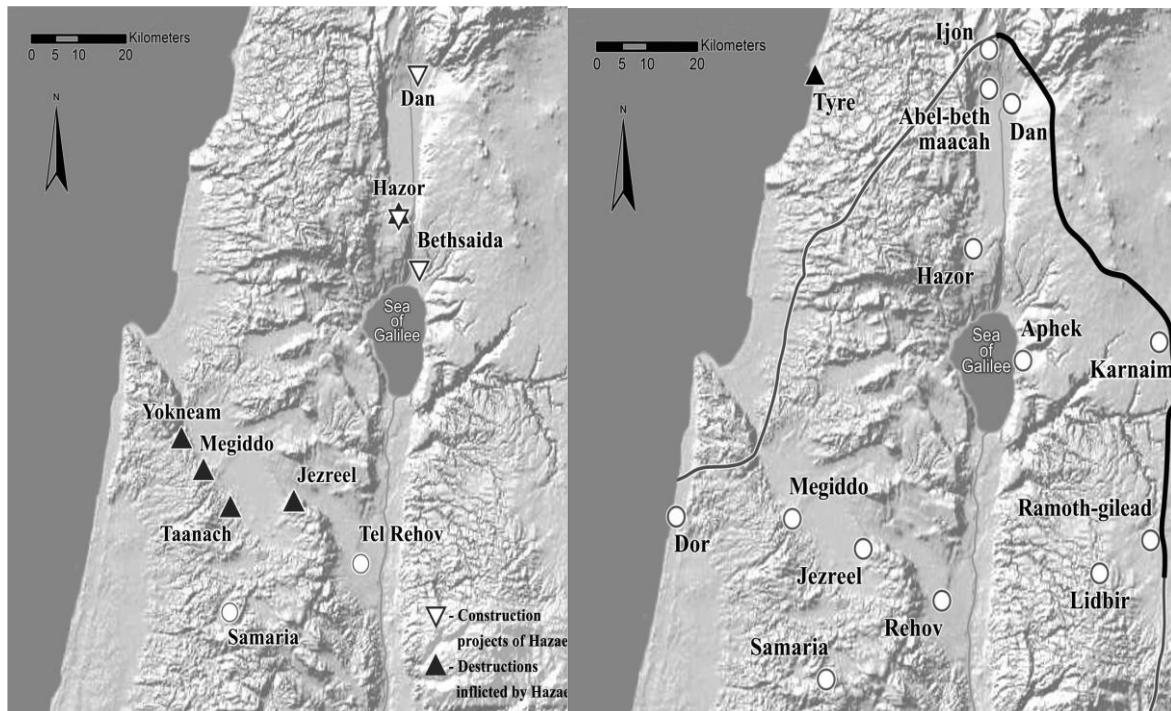
Fig 5.8: Aramaean hegemony over Israel; the resurgent Israelite expansion (Finkelstein 2016:27, 29)

The pressure of a rising Assyria on Aram Damascus saw the opportunity for a reemergence of Israel (Miller & Hayes 2006:331-347) which would see the last of Israel expansion before disseminating into the exilic period. In 2 Kings 13:25 three times Joash defeated Ben-Hadad the son of Israel and recovered the cities of Israel. The map above to the right shows the third black line (Fig 5.8) of the extension in first half of the 8th century reflecting the spanning combat zone between the Israelites and the Aramaeans.

Arie (2008) shows Strata VI and V in Hazor and Strata III and II in Tel Dan feature Israelite material culture. The previous 9th century towns of Dan and Bethsaida were finally in the Israelite hands, resulting in the destroying of the royal inscriptions in Hazor and the three in Dan. The emulation maintained by the Aramaean hegemony had finally shifted into the hands of the Israelites with Dan becoming a major cult centre. But not for long.

5.3.5 Assyrian conquest of Dan

The drive for hegemony by the Assyrians between 900 and 640 BCE saw their imperial imprint across the Levant, causing heavy destruction. Military conquest was followed by annexation and integration into the Assyrian provincial system, such was the case in Dan (Thareani 2016b:254). These imperial strategies (Harrison 2005) required adjusting to ecology, political structure and ethnic composition which will be discussed in Chapter Six (Sinopoli 1994:169).

Material validation of the Assyrian assault is visible in Hazor (Yadin 1993:603), Bethsaida (Arav 2009:64-70) and Dan. According to Thareani (forthcoming) Stratum IIA at Dan was destroyed in a heavy conflagration supporting Biran's claim (1994:203-04) where the mudbricks were burnt red. The Assyrians built a new well-planned city and removed the Sacred Precinct of the Israel period (Thareani 2016b:258).

5.4 WATER MANAGEMENT AT TEL DAN

5.4.1 Terrain and Climate

Climate changes can disrupt social and political structures, causing water system management to collapse which in turn can cause major diseases and sickness and facilitate marshlands (Kaniewski et al 2017:1). The use of freshwater supplies as a weapon of war rapidly became an object of military conquest, used for political leverage and a trigger for conflict (Gleick & Heberger 2013:173-219). Was Dan such a site?

Tel Dan is located at the headwaters of the Dan tributary of the Jordan River, in the northeastern Hula Valley. It is in a Mediterranean climate zone, like that of the Western Cape, with hot summers and cool rainy winters, receiving up to 600-800 mm of rainfall per annum. The wind pattern is northwesterly, being stronger in the summer afternoons (Ilan 2019a:1). Genesis 13:10 describes it as a font of fertility, its valley watered like the garden of the Lord. There are no written historical sources that recount the role of water at BA or IA Dan. North Levant and other south Levant sites suggest that drought and climate changes triggered violent confrontation, abandonment and migrations (Finkelstein et al 2015:217-235). Arie (2008) identified Dan to be deserted for a period in the IA.

5.4.2 Reconstructed water influence on Tel Dan in BA and IA

Could the water source which was secured by the massive ramparts possibly have caused the desertion of the city, other than through a conflagration or an earthquake? Is it possible that the ramparts may have impacted on the water management through:

- Inputs of freshwater from the Mount Hermon;

- Urban development;

- Development of olive orchards; and

- Water levels?

What would the situation have been with the climate changes during the periods of settlement of the BA and the IA and the periods of fortification with the BA ramparts and the additional fortifications during the IA? These scenarios will be discussed based on the data gathered on the graphs below reported by Kaniewski et al (2017:3) (Fig 5.9).

Inputs of freshwater from Mount Hermon shows that the area was never dry but may have morphed into a marshland, possibly causing water disruptions in distributing water around the city (Kaniewski et al 2017:2). The low water inputs during the period before the MBA and the transition between the IA I and the IA II ties in with the community decline identified by Biran (1994) and Arie (2008). The climate cycle determined from the graph shows a period of 550 years from a low to a high water inflow interval: refer to A in Figure 5.9.

Urban development first peaked in the late MBA, which aligned with the higher water input at Tel Dan and which possibly attests to the decrease in the levels of disease because of the flushing out of stagnant water thus decreasing the mosquito levels and the possibility of malaria which would have caused the population to decline in the IBA. This trend continued during the transition from the LBA into the IA I and again at the end of the IA II: refer to B in Figure 5.9.
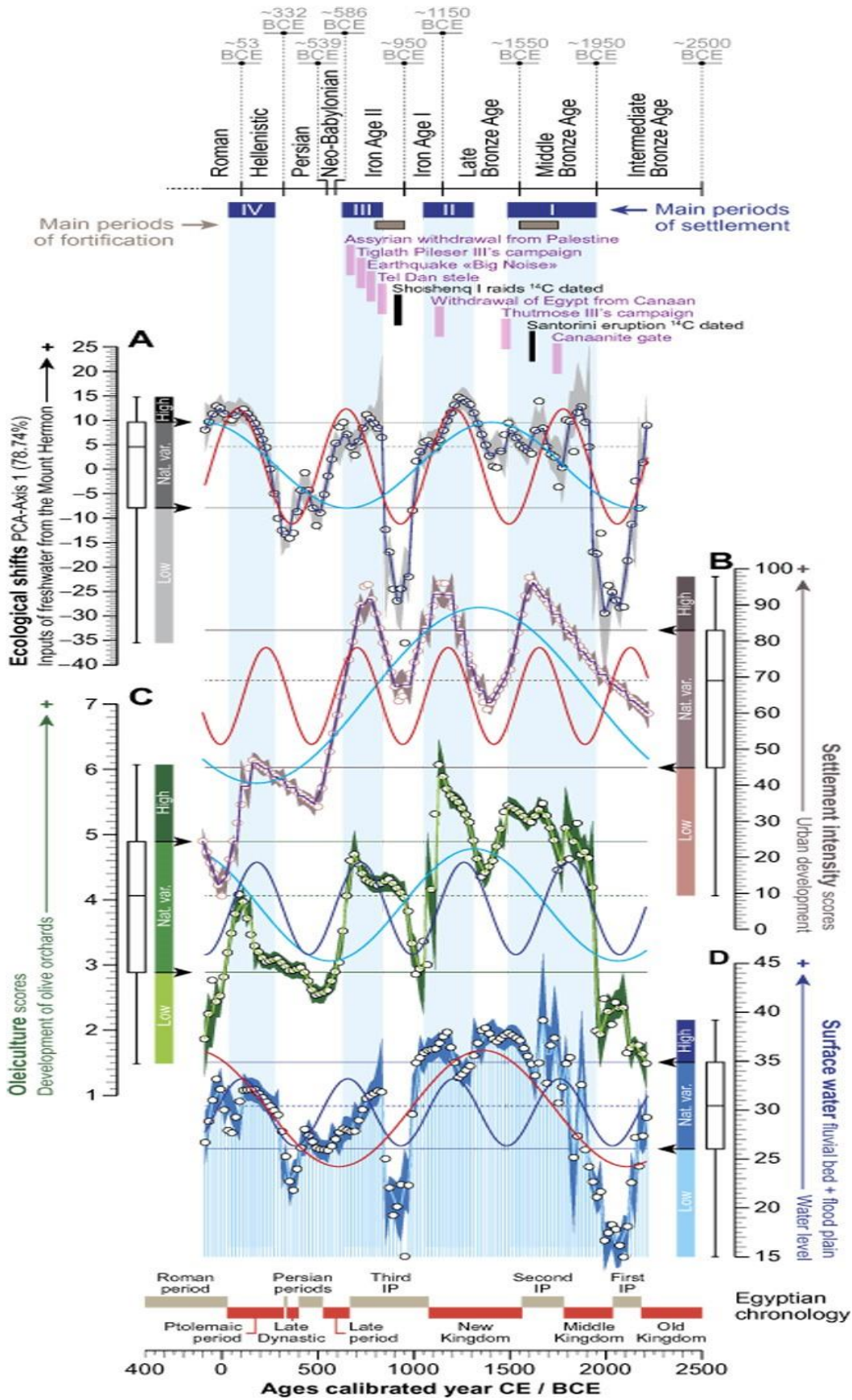
Fig 5.9: Reconstruction of water influence in the BA and IA (Reprinted with permission from AAAS http://advances.sciencemag.org)

The climate was conducive to the development of olive orchards. One would argue whether the low water levels which aligned with the drop and peak of orchards was due to water volume and quality or whether it was the decrease in the population to work the orchards. Whatever the case, they all impacted each other, and agriculture peaked in the middle of the different settlement periods. Other cultivated species and pastoral activities largely mirror the relative intensity of the olive (Kaniewski et al 2017:3). In the LBA, Egyptian incursions, deportations and slave capturing could also have been a contributing factor in the population decline (Redford 1992): refer to C in Figure 5.9.

5.4.3 Could water control and dictate defence and cultic activities?

The surface water levels show that it was the lowest during the periods of no or declining settlement. This in turn correlated to the ecosystem dynamics. The marsh and stagnant water during the low levels were the cause for a challenging environment, and occupation level decline may not have been entirely caused by conflicts but rather the lack of sustainable development in periods of dramatic climate change and the inability to manage the water: refer to D in Figure 5.9.

The map below on the right shows the alluvial fan of the Nahal Sion which covers the agricultural hydraulic spread incorporating Tel Dan and the Dan springs. The table below on the left reflects the periods of stagnant water which correlate with the settlement periods at Dan (Fig 5.10).
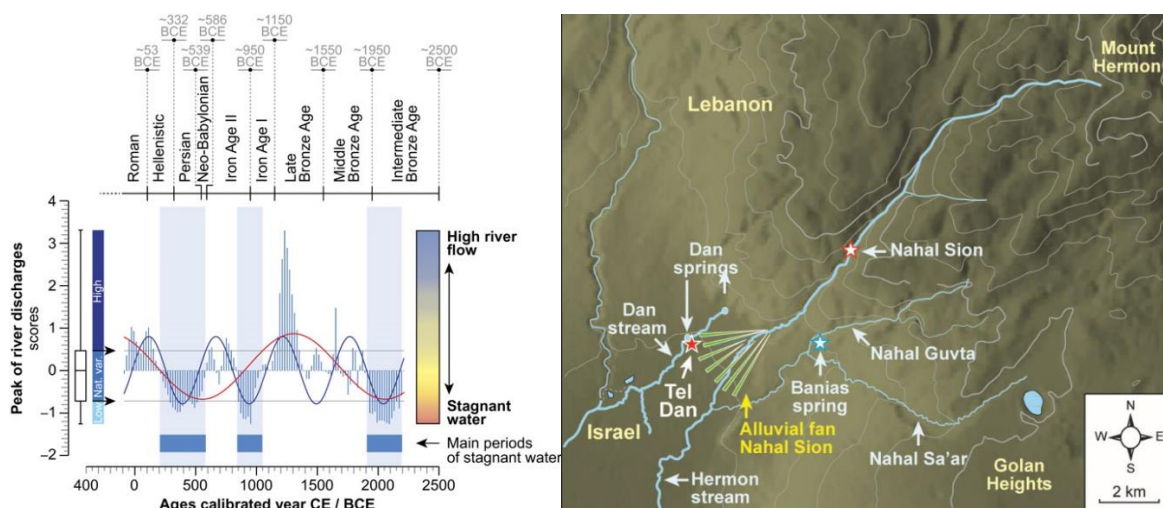
Fig 5.10: River discharge and flow in the BA and IA (Reprinted with permission from AAAS http://advances.sciencemag.org)

Settlement density at Dan reached its peak in the EBA (Biran et al 1996:83-160), declining in size and

density thereafter, in the IBA (Biran 1995). The MBA (Strata XIII-IX) saw an increased population with immigration from Syria (Ilan 1996:159-174). The second half of the MBA saw an increase in fortifications around the perimeter of the city, (Fig 5.9) timed with an increase in the river flow after moving out of a period of stagnant water (Fig 5.8). This was also the time when the monumental MBA gate was constructed (Biran 1984:1-19).

The LBA settlement was occupied in all areas but with a lower settlement density than in the MBA (Ben-Dov 2011). During the transition from LBA to IA I, the city encountered upheaval, with a decreased population and extensive grain storage in subsurface pits; possible food insecurity as discussed in Chapter Three (Ilan 2019a). By Stratum V the IA I, the city settlement again peaked, coupled with productivity, a system of exchange and emigrants from the Aegean and Egypt (Ilan 2019a). Oleiculture is represented by the olive pits found in all areas. Dan was destroyed in a massive conflagration preserving much in the way of material culture, but no human remains; the inhabitants were not caught in the fire (Ilan 2019a:47). This period of high river flow in the LBA (Fig 5.10) was also the period of Egyptian occupation, the Canaanite conquest, and the Aegean infiltration. Water seemed to be a magnet in attracting settlement, causing the war for water with ramparts as the first line of defence.

The later period of IA I occupied structures built over those of earlier periods with a smaller spread settlement. Very few olive pits were recovered, relative to the size of the excavated area. An earthquake is thought to have destroyed the city during this period (Ilan 2019a:19). The city also entered a period where the water flow ceased and the water table dropped creating marshland and stagnant water, halting further construction and development (Fig 5.10).

The IA IIA continued the trend of late IA I. It took 600 years before renewed construction of fortifications on a large scale such as city walls and a gate tower were erected (Fig 5.9) on the foundations of the BA ramparts (Biran 1995). The development took place while moving out of a period of low settlement and a stagnant water situation (Fig 5.10). In my opinion this may be because the continued conflicts with the Israelites and Aramaeans justified hegemony and emulation.

IA IIB emulation in the construction development, agricultural activity and the population peaked (Fig 5.10). During this period, the ritual function or cultic practice became a stronger focus for the city resulting in more public rather than domestic structures. The locals did not necessarily increase in numbers, but more foreigners made pilgrimages especially at festivals (Greer 2013). It was in this period

that the gates in the central south entrance of the city underwent numerous developments on their fortifications.

The later period of the IA reached levels of settlement last experienced in the BA to IA transition and the MBA. At the upper spring, a monumental structure thought to be an Assyrian governor's residence was built (Thareani 2016b:254-283). The cultic compound in Area Y was also no longer active (Biran 1995).

The ramparts have been discussed as a fortification of defence as well as emulation in the socio-political environment during the BA and IA. By default, the defence would also ensure the protection of the water source of the Dan Springs (Kempinski 1992b). The ramparts in the BA and the early part of the IA may also have been a major burden with monumental ramparts 18m high and up to 70m wide covered with travertine it initially lacked drainage, with no effective water management (Biran 1994:72). This lack of infrastructure and resources to manage drainage through the ramparts would instead have contained the water that settled during the low river flow period, thus fast-tracking the stagnant water process, triggering malaria and infectious diseases. This would have huge consequences as was experienced in the 20th century CE. One can conclude that the ramparts had both benefits and challenges for the BA and IA in respect of water; however, in my opinion the benefits outweighed the challenges.

5.5   CONCLUSION

The role of the Dan ramparts through the BA and IA has shown that they may have served a different purpose when focusing only on a specific dynamic. This chapter focused on the ramparts in war or conflict situations, the monumental gates and buildings influenced by emulation, as well as their impact in water protection and management.

The wars during the BA and the IA make no mention of any attempt or successful penetration through or over the ramparts at Dan. This would imply that the ramparts served as a first line of defence against an attacking enemy. Rampart penetration was possible in some cities during this period, which will be discussed in Chapter Six. The various conflicts and attacks on Dan were through or at the gates, identifying the gates as the weakest link. Lack of archaeological evidence in the BA and the sealing off of the MBA gate shortly after its construction in Area K, leaves the gates of the MBA and LBA situated under the IA gates in Area B (Ben-Dov 2011:112) as the most likely point of entry during a possible attack. Evidence of historical archaeological events during BA of any enemy penetration or battles at the gate is lacking.

The IA, through biblical and destruction layers and through inscriptions, has identified three events where enemy forces attacked the city or took control of the city. These all occurred at the IA city gates and not through any IA fortifications or the BA ramparts. The first was the Aram Damascus occupation in the late 9th century evidenced through the erection of the monumental royal inscriptions at the rebuilt IA Gate 3. The second occupation was the resurgent Israelites who recaptured the city, destroying and rebuilding part of the gates and additional gates, as the gate complex together with the city which became a major cult centre. This occurred in the first half of the 8th century and was enabled through the Assyrian onslaught against the Aramaeans. The final attack prior to the exilic period during the Babylonian rule was by the Assyrians who attacked the gate while on their way to Hazor; however, the Assyrians took possession of Dan as a regional centre as evidenced by the governor's residence unearthed in Area T (Thareani 2016b:254). The Assyrians were led by Tiglath-pileser III where the conquest of Dan probably occurred between 734-732 BCE. The major conflagration layer across the city covered the fortifications, public and residential areas (Thareani 2016b:258). The confirmation of this being associated with the Assyrians is yet to be confirmed as the event was on the back of a major earthquake (Thareani and Ilan forthcoming).

Emulation was evident throughout the BA and IA at Dan where the ramparts emerging first from the EBA were expanded into monumental structures of massive building and human resources comparable with that of the Egyptian pyramids. The later part of the MBA had a monumental mudbrick gate which was probably constructed to include ceremonial festivals, but the gate was soon closed, back filled and sealed off as part of the ramparts where new gates were erected or existed in the midpoint of the southern ramparts in Area AB.

In the IA, with the shifting control between different kingdoms, the emulation continued coupled with hegemony trying to outdo the rulers of the past and the challenge to win the hearts and minds of the people. Possession was not just the accruing of territory through blood, sweat and tears but also through political maneuvering by incorporating ethnic diversity to ensure the sustainability of the annexed territory. The changing hands between the Aramaeans, Israelites and Assyrians all showed monumental structures to appease the masses and glorify the rulers. The Aramaeans rebuilt the gate complex on top of the BA gates displaying a monumental royal inscription, today commonly known as the *Dan Inscription*. The Israelites destroyed the inscription and used the pieces to revamp the gate complex with the addition of an outer gate and an inner-city gate. The main gate 3 was supported by monumental city walls. In addition, the Israelites had developed the city into a cult centre with a monumental *bamah* and cultic

activities included at the city gates for the massive influx of pilgrims. The Assyrians, following occupation from the Israelites, added to the gate complex but also redesigned the city after a massive conflagration throughout the city. An Assyrian governor's monumental residence was also discovered identifying the extent of the redevelopment which despite the decline of the cult centre had a permanent population peaking to capacity and leveling out before the end of the LBA.

Water at Dan probably played a major role in libation and cult activities; however, this chapter had a core focus in terms of the ramparts' ability to protect the water source especially of the Dan spring as well as sustaining the population during times of siege.

Despite the history of wars through the BA and IA, as well as destruction and conflagration caused by earthquakes, the engineers and rulers in commissioning the erection of the ramparts in the BA encompassing the spring would not have thought that it could be possibly counterproductive. This cause was primarily due to the lack of effective water management during the BA at Dan due to the long climatic cycles of 550 years, and they were not able to foresee the impact that river flow and water levels would have on the city and its agricultural development, and the impact of stagnant water on disease caused by malaria and other related sicknesses.

The lack of drainage initially during the EBA rampart stage may have been a contributor to the stagnant water in the intermediate BA lasting 600 years. The IA period of stagnant water was a lesser period at which stage drainage and better water management over and above the impact of destruction saw lesser periods of inactivity.

Collectively the ramparts, considering the wars, emulation and water management, were probably an asset to the city's population. Although the enemy many times through the BA and IA penetrated the city through its gates, the monumental ramparts together with their fortifications ensured a protective line of defence. This emulation of mass ramparts attracted migrants to the city allowing for more development and growth, which contributed to the improved economy of Israel, while its Israelite neighbour Judah in later years continued to remain behind in development.

CHAPTER SIX

HYPOTHESIS: THE ART OF WAR

6.1   INTRODUCTION

This chapter will address the hypothesis that Far East military strategy influenced rampart defence and penetration in Palestine during the BA and IA as well the transition of the IA into the Assyrian period. This dissertation has covered the military and socio-economic influence in the north of Israel with specific focus on Tel Dan from the Egyptians and Cushites in the south, the Sea Peoples from the west and various ruling dynasties from the north during the BA and IA. W now turn to the East.

Sun Tzu's book of essays on '*The art of war*' form the earliest doctrine on military strategy and is yet to be superseded by any new military principles today despite the emergence of cyber warfare. Tzu, a Chinese general, documented his treatise circa 500 BCE. Hart (1963) sums it up as the concentrated essence of wisdom on the conduct of war. Giles' and Griffith's translations of Tzu's principles have been applied in this chapter. Griffith's work also includes interpretation on Tzu's work around the fundamentals of strategy and tactics.

Evidence through dental examination of teeth and bones from the tombs found in Megiddo in the MBA, had identified that goods and knowledge were traded from the Far East since the BA (cf. 4.8.2). Although historical recording of events emerged only in the 8th century BCE in Israel, the oral tradition was in existence from the BA. With the movement of people, military campaigns, and trade one cannot deny that military strategy, although not documented till the 6th century BCE, was also intellectual knowledge that was traded throughout the BA and IA.

This chapter will unpack the defence and penetration strategy, techniques and tactics that may have been adopted to attack Dan in the LBA and IA, be it through the ramparts or the gates or to deter entry through the gates and ramparts. This chapter will also form the base of possible further research on military siege strategy in the south Levant during the later period of the IA with a focus on siege ramps. The possible siege techniques at Dan by attacking forces will also be discussed covering conflict, destruction, capitulation, negotiation and deportation. It will conclude with several hypothetical scenarios of the annexation of Dan by opposing forces and to what degree the conflagration or destruction was executed

by the attacking force, if any. Finkelstein (2009:121) researched the Megiddo destruction layers as an effective benchmark in determining whether the degree of destruction at Dan during a specific campaign was carried out by the enemy or possibly through other circumstances.

6.2   DEFENCE

6.2.1   Strategy

In the 1960s it was a widely accepted view that ramparts, moats or fosse, walls, and gates were all part of an integrated defensive strategy (Parr 1968:43; Yadin 1963:17). The conditions at Dan were not a continuous rampart of one period and size (see Chapter Three). A combination of defensive strategies which would require an understanding of local conditions and the awareness of the water channels (see Chapter Five) was necessary. No mention in the Hebrew Bible or any archaeological evidence has identified whether the defenders of Dan during the BA and IA ever went out to meet their aggressors. Tzu states that '*whoever is first in the field and awaits the coming enemy will be fresh for the fight, the arriving enemy will be exhausted on arrival*' (in Giles 2000:19). The fortifications of the BA and IA would normally be relied on as the first line of defence, therefore these periods, except for the protection of the trade routes, would have been siege warfare rather than open warfare.

Another strategy is the positioning of the city, with its fortification being on a hill or high ground. Dan was not as large and wealthy as its closer neighbour Hazor. However, Dan with the outside perimeter at the base of the rampart to the top of the fortification walls measuring 18m and a slope of 40%, plastered with travertine, posed a formidable barrier to any opposing force. According to Tzu's principle '*where an enemy is in a strategic position behind massive walls and deep moats with plentiful store of grain and food, would result in the enemy being restrained for a long period of time*' (in Griffith 1963:111). Eventually, should the enemy not be able to take the city they would have lost many men. Should they take a city such as Dan would it be worth it, to lose part of the army to sustain it and to receive no benefit? It is in these situations that Dan was small enough to be left alone with the focus on the bigger cities such as Megiddo and Hazor, alternatively engaging only at the city gates before moving on to bigger stakes.

6.2.1   Techniques

The elements or techniques of '*The art of war*' gathered from experience and documented by Tzu, 2520

years later, are still in place today. This requires the measurement of space, estimation of quantities, calculations, comparisons and chances of victory, all flowing from the previous action (in Griffith 1963:88).

The measurement of space will be the assessment of the ground or terrain, and the defenders of Dan would have assessed the rampart and its fortifications against the surrounding terrain. Knowing that the city stood higher than the immediate landscape, surrounded by a deep broad fosse, with the most abundant source of the Jordan river at the foot of the northern flank of the tel (Ilan 2019a:6), made Dan a natural defensive obstacle to the enemy. The vegetation consisted of forest, with Tabor oak, Syrian ash, poplars and savannah grasslands (Ilan 2019a:8) making it a haven for concealed, fleet-footed, elite enemy approaches. This measurement of space in defence therefore had to be assessed based on the quantity of estimates, whether the army at Dan should defend the city.

The quantity of estimates refers to the strength of the enemy in terms of the number of fighting soldiers and the weapons (Griffith 1963:88). The environment in my opinion may have played a role in the estimates as the large Tabor oak could aid as a weapon of war available at the point of battle. According to Burke (2008), Biran (1994) and Finkelstein (1992) the military contingent was unlikely to be more than 20% of the population of Dan at any time during the BA and IA, unless they were supported by other cities. This ranged from 555 to 1000 military personnel located at Dan (cf. 3.3.11). The weapons of defence would have been predominantly bows and arrows, spears, slings, catapult, rocks as well as swords, with battle axes and shields for close combat at the gate and the inner city.

The calculations are the third step of the technique that would be adopted. In the case of Dan, the quantity of war equipment and troops which the Dan army would have to face as well as the morale of the enemy would all be assessed in determining whether it would derive any benefit to defend the city. An exit strategy would also be a consideration whereby the postern gates (cf. 2.3.6.3) would be a means of escaping the city knowing that defending it would not be possible.

Comparisons of the enemy in relation to Dan would also be necessary: this would consider the swiftness of the enemy in battle, the weapons of war, the ability of the enemy to replenish their logistics as well as Dan's own forces, food and logistics. The morale of the people in the city of Dan would have also played a major role in defending the city as in times of conflict food storage was often hidden which showed a scared and vulnerable population (Ilan 2008:101f).

Victory would only be determined based on the adoption of the information gathered from the steps above. Today in military terms it would be known as intelligence followed by situation reports to determine the probability of success. This would adopt all five techniques, namely measurement of space, estimation of quantities, calculations, comparisons and chances of victory from Tzu. As taught in military doctrine (Berkowitz & Goodman 1989), it can be summarized as the collection, evaluation, analysis, interpretation, integration and collation of all available information concerning the enemy, the weather and the terrain which is of immediate or potential importance in military planning and operations.

Whether the battles of Dan had followed these steps through the BA and IA, we will never know. However, where the Bible (Judges 18) speaks of the Danites taking over Laish or the counter-argument of Aegean Sea Peoples, could it possibly be that the inhabitants of the city at the time and its military force weighed up the odds and decided to hand over the city? Could the wars at the city gates have been a weighted attack not believing that the Laish army could defend the city? Could the attacks at the city gates have been many more, and was the Laish army ever successful in defending their city? These questions will remain unanswered for the foreseeable future as the unearthed BA gates beneath the IA city gates remain hidden except for the few probes revealing that more is yet to be uncovered as the excavations at Dan have to date only unearthed 5% of the total area of the Tel (Ben-Dov 2011.13).

6.2.2   Tactics

Tzu describes '*security against defeat*' as having the right defensive tactics and having the ability to defeat the enemy, which implies taking the offensive (in Giles 2000:12). The citizens of Dan, under the protection of massive ramparts, would probably have put themselves at a greater risk leaving the fortifications, if the size of the enemy was more than 50% of their own forces. However according to Burke, during the BA and the IA to a lesser extent, open warfare was nonexistent and siege warfare was more the order of the day (2008).

The tactics possibly adopted within fortification structures such as Dan with good water security would possibly be to store food in mass, weapons and ammunition, and to make use of all able-bodied men and women to contribute to the logistical support of the military. Specific tactics adopted in the first millennium BCE which were later documented in the 6th century BCE (Griffith 1963:92f) according to Tzu, required '*hiding order behind disorder*', which would mean that knowing the enemy is planning an attack, the defenders would continue to go about daily chores so potential spies amongst the population

would not be aware of war preparations. A second tactic would be '*concealing courage under a show of timidity*' (in Giles 2000:17). This could imply misinformation of a population being carefree and not becoming overly concerned. Although not the only tactics, a major influence in disposition would be masking strength with weakness where possibly the hiding of grains and food in subsurface pits could be sending out signals of weakness (Ilan 2008:101). Instead, they could have been partly stockpiling for war and sending out signals to misinform the enemy without disclosing the bulk storage.

6.3   PENETRATION

6.3.1   Strategy

Adapting the treatise of Tzu, he states that the rule is, 'not to besiege walled cities if it can possibly be avoided' (in Giles 2000:11). The preparation of movable shelters and various implements of war will take up three whole months; and the piling up of mounds over and against the walls will take three months more. Reflecting on the hesitancy of military generals to attack major fortifications with monumental ramparts indicates that even in the success of victory one must be assured that the economic and reputational reward far outweighs the loss of life and the burden of possible economic destruction, which historically has been the downfall of all great nations throughout history as not all acquisitions added value. Self-gain, greed, power and corruption infiltrated organizational structures contributing to their downfall.

Reflecting on the rampart built where a revised model showed that it took three years to build the Dan ramparts in the MBA with 216 men, (cf. 3.3.11) puts the period for building a siege ramp into perspective. The slope of the eastern rampart at 40 degrees would require lesser material than a vertical wall, but the number of men required to build the siege ramp, and the building of protective shelters and military personnel to protect and challenge the defenders would not have been economically viable, especially considering that the fosse was an additional constraint.

The evidence of all the conflicts at Dan has centred around the gates despite the huge towers and fortifications with crenulations. Although Tzu had documented the avoidance of cities with major ramparts and fortifications in the 5th century BCE, it is evident in both Dan and Bethsaida (Ilan 2019b) that the gates were the weakest point of penetration and the chosen point of attack. Unless there was a major incentive in taking a fortified city which was on a hill such as Lachish, only then would penetration through or over the ramparts be considered. In the case of Lachish, a siege ramp was built (Ussishkin

1990:53) where the Assyrians camped till the ramp was ready.

6.3.2   Techniques

According to Tzu '*maneuvering with an army is advantageous, however having undisciplined troops is extremely dangerous*' (in Giles 2000:25). Therefore, the likelihood of an enemy charging from all flanks toward the ramparts with an ill-disciplined army would probably result in major loss of life to the attacking enemy.

Based on the evidence addressed in cf. 5.2, the documented wars and conflicts were reported to have occurred at the city gates. Additionally, in the various stratums where destruction was identified in the excavated areas, conflagration and fire were the cause of destruction. Where destruction was not caused by an earthquake, one of the causes for destruction layers was a technique of attacking with fire to penetrate the rampart defences.

Attacking with fire according to Tzu was divided into five focus areas. The first '*requires burning soldiers in their camp*' (in Griffith 1963:141). Within the confines of the city walls and fortifications this would only be applicable where troops may be camped outside the city gates as an extra security, early warning system or access control. Such an example at Dan would likely have been at the outer outer gate during the IA period of Israelite occupation.

The second is '*to burn the stores*' (in Griffith 1963:141). This technique of fire use may have been difficult unless the enemy had already penetrated the gates and entered the city. Ilan had indicated that food stores were buried all over the city especially in Area A and Area B which would have been the residential areas, implying that the food supplies were sunken in pits inside the houses (2008:101).

The third is '*to burn baggage trains* (in Griffith 1963:141). In the case of Dan, the trade routes from the East carried predominantly metals during the BA and IA as pottery and agricultural requirements could be locally produced. It was necessary to protect Dan beyond the ramparts for possible theft of metals hence the need for logistics, patrols, blockades, countering siege techniques and military equipment which has been scripted in the *Mari texts* (Philip 1989:155).

The fourth is '*to burn arsenals and magazines*' (in Griffith 1963:141). This would, as in the case of stores be subject to the enemy having entered the city, unless spies, which is discussed in cf. 6.4.4, were able to

report back regarding the location of the armaments and the weapons range to reach the target.

The fifth is '*to hurl dropping fire amongst the enemy*' (in Griffith 1963:141). Reported by Tzu as the last technique in fighting with fire, this was probably the most dominant attack when siege warfare took place. Bows and arrows as well as large catapults would have been used from a distance to reach beyond the fosse and rampart heights into the fortifications and the city (Fig 2.4), hoping to trigger massive fires, damaging the superstructure and incurring casualties.

Tzu emphasizes, that '*to carry out an attack, one must have the means available where the material for raising fire should always be in a state of readiness*' (in Giles 2000:56). This would be one of the reasons why attacking well-fortified cities would have to be carefully weighted to determine if it would make economic sense. The heavy logistics to transport bitumen for the purposes of catapulting fireballs and burning arrows would require several heavy-built chariots making the war machine for targeting fortified cities challenging, unless the materials were freely available in proximity such as the timber from the massive oak trees (Ilan 2019a:9).

Tzu also believed that the weather and the terrain played a major role in the timing of attacks. He believed there was a '*special season for making attacks with fire*' (in Giles 2000:56). In the case of Dan, it would be the hot summer months with the wind pattern strong northwesterly increasing in the afternoon (Ilan 2019a:1). Conflagration in Dan where destruction layers were identified showed that fire could be traced across all areas, except Area K which was in the southeast. This could be due to the change of season when dry, hot, dusty, desert air with northeasterly winds blew, allowing the enemy to draw close to Dan when vision was restricted (Ilan 2019a:1). Tzu identifies wind as a critical military weapon to be used to one's advantage and he was able to train his generals to '*read the cloud formations to forecast the coming rising winds*' (in Giles 2000:57).

6.3.3   Tactics

There are many reasons in the BA and IA why the gates tended to be the choice of attack of cities that were fortified with monumental ramparts. Dan as an example had rampart bases as wide as 60m. The burning arrow had a range of 50m and an accuracy at 40m which made this tactic useless against Dan. The composite arrow had an accuracy range of 120m, which would have little effect if the population of the town had protective cover. Even the combination of the siege towers together with burning arrows would

give a range of 70m, but factoring in the fosse, the arrows would only reach the inner rampart walls at Dan (see Fig 2.4). Slingers and composite bows used in combination with siege towers would be the most effective in reaching the inner city; however, so many siege towers would be required that it would not be economical, hence the gates would have been the weakest point of entry and the best attacking position (cf. 2.4.1).

The wide ramparts together with the fosse would make the use of sappers an almost impossible option, knowing that the centre of the ramparts was made up of a 6m core wall of tightly packed stone.

As evidenced from all the IA conflicts and presumably the BA, it was the gates that became the major focused tactic of penetration. The battering ram would have had limited effect at the doors as the main gates were positioned in such a way that the speed to ram the door would not be possible, especially with arrows raining down on the troops from the flanked towers. Fire through darting burning arrows, burning bitumen barrels and burning torches at the city gates was a tactic that could have been applied, as documented by Tzu (in Griffith 1963:142).

6.4   SIEGE

6.4.1   Conflict

The conflicts at Dan during the IA occurred mostly at the city gates. The BA gates beneath those of the IA gates at the southern centre of the city ramparts have not yet been exposed sufficiently to confirm that conflict occurred also at these gates. As mentioned above, currently Dan excavations are only 5% of the total area of the Tel. Based on the evidence to date, no conflict has been recorded within or around the outer perimeter of the rampart bases other than at the gates, more specifically those on the south. It is possible that strategy, although first documented by Tzu at the end of 6th century BCE, was practised in the BA and the IA to avoid the siege of a fortified city if no economic, political or social benefit could be achieved in the short and long term. According to Tzu (in Giles 2000:5), '*if you lay siege to a town, you will exhaust your strength and if the campaign is protracted*'. The resources of the state will not be able to maintain and sustain the campaign as prolonged warfare has no benefits. 2500 years later this statement still holds true, as the fall of the United Socialist Soviet Republic, the Vietnam war, the South African war in Angola, the Iraq war and the war in Afghanistan are all examples of long protracted wars which ended in my opinion with no winners or losers, but rather economic degradation and in most instances a poorer nation.

6.4.2   Destruction

Destruction with the intention to siege the city was not always how military campaigns were conducted. However, the desire to take a city where destruction and loss of life are the only alternatives was probably the cause of the continued Israelite and Aramaean conflicts in the northeast of Palestine. The destroying and rebuilding of gates was evidence as Tzu points out that '*one anxious to defend his reputation pays no regard to anything else*' (in Griffith 1963:115). The inscriptions at Dan tell this story as to whether the Israelites were wanting to uphold their ownership of all the northern cities and claim the land to be theirs as part of the United Kingdom of David, and likewise the Aram Damascus Kings of Ben-Hadad and Hazael claiming the land that was originally theirs. This was also witnessed through the emulation that took place between Hazor, Dan and Bethsaida, as well as within Dan, when it switched between different rulers.

The question remains, was this destruction a need and necessity to take the city to achieve economic, political and social gain or was it a battle, putting lives at risk merely to honour forefathers of Israel and Aram Damascus?

6.4.3   Negotiation

Tzu states that in the practical art of war, '*the best thing of all is to take the enemy's country whole and intact and to avoid destruction at all costs. In the same manner it is better to capture an army than to destroy it*' (in Giles 2000:8). Griffith interprets this as the desire to negotiate to take over the city (1963:77) or to establish a vassal state as was the case with Israel, when the Assyrians destroyed the Aramaeans. Initially following the success of the Assyrians over the Aramaeans, Israel was able to achieve a victory over the Aramaeans in Dan but later had to relinquish it to the Assyrians.

Tzu states that to '*fight and conquer in all your battles is not supreme excellence; supreme excellence consists in breaking the enemy's resistance without fighting*'. It is therefore necessary to attack the enemy's plans (in Giles 2000:8); that is why since antiquity there was always a determined effort to capture or kill the top-ranking officials. This is the reason why today officers do not wear their ranks on their shoulders in insurgency warfare, witnessed from my personal experience in Angola as an officer in the South African Defence Force during 'Operation Hooper' in 1987.

6.4.4   Capitulation

Tzu notes that '*hegemonic kings need not contend against powerful combinations since he isolates his enemies, allowing them not to form alliances*' (in Griffith 1963:137).
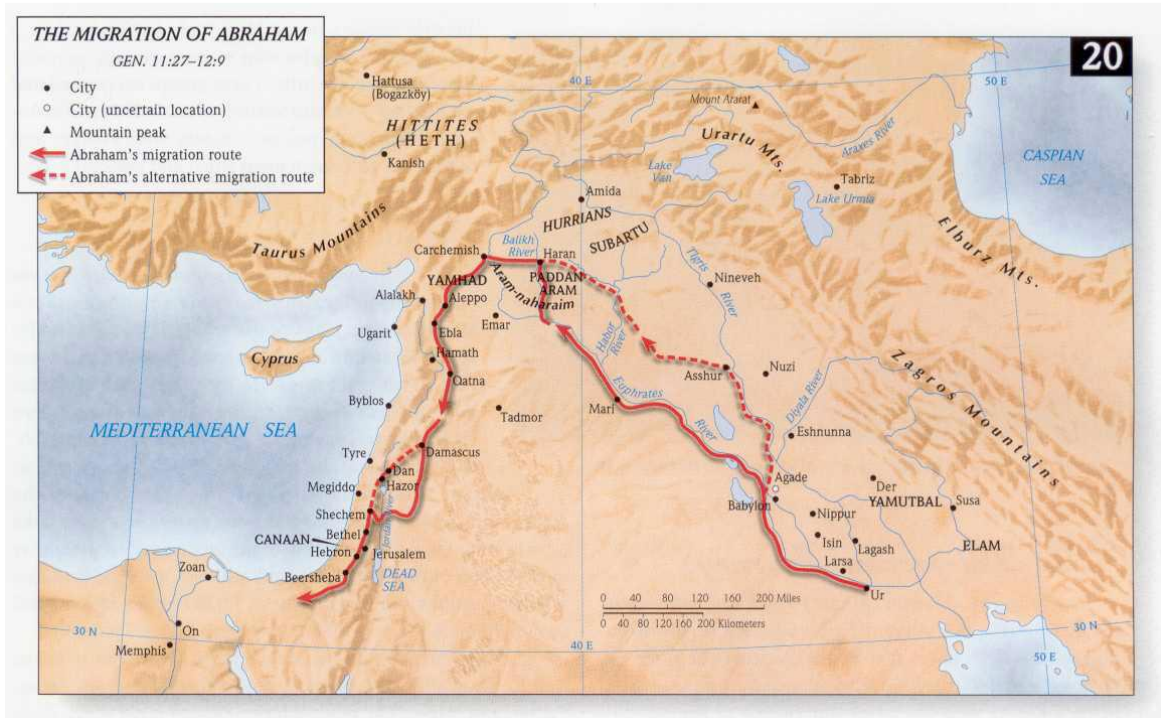
Fig 6.1: Migration route of Abraham: The Bible atlas (www.holybooks.com)

The migration route of Abram is thought to have entered through the Triple Arched BA gate at Dan on his way to Egypt (Gen 11:27-12:9). It would be a chase back toward Dan (Fig 6.1) that he would make war on the four kings who entered into an alliance to defeat him (Gen 14), although almost 1500 years earlier the strategy of Abram to divide and conquer, with the offer of capitulation from the king of Sodom, is a strategy documented by Tzu, assuring Abram of victory. As Tzu recorded, if the enemy forces are more, divide the army accordingly (in Giles 2000:9).

Dan has no evidence of capitulation; with all battles that took place at the city gates, it could be possible that Dan had capitulated in the engagements between Israel and Aram Damascus as well as between Israel and Assyria (see cf. 5.1).

The role of spies during the Canaanite conquest was a strategy documented in the Bible (Num 13;14:1-12; Jud 18). The role of spies, who were utilized in different roles and were recruited under various circumstances, was also formalized by Tzu. This was especially critical and necessary within targeted siege cities which were heavily fortified. The biblical story of the Danite spies relates to a long march in search

of a land in which they would be free of the Philistines and Amorites (Judges 18). In Figure 6.2 the journey of the spies demonstrates the use of spies during the LBA to IA transition, the same strategy as the Danite spies between Joppa and Laish. Tzu documents that '*rather than have tired, travelled and demoralized troops, generals should have foreknowledge*' (in Giles 2000:59-60).

Fig 6.2: The route of the spies: The Bible atlas (www.holybooks.com)

In other words, the attacking army should have intelligence which could be collected through spies. Although the Canaanite conquest made use of their own local spies, spies could be local, within the enemy ranks, double agents or traitors. Their intelligence which they gather about the enemy will only be part of the whole; the joining of the dots would give a more complete picture which becomes a negotiating

tool for capitulation.

6.4.5   Deportation

Reflecting on the doctrines of Tzu, deportation is not seen as a responsibility of the military. The only use in military terms would be disgruntled persons who do not support the enemy regime to be used as spies. Furthermore, no evidence has been forthcoming in respect of the city of Dan having had their citizens deported for the purposes of labour by any of the opposing forces. The building of the ramparts may possibly have been done by deportees as well as *corvée* and military labour, but this cannot be proven. The hegemony of the Assyrians in the 8th century may possibly have resulted in the removal of the Dan population to assist in the hegemony and expansion of their own states (Valk 2021:2). One could argue that according to Arie (2008), Dan was deserted for a period in IA, and this could be because the population was deported; but based on the environment and because was Dan situated on the war front, this makes deportation highly unlikely.

In the case of the Assyrians, deportation was only a secondary focus and therefore unless there was gross resistance to the status quo, the likelihood of deportation was virtually zero (Valk 2021:9). Referring to the map (Fig. 6.3) Hoshea king of Israel according to 2 Kings 17:1-6 was a vassal to king Shalmaneser V and had become a traitor by sending a messenger to Egypt for help. Shalmaneser then attacked the whole of Israel, laid siege to Samaria and deported the Israelites to Assyria; this could possibly have included the population of Dan. Dan later became the regional capital of one of the provinces of Assyria, which may have made deportation unlikely as people were needed to assist in rebuilding the city.

Although no research could be found around the political triggers, in my opinion deportation could additionally be a means of moving people from their home base and mixing populations to create diversity and culture mix which would inhibit possible uprisings and planned resistance. In Figure 6.2 the routes indicated in green shows the Israelites' deportation from Israel, especially from Samaria. No evidence to date indicates that the population of Dan was deported.
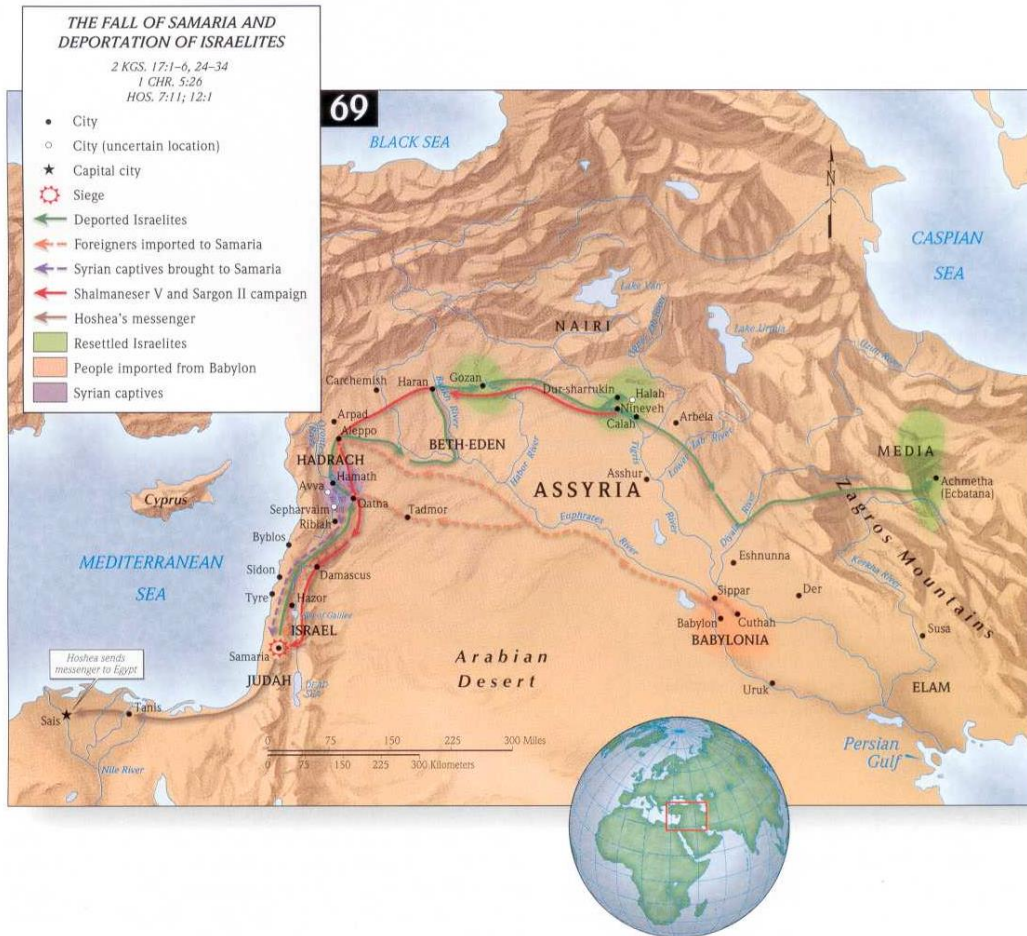
Fig 6.3: The Assyrian deportation routes: The Bible atlas (www.holybooks.com)

Syrians and foreigners were imported into Israel, specifically Samaria and possibly other cities such as Dan, during the Assyrian occupation of the city.

6.5   HYPOTHETICAL SCENARIO PLANNING

Different hypothetical scenarios can be theorized as to whether the ramparts at Dan served their purpose as a formidable deterrent making it impenetrable by enemy forces and whether the gates were the battle ground for the conflagrations, if any. This section will focus on three hypothetical scenarios during the IA, which in time can be tested more vigorously, as evidence in support of these hypotheses is more forthcoming and a greater investment in research on military strategy, including intelligence can be realized.

6.5.1   West meets East - spies, speed, surprise and slaughter

Scheffler (2001:33), followed by Finkelstein & Silberman (2002:48-71) and Milner (2008:18) all are aware of the various hypotheses or models associated with the 'Exodus' and the 'Canaan Conquest' aligning or challenging the Hebrew Bible in varying degrees. These scholars and many others are competing for intellectual respectability for their specific theory or hypothesis. This hypothetical scenario is a mix of the many theories, focusing on a strategy which was influenced from the Far East.

Following the so-called conquest of Canaan as recorded in the Bible, the conquest of Laish by the Danites followed (Jud 18). But who were the Danites and what has this to do with the West and the East? Although this dissertation has discussed the possible origination of the Danites as Aegeans, it is necessary to reflect on a possible earlier period of the 'Exodus' to understand the theory of the Danite origins, the invasion in the context of Judges 18 and the tactics possibly used from the East which were documented by Tzu at the end of the 6th century BCE.

Fig 6.4: Tomb at Dan (Biran 1994) and tomb at Mycenae (Photograph Donald Scott 2017)

Could it be possible that when the Israelite tribes left Egypt, not all left on foot but could have crossed the Mediterranean Sea by ship to Mycenae[1] in Greece? Milner (2008:12) argues that before the

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[1] This dissertation is not intended to elaborate on the evidence of the possibility of a Hebrew dissident group fleeing to Mycenae circa 15th century BCE. Various contributions supporting this possibility collectively is evidenced through the following resources: (Milner 2008:450ff; Schult & Spatz 1995:7; Jacobovici 2019; Josephus 15:1,38; 1 Maccabee 12:21; 2 Maccabee 5:9; Yadin 1991:294-310; Exodus 1 -18; Ezekiel 20:24; Judges 5:17)

completion of the 'Exodus' a group of dissident Hebrews left the tribes under Moses' authority due to fear of being killed for non-compliance of the Mosiac Code. This could have been a returning group of Sea People known as the *Denyen, Dannunu* or *Danoi*, who had morphed into the Greek tribe from Mycenae, and who would eventually link up with the allocated area for the Dan tribe in Zorah and Eshtaol (Jacobovici 2019). Jacobovici in conversation with Ilan links the tombs containing pottery and gold crafts found in Mycenae, Greece, to the Mycenean tomb found at Dan (Fig 6.4; 6.5; 6.6).
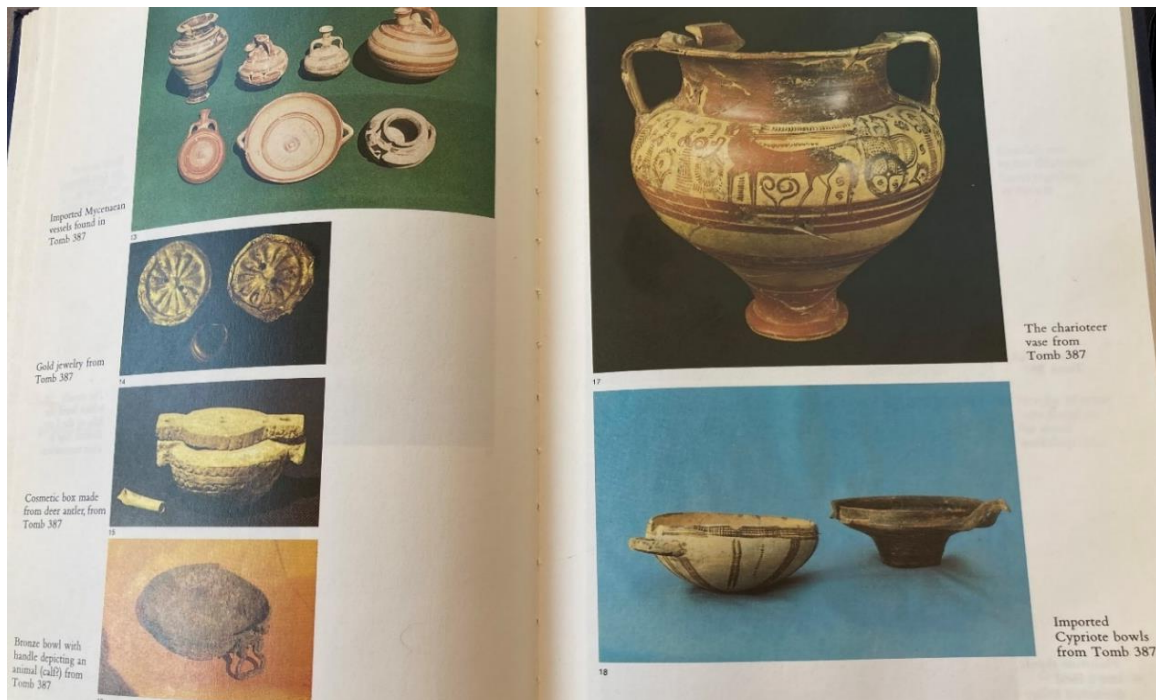

Fig 6.5: Tomb findings at Dan (Biran 1994:13-18)

Fig 6.6: Tomb findings at Mycenae (Photographs Donald Scott 2017)

Ilan in conversation with Jocobovici further links the *Danoi* in Dan as the Danites of the Bible, as the standing stones are representative of the five toes at the foot of the city which leads up to the altar and the holy of holies being the bamah mapped out to the model of the temple of Solomon in Jerusalem (in Jocobovici 2019). Some of the Danites according to the Song of Deborah in Judges 5:17 remained at their ships when the rest headed toward Laish. These Danites might have been 'Sea People' (*Danoi*) who had joined those that had travelled through the wilderness and were based in Joppa, which was on the coast (Jos 19:46) being part of their allocated territory.

Scheffler (2001:38) mentions the seven groups of Sea People as listed in the *Medinet Habu-inscriptions* which included the *dnn* or *denyen*. Scheffler states that the Philistines settled south of Joppa, the *tjekel* occupied the northern coast close to Dor, the remainder are unknown, but the *denyen/dannuna/danoi* linked to the Danites as they migrated from the coastal plains toward the far north. In my opinion the only remaining coastal area would be around Joppa, linking with the ships in the Song of Deborah, and the original settlement allocated to the Israelite tribe of Dan (Jos 19:40-45).

In Judges 18:1-10, five Israelite spies from the tribe of Dan between Zorah and Eshtaol arrive at Micah's house and ask the priest whether the Lord will bless their proposed conquest of Laish. They found the people at Laish living in security, possibly referring to the protection of the huge ramparts which Biran refers to as impenetrable (1994:59), and they return home to report back to their people. In summary we see that the use of spies to gain foreknowledge was adopted by the Danites, which is documented in Tzu's '*Art of war*' (in Giles 2000:59).

According to Judges 18:11-26, 600 armed men from the tribe of Dan set off from Zorah and Eshtaol to conquer Laish. They camp *en route* at Mahaneh Dan which is a camp of Dan near Kiriath Jearim (cf. Jdg 13:25). Based on the resources required to build the ramparts as discussed in Chapter Three as well as Burke's estimates, the maximum size of the Dan army would have been 555 soldiers, not necessarily all armed fighting soldiers. It can therefore be assumed that the five spies gave a situation report of the strength of the army at Dan, and the tribe of Dan mobilised a force that would guarantee a victory as documented in Tzu where a force should be, if possible, greater than that of the enemy. Secondly, the intelligence gathered on any outside deployments or security beyond the city gates was also noted and reported back. Tzu's military treatise addresses the question of encamping the army, and the same would apply for the attacking force. If the 600 men were to go directly to the city gates to launch an attack, although they may have had more fighters, they would have been encamped with the rampart defences in

front of them, the river on their left flank and Abel Beth Maacah (Fig 4.5) 7km west of them. Although not documented until the end of the 6th century, the tactics of Tzu (in Giles 2000:33) were adopted by possibly, if necessary, first eliminating anybody who could entrap the 600 Danites or come to the aid of Laish and then proceeding onward toward the fortified city.

In Judges 18:27-31, on arriving at Micah's house, they stole the silver idols and household gods and set off with his priest. This again supports the theory of the tribe of Dan and *Danoi* merger, as the *Danoi* were still focused on their idol gods and Dan showed the 'respect' of the Levi priests. Secondly the loot, livestock and the children who were acting as a shield by keeping them in the frontline ensured that any attack from Micah's forces would cause them to hold back in case the innocent were killed. This tactic is documented by Tzu as a deterrent to keep the enemy at bay (in Giles 2000:29).

According to the narrative in Judges 18:27-31, on arrival at Laish, they attacked the city and destroyed it, before re-building it and calling it Dan. The silver idols were set up in Laish. During this period, the transitioning from LBA to IA, the gates were now in the same location as the IA gates which were later to be built and improved on by the Aramaeans, the Israelites for the second time and the Assyrians (cf.5.3.3). It is probable that the 600 Danite men entered as part of the daily workforce and visitors entering the city based on the intelligence analysis, through the information collected from the spies. Once in the city, with speed and surprise the Danites were able to attack and destroy the Laish army, taking over the city. This was also a period that saw a decline in Egyptian occupation. In executing their strategy, it was critical they adopted Tzu tactics to ensure that Laish was isolated by incapacitating Abel Beth Maacah (Figure 4.5), any troops from Laish outside of the city along the trade routes in proximity, and by ensuring that Sidon would be too distant to bring in reinforcements, hence the need for speed in taking over the city.

Referring to section 4.5.5.1 '*To the god at Dan*', reading the name of the place in Aramaic it would read *Danois*; however, is it possible that *Danois* could be referring to the people who lived there and Zoilos had a Greek deity in mind (Biran 1994:224). In my opinion it would make sense that the *Danoi* came from Mycenae and saw themselves as part of the tribe of Dan based on the above discussions.

It may seem to be that one is having to side with either the Biblical narrative or the theories of recent archaeologists; however, through this hypothesis it is possible to see that the two might have been intertwined. The Dan conquest as spoken about in the Bible most probably happened, but how it possibly

happened has been uncovered by archaeologists. The oral tradition once documented in the 8-7th century may not have had the accuracy of timing and role players, but history was real. In the same manner, although no treatise or strategy was documented until the end of the 6th century, the military tactics might have been adopted and executed by knowledge that was passed on between the East and the West centuries before it took on the written form.

The rampart walls with all their defences, although physically impregnable according to Biran, exposed other points of weakness. It was not the weapons of warfare that ultimately would break down the Laish defences, but strategy through intelligence gathering by spies, speed, agility, planning and the element of surprise that resulted in the slaughter of the 'Canaanites'.

6.5.2   Winning the hearts and minds of the people

Aram Damascus were the rulers of Dan during IA II; how was this possible? No such conflagration or destruction had ever taken place. This is the view of Fiaccavento (2014:230) where the clashes between Israel and Aram Damascus are documented through Aramaic inscription referring to IA II sites in the Jordan and Jezreel valleys and as far south as Gath and textually in the Bible. However, no destruction had taken place by the Aram Damascus king Hazael at Dan; in fact, it was left barren for a period according to Arie (2018). Despite the *Dan inscription* no destruction layer was associated with the Aramaean conquest. The inscription was erected to celebrate the rebuilding of the city and not as a symbol of its occupation (Fiaccavento 2014:231). After the destruction in IA I the city was left abandoned and was eventually annexed by Hazael and rebuilt (Arie 2018).

Tzu puts an emphasis on the attacking strategy, and Hazael applied the strategy of the Tzu treatise that '*to fight and conquer all your battles is not supreme excellence, supreme excellence is breaking the enemy's resistance*' (in Giles 2000:8). Hazael would not drain his forces knowing that he was intending to eventually reach Gath. Cities that posed no threat would be bypassed; however, it would not be a good strategy to take the shortest and most direct route to the south, as it would have been necessary for any large, fortified cities to have been destroyed to avoid having his armies encamped and the logistics lines cut.

Dan was also a well-fortified city, and it would be virtually impossible to penetrate the ramparts because of their height and thickness. According to Tzu the worst strategy would be '*to besiege monumental rampart cities if it can be annexed without having to make war*', simply because it would take up to 6 months to build

defence shelters and siege ramps, making it a long campaign with few gains (in Giles 2000:9).

Hazael adopted a military strategy in taking occupation of Dan possibly by a process of rebuilding the city through a subtle process of having a non-presence of military in the city while it was deserted or sparsely populated. As the city grew and people from the Aram Damascus region started settling in the city, the locals such as Israelites were slowly drawn to the hegemony of the Aram Damascus renewing of the city and the prosperity of the city. This strategy saw the winning of the hearts and minds of the city's population.

Hazael was able to annex the city of Dan and it became a prominent regional capital and a front line of defence for its southern frontier (Arie 2018). Hazael knew when to fight and when not to fight. He knew how to handle both superior and inferior forces (Giles 2000:10). Hazael, in erecting the monumental inscription at the gates of the rebuilt city, was not only celebrating the achievement of a great city but also using Tzu's strategy of propaganda by reflecting on the land, which was once his father's, and was now back in the hands of Aram Damascus, referring to territory beyond that of Dan.

6.5.3   Conflagration between the Israelite defenders of Dan against the Assyrians

The rulers of Dan being Assyrians under the reign of Tiglath-pileser III with effect from 733 BCE was through annexing and not a conflagration. This hypothesis is tested below.

The eastern part of the Hula Valley was an out-of-the-way location which included Dan and therefore would remain on the fringes for regional and imperial powers; however, these areas needed to be included in the political system (Thareani 2016b:256). As indicated on the map (Fig 6.7) Tiglath-pileser III expanded his borders west of the Euphrates River annexing first Syrian kingdoms, followed by the south Levant as far as Samaria and further south along the coast (Na'aman 1995). In 2 Kings 15:29 although Dan is not mentioned by name, all of Naphtali which bordered Dan was captured and its people were deported to Assyria (Na'aman 2005:45-46). Evidence of the Assyrian invasion could be identified in most excavated sites including Hazor and Bethsaida (Thareani 2016a:169ff).

Stratum IIA at Dan was destroyed by conflagration in the excavated areas, but this is still to be released in the Dan V excavation report (Thareani forthcoming). Could this not have possibly been due to the rebuild of the city which could have created a destruction layer? Knowing that the Assyrians had taken the capital

Samaria, and the major city of Hazor, why would they drain their forces against Dan? Is it not possible that Dan, although its population was in a secure city with fortified ramparts and could defend themselves, would not be able to sustain itself indefinitely if faced by a massive army? Hence the option to surrender without having to shed blood.

Like any change in government today, name changes, destroying of icons, culture and religion are some of the things that are affected. Examples are in Russia, South Africa and Germany over the past few decades and was possibly the same in ancient times. Could this rather have been the conflagration that has been documented, rather than a total onslaught?

Dan, previously Laish, experienced its greatest period of expansion since the EBA, with a redesigned town with stoned-wall houses and public spaces, attesting to effective town planning (Thareani 2015:258). The Dan environment and ecosystems mirrored the irrigation and greenery around the monumental structures in Nineveh and later Babylon. The Assyrians could have used the ecological advantage of the waters, plants, and diverse animal species and, taking advantage of the marshlands, chose Dan as the provincial capital as the governor's residence could replicate on a smaller scale the architectural features of the Nineveh construction (Feibel et al 2009:29) and Nimrud (Novak 2004:177-85).

The governor's residence at the Pilasters Wall in the Dan structure is like the walls of the royal palace of Sargon II, where the courtyards, guardrooms, service, store and reception rooms and hall all mirrored the same building techniques of Sargon's citadel (Tharaeni 2016:274). Pithoi embedding was also as that found in Nimrud and stored in case an imperial campaign was routed through the territory of Dan.

Dan became a regional capital and required the city to represent the hegemony of the Assyrian Empire. It is possible that the hypothesis can be justified that the Assyrian occupation was not through conflagration and the destroying of the Dan fortification and the city. Additionally, they would have been unable to penetrate the rampart walls. The power of the Assyrian army and the success in Syria as well as Israel would have put fear into the citizens of Dan. Israel may not have had a mighty army in Dan, as it won Dan more through a power vacuum with Assyria destroying Aram Damascus. The Israelites in Dan knew it was just a matter of time before they lost the city and therefore allowed capitulation of the city. Conflagration was probably due to a new city with a flair toward the imperial city palaces of Nineveh and Nimrud.
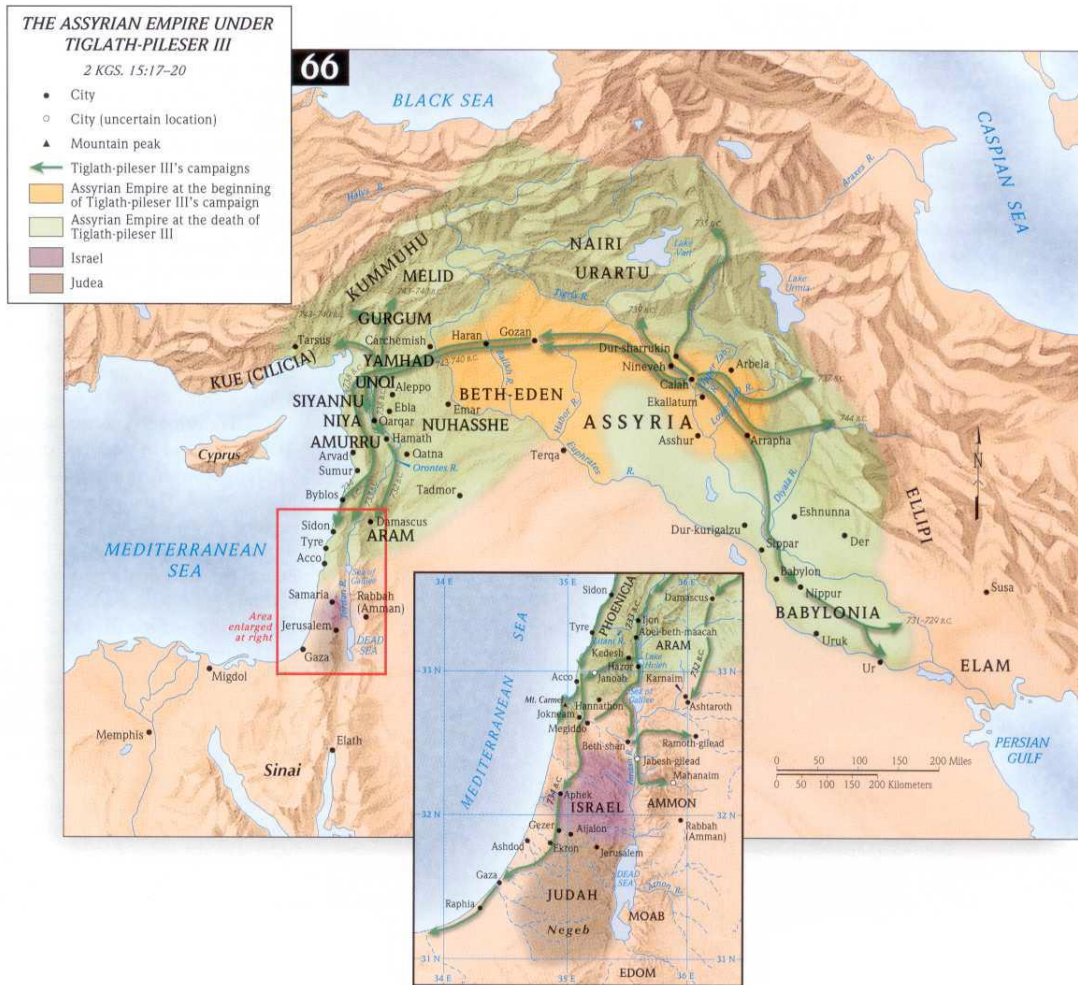
Fig 6.7: The Assyrian empire under Tiglath-pileser III. The Bible atlas (www.holybooks.com)

Tzu states that (in the practical art of war) '*to take the enemy's country whole and intact, to destroy it is not good and supreme excellence is to break the enemy's resistance without fighting*' as the rule is not to besiege walled cities and should be avoided (in Giles 2000:8). Could it be that the war doctrines were practiced and influenced from the East, even though they were not yet in a written form? It was evidenced in Dan that the role of its occupation was as a forward command station for military campaigns, a base for military intelligence gathering and a logistical base for continued campaigns, all pointing to the critical occupation of strategic areas to advance the hegemony expansion of the Assyrians (Fig 6.7) (Parker 1997:79).

Many cities in northern Israel were destroyed such as Bethsaida and Hazor, but Dan had all the elements of an ecological, natural architectural environment to closely replicate Nineveh and Nimrud. Israel by 733 BCE was Assyrian controlled, so setting up Dan as the forward headquarters was a formality.

6.6   CONCLUSION

Military strategy has been adopted and adapted since the EBA and has been carried forward by generations through oral tradition, embedded training and drills. This is evidenced in the Hebrew Bible and extra-biblical texts. Although the written language was first evident in the Middle East around the 34th century BCE, it was only at the end of the 6th century that military strategy was first documented in Tzu's military treatise *'The Art of war'* (in Griffith 1963:iii) which has never been surpassed in comprehensiveness and depth of understanding.

The defence strategy, techniques and tactics that possibly could have been exercised in the protection of Dan were strongly aligned to the treatise of Tzu. The major strategy of defence was arguably the fortified ramparts which were a major deterrent for any enemy wanting to scale the walls. The normal conventional weapons, together with the fosse around the rampart walls, were the basic techniques that could keep the enemy at bay. The tactics of defence that the 'army of Dan' probably employed were not to expose themselves to open warfare, using the rampart fortifications at the first line of defence, with stockpiled resources and misinformation to keep the enemy guessing.

Penetration strategies by all the enemies challenging the ruling force in the city of Dan had at all times adhered to the treatise of Tzu in avoiding the ramparts as a means of penetration as this would be financially draining on the economy and military resources. Gates were the weakest points and in all the recorded military occupations of the city, the battle happened at the city gates.

The techniques exploited the vulnerabilities at the city gates at Dan; however, the design of the gates at Dan was probably not an easy choice but was easier than the formidable rampart fortifications and fosse. The penetration weapon systems would also have been restrictive in use at the city gates; however, although it cannot be accurately determined just how the gates were attacked, it is likely that fire played a major role. This is in line with Tzu's treatise where five stages of fire were probably used to penetrate the city, namely targeted personnel at camps, stores, baggage trains, arsenal, magazines as well as weapons of fire projected over the rampart walls.

The tactics adopted were possibly the penetration weapons addressed in Chapter Two; however, the restricted range justifies why Tzu documented in his treatise that massive walled cities should be avoided. Siege towers and battering rams were probably restrictive because of the fosse, hence most of the

occupying nations in Dan gained the city through subtle means.

Most recorded destruction layers at Dan were not necessarily through conflict. These destruction layers were also due to earthquakes, rebuilding of the city and, although no archaeological evidence has been forthcoming, the likelihood of fire caused by accident or negligence in the residential or metallurgy areas should not be discarded. The strong summer northerly winds could always be a trigger for widespread fire. The townships in Cape Town are a fire danger with fires often occurring in the summer when the southeaster is blowing. Known conflicts that have been documented archaeologically have been noted through the takeover by Israel of Dan, after the Aram Damascus regime was weakened by the Assyrian onslaught.

The layers unearthed to date in and around the gates have not shown any weapons of note that would have supported heavy conflict at the city gates during the IA. The probes to the LBA gates in the same area are at this stage too small a sample to gather any sherds, hence the change of rule possibly took place with little or no resistance implying that negotiation or capitulation may have been the way Dan was annexed. These alternative strategies of gaining a city such as Dan are incorporated in the Tzu's doctrines knowing that the mighty city ramparts of Dan were a physical wall of defence, and nonphysical means of penetration were necessary to conquer Dan.

Although deportation was well documented in the Hebrew Bible, especially amongst the Assyrians and Babylonians, no evidence of deportation could be discerned in Dan, although because of the hegemony at Dan during the Aram Damascus and Assyrian rule, it was likely that skilled labour was imported and some of the Danites/*Danoi* being master craftsmen may have been deported or exported to locations elsewhere to assist with skilled building operations. Assyrians generally deported en masse only if major resistance and rebellion were the order of the day.

Hypothetical conflagration scenarios at Dan associated with archaeological sources of actual evidence showed an alignment with Tzu's strategies and the role that the Dan ramparts played, where in all instances the ramparts were never challenged in trying to access the city. One could conclude from this that Tzu's treatise to avoid attacking a well-fortified city with monumental ramparts through direct access of the walls, be it through or atop, is not an economical option as you may win the battle, but you may not have gained the advantage. All the conflagrations hypothesized showed that ramparts were a powerful line of defence, and planned strategy was possible without the need for massive devastation and loss of

life.

The intent of the enemy against Dan was, in most cases, never a complete conflagration, nor always an intention of destruction. This is supported by the Megiddo destruction layers indicating the partial destruction layers at Dan were not caused by the new occupied forces. Siege towers, battering rams and the use of sappers were appropriate for fortification walls but were not a match for ramparts. Dan in all instances was a city conquered through conflict, annexation, or capitulation. Public buildings may have fallen, some residences may have crumbled, gates were destroyed and rebuilt, but through the BA and IA the ramparts stood firm.

CHAPTER SEVEN

CONCLUSION

7.1   INTRODUCTION

This research was expected to uncover the events that caused the ramparts to be rebuilt or evidence of catastrophic destruction of its walls and fortifications as the enemy continued to plunder and destroy Laish/Dan through the BA and IA. Instead, a totally different picture emerged, yet the core hypothetical role of the ramparts never changed. The ramparts were a critical part of the daily life of the inhabitants of Dan, sustaining them for long periods in the BA and IA, both in times of prosperity and of war. It was in the how, when, who and why that the unpacking of this hypothesis displayed the diverse purpose of the ramparts.

In segmenting the research study into chapters with a specific staged focus it was possible to firstly evidence the microscopic drill down into the direct and indirect impact the ramparts had on the anthropological role of the Dan population, technological advances in the build as well as the weapon systems and their ability to penetrate or defend the rampart fortifications. The geographical implications of Dan's location to trade, and the environment and living conditions complementing the research questions, were all evidenced through an overarching umbrella of archaeological methodology aligned to the aim of determining how the ramparts influenced the political, economic, social, cultural, religious and military landscape (Chapter One).

The archaeological approach as well as the multi-disciplinary transversal approach throughout the dissertation illuminated the main research questions; however, identifying rework of rampart sizing and analysis of Tel Dan rampart measurements were necessary as current analysis of primary excavation reports and secondary research were not able to address the true volume of the ramparts' size (cf. 3.3.4). Complementing these analytics was an attempt to hypothesize with possible theories the change of power at Dan was in most cases, never a complete conflagration or the destroying of the ramparts (cf. 6.5). The impact of the approaches and outcomes of the main research questions and conclusions follow.

7.2   THE RAMPART'S ANTHROPOLOGICAL ROLE AT DAN

The primary role of the ramparts was that of defence with all other purposes fulfilling a secondary role. Scholars have had opposing views of rampart roles as a line of defence, to prevent erosion within the city or to contain and manage the access of people (cf. 2.6). The study of the ramparts at Dan questions whether it was any one of the above, or rather a combination of all three and not necessarily of equal weighting, adding to this a political status of hegemony (cf. 5.3.1).

The ramparts have shown no evidence of a clear and definite platform of full-scale war launched against them by any force or enemy from any archaeological evidence during the BA and the IA. No records of attempts have been documented by opposing forces, except through the gates. One can argue that the ramparts were not primarily for defence as no evidence of battles occurring from the fortification walls, on, along or at the foot of the rampart walls could be attested to date for the BA and IA period. However, a counter-argument would be that the presence of such monumental hegemonic rampart structure, coupled with military strategy, was a major line of defence which would deter any enemy due to the energy, time, resources, and degree of success, and would make the assault counterproductive (Chapter Six).

The inner side of the rampart walls did not paint a picture of the ramparts as a no-go area, reserved exclusively for the military and related activities. Instead, evidence shows it to be intertwined in the social complexity of the city, where tombs, houses and public buildings infringed or were built into the slopes of the inner ramparts (cf. 4.6.1).

7.3   THE RAMPART'S TECHNOLOGY: CONSTRUCTION AND DESTRUCTION

The gate was the weakest point of defence, and the ramparts with their fortifications were a solid, massive, impenetrable masterpiece. Taking the literal meaning for the book by Craig (1974) titled '*Enemy at the gates*', 'we tried to be equal…but there is always envy', sums up in all instances where the enemy attacked Dan and why they attacked.

The ramparts' volume, labour and material were overstated by Biran and Finkelstein and understated by Burke. Based on a reconstructed model the best estimate of the volume of the Dan ramparts should be 486 771m^3. This changes the quantities of material and labour resources required to have built the ramparts which ranged in width between 60m and 81m at heights of 18m and were centred with a core wall of 6m, sloped in some instances at 40 degrees. However, this did not change the visual size of the

rampart which probably intimidated the enemy (cf 3.3.4).

The base measurements used by Biran and Burke were not mathematically sound as the circumference midpoint should have been used to determine the volumes and not the outer or inner circumference. What other reasons caused Biran and Burke to differ? The Dan rampart definition had been interpreted by Biran and Finkelstein to include the mudbrick walls atop the ramparts to be part of the rampart construction, whereas Burke sees this as a fortification wall separate from the ramparts which incorporated the defence towers and city gates. The divergent views have impacted on the size of the ramparts as well as the volume of the ramparts, which in turn impacted on the resources and time taken to build them. Additionally, Burke did not recognize the western rampart as MBA (cf. 3.3.5).

The ramparts were impenetrable. A flanking river to the west, surrounded by a fosse and lined with travertine and erosion-deterrent slippery slopes: no siege weapon or soldier could penetrate the rampart against such formidable defences, resulting in the enemy at the gates (cf. 3.3.3).

Through all this, physical rampart destruction through conflagration to date cannot be evidenced. It was the gates that had possibly fallen in the Danite conquest, evidenced in the Aramaean occupation, the Israelite reoccupation and possibly in the Assyrian takeover.

7.4   ARCHAEOLOGICALLY SPEAKING: DAN UNEARTHED

The dating of Dan's ramparts by Biran and Burke as MBA was probably not correct. The challenge by Finkelstein and Arie as EBA would eventually be confirmed by Ilan in the forthcoming excavation report *Dan V*. This also raised questions on Biran's chronology and dating of the strata by Finkelstein and Arie; except for minor differences in the IA by Ilan these remain as the midpoint of Finkelstein's low chronology and the midpoint of Bruins et al radiocarbon dating (cf. 4.4.2).

Evidence of the cultic activities and their expansion would have weakened the northwestern rampart structure where the High Place was built on the upper slopes of the rampart and the MBA tower was removed. This arguably contributed to the physical vulnerability of the rampart as the inner sloping walls would be nonexistent (cf. 4.3.2.1). However, this avenue of attack was never pursued by the enemies of Dan simply because the Dan River was a natural defence barrier. Weapon finds indicate military preparation or thanksgiving rituals which also linked cultic activity with military psychology (cf. 4.3.1).

Epigraphy, although not many weapon findings were evident, supported the evidence of destruction where the gates tended to be the weakest defence link in cities with freestanding ramparts and fortification walls. The pieces of the *Dan Inscription* found between the outer gate and the outer outer gate in secondary use related to the Aram Damascus conflict, identify, for example, possible battles which took place, possibly associated with the Dan conquest, Omride dynasty, Aram Damascus, where the same tactics were conducted at Bethsaida, by the Assyrians (cf. 4.5.5).

Ramparts were weakened, but not by sappers. Dan's own residents who were restricted to the inner rampart walls were the guilty party. The extension of the dwellings during the LBA onto the city walls and the evidence of tombs both into the city walls and beneath the floors of the dwellings are evidence of the inner slopes being weakened with cavities and holes into the ramparts from inside of the city (cf. 4.6.1).

Access control, if any, would only have been at selected key points along the gate complex. Podiums and guard rooms were present, however judicial and other administrative purposes may also have been conducted at the city gates with the plazas indicating economic activity (cf. 3.4), (cf. 4.5.3).

Fire rather than siege ramps was the core means of penetrating the city gates. The number of gates in Area A-B during the IA are also deemed to be added security to counter siege rams. By keeping the entrances offset at different angles and the towers set back in the IA gates the enemy would be entrapped, attacking the enemy from a safe height as they were confined to a restricted area within the piazzas between the city gates (cf. 3.4.3).

7.5 RAMPART IMPACT: GEOGRAPHICAL AND ENVIRONMENTAL ELEMENTS

The ramparts were not only a protector of the water source, but also a burden to the effective management of water. The ramparts were able to protect the water source from the Dan spring thereby sustaining the population during times of siege. However, lack of drainage caused by the BA ramparts and reduced water flows during periods of climatic change caused stagnant water, disease and eventual abandonment or decreased populations. The IA introduced better drainage but was still hampered by a drop in the water flow (cf. 5.4).

Citizens of Dan were all resident within the confines of the rampart walls from the BA and during the IA.

No evidence has yet been recorded of dwellings on the outskirts of the city except for a possible guardhouse, agricultural activities and trade around the city gates. The neighbouring city of Abel-beth Macaah at 7km was possibly the closest alternative secure environment and possibly have been ruled by the same nation as and when a change of power took place at Dan. In the Hula valley the EBA consisting of 23 villages and sites merged into three fortified sites by the MBA as urbanization emerged (cf. 4.8.2).

Dan was not excluded or bypassed in respect of the trade routes in the south Levant. As early as the BA evidence through dental analysis determined trade from the Far East within upper Galilee (cf. 4.8.2). Tin and other goods were imported from the East, as well as tactical and operational techniques of fortification, weapons and strategy (cf. 4.8.3).

7.6   MILITARY STRATEGY IN OVERCOMING RAMPARTS

Military strategy was the weapon that conquered the Dan ramparts. Change of power happened through the BA and IA from Canaanites, Phoenicians, Danites, Aramaeans, Israelites and Assyrians. It was timing and strategy and not penetration of the ramparts that made these nations the victors (Chapter Six).

The empires taking over Dan identified Dan not as a city to shatter and destroy, but to take whole and intact. The Danites used spies and surprise as their key strategy. The Aramaeans were opportunists taking advantage by winning the hearts and minds of the people when the city population was low or close to abandonment, allowing the renewing of the city within the rampart fortifications complemented by monumental city gates in an act of hegemony. The Israelites took advantage of the threat of the Assyrians who worked their way toward Damascus weakening the resistance of the Aramaeans, allowing the Israelites to regain Dan. The Israelite nation having been destroyed by the Assyrians probably had no option but to allow Dan to be annexed. The city under Assyrian rule rose again with Syrian deportees able to empower the city (cf. 5.3; 6.4).

The monumental ramparts of Dan were impenetrable which made the attacking force put themselves beyond the possibility of defeat. Dan's total population was only able to support an army of battalion strength at most. The enemy, to overthrow the city-states in Palestine, would have had regimental and divisional strengths, making capitulation, annexation and a gate attack the easier options, knowing victory was a given (cf. 3.3.11; 6.4).

Gates, fire and spies were the combatant tactics that were used when a physical war was necessary to overthrow the city. The enemy would in all instances have used the gates as the point of entry; however, like the ramparts, the gates became more defensible and would counter the siege weapons such as the huge, covered battering rams as they would be difficult to maneuver through the gate complexes and manual battering rams would not have sufficient momentum to be effective. Hence fire at the gates was the most effective mode of attack, justifying a contributing reason for the continued rebuilding of the gates after a change of power (cf. 6.3).

Capitulation, annexation, and emulation were the psychological warfare tactics used to capture or take over Dan where conflict was absent. This hypothesis currently cannot be proven but remains a theory which is open to challenge (cf. 6.5).

7.7   DAN RAMPARTS – THE ENEMY WITHIN

The residents of Dan within the fortified city could possibly have been their own worst enemy. The pits used as silos within the houses of the locals identified an insecurity during IA I possibly caused by a divided city population and an ill-equipped and ill-trained army. Taxation was an added burden, and the population was not at its peak as was the case in the LBA and during the Aramaean/Assyrian occupation (cf. 3.3.6) to sustain an effective defence force. Even at its peak Dan would not have been able to muster an army more than a battalion strong, as support economically from its ruling nations during the IA and lucrative trade would have been necessary to maintain a highly professional military. On its own the tax burden would be too great, hence the fall of Dan, despite its mighty ramparts, occurred at a time when ruling nations of Dan were vulnerable and the city population was on a decline.

Collectively the ramparts, considering the wars, emulation and water management, were probably an asset to the city's population. Although the enemy many times through the BA and IA penetrated the city through its gates, the monumental ramparts together with their fortifications ensured a protective line of defence. This emulation of mass ramparts attracted migrants to the city allowing for more development and growth contributing to the improved economy of Dan (Chapter Five).

7.8   RAMPARTS IN THE BIBLE

The Bible is one version of the truth. The enormity of ramparts and their impenetrable walls in the Bible

were possibly not an exaggeration as uncovered by the Dan study (cf. 3.5), nor were the related events misguided. Like the debate of high and low chronologies which is ongoing today, who was where and when, or the possible bias in inscriptions and their interpretations, one must also respect that the writings were the result of an oral tradition and so dating and names may not always be precise, but the events, although having a biased view depending on whether the writers were from Israel or Judah, were real.

7.9 CONTRIBUTIONS MADE TO THE RAMPART STUDY

The determination on the sizing of ramparts requires a structured mathematical model. Although all measurements and sizing are estimates, these should be reasonable with a high confidence level. It is therefore of critical importance that the best estimates of inputs are determined and tested allowing for all outputs to be complete and accurate. The process applied in Chapter Three will go a long way in adding value to the works of Burke where he has already made a major contribution in ramparts and fortifications in the Levant during the MBA.

Chapter Six contributes to possible theories focusing on military strategies and tactics that could have been influenced through the trade routes from the Far East, which is an area that has not yet been addressed in the past. War and conflicts in the ancient Near East were predominantly influenced from the north, west and south.

7.10 AREAS FOR FUTURE RESEARCH

Further study is necessary to evidence more convincingly that weapons to penetrate monumental ramparts with fortification walls atop were used in siege warfare, or to ascertain if these were designed and targeted only for city gates or towns with casemate walls, lacking ramparts and monumental fortification city walls.

As discussed under the contributions to the rampart study a revisit to the work of Burke and Finkelstein of rampart volumes and labour resources requires further research to determine the accuracy of data. Furthermore, the development of military strategies and doctrine adopted during the BA and IA requires further research beyond the traditional sources, identifying to what extent the Far East shaped and developed the warring parties in the Levant.

ABBREVIATIONS

AAS	*Annales archéologiques de Syrie*
AB	*Anchor Bible Dictionary. Edited by D. N. Freedman. 6 vols. New York: Doubleday, 1992*
ADAJ	*Annual of the Department of Antiquities of Jordan*
AoF	*Altorientalische Forschungen*
ASOR	*American Schools of Oriental Research*
BA	*Biblical Ar chaeologist*
BAR	*Biblical Archaeology Review*
BASOR	*Bulletin of American Schools of Oriental Research*
COS	*Context of Scripture, 3 vols., ed. William H. Hallo (Leiden, 1997−2002).*
CHANE	*Culture and History of the Ancient Near East*
EDB	*Eerdmans dictionary of the Bible*
EI	*Eretz-Israel: Archaeological, Historical and Geographical Studies*
ESI	*Excavations and Surveys in Israel*
HS	*Hebrew Studies*
IEJ	*Israel Exploration Journal*
IES	*Israel Exploration Society*
JAS	*Journal of Archaeological Science Reports*
JBL	*Journal of Biblical Literature*
JIA	*Journal of Israel Antiquities*
JMB	*Journal of Molecular Biology*
JNSL	*Journal of Northwest Semitic Languages*
J Sem	*Journal foe Semetics*
JSOR	*Journal of the Society of Oriental Research*
NEA	*Near Eastern Archaeology*
NEAEHL	*New Encyclopedia of Archaeological Excavations in the Holy Land, ed. E. Stern (New York, 1993)*
OEANE	*Oxford Encyclopedia of Archaeology in the Near East, ed. E. Meyers (New York, 1997)*
OBO	*Orbis biblicus et orientalis*
OJA	*Oxford Journal of Archaeology*
PEQ	*Palestine Exploration Quarterly*
Praehist Z	*Prähistorische Zeitschrift*
RIME 4	*Royal Inscriptions of Mesopotamia: Early Periods*, vol. 4: Old Babylonian Period (2003−1595 B.C.). D. Frayne (Toronto, 1990)
TAVO	*Tubinger Atlas des Vorderen Orients*
VT	*Vetus Testamentum*
WA	*World Archaeology*
ZA	*Zeitschrift für Assyriologie*
ZDPV	Zeitschrift des deutschen Palästina-Vereins

Period Dating:	EBA.	Early Bronze Age
	MBA.	Middle Bronze Age
	LBA.	Late Bronze Age
	IA.	Iron Age
	IA I.	Iron Age I
	IA II.	Iron Age II

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