

1 INTRODUCTION

“The time machine, which has enchanted generations of readers and moviegoers, is a fictional artifact for transporting people through time. Although archaeologists would welcome a time machine, we are satisfied by the remarkable fact that objects made, used, and deposited in the past survive into the present. We need not go to the past, for it comes to us.” (Schiffer, 1987: 3)

1.1 Background

Through field surveys, archaeologists detect surface samples of ancient settlements and material culture. Based on these findings, conclusions about ancient settlements and population that settled the landscape can be drawn. However, the material remains of ancient settlements might be re-used, displaced, or destroyed, and their visibility changes in the depositional process (Casarotto, 2018: 11; Schiffer, 1987: 20). As archaeologists in most cases do not see the “full picture” during surveys, but only a part of the ancient settlement and material culture, the collected survey data are biased. However, systematically collected survey data can be used to reconstruct ancient settlement patterns, and even if biased, can still give very important insights into ancient settlement patterns. In many cases survey descriptions are also the only data available of ancient settlements, either the because ancient sites were destroyed, or no further investigations were conducted.

The northern Negev has an extensive settlement record, much of which is derived from systematic archaeological surveys and excavations. This study will present the long-term view on the settlement patterns of the northern Negev from the Hellenistic through the Early Islamic periods. This interval is also generally

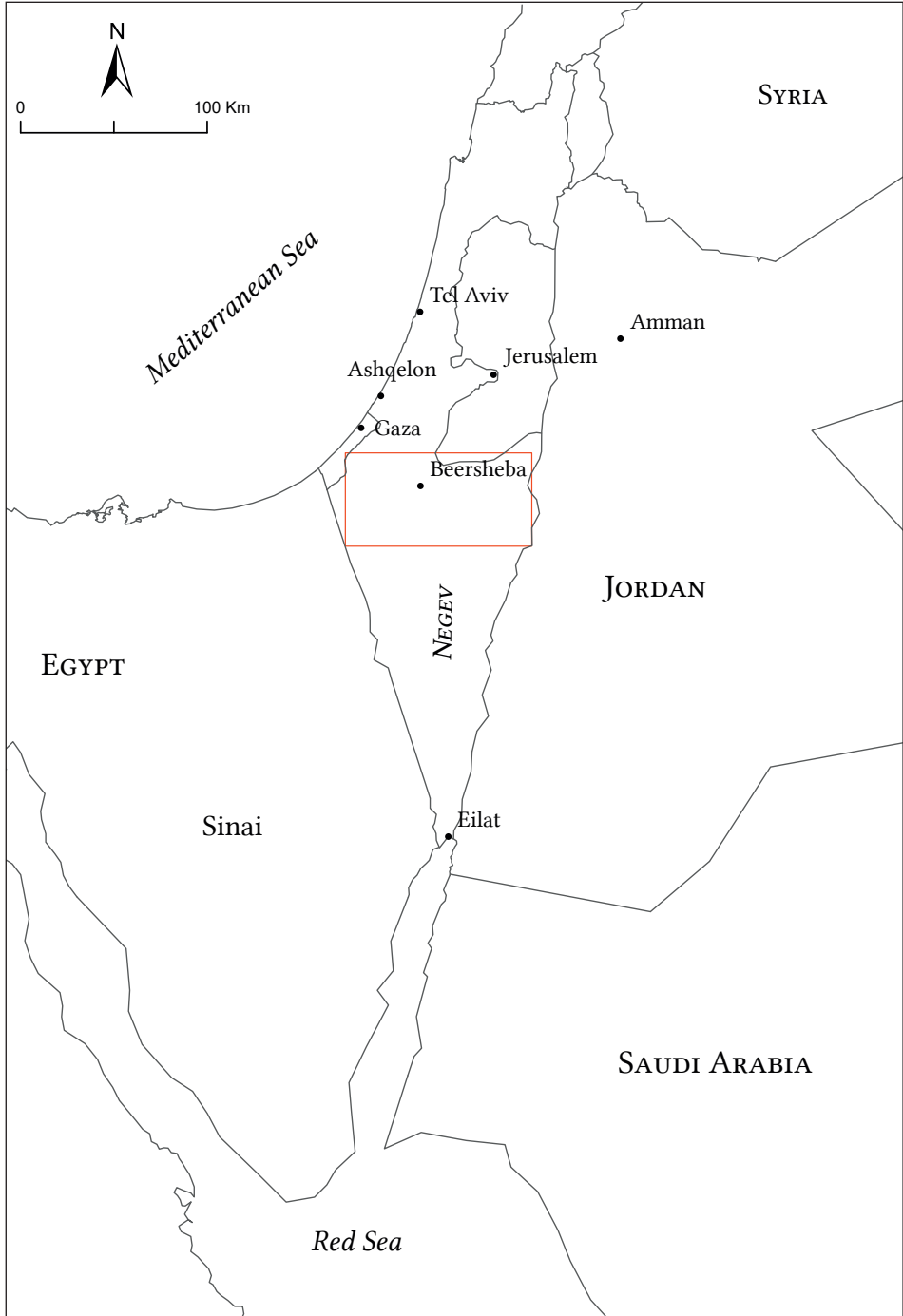


Figure 1.1 The northern Negev in regional context.

known as the “Classical” period and “Late Antiquity”, which started with the conquest of the area by Alexander the Great (332 BCE) and ended after the Muslim conquest (~640 CE) sometime in the 10th/11th centuries CE. The archaeology of both the Classical period and Late Antiquity are referred to as “Classical” in this research.

The study focuses on the dynamics and changes in settlement patterns, which include social, political, and environmental factors. The northern Negev, located on the edge of dry-farming practicability, is especially sensitive to environmental and climatic fluctuations with significant impacts on farming potential (Rosen, 2016; Figure 1.1). The area also bridges different regions, the desert and the Mediterranean zone, and interior regions with the coastal plain, thus a major locus of trans-shipment and trade. In these, political, social, and economic trends over the long millennium of the Classical Era played a role in settlement systems.

Since the 19th century the northern Negev has been the subject of intensive archaeological investigation. Large areas have been surveyed, many sites have been excavated, and a significant amount of data have been collected. As such the main goal of this study was to build a model of the region containing the spatial and temporal distributions of the settlements from the Hellenistic through the Early Islamic periods.

The study is based on data collected mainly from the Archaeological Survey of Israel (ASI), and the Israel Antiquities Authority (IAA). The model that was built allowed the application of knowledge and hypotheses from observations made at single archaeological sites to the landscape surrounding them, moving these observations from single-location to area-based descriptions of the Classical landscape of the northern Negev. These depictions are then developed to demonstrate how to build a geospatial database that combines social, political, and environmental variables, outlining productive ways to analyze the available data collected by the ASI, IAA, and other research institutes.

1.2 Rational for the study

This research was based on different parameters. Specifically, the northern Negev as a research region has been chosen because it is an environmentally sensitive area, and climatic fluctuations might have a strong impact on the settlement patterns. The survey variables analyzed in the study have been chosen based on numerous attributes, such as location, rainfall per year, altitude, access to water, etc.

The northern Negev has an extensive history of research and has been studied since the early 19th century. But the most important data for this study stem

from the ASI which has conducted systematically map surveys in the northern Negev in course of the last five, six decades. Much of the data has been collected in course of the Negev Emergency Survey. A small part of these data have been published, starting in the 1990s onwards, as monographs. However, most map survey are only now available, as they have been published online in two languages (Hebrew/English). The online publications of much of the available survey data were done during the last decade. These online surveys data give easy access for researchers to work on specific regions, or historical periods.

Since the 1970s, several large research excavations have been conducted by different universities, such as at Tel Malhata, Tel Ira, Tel Sheva, and Tel el-Far'ah (south). Much has been published from these excavations. Another, very important source are the salvage excavations, mainly conducted since 1990s in the northern Negev (there are some earlier salvage excavations from the 1950s onwards). The locations of such salvage excavations are random and not preselected by archaeologist, they are based on construction projects (Avni, 2014: 20). This reduces bias of the archaeologist as they are not selected based on personal preference or interest (Avni, 2014: 20). Therefore, these salvage excavations produce very important data; furthermore many smaller sites, such as farmhouses or installations have been thus excavated, which would in many cases not been chosen for research excavations. In the last 30 years, a large number of such salvage excavations were conducted, reaching several hundreds in total. Most of these excavations have been published in *Hadashot Arkheologiyot, Excavations and Surveys in Israel* and some larger excavations in *'Atiqot*. Since 2004/2005, those excavations reports were also published online. Furthermore, the large amount of archaeological data available has also led to much new archaeological research, conducted by Israeli and international research institutes, concerning the northern Negev.

The systematic survey of large areas of the northern Negev, the numerous research and salvage excavations, as well as research conducted in the Negev by research institutes, have given a large amount of data that allowed for reconstruction of the settlement patterns of the region in a most accurate and detailed way. The study is timely because of the availability of the large amount of data, and this provides a rationale for this study.

1.3 Research parameters

In this research, the spatial and temporal distribution of sites are modeled from selected archaeological surveys in the northern Negev. The synthesized survey data compiled by the ASI over the course of several decades have been compared chronologically by reference to key excavations in the region as well as numismatic evidence. The data were analyzed to establish the settlement patterns and site hierarchies throughout the region from the Hellenistic through Early Islamic periods (4th century BCE–9th/10th century CE). As mentioned above, the survey data served as the primary material for this research since archaeological surveys provide valuable information that must be evaluated critically. The distribution of sites was analyzed carefully and compared among the different study areas. This allowed for the establishment of site hierarchies, site frequency and density. Additionally, the organization of larger urban centers and their hinterlands was analyzed, as well as the influence of the hinterlands. Maps were established by archaeological period and when possible by subperiod. The role of environmental, political, economic, and social factors was analyzed critically in order to explain changes that occurred in the settlement patterns.

Several researchers explain change in settlement patterns in the Negev in reference to shifts in climate; others claim that the changes were based on political, economic, and/or social factors. Based on the analysis of the settlement patterns and its changes, the main factors that led to these changes were analyzed.

1.4 Methodology

The research here involved quantitatively synthesizing a significant volume of survey and excavation data from the northern Negev in order to explicate long term settlement trends in the region during the Classical Era (Hellenistic through Early Islamic). The methods consisted of three primary stages. The first included the collection of all known archaeological sites for each of the three study areas dating to the Classical period. The systematic surveys conducted by the ASI and IAA served as the primary sources. Furthermore, data from excavations, development surveys and inspections were added. In a second phase, the data were interpreted and standardized according to a catalogue of different parameters and defined attributes (see Appendix 1—Database format and attributes). These data were added to a spatial database, according to the specific parameters and attributes. In a third phase, the data were compared chronologically by reference to key excavations in the region, as well as from numismatic evidence. The goal was

to construct areal maps that show settlement patterns for each period (and sub-periods) with the finest chronological resolution possible. GIS technologies had been used in the actual construction of the maps, which then served as a basis for understanding the structures of each settlement system (social, political, economic, etc.). These structures were examined using three different scales: the region was examined holistically as the northern Negev, the three study areas—west (Nahal Besor region), central (Be'er Sheva and surroundings) and east (eastern Be'er Sheva–Arad Basin), and finally, individual survey squares (10 × 10 km) were also examined. Furthermore, large settlements and their connections to the hinterland were analyzed. An examination of urban centers had extensive political and economic facilities, which impacted land-use strategies and settlement density, as well as the settlement types in the hinterland. Graphs of site frequencies, sorted by site size and function, were constructed for the entire period (and at different scales), offering long-time perspectives on settlement trends which, of course, reflect general historical processes.

1.5 Summary of the thesis contents

Chapter 2 discusses the history of research in the northern Negev. The chapter starts with the first “biblical” investigations in the early 19th century, including early explorers such as Robinson, and the reconnaissance surveys. This discussion is followed by the different stages of archaeological research in the northern Negev, which covers both the influence on archaeological research of the founding of the modern state of Israel, and the modern research conducted in the northern Negev in recent decades.

Chapter 3 then deals with present-day and paleoclimatic and environmental conditions, including the topography, lithology, soils, climate, and vegetation of the present-day northern Negev. It also provides a tentative reconstruction of the paleoclimate during the Classical period.

Next, Chapter 4 opens with a short introduction to the theoretical and methodological background of this research. This is followed by an introduction to survey methodology, the problems and limitations of surveys, and the process of using legacy survey data. The next section of the chapter deals with the settlement analysis methodology and the survey samples. The subsequent discussion reviews how the database was built, what GIS data have been used for analysis, the categorization and definition of settlement types, the calculation of site size, and the chronological considerations used in this research.

Detailed examinations of the three study areas are presented in Chapters 5 to 7. They consist of detailed analyses of the three study areas in the northern Negev: west (Nahal Besor region), central (Be'er Sheva and surroundings) and east (eastern Be'er Sheva–Arad Basin), from the Hellenistic through the Early Islamic periods. Each analysis is based on data from surveys conducted and published by the ASI, and inspection, development survey, and excavation data collected by the IAA and universities. Site density, settlement distribution, site size, and site continuity are explored according to archaeological periods. Where possible, the sites have been dated to subperiods. The survey data are compared with excavation data, which helps in dating the sites. These results are supported by numismatic finds from excavations, which serve as a base line to analyze the peaks and troughs of different periods and specific settlements. After establishing the settlement patterns, site hierarchies, site size, and settlement continuity in the northern Negev, these data were analyzed and compared.

In chapter 8, the Byzantine population, land use, and the connection between the settlements was discussed. Although the majority of the population during the Byzantine period was rural, with most people living in small villages, hamlets, and farmhouses spread throughout the northern Negev, there was also an urban population. The larger urban centers, examined in this study, were Be'er Sheva, Ma'on, Khirbat Jemmeh, Khirbat Irq, Tel Malhata/Moleatha, Khirbat Qasif, Horvat Hur, and Be'er Shema; their respective populations have been calculated based on site size and different settlement density estimations. The hypothesis was that urban centers adopted specific land-use strategies, which, in turn, impacted settlement density and settlement types in the hinterland. This hypothesis has been analyzed and discussed based on the settlement patterns established in previous chapters. A focus was given to the city of Be'er Sheva and its hinterland, as the city served as the center of the northern Negev.

Chapter 9 discusses the dynamics of settlement patterns, by analyzing the results of the survey samples (Chapter 5–7) and population (Chapter 8), and then outlines some general trends for the northern Negev. Furthermore, the emergence and abandonment of urban centers and cult sites is discussed, with its impact on the settlement patterns as well as the *longue durée* processes of change and the different political, environmental, social, and economic factors.

The Conclusion is presented in Chapter 10, which presents the research results as well as a new interpretation of the settlement patterns of the northern Negev. Furthermore, the significance of the research and its limitations are discussed. The chapter ends with recommendations for future research.

Appendix 1 contains the database format and its attributes. Appendix 2 comprises the coin database. Appendix 3 includes a table with the density of Classical

sites and the percentage of total sites for each survey map, as well as a table containing the number of sites according to period for each survey map. Appendix 4 lists all the cities and towns of the three study areas and their subsequent abandonment date. Appendix 5 inventories all the cult sites found within the study area, details the date of establishment and abandonment, and includes distribution maps of all sites according to dating conventions. Appendix 6 catalogs all the sites included in the settlement analysis in tabular format, with site name, study area, coordinates (NIG), and period(s) of occupation as well as references.