RECONSTRUCTING THE RURAL ECONOMY OF SOUTHERN MESOPOTAMIA
DURING THE THIRD MILLENNIUM B.C.

A Dissertation in
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by
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ABSTRACT

This dissertation addresses the rural economy of southern Mesopotamia during the Third Millennium B.C. Previous research suggested that during the Early Dynastic, the region was characterized by a largely dispersed and decentralized settlement system that progressively became increasingly centralized with the emergence of the Akhadian Empire and the subsequent Ur III State. Our knowledge about the economic organization of rural Sumer, however, is largely based on ancient textual evidence, which is biased toward the perspective of city-based administrators. Focusing on the Girsu peripheral region of southern Mesopotamia, I explore landscape management, craft production, and exchange. I constructed a geographic information system including remote sensing images, field observations, published archaeological maps, and ancient textual evidence to explore the nature of settlement patterns and their change over time. I also relied on recent landscape changes in the research area to infer the level and scale of changes that took place over time using both geographic and ethnographic information. As a result, I identify a continuous landscape management system with some changes that mostly responded to regional environmental and social fluctuations. In addition, although according to textual evidence, sites such as Menfesh were subject of various levels of control by emerging city-states, the archaeological evidence informed by ethnographic analogies, suggest that by actively managing the marsh wetlands, the rural communities of southern Mesopotamia, were able to maintain a resilient level of political and economic autonomy.
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PREFACE

As the son of an Iraqi archaeologist growing up in the 1980s and 1990s, I had the opportunity to visit and observe many Mesopotamian archaeological sites. Every chance I had, I would accompany my father to his wide-ranging excavations in Iraq. I had the opportunity to walk around and feel the ancient architecture of the great sites of Babylon, Ur, and Eshnunna. I also watched my father as he excavated small villages along the Euphrates River in the western part of the country. I saw human and animal remains. As I held household and agricultural tools, I compared them with the instruments that we had in our home in Baghdad and reflected on how these artifacts were made. It was an enriching experience being on these sites at such a young age and as a result, my attraction of Mesopotamian archaeology and my eagerness to know more were both obvious to me. After finishing high school, I was admitted to the undergraduate program at the Archaeology Department in the University of Baghdad, which resulted in four truly enjoyable years and my graduating as a provisional Mesopotamian archaeologist.

It became apparent that those travels with my father throughout Iraq had influenced my sense of connection with the diverse landscapes in the country. All of those trips, involving desert areas, riverbanks, and marshes, bore fruit whenever I worked with maps in my undergraduate courses. I was familiar with the features shown on archaeological maps and that other types of maps show. Due to my familiarity with site plans and topographical features, I could even correct or clarify the information thought to us. I became increasingly engrossed with any archaeological, topographical, or historical maps part of my course-work or otherwise—and analyzed their contents.
During my last undergraduate year, American military operations in Iraq resumed. Because of the war, the University suspended all activities. The Department of Archaeology in Baghdad, where I was studying, was devastated and partially burned. I and a few other students and professors volunteered to clean the mess in our classrooms for several weeks in order for other students and faculty to be able to return to the department and finish the academic year. Although the military operations were declared officially over, the situation in the country became increasingly unsafe and there with little to none security forces on the streets. At that time, it was very challenging to keep my thoughts together, concentrate and write my final graduation assignments in order to graduate. This was especially difficult with the bomb explosions, killing, kidnaping, and robbery happening every day.

The State Board of Antiquates and Heritage and the Iraqi National Museum of Antiquities complex also experienced very difficult conditions. Prior to the war, many of the museum’s important artifacts and publications were transported and stored in a series of safe locations in Baghdad. I took part of this rapid emergency plan. As the military operations stopped some employees and I returned to the complex hoping to salvage whatever was spared by the bombs, but instead we had to hopelessly witness the destruction and spoils left by the explosions and subsequent looting. Nevertheless, I was among the first to participate in the cleanup and recovery teams who initially entered the complex.

Throughout this entire ordeal, I managed to graduate and continued to work at the State Board of Antiquates and Heritage. There was no archaeological exploration work in the country due to the obvious instability and insecure conditions. Most of the work was focused towards restoring the State Board and Museum facilities. After about a year, I was made aware that Stony Brook University, in the United Stated, was offering graduate scholarships archaeology
applicants. I was encouraged to apply and I received a scholarship that allowed me to travel and study in New York in July of 2004.

I first recognized the usefulness of geospatial tools to Iraqi archaeology in 2005 when taking an introductory graduate course in GIS. Using these tools, Mesopotamian sites can be accurately located on maps and satellite imagery to reveal settlement patterns and their relationship to both ancient and modern landscape feature. Furthermore, more importantly for my study, possible ancient subsistence practices could be predicted and analyzed. Although I had limited computer skills at that time, I learned these skills along with the use of tools and software particular to GIS. My M.A. thesis resulted from these efforts, and successfully corrected and modernized old archaeological data contained in the Atlas of the Archaeological Sites in Iraq (1976).

Later, when I began my doctoral studies at Penn State University, I focused not only on learning the use of GIS geospatial tools but also on improving my skills in applying theoretical approaches to Mesopotamian archaeology. Toward this goal, I worked closely with Dr. Carrie Hritz, and benefited from her wealth of knowledge. This dissertation emerged from a previously proposed research plan, designed to address the Third Millennium Mesopotamian economy through survey and excavation at the peripheral site of Menfesh located between the two ancient cities Girsu and Lagash, in southern Mesopotamia. The survey aimed to determine the settlement’s limit during the periods of the Third Millennium BC and the excavation’s goal was to uncover architectural, manufactural, paleoclimatic, and texture remains at the site. If uncovered, these would make valuable indicators to the size of this peripheral site and its inhabitants. Also, they would reveal information about the wealth of Menfesh’s peripheral
community and what kind of activities used to take place at the site, such as agricultural activities or pottery manufacturing, or both. In this context,

The need to shift from the original proposal was imposed by the political opposition of the Ministry of Tourism and Antiquities in Baghdad. The higher administration in the Ministry viewed Americans as invaders and responsible for the destruction of Iraq after the year 2003. This opposition included all American individuals regardless of their background. As a result of this hostility, permissions for American research projects in Iraq within the Ministry’s sector were delayed and eventually denied, a process taking place approximately between 2014 and 2016. After this long period of waiting and inactivity, I had to rethink the methodology and approach of the original study. It was under these circumstances that I made the decision to adopt a regional approach and use the alternative data set presented by the Atlas of Archaeological Sites in Iraq (1976). I was also able to visit the research area and the sites Menfesh, Girsu and Lagash twice, in the years 2011 and 2013. These visits were productive as I was able to observe the landscape around the site Menfesh during both dry and raining conditions. I was also able to observe the surface materials at the site which I later used to inform the type of activities that may have took place there. The surface on-site observations were further useful in confirming the occupational periods on Menfesh. And lastly, I was able to make other important observations about the site, like the presence of ashy-color soil on one side of the site, which indicates the existence of ancient pottery manufacture.
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CHAPTER ONE
INTRODUCTION

Much of our understanding of ancient Mesopotamian history comes from the excavation of a dozen large “urban” sites (more than 200 hectares in size), (Adams 1981: 138) and information from ancient texts. Beginning in the late 19th century, excavations at southern Mesopotamian centers, such as Warka (Lenzen 1956), Nippur (Peters 1897), and Ur (Woolley 1954) shed light on the institutionalization and organization of administration, and religion through several crucial periods in Mesopotamian history. In the latter Third Millennium B.C., in particular, the ancient texts describe a highly centralized bureaucratic apparatus, seated at key cities, and controlling a wide network of integrated agricultural communities in the surrounding countryside. The ancient texts describe these city-states as surrounded by rural landscape populated by small village settlements. These village settlements located within a few kilometers of large centers provided basic subsistence goods for city inhabitants who were engaged in the production of specialized goods such as cloth (Figure 1; Steinkeller 1991). This dissertation provides new insights on the economic interaction between the rural settlement of Menfesh as well as other peripheral settlements of Girsu area with their nearest major urban centers Girsu and Lagash during the Third Millennium B.C. I produced a Geographical Information System (GIS) composed of remote sensing imagery, georeferenced archaeological datasets, field observations, ethnographic information, and ancient economic records to explore the landscape and address the research problem.
Data from the extensive surveys of Robert McCormick Adams to the north of this project research area shows that during the latter Third Millennium B.C., there existed vast areas of irrigation agriculture around Mesopotamian towns. These zones would have provided the settlements with ample yields of cereals, dates and garden crops. The heightened irrigation requirements and productivity of the gardens, and orchards demanded their immediate location around the towns. The fields on the other hand, could be established beyond the garden zones. There, agricultural areas would have been visited by farmers who lived in the urban centers. There would have also been extensions and modifications to natural waterways so that they could be used for transporting large loads from the agricultural fields farther away (Adams 1981: 140, 142).

Figure 1: Core Area of the Ur III State (after Steinkeller 1991).
More information from the Third Millennium has reached us through what are known as “Temple Hymns” and “the Sumerian King List.” Both sources reflect the political scenery of early Sumer. The Hymns refer to Enheduana, daughter of Sargon of Akkad, as the author of the texts. The texts indicate that there existed thirty-five different cities in the southern alluvial plain during the Akkadian period (Figure 2).

Figure 2: South Mesopotamia c. 3200-1600 B.C. showing cities and reconstructed Third Millennium water courses (after Postgate 1992).
Pre-Sargonic texts from Abu Salabikh represent a reference to the composition of the land two centuries earlier than Enheduana. These texts denote individual equal-ranking city-states. Each of them had a main deity and sanctuary. Each of these heavily populated centers would have controlled the lands around it, in more or less manner. The archaeological record—i.e., excavation and surface survey—seem to agree with the description mentioned in the texts. They have provided evidence which indicates the existence of uniform class of major population centers spread over the southern plain. Each population center had a distinguished local identity, a city god to which the entire city was loyal, and a local main temple (Postgate 1992: 26).

Despite the ample information from ancient texts, our knowledge about the rural Mesopotamian economy during the Third Millennium B.C. is still ambiguous (Hansen 1992). Texts record the perspective of city-based administrators and were written for the equally elite and literate account managers and administrators. Further, only a few excavations of small household scale sites have been conducted to date, which makes integrating the textual and archaeological datasets difficult.

The availability of new geospatial tools and methods, particularly Geographic Information Systems (GIS), remote sensing, and the use of satellite imagery, have enabled researchers to both addresses long standing questions, and propose new theoretical approaches. These tools have provided significant assistance for Mesopotamian archaeologists addressing questions in their diverse concentrations. Some researchers have employed the tools to detect antiquities looting and destruction of cultural heritage (Stone 2008; Hritz 2008; Ibraheem 2008). Others used these tools to detect ancient features which cannot be observed from the ground (Ur 2003; Hritz 2010). In the sub-field of geo-archaeology, GIS and remote sensing techniques have
also been successfully implemented in investigating the economic foundation for the area of southern Mesopotamia (Hritz, Pournelle, and Smith 2012).

In this study, high-resolution satellite imagery, different methods and techniques of GIS, and SRTM data, are used, in addition to older archaeological maps, to observe the recent landscape of Girsu area in southern Iraq. I use these methods in order to capture trajectories of the landscape during the Third Millennium B.C., as well as what these trajectories might reveal about ancient economic role of the peripheral settlements around the major ancient city-states Girsu. As a case study, the area around the sites of Girsu represents a relatively preserved landscape in comparison with other areas of southern Mesopotamia. For example, in contrast with the site of Umma and its surroundings, the Girsu area is not occupied by sand dunes, which intercept landscape observation through remote sensing. Further, modern governmental projects have not been established in close geographical contact with the chosen site, unlike Umma where the Main Drain-Fall runs just east of the site.

In terms of ancient records, the area of Girsu has been renowned as a significant source of ancient texts, including plenty of Third Millennium texts. The big city sites of Lagash (Al-Hiba), in the research area, and the city site Girsu (Tello), the capital city of the state of Lagash (Crawford 1970) have provided extensive textual information, despite the fact that neither of the two sites has received adequate excavation yet. These writings have appeared to us on seals, stone bowls and statues, tablets, and other objects some of which were part of temples’ offerings (Hansen 1970; Crawford 1970). The richness of the historical information included in these texts (Jones 1976; Cros 1910) is important to this study in that it reveals the nature of these major
urban centers and other smaller sites in the area during the Third Millennium B.C. At the same time, these writings are not to be relied upon as a firm source of historical information.\(^1\)

Another factor which qualifies the area of Girsu as a good case study is the area’s ground accessibility. During the 1960s and 1970s, this region was covered with a network of active irrigation canals, while the Al-Hiba mound (the site Lagash) used to be surrounded by a great marsh from all directions. According to Donald Hansen, the joint expedition of the Metropolitan Museum of Art and the Institute of Fine Art of New York University had to cross multiple water canals by car, and journey by boat for one hour and a half, in order to reach the site (Hansen 1970: 243). Yet, due to the recent significant reduction in water supplied by the two rivers Tigris and Euphrates, the watershed formation around Lagash has changed. Many canals have dried out or have been filled in, and there has been a noticeable reduction of the marsh water surrounding Al-Hiba mound. Accompanied by representatives from the Dhy Qar inspectorate in the summer of 2011, we approached the site from its eastern side by car after crossing two small mud bridges. During another visit to the area in the beginning of summer 2013 with Dhy Qar inspectorate staff, we were able to reach the site from its south-western dry side despite having a rainy season a month before. These changes may have also occurred in the past. For this study, they can provide insight into how quickly and completely this landscape can change. Further, the good ground accessibility in the area between the site of Lagash and the site of Girsu is an important element in this project for the general landscape observation. It allows for checking the accuracy of data and the clarification of ambiguous landscape matters which might not be evident through GIS processes.

The examination of older archaeological maps in this project is a key component to the landscape observation and special analysis. These maps provide a rich view of site distribution over a landscape in relation to important resources of subsistence and transportation, such as canals and marshlands which are important to the economic communication among the settlers of this area. While many of these features have either vanished or changed over the past century by governmental projects and agricultural activities, the older maps preserve a view of these landscape resources for the past hundred year or so. In addition, all archaeological sites in the maps were recorded with their periods of occupation based upon the observation and study of surface materials. The maps are compiled in *Atlas of the Archaeological Sites in Iraq* (Directorate General of Antiquities 1976). This Atlas was completed in 1976 by teams of archaeologists and engineers. It was developed in response to the needs of the archeological community to integrate maps accumulated by the Department of Investigation and Protection of the Archaeological Sites, located in Baghdad. The Atlas includes all survey efforts that had been completed during the fifty years before 1968. The goal of the workers on this project was to collect all the maps, revise their information and organize them as an atlas, making it easier for scholars to investigate issues relevant to their research. Unfortunately the Atlas has not been utilized in most of the researches thus far, mainly because it is written in Arabic.

Seven thousand archaeological sites were observed before 1968 and have been included in the Atlas. The smallest unit in the Atlas is the sub-district, which is also the smallest administrative unit in the country. A large-scale map represents the district map. The province map comes as the second biggest map, while a map of the whole area of Iraq is the largest scale map in the Atlas. This quaternary division system is a traditional Iraqi method that is still being used today. The Atlas does not, however, cover all of Iraq, only those sub-districts which were
subjected or accessible to the surveyors. Due to space limitations, the Atlas designers preferred not to write names of archaeological sites onto the maps. Instead, they gave each archaeological site, tell, or location a triangular sign. Each triangle has a number attached to it on the map; a list of these numbers with their sites names is located beside each map or at the bottom of the page. Furthermore, square symbols on each map are used to indicate the locations of modern villages and circles are sometimes used to indicate a position of cities, districts, sub-districts, and provinces (Directorate General of Antiquities 1976: 1-2).

The deficiencies of these maps are that they have a sketchy appearance and that the scales are not uniform across the maps. Another limitation exists in how the time periods within the Third Millennium B.C. are defined. For example, the Atlas relates groups of sites to the Early Dynastic period in general and does not specify whether these sites belong to Early Dynastic I, II, or III. Also, the Atlas assigned another collection of sites to the time toward the end of Third Millennium B.C., to a period called “Sumer and Akkad” without distinguishing between the two eras—Akkadian Period and Ur III in modern terminology. This obviously was not done by mistake, but rather in accordance with the known information about the Mesopotamian periods at the time when the Atlas was being compiled.

The results of this study indicate the existence of an ancient marsh throughout the Third Millennium B.C. It would have been roughly located between the sites of Girsu, Menfesh, and Lagash. This marsh may also have surrounded the site of Menfesh completely. While this natural feature would have created an isolated environment for Menfesh from other settlements in the area, it would have offered safe shelter for the inhabitants of Menfesh as well as a significant resource base for their economy. In addition, it would have played an important role in connecting the Girsu, Menfesh, and Lagash communities economically in the form of the
transfer of agricultural, dairy, and manufacturing items between the periphery and the urban centers. Further, there seem to have been two types of peripheral sites in this research area. One is those sites that would have been involved in activities related to the garden zones around the major urban centers. They used a connecting canal to communicate and transfer agricultural products with the adjacent city of Girsu throughout the Third Millennium. The second class would have been represented by peripheral sites whose economic function seem to have involved activities related to the marsh environment like buffalo breeding, reed gathering, and mat weaving. Groups of this class seem to have practiced pottery production and possibly cereal farming. This class of sites would have interacted economically with the nearest urban centers of Girsu and Lagash through a connecting ancient marsh, which was used to send dairy and manufactured items to the big cities. People in these communities would have used boats as the main transportation devices with the nearby urban centers. Toward the end of the millennium, the produce of this class of sites would have reached major cities farther afield, such as Nippur, through the use of the ancient marsh, and then likely by connecting water canals. Draft animals may have been used for this purpose at some sections along the way. The resultant model from analyses of this project shows the possible types and movement of goods between the peripheral site of Menfesh and its two contiguous city-states Girsu and Lagash, toward the end of the Third Millennium.

The Marsh Dwellers

My analysis indicates that the population of the Girsu area at the peripheral site of Menfesh, resided close to a marshy area during the Third Millennium B.C. Because the marsh would have comprised a major subsistence resource for the dwellers of this settlement, it was
necessary to study the adaptation practices and economic interaction of the closest analogue population to that of the Third Millennium B.C.—the current marsh dwellers of southern Iraq. The following section provides a general background on the ethnography of marsh dwellers in southern Iraq.

The inhabitants of marshes in southern Iraq, or marsh Arabs, have long occupied an area of about 20,000 square miles. This area is bordered by the city of Basra in the far south, the city of il-Kut in the northeast and the city of il-Kifil in the northwest. It consists of great marshes like Hor il-Hammar on the Euphrates and Hor li-Hwaiza on the Tigris. Smaller marshes and lakes also exist in this area. Additionally, there are desert areas which separate these marshes. Within this region the marsh Arabs have settled on the banks of the two rivers and their branches. They have also built their villages and towns on the edges of the marshes (Salim 1962: 5–7).

According to today’s marsh Arabs, their presence in the area of southern Iraq dates back to the year 637 AD. The largest tribes of the marsh Arabs claim that their lineage extends from the tribes of Arabia and that their ancestors came to the region of southern Iraq with the Arabian conquest. Archaeologists and anthropologists, however, have had their own hypotheses about the origins of these marsh dwellers. In the 1930s, Henry Field attempted to explore the connection between the marsh dwellers of southern Iraq with other Arab groups in the surrounding area. After his visit to the area, he promoted the theory that the marsh Arabs were the descendants of the Sumerians who inhabited this same area some 5,000 years before (Field 1936). Field did not bring forward evidence to support his statement. Henri Frankfort, on the other hand, suggested that the dwellers of southern Iraqi Marshes were the decedents of “men from the Persian plateau.” He supported his claim with archaeological evidence, using pottery analogies showing that pottery made by the earliest Neolithic inhabitants of southern Mesopotamia came from
Persia (Frankfort 1951: 44-45). By comparing physical features and farming tools of modern farmers of southern Iraq with those of the Sumerians depicted on reliefs, Seton Lloyd proposed that the marsh dwellers were the decedents of the Sumerians rather than of nomadic Arabs. He also supported his opinion by citing the great similarity between the marsh Arabs’ lifestyle and conditions and those of the Sumerians. For example, the guest houses of the modern heads of tribes, or Sheikhs, were built with reeds and mud and resemble the 4th millennium Sumerian temples (Lloyd 1947). Shakir Salim conducted his anthropological study on marsh Arab groups and lived among them for two years in the early 1950s. He stressed that there should be a cultural and racial distinction among different marsh groups when it comes to their origins. He concludes that the eastern marsh dwellers, “Ma‘dan,” would have had close contact with their adjacent Persians, while the western marsh dwellers or non-Ma‘dan must have had close contact with their neighbors, the nomadic Arabs. Further, since the southern Iraqi area was the bed of ancient Sumerian and Babylonian kingdoms, it could be assumed that the origin of the modern marsh dwellers is diverse rather than homogeneous (Salim 1962: 8).

One meaningful way to distinguish between groups of the marsh dwellers is according to their occupations, since there is not a distinctive dialect useful for this purpose (Salim 1962: 9). The marsh inhabitants can be categorized as cultivators, reed-gatherers, and buffalo-breeders. The first category could be assigned to those dwellers who reside in the eastern marshes on the Tigris and northward past the city of Ammara. They also live in the central and southern parts of the general marshy area, towards the ending of the Gharraf River and to the north of the Basra city, also spreading in the area in between the two branches of the Euphrates, il-Hilla and il-Hindiya. The economy of these groups depends mainly on cultivating rice and great millets in the summer, and wheat and barley in winter. In addition, they grow vegetables for trade in
nearby markets, and these groups (especially those of the Tigris marshes) raise cattle for their milk products as a secondary economic resource. Items like milk, cheese, butter and cattle-dung are taken to the nearest markets to be sold by women. From the same markets, the women buy other items to bring back to their villages, such as tobacco, tea, sugar and clothes (Salim 1962: 10).

The second category, the reed gatherers, overlaps to a certain degree with the third category, the buffalo-breeders. These classifications are both assigned to the Maʻdans, who depend mainly on their water buffalo herds for living. The size of the herd depends on the economic status of the family. A rich family would own between 7-10 animals, a middle-class family would own between 3-5 buffaloes and a poor family may own 1-3 beasts. They feed their animals fresh green reeds and bulrushes, which seem to be sufficient nourishment. In certain seasons, the Maʻdans might also buy the right to graze their animals on cut great millets in cultivated fields. The milk, butter and cheese of these animals are sold to mobile shops that come to these areas, and the products are then sold in the nearest markets. Milk products are also exchanged for cereals, which they obtain from the markets. The wealthy Maʻdan families do not have to do much work other than tending their herds. They keep their buffalo population under control so that they have sufficient feed for them. For this reason, they slaughter bulls of about one year old and consume their meat. They also sell the young animals in the herd each year to gain money. For those poor families who possess fewer animals in their herds, mat-weaving work serves as a secondary source of income. They could also be involved in hired labor, such as cultivation in rural areas. These groups also practice fishing for their own consumption (Salim 1962: 10-11).
Environmental Changes in the Third Millennium B.C.

Environmental conditions affect the ways in which humans live in any landscape. People have tended to organize their lives in accordance with what natural resources their environments can offer them. They have built their settlements close to environmental resources, such as sources of water, food, and shelter, and, since no environment can be completely ideal for human life, people have also learned to adapt to the shortcomings of their environmental conditions in order to survive. During the Third Millennium B.C., the inhabitants of the Girsu area seem to have taken advantage of the riverine resources provided mainly by the Tigris and Euphrates rivers and their branches. In addition, GIS analyses show that a large body of water would have existed and covered the area stretched among the sites Girsu, Menfesh, and Lagash. This location is further to the north of where modern Iraqi marshes are now located. One possible reason for the current location of the Iraqi marshes is the gradual, southward regression of the seashore of the Arabo-Persian Gulf, leaving these huge bodies of water in the form of wetlands. Therefore, in the Third Millennium B.C., the seashore may have been higher northward into the alluvial plain of southern Mesopotamia forming a series of wetlands and marshes in the Girsu area, as suggested by this research analyses. For this reason, the matter of sea level change in antiquities had to be addressed in this study.

In scholarly research on Mesopotamia, the matter of ancient environment and its effect on the early formation of state-level societies was not given proper attention until recently (Kennett and Kennett 2006). More specifically, a number of researchers have attempted to investigate the environmental changes in the Third Millennium B.C. and their effect on ancient social life (Weiss 1997; Cullen 2000). Using marine sediment cores from the Gulf of Oman and data from paleoenvironmental lakes, scholars have hypothesized that a period of aridity took place towards
the end of the Third Millennium B.C., which might have consequences for the regional economy. Other researchers have attempted to explore the sea level of the Arabo-Persian Gulf in antiquity using marine sediment cores from the Persian Gulf (Kennett and Kennett 2006; Al-Ameri and Al-Dolaymi 2009; Lak 2014). These studies suggest that the seashore used to exist further to the north of its modern location, and it may have even reached as far as the western parts of modern Iraq. Whether this was the case during the Third Millennium B.C. is to be determined. Nevertheless, it is likely that this transgression may have taken place during previous millennia and at the same time, these studies offer a good indication that during the Third Millennium B.C., the sea level of the Arabo-Persian Gulf used to reach further north into the Mesopotamian plane, covering or adjacent to the Girsu study area.
CHAPTER TWO

WETLAND ADAPTATION IN SOUTHERN MESOPOTAMIA

The marshy environment in southern Iraq can be described as full of resources and risk. These marshlands have been continuously occupied by marsh dwellers for millennia. The inhabitants of these areas have found an abundance of fresh water, fish, water fowl, water plants, salt, and other natural items (Thesiger 1985; Young 1983). However, when considering other realities of the marsh environment, the marshlands of southern Iraq would hardly be viewed as attractive places for long-term settlement. For instance, the marshes have been known to be heavily infested with mosquito populations (Salim 1962), responsible for transferring diseases and causing mortality among human groups who inhabit the area. Further, the plentiful fresh water in the marshes has always been coupled with destructive flooding caused by the melting snow upstream of the rivers Tigris and Euphrates. The geographic setting of these huge bodies of water can also impose isolation from the outside world and a barrier between the marsh inhabitants and the outside resources. On the other hand, this isolation could be accounted to the advantage of the marsh dwellers as a natural shelter from outside threats and enemies. So how could the marshlands settlers have dealt with such serious environmental issues and continued to live in these areas for thousands of years?

To explore how people of ancient Iraq adapted to living in the marsh environment, it is necessary to look at the lifestyles of the contemporary marsh dwellers of southern Iraq. This is appropriate since the Mesopotamian marshes and modern Iraqi marshes have maintained the same or similar environmental characteristics, despite the fact that their exact locations in the southern region may have been slightly changed (Lak 2014). The limited use of modern
machinery and techniques in the marshes have helped to maintain the environmental characteristics of the marshes. Thus, ancient and modern settlers of these wetlands would have faced the same challenges of the marsh environment and reacted to these challenges in similar ways in order to cope.

Archaeological evidence, in the form of art from ancient Mesopotamia, confirms the similarities between ancient and modern times in environmental setting and lifestyle in the marshes. Art reliefs depict natural scenes of Mesopotamian marshes that mirror views of the southern Iraqi marshes (Figure 3). In these scenes one can observe fully-grown reeds and bulrushes, which spread quite widely in the ancient marshes. Further, there is a representation of fish and crabs beneath the water’s surface. In addition, the boats used to navigate the marsh appear to be made of reeds or bulrushes. The purpose of these reliefs was to show the power of the Assyrian king Sennacherib and to perpetuate his victory in the south over the Babylonian king Merodach-Baladan. Upon defeat, Merodach-Baladan had run into the southern marshes to hide and save his life, showing that these marshes have offered a natural shelter and a form of protection from outside enemies. This was not only the case in ancient times, but also in modern history. The Ottoman government did not have real control over the marsh regions like other Iraqi regions under its control. After the end of World War I in 1918, a new national government began to establish police stations and administrative units in the marsh villages (Salim 1962: 14). However, even with the following governing systems’ increased access to marshes in Iraq, these huge bodies of water remained a locus for those people in Iraq who were striving for independence from governmental roles and obligations as well as those rebelling against the governing power.
Figure 3: The king’s campaigns in the marshes. Alabaster relief from the South-West Palace of King Sennacherib (704-681 B.C.) at Nineveh. Neo-Assyrian. Height 1.48 m. (4 ft. 10.25 in.).

Structural Adaptation

In order to maintain their existence on the landscape, the modern marsh dwellers have first had to keep some form of continued residence within the marsh limits in the face of inevitable and destructive floods. For this purpose, they have developed temporary residential devices to be used during flood events, kept beside their permanent huts, which are built on stable ground or islands, called “ishan,” (Figures 4 a and b). The water level fluctuates significantly in the marsh. It starts to rise in March- through May. Then, the water level goes down gradually through September. This is caused by the water volume in the course of the two rivers, Tigris and Euphrates (Salim 1962: 17). Beside the “Ishan,” which in modern times consists of 30-40 reed huts built on an island in the marsh, residents of this island have also built floating platforms, or “id-dibun,” of reeds, bulrushes, and earth. These temporary floating homes usually consist of one hut and a small area that can accommodate a few buffalos (Figure 5). The id-dibun could be poled from one location to another, perhaps to any location safe from the effects of the flood. A group of these platforms may come together and form a new settlement (Figure 6). In addition to id-dibun, the marsh dwellers have also developed what are known as “chibaysh” (plural), “chibysha” (singular). These too are islands built from layers of reeds, bulrushes, and earth and are raised by water when the flood waters are high. This type of residence is exclusive to the marsh village of ech-Chibayish, and it only exists in the southern Iraqi marshes (Salim 1962: 12).
Figure 4a: A dwelling island (after Salim 1962).

Figure 4b: A hut during the flood (after Salim 1962).
Figure 5: A floating platform with a hut and buffaloes (after Salim 1962).

Figure 6: A Marsh Arab village, 1974 (photo by Nik Wheeler).
To overcome the barrier formed by the body of water between marshland settlements, the settlers have constructed and used boats to maintain communication with groups living in remote parts in the marsh, or even with those groups living outside the marshes in permanent villages and main cities. These boats have also been used to navigate the marsh for different types of activities, such as collecting reeds and making trips to different groups and families for social purposes. Boats have even been used as mobile shops (Salim 1962: 10), (Figure 7). The boats are made either from reeds or bulrushes. Most recently, the boats have been made of wood covered with tar, both for extra protection and to prevent the leakage of water into the boats while operating (Figures 8 a and b). Although wood has been a useful modern material, however, it is expected that the marsh dwellers during ancient times—including those during the Third Millennium B.C.—used reeds and bulrushes in constructing their boats, as wood has always been an item of high value in southern Mesopotamia. Archaeological evidence, in the form of ancient art, supports this point. In Figure 3, the marsh boats are depicted with prominent horizontal lines, representing the bundles of reeds or bulrushes, which composed the body of the boats. Also, vertical belts of reeds or bulrushes appear to hold the horizontal bundles together.

In modern times, wooden boats are most common. In some settlements in the marsh, like the village of ech-Chibaysh on the Euphrates, these boats are the only devices communicating the residents to the outside world, as the village is completely surrounded by water. The boats vary in size from small canoes to large sailing boats. The small canoes are used for short trips to collect reeds from the marsh, to reach nearby communities and trade with them, or simply to transfer passengers. These small water crafts are moved either by paddles or by a sturdy long reed. Bigger boats are used for longer trips in the marsh or for sailing downstream to reach further communities. These are moved by small sails or, more commonly, by poles (Figure 9).
Figure 7: A canoe shop (after Salim 1962)

Figure 8a: Wood-made marsh boats in southern Iraq (photo by Jamie Simson, Sonia Halliday, Photo Library)
Figure 8b: Rafts made from bulrushes (after Thesiger 1964).

Figure 9: Boat with sail near Majar al Kabir (after Thesiger 1964).
Economic Adaptation

The marsh dwellers in southern Iraq could be categorized into three broad occupational bases (Salim 1962: 9-11). Inhabitants of some villages are specialized in cultivation while those residing in other villages are specialized in reed gathering. In some other locations in the marshes, the dwellers make their living based on buffalo breeding and the products thereof. While this occupational base economy is applicable to all groups within the marshes, diversification in occupational base can also be found within individual settlements (Salim 1962: 9-10). This diversity of specialization within a group presents one way of economic adaptation for those living in a marsh environment.

The groups of marsh dwellers whose main occupation is farming represent the majority among the marsh population. In addition to their farming, these groups raise and keep cattle. After using a minimal portion of their animals’ milk for local consumption, the milk and other products, including cheese, butter, clarified butter, and cattle-dung, are taken to nearby markets in bigger villages or towns for bartering. The items for which these are bartered include sugar, tea, cereals and clothes, or other items (Salim 1962). That these groups maintain a secondary source of livelihood reflects a resilient economic way of coping with the unfavorable environmental conditions in marshy areas. With the risk of seasonal flood, the farmers could not depend completely on cultivation. The farmers cultivate two times a year when the flood water allows. Cultivated summer crops consist of rice and great millet, while wheat and barley are cultivated in winter (Salim 1962: 9-10). However, the outcome of cultivation could easily be affected by flood conditions. Any change in the flood volume or timing could cause severe damage to the crops. Thus, cultivators keep cattle as a backup economic base that supports their farming-based economy in case of shortages.
Until recent years, the reduction in water volume used for irrigation had not been a concern for the people of Iraq. This changed when a number of dams were constructed in Turkey and Syria on the upper streams of Tigris and Euphrates rivers. High flood-waters on the other hand, have always been a serious matter, especially to the people of the south, because of the total flatness of agricultural lands. When flooding occurs, water covers all arable lands cultivated by those marsh dwellers who are specialized in farming. In this case, the land is covered with water from March through August, preventing the cultivation of the main profitable crops (i.e., wheat and barley) which should ordinarily take place from January through April (Salim 1964: 84). Such a major event was reported when high flooding occurred in the year 1934 and then re-occurred in the following four years. Because of this devastating flooding, the farmers of Ahl ech-Chibayish were not able to farm for profit all these years. In order to overcome this environmental disaster, some of this group had to migrate to farther areas of the Amara region, where lands were less susceptible to flooding, and cultivate barely in order to bring food back to their families in their area of the marsh. Other members in this group, preferred not to deal with the uncertainties of farming and left farming completely. Instead, they adopted reed-gathering to make their living (figure 10). This shows another way of economical adaptation to the hostile conditions in the marshlands.

The shortage in cultivation may not necessarily be environmentally-related as a whole. It could rather be caused by loss of land due to political issues. An example of this is the case of the Beni Asad from the ech-Chibaysh region. When the Beni Asad were defeated by the Ottoman army at the end of the 19th century, they lost significant portions of their fertile lands. This created an economic crisis for the group. However, group members quickly switched to another practice of mat-weaving in order to maintain their livelihood (Salim 1964: 83-84), (Figure 11a
and b). This shows the resilience in the economic adaptation of this marsh dwellers when facing political calamities.

Figure 10: Reed- gathering in the marshes of southern Iraq (photo by Jassim Alasadi, *Nature Iraq*).
Figure 11a: A family splitting and skinning reed (after Salim 1962).

Figure 11b: Mats stored ready for collection (after Salim 1962).
The Madans depend mainly on their water buffalo and byproducts as a main source of their livelihood. The meat of these animals is rarely consumed by the owners locally. The animals are slaughtered only when there is a need to control the numbers of animals in the herd, for feeding control purposes. The milk products of these animals, however, are taken to the nearest village or town markets to be traded for cereals. Sometimes the milk products are traded at mobile canoe-shops, which conveniently navigate the marsh and are useful for bartering with the locals. Further, the Madans have secured another revenue source for obtaining the needed cereals. Aside from tending their buffalos, they are also involved in harvest activities in peripheral fields and are compensated with cereals by the fields’ owners. In addition, the richer groups of the Madans who possess bigger buffalo herds (7-10 animals per herd) tend to sell some of the young animals on a yearly basis as additional source of income. However, the poorer families cannot do that, since their herds are smaller (1-3 animals per herd). Therefore, these poorer families may work in mat-weaving, cultivation, or even in some other hired labor to secure additional source of finances. It should also be mentioned that fishing has been practiced mainly for local consumption (Salim 1964: 9-10). Fishing is usually conducted when individuals finish their duties in their main occupations (Salim 1964: 100). In recent times, however, fish have become important items sold by the marsh dwellers in town and city markets, and have become an important revenue source in the marsh dwellers’ economy (Figure 12). These varied activities show that the Madans have maintained multiple economic bases so that they can rely on one source whenever there is shortage in another.

While specialized in one occupational base, the marsh dwellers of southern Iraq have maintained a secondary source of income in order for them to continue living in this region until recently. When the drainage of the southern marshes started to take place in the 1990s, it became
impossible for the marsh dwellers to practice their daily life or to adapt to the severe shortage of water, forcing the majority of the marsh community to abandon their settlements in the marshes and migrate to the nearest towns to adapt to a very different lifestyle. However, for the time periods proceeding the exceptional drainage of the marshes (from the 1990s to the present), the marsh dwellers continued to live in the marsh. They must have faced different conditions and events. They would have coped with these issues and showed resilience through the same structural and economic strategies they must have inherited from their ancient ancestors occupying this marshy region in ancient Mesopotamia.
Figure 12: Marsh saleswoman in a town market with different types of fish from the marsh (photo online source: https://www.pinterest.com/pin/350225308495045819/).
The most detailed information we have about Mesopotamian daily and royal life has reached us from the artifacts, texts and geographical features of the Third Millennium. Besides the well-known golden treasures of the Ur cemetery, many other remarkable finds have been uncovered and dated to this millennium. The plentiful written texts from this era have served as benchmarks of life in the period, shedding light on aspects of Mesopotamian social, economic and religious practice. Pieces of this history have also emerged from the influential surveys that were conducted over the majority of the alluvial plain of Iraq, which revealed much about this period of the Mesopotamian civilization. In observing the geographic setting of this ancient civilization, tracing ancient rivers and their canals around which some of the earliest urban centers were arranged (Adams 1981), these surveys resolved several historical issues and inspired scholars to ask critical questions about interactions between the core urban center and the smaller settlements on its periphery during this period. Before delving into exploring the area of this study (chapter 5), it is necessary to review the currently known information about all Third Millennium periods in order to obtain a general idea about the core and the peripheral sectors in this millennium.

Written Records

In the Third Millennium B.C., southern Mesopotamia saw a significant increase in written texts. Unlike texts from the previous millennium, Early Dynastic texts (2900–2450 B.C.) have become crucial sources in providing scholars with detailed information on ancient political
and cultural developments. Texts in the administrative and political genres were the most common for this era; although, the administrative type was the more dominant of the two.

Written materials have reached us in the form of administrative documents, regnal histories and literary texts with the administrative archives, in particular, discovered in large proportions at various sites. Two hundred eighty tablets (c. 2800 B.C.) were discovered at the ancient city of Ur, 1,000 tablets at Fara, 500 tablets (c. 2500 B.C.) at Abu Salabikh, a large archive (c. 2400–2350 B.C.) at the Temple of Bau in Girsu and 1,500 tablets at Lagash from the late Early Dynastic period. In addition to these significant textual finds, other small finds were uncovered throughout the region of Babylonia and even beyond those geographical limits. For instance, about 40 tablets were discovered at the site of Mari on the Euphrates in Syria, approximately 150 tablets were unearthed from the site of Tell Beydar, and 3,600 tablets were uncovered at Ebla, also in Syria (Mieroop 2004).

Other significant Third Millennium textual sources include royal inscriptions, which have shed light on the political history of this period. The preliminary form for these inscriptions was the votive object. Rulers wrote their names on these objects and placed them in temples to show their dedication to the deities of their cities. The stone vessel bearing the name of Mebaragesi, king of Kish, is an example on this type of textual artifact (Cooper 1986). Later in the millennium, this type of writing expanded to include more information about the royal activities, such as the construction of buildings or the staging of military campaigns. A limited number of Third Millennium royal texts were found at the ancient cites of Adab, Kish, Nippur, Umma, Ur, Uruk and Mari. Perhaps the largest and most significant body of royal texts is the one which was recovered at the southern state of Lagash. One hundred and twenty royal texts were left by nine individuals from the local dynasty of Lagash. Most of these texts include details about a dispute
between the city of Lagash and its neighboring city Umma. This conflict appears to have broken out over a dispute in which several territories were claimed by both cities. The texts from Lagash are considered especially important because they have provided researchers with the means, for the first time in the history of the Near East, to narrate a historical event through contemporary sources (Mieroop 2004). However, the shortcoming of these records is that they were written from the perspective of the Lagashites with the view that Umma was the transgressing city. This imposes no small level of bias upon the Lagashite writings.

Another group of texts from the late third and early second millennia refers to the kings of the Early Dynastic period. The most well-known among these texts is the Sumerian King List. Due to the detailed information such records provide, these histories have long been considered the backbone of scholarly attempts at structuring Early Dynastic history. Nevertheless, this collection lacks reliability as an historical source, and researchers have not yet been able to establish historical accuracy. One of the reasons why these records are considered unreliable is because it was not compiled during the Early Dynastic period, but rather sometimes at the beginning of the second millennium B.C. Add to this, we do not know what kind of historical sources of the Early Dynastic period were available to the compilers of the Sumerian King List in the second millennium, or how reliable those sources were (Postgate 1992: 32). Another reason that weakens the truthfulness of the Sumerian King List is that the list describes certain rulers as were reigned for a very long time. For instance, the 1st king of the Dynasty of Kish, En-mebaragesi, ruled for 900 years and also his son, Akka, reigned for 625 years. Further, the Sumerian King List describes the kingship as was exclusive to one city at a time. Because of this, this city would have had hegemony over the other cities in southern Mesopotamia during the

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Early Dynastic period. The kingship would have moved from one city to another due to conflicts and wars. At the end, the kingship and the political power would have always remained in one city at a time (Postgate 1992: 28). This goes against the well-known characteristic of the Early Dynastic period when political power was possessed by multiple cities at one time. Early Dynastic cites have had control over their surrounding lands and resources independently.

Among the extant written sources, those from about 2400 B.C. in particular are considered more reliable in their content than other sources. The royal inscriptions from the southern Mesopotamian state of Lagash are good examples of this class of texts. The Lagash inscriptions relate political and military events and a large quantity of historical data on the activities of an important public institution. These writings made it possible for researchers to reconstruct the actions of the royal administration and, then, to compare the official rhetoric to accounts of genuine day-to-day activities. This is why these writings are considered more reliable than other ancient written records. However, these inscriptions, as well, have posed some scholarly problems. For instance, some words in the texts cannot be understood in context and have only been translated based on their appearance in later documentation (Postgate 1992; Mieroop 2004). In this case, the possibility must always exist that the word has changed in meaning over time: while the word “ensi” once referred to a ruler who could act independently, in later periods, the same word referred instead to a provincial governor belonging to a higher authority of a king. Thus, the practice of applying a later meaning of a term to the same term in an earlier period may be too simplistic.  

Like other groups of texts, this group reflects the view of royal administration, which imposes a bias in presenting the ancient economy and how it was

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3 See discussion in Mieroop 2004: 48.
organized. This is because the content of these records does not represent the peripheral view of the ancient economy that this research is concern about.

The Ur III period 2150-2000 B.C. is largely considered to be the era with the highest production of Mesopotamian textual materials, not only in numbers but also in variety. An abundance of written texts was produced by the royal court, recording building activities and military campaigns. Hymns were written by scribes to honor the kings and to recognize their significant acts. Another substantial source of written texts is the archives, such as the archives of Lagash, Nippur, and Ur, of this period. Although a significant portion of texts from the archives of the period have been published (around 40,000), the majority of archival texts are still kept in museum collections or under private ownership. These texts clarify diverse economic aspects of ancient life such as, trade, taxation, agriculture, manufacture and sale. The majority of this information came from texts housed in the big cities of southern Babylonia (e.g., Puzriš-Dagan, Umma, Nippur, Girsu and Ur). The massive quantity of these written records and their wide coverage of topics yet pose certain unique challenges. While the detailed economic information in these texts is copious, one might mistakenly believe that this information is comprehensive. However, as almost all the written texts were produced by the government, there exist certain biases in the exclusion of the economic activities of the private sector. Here we recall the establishment of scribal school by Šulgi (ruled in about 2095 B.C. for about 48 years), (Postgate 1992: 39, 42), which indicates the full control of the palace over all written material. Further, given the overwhelming number of texts, researchers would be best served in developing strategies to study groups of texts rather than single accounts. However, this is often a challenging task given that the majority of these texts were acquired illegally and then dispersed across many collecting agencies via the antiquities market (Mieroop 2004). Add to this
that materials looted from ancient sites lose much of their historical value in that they lack their original context, an important element in any historical research.

**Early Dynastic Period**

The beginning of the Third Millennium was characterized by the rise of Mesopotamian city-states. During the Early Dynastic period (3000-2350 B.C.), the city-states had one or more major urban centers with 200 hectares or more (Adams 1981), and each of these centers was surrounded by hinterland where agriculture and animal husbandry took place. Different rulers followed each other in controlling the city-state. In religious life, each city-state had a main temple where the city’s foremost deity was housed, with smaller temples dedicated to secondary deities. Temples of this period were not only places of worship but also important loci for the city’s economic life—controlling extensive farmlands in and beyond the outskirts of the city and employing large workforces of administrative, agricultural, textile, culinary and skilled workers (Gelb 1979).

During the Early Dynastic period, the city-states had access to exotic raw materials, which were obtained through wide-ranging exchange relationships that reached places like, the Indus Valley, Central Turkey, and Oman regions. Used to fashion tools and to adorn temples, some of the non-local materials consisted of copper, tin, gold, silver, lapis lazuli, carnelian, and igneous rock. These materials were also found buried in the graves of wealthy individuals. On the other hand, exported items included manufactured goods and Sumerian textiles. For the local use, pottery was a widespread commodity, along with a variety of wheel-made vessels. Rarely decorated with paint in this period (Pollock 1999), Early Dynastic pottery would have nevertheless been an important export item as well.
Early surveys in southern Mesopotamia show a trend of population movement from villages and smaller settlements to the bigger city-states at the beginning of Early Dynastic period. A process of growing urbanism had already begun in the Uruk period (4000-3200 B.C.), which then continued through the Jemdet Nasr period (3200-3000 B.C.) and reached its peak by the beginning of Early Dynastic time (3000-2350 B.C.) (Adams 1981) (Figure 13). Small settlements in the countryside either disappeared in this period or shrunk drastically in size due to the mass departure of their populations. Perhaps these former country-dwellers sought walled cities for greater protection. It has also been suggested that a dry climate inspired the migration towards the cities and caused their boundaries to spread. The growing populations of city-states demanded a corresponding growth of agricultural resources, possibly pushing the controlling governments of the city-states to expand their territorial borders in order to maximize arable land. This expansion could also have caused the narrowing of the marginal zones between city-states or even, in some cases, an overlap of the territorial borders, which ignited conflicts such as the one between Lagash and Umma toward the end of the period.
Figure 13: Early Dynastic I period settlement patterns. The lines among settlements represent predicted canals levees (after Adams 1981).
Akkadian Period

The later Akkadian period (2350-2150 B.C.) witnessed the unification of the city-states. King Sargon, of the Sargonic dynasty, took control of land in northern Babylonia and established the Akkadian empire. The changes instituted by King Sargon marked the beginning of a centralized governmental system in the area of southern Mesopotamia, which was adopted by subsequent dynasties including the Third Dynasty of Ur in southern Babylonia. Sargon was considered a model for proper kingship throughout later Mesopotamian history. The Sargonic dynasty lasted for about a century and introduced other well-known rulers such as Naram-Sin, Sargon’s grandson (Cooper 1993). Beyond the movement towards a centrally controlled and unified territory, little else is known for certain about Akkadian time due to the yet unknown location of the capital Akkadian city, Akkad, and the lack of recognizable archaeological and paleontological evidence from this period. According to the scarce information we do have on domestic architecture, it has been assumed that the settlement patterns of this period bore a close resemblance to those of the Early Dynastic period (Pollock 1999: 10).

As the nature of Mesopotamian society changed, the overarching political ideology changed as well. Contrary to the perspective of kingship assumed by the Early Dynastic rulers “who administrated in the god’s name the large farm that was the city-state” (Liverani 1993: 4), the Akkadian kings portrayed themselves as heroic military leaders whose authority surpassed the control over the geographic limits of the city-states, and their conquests included lands of external enemies (Foster 1993; Nissen 1993).

Other changes included the use of the Akkadian language in royal documents instead of the Sumerian language, which was used in previous times (Jacobsen 1939). Akkadian was not imposed on Babylonia, nor did it replace the use of Sumerian entirely. Sumerian remained in use
in many places in Babylonia, especially those with a long Sumerian tradition (Liverani 1993: 62).

**Ur III Period**

After the collapse of the Akkadian dynasty, a short period of fragmentation took place with the invasion of Babylonia by the Gutians. Unification occurred again at the time of Ur III period (2112–2004 B.C.) when the Third Dynasty of Ur was established by Ur-Nammu, who continued the efforts of his brother, Utu-hegal of Uruk, in fighting the invaders. Ur-Nammu expelled the Gutians from the entirety of Babylonia and became the unifier of the region. This dynasty lasted for about a century and has been known for its highly centralized and bureaucratic governmental system. For reasons yet unknown to researchers, the Ur III dynasty eventually underwent a sudden collapse (Steinkeller 1987).

The rulers of Ur III dynasty did not leave an impression as proper leaders or heroic figures, as did Sargon and other kings of the Akkadian period, for later generations of Mesopotamians (Mieroop 2004). Nevertheless, significant improvements were made during the rule of the Ur III kings. The reign of Šulgi, son of Ur-Nammu, saw a series of significant economic, political and administrative changes on the internal level. Among these changes were the recognition of the old system of temple households, the formation of a standing army, the unification of the administrative system across southern and northern Babylonia, the establishment of new taxation system (or, *bala*), the founding of new redistribution centers for the state revenues like Puzriš-Dagan (modern-day Drehem), the establishment of vast bureaucratic apparatus, the establishment of scribal schools whose members carried highly standardized training, the reformation of the writing system, the introduction of new accounting
processes, the introduction of new archival records, the founding of new calendar, the introduction of new weights system. While on the external sector, the geographic limit of the state expanded rapidly to include extensive territories to the east of the Tigris River and parts of southwest Iran (Steinkeller 1987).

Economically, the temple households in this period became part of the state property when a step was taken by Šulgi to control the economy. All temple households in the provinces came under the control of a governor loyal to the royal family. Thus, the surplus revenues of the temple households were sent to the central government instead of being retained in the province, as in previous periods. Šulgi continued to designate agricultural lands “crown land” or “royal domain” as the Akkadian kings did. This category of land was offered to military officials as well as royal dependents in exchange for service. Šulgi also devoted his efforts toward the industrial sector. He established extensive industrial centers that specialized in producing different commodities, facilities supervised directly by the central government (Steinkeller 1987). There are references to lands which were owned privately at this period (Gelb 1969); however, it has been suggested that the contributions of lands in the private sector were limited in comparison to those of the state economy.4

 Administratively, Ur III state was divided into two parts: the core and the periphery (Figure 14). The core would have included the regions of northern and southern Babylonia, in addition to the lower part of Diyala. The core was controlled by the king’s governors and comprised twenty provinces, listed in the cuneiform texts as Adab, A.HA, Apiak, Babylon, Dabrum, Ereš, Ešnuna, Girsu/Lagaš, Isin, Išim-Šulgi, Kazallu, Kiš, Kutha, Mara(a)da, Nippur, Puš, Sippar, Šuruppak, Umma, Ur, Uruk, Urum and Uru-sagrig (Figure 1). Each of the twenty

4 See the statements of Diakonoff 1985: 49 and Renger 1987.
provinces had control over its smaller towns, villages and hamlets which were spread throughout its hinterland. For instance, about fifty towns and smaller settlements used to belong to the province of Umma. Most significant among these were Amrina, Apišal, Asarum-dagi, Dintir, Garšana, Garkuruda, Girgiš, Id-dula, Kamari, K/Hardahi, Karkar, Mašksn, Nagsu, Şarbat and Zabalam. The periphery, on the other hand, was military-controlled and would have covered the land between the Tigris and the Zagros mountains to the east of the core area (Steinkeller 1987).

The provincial governors were important figures appointed from local families whose positions were likely passed down within the same family from father to son. The governors possessed significant power in their provinces with duties such as acting as judges on behalf of the king and keeping the canal system functioning properly (Mieroop 2004). Apart from the role of governor, other important governmental posts within the province were also offered to families by Šulgi to guarantee their support. Though, this was not Šulgi’s only way to achieve these goals, as he also established connections with influential local tribes in the provinces through multiple marriages.

The civil authority in the hands of the governors was not the only influential power in the provincial system. Šulgi installed military personnel as generals, or shagina. The power possessed by the generals may well have been independent of the governors’ power. Some of the provinces, like the province of Umma, had one governor and several generals. Unlike the provinces’ governors, the generals were not from local families. Instead, their names indicate family roots in Akkadian, Hurrian, Elamite and Amorite and would have been offered these positions because of their loyalty to the king. The generals may have joined with the royal family through marriages, as well. They made their living off the agricultural lands (or, crown lands) given to them by the king in return for their services. The generals would also have been
involved in any military activities in their provinces and may have been tasked with keeping close watch over the local governors, in case of rebellion against the central government. Both the generals and the governors were then subordinate to the higher authority of the chancellor, second only to the king in the governmental hierarchy. The chancellor’s duties involved matters related to civil administration, the army, foreign relations and law (Steinkeller 1987).

Figure 14: Territorial Extent of the Ur III State (after Steinkeller, 1991).

While there is a wealth of information on the functions of government in the city-states, the administration of smaller settlements is more ambiguous due to a shortage of documentation. The limited information still extant suggests smaller settlements in this period were run by
hazānum, a title closest to the modern role of “mayor.” The power of hazānum would have been limited to the settlement and subordinate to the authority of the governor and the general (Steinkeller 1987).

One of the strategies used by the central government to control its land was the establishment of a tax system, or bala, meaning “rotation, transfer” (Sharlach 2004: 16). The bala was a tax to which all provinces were obligated to contribute a pre-calculated amount of agricultural produce, animals or manufactured materials at an annual event for this purpose. The amount of the tax was determined by the central government prior to collection, based on the agricultural and manufacturing capabilities of each province. For instance, the Girsu province provided grain because of its abundance in the region. The province of Umma, on the other hand, was called upon to provide manufactured goods like leather, wood and reed. The bala system was bidirectional, flowing not only from the provinces to the central government but also sending items back to the provinces from the bala fund according to the provinces’ needs. The materials withdrawn by a province were normally either scarce in that area or not part of local production. These substances would have been sent to needy provinces either from the central government in Ur or from one of the governmental redistribution centers, for instance Puzriš-Dagan, which specialized in livestock and animal products, or Dusabara, which specialized in agricultural products. In this way, resources could be circulated throughout the provinces, with each province having access to the goods of its fellows. If a province was short of meeting the predetermined tax allocation, it was allowed to make up for this shortage in the following tax year. The movement of goods to and from the provinces was controlled by designated state administrators, with some of the tax allocations to be consumed within the state by the crown dependents (Sharlach 2004).
While there has been a general consensus over the aforementioned aspects of *bala* system, scholars also differed on its particulars. Hallo (1960) took the initiative of examining the role of *bala* in the Ur III state, comparing the slight differences in meanings of the word *bala* in various contexts. Hallo claims that the word *bala* in the context of Ur III documents from Puzriš-Dagan denoted the rotating obligation of city governors and temple administrators to supply sacrificial animals for the central cult in Nippur. He suggests that the rotation of *bala* seems to have occurred on an approximate monthly basis among provinces. Further, these contributions were likely determined according to the province’s size. After studying these texts, Hallo noted that the *bala*, as an institution, seems to have been used to integrate the Sumero-Akkadian cities (Hallo 1960). Decades following Hallo’s original argument, Steinkeller (1987) put forth a model for the *bala* system based on evidence from the archives of the Lagash and Umma provinces. Steinkeller did not refute Hallo’s suppositions regarding the contribution of livestock by the provincial administrators and the month-by-month rotation. However, he concludes that this represents merely one aspect of the *bala* system and that there were other more significant financial elements. One of the basic principles of the *bala* system, identified by Steinkeller, is that the *bala* contributions for each province included goods in which that province specialized. These goods could be in the form natural resources and agricultural products, such as wood, reed, and cereals. In addition, the amount of goods designated for each province was determined by the size and wealth of that province (Steinkeller 1987). More recently, Maeda (1994) has conducted his own investigation about the role of the *bala* system based on a comparison of Hallo’s and Steinkeller’s investigations. Maeda inclined towards Hallo’s model and focused on trying to reconstruct the timetable by which the provinces alternated in their *bala* obligations to provide to the central shrines. The main premise of Maeda’s comparison was that reconstructing
the entire bala rotation system was problematic due to the variability in the allocation of bala months to provinces and in the time span allotted to a province for a bala rotation.

Outside of the core urban centers, another tax, called the gun ma-da was levied on those in the periphery as a personal income tax, which was then paid in livestock and collected in Puzriš-Dagan. Initially, scholars thought of the gun ma-da as a territorial tribute paid collectively by a given geographical area (Hallo 1960), then later, as a type of tax which was paid by the military personnel occupying the periphery of the Ur III state (Gelb 1973). However, further study of relevant texts revealed that the gun ma-da may have been a tax forced on the unincorporated regions of the Ur III state, which were considered to be buffer zones between the internal parts of the empire and its enemies (Michalowski 1978). Moreover, Steinkeller (1987) found additional support for Gelb’s earlier hypothesis, suggesting that the gun ma-da was a tax paid by military officials living in the periphery. Records indicate the livestock used for the gun ma-da originated from localities with non-Babylonian place names. Also, the amount of livestock designated for this tax depended on the military rank of the taxpayer. Like the bala, the gun ma-da was a yearly tax, and its due date could span anywhere from mid-September to mid-December. If a payer failed to make the full payment in a year, what was left of that could be made up in the following year. The texts also indicate that the administrators at the receiving center Puzriš-Dagan were well aware of the gun ma-da amount designated to be paid by each settlement (Steinkeller 1987).

The area of Girsu, as it has been revealed through the study of these extant materials, was an important and dynamic territory throughout the Third Millennium B.C., strongly impacted by the administrative, political and economic changes of this millennium. The effects of these changes on settlement patterns in Girsu and its periphery can therefore be taken as indicative of
the impact of such changes in other Mesopotamian regions. Thus, all of these elements—administrative, political and economic—are considered in the analysis conducted by this study in the following chapter.
CHAPTER FOUR
ARCHAEOLOGICAL SURVEY AND SPATIAL ANALYSIS IN SOUTHERN
MESOPOTAMIA

Throughout the historical periods of Mesopotamia, ancient settlers have left for us patterns on the landscape. These patterns were formed by people’s interactions with the available resources in their environments. Among the different methods used in archaeological work, the archaeological survey is the one most suited to detecting settlement patterns. Early archaeological surveys in Iraq were initially narrow in their approaches, and they tended to cover areas within excavated sites. During the 1960s and 1970s a new framework emerged to answer more complex questions. Regional analysis began to include innovative techniques and newer theoretical approaches, such as Adams’ surveys in southern Mesopotamia plain. Since then, archaeologists have conducted archaeological surveys with newer and more refined methods such as those used in GIS. Though the scale and quality of these surveys have varied, the outcomes of such efforts have contributed significantly to our understanding of cultural development and social dynamics in ancient Mesopotamia (Wilkinson 2000).

Survey Objectives

The archaeological survey has undergone significant changes in its goals, strategies, and methods. The objectives of early surveys in the Middle East in general and Mesopotamia in particular were similar: to find a good site selection for excavation (Redman 1982: 375). Surveys with other goals also existed as early as the 1930s. In his survey of Amuq, Robert Braidwood acquired data which established the connection between settlement patterns and
human behavior (Braidwood 1937). Similarly, Seton Lloyd collected data about the range and interrelation of “cultural provinces,” military sites, economy sites, comparative density of population, and the directions of ancient routes and place names (Lloyd 1954). The attempt of Thorkild Jacobsen in his survey in the Diyala region in 1936 was to establish connections between settlements and water courses. He plotted observed sites of each time period on period maps. Then he aligned these sites with water courses which used to supply the adjacent settlements with their needs of fresh water (Jacobsen 1995: 2747). Later in 1953, Jacobsen and other team researchers adopted a parallel method in their survey in the southern Mesopotamian plain (Jacobsen 1969). Jacobsen indicated two general purposes for conducting an archaeological survey in the lands of Mesopotamia: (1) to unveil the geographical nature within which ancient Mesopotamian history evolved; (2) to shed light on the rise of the earliest cites in human history (in Adams 1981: xiii). In *Heartland of Cities*, Adams states that the goals of his surveys were initially to provide explanations about the early rise of the literate civilization of Mesopotamia and its rapid falloff (Adams 1981: xvii). Whether or not these surveys could provide comprehensive accounts of the growth and the decline of this early civilization, there is no doubt that they have provided significant information for better understanding the process of urbanization (Wilkinson 2000).

Since Jacobsen’s survey in the Diyala region, the archaeological landscape has been the subject of surveys. Recently, postprocessual archaeologists have used phenomenological approaches to landscape, but these have not been entirely beneficial in the context of the Near East (Wilkinson 2000: 221). Subsequently, there has been a realization of the need to revert to basic questions in the archaeological survey (Ammerman 1981, 81-82) highlighting issues such
as site recognition, changes in additional intensive strategies, the consideration of geomorphological factors, and the relationship between surface and subsurface remains.

Subjects like the agricultural economy and population trends have been considered in most of the archaeological surveys in Mesopotamia. Other topics have still not been investigated thoroughly by surveys. In the southern Mesopotamia plain, no systematic large-scale surveys have been conducted to the extent of the ones compiled in *Heartland of Cities*, and only small patchy surveys have been carried out. With the implementation of newer GIS methods, remote sensing, and the use of different types of satellite imagery, the archaeological survey field is growing rapidly in its ability to map settlement systems within their environment (Verhoeven and Daels 1994).

**Survey Techniques**

Intensive sample survey and full coverage survey are two commonly used archaeological methods in the field. They both involve surface collection. Sample surveys enable surveyors to collect samples from a small part of the designated research area. From this sample, surveyors make generalizations for the whole area. This approach can be applied only to the area within a given archaeological site. For example, systematic surface collection within the site of Abu Duwari provided a clear indication to the functionality of different quarters of the site—e.g., ceramic kilns, metal working, and religious area (Stone 1990; Stone and Zimansky 1994). Full coverage surveys on the other hand, enable surveyors to visit all important sites within the limit of their natural territory. This top-down approach provides structural patterns which can then be studied and analyzed by special analysis and location models (Falconer and Savage 1995; Sumner 1990).
Closely related to the full coverage survey, mound surveys have traditionally been implemented in the Near East because mounded sites are easily noticeable in the generally flat landscape and are therefore easier to record. Though it is unfortunate that, while big sites have received the most attention, small sites have been relatively ignored (Wilkinson 2000). Consequently, settlements of mobile communities and Aceramic Neolithic sites have not been sufficiently recognized. Further, the insufficient ceramic dating in these areas results in the creations of considerable gaps in the records, and deceptively extended ceramic periods. Thus, two sites may be found contemporary according to the ceramic dating, although not necessarily occupied simultaneously (Dewar 1991).

The method of fine-grained local ceramic typology can provide a firmer local orientation sequence. A survey method like this can produce good results especially when used in parallel with excavation. It is even more useful if these excavations happen to be part of salvage irrigation plans, where a deep cut in the profile is exposed, which can provide a clear sequence to earlier occupation and determine the volume of sedimentation in the profile section (Wilkinson 2000).

Adams’s surveys in Mesopotamia highlighted the value of including small sites in the process of detecting settlement patterns, although, the range of Adams’s smaller settlements was called into doubt by Piotr Steinkeller on the basis of evidence from Ur III texts. He argued that many small sites could have been overlooked by Adams’s surveys. A possible reason for this goes to the unpreserved nature of their building materials, such as reeds or palm fronds (in Stone 1997). Nevertheless, even validating Steinkeller’s argument, the significance of including small settlements in the archaeological surveys has remained clear for researchers. Since the changes of the last forty years, when more intensive approaches have been taken in the field of
archaeology (Gibson 1972; Wright 1969), there has been an increase in awareness of the significance of these small sites.

Challenges

Unlike in the area of upper Mesopotamia, surveys in the lowlands have been faced with issues related to geomorphological landscape processes. Various amounts of sedimentation have accumulated in the Tigris-Euphrates valley. Due to this phenomenon, a significant number of archaeological sites may be buried under layers of sedimentation, causing them to remain missing from the archaeological record (Reichel 1997 and Stronach 1961). Both human and natural causes have played a role in the deposition and deflation of the alluvial plain landscape over the millennia. Therefore, early sites in the region may still be beneath the ground in some areas, while others are exposed on the landscape (Wilkinson 2000).

The concepts of “landscapes of survival” and “landscapes of destruction” (Taylor 1972) are relevant to the Middle Eastern landscape and that of Mesopotamia in particular. It is uncommon for settlements to exist in challenging environments like deserts or high elevation regions. Though, if settlements did exist in such areas, their traces would most likely survive through time as these types of environments do not tend to support long-term inhabitation and subsequent human-related activities would be unlikely to contribute to the settlements’ erasure. This reflects the case of “landscape of survival.” The moister and lower regions are expected to support long-sequence of living. Therefore, the traces of a settlement and its possible off-site features can be easily erased or heavily altered by subsequent settlements, especially if the newer were established on top of the older ones. This constitutes the case of “landscape of destruction.” What also falls under “landscape of destruction” is when the features of an ancient settlement,
such as fields boundaries, roads and canals; or, building materials like stone became “recycled” into the establishment of newer settlements (Wilkinson 2000: 229). This can contribute to the obscuring of physical traces of older settlements.

The area of interest in this study, Girsu, has been a dynamic place for a variety of human and natural processes through time. Although, among other regions in Iraq today, Girsu qualifies as one of best possible intact selections (see page 6), its landscape may relate more to a “landscape of destruction” than to “landscape of survival.” Thus, it requires rather aggressive remote sensing observation through multiple sets of satellite imagery and different time periods in order to arrive at a meaningful description of the settlements’ distribution, as well as possible social, political, and economic links among settlements during the Third Millennium B.C.

**Spatial Approach**

Modern advances in GIS tools for spatial analysis are considered to be among the main contributors in the recent transformation of the field of archaeology. Together with the use of high accuracy, satellite-based, remote-sensing datasets, archaeological researchers have planned and conducted their fieldwork differently than before. These elements also affected researchers’ interpretations of their study materials (Aldenderfer 1996, 2003; Allen et al 1990; Branting and Trampier 2007; D. Ebert 2004; J.Ebert 1984; Kvalme 1992, 1999; Lasaponara and Masini 2011; Limp 1996; Lock and Stančič 1995; Maschner 1996; Tripcevich 2004a, b; Wheatley 2004; Zubrow 2006). New methods like “geomatics,” which compiles all available georeferenced data, aerial photos, maps, and satellite images into one GIS framework have been commonly used (Bitelli 2012). Based on this visual data presentation, researchers conduct comparisons and
analysis to reach their conclusions. In this study, I apply this approach to the area of Girsu, and therefore I compiled all available geographic information for comparison and analysis.

The utility of different geospatial tools in addressing research questions is varied. The longevity and diversity of the records in the Middle East, makes certain geospatial tools useful in some archaeological research over others. For example, the “catchment analysis” tool and the “inductive predictive” models depend significantly on particular environmental data. They have been used successfully in producing simple stochastic models which are suitable for modelling nonliterate and less socially integrated societies. The use of these models however, has been proven unbeneficial when used with inconsistent proxy datasets and societies with extended textual records that indicate complex decision making over long periods of time. This is typical to the Middle East and demands the use of multivariate models (Wheatley 2004).

The utility value of satellite-based, remote-sensing datasets also differs from one geographical area to another in the Middle East. For instance, the use of high-resolution imagery has been most successful in lowland alluvial landscapes like those of the Tigris-Euphrates Valley and the Nile Valley (Hritz 2010; Parcak 2007; Pournelle 2003a, b; Trampier 2009). On the other hand, the same datasets have not been as useful in areas where mountains exist. Because of the characteristics of the archaeological sites in the mountainous regions which are different than those of the lowlands, applications of geophysical survey maybe more suitable in exploring ancient settlements (Branting and Summers 2002; Creekmore 2010; Summers and Summers 2010).
Case Studies

The flexibility of the GIS framework and the broad potential of its quantitative tools, have allowed Mesopotamian researchers to employ the GIS in various field topics within the archaeology of Iraq. Since 2003, the looting of archaeological sites has been a subject of concern within the global archaeological community of Mesopotamia. In her study, Elisabeth Stone implemented high resolution (0.6 m.) DigitalGlob imagery for a broad area in southern Iraq. She also used statistical methods to observe and analyze archaeological looting that occurred in southern Mesopotamia after the year 2003. She used a database of 1,949 archaeological sites for her analyses. After conducting her observation and analysis, she generated a number of assumptions. First, she assumed that there is a relationship between the degree of looting and site size. That is, mounds with big sizes normally receive more looting than smaller mounded sites. She also suggested that sites with Sassanian and Islamic occupations are normally less severely damaged compared to sites with earlier occupations, such as Uruk, Early Dynastic, Akkadian, Ur III, Old Babylonian, Kassite and New Babylonian (Stone 2008). Although not directly stated within the text, Stone implies that the looters of archaeological sites are well-aware/educated of the history of the sites they vandalize. Although this study brought new insights to the issue of the looting of antiquities, certain dimensions in the study remain highly questionable within the archaeological community.

Within a subset around the site of Isin in the south of Iraq, Carrie Hritz tested the hypothesis that vandalized sites seemed to have a special pattern depending on distance from towns and villages. For this purpose, she used the tools of GIS and submeter-resolution panchromatic Quickbird images to measure the distances and roads from villages to sites. Prior to this study, there had been an assumption that vandalized sites are located within a distance of
2-5 km. from modern towns and villages, indicating that this was a reasonable distance for the looters to reach their targeted sites by walking or by other means of transportation. At the same time, the 2-5 km. distance would be far enough for the vandalizers to be out of the sight of daily traffic. The outcome of this study indicates that the distance between looted sites and the nearby towns and villages is only one of many factors determining site vandalism. In addition, the study suggests number of other variables which influenced looters’ choices. Some of which are the level of local security and economic conditions (Hritz 2008: 5-8).

In my MA study (Ibraheem, 2008), I intended to expand upon the information contained in the Atlas through the use of GIS tools, remote sensing methods, and, to a certain extent, newer maps of the region of southern Iraq. With the implementation of high-resolution DigitalGlobe imagery, I was able to provide further evidence for the destructive archaeological looting in southern Mesopotamia around the sites of Girsu and Isin. The study shows that among the 252 possible new archaeological sites observed in the Girsu region, 55 were looted to various degrees. Notably, these sites have never been surveyed before, and they were identifiable only by their looting holes on the satellite imagery through remote-sensing. Thus, the use of these advanced geospatial tools has been proven useful for the detection and inclusion of archaeological sites which were otherwise lost from the record. The GIS analyses also show that the looters were interested in digging sites which are on the average larger than others in the area.

In a growing trend of using satellite imagery to visually identify archaeological tell sites and off-site features, researchers at Durham University investigated landscape formation processes with the use of CORONA satellite photos around the area of Homs, Syria (Beck 2007; Philip 2002; Wilkinson 2006). For these studies, CORONA imagery provided a significant aid in
detecting mounded sites, clusters of dense surface material, field limits, and other relict features. The researchers concluded that both soil composition and vegetation have a distinctive signature in the CORONA images. This signature is represented as tonal differences in pixels. For nonmounded sites, which retain a heavy volume of surface materials, pixel differences appear as waves on the landscape, reflecting decaying mudbrick beneath the surface. These areas appear as highly reflective dark pixels or, sometimes, white pixels with low absorption (Wilkinson 2006). With the use of filters and visual interpretation, Wilkinson (2006) and Beck (2007) linked the reflectance differences in pixels with soil conditions and composition. They concluded that in dry seasons, archaeological sites can be easily distinguished through their soil. This is because such soils retain more moisture than naturally occurring loam soil, causing the archaeological sites to appear as darker spot in the bigger lighter soil surrounding it.

The above-mentioned examples and other studies that have been conducted in the archaeology of Mesopotamia show how archaeologists have been able to view ancient landscapes from afar by using satellite images. They have also been able to document Mesopotamian landscapes with their settlements and off-site relict features in GIS. For the area of Lagash, I use a set of satellite imagery including up-to-date and high-resolution (2017) Google Earth-Pro DigitalGlobe imagery. This imagery provides a detailed view to the modern landscape and any recent man-made modification (e.g., governmental projects) that have occurred in the area of interest. In addition, I use CORONA imagery as an older reference to the landscape before major governmental enterprises took place in the area of southern Iraq. SRTM data is also be used to check the elevation of selected areas. A set of old Iraqi maps from *Atlas of the Archaeological Sites in Iraq* is used for their valuable survey information as well as an initial reference to site locations. Other types of topographic detailed maps of the area are also be
used to guide the process of georectification of old maps when needed. The up-to-date 10.5.1 ArcMap program with its advance spatial tools and processes is applied. All data are organized into one GIS framework for analysis on settlement distribution toward the end of the Third Millennium B.C. and to investigate possible patterns related to the spatial connections and economies of that era.
CHAPTER FIVE
RESEARCH DESIGN, LANDSCAPE AND REGIONAL SETTLEMENTS IN GIRSU AREA

My dissertation is focused on a research area located 250 km to the south east of the modern city of Baghdad (Figure 15). The geographical limit of this area encompasses an approximately 5,250 km² around the site of Girsu (Figure 16). The site of Girsu is located at the center of the research area because of its importance as a major urban center during the Third Millennium B.C., and because it was the capital of the Lagash province toward the end of the millennium, during the Ur III period. In addition to Girsu, this area encompasses the other major ancient city Lagash, to the south-east of Girsu. Besides these major cities, additional 323 smaller settlements exist on the landscape of the research area and are presumed part of the periphery based on their sizes. Some of these make up the representation of the periphery in this study. These are Eshan Alshijrah, Eshan Abu Khiraz, Tell Alkawili, and Tell Salih, all of which are located close to Girsu. This study will also examine the peripheral site of Menfesh, which is located between the sites of Girsu and Lagash. This site was the only one visited among other peripheral sites in this area, and the field observations taken during these visits are invaluable for the exploration of the ancient economic role of the periphery.

The size of this area and the distribution of its archaeological sites represent a good sample on which spatial analysis can be conducted on a regional scale. Conclusions and models resulting from the analysis of this area will make a significant reference for the researchers of other areas of southern Mesopotamia, in terms of the ancient economic role of the periphery in relation to adjacent urban centers. The 327 sites represented in the sample of this study are
encompassed in four maps from the Iraqi Atlas: Alnasir sub-district, sub-district of Rifaie district center, sub-district of Alshatra district center, and Aldawayah sub-district.

Figure 15: Research area on the map of Iraq.
Figure 16: Research area-internal view from Atlas data.
Methods

The dynamic nature of the landscape of Girsu area demands, first, a comparative view of its landscape through time in order to obtain an understanding of the nature and volume of changes that occurred within it. For this purpose, maps and satellite imagery available to us are used to allow tracing serial views of the landscape of Girsu area back to the beginning of the 20th century. It should also be mentioned that the meaning of “changes” here refers specifically to changes related to resource bases and landscape features that would have allowed communication and interaction between settlements. These include water ways, water resources and arable lands. Such elements are capable of affecting economies in modern times and even more so in ancient times. Similarly, site distribution of the Third Millennium B.C. can provide additional information related to subsistence resources and possible land use. Any noted changes during the modern history of this area would not represent an exact mirror to the changes that may have occurred during the Third Millennium B.C. However, current ecological, hydrologic, and geomorphic processes of present time, can help in understanding what could have happened in this landscape, since these processes could have had the same effect and worked the same way in the past (Adams 1981: 52). From that, we can obtain some indications about the resources which could have been available for the settlers during that era, the effect of resources on the formation of settlement patterns, and the potential uses of resources in economic interactions between dwellers of the periphery and urban centers of the area.

It has become apparent to us, as it has for many researchers of this region, that modern agricultural activities have influenced the configuration of this landscape. We noted in our two recent observatory visits to the Girsu region in 2011 and 2013 that farmers are frequently forced to shift their fields due to salinization. Farmers also dig new canals and block, fill or otherwise
modify the course of older ones in order to maintain the flow of water to their crops and animals. These practices have been especially necessary with the well-known recent reduction in the water levels of the main two rivers, the Tigris and the Euphrates (personal interview with local farmers in May of 2011 and 2013). Pathways for humans and their herds also change according to the locations of more newly cultivated fields and the availability of grazing lands. Water from heavy rain could accumulate for weeks over extended lands of the region due to poor soil absorption preventing access to these lands as they turn to temporary swamps (Figure 17).

Figure 17: Temporary swampy area to the south east of Girsu, after a rainy season (photo by Zaid Alrawi, May 2013).
Other factors also affect the formation of this landscape, such as politics, economics, and social issues. An example on this is the drainage of the southern marshes due to political considerations at the beginning of the 1990s, and the demographic changes that followed among the marsh Arabs. Likewise, these events or similar ones could have contributed in manipulating the formation of the Third Millennium landscape and the distribution of its settlement patterns. Here I try to explore the landscape of Girsu area and detect what is possible through remote sensing based on three resources. First, the four maps of the Iraqi Atlas, which represent the oldest reference for the geographical setting of the area. Although the Atlas was published in 1976, its maps were established first sometime during the first quarter of the 20th century. The initial purpose of compiling these maps was for agricultural and land assignment by the British army, which controlled the area at that time. The maps were compiled by Indian specialists who accompanied the British army. Later, teams of Iraqi archaeologists and engineers used these maps and located known archaeological sites (personal interview with Mr. Qaiss Hussain Rasheed, *Head of the State Board of Antiquities and Heritage*, in Baghdad: 2013).

Despite the fact that some of the Atlas maps do not offer comprehensive topographic details about the areas they represent, the four Atlas maps used for the Girsu area demonstrate a good representation of ground features at the first quarter of the 20th century. The maps show the extents and limits of marshlands, as well as areas with sand dunes, rivers, and canals. Many of these old views may not exist in the more recent satellite imagery.

CORONA satellite imagery for the year 1968 will be used as the second reference to observe the landscape of the Girsu area. This represents an important time span in that it precedes the expansion of major governmental enterprises that hugely impacted the landscape of Iraq starting in the early of 1970s. Further, a group of 2016 DigitalGlob imagery of Google
Earth-Pro will be used as the third and up-to-date reference for landscape exploration of Girsu region. Finally, a set of SRTM data was also implemented in this study in order to look at elevation in areas where ancient Third Millennium marshes are assumed to have been.

After the comparison is conducted, the site data provided by the Atlas maps will also be used in a fashion similar to but more simplistic than that used by Adams in *Heartland of Cities*. This includes viewing the smaller sites around the major ancient cite Girsu in different periods of the Third Millennium B.C. Then, inferences will be made so as to understand, on the one hand, the interaction between ancient settlements and the landscape resources; and on the other, how this could have formed the economic interaction between the peripheral sites and their adjacent ancient major cities.

**Data Use in GIS**

In order to obtain easy and quick access for viewing and comparing processes, the data needed for this study had to be compiled in one GIS data frame. Accordingly, all of the four Iraqi Atlas maps, the 1968 CORONA images, the 2016 DigitalGlob imagery, and the SRTM data were geo-rectified with a unified geographical projection system. Neither the Atlas maps, nor the imagery from Google Earth-Pro (after being downloaded) maintained geographical coordinates. Nevertheless, CORONA images for the area of interest were available for free download on *CORONA Atlas of the Middle East*, of the University of Arkansas, and were already georectified. Thus, they were downloaded and were used as the base of rectifying the four Iraqi Atlas maps as well as the DigitalGlob photos. The SRTM data file was already geo-rectified and provided by Dr. Carrie Hritz. The coordinate system of WGS 1984 UTM was chosen in the georectification of all material used in GIS for Girsu area. This system was selected for its common and
successful use by other researchers in this field. The four Atlas maps were brought to GIS and were geo-rectified successfully (Figure 18). To track the changes in the Girsu landscape it was necessary, first, to digitize the ground features in each of the four Iraqi Atlas maps and, second, to do the same for the other two sets of imagery. These features included marshy areas, rivers, irrigation canals, and ancient sites.
Figure 18: The four Atlas maps georectified and aligned with the research limit.
CHAPTER SIX
LANDSCAPE AND REGIONAL SETTLEMENTS IN THE GIRSU AREA

Recent Landscape Setting

A close examination of the four maps of the Girsu area reveals that some segments in the maps were left blank. A possible reason for this is that the surveyors might not have been able to access those lands due to social or safety restrictions at the time of survey. Nevertheless, the maps still provide significant information about the extent of features like main river courses, smaller canals, marshes, agricultural lands, and unpaved roads. Most importantly, all of these items are present on the map with their special relationship to the archaeological sites in the area. The goal here is to observe the existence and extent of water sources in the area of Girsu since the beginning of 20th century, to gain a sense of their role in the recent economic life of the population.

Starting from the map of the Aldawayah sub-district, which covers the eastern and south-eastern parts of the research area, an old marsh can be observed to the south of the site Lagash (Figure 19). It is termed as “Hor Alghamuga,” and its northern water limits surrounded the eastern and southern limits of the site Lagash. Another portion of its water reached the western side of the site; however, it is not directly adjacent to the edge of the site. There are a few sites located within the marshy area and on the edges of it. This marsh appears to be the one that Donald Hansen and his team members had to cross by boat in order for them to reach the site Lagash in the 1960s (see page 6). Another marsh existed to the north west of the site Lagash which is called “Hor Abu Ijool.” Even further to the northwest, a smaller swampy area existed and included the peripheral site of Menfesh. On the map, this marsh is labeled “Alsdiefah.”
These three marshes take a linear form between the site of Lagash and the site of Girsu, included in another of the four maps. There is also a network of irrigation canals spread throughout the northern and eastern parts of the map, and less densely among the marshy areas. One unequivocal major canal or small river, termed “Shat Alakhder Alqadeem” extends from north to south in the northeastern corner of this map. A number of sites are located near this canal, and those sites to the east of it, especially, appear to line up parallel to the canal. The areas that fall between the water canals and archaeological sites represent cultivated lands or lands available for agricultural activities.

An observation on Alghamooga marsh through the three data resources revealed that it did not retain its full extent during the past century. While the maximum northern limit of this marsh used to surround the site of Lagash from its eastern and southern ends, as per the Aldawayah Atlas map at the beginning of the century, the CORONA imagery shows that by 1968 the water volume in this marsh had increased. This caused the northern limit to move northward and eastward of the site of Lagash. As a result, the marsh water surrounded the site of Lagash from all directions (Figure 20). Further, when comparing the 1968 CORONA imagery to the 2016 DigitalGlob images, this marsh appears to have lost so much of its water that its western and southern sections have dried and cultivated fields have replaced them. Moreover, the eastern side of the marsh has lost almost 50% of its water, and a gap between the marsh’s limit and the site has formed. This gap seems to have also been used by farmers in establishing new fields. Because of the significant reduction of water volumes in the two rivers Tigris and the Euphrates, the northern portion of this marsh has, expectedly, also lost about 50% of its water since 1968. However, the marsh water in the northern section still borders Lagash on its northern and eastern sides.
As for the second marsh to the north-west of the site Lagash, “Hor Abu Ijool,” it appeared that this swamp has generally retained its limits, as is shown by the Aldawayah map. The CORONA images revealed that there had been insignificant gain in extension at the northern and southern edges of the marsh (Figure 21). The 2016 DigitalGlob images show that the entire marsh has dried and the area has been taken over by farmlands (Figures 22 a and b).

Figure 19: Aldawayah sub-district Atlas map.
Figure 20: Digital model of Alghamooga marsh based on the three data sources shows the fluctuation in its limit through time.
Figure 21: Digital model of Abu Ijool marsh based on two data sources shows insignificant fluctuation in its limit until the year 1968.
Figure 22a: Abu Ijool marsh in CORONA imagery.
Figure 22b: 2016 DigitalGlob images show the dry out of Abu Ijool marsh and the present farmlands in its previous location.
The third marsh of Alsdiefah is located even further to the north-west of the site of Lagash and encompasses the peripheral site of Menfesh. This swampy area has been dry since 1968 or possibly sometime before, and cultivation has taken over its former location, as the CORONA images show. This seems to have been the case until the present time, as the DigitalGlob images display (Figures 23 and 24). During our visit to this particular area in 2013, after a heavy rain season, we noticed an accumulations of rain water on previously cultivated fields, effectively turning them into a shallow, temporary marsh. This indicates that although the marsh, whose existence was documented in the Aldawayah map, has been dry since 1968, its area is still capable of hosting a new marsh once a sufficient amount of water is available to flood it.

The great number of irrigation canals in the Aldawayah area and in other maps of the research area, made it impractical to track the changes happening in each canal through the three data sources. Instead, a general description of all canals in the four maps suffices in considering the bigger picture of water resources.
Figure 23: 1968 CORONA image shows the cultivated field taking over the dried marsh of Alsdiefah (in blue).
Figure 24: 2016 Digital Glob image shows the cultivated field taking over the dried marsh of Alsdiefah (in blue).
The Alnasir sub-district map covers the central, western, and south-western parts of the research area. It includes the sites of Girsu, Eshan Alshajrah, Eshan Alkawwili, Tell Salih, Eshan Abu Khiraz, and Menfesh in its north-eastern corner (Figure 25). The main natural feature in this map is the Gharraf River, which runs from north to south at the western side of Girsu. From Gharraf many other smaller irrigation canals disperse from its right and left banks carrying fresh water to the fields further to the east and west of the river. Further to the south, when the Gharraf almost reaches the modern town of Shatra, the river further splits into a few smaller canals, one of them termed as “Alhussainyah River,” according to the Atlas. This canal runs eastward while the other ones continue toward the south. An area of sand dunes exists to the west of the Gharraf course, and further to the west and southwest of the sand dune area, a few wadis are present. The northwestern corner of the map shows a major canal that runs parallel to Gharraf but that seems to terminate at half the distance of the Gharraf course. It is termed “Shat Alkar” by the Atlas. It is noticeable that the western side and most of the southern side of the Alnasir map is empty of irrigation canals in comparison to the central and northeastern sections, which shows a dense network of canals especially around the site of Girsu. This map also overlaps with the map of Aldawayah in showing that the Alsdiefah marsh completely surrounds the site of Menfesh (Figure 19).
The sub-district of the Rifaie district center map covers the northern portion of the research area. It encompasses the northern course of the Gharraf River after branching from the Tigris River at the modern town of Alhay. Similar to the Alnasir map, it shows heavy density of smaller irrigation canals, which branch out from the two banks of Gharraf (figure 26). The network of these canals becomes less dense the further it extends toward the east and the west, away from the Gharraf River. The northeastern section of this map displays the continuation of the other major canal in the map of Aldawayah sub-district, called “Shat Alakhder Alqadeem.” The course of this canal extends parallel to the course of the Gharraf River. Unlike the other
three maps used in this study, the Rifaie map shows a substantial area of sand dunes at the southwestern section of the map. No irrigation canals are depicted that would interfere with the sand dunes; however, there are about 26 archaeological sites marked within and around the edges of the sand dunes’ area. Other archaeological sites are located close to the irrigation canals.

Figure 26: Sub-district of Rifaie district center map.

The last Atlas map used in this study is the sub-district of the Alshatra district center map. This map covers the southern part of the research area. The eastern half of this map overlaps with the map of the Aldawayah sub-district, while the western half overlaps with the map of the Alnasir sub-district map. Therefore, this map does not cover additional distances
within the research area. However, it provides additional ground features around the final section of the Gharraf River which are not present in the other maps. The three sites of Girsu, Menfesh and Lagash are included in this map. Also, the three marshes of Hor Alghamuga, Hor Abu Ijool and Alsdiefah are represented in this map. A wide spread of irrigation canals can be noticed branching from the main course of the Gharraf and also from its smaller courses after it splits near the city of Shatra. The irrigation canals depart from both sides of the Gharraf. Those which take off from its eastern bank continue eastward until they end in the marshes (Figure 27). The archaeological sites are located on or among the irrigation canals.

Figure 27: Sub-district of the Alshatra district center map.
As for the watershed in the landscape of Lagash area, it can be described under one of two categories: first, the category of small rivers or major canals. The second category includes all smaller irrigation canals in the area. The first category includes Gharraf River in the central part of the research area, in addition to two smaller rivers —the Shat Alakhder Alqadeem to the east of Gharraf River and the Shat Alkar to the west (Figure 28). An observation of the Shat Alakhder Alqadeem’s course through the Atlas maps, the 1986 CORONA images, and the up-to-date DigitalGlobe imagery shows that the river course has retained its shape during the past century. The same observations could be applied to the Gharraf River course. The only exception that can be noted in the case of the Gharraf is that its course shows fewer curves and sharp corners in the Atlas representation than in both the CORONA and the DigitalGlobe imagery. However, this cannot be used as evidence that a small section of the course has changed over time, but instead probably reflects the imprecise drawing of the Gharraf River course in the Atlas as compared to the actual course representation in both sets of satellite imagery. Thus, we can say that the general Gharraf course has remained the same in the past century or so. While the Shat Alkar is drawn in the Atlas, only a trace of the bed can be seen in both the 1968 CORONA and the up-to-date DigitalGlobe imagery, which show no indication of running water into this major canal, suggesting that the course may have dried before 1968.
Figure 28. Recent watershed in the Girsu area.
Distribution of Third Millennium Sites in Relation to the Ancient Watershed

The existence or non-existence of water sources during the Third Millennium is indicated by the configuration of sites from that period. Simple logic is used here: in a semi-arid landscape, ancient settlements, whether they were major urban centers or smaller peripheral sites, would not have been existed without access to nearby water sources. Thus, the establishment of settlements reflects the existence of rivers, canals, or swamps in this area. These features must have been important in the economic life of the Third Millennium, in that they provided the ancient settlers not only with water for household use but also with a means of transportation, which helped to link these communities economically.

The dating categories of the Atlas do not differentiate between the three Early Dynastic periods (i.e., I, II and III), as most modern historical literature does. Rather, the Atlas encompasses the three sub-periods with one term—the “Early Dynastic” period, which extends from about 3000 B.C. - 2350 B.C. The Atlas dating also generalizes the remaining time span of this millennium, extending from about 2350 -2000 B.C., as the “Sumer and Akkad” period. Again, this differs from how researchers have recently defined this time span as two distinct periods—the Akkadian period 2350-2150 B.C. and the Ur III period 2150-2000 B.C. This dating issue in the Atlas necessitates that this study considers all Early Dynastic sites, representing two-thirds of the millennium, as one group and the later historical sites, representing the last third of the millennium, as another, with no distinction among Early Dynastic periods or between the Akkadian sites and Ur III sites.

Starting with the Early Dynastic sites, the distribution of settlements shows a pattern parallel with the modern Gharraf River in the center of the research area (Figure 29). This indicates the existence of this river in more or less the same formation during this period. Not
only the main course of the Gharraf, but also its major branches and some of its smaller irrigation canals can be assumed to have existed in the modern pattern. It is possible that, as in modern times, these branches broke-off the banks of the river stretching eastwards and westwards, to supply the Early Dynastic settlements further away from the Gharraf. Examples of this are the three irrigation canals drawn in Figure 29 whose shape was predicted in accordance with the linear formation of Early Dynastic sites adjacent to them. Girsu could have flourished as a major urban center near the main course of the Gharraf, resembling the big modern towns like Rifaie, Alnasir and Alshatrah that lie near the course of Gharraf. Beside the site of Girsu, 58 smaller Early Dynastic settlements (excluding the other major urban center Lagash) were spread further to the east and west of the main course of Gharraf. Smaller water canals also exist in this area and must have been dug to bring fresh water from the main river.

A difference can be noticed in the range of settlements extending toward the east rather than the west from the Gharraf. While the settlements east of Gharraf spread out for about 14 km, the settlements to the west of the river extend for about 28 km, until they reach the major canal of Shat Alkar. This suggests that Shat Alkar may have existed during the Early Dynastic period as a major canal to supply fresh water to the dwellers of the area adjacent to it would allow further establishment of settlements far from the main course of Gharraf. Another indicator of the ancient presence of this major canal is the establishment of the significantly larger site Tellool Malatees (its modern name) adjacent to this canal. This site may have been established as a larger town than the other peripheral settlements in the area, relying directly on the water supplied by Shat Alkar. On the other hand, the limited range of the sites to the east of Gharraf (14 km) indicates the non-existence of the major canal of Shat Alakhder Alqadeem further east of the Gharraf. Had this major canal existed during this era, settlements could have been
established beyond the 14 km limit and relied on its water supply further away from the Gharraf River.

The area between the sites of Girsu and Lagash appears to be unexpectedly empty of any Early Dynastic peripheral sites. Here, it should be recalled that this area hosted a number of marshes whose water portions and limits fluctuated from the 1920s until recently (see Figures 20-24). Most recently, the majority of these marshlands has been taken over by cultivation after the shrinkage of the wetlands. These wetlands used to exist around and among the sites of Girsu, Menfesh, and Lagash. In 2013, after a rainy season, the huge body of water around the site of Menfesh turned the landscape into a marsh in matter of days (Figure 17), which indicate the existence of a large, ancient marsh in this area. Therefore, despite the general flatness of southern Iraq, the elevation of this area had to be checked using SRTM data. If the area between Girsu and Lagash showed a lower elevation than the area around it, then one could argue that this region once hosted a large marsh or smaller, neighboring marshes during the Early Dynastic period.

The SRTM data shows that this area maintains a slightly lower elevation than the area around it (Figures 30 a and b). Therefore, it is plausible to assume that, with enough water available to flood it, this area has been capable of hosing a marsh in the recent and ancient past. We can also assume that the area between Girsu and Lagash used to be of lower elevation during the Early Dynastic period, as it has since been layered with the silt deposition of the Gharraf and its canals over the course of millennia. Thus, we argue that there used to be a marshy area between the sites of Girsu, Menfesh, and Lagash during the Early Dynastic period.
Figure 29. Distribution of Early Dynastic sites in the study area.
Figure 30a. Digital elevation model of the study area based on SRTM.
Site distribution of the later Sumer and Akkad period confirms some assumptions about the Early Dynastic period and indicates additional changes in the ancient landscape features. First, the general parallel pattern of site distribution with the Gharraf River confirms its existence in this period too (Figure 31). During this era also, there seems to have been a reduction in the number of smaller peripheral sites to the west of Gharraf River. While the total number of Early Dynastic settlements in this region was 59 sites, this dropped to 45 sites during Sumer and Akkad period. This does not match Adams’ conclusion that the sites and occupied area increased toward the end of the Third Millennium B.C., and especially the Ur III period (Adams 1981: 143). This may indicate either drainage, or significant shift in the course of Shat Alkar, which
was presumably used to support these smaller settlements far from the Gharraf River. The disappearance of the slightly larger site, Tellool Malatees, near Shat Alkar is another indicator of the drainage or shift of Shat Alkar. On the eastern side of the Gharraf, settlements continued to fall within 14 km range. This affirms the non-existence of the Shat Alakhder Alqadeem not only during the Early Dynastic period but also throughout the entire Third Millennium. The area between the ancient cities of Girsu, Menfesh, and Lagash continues to appear empty of peripheral sites, affirming the continuation of a large body of water in this particular region. Throughout the research area, breakages could be noticed in the linear site patterns of Early Dynastic period. The rather scattered pattern of settlements makes it difficult to predict the shape of possible ancient irrigation canals during Sumer and Akkad period.
Figure 31. Distribution of Sumer and Akkad sites in the study area.
CHAPTER SEVEN
DISCUSSION

Subsistence Base and Land Use in Girsu Area during the Third Millennium B.C.

Unlike other regions of Mesopotamia, the area of Girsu seems to have hosted multiple resource bases. The big marsh whose existence was predicted according to the GIS analyses in the area must have provided many subsistence options for the inhabitants, in addition to cultivation (Figure 32). The dwellers of Girsu, Menfesh, and Lagash must have had access to fresh water subsistence items. This is mainly through the presumed marsh located between the ancient Gharraf River and these three sites. In addition, the ancient Gharraf River and its branches were sources of riverine items. The immediate location of the three sites off the marsh limit would have offered the settlers access to a daily source of protein fish. Other sources of protein must have come from wild pigs which would have been available around marshy environments. Further, the settlers would have hunted different types of local and migrating birds, attracted by the marsh and its plants. Fresh water turtles could also have been consumed in this area. Bitumen, reeds, bushes, and small trees, also available in a marsh environment, would have been used as animal feed, fuel for cooking, and building material.

The marsh in this area, as a valuable resource of many subsistence items, must have been a source of competition for the populations of the two cities, Girsu and Lagash. Unless these cities shared the area of the marsh equally, or 12 kilometers each as calculated in GIS, division of the marsh would have constituted a significant conflict for the city-states during the Early Dynastic period. This control over subsistence resources may not have been an issue toward the end of the millennium, especially once the city Girsu was part of the bigger State of Lagash and
the centralized and bureaucratic system would have organized land use through the highest authority in the area. In addition to the marsh, the ancient Gharraf River and its branches must have supplied the inhabitants of these three sites and other sites in the area with fresh water for irrigation and drinking purposes.

The inhabitants of Girsu area in the Third Millennium, must have cultivated the lands located on other sides of their settlements. In case of any unexpected shortages of the river-marsh items, the crops of these lands would have provided an alternative and somewhat secure subsistence base to the communities of these three sites. The agricultural products would have consisted of garden crops and dates, in addition to cereals like wheat and barley. The nature of the highly demanding work needed for cultivating the gardens required them to be adjacent to big cities (Oppenheim 1969: 6). Thus, it is expected that both Girsu and Lagash, as major urban centers during the Third Millennium, would have been surrounded by gardens or orchards. Those areas would have stretched for about 5 km a reasonable distance for farmers, who may have resided in the two ancient cities and commuted back and forth on foot, perhaps daily, to maintain the gardens. A buffer limit of 5 km was established in GIS around the two ancient cities of Girsu and Lagash to show the expected extent of the garden zones, at that time (Figure 32). The greater open fields, cultivated with cereal crops, would have been established further beyond the gardens’ limits. The level of care required for such fields would be less frequent than for the gardens. The maximum limits of these fields could not be predicted.

Domestic animals would have presented a major contributor to the resource base. The settlers must have used their milk, meat, skins, wool, and waste on a daily basis. The distribution of domestic animals throughout the landscape has been predicted according to the nature of their pastures. For instance, it has been suggested that herds of goats and sheep may have been kept in
areas within or close to lands where cereals are cultivated. These animals depend on cut barley or young growth barley as fodder. They are also pastured in areas of slightly lower elevation, where vegetation is ubiquitous, after rainy season (Nissen 1976: 33). Thus, the herds of goats and sheep in the Girsu area would either have been kept somewhere in the open fields near to the cultivation of wheat and barley or located towards the furthermost ends of the zones within 5 km of Girsu and Lagash. Conversely, it has been suggested that cattle would have had to be closer to cities because of their use as draft animals. The demand for their milk, as well, would require that they be kept closer to the consumer populations in order to avoid milk spoiling during long-distance transportation (Adams 1981: 142). Therefore, the populations of cows must have been kept within the 5 km zones of the cities Girsu and Lagash. For similar reasons, the herds of buffalo would have been kept close to cities, and in particular, where water abounded. The physiological nature of these animals demands the nearby presence of water. Thus, it is expected that the buffalo in Girsu area must have kept around the two cities Girsu and Lagash, specifically at the sides where the old marsh existed. The site of Menfesh may also have kept a population of buffalo since it had a direct access to the old marsh a suitable environment for these animals.
Figure 32. Early Dynastic water sources and land use in study area.
Altogether, the general configuration of natural resources, settlements, and land in Third Millennium Girsu seems to have borne significant resemblance to that which was posited by Nicholas Postgate (1992), with some differences. Postgate sketches a model of a Sumerian land cell from archaeological and textual data from southern Mesopotamia. The representation shows where people would have established their settlements in relation to water resources and how land would have been divided, for instance into arable and grazing lands (Figure 33). Postgate’s illustration of water resources can be seen in Girsu’s dependence on the ancient Gharraf River as the main water supply and in its own system of dividing land. From the Gharraf, smaller canals, similar to those presented in Figure 32, branched off and took water further in land for irrigation and drinking purposes. On these smaller canals, people would have built their smaller settlements, again like the small settlements shown in Figure 32. We can see additional similarities in the division of land. The sketch shows that the location of fruits and vegetables (i.e., the garden zone) tended to be closer to settlements while the staple grain fields tended to be further away. Moreover, cattle herds were kept closer to the villages while sheep and goats were located in the fields where they could graze in the marginal zones.

The primary difference between Postgate’s sketch and what seems to have existed in Girsu area is the location of the marshland. While Postgate suggests that the marshy area existed towards the end of the Sumerian land cell, the marsh in Girsu area seems to have been between the main river and the three sites Girsu, Menfesh, and Lagash. Additionally, Postgate does not show a possible location for a major urban center in a Sumerian cell. Overall, the water resources and land use suggested by Figure 32, based on data and analyses of this particular area, better model this geographical area than Postage’s model which is based on historical information of other Mesopotamian areas during the Third Millennium B.C.
Figure 33: Hypothetical sketch of an agricultural cell in Southern Mesopotamia (after Postgate, 1992).
Economic Role of the Ancient Periphery during the Early Dynastic Period

For this period, spatial analyses in GIS show two categories of peripheral sites with distinguishable economic roles. Site size and location relative to major ancient cities, water sources, and arable lands were considered in differentiating between the economic functionalities of the two classes. Also considered was Adams’s work surveying sites in other parts of the Mesopotamian plain and the suggested economic functionalities that he introduced based on site size (Adams 1981: 137-138). Although Adams’s categories may not absolutely represent the ancient role of each site, his taxonomy is still significant here, as it was based on sites in neighboring areas of southern Mesopotamia. In addition, the field notes and observations from the two visits to the site of Menfesh were taken into account.

The first economic category is represented by the three sites Eshan Alshijrah, Tell Alkawili, and Tell Salih. These ancient settlements were located close to the north-east of the city Girsu (Figure 34). The second category is represented by the site of Menfesh located between the two cities Girsu and Lagash. When exploring the economic functionality of the peripheral sites in the Early Dynastic period, it should first be kept in mind that, at this time, the hinterlands were politically connected with their nearest city governing system (Postgate 1992: 83). Other administrative means could have been imposed by the city to control the hinterlands, as well. The closeness of the three sites in the first class to the city Girsu implies a direct economic connection with it as the closest major urban center. The ancient canal connecting these three sites to Girsu (Figure 34) would also have offered a convenient way to access these settlements in the ancient landscape. The position of these three sites within the 5 km zone of Girsu suggests their involvement in the cultivation of garden rather than cereal. The location of these sites right off ancient canal as well as their relative sizes (Eshan Alshijrah about 7 hectares,
Tell Alkawili about 3 hectares, and Tell Salih about 1 hectare) suggest that they could have been specialized sites whose functionality included lifting water from the canal and facilitating irrigating the garden zone of Girsu. The structural plans of these sites during this period would, therefore, have involved some type of irrigation canal, which would have originated at the sites and gone out to the gardens. Further, there must have been small regulators to manage the flow of water through these sites. Future excavations at these sites can verify the existence of such features. The two sites Tell Alkawili (3 hectares) and Tell Salih (1 hectare) are more likely to fit this expectation because of their small size. According to Adams, sites of this size may have represented specialized locations, temporary camps, or even villages (Adams 1981: 138). This last possibility may apply to the third site Eshan Alshijrah (7 hectares) because of its bigger size. Eshan Alshijrah may well have been a small village which was occupied with settled farmers, unlike the other two sites, which more likely functioned as locations where farmers, living in the city Girsu, used to stay temporarily.

It is also possible that any of the three sites could have functioned as a locus for the piling, packing, loading, and shipping of fruits and other garden produce through the connecting canal to Girsu, the center of consumption. If these types of activities concentrated at these sites, future excavation should reveal hard mud platforms, which would have served as shipping docks, at the sites’ edges, facing the ancient canal.

The site of Menfesh on the other hand, represents the second peripheral class in this period. This site may have been a location with multiple economic functionalities. Unlike the above mentioned three sites, this site’s location falls within the cereal cultivation zone of the ancient city Girsu. About 7 km to the south-east of the city Girsu (Figure 32), its location implies direct and exclusive economic interaction with Girsu, in the Early Dynastic period. Though it has
been suggested that smaller sites in this period depended politically on the nearest city, these sites could still have had control over their administration and land use, as in the villages of the later Old Babylonian period (Postgate 1992: 83). Thus, Menfesh may have been under the political control of the government of Girsu; however, it may also have controlled its own agricultural lands and interacted economically with the cities Girsu and Lagash at the same time.

Figure 34: Three garden-zone sites near Girsu.
The actual size of Menfesh during the Early Dynastic period is, as of yet, unknown. At about 10 hectares, the site’s size represents its extent in the latest occupation period in the Old Babylonian era from 2000-1600 B.C. According to Adams’s categories, this qualifies it as a village (Adams 1981: 138). However, the size of Menfesh may well have been smaller during the Early Dynastic period, in which case, the site could fall under another of Adams’s categories for smaller sites (4 hectares), applying to small manors or specialized agricultural sites. The site could also fit into Piotr Steinkeller’s “hamlet” category, containing populations between 10 -250 people and 2-50 residences. Only future excavations can reveal the exact site limit in a particular period. For now, one can only infer, based on the location of Menfesh within the cereal cultivation zone of Girsu, that this was a village occupied by settled farmers involved in cereal cultivation activities. Such activities must have included planting crops like wheat and barley, digging and modified irrigation canals to bring water to their fields and draining extra water from fields to avoid salinity.

The location of Menfesh in the middle of open fields also suggests the site’s use for grains processing. After the harvest season, the plants would have been brought to Menfesh for threshing before spreading the grains to dry in the sun for a few days. Otherwise, farmers would have taken the risk of losing their harvest either to moisture or to mice. Future excavation of the Menfesh threshing ground could affirm this speculation.

Storing the grain for long after threshing the plants would have been a risky step. Therefore, the crop would have had to be transported shortly after threshing to the nearest centers of consumption—in this case the two cities Girsu and Lagash. The marsh located between Menfesh, Girsu and Lagash, must have represented a convenient natural feature through which the settlers of Menfesh could transport the majority of staple grains by boat to the two cities. A
shipping dock in a form of hard mud platform at the edge of Menfesh, a potential object of future excavations, could have existed as part of the site’s structural plan.

The site of Menfesh could also have played a role in the ceramic production of the area. In our 2013 observational visit to the site, the surface collection included significant amount of kiln waste (Figure 35). Additionally, a lower layer of gray ash was observed at the southern end of the site. Both observations are indicative of the existence of pottery kilns at the site. Therefore, Menfesh could have been involved in pottery production and supplied the populations at the two cities Girsu and Lagash with their pottery goods. The settlers of Menfesh may have worked on pottery production part-time, alongside farming responsibilities, or they may have worked on producing pottery only at times when there was less demand for farming labor. Like the grain produce, convenience dictated that the different pottery items made at Menfesh must have been transported over the marsh to both Girsu and Lagash.

Economic Role of the Ancient Periphery toward the End of Third Millennium B.C.

The landscape conditions offered economic access to the peripheral sites at the last phase of the Third Millennium, similar to that of the earlier millennium in this region (Figure 36). The marsh would have still existed between the sites Girsu, Menfesh, and Lagash. It would have continued to represent a major resource base in the area. It would have still offered a convenient method of transportation from Menfesh to the two nearby cities. The two garden zones would still have surrounded Girsu and Lagash because of the continuing demand on constant labor and level of care. Nevertheless, the cereal crop zone must have been set differently than the during the former Early Dynastic period. This zone would have expanded around the site of Girsu as the capital of Lagash province, which was itself under the centralized governing system of Ur during
Ur III period. Therefore, there is no reason to think that the agricultural land and marshland as were cautiously divided so as to be shared by the two cities Lagash and Girsu and to avoid conflicts in this period. Rather, the land would have been designated by the two cities and their rural settlements as one administrative unit of the province of Lagash (Figure 36). According to the 485 field names extracted from regional texts by Giovanni Pettinato (1967), a limit of 40 km is drawn to include an area of about 5000 sq km of land. This would have been the maximum extent of Lagash province, especially at the western side of the province where the other province of Umma existed. It is not easy to predict the exact extent of lands for the province of Lagash westward toward Umma. The 5000 sq km could well have extended in a different direction to avoid overlap with the lands of Umma. It is also possible that the lands of Lagash province could have included less land than the predicted 5000 sq km. Pettinato also proposed 3000 sq km as a minimum (Pettinato 1967). The two irrigation canals to the west and southwest of Girsu have probably dried or shifted. This is predicted by the disappearance of some of the sites that used to exist along those two canals (Figure 32). Thus, the canals are not represented in Figure 36. Two of the three smaller sites to the northeast of Girsu Eshan Alshijrah and Tell Alkawili continue to exist in this period along the ancient canal, which seems to have continued to connect them with Girsu. The third and smallest site among them, Tell Salih (1 hectare), had dispersed. This affirms its temporary functionality in the garden zone of Girsu during the earlier Early Dynastic period. Instead, another smaller site appeared in this era. Eshan Abu Khiraz (in modern term) existed next to Eshan Alshijrah (figure 37). This site measures about 5 hectares and may have represented an extension settlement which hosted the expanding community of the adjacent Eshan Alshijrah in this period. The expansion of the original settlement indicates the flourishing economic status of the community of Eshan Alshijrah in the peripheral sector.
following the earlier Early Dynastic period. The three sites Eshan Alshijrah, Eshan Abu Khiraz, and Tell Alkawili must have functioned the same way economically as they did during the Early Dynastic period. They would have been involved in cultivating and maintaining the garden zone of Girsu and probably continued to harvest, pack, and ship the garden’s crops to the city of Girsu in this period.

Figure 35: Wide spread of kiln waste (indicated by red arrows) on the surface of Menfesh (photo by Zaid Alrawi, 2013).
Figure 36. Water sources and land use in the Girsu area during Ur III.
Figure 37. Garden zone, canal, and sites associated with the northeast of Girsu during the end of the Third Millennium B.C.

More information can be speculated regarding the economic role of Menfesh as a peripheral site in this era than what could be said about it in the previous Early Dynastic period. This is because of the abundant information that has been extracted from textual records by Piotr Steinkeller, Tonia Sharlach, and others, regarding the periphery of the neighboring province Umma, during the Ur III period. Girsu’s textual archive has also shed light on many aspects of
the Ur III economy in the Lagash province and its periphery in terms of the bala taxation and the related movement of goods (Sharlach 2003). Thus, exploring the economic position of Menfesh, incorporating textual information from the periphery in addition to the spatial analyses, would allow for the drawing of a better and more comprehensive picture of Menfesh’s economy in this era. Such textual information may consist of information pertaining to the type of items produced at Menfesh, how they were made, to where they were transferred, and what types of goods were brought to Menfesh.

All of Menfesh’s potential economic roles during the Early Dynastic period would still have been valid during the Akkadian and the later Ur III periods based on the indicators already mentioned. However, the limited economic connection of Menfesh with the city of Girsu would have been broken in Ur III period. Textual records of the bala taxation from Lagash province reveal that large portions of grain and flour shipments were sent by boat to the capital cities of the Ur III state (Sharlach 2003: 66). The texts also note that the loads of cereal originated from the fields (Sharlach 2003: 82). Thus, since Menfesh was located in the middle of the cereal fields and also on a marsh, it can be assumed that Menfesh was one obvious location from which grain was shipped to the capitals, presumably after the plants were processed at the sites. The boats which would have carried the loads of grains and floated over the body of marsh, would have made the easiest and most effective method of transportation. Further, the texts mention that boats were also used to transport the grain shipments northward, to the other major city of Nippur. Thus, it is expected that Menfesh had economic connections with multiple cities at the same time and that those connections were not limited to the city of Girsu in this era. A grain loads shipped from Menfesh over the marsh, would have reached Girsu, then continued on their way through the northwest canals toward Nippur.
Another set of texts, belonging to the adjacent province of Umma, mentions that loads of grains were transported from the fields by boat to be kept within the storehouses of big cities (Sharlach 2003: 82). Assuming that the same process occurred in the Lagash province, grains would have been shipped from Menfesh by boat, over the marsh, to the nearest large storehouses at the cities of Girsu and Lagash. From these storehouses, the grains of the periphery would have been consumed by the larger populations of the cities, or they would have been sent to other parts of Ur III state, like Nippur, as part of the bala duty (Sharlach 2003: 82).

Additional types of shipments from the province of Lagash were sent out to other parts of the Ur III state. Beside cereals, these shipments included reeds, willow woods, and pottery products (Sharlach 2003: 82). Because of its location off the marshland, Menfesh must have played a major role in providing these items. Portions of reeds must have collected from the marshland and brought to Menfesh for cutting or cleaning. There they would have been organized in bundles at the site and then shipped on boats over the marsh. The same process must have occurred with regard to the willow trees, which grew on the edges of the marshes or on levees in the area.

We already noted evidence for pottery production on the site of Menfesh (Figure 35). If pottery products were produced at Menfesh, they would have been transferred by boat to the big cities nearby, using the marsh as well. Larger pottery pieces, like jars, must have been used to store grain on site for the consumption of Menfesh’s community, as well as to transfer the grains and bitumen (another important product of the marsh) from Menfesh to other parts of the state.

As an alternative to marsh transportation, animals may have also been used to transfer certain items from Menfesh to Girsu or Lagash on land. There is a general consensus among zooarchaeologists and philologists on the existence of onagers, then their descendants the
donkeys, during the Third Millennium (Postgate 1992: 165-166). They were used as draught animals in addition to carrying loads of goods over land. In the area of Girsu, donkeys must have been used to transfer grain loads from the fields in Menfesh for 7 km to the storehouses of Girsu and for about 17 kilometers to the storehouses of Lagash. Reeds could also be transferred using donkeys at times due to their light weight. Bitumen may or may not have been transferred on animals from Menfesh, depending on how it was prepared and packed for transportation. Unless the bitumen was stored in sealed jars for transportation, it would have made more sense to transfer it by boats over the marsh to guarantee a smoother process. People at Menfesh would have also preferred the boats over donkeys to transfer their pottery products, since the later method of transportation would have come with the risk of damaging some of the products due to the constant movement of animals. In contrast the boats would have moved smoothly over the marsh, delivering pottery pieces safely to their final destination.

Moving livestock from Menfesh to the nearby two cities would not have involved the use of boats. Whether the community of Menfesh needed to send a certain number of sheep, goats, cattle, and occasionally donkeys to the capital of the Ur III state for personal reasons or as part of the bala duty (Sharlach 2003: 159-160), shepherds must have guided the animals to their drop-off location on land. It would have been impractical to load a number of animals, especially the bulky ones like cattle, onto boats and to travel with them over the marsh safely to the final destination. Animals could not be easily restrained and kept still while on simple boats like the ones used in Sumer at that time.

It should be mentioned that the items included in the shipments were not always available in the periphery around the site of Menfesh. In certain years, shortage in one or more of the agricultural items would have been unavoidable, due to floods or agricultural calamities. In such
times, the peripheral communities, like the one at Menfesh, would have had requested and received assistance from the central government at Ur. Therefore, it could be assumed that there was a bidirectional transfer of commodities by boat over the marsh and by animals on land. One direction was needed for sending surplus items and pottery products in normal conditions. The other was for receiving needed agricultural items. The route into Menfesh would also have carried items manufactured in the big cities, such as textiles and agricultural tools (Figure 38). Finally, the transportation of goods over the marsh would not have been limited only to items which were part of the bala taxation system on the governmental level. Other loads of the same or similar items on the level of personal trade may also have been transported.

Figure 38. Illustrative model shows the movement of commodities between Menfesh, Girsu, and Lagash toward the end of the Third Millennium.
Adaptation at Menfesh during the Third Millennium B.C.

The adaptation strategies that modern marsh dwellers of southern Iraq practice are simple and do not involve a high level of technology. With their simplicity, these strategies have been proven effective in the marsh environment until very recently. Therefore, it is reasonable to consider the adaptation practices have been carried across generations, over millennia, and that they have their roots in the ancient era of the Third Millennium or even prior to that.

Situated on a great marsh, or perhaps even completely surrounded by water during the Third Millennium B.C., as the GIS analyses show, the site of Menfesh resembles the village of ech-Chybaish in southern Iraq to a great degree. If Menfesh were surrounded by marshes, then its dwellers’ connection with the outside world would have been limited to the use of boats, as is the case for the ech-Chybaish village in recent times. Boats made of reeds and bulrushes would have been constructed to transport people and local products. These products would have consisted mainly of reed mats, baskets, and, if the people of Menfesh were involved in buffalo breeding, dairy products. Pottery may also have been a product of the site of Menfesh during the Third Millennium, in accordance with the evidence appearing in the surface collection. Pottery products would have been transferred by boats as the only way of connection with the nearest markets in the ancient cities of Girsu and Lagash. It should be clear that the meaning of “market” in this context may not refer to a place with constructed shops, but rather refer to any open location in the big cities where exchanges would have taken place. After bartering, the people of Menfesh must have loaded other items needed for their daily lives onto the boats to be brought back to their settlement.

Similar to the marsh groups of modern times, the community of Menfesh would have constructed temporary floating homes to be used in flood times when the permanent settlement
of Menfesh was unlivable, as in the scenario reflected in Figures 4 a and b. As the surface
collection of Menfesh shows, Menfesh residents likely would have been involved in multiple
occupations and would have dedicated half their time towards each. As a way of adaption to the
unpredictable environmental changes, some community members must have been involved in
cultivation in places far from their settlement. They would have built low-earth dams to direct
the water into their farmed fields. Other members would have tended a number of water buffalo
and counted on their products to make up for possible farming shortages in some years, when
high flood-waters prevented cultivation. Some community members would have been involved
in hired labor and cultivation activities for the state or private owners whenever they were short
of resources. They would have built different sizes of boats from the abundant reeds and
bulrushes in the surrounding marsh and used them for short social trips or for longer trading trips
with nearby cities. In their spare time, group members would have fished and hunted for water
fowl for their local consumption. These are some of the economic practices that would have
taken place in the ancient settlement of Menfesh during the Third Millennium. Further
excavation and exploration at the site would likely provide clearer evidence of the type of
activities adopted by the Menfesh peripheral community. With this evidence, a more
comprehensive economic picture could be drawn of both the core and the periphery of ancient
Mesopotamia during the Third Millennium B.C.

Conclusions

This dissertation exposed certain dimensions of the economic connection between the
periphery of Girsu represented by the sites of Eshan Alshijrah, Eshan Abu Khiraz, Tell Alkawili,
Tell Salih and Menfesh, and the major urban centers in the area the two ancient cities Girsu and
Lagash, during the Third Millennium B.C. The regional analyses on the distribution of sites show that there was a collapse in the number of peripheral sites to the west of the Gharraf River between the Early Dynastic period and the end of the Third Millennium. Further, this reduction may very well have been caused by the drainage of shift in the major canal, Shat Alkar, toward the end of the Third Millennium.

The three sites of Eshan Alshijrah, Tell Alkawili, and Tell Salih would have been involved in farming the garden zone around the ancient city Girsu. They also seem to have been directly interacting with Girsu economically during the Early Dynastic period rather than farther major urban centers. This is assuredly the case because of their close proximity to Girsu which was less than 5 km away. In their contact with the city, the peripheral sites must have used an ancient canal whose trace is still present in the old Iraqi maps and the satellite imagery. The canal’s course ran close to these sites and ended at the city of Girsu. Besides farming, these peripheral sites must have been involved in packing and shipping the garden products of fruits to Girsu, using small boats, over the connecting canal. Toward the end of the Third Millennium, Tell Salih was not functioning economically. This may be due to abandonment or other unknown reasons. Instead, the site of Eshan Abu Khiraz appeared and joined the former two sites, Eshan Alshijrah and Tell Alkawili, to continue the same economic interaction toward the end of the Third Millennium.

The site of Menfesh on the other hand would have been involved in the further and bigger cereal fields. It seems to have been using an old marsh that linked it with the two major cities, Girsu and Lagash throughout the Third Millennium B.C. During the Early Dynastic period, Menfesh would have most likely shipped its marsh-environment items like, dairy products, reed mats, cattle to Girsu alone. This is assumed because of its location, which appears to be closer to
Girsu than to Lagash. Girsu and Lagash would have provided Menfesh with specialized products, such as farming tools and textile. Physical evidence at the site suggests that Menfesh could have been involved in pottery manufacturing. Therefore, different pottery products would have been shipped from Menfesh to their consumers at Girsu. Traditional small boats would have floated over the connecting marsh carrying these items. Towards the end of the Third Millennium B.C., Menfesh would have partaken in the same economic activities, with the exception of the scope of economic interaction, which would have gone beyond merely Girsu. Rather, economic interactions in this era would have reached other major ancient cities such as Lagash and cities even farther away, such as Nippur.

**Future Research**

The intended future plan for this project would focus mainly on the site of Menfesh. This is due to the great potential represented in its location as peripheral site between the two ancient cities Girsu and Lagash. In addition, the site has been visited already, and field notes and observations have been compiled. They represent initial indicators of the economic role of the site during the Third Millennium. However, this information should be further explored. The intended methodology for further exploring this site is a survey and excavation for three seasons. Season one begins a survey and establishment of a topographic model for the site and its surroundings. Core soil samples will be taken from the surroundings of Menfesh in search for evidence to the existence of the old marsh. Also, a sampling method will be conducted on the surface collection of the site through GIS. This could be described as laying a digital grid over the site’s surface using satellite image from which a command program randomly selects squares within which artifacts would then be collected. These collections would then guide the
excavation work to areas where materials of the Third Millennium B.C. are predominant. As part of the survey process, ground penetrating radar method will be necessary. This method would help in determining the location of structural features laid under the surface of the tell. At the second and third seasons, a vertical trench would be dug in order to obtain a solid site chronology. Then, horizontal excavation would be necessary here to expose structures, subsistence objects, and possibly textual records.

If we consider the site as a permanent residency location, as Steinkeller suggests, we would expect to find evidence of permanent structures, like house plans with storage area sufficient to contain enough surplus for both subsistence and for paying the annual tax bala to the governmental office in Girsu. Along with this, one would expect relatively large jars or containers to be found within the site (Christakis 2011). If houses were to be found, they would be compared with previously discovered private houses in terms of size and storage facility (Gibson 1981; Gelb 1976: 197).

On the other hand, if we are to take into account Adams’s hypothesis and consider Menfesh as an ancient short-term residency, we would expect our excavation to expose a simple structure, like a room, or ground holes, used to stabilize the wooden pillars of a simple tent where the ancient farmers only needed to rest for parts of the day. Further, there would be no evidence for significant storage area or storage objects, like large jars.

Pottery sherds were observed with great amounts on the surface of Menfesh, in summer 2011. If the site was a ceramic production location, our excavation would encounter evidence for large pottery kilns, or significant portions of kiln wastes. For the question of whether Menfesh was distributing its pottery products to Girsu or the whole region, pottery analysis on the original material and comparisons with the ceramics of the neighboring regions could be made to obtain a
clear idea. By proper study of the previous finds, this project can establish a model which can reflect the nature of the economic relationship between a peripheral site (Menfesh) and its adjacent core city (Girsu). The project might also gain economic information through excavating peripheral textual materials, such as cuneiform tablets or engraved seals.


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