CHAPTER FIVE

SETTLEMENT PATTERNS IN THE SOUTHERN JORDAN VALLEY AND DESERT FRINGES OF SAMARIA IN THE CHALCOLITHIC PERIOD

INTRODUCTION

This chapter presents the settlement patterns of the region in this period. It comprises the following sections:

- Types of sites, and what can be learned about them.
- Dwelling units.
- Areas of the sites (according to types).
- Proximity to sources of water.
- Spatial distribution and location of sites.
- Topography and preferred orientations for settlement sites.
- The question of settlement continuity.

In addition, the subsistence economy and transition periods are examined, and a spatial synthesis of the settlement pattern and hypothetical explanations for the nature of the changes are presented.¹

The study includes two fundamental assumptions:

- The accuracy of the chronological segmentation in the basic survey is limited, and therefore the following steps were taken at each site: the boxes of artifacts were re-examined, the site was revisited, and additional finds and information were gathered (assuming the site still existed or was accessible), and a specific level of probability was defined.
- A statistical analysis was made only for those sites that had a medium or higher level of probability.

Some of the data presented here were statistically processed according to questions relevant to each datum.

We based our examination of the proximity of sites to sources of water on the following statistical question: Is the average distance of all the sites from a source of water significantly less than the average distance of the sites to the nearest source of water?

¹ Two other questions were asked in this study: – is there a preference for a particular kind of soil and – is there a preference for a particular kind of rock? In view of the negative results we can say there was no preference for either in selecting settlement sites in the periods discussed in this study.
distances from a source of water of a random collection of points in the area? This was done by means of a t-test (Underwood 1997).

The following steps were taken in order to create the database for the test:

- All the sites were uploaded to a geographic information system (GIS), and the minimum distance of each site to the nearest source of water (stream/spring) was measured.
- A collection of random points (the number of sites in each period) was scattered in the area. The distance to each point was calculated in the same manner. Tables with the distances of the real sites and the random points served as the basis for the statistical test. The test was performed on three groups of sites for each period: all of the sites with a medium or higher level of probability; settlement sites with a medium or higher level of significance; and open sites/temporary encampment sites with a medium or higher level of significance.

To answer the question of whether the spatial distribution of the sites is random or deliberate (do they tend to cluster?) the dispersion pattern of the sites was tested statistically. The test was based on the index of dispersion (ID). This index is the ratio between the variance and the average number of sites located inside a random sample of areas (squares) of a known size. If the variance is small relative to the average, one can assume that the dispersion is uniform, and that a similar number of sites existed in all of the squares. If the variance is larger, it is more likely that the dispersion is clustered, because there are many squares without sites and few squares with many sites. On the other hand, if the average and the variance are similar, then the dispersion is random. In addition, if the dispersion is random, the number of sites in a square is expected to follow a Poisson distribution.\(^2\)

The index of dispersion ID is:

\[
ID = \frac{s^2}{\bar{x}}
\]

Where

- \(ID = 1\) – random
- \(ID > 1\) – clustered
- \(ID < 1\) – uniform

\(^2\) Other advanced methods for checking the dispersion of the sites in a given area were presented by Fletcher (2008), with regard to Chalcolithic period in the southern Levant.