

The Origins of Agriculture and Sedentary Communities in Northeast China

Survey Methods and Procedures

The methods of the Fuxin regional survey are based on that of the Chifeng survey with modifications and improvements (For the Chifeng survey methods see: Chifeng, International Collaborative Archaeological Project. 2003. *Regional Archaeology in Eastern Inner Mongolia: A Methodological Exploration*. Beijing: Kexue chubanshe. Chapter 3).

1. Basic survey methods

Each survey team was composed of about four archeologists. At the beginning of the day the team received an area to survey and identified it on the satellite image sheets. It systematically walked back and forth across the entire landscape, spaced at about 25 m between one person to the other. One archaeologist, at the center of the group, was in charge of the satellite image sheets and the GPS unit. He or she was in charge of directing the movement of the group and marked on the sheet the areas that were surveyed by the team. Each team member walked in a zigzag line, so as to cover as much of the surface as possible, and concentrate on finding artifacts on the ground. Any anomaly in the flat terrain, such gully cuts, cliffs or anthropogenic tranches, were also be looked into because they may have exposed archaeological strata buried underneath the loess layers.

2. Identifying an archaeological site

For the purpose of the survey any ancient remain was identified as an archaeological site. Most sites were detected as surface scatters of artifacts (usually ceramics or stone artifacts) but ancient structures (walls, graves, etc.) are also known. When a survey team member found one shard (or other artifact), s/he announce it to the rest of the team and the team continued to survey ahead paying especially careful attention to the ground. If, after continuing for about 100 m, no more shards were found, the first shard was discarded and no site was recorded. If, however, a second shard was found, the survey team examined the surrounding area carefully. If no more shards were found, the two were discarded, and no site was recorded. If a third shard was found, then a site is recorded. If architectonic features or remains of ancient graves were identified a site with less than 3 shards (even with no shards at all) is recorded. Because identifying early sites is one of the main goals of this research the **survey teams were encouraged to pay special attention to the identification of stone tools, including small stone flakes and artifacts**. Finding 3 or more stone artifacts, even without other artifacts or features, was sufficient for the identification of a site.

3. Recording collection units

The basic units of data recording in the Fuxin survey were the collections units. We recorded site numbers in the field but this was just for administrative purposes and had no analytical significance. When a team found 3 artifacts, as described above, it opened a collection form. The person in charge of the satellite image sheets and the GPS unit recorded the coordinates of the site (took a *Way Point*, and recorded the *collection unit name in the GPS*) and another person in the team was in charge of filling up the collection form. Surface Visibility, to be recorded on the form, was mainly determined by vegetation coverage: high entails non to very few plants; medium refer to more plants (natural vegetation or agricultural fields); and low is usually assigned to wooded areas when the ground is covered with leaves or needles.

Each collection unit was approximately one hectare (100 x 100 m), but the exact size and shape of the units were determined by the topography and size of the site. If artifacts were scattered over a smaller area the actual area of distribution was recorded. If they were scattered over larger area more than one collection unit was made. The borders of each unit were determined by the landscape, taking gullies, for example, as the border between units. We also preferred that a unit had a more or less homogeneous nature, therefore a hilltop was separated from a slope or the two sides of a river were separated even if it meant making smaller collection units. In the absence of clear landscape markers the units was made as systematically as possible.

The person in charge of the satellite image sheets and the GPS unit marked the borders of the collection unit on the satellite image and recorded it with the GPS unit (using the *Area Calculator* function). The unit borders polygon was saved using the **collection number** as its name. Collection number is made from the year (12 for 2012), the team letter (A, B, C...) and a running number for each team. So, for example, team A had numbers from 1 to 1000 and its first collection was named 12A0001. The first number of team C was 12C3001. When needed, more collection units were made adjacent to the first one until all the area of artifact distribution was covered. In such cases the border of the collection units already made were presented on the GPS screen (using the *Track Manager* function and determining the color of the polygon borders). This helped the team avoid missing an area or surveying the same area twice.

The site number for the collection unit was made from the grid number marked on the satellite image (1-332), the team letter (A, B, C ...) and a running number. So, for example, in grid number 24, the sites could be: 24A1; 24A2; 24B1 and so on.

4. Making artifact collections: General vs. Systematic collections

After deciding to open a collection unit the survey team observed the area of the collection units and whenever it appeared (subjectively) that a 3 m diameter collection circle would produce three or four shards or more, then systematic collections were made. A

systematic collection represented in our data the entire collection unit – no other artifacts were collected from this unit – so it was located as randomly as possible within the collection unit (not intentionally selecting an area that appeared to have more shards). A circle was delimited with the aid of a 1.5 m rope as radius and all artifacts visible on the surface inside the circle were collected. All modern ceramics were also collected to provide a quantitative indication of the abundance of modern materials. If the collection had fewer than 20 artifacts, then up to three more circles were delimited and collected adjacent to the first. The material from all these circles (up to four) formed part of the same collection, and the number of circles was indicated on the collection form. When the density of surface artifacts appeared so light that 3 m collection circles will produce fewer than three or four shards, then general collections were made. These collections will include all the artifacts found within the borders of the collection unit.

Artifacts collected (using systematic or general collection method) were stored in plastic bags and marked with tags placed inside the bags and outside of them. The tag provided the collection number, date of collection, and name of the head of the team. All artifacts could be placed in one bag (general bag) or, if needed, separated according to the type of artifacts (ceramic, stone, bones, etc..). The number of bags from each category were indicated on the form to prevent confusion when sorted out in the laboratory.

5. Photos, sketch maps and notes

When anything interesting was visible on the surface of the site the team was encouraged to take photos. Such 'interesting' features included architectonic remains as well as less impressive features such as marks of burnt earth or a cut (natural or anthropogenic) that ran through the site. Even if the topographic location of the site was in some way interesting, a photo was taken. The number of photos taken in each collection unit were written on the collection form. When needed a brief description and possibly a very quick sketch map of the visible remains were made on the back of the collection form or on a millimeter sheet to be attached to the form. However, teams were encouraged to not spend too much time on these extra documentations.