Topographic Survey

Topographic survey is simply the recording of coordinates and height data for a particular survey area. This data can be used to create spot height maps, contour maps, or more complex terrain models of the surveyed area.

General principles:

**Boundaries**
It is important in topographic surveys to record the boundaries of your survey, both so that the data can be spatially located, but also, for the management of point collection.

More often than not, survey boundaries are defined by field boundaries, and it is good practice to record these immediately after instrument setup and orientation.

**Features**
Often the survey area will have buildings, standing remains, or archaeological features which you don't want to include with the topographic data. Points associated with these features should be recorded separately and assigned point IDs which are different from the ID of Topographic points.

**Topo Points**
The idea behind collecting topographical points is simply to record elevation data for the entire area of survey. Important points to keep in mind:

- Ideally points will be recorded at a high density (close together) over the entire area of the survey.
- In practice this is not often possible and different strategies have to be chosen; two possibilities are as follows:
1. **Even coverage over survey area**
   In this option point spacing should be approximately equal over the entire area of the survey.

   **Pros:** The theory behind this method is that with a full and even coverage, a true representation of the topography of the survey area will be generated.

   **Cons:** The drawback is that in practice, it is often hard to record a density of points over the entire area that will accurately reflect the detailed surface of the ground. Rather, this method often gives a general idea of the surface of the ground.

2. **Feature oriented Topo survey**
   If the survey area covers a number of earthworks or areas of archaeological significance, a strategy which concentrates on these areas may be chosen. In this type of survey points are collected at a high density in the area of the archaeology/feature, while the surrounding area is surveyed at a lower density.

   **Pros:** This strategy relies on the judgment of the surveyor and has the potential to be very accurate (the human eye is left to judge where more points are needed based on the complexity of the ground surface.

   **Cons:** Features which escaped initial observation by the surveyor may be missed. Areas with very few points can be misinterpreted. Areas which are left out the survey for whatever reason must be marked by survey boundaries.

**Breaklines**
Features which have clear boundaries or edges are often surveyed with a specific point sequence called a Breakline. This allows us to accurately reconstruct the surface of the feature in the office. Surfaces created with topographical points only can sometimes “dull” the effects of boundaries of edges. Breaklines define edges, boundaries, and sharp changes of terrain.

![Breaklines cross the contours and define the edge of slopes or features](image1)

![Modelled surface with the results of breaks](image2)