

Chapter 9: Conclusions

GIS offers the researcher a simple model of the world. The earth's surface is subdivided into simple graphic primitives: points, lines or polygons in the case of vector systems, and regular tessellations such as grid squares with raster systems. Data about these spatial features are held in an attribute database in a manner familiar to most researchers. This model fundamentally limits what is and is not "GIS-able" but, assuming your data can be represented in this way, this simple model opens up enormous potential for gaining a better understanding of a study area and the processes affecting it. Unlike a conventional database, GIS allows the user to gain an understanding of the geography of the phenomenon they are studying. Unlike a computer mapping package, GIS provides the underlying data that form the map patterns.

There are two basic ways in which this ability to handle space and attribute simultaneously opens up new opportunities for the historian. First of all, it allows the researcher to explore the spatial patterns inherent in a single dataset, and secondly it allows the researcher to integrate data from different sources through location. As all spatially referenced data have a location, in theory, all data can be integrated although in practice there will be major issues concerned with compatibility and scale. This ability is particularly useful in historical research where the ability to look at change over time by looking in detail at changing attributes at changing locations offers new and exciting ways of exploring change over time.

Throughout this guide the issues, dangers and pitfalls of using GIS have been raised and references given as to where more detail can be found. The basics of good practice when using GIS can be summed up in three points:

1. Always think carefully about the impacts of space. The basic question underlying GIS research is "what impact is the geography having on my data". This applies to both genuine geographical issues such as the links between industrial development and the development of the transport network, or to problems with the spatial nature of the data which can include apparently simple considerations such as what is the impact of overlaying two layers taken from different scale sources, to much more conceptually complicated considerations such as the impact of spatial autocorrelation on statistical techniques.

2. Always use data within their limitations. This applies in particular to the limitations of the source material and to limitations to do with the spatial nature of the data such as scale and accuracy.

3. When exploring, analysing, or visualising data avoid unnecessary simplifications. This means trying to use the data in as close as possible to their original form with a minimum of aggregation though space, time and attribute. Where aggregation is unavoidable or is present in the source, the impact of the aggregation on the patterns formed must be considered.

GIS, in combination with other branches of scholarship, has the potential to provide a more integrated understanding of history. There are, however, risks to using GIS. In particular, GIS data are expensive, GIS expertise is expensive, and the learning curve for people using GIS is steep. This means that researchers wanting to get involved in GIS should do so carefully, aware that the initial investments are high and that the rewards may take some time in arriving. Once spatially referenced databases are built, however, they can be significant works of scholarship in their own right and can significantly enhance our understanding of a problem.