WELT E R B E TAGE

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ARCHAELOGY USING GEOGRAPHIC INFORMATION SYSTEMS IN BREMEN

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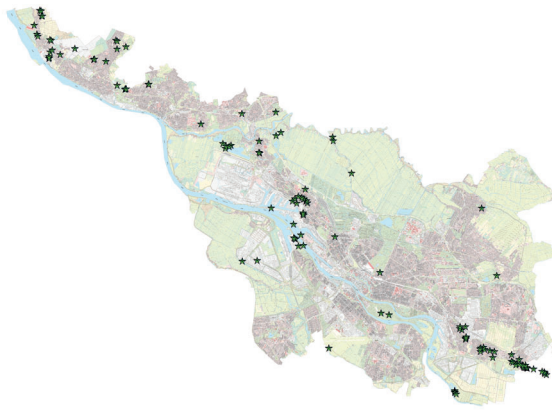
GIS?

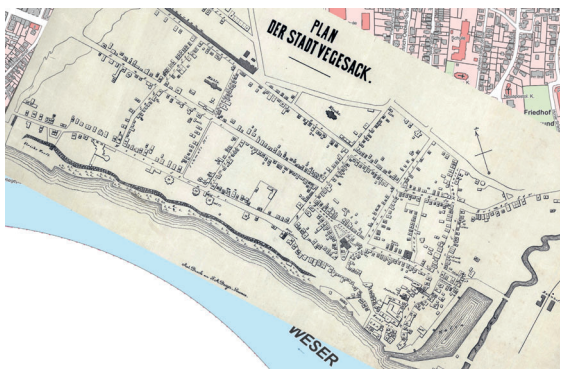
A Geographic information system (GIS) is a framework for gathering, managing, and analyzing data. Rooted in the science of geography, it integrates many types of data. The ability of GIS to mathematically process and visually display spatially referenced data differentiates them from CAD (Computer Aided Design) and CAM (Computer Aided Mapping) programs. It is a rapidly developing archaeological method which is giving ease and precision of analysis to the broader modern archaeological community.



Analysis of the “Preußische Landesaufnahme” of about 1890 to pick out grave mounds (source: Marco Tack, Landesarchäologie Bremen)

GEOREFERENCING

Georeferencing is the process of transforming a scanned map or aerial photograph so it appears “in place” in GIS, by associating features on the scanned image with real world x and y coordinates. It requires a spatially referenced data set that will be used to provide locations on the scanned map with their associated coordinates. For example, in practice, a recent map of Bremen state is mostly used as a base map to georeference scanned historical maps.



Georeferencing: a map of Bremen-Vegesack in 1880, placed over a modern day Bremen map (source: Landesarchäologie Bremen)

Mapping of the concentration camp on Bahrsplate, Bremen-Blumenthal
(source: C. Rehbock after K. Ellebrecht)

MAPPING IN ARCHAEOLOGY

It is one of the two basic ground survey methods used in surface survey of archaeological sites, the other being surface collection.
Applications at the Landesarchäologie include the analysis of the “Preußische Landesaufnahme” of about 1890 to pick out grave mounds, Mapping of finds and Mapping of the concentration camps in Bremen.

FUTURE OF GIS IN ARCHAEOLOGY

GIS is rapidly becoming indispensable. Archaeological data are inherently spatial, and archaeologists are naturally concerned with the distribution of archaeological sites across the landscape: Settlement patterns, for example, can infer a great deal about the social and political complexity of the ancient peoples we study, the size of their domains, aspects of resource procurement, and much more. GIS can be used as a database management tool of great flexibility.

References

https://mdl.library.utoronto.ca/technology/tutorials/how-georeference-images-arcgis
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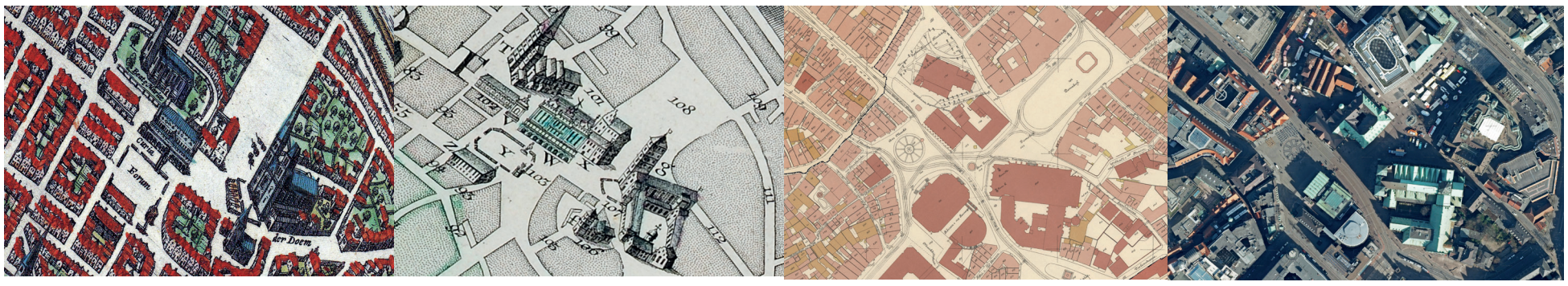
K., S. Green, and E. B. W. Zubrow. Editors (1990).Interpreting space: GIS and archaeology. London: Taylor & Francis.



The world heritage of Bremen in georeferenced maps from 1588, 1756, 1901, and in a recent aerial photo from left to right (source: 1-3: Landesarchäologie Bremen, 4: © GeoBasis-DE / Landesamt GeoInformation Bremen 2021)

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