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Integrating High Resolution Imagery with Spatial Analysis and Genealogical Analysis of Historic Cemeteries

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INTEGRATING HIGH RESOLUTION IMAGERY WITH SPATIAL ANALYSIS AND GENEALOGICAL ANALYSIS OF HISTORIC CEMETERIES

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ABSTRACT

Spatial and genealogical analysis of cemetery plot location and attribute data collected with a Trimble GeoExplorer 3 GPS unit was undertaken to understand the spatial arrangement and genealogical distribution of graves within one of the oldest cemeteries in the state of Texas. High spatial resolution multispectral imagery was incorporated as a base map to aid the visual interpretation of the spatial analyses.

INTRODUCTION

Oak Grove Cemetery, located within the City of Nacogdoches in Nacogdoches County Texas, is one of the earliest cemeteries in the county dating to the early 1800's. Several historic Texans are interred within this cemetery including Thomas J. Rusk and Charles S. Taylor who was the great-great-grandfather of current United States Senator Kay Bailey Hutchison. Due to a fire circa 1910 many of the records for the original section of the cemetery were lost. In the summer of 2006, the GPS coordinates of each grave marker within the cemetery were plotted on a backdrop of 6 inch spatial resolution multispectral digital imagery using a Trimble GeoExplorer 3 GPS unjt (Figure l).

Figure l. Map depicting location of all graves within Oak Grove Cemetery.

The genealogical data from each marker were collected for spatial and genealogical analysis and incorporated into a poster for visual interpretation (Figure 2). By incorporating high spatial resolution digital imagery with GPS collected grave marker data we were able to use spatial analysis to display familial relationships and perform statistical analysis of this historic cemetery as well as recover much of the lost historical data while simultaneously creating an enhanced genealogical database for current and *future* ancestral queries.

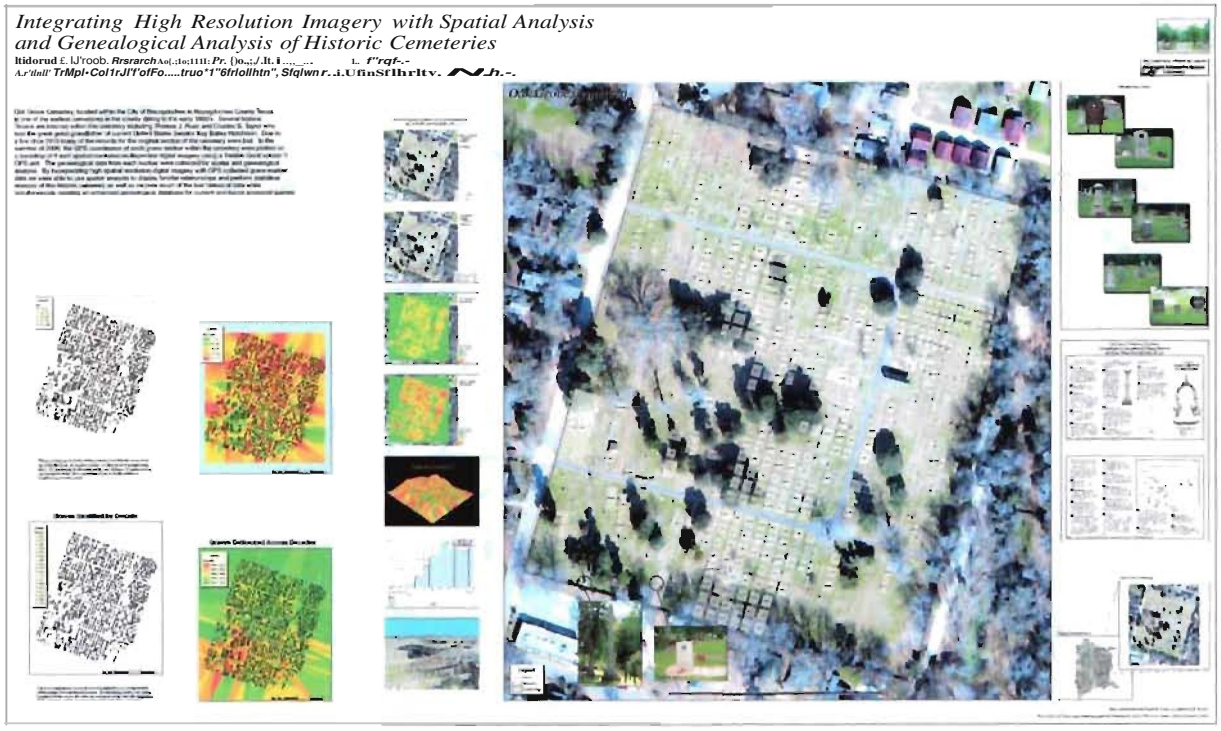

Figure 2. Poster depicting Oak Grove Cemetery with accompanying spatial and genealogical analysis.

RESULTS

Spatial analysis of the cemetery data, following the methodology described by Chang (2008) indicate that when viewing burial year by decade it is difficult to ascertain spatial relationships between burial location yet when stratifying death year within 5 natural breaks across decades one can more easily view the utilization of the cemetery and its expansion from the early 1800's to today. When viewing age at death with in 5 classes it is difficult to ascertain age at death of any given grave relative to their nearest neighboring grave while displaying death using an Inverse Distance Weighting of age one can more easily view a grouping of age at death relative to neighboring cemetery plots (Figure 3).

In addition to spatially analyzing cemetery plot locations, the poster visually portrays the summary standard deviation and summary ellipsoid of all grave locations, a simple and kernel density distribution of age at death for all grave markers, a visual presentation of age as elevation at time of death, a graph depicting the number of deaths per year since the cemeteries inception and a three dimensional rendering of all cemetery plot locations draped on a high spatial resolution multispectral image.

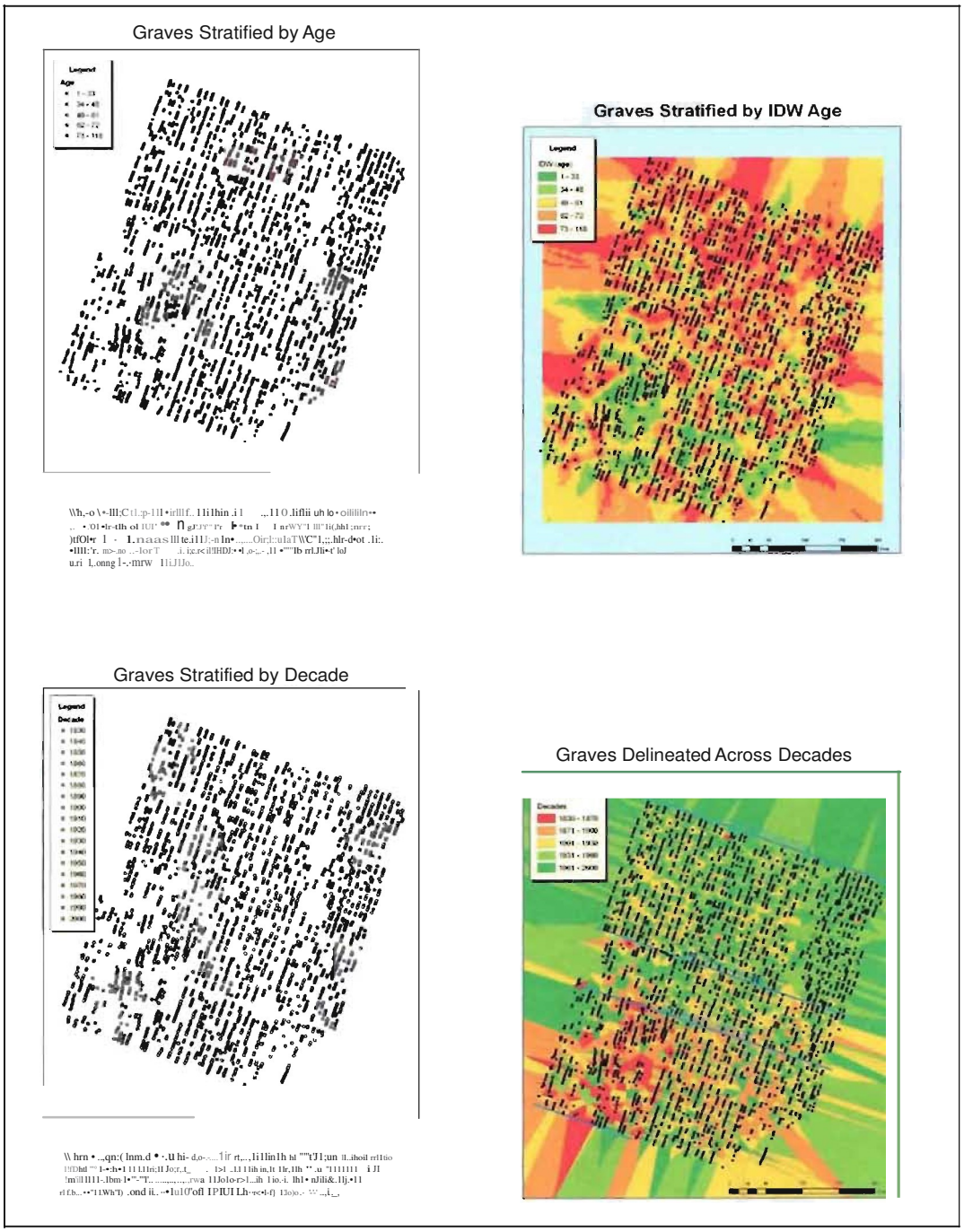

Figure 3. Spatial analysis of Oak Grove Cemetery.

REFERENCES

Chang, K. 2008. *Introduction to Geographic Information Systems (Fourth Edition),* McGraw-Hi l l, 450 p.