

# **Enhancing Contextual Narratives: Time-space Data Mining and Visualization**

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Narratives are considered one of the unique and effective forms of knowledge and communication. However, narratives are traditionally defined as “a series of temporally ordered clauses.” In this study, I emphasize that actions or expressions can only be understood in context, i.e. the narratives are context-dependent. Each event in a narrative relates sequential or consequential occurrence in space and time. Narratives enhance the understanding of causality by relating it to time and place.

In this study, historical text are digitized and parsed into processing unit and tokenized to extract temporal and location terms. Temporal terms that might explicit, relative or deictic dates are extracted. Explicit dates including information such as the day, month and year, can be extracted directly. The extracted temporal terms including clues to derive dates and relative ordering of events, may need to further process based on semantic indicators so all the temporal terms can be organized chronologically. Candidate location terms are matched to all their possible real-world geographic referents in the “Gazetteer Matching” process. A number of different gazetteers are utilized in the matching. Since the names of geographic locations are often highly ambiguous, a substantial amount of work will be done on disambiguating the terms to its true location. Both data are assembled in GIS and each location is identified with a historically and spatially appropriate hierarchy. The presentation aims to explore the potential of drawing on Geographic Information System (GIS) and geo-visualization to uncover the stories happened in the past times and past places. I propose a conceptual framework to representing and ordering events in space and time as well as functional abilities to construct meaningful narratives. I will also demonstrate the story-telling and visualization of two distinctive corpuses represented in a GIS platform as a proof of concepts.