

# Harvesting Event Chains in Ritual Descriptions Using Frame Semantics

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## ABSTRACT

Led by the observation of similarities and variances in rituals across times and cultures, ritual scientists are discussing an underlying abstract – and possibly universal – structure of rituals, which nevertheless is subject to variation. In an interdisciplinary project, we investigate the use of computational linguistic techniques to make characteristic properties and structures in rituals overt. For this sake, we apply formal and quantitative computational linguistic analysis techniques on textual ritual descriptions. We employ data-driven approaches to detect regularities and variations of rituals, based on semi-automatic semantic annotation of ritual descriptions, thereby addressing this research issue in a novel empirical, quantitative fashion.

Computational linguistics has developed semantic lexica and processing tools for the formal analysis of events and their predicate-argument structure, in terms of semantic roles. Frame semantics (Fillmore et al. 2003), with its concept of scenario frames connected by frame relations and role inheritance, offers a particularly powerful framework for the modeling of complex event sequences. Through the annotation of word senses, we can observe and analyze variations in the selectional characteristics of specific events and their roles across rituals. These structured and normalized representations of event sequences will be used as a basis for identifying recurrent patterns and variations across rituals by quantitative analysis.

In our talk, we present motivations and prospects of this approach to ritual structure research, focusing on two major aspects:

- (i) We discuss design decisions for data collection, choices of NLP processing tools and workflows for semantic annotation. We focus on the special characteristics of the textual data and present a number of **domain adaptation** techniques to assess diverse methods for adapting our resources and tools to the novel domain.
- (ii) In the second part, we discuss in more detail the semantic

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annotation layers and how they will contribute to make similarities and differences of (partial) **event sequences** overt. We will present first experiments on computing abstract event chains on the basis of our structured annotations and on detecting recurrent event patterns by statistical analysis.

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