

## Poster abstract

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*Author's name:* Tamás Biró

*Author's email address:* [tamas.biro@btk.elte.hu](mailto:tamas.biro@btk.elte.hu)  
(backup address: [birot@birot.hu](mailto:birot@birot.hu))

## AVM: data structures for the Cognitive Science of Religion

Lawson and McCauley (1990) introduced a formalism describing the structure of actions, in general, and religious rituals, in particular, inspired by early Chomskyan context-free rewrite rules and syntactic trees. While this formalism did not gain popularity among scholars of religion, it was also an unfortunate choice because the original linguistic formalism had been developed for a purpose different from Lawson and McCauley's. Context free grammars account for the linear sequence of elements in a string, such as words in a sentence, whereas Lawson and McCauley employed it to describe dependency relations, thematic roles of verbs and actions.

We propose to adopt a different linguistic formalism: *attribute-value matrices* (AVMs), also called *feature structures* and *unification grammars* (Francez and Wintner 2012), widely used in computationally oriented linguistic theories, including *Head-Driven Phrase Structure Grammars* (HPSG, Pollard and Sag 1994) and *Lexical Functional Grammars* (LFG, Bresnan 2001). We believe this approach describes more adequately and in a visually more intuitive way the thematic structures of actions (and hence, of religious rituals). Coming with strong mathematical foundations, AVMs proved useful in computational models of natural languages, and so we argue they also have great potentials for computational approaches to religious cognition. On the one hand, past computational work on AVMs, implementations and results are readily transferable from linguistics to religious studies. On the other, if a formalism adequately describes two very different domains of human (higher) cognition, then its general cognitive adequacy is further corroborated.

In turn, religion as a complex system is considered a network of AVMs. Some of them describe entities, whereas others describe actions. Some are real, and others are culturally postulated. Past actions are organized into religious narratives, future actions into eschatology, while prescribed and prohibited actions are religious statutes. Unification models how elements in a religious system hold together.