

## CULTURAL CONSENSUS THEORY

William H. Batchelder  
Department of Cognitive Sciences  
University of California Irvine

Cultural Consensus Theory (CCT) is an approach to information aggregation (information pooling, data fusion) first developed in the 1980s by A. Kimball Romney, myself, and co-workers. Since then it has become a central tool in cultural anthropology, and it has also been used in other areas of the social and behavioral sciences, e.g. social networks, linguistics, sociology, and psychology. Like other approaches that may go under the heading of ‘Wisdom of the Crowd,’ it attempts to determine ‘consensus correct answers’ to questions by aggregating responses over multiple informants (respondents, experts). However, CCT has several salient differences with many other approaches to the problem of determining correct answers from information aggregation: (1) It is essential in CCT that one has access to response profile data from multiple informants, where each informant answers the same series of questions about some aspects of their shared knowledge or beliefs. While some missing response data is acceptable, the key to success of CCT models comes from how respondents compare with each other across a series of questions; (2) There is no requirement that there is a ground truth or scientifically verifiable set of correct answers to the questions. It is accepted that ‘cultural truth’ resides in the shared knowledge and beliefs of the informants; (3) CCT consists of a set of cognitively motivated item response models, e.g. True/False, ordered category, or continuous response models, that are related to parametric models in signal detection theory and IRT, except the correct answers are treated as parameters in the model rather than known a priori to the researcher; (4) CCT models are used to estimate endogenously from the response profile data structure the informants’ competences and biases as well as consensus correct answers and difficulty of the questions. This talk will present some CCT models, pose them hierarchically, provide Bayesian inference for the models, extend them to finite mixture modes that allow subgroups of informants to have different consensus answers, provide posterior model checks for the essential assumptions of the models, and apply them to both simulated and real data.