Title
Formalization as a Tool for Empirical Research

Journal
Structure and Dynamics, 3(2)

Author
Kronenfeld, David B

Publication Date
2008

DOI
10.5070/SD932003298

Peer reviewed

Introduction

The stimulus for this special issue, and the source of most of its papers, was a Symposium entitled "Formalization as a tool for empirical research: what it buys us and what it doesn't" at the February 21-24, 2007 General Scholarly Meeting of the Society for Anthropological Sciences (SASci) in San Antonio, Texas. The session description was roughly this:

> Our concern is with "formalization" —why it's important, what benefits a formalization produces, but also what may be pertinent limitations and how sometimes we can be misled by even a good formalization. We take a minimalist definition of "formal": explicit definitions and operations. But the important application concerns formal models and theories. The goal here is threefold: a) to get out on the table the range of kinds of formalizations that our participants (and others) make use of, b) to get our participants to address the uses (the "what it buys you") of their chosen approach, and c) to get some participants to address what one or another *good* formalism still does *not* do (but that people sometimes speak of as if it does). Pertinent issues concern 1) the relationship among analytic goal, assumptions one is willing to make, and the resulting formalization and 2) the relationship between a formal representation of some empirical phenomenon (process, set of relationships, pattern, or something else) and the on-the-ground reality that one actually experiences.

"Formalization" can range from, at the one extreme, explicit forms of data representation and manipulation to, at the other extreme, an explicit well-defined mathematical model or simulation designed to embody a theory and to allow deductions from the theory regarding data and/or changes in the portrayed conditions as relevant variables change. A formal theory thus can be a very powerful experimental device—when its relationship to empirical observations is made clear—as we see in some of the included papers. But even explicit formal representations of postulated or hypothetical data relationships can become powerful tools for exploring the effects of different claims about data relations and thus for refining and formalizing relevant theory—as we see in others of our papers.

The papers also recognize that, to be ethnographically or theoretically useful, formalization by itself is not enough; the formalizations must be clear about what they apply to, demonstrably accurate in that application, and there needs to be equal clarity about their limits. Formal coherence or elegance by itself does not guarantee this. In fact, researchers can sometimes confound their formal representation with the represented reality, and thus either produce empirically erroneous claims about that reality or preclude the recognition of additional (not yet included in the representation) processes or relations, as, again, some of our papers show. Additionally—though not addressed in this collection—researchers sometimes confuse a formal mathematical description of a system of some part of human behavior with the psychological processes that produce the system's regularities—a situation I discuss in Kronenfeld 2006

The collection is organized around ways in which formalization is used or addressed. We begin with a focus on the role of formal description and formal analytic models in particular ethnographic cases, and then move out to more comparative discussions; as we move out our emphasis gradually shifts from the immediate ethnographic reality to attributes and constraints of given formalisms..

We open with a paper by Giovanni Bennardo showing how a concern with formal modeling of elicited relations and the understandings which generate them can drive sophisticated and insightful ethnographic elicitation.

Next Murray Leaf formally models the economic understandings of his informants—producing both a clearer ethnographic picture than we are used to and a better appreciation of the sophistication and analytic understanding embodied in the economic decisions made by his farmers.

Dwight Read provides a rigorous formal algebraic model of an important cultural domain, shows how he arrives at it, and applies it to several ethnographic cases—drawing relevant ethnological conclusions

F. K. L. Chit Hlaing (published sometimes as F. K. Lehman) begins our transition to a focus on the formalization of particular theoretical approaches or domains; in doing so he makes a strong argument for the crucial utility of "algebraically based reasoning and analysis."

Michael Fischer presents an example of how a symbolic system 'drives' the material organization of human groups—and examines the use of multi-agent models to further explore how symbolic systems act over material domains as a general case.

Alan Fix explores the uses and misuses of tree diagrams in representing the historical connections among different kinds of cultural and biological entities. David Kronenfeld follows by looking carefully at what traditional tree diagrams represent and misrepresent regarding historical relations among languages—and then considers where improvements can (and perhaps can not) be made.

Anthon Eff develops a formal way of assessing the implications of language phylogeny for cultural similarity and thus for measures of cultural proximity.

The papers attack a variety of problems in a variety of ways. We have no single party line to offer, nor any magic wand. But taken together they offer powerful illustrations of the importance of formalization to anthropological description, analysis, and theory, and they offer some pointed illustrations of what is needed for proposed formal models or solutions to be ethnographically and ethnologically accurate, insightful, and useful.

References

Kronenfeld, David B. 2006. Formal Rules, Cognitive Representations, and Learning in Language and Other Cultural Systems. *Language Sciences* 28: 424-435.