

Primer on Dan Hillman's Thesis

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Context

This document is for the XOP Encoding project, participants include Eric Walkingshaw and Jeffrey Young. This is the third such primer in the project, the first one is a primer on DN-Theory, the second a primer on typologies of explanation, specifically Bellack et al's typology. This document expands on bellack et al's typology by summarizing the thesis of Dan Hillman. Dan Hillman iterated on bellack's typology, changing and improving it in several ways, and hence his typology is of interest to the XOP project. Dan Hillman was also kind enough to provide the data he compiled with his typology for the XOP Project.

Orientation

This document is meant to explicate three things:

1. What are Hillman's changes to Bellack's typology and why
2. What is the nature of the data that Hillman compiled and it is useful to the XOP project?
3. What did Hillman learn from his data, what were the conclusions of his thesis?

Executive Summary

Details on Hillman's Data

General Details of the Data

- Data is composed of Face-To-Face (FTF) and Computer-Mediated-Communication (CMC)
- All data is from courses taught at New York School of Education between 1994 - 1995
- Data was recorded from 2 classes:
 1. Systems Analysis and Design
 2. Database Management and Systems
- Both courses had FTF and CMC versions, and both versions taught the same material

Details on the Transcription of the Data

- FTF courses were recorded on audio cassette, transcribed to word docs, then munged into a database
- Participants for CMC courses communicated, and were recorded, by Lotus Notes.
- only interactions that encompassed *the whole class* was included
- interactions during breaks were not considered or included

- Any small group discussions that took place were not considered or included
- No one working on the transcript, editing, or the coding, had knowledge of what was transcribed, which participant said it, or the purpose of the research

Database and data information details

Database Contains

1. All text
2. Participants sex
3. Participants role (Teacher/Student)
4. Number of words in each sentence
5. Metadata of course (Course name, date etc.)

Data alterations

- All audio recordings were pre-pended with a character to denote the speaker, one of:
 1. t \triangleq teacher
 2. m \triangleq male student
 3. f \triangleq female student

Hillman's Problems with Bellack et al's typology

Most of this is taken directly from Hillman's thesis:

1. Problem: Bellack's system fails to differentiate between a one-word response and a one-liner response. This is consequent of Bellack et al's decision to round any non-line utterance to length 1.
Effect: This gives unfair weight to utterances that are less than one-line length, which distorts the differences between teacher and student utterances (with the latter being inflated).
2. Problem: Structuring and Soliciting moves fail to capture monologues or exegesis
Effect: This constrains the systems unit of analysis, in fact, Hillman found that studies which employed Bellack's system, and Bellack et al's own data, have almost no monologues by the teacher, and are almost never have adult student participants - only children.
3. Problem: The difference between Responding and Reacting moves is often minimal and the two are easily interchangeable, especially in asynchronous communication (Bellack et al assumed synchronous communication e.g. a conversation)
Effect: Superfluous encodings and noise in agreement rate
4. Problem: Substantive meanings fail to account for progressive levels of meaning, which, in turn, make it difficult to code for any subject in which the same idea or procedures are used at higher levels. For example, in a math class one would learn multiplication or division not as an end in and of itself, but as part of a larger process. Bellack's system cannot account for this in a clean way.
5. Problem: Substantive Meanings are not abstracted from the course material at all. In general, each substantive meaning is derived from the course material, but if that material differs slightly than the meanings must also change.
Effect: Comparing courses on the same material or topic becomes more difficult
6. Problem: Instructional Meanings are similarly limited

7. Problem: Inclusion of an Audio-Video devices inflates its importance in the classroom interaction to that of the participant.
Effect: One cannot claim that if a teacher plays a move or audio snippet as part of the lesson that the student is interacting with the content in *an observable* manner.
8. Problem: Bellack et al's system does not distinguish between differences in students.
Effect: One cannot analyze the variable of sex in the data.
9. Problem: Bellack et al's system distinguishes between discussion that occurs "as the result of an assignment", and intra-classroom discourse.
Effect: This excludes discourse which occurs from a teacher assigning work *and then* building on that assignment in class.

Hillman's modifications to Bellack's Typology

Pedagogical Moves are denoted by Purpose. Purpose has 6 Types:

1. Organizing: Similar to Structuring moves, organizing sentences do not elicit a response and are not responses. Organizing sentences set an agenda, organize a discussion or recitation, and function as a means to get to other Purposes. Hillman describes them as functioning similar to an on-ramp to a highway.
Ex. "In a minute I'll be handing you an overview of the course as well as handouts for the first session."
[Organising/Fact-Stating/Procedure]
- 2.