HANDOUT 1

SAMPLE I: UNITS AND CODING PROCEDURES

Meyers, Workshop, "Analyzing Written and Spoken Data," April 11, 2008

A *Unitizing discussion content.* After transcriptions were made of all videotaped group discussions (n = 45), discussion content was unitized by two judges working independently. The unit choice was any statement that functioned as a complete thought or change of thought (Auld & White, 1956; Hatfield & Weider-Hatfield, 1978; Murray, 1956). In view of our focus on argument, it seemed more appropriate to unitize transcripts into complete thoughts, rather than microanalytic "words" or overly comprehensive "turns." Unit by unit intercoder reliability (Scott's pi) for the three problems yielded estimates of .90, .90, and .89 (Krippendorff, 1980).

Coding Procedures

B *Multi-stage coding process.* The coding scheme (see Table 1) utilized in this investigation was the Conversational Argument Coding Scheme developed by Canary, Meyers, Seibold, and colleagues (Canary et al., 1987; Canary et al., 1982; Meyers & Brashers, 1998; Meyers et al., 1991; Seibold et al., 1983; Seibold et al., 1981). Because the Conversational Argument Coding Scheme is so complex, and because of past concerns with reliabilities obtained with the scheme, a multi-stage process was utilized to code this data set (see Meyers & Brashers, 1995, for a fuller account of this process). In brief, the coders made several iterative passes through the data and identified different facets of the group's argument each time. In the first stage, the coders parceled the data so as to provide an organizational framework for subsequent coding tasks. Coders first

went through the forty-five transcripts to separate the argument-related from nonargument-related messages. Having completed that task, they returned to the data to code the risky/cautious valence of each argument-related statement. In a third pass, the coders identified the argument content of each statement (i.e., argument topics).

Once the data had been parceled in this way, the coders applied the Conversational Argument Coding Scheme. Application of this scheme also occurred in stages. First, the coders placed messages into the first-level categories (Arguables, Convergence-Seeking Activities, Disagreement-Relevant Intrusions, Delimitors, and Nonarguables). Second, they returned to the transcripts and coded statements assigned to each first-level category into their respective second-level subcategories as follows: Arguables were classified as Assertions, Propositions, Elaborations, Responses, Amplifications, or Justifications; Convergence-Seeking Activities were categorized as Agreements or Acknowledgements; Disagreement-Relevant Intrusions were divided into Objections or Challenges; Delimitors were coded into Frames, Forestall-Secure statements, or Forestall-Remove statements, and Nonarguables were coded into Process, Unrelated, or Incomplete statements. Nonarguables, however, were not analyzed in this investigation because we were concerned primarily with argumentative messages.

C *Coder training sessions*. Two different sets of individuals were trained for the coding tasks. One set of four completed all the initial parceling tasks. A second set of four completed the substantive argument coding tasks. Training was intensive and averaged more than 40 hours for each set of tasks. Coders practiced on transcripts extraneous to this study. After coding the practice transcripts for any given coding task, they discussed and clarified differences. When reliability for all four coders for any

given task reached 80% agreement, training sessions were terminated, and two pairs then independently coded half of the transcripts for the relevant task. The coders utilized the transcripts for the initial coding, but checked their assignments and designations against the videotape before making a final choice.

D *Intercoder reliability*. Cohen's kappa was utilized as the index of reliability for each task. Estimates for relevant coding tasks were as follows: .86 for the argument/nonargument codes; .88 for the risky/cautious codes, .88 for content (argument topics) codes; .88 for first-level argument codes; .85 for second-level subcategory argument codes. All of these reliability levels are satisfactory (Fleiss, 1981).

HANDOUT 2

Coding Scheme for Evidence in Group Quiz Discussions

I. No Evidence categories

1. Provide claim but no evidence (I put that too, I put true, I put D, nonverbal agreement, Yeah,); a claim is verbally or nonverbally stated, but no evidence is provided here at all.
2. Provides neither claim nor evidence; doesn't speak in regards to quiz question.
3. Indicate lack of own knowledge or expertise as source:
   - don't know
   - don't remember reading it
   - guessed
   - used process of elimination
   - don't care
   - don't remember from earlier exam
   - didn't read all the answers to the question
   - asks questions of other participants that show doesn't know for sure (but provides no additional evidence or information through these questions), etc.

II. Evidence Provided categories

4. Expert-Based Evidence--Use sources other than self

1. Use/Cite **text** authority (It said in the book, I remember from the book, I don't remember reading that in the book, The text said that . . .,etc.)
2. Use/Cite **teacher's** authority/expertise (She said this in class, I asked her, etc.)
3. Use/Cite **class discussion** as authority (We talked about this in class, When we did this in class, Remember when we did that activity in class, etc.)
4. Use/Cite **another question on the exam** as evidence
5. Use/Cite **class notes** as authority (I wrote it in my notes, I remember from my notes, etc.)

5. Speaker-Based Evidence—Use "self" as source

1. Use "**own authority**" (I know that is right, I remember that, I know this is true, I am sure I am right)
2. Use "**own sources**" such as an example or illustration or definition or clarification to clarify/explain the concepts/theories/wording in test question, etc.

III. Other types of evidence—types of evidence **NOT** contained in the codes above.

HANDOUT 3

SAMPLE II: UNITS AND CODING PROCEDURES

Meyers, Workshop, "Analyzing Written and Spoken Data," April 11, 2008

A *Unit of Analysis*

The unit of analysis for this investigation was each individual group member's communicative contribution to the discussion of each quiz question. Communicative contribution was defined as a participant's total turn-at-talk within the discussion of any given quiz question. There were 226 total questions answered by each of 18 group members resulting in a total of 4068 units of analysis.

Coding Procedures for Argument Strategies

Development of coding scheme. The construction of the coding scheme used in this investigation was grounded in, and shaped by, three areas of past research. First, research on cooperative learning in groups and the few coding schemes of group interaction that were available in this domain were analyzed for relevant information. Second, books on argument and debate that detailed types of evidence were scrutinized to determine the various types of evidence that students might use in argumentative interaction (Clark, 1984; Ehninger, 1974; Hollihan & Baaske, 1994; Inch & Warnick, 1998; Lee & Lee, 1989; Ziegelmueller & Kay, 1997). Finally, past work on group argument and the Conversational Argument Coding Scheme (Canary, Brossman, & Seibold, 1987; Canary, Tanita-Ratledge, & Seibold, 1982; Meyers & Brashers, 1998; Meyers, et al., 1991; Seibold, Poole, McPhee, Tanita, & Canary, 1981; Seibold, Canary, & Ratledge, 1983) were examined.

Relevant concepts from each of these sources were initially outlined in a primitive coding scheme. Next, videotapes of group discussion quizzes (extraneous to this investigation) were viewed multiple times (by the first and second authors) to get a general sense of the types and forms of argumentative interaction in these discussions. Moving back and forth between the research, the initial coding scheme, and the videotapes, a more refined coding scheme was developed. Coding scheme categories were added, revised, deleted, and tested until a final scheme resulted that seemed both comprehensive and valid. This final coding scheme (see Appendix A) was then used to code the data for this study. Coding rules are available from the first author.

Multi-stage coding process. Because group interaction is difficult to code, and because coders were coding from live videotapes, a multi-stage process was utilized to code this data set. In brief, coders made several iterative passes through the data and identified different facets of the group's interaction each time. In the first stage, the coders parceled the data to provide an organizational framework for subsequent coding tasks by categorizing each of the group answers to any given question as illustrating "agreement" or "disagreement." Following this initial organizing task, coders returned to the data a second time to categorize group member's contributions to the discussion into one of ten evidence categories housed within the general distinctions of no evidence, expert-based evidence (use sources other than self), and speaker-based evidence (use "self" as source).

B *Coder training sessions*. Four graduate students were trained for the coding tasks. First, each coder was asked to become familiar with the category scheme and the definitions of the categories. Then, coders practiced using the coding scheme on

videotapes extraneous to this study. After coding the practice videotapes independently, coders met together to discuss their codes and then clarify differences. When reliability for all four coders for any given task reached 85% agreement, training sessions were terminated, and each of two sets of two coders then independently coded one-half of the videotaped interactions.

C *Intercoder reliability*. Intercoder reliability was assessed using Perreault and Leigh's (1989) index of reliability, a measure designed to test the reliability of nominal data based on qualitative judgments. For the first coding stage (agreement and disagreement) $I_r = .87$ and $I_r = .90$ for the two sets of coders; average $I_r = .88$. For the second stage of coding (evidence categories) $I_r = .79$ and $I_r = .88$ for the two sets of coders; average $I_r = .84$. All of these reliability levels, according to Perreault and Leigh (1989), can be considered excellent.

HANDOUT 4

Sample of Unitizing Rules for Thought Units in Group Discussion
Meyers, "Analyzing Written and Spoken Data" Workshop, April 11, 08

1. A unit is any statement that functions as a complete thought or change of thought.
2. A unit is typically defined as any statement that contains a subject (explicit or clearly implied) and predicate/verb (explicit or clearly implied) and/or can stand alone as a complete thought (including terms of address, acknowledgements, nonrestrictive dependent clauses, etc., as indicated below).
3. Simple sentences and all clauses that function as independent and complete thoughts constitute separate units
    a. **Simple Sentences** contain a subject and predicate and constitute a complete thought
    b. **Independent Clauses** are a subset of the sentence, contain a subject and predicate, and can stand alone as a complete thought.
4. Divide **compound sentences** into separate units when clauses are connected with coordinating conjunctions such as those indicated below, or other transitional markers which establish an independent clause relationship.
    a. Additive: and, also, besides, moreover, furthermore, etc.
    b. Opposing: but, yet, however, rather, nevertheless, instead, etc.
    c. Alternative: or, either/or, nor, neither/nor, etc.
    d. Temporal: then, next, afterwards, previously, now, meanwhile, etc.
    e. Causal: for, so therefore, thus, consequently, hence, etc.
5. **Functioning Independent Clauses.** Because spontaneous speech (i.e., group discussion) is often grammatically incorrect, individuals make statements in discussion that function as complete and independent thoughts even though grammatically they would not be classified as such. These statements often begin with typical dependent clause conjunctions—because, like, since, so—and are therefore, in strict grammatical sense, dependent, rather than independent clauses. But when these types of clauses function in group talk as complete and independent thoughts, they should be unitized as separate units.
6. Consider as separate units functioning independent clauses which are joined with explanatory subordinating dependent transitional markers such as the following:
    a. When, whenever, because, just because, like, since, although, though, while, as, after, before, unless, until, in order than, so, so that, it's like, etc.
7. **Agreement/Disagreement** (yeah, right, no, no way) is counted as a separate unit if it stands alone and functions as a complete and independent thought (i.e., it is not immediately followed by a connecting statement that contains a subject and verb). If simple agreement is followed by such a connecting statement in which the person speaking goes on to amplify or explain, unitize the simple agreement as part of the next statement.
8. **Two or more expressions of agreement/disagreement** spoken in immediate succession by the same person (yeah, right, uh-huh) are considered to function as a single thought and should be unitized as a single unit.

9. **False starts or introductory phrases** do not count as separate units (Well, I think, maybe, I mean, you know, I guess). Unitize these with the next statement.

AND SO ON UNTIL YOU HAVE A COMPLETE SET OF RULES.

HANDOUT 5

Sample Coding Rules for Coding Argument in Group Discussion
Meyers, "Analyzing Spoken and Written Data" workshop, April 11, 08

Assigning Codes and Attributing Meaning

1. If the function of the statement is clear, then code it into one of the appropriate categories.
2. If the function of the statement is not immediately clear, then coding should proceed in the following sequence of categories: arguables, reinforcers, prompters, delimiters, and non-arguables.
3. If the statement is unrelated to the group's arguing, code it into the non-arguable category.
4. Attributions of meaning should be limited to the text as much as possible. If a cogent idea is readily inferred from the statement in the text, code it into the appropriate category. When meaning is not evident in a given utterance, read ahead to the following conversation to ascertain the meaning assigned to the utterance by the group, or read previous discussion to determine if prior conversation provides a context. If a statement is not cogent or is impossible to interpret, do not infer its' meaning. Instead code it as a non-arguable.

AND SO ON UNTIL YOU HAVE RULES THAT THE CODERS FIND USABLE AND HELPFUL, AND THAT HELP TO MAKE THEM RELIABLE

HANDOUT 6

Table 3

Frequencies of Evidence in Agree and Disagree Situations

Evidence Type	Agree		Disagree	
	n	%	n	%
Provides No Evidence	**2168**	**91.7%**	**457**	**43.7%**
• Claim, no evidence	1864	78.8%	320	30.6%
• Doesn't speak	223	9.4%	38	3.6%
• Lack of knowledge	81	3.4%	99	9.5%
Expert-Based Evidence	**107**	**4.5%**	**330**	**31.6%**
• Text	61	2.6%	203	19.4 %
• Teacher	34	1.4%	67	6.4%
• Discussion	9	.4%	36	3.4%
• Exam question	0	0%	18	1.7%
• Class notes	3	.1%	6	.6%
Speaker-Based Evidence	**90**	**3.8%**	**258**	**24.7%**
Total	**2365**	**100%**	**1045**	**100%**

Table 4

Evidence Use by High and Low Achievement Individuals

Evidence Type	Disagree Situations			
	Low		High	
	n	%	n	%
Provides No Evidence	137	55.7%	65	30.0%
• Claim, no evidence • Doesn't speak	97	39.4%	46	21.2%
• Lack of Knowledge	15	6.1%	3	1.4%
	25	10.2%	16	7.4%
Expert-Based Evidence				
• Text • Teacher • Discussion	**54**	**22.0%**	**96**	**44.2%**
• Exam question	38	15.4%	67	30.9%
• Class notes	9	3.7%	19	8.8%
	6	2.4%	8	3.7%
Speaker-Based Evidence	0	0%	0	0%
	1	.4%	2	.9%
Total				
	55	**22.4%**	**56**	**25.8%**
	246	**100%**	**217**	**100%**

Content Analysis References

Workshop, "Analyzing Written and Spoken Data"
April 11, 2008

Krippendorff, K. (2003). *Content analysis: An introduction to its methodology* (2nd ed.). Thousand Oaks, CA: Sage.

Neuendorf, K. (2001). *The content analysis guidebook*. Thousand Oaks, Sage.

Rosengren, K. E. (Ed.). (1981). *Advances in content analysis*. Beverly Hills, CA: Sage.

Weber, R. P. (1990). *Basic content analysis: Quantitative applications in the social sciences* (2nd ed.). Beverly Hills, CA: Sage.