DOCUMENT RESUME

ED 465 765 TM 033 904

AUTHOR	Steinkuehler, Constance A.
TITLE	A Discourse Analysis of Online Social Argumentation.
SPONS AGENCY	SRI International, Menlo Park, CA.; National Science Foundation, Arlington, VA.; National Inst. for Science Education, Madison, WI.
PUB DATE	2002-04-00
NOTE	40p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 1-5, 2002).
CONTRACT	REC-9725528; RED-9452971
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Attitudes; Background; Case Studies; *Computer Mediated Communication; Context Effect; Course Content; *Curriculum; *Discourse Analysis; *Graduate Students; High Schools; Higher Education; *Intellectual Disciplines; Online Systems; Persuasive Discourse; *Social Influences
IDENTIFIERS	Argumentation Theory

ABSTRACT

This case study examined the role of field dependence in the failure of an online dyadic discussion of a complex issue, whether or not creationism should be placed on an equal footing with evolution in high school science classrooms. In this study, field is used to designate whole disciplines, rather than factions within disciplines. Using discourse analysis methods developed by J. Gee (1999), the study shows how each individual approaches the given issue from her own field, contributing to the failure of the negotiation. A transcript of an online discussion between two participants in a secondary education course, one an anthropologist by prior training and the other a chemist, was analyzed. Analysis of the discussion shows two opposing situated social activities, establishing interpersonal subjectivity versus intellectual one-upmanship and knowledge display. These social activities shape the arguments each participant constructs. The paper also discusses the limits of field dependence as an explanatory mechanism in this instance and expands the notion that social argumentation is not just field dependent, but also socially situated. The argument an individual produces is not just an outcome of the field of knowledge that the individual makes relevant, but also of the socially situated activity it reflects and helps constitute. An appendix contains a transcription of the discussion. (Contains 26 references.) (SLD)

A Discourse Analysis of Online Social Argumentation

Constance A. Steinkuehler
University of Wisconsin-Madison

Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans LA, April 1-5, 2002.

This research was conducted through SRI International with funding from the National Science Foundation (Grant No. REC-9725528) and the National Institute for Science Education with funding from the National Science Foundation (Cooperative Agreement No. RED-9452971), Sharon J. Derry, Principal Investigator. However, the ideas expressed herein are not endorsed by and may not be representative of positions

endorsed by the sponsoring agencies. I would like to thank both Sharon J. Derry and Joel R. Levin, co-authors on the original experiment in which this data was collected.

Complex issues, by nature, can reasonably be considered from a range of different vantage points that crosses disciplinary lines, yet, as Toulmin (1958) points out, "the *criteria* or sorts of ground required to justify...a conclusion vary from field to field" (p. 36). Therefore the standards by which we measure the quality of someone's argument about such issues should vary depending on the discipline or field that individual – to borrow a phrase from Raymond Carver (1988) – is calling from.

For example, consider the issue of whether creationism should be taught on an equal footing with evolution in the high school science classroom, an issue recently contested and highly publicized after the Kansas State Board of Education's removal (Belluck, 1999) and subsequent reinstatement (Fountain, 2001) of evolution from the state's science curriculum. Is this an ethical issue about equal representation? A political issue about the type of education that best resonates with a democratic system? A scientific issue about which theory the preponderance of evidence supports? Or a philosophical issue about what constitutes science itself?

This topic lies at the intersection of all these fields – ethics, political science, science (i.e. biology), and philosophy – and, as such, can be reasonably debated from the perspective of each. Thus, there is a range of argumentation strategies I might use to justify my position on the issue that is contingent on the way in which I construe the issue and the relevant domain. If I construe the issue, for example, as a scientific one, then the extent to which I compare the empirical evidence supporting each theory would be one obvious criterion by which the strength of my argument might be judged. If, on the other hand, I consider it an ethical question, then such evidence is simply beside the point.

Individuals faced with the task of constructing an argument about a complex issue can, and will, provide reasonable arguments that vary depending on the manner in which they construe the issues at stake. Studies of argumentation that assume that argumentation is domain general (e.g., Kuhn 1991, 1992; Kuhn, Shaw & Felton, 1997), or (albeit implicitly) that scientific argumentation is the ideal model, fail to acknowledge the validity and structure of arguments from other domains. If we are to engage

individuals in argumentation about complex issues and hope to accurately assess their skill in doing so, the analytic scheme we use must be able to account for the wide array of feasible arguments from varying perspectives that participants can (and will) adopt.

The field dependence of argumentation, then, has direct import for research practice in the field of argumentative assessment, but what about its import on the social practice of argumentation in everyday life? How does the field dependent nature of argumentation play out between individuals engaged in social debate of an issue whose complexity makes relevant a wide range of disciplines or fields? This case study examines the role of field dependence in the *failure* of an online dyadic discussion of the complex issue used in the example above (i.e., whether or not creationism should be placed on an equal footing with evolution in high school science classrooms). Using discourse analysis methods developed by Gee (1999), I show how each individual approaches the given issue from her own particular field, thereby contributing to the failure of the negotiation. I then discuss the limits of "field dependence" as an explanatory mechanism in this instance, and expand the notion of field dependence further, arguing that *social argumentation is not just field dependent but also socially situated.*

The Original Experiment & Results

The analysis described here was conducted as a post-hoc qualitative analysis of data collected during an experiment that compared the effects of online discussion to two online, individualized study techniques derived from the cognitive memory literature (Steinkuehler, Derry, & Levin, in submission). Following Kuhn's work, we gave individuals a complex issue for consideration, randomly paired them for discussion with a peer (in our study, using the online synchronous discussion environment *Tapped In*, www.tappedin.org), and then assessed changes in their argumentative ability from pretest to posttest using a coding scheme modeled after one by Kuhn, Shaw, and Felton (1997). This categorical scheme allowed us to ask ostensibly domain-general questions about the arguments individuals constructed (e.g., Do they talk about the function of the issue at hand? Do they address alternatives?) as well as

some questions that captured some extent to which the constructed arguments were scientific (e.g., Do they reference evidence?). Results indicated that, although across conditions participant's argumentative reasoning did improve, discussion did not foster greater learning gains than the two individualized conditions as expected. Given our surprising results, I conducted a post-hoc qualitative analysis of one of the discussion transcripts.

Selection of Transcript Based on Failure

The transcript selected for closer analysis was the 45-minute discussion of two participants in our original study: Emma, a former anthropology major who was *for* placing creationism on an equal footing with evolution in high school science classrooms, and Daisy, a former researcher in chemistry, who was *against* it. Both participants were enrolled in a secondary education course from which the original sample was drawn. The outcome of the pair's discussion was representative of our overall findings in terms of our original definition of argument improvement. From pre- to posttest, the pair's arguments exhibited a decrease in the proportion of non-justificatory statements made (statements having little or no argumentative force) coupled with an increase in both the number of references to evidence and the number of metacognitive statements, but showed no change in the number of statements made that addressed alternatives and little substantial decrease in the proportion of nonfunctional statements (statements that failed to address what the purpose or function of teaching creationism on an equal footing with evolution might be) or increase in the overall range of their arguments. Because the pair shared these characteristics with our overall findings, their transcript was a suitable candidate for further analysis.

Final selection of Emma and Daisy's discussion transcript for closer analysis was based on the fact that their discussion was a *failure*. Rather than fostering some level of cognitive change or, at minimum, prompting a better articulation of their individual opening positions (e.g., consideration of additional alternatives), their discussion

appeared to elicit the opposite. From pretest to posttest, both dropped rather than added an acknowledgement and subsequent refutation of an argument in opposition to their own position; interestingly, in both cases, they were counterarguments that the individual's discussion partner presented during the intervening conversation. Though one participant, Emma, espoused a new position during the discussion, she returned to her original position afterwards. Neither individual exhibited actual opinion change (as measured by comparison of pre- and posttest opinion scales) or reported opinion change. Not only did both Daisy and Emma leave the discussion with the same opinion they walked in with, but they both actually *dispensed with* consideration of certain competing arguments, seemingly based on the fact that their discussion partner made and justified just those claims. In this way, their discussion yielded precisely the opposite effect than we had predicted. Given this surprising outcome, I conducted a post-hoc qualitative analysis of what transpired during their online discussion in order to better understand why the discussion had the negligible (and, arguably, negative) outcomes it had.

Post-Hoc Discourse Analysis of an Online Discussion Transcript

> *"If I had to single out a primary function of human language, it would be not one, but the following two: to scaffold the performance of social activities (whether play or work or both) and to scaffold human affiliation within cultures and social groups and institutions." (Gee, 1999, p. 1)*

The discourse analysis method used here is based on the work of Gee (1999), who outlines six basic aspects of "reality" that any piece of oral or written text construes in some way: the material world, politics (the distribution of social goods), semiotics (symbol systems and the forms of knowledge they entail), identities and relationships, activities (what is currently going on), and connections (between the present and the past and future). Any oral or written utterance constructs reality along these lines in the sense that it indicates (often implicitly) which aspects of, for example, the material world, are relevant and what they mean. As speakers and writers, we *cue* our listeners or readers as to which construals of "reality" are relevant (and which are not) through

the particular grammatical patterns or devices we recruit. These cues are essentially collocational patterns – "various sorts of grammatical devices [that] 'co-locate' with one another" (p. 29), including word choice, clausal structure, and clausal ordering (e.g., the backgrounding-foregrounding function of clausal transformations).

For any analysis of language use, all six aspects of reality construction are relevant; however, like, most actual analyses, mine will explicitly focus on only a selected subset - specifically, *semiotic building* and *activity building*. The former, *semiotic building*, relates directly to the notion of "field-dependence" of argumentation, an issue I take up straight away; the latter, *activity building*, is an issue I will discuss later on. First things first: let me demonstrate the import of "field dependence" on the social practice of argumentation before arguing that it must be expanded with a richer account of socially situated activity itself.

Argumentation is Field-Dependent

Again, the primary goal of this analysis was to shed light on why Emma and Daisy's discussion transpired in the particular (unproductive) manner it did. Given this goal, the notion of *semiotic building* through language is particularly useful in highlighting the following important questions: What different symbol systems or forms of knowledge "count" for each participant and how do they align or conflict? What fields of knowledge are made relevant? Or, to paraphrase Gee (1999), what social groups or institutions does each participant, implicitly or explicitly, aligned herself with?

Analysis of both the content and form of Emma and Daisy's contributions to the discussion indicates that both participants were indeed approaching the given topic from different disciplines or "fields." While Emma reasoned about the issue in a manner suggestive of an anthropologist, Daisy reasoned about the issue in a manner suggestive of a scientist. Two precursory disclaimers are required, however, before going further. First, to say that each participant seemed to take a field-dependent approach is *not* to say that either did so with expertise. Though both Emma and Daisy

display a certain fledgling skill at argumentation within their respective disciplines, neither show sufficient mastery of their field's discourse. Second, no discipline is monolithic. Like my own field, both the field of anthropology and the field of physical science exist as congeries of loosely coupled, overlapping "subfields" that vary (sometimes quite radically) in theoretical approach, methodology, epistemology, ontology, and even rhetorical style (for a discussion of the subfields of anthropology, see Ortner, 1984; of the physical sciences, see Knorr-Cetina, 1999). In this paper, I use the notion of "field" more generally to designate whole disciplines rather than factions within disciplines (for example, the kind of general "anthropology" that is taught in a typical introductory undergraduate course). Here I offer little more than the proverbial nod to this attribute of academia and can only hope that further research endeavors better explicate how the "*subfield* dependent" nature of argumentation plays out between individuals engaged in social debate – a line of inquiry that, I would argue, might profitably follow the methodological avenue I sketch out here. In sum then, my claim is that, in the context of this discussion, both individuals seemed to reason from their own (general) field; my argument will *not* be that either individual took a stance that could be construed as representative of those fields or that either participant's performance embodies the ideal.[1]

Emma the Anthropologist

> *"I am an Anthro. major, I think that Darwin is scientific, but I think creationism is an alternative way to make sense of how humans came to be." (Emma, 18)*[2]

Literally, anthropology is "the science of human beings"; in general terms of practice, is the naturalistic description and interpretation of diverse populations in terms of biological and cultural characteristics such as comparative anatomy,

[1] The issues raised in these two precursory disclaimers – mastery of the discourse of one's own discipline and recognition of the discrepancies among factions or "subfields" within that discipline – may very well be related. One would guess that, as an individual becomes increasingly enculturated into her particular field, she simultaneously masters that field's rhetorical style and comes to recognize, and align oneself, with subfields within it. Common sense supports this hypothesis but I know of no empirical research that might bear this issue out.

[2] Numbers in parentheses reference lines in the transcript (see the Appendix) unless otherwise noted.

evolutionary history[3], geographic distribution, and historical and contemporary social and cultural phenomena. If we focus our attention on Emma's contributions to the online discussion, several anthropological themes emerge.

First, Emma exhibits a *preoccupation with peoples and cultures*. Her turns contain roughly three times the number of references to people than do Daisy's (Emma makes 92 such references, Daisy makes 32), including actors in the current discussion – herself, her partner, the "we" they comprise – as well as actors in the broader drama that the issue of teaching creationism equally with evolution in high school classrooms entails: Americans, Christians, educators, students, scientists, humans in general, and even Darwin himself. Even talk about ideas becomes talk about people: the content of the pro/con article both participants were asked to read before meeting to discuss becomes what "they said" (5, 42) and evolution becomes "Darwin" (18, 19) and "his theory" (60). Social groups are foregrounded, including her own. Throughout the conversation, Emma reflexively identifies herself via group association and disassociation, by what she is (e.g., a student) and what she is not (e.g., "a crazy Christian fundamentalist," 29, or a scientist, 40). Through her persistent exploitation of social classification in rendering sensible various parties views, one almost senses her abiding by Malinowski's injunction (1961) to anthropologists in the field: "we are not interested in what A or B may feel *qua* individuals, in the accidental course of their own personal experiences – we are interested only in what they feel and think *qua* members of a given community" (p. 23).

Emma's *reasoning from the perspective of others*, whether actual historical individuals or social types, is reminiscent of the praxis-focused anthropologist who "takes these people and their doings as the reference point for understanding a particular unfolding of events, and/or for understanding the processes involved in the reproduction or change of some set of structural features" (Ortner, 1984, p. 149). For example, consider the following excerpt (emphasis added):

[3] Curiously enough, the evolutionist point of view that emerged in anthropological work in the 1840's actually predates Charles Darwin's publication of On the Origin of Species in 1859 as well as Alfred Russel Wallace's famous "Ternate essay" (1858) that Darwin received in February of 1858.

26 Emma If you think about it, the **people** that **came to America** and set up the united states were **hardcore Christians**. The majority of the info taught in the schools...

28 Emma is from the **white American perspective**, and in general most **white Americans** are **Christian**, or at least come from some Christian background

Emma takes a social type (i.e., white, Christian American) as her reference point for understanding the processes involved in the reproduction of a particular structural feature of the education system (i.e. the historical and present-day prominence of instructional content based on Judeo-Christian beliefs, 22, 24).[4] Throughout the conversation, she takes various actors' points of view in an effort to "figure out what the devil *they* think they are up to" (Geertz, 1983, p. 58, emphasis added). For example, she argues that creationism should indeed be placed on equal footing with evolution in high school classrooms by taking the perspective, first, of the recipients of such education (i.e., the students themselves, 2-3) then those who would deliver such education (i.e., the teachers, 9). She sympathizes with the authors of the pro article, excusing their brevity by explaining that, "unfortunately," it is "hard to squash tons of support" into a limited space (45). And, again and again throughout the discussion, she legitimates the views of her opponent in the debate, prefacing her own statements such as "Ok, I can see what you are saying" (21) and "I understand" (24). Using pronouns such as "me," "you," "us," and "they," she locates the actors she references within her immediate proximity, attributing to them a specificity and connection to her immediate environment that renders their positions and interests sensible. In viewing the issue from the perspective of not only those actors that the given issue impacts (i.e., students, teachers, etc.) but also the other actor in the current conversational debate (i.e. Daisy

[4] Emma's argument is ironic given the state of anthropology since the 1970's influence of Marx. Emma leverages her anthropological understanding of why Judeo-Christian beliefs are dominant in education as a justification for continuing the trend (i.e., teaching creationism), despite the widespread concern in some anthropological circles with the constraining and dominating power of culture to legitimate the existing order, thereby reproducing relationships of exploitation and inequality. Again, the intertwined issue of "level of expertise" and "familiarity with factions" rears its head. Perhaps, as the old saying goes, a little knowledge is a dangerous thing.

herself), Emma demonstrates a manner of reasoning suggestive of an anthropologist – "the attempt to view other systems from the ground level ... to take the perspective of the folks on the shore" (Ortner, 1984, p. 143).

Emma *locates claims in a cultural context*, exhibiting a mindfulness of who (culturally speaking) is making what claims. She brackets her own claims about the issue as statements made from a particular vantage point (e.g., "what I am talking about," 15) rather than transparent representations of a world outside and then indexes this vantage point with descriptions of her own "personal experience" (40) that serve as qualifiers on the truth value of the propositions she makes. She frames her partner Daisy's claims in a similar manner, shifting the topic of the negotiation from a debate over facts about the world to a debate over what "you are saying" (5) and "what I am talking about" (15). Claims from the pro/con article are likewise imbedded inside clausal structures that foreground the "*who* that's speaking" behind the "*what* that's said."

As such, implicit in Emma's language use is the notion that "culture mediates all human behavior" (Ortner, 1984, p. 134), rendering *science one view among many* rather than a litmus test for truthfulness. She grammatically coordinates evolution and creationism as equal, parallel alternatives, each acquired within an epistemological framework relative to a particular domain, then later echoes the same structure to describe theories in terms of individual belief selection (3, 37, emphasis added):

3 Emma	I went to catholic high school so we were taught both. **In biology class we learned evolution, and then** **in religion class we were taught creationism...**
37 Emma	Think of an Ed Psych class, they give us many different theories **and some you may believe,** **and others you may not...**

Throughout the discussion, Emma implicitly and explicitly construes creationism and evolution as parallel, alternative "views" (2, 19) or "perspectives" (12) whose truth-value is relative to the framework of beliefs each individual holds (12-13), acceptable to

the extent that they provide the individual a way to "make sense" of their own "personal experience" in the world (18, 40).

Emma also displays an *interest in the function of institutions*, stressing that the primary role of education is to provide students "alternative ways to make sense" (18) of the world. The practical means by which this function is realized is of less import. When she recounts the circumstances in which she learned about creationism, she shifts back and forth between saying that she learned it in religion class (3, 20) and saying that she learned it in science class (16), glossing over the issue of how such education might actually be realized. Which class for which theory is not important; the *function* that the institution should serve – to provide students a "rounded education" (2), "a variety of perspectives" (12), "many different theories" (37), "a whole view of all of the issues involved with the topic" (39) – is her primary interest.

Furthermore, Emma takes *an historical perspective*, arguing that because the Judeo-Christian perspective is historically significant both inside (30) and outside (26) the educational system, teaching a theory based on this perspective merely continues an educational trend (22, 24, 26, 28, 30). She proffers an account of the origins of public education (26, 28) and uses it to argue that creationism is culturally relevant to the majority of Americans (28) and therefore should be taught. In so doing, she plays both "chronicler and historian at the same time" (Malinowski, 1961, p. 3).

Finally, Emma *leverages "narrative knowledge"* (Lyotard, 1984) *and personal experience* in a manner prototypically anthropological (Malinowski, 1961; Bruner, 1986). While the field of hard science "questions the validity of narrative statements and concludes that they are never subject to argumentation or proof" (Lyotard, 1984, p. 27), the field anthropology exploits personal experience, anecdote, legend, and story. Emma's experiences in the world and familiarity with the master stories pervasive in American culture provide her a rich narrative reserve from which she draws throughout the discussion. She capitalizes on her own experiences in education and leverages them as support for and validation of the claims she makes (3, 16, 66). She makes sense of her partner's claims by connecting them to her own anecdotal

experience (21) and, reciprocally, tries to help her partner make sense of her perspective via reference to experiences they have in common (37). For example, when her partner asks her what she "means" by the claim that "the majority of everything we learn is based on Judeo-Christian beliefs" (25), Emma draws from the master "founding of America" narrative perpetuated throughout American culture in order to justify her view.

No single one of these characteristics alone justifies construing Emma's perspective as anthropological, yet, in combination, the preponderance of evidence does suggest that Emma's talk indeed conveys alignment and affiliation with anthropology. Emma makes her field of study relevant not only by explicitly pointing it out (18) but also and more importantly by the very manner in which she construes the issue, formulates the problem, and constructs her argument. Emma's argument is of a particular domain - field dependent, in Toulmin's (1958) terms - and as such it both reflects and evokes a particular field of knowledge. This field of knowledge, as we shall see however, is at variance with her coparticipant's.

Daisy the (Physical) Scientist

"I AM a scientist, a chemist." (Daisy, 44)

What themes emerge throughout Daisy's contributions to the online discussion that indicate that she was, in fact, calling from a wholly other place? First there is the difference in overall preoccupations. While Emma's talk shows a concern with peoples and cultures, Daisy's exhibits a *preoccupation with abstract constructs, theory & evidence.* She concerns herself with amounts (4), arguments (4, 44), evidence (32, 36, 38, 41, 44, 56) experiments (41), issues (7, 10, 14) and theories (41). Excluding the joint statement (where Emma presents Daisy's argument rather than her own[5]), Daisy's turns contain

[5] In the joint statement, Emma parrots her partner's position (46, 48, 52, 55) despite the fact that it is in direct contradiction to the views she espouses throughout the rest of the conversation and in both her pretest and posttest essay. Author of their shared product, she transforms the difference between her perspective and her partner's into a nothing more than a difference in opinion regarding *location* – an issue that, for Emma, is not that important in the first place (55). Note however, that the criteria for belief selection is still direct, personal experience: "We believe that if it is to be used in science classes that there needs to be a way to experiment to back up the assertions made by creationism. If we cannot recreate the

nearly twice as many references to abstract entities than do Emma's (Daisy makes 41 such references; Emma makes 22). In stark contrast to Emma, Daisy construes people as populations with measurable characteristics: she references an "increasing about of diversity in the cultural and religious beliefs of Americans" (4) using a clausal structure analogous to "the path of agricultural chemicals in soil and water" (64). Whether populations or substances, the most salient feature for Daisy appears to be its measurable trajectory of change over time.

Throughout the entire conversation, Daisy displays an orientation to and interest in *delineating what does and does not count as "science."* For Emma, science is one view among many; for Daisy, a scientific theory is something ontologically different than an everyday belief. From Daisy's perspective, a scientific theory is something tightly coupled with "evidence" (36) – if there is no evidence, then the theory is not scientific (36, 38); if the evidence is not experimental or cannot be repeated, then the theory, again, is not scientific (36, 38); if the evidence changes, then the theory changes accordingly (56). Creationism, therefore, is definitively not science – it is not tightly coupled with evidence (44, 56). Rather, it is a "story" (56).

While the structure and content of Emma's talk foregrounds the "*who* that's speaking" behind the "*what* that's said," Daisy overwhelmingly disregards the speaker and attends only to the claims. Her talk is saturated with *ideational statements of "fact."* Over the course of the conversation, she makes unmitigated claims and assessments about nearly every topic of conversation, including other people and populations (4, 27), what the pro/con article states (4, 44, 56), what should and should not be taught in science class (10, 20), what science is (36) and is not (38), whether or not the pro/con article was convincing (44), how theories change (41), the status of their discussion (23),

---

evidence to support creationism, then it should not be taught in the science classroom, but in a world religions classroom" (55). Emma acquiesces that beliefs appropriate to a science classroom are the kind of beliefs that can be supported by evidence; however, for Emma, this seems to mean that there must be a way to directly run experiments that would support the creationist claim. If the supporting evidence cannot be recreated - directly experienced, presumably - by the students, then the theory is simply relegated to a different classroom.

and even what the topic of conversation is in the first place (7, 10, 14). In fact, the only time Daisy uses the interpersonal metaphor of modality "I think" (Martin, Matthiessen, & Painter, 1997) is in reference to the joint statement and whether they have completed the activity (47, 54, 58, 62), *not* in reference to her own claims about the world. In effect, Daisy's assessment of aspects of the here-and-now activity may be mitigated but her statements about the world are not.

Finally, there is the issue of Emma's exploitation of narrative knowledge and personal experience and Daisy's *dismissal of it*. For Daisy, who espouses the scientific model (44), Emma's narrative knowledge is of no import. Throughout the interaction, Daisy does more than simply reject such anecdotes; she fails to even register them and shifts the discussion elsewhere by initiating a new topic or resurrecting a previous one (4,17, 20). The following examples illustrate this lack of uptake of Emma's presentations of supporting anecdotes:

3 Emma	I went to catholic high school so we were taught both. In biology class we learned evolution, and then in religion class we were taught creationism...
4 Daisy	After reading the pro article, I had several concerns about the argument for including creationism in the science classroom. One was the statement that the majority of Americans are Christian. There is an increasing amount of diversity in the cultural and religious beliefs of Americans.
...	....
16 Emma	We also learned about creationism in science class
17 Daisy	Basically, what I'm saying is I don't believe that creationism belongs

Only when Emma enlists a narrative they have in common (26, 28, 30) does Daisy use narration as well. Elaborating on Emma, Daisy relates additional details of the "founding of America" tale that contradict the claim Emma intended the story to justify (27). This shift is occasioned by the recognition of a perceived contradiction (omission) in Emma's narrative. The need to highlight this contradiction requires Daisy to temporarily appropriate Emma's narrative style. However, Daisy then quickly shifts

back to her former focus on ideational statement of facts, stating that she "just" wants to know why creationism should be included in science (31). After leveraging narrative against her partner, Daisy insists that she only wants to discuss argumentation and proof (31, 32). Her demand for evidence (32) forces the conversation back to the issue of whether creationism is, indeed, a science — a topic of great import to Daisy but not her coparticipant. Emma's narrative is interrupted again and again with demands for evidence (36, 38) that challenge its legitimacy by commanding that they be subject to (a different order of) argumentation or proof. Such demands are part and parcel to Daisy's field of knowledge: Emma's argument "from personal experience" (40) is construed as nothing more than testimonial, a case of one.

The patterns that emerge throughout Daisy's talk - her preoccupation with abstract constructs, theory & evidence; her interest in delineating what does and does not count as "science"; the saturation of her talk with ideational statements of "fact"; her dismissal of narrative knowledge and personal experience in place of evidence and proof - signal Daisy's affiliation with the scientific paradigm (albeit a rather pre-Kuhnian one). Like Emma, Daisy does more than explicitly point out her field of study (44); the very arguments (and counterarguments) she proffers are field dependent (Toulmin, 1958), both reflecting and evoking her particular discipline.

Limits of Field Dependence as an Explanatory Device

> *"The main difference between scientific knowledge and narrative knowledge is that scientific knowledge requires that one language game, denotation, be retained and all others be excluded. Both science and non-scientific (narrative) knowledge are equally necessary. Both are composed of sets of statements; the statements are 'moves' made by the players within the framework of generally applicable rules. These rules are specific to each particular kind of knowledge, and the 'moves' judged to be good in one cannot be the same as those judged 'good' in another (unless it happens that way by chance). It is therefore impossible to judge the existence or validity of narrative knowledge on the basis of scientific knowledge or vice versa: the relevant criteria are different."* (Sarup on Lyotard, 1993, p.136)

Throughout their discussion, Daisy and Emma make relevant two very different fields of knowledge. While Emma's talk conveys an alignment and affiliation with anthropology, Daisy's talk conveys an alignment and affiliation with science. While one participant construes the issue in terms of social groups and the function of the institution of school in providing students a "rounded education" (2), the other participant construes the issue as one about "should" or "should not" be taught in science class (10), where abstractions (amounts, evidence, information, issues, and theories) take center stage. Whereas one formulates the problem in terms of the historical and cultural processes underlying "the foundations for the educational system, and the information that kids are to learn in schools" (30), the other formulates the problem in terms of what does and does not legitimately fall under the rubric of science based on "convincing argument" and "evidence" (44). While the former participant constructs her argument out of culturally bracketed, mitigated, and qualified claims supported by narrative knowledge and personal experience (3, 16, 66), the latter participant constructs her argument out of unmitigated, ideational statements of fact shored up by general definitions of science (36, 38) and demands for evidence (32). This discrepancy contributes to their failure to negotiate: they have discrepant fields, hence orthogonal arguments.

But does the notion of "field dependence" explain the failure of this discussion? Not entirely. The conspicuous discrepancy between Emma and Daisy's fields of study seriously challenged their ability to negotiate (not surprisingly, given the research on interdisciplinary collaboration, e.g. Derry, DuRussel & O'Donnell, 1997; Golde & Gallagher, 1999; Metz, 2001; Naiman, 1999; Wear, 1999), yet the discussion of other pairs with discrepant fields were a *success*. For example, a different pair of individuals in our study who came from discrepant fields (medicine and education) and who explicitly stated during their interaction that their respective positions on the issue was due to their particular disciplines seemed to engender *improvement* in one another's arguments rather than decline. In contrast to Daisy and Emma, both participants in this discussion fleshed out their arguments using claims that arose during their interaction, streamlined

their posttest essays by dropping nonfunctional arguments that were discussed, and gravitated *toward* one another on the issue of creationism in the classroom rather than away. In this contrasting case, discussion with someone from a different field prompted not only better argument but genuine belief revision as well. It would seem, then, that "field dependence" cannot entirely account for why the discussion analyzed in this case study transpired in the particularly unproductive manner it did.

Argumentation is Socially Situated

> *"An oral or written 'utterance' has meaning, then, only if and when it communicates a who and a what (Weider and Pratt, 1990a). What I mean by a 'who' is a socially-situated identity, the 'kind of person' one is seeking to be and enact here and now. ...What I mean by a 'what' is a socially-situated activity that the utterance helps to constitute." (Gee, 1999, p. 13).*

Language is not only an information medium; it is the means by which we construct our situated identities and act upon the world. The very act of interacting with another entails crafting "our oral and written utterances to have patterns in them in virtue of which interpreters can attribute situated identities and specific activities to us" (Gee, 1999, p. 29). No utterance escapes it, not even the kind of ostensibly rational dialogue we call argumentation.

To what extent, then, does the social *activity* that an individual engages in *with and through* her utterances shape the trajectory and outcome of the argument itself? How might the alignment or misalignment of the activities of interlocutors in social debate impact what transpires? Through the course of the conversation examined in this case study, we find two individuals engaged in discussion but "doing" two very different activities. Each participant received the same instructions – "Review the issue in depth, share your ideas with one another, and develop some joint statement on the topic" – yet the means each individual used to accomplish the assigned task were at odds. Close examination of the form and content of each participant's talk reveals two conflicting constructions of what "doing discussion" entails. For Emma, discussion entails establishing interpersonal subjectivity; for Daisy, discussion is an opportunity

for intellectual one-upmanship and knowledge display. Their respective activities and the misalignment they engender respectively shape the individual argument each voices and the social argumentation that unfolds over the course of their talk.

Emma: Establishing Interpersonal Subjectivity

"...I understand" (Emma, 24)

For Emma, discussion entails establishing interpersonal subjectivity. Close analysis of her talk indicates that, throughout the interaction, Emma crafts her utterances to build rapport, constitute herself and her partner as a shared collectivity, and foreground a cognizance of audience and interaction. This emphasis on interpersonal relationship building is accomplished through the fine details of how her contributions to the interaction are designed: characteristics of her talk such as vernacular style, deixis, interpersonal metaphors of modality, frequent requests for engagement, and dialogic textual themes lend Emma's talk a pervasive interpersonal motif. The net effect is an impression of a speaker focused on the *dialogic* aspect of argumentation rather than on information transmission.

First, Emma's realizes her claims in a *vernacular style*, evidenced by her choice of informal vocabulary, right dislocation, and the relatively rare use of complex nominal groups. For example, consider the following illustrative turn (emphasis added):

> 2 Emma I think in order for **kids** to get a **rounded education** they need to get more than one **view on how humans were created.**

Students are "kids," educating for diversity is "a rounded education," and theories of human origins are "views on how humans are created." Such informal language permeates Emma's turns throughout the conversation. She abbreviates titles and terms (18, 66, 26, 37) and refers to theories as "perspectives" (12, 28) or "views" (2, 19, 35, 39) that are "ok" (5, 21, 52) if they provide an individual a way to "make sense" (18, 40) of their world. Creationism, she argues should be "thrown out there" (19) since evidence supporting it is "out there" (42) as well. Such informalities give her speech the feeling of

casual, personal conversation directed toward an equal peer. Combined with her use of right dislocations ("beliefs what you believe," 13) and the overall paucity of complex nominal groups throughout her utterances, these stylistic features lend her talk an informal quality that marks her speech as vernacular, a style often used to establish solidarity (Labov, 1972).

This interpersonal motif is also realized though Emma's *foregrounded use of deixis* with several exophoric references to the interlocutors (I, you, we) and anaphoric references to the immediately preceding texts (it, this, that, these, they), which lends her text a more concrete, mundane, and informal quality. She uses the pronoun "we" to designate herself and her partner, marking the joint statement task as a shared one – one that "we have to come up" (43), in which "we could say" (46) – and the statement they eventually generate as collectively owned – one in which "we both agree...we disagree...we believe" (55). Through such devices, Emma represents herself and her partner as constituting a shared collectivity with one mutual goal and one mutual achievement, highlighting her effort to build and maintain a shared interpersonal space.

Emma's turns are also marked by the *interpersonal metaphor of modality* (Martin, Matthiessen, & Painter, 1997) "I think," as shown in the example (2) above. Emma's consistent use of this device throughout the conversation accomplishes two functions simultaneously: On the one hand, it enables her to frame her claims about the world as cognitive assertions rather than statements of fact, an aspect of her talk discussed previously. At the same time, however, it lends her talk a kind of dialogic quality, highlighting her own cognizance of audience, self, and interaction. The exceptions to this pattern are revealing: Claims *not* marked as such are overwhelming (a) claims about her own experience (3, 21) or intentions (39, 12) - subjects to which she alone is privy, or (b) requests to her partner for engagement - utterances that are thoroughly dialogic and for which this device is grammatically inappropriate. The overall pattern that emerges throughout Emma's talk is dialogic rather than oratory, interaction rather than transmission.

Frequent requests to her partner for engagement also contribute to the interpersonal

motif emergent in Emma's utterances. Throughout the interaction, Emma addresses her partner three times more often than her partner addresses her in return (Emma addresses Daisy 21 times, Daisy addresses Emma only 7 times). This pattern is established from the very beginning of the conversation when Emma queries Daisy for her opinion before voicing her own (1). Again and again, she invites her partner to consider something (26, 37), solicits her opinion (43) and requests her input (53). She asks for feedback on both the joint statement (46, 52, 55) and the status of the task (61) and, once their goal is accomplished, she uses this querying strategy to initiate social talk (63). She approves (49, 51), apologizes (53), assists (35), and takes the blame (66). As such, Emma's turns are saturated with displays of consideration of and interest in her partner's views and everyday life.

Emma attempts to build rapport through the use of *dialogic textual themes* that scaffold her talk as rejoinder: "well" (1), "oh, whoops" (11), "Yeah, what you said" (49). She also structures her own clauses a manner parallel to Daisy's previous ones, effectively connecting her own talk to her partner's previous contributions. For example, her qualification "Acknowledging that there is growing diversity in religion" (22) in the middle of the conversation connects back to Daisy's early assertion "there is an increasing amount of diversity in the cultural and religious beliefs of Americans" (4). Again, her statement "I realize that you need to have repeatable evidence" (40) toward the latter part of the conversation connects back to Daisy's just prior phrase "If there is no repeatable evidence" (38). Through such forms, Emma's talk foregrounds the perspectival and dialogic nature of the interaction and thereby also contributes to the overall interpersonal motif.

Moreover, Emma makes explicit bids to establish a common frame of reference by *referencing their shared experience*. Using an educational psychology course (39) in which they are both enrolled as support for the argument that teaching different theories within the same course is sensible, Emma appeals to their shared experience in order to substantiate her own perspective (37, 39). In a reciprocal manner, she connects her partner's claims to her own personal experience, stating for example, "I can see what

you are saying, because I did..." (21). In this way, Emma not only supports her claims with familiar examples taken from her and her coparticipant's life but also tacitly points to their common ground. Again, we see the active construction of interpersonal space.

What other discourse patterns support this claim that Emma's primary activity is establishing interpersonal subjectivity? Emma's use of marked topical themes appears to be another case in point: By framing her counterarguments with reference to the previously read article, Emma *displaces her disagreement with Daisy to the pro/con text.* For example, Emma's first contestation of one of Daisy's claims is prefaced with "in the con article" (5), thereby attributing the disagreement she voices to the article rather than to herself (emphasis added):

4 Daisy	**After reading the pro article, I had several concerns** about the argument for including creationism in the science classroom. One was the statement that the majority of Americans are Christian. There is an increasing amount of diversity in the cultural and religious beliefs of Americans.
5 Emma	**I do agree with what you are saying,** but **in the con article they said** it was not it is ok to believe in creationism, but it is not an acceptable belief for science...

The construction of Emma's turn echoes Daisy's previous one; however, the attributional structure is inverted: whereas Daisy cites the article but "owns" the claim, Emma "owns" the agreement but attributes the counterclaim to the text. In this manner, Emma locates the disagreement *outside* their interaction (i.e., in the text they read) rather than *within* it, the upshot of which seems to be that "others are disagreeing, but not necessarily us." Given the interpersonal motif emergent throughout her talk, this strategy may serve as a way to disagree with Daisy without being disagreeable.

If this analysis is correct and Emma is indeed engaged in the activity of building interpersonal subjectivity, then what bearing might this have on her contributions to the debate? How might "doing building interpersonal subjectivity" impact argumentation? Important characteristics of how Emma engages in argumentation align with this goal of building rapport.

First, there is an overwhelming sense in which Emma *displays her line of reasoning* to her partner. She uses continuatives to connect her statements internally as she expands on her reasoning for her claims and alternations to build connected series of claims. For example, consider the following turns (emphasis added):

26 Emma	If you think about it, the people that came to America and set up the united states were hardcore Christians. The majority of the info taught in the schools…
…	…
28 Emma	is from the white American perspective, **and** in general most white Americans are Christian, **or at least** come from some Christian background

Through such chains of claims, Emma engages her partner in her thinking process, inviting her to participate in the line of reasoning she describes (e.g., "If you think about it," 26).

In addition, Emma *situates her claims within a framework of competing ones* and, within that framework, *accounts for her own*. She positions her own perspective within the context of other people's perspectives by co-locating her "I" with "you" and "they." This pattern, established in her opening line of the conversation (1), draws connections between her views and the views of others. Coupled with connectives such as "Like I said at the beginning" (12) and "I said before that" (33), this evoked framework of claims displays consideration of other people's viewpoints while at the same time holding herself accountable for her own (cf. Resnick, 1999).

Moreover, Emma *owns the alternative before contesting it*. Throughout the conversation, she prefaces disagreement with her partner with statements of agreement (5, 30) or understanding (11, 24); for example, "I do agree with what you are saying, but in the con article they said…" (5), or "I understand what you are saying, but I think" (24). As illustrated in these examples, the contrasts Emma builds throughout the conversation using the conjunction "but" are of a very particular type – they are contrasts drawn between two claims she herself voices rather than oppositions between

herself and her coparticipant. Such constructions lend her talk the quality of opposing two ideas rather than opposing her partner (e.g., "True... but then again..." 57 & 59).

In the latter part of the conversation, Emma *uses conditionals to construct a compromise*, transforming Daisy's contentions into a qualification on her own proposal, effectively finding a way to reach consensus. She presents this compromise as their final joint statement on the topic: "We believe that if it [creationism] is to be used in science classes that there needs to be a way to experiment to back up the assertions made by creationism. If we cannot recreate the evidence to support creationism, then it should not be taught in the science classroom, but in a world religions classroom." (55).

These features of Emma's argumentative strategies - displaying of her line of reasoning; situating claims within a framework of competing ones and, within that framework, accounts for her own; owning the alternative before contesting it; using conditionals to construct a compromise - both reflect and contribute to her activity of building interpersonal subjectivity. In light of the of the assignment (i.e. to construct a joint statement) and the fact that she and her partner are on opposite sides of the fence, Emm'a goal could be quite effective. Sufficient interpersonal subjectivity might well serve as a solid foundation upon which Emma might persuade her partner to reconsider the issue from their now- partially- shared perspective or, at minimum, to treat her contrary perspective as important enough to address via counterargument. In this light, the overall activity and argumentative strategies Emma uses seem not only reasonable but indeed quite ingenious. That her goal is thwarted and the joint statement ends up reflecting little of Emma's own argument appears due to Daisy's opposing objective.

Daisy: Intellectual One-Upmanship & Knowledge Display

"Not a very convincing argument!" (Daisy, 44)

If Emma's main activity is establishing interpersonal subjectivity, what is Daisy's main activity? How might the patterns that emerge in Daisy's turns be at odds with the patterns found in Emma's? In contrast to the interpersonal motif replete in Emma's talk, the main *motif organizing Daisy's talk is ideational and authoritarian.* Daisy is

preoccupied with ideas rather than the interpersonal relationship and her use of language effectively positions her as the local authority on each topic raised. In order to accomplish this, she uses a range of linguistic resources markedly different from Emma's: formal style, limited and self-referencing deixis, and contentious and condescending textual themes rather than dialogic ones.

First, Daisy realizes her claims in a *formal style*, evidenced by her choice of formal vocabulary, clausal embedding, compound predicates, and the frequent use of complex nominal groups. For example, consider the following turn (emphasis added):

> 4 Daisy After reading the pro article, I had several **concerns** about the **argument** for including creationism in the science classroom. One was the **statement** that the **majority of Americans** are Christian. There is an **increasing amount** of diversity in the **cultural and religious beliefs** of Americans.

In contrast to Emma, Daisy uses formal vocabulary throughout the conversation to denote abstract entities, populations, and acts. From the very beginning of the conversation, Daisy displays a "concern" with "arguments" and "statements." While Emma speaks of "hardcore Christians" (26) and "crazy Christian fundamentalists" (29), Daisy speaks of "the majority of Americans" and their "cultural and religious beliefs." Her speech is populated with "increasing amounts" (4) and "fundamental aspects" (36), "science" (36, 38), types of scientists (44, 54), "labs" (64), and institutions (64). A sundry assortment of references to "evidence" inundates her talk: "scientific evidence" (32), "experimental evidence" (36, 41), "repeatable evidence" (38), "new evidence" (56), and just plain "evidence" (44). The overall pattern that emerges sharply contrasts Emma's vernacular style. Together, these formal (scientific) terms lend Daisy's speech a kind of authoritarian voice and effectively construct some degree of status difference between herself and her interlocutor Emma (Labov, 1972).

This formal, authoritarian style is augmented by complex syntactic structures and formal grammatical features reminiscent of academic language, including clausal embedding, compound predicates, and frequent complex nominal groups. If we return

to the example (4) above, we find not only formal vocabulary but also formal structure: clausal embedding through the structural conjunction "that." Daisy uses such embedding throughout her turns to construct a theoretical critique of her partner's position and points. Combined with frequent compound predicates (e.g., "The pro statement said that there was evidence, but makes no mention of what that evidence might be," 44), complex nominal groups (e.g., "Something that I thought was a very important point that the con article brought out was..." 56), and frequent nominalizations (e.g., "no mention," 44) and abstract nouns (e.g., "fundamental aspect," 36), such structures lends Daisy's talk an abstract, formal quality reminiscent of theoretical critique.

This ideational and authoritarian motif is also manifested in Daisy's *limited and self-referencing diexis*. While Emma's talk is replete with deitic references, Daisy use of dietics is quite sparse. Of those that do occur, the anaphoric references (it, this, that, these, they) point back to her own preceding talk (4, 14, 23) rather than her partner's (or even the pro/con article previously read) and the exophoric references (I, you, we) are overwhelmingly "I" (e.g., 23, 33). While Emma represents herself and her partner as constituting one entity with one shared goal through her use of the pronoun "we," Daisy constructs and maintains separation by avoiding representation of herself as a group member and mitigating her use of "we." Except where revoicing one of Emma's preceding phrases in order to transform it into a challenge (25), Daisy's "we" is quickly mitigated by a succeeding "I" versus "you." For example, when referring to the joint statement, Daisy's "we both agree" is immediately repealed with "I would say" (47, emphasis added):

> 47 Daisy I think that a joint statement might be that we both agree that creationism should be taught in schools. **I would say** that all students should take a world religions class, and learn the various creation views as part of that class.

For Daisy, the joint statement is about what she "would say" (47) versus what "you want...to say" (50). Daisy's use of such rhetorical devices throughout the interaction enacts and maintains a social distance between herself and her interlocutor.

Daisy also uses *very few interpersonal themes*, which lends her statements an impersonal information-transmission character. When Daisy does address her discussion partner, it is primarily to *challenge*: "do you realize," (23), "what do you mean" (25), "I would just like to know why you think" (31), "can you come up with any scientific evidence" (32). Throughout the discussion, the only time Daisy asks Emma for input (50) or displays sanctions something she has said (58) is *after* Emma crafts a joint statement that recapitulates what Daisy has argued. At no other point in the conversation does Daisy solicit, acknowledge, or accept Emma's claims. Rather than inviting and legitimating her partner's viewpoints, Daisy challenges and rejects them.

Moreover, Daisy's *textual themes appear contentious and condescending rather than dialogic*. Very few textual themes (continuatives) link her turns to her partners. When such links are made, they mark direct opposition (e.g., "*But* the issue is not should creationism be taught in school, it's should it be taught in science classrooms," 14, emphasis added) or seem surprisingly condescending and contentious. An instance of this latter type of theme occurs when Emma implicitly challenges (15-16) the importance of one of Daisy's central claims (14). Rather than addressing the implied challenge outright, Daisy presumes comprehension failure on Emma's part by "translating" what she is saying into "plain English" in order for Emma to understand (14-17, emphasis added):

14 Daisy	But the issue is not should creationism be taught in school, it's should it be taught in science classrooms...
15 Emma	Isn't that what I am talking about?
16 Emma	We also learned about creationism in science class
17 Daisy	**Basically, what I'm saying is** I don't believe that creationism belongs

This same presumption (i.e. that Emma just "isn't getting it") is displayed again moments later in the conversation when Daisy "spells out" for Emma the status of their

(dis)agreement: "*Do you realize that* we are not disagreeing?" (23). The net effect of such themes in an overall forefronting of the disagreement between the individuals and the impression that Daisy assumes the role of the local authority on not only "the issue" (14) but even the status of their interaction itself.

Another indication that the main motif of Daisy's utterances is ideational, confrontational, and authoritarian also functions as a subtle and rather effective argumentative strategy: converting evidence for the opposing position into evidence for your own. When Emma leverages their shared experience in an Educational Psychology class as support for the claim that teaching different theories within the same course is valid (39), Daisy *repurposes the anecdote as justification of her own position* (37-41, emphasis added):

37 Emma	Think of an **Ed Psych class**, they give us many different theories and some you may believe, and others you may not...
...	... ...
39 Emma	The point is the profs. put them out there to give us **a whole view of all of** the issues **involved** with the topic.
41 Daisy	In the **Ed Psych class**, **all of** the **views** given were backed up by experimental evidence. As people do more experiments, theories change

In terms of Daisy's overall activity, what is most notable is the way her reappropriation of Emma's anecdote is formulated. Daisy uptakes Emma's phrases "an Ed Psych class" (37) and "a whole view" (39) and converts them into topical themes, thereby crafting her response as in direct competition with Emma's: the object being assessed is precisely the same but the assessment itself is contrary. Thus, if Emma's reference to this shared experience functions on two levels – as both support for her claim and a covert bid to establish some common frame of reference – then Daisy's repurposing of this anecdote does more than forward her own ideational agenda. It rejects Emma's bid to establish this common frame of reference by making clear that, though the experience might be shared, the interpretation of that experience is not.

Finally, while Emma displaces her disagreement with Daisy to the pro/con text, Daisy appears to *pursue disagreement outright*, taking up topics Emma initiates in a volley like fashion, lobbing the raised issues back at her partner. For example, consider the following response (26 -27, emphasis added).

26 Emma	If you think about it, the **people** that **came** to **America** and **set up** the **united** states were hardcore Christians. The majority of the info taught in the schools..
27 Daisy	**The people who started this country** came over partly to escape religious persecution, and wanted a separation of church and state

As illustrated in this example, new claims introduced by Emma are made Daisy's the point of departure in such a way that Emma's assertions are constantly repredicated in Daisy's reply. The result is a kind of "topic chase" style of interacting that, over several turns, begins to seem antagonistic if not aggressive.

Together these stylistic features indicate that Daisy's general activity is indeed a kind of intellectual one-upmanship and knowledge display. Through consistent use of formal vocabulary and grammatical style, limited and self-referencing deixis and mitigated use of "we," frequent overt challenges, contentious and condescending textual themes, tacit rejection of Emma's bid to establish some common experiential ground, and unshrouded pursuit of disagreement, the pattern emergent in Daisy contributions to the interaction appears in stark contrast to Emma's interpersonal (and rather indulgent) motif. How might Daisy's contrary activity differentially bear on her contributions to the debate? How does Daisy's argumentation contrast Emma's in ways that implicate her particular social activity?

First, in contrast to Emma, we see *little explicit movement of reasoning* within Daisy's own turns. While Emma uses continuatives throughout the conversation in order to trace her line of reasoning and thereby engage her partner in her thinking process, Daisy turns are more or less a series of ideational statements with no rhetorical connections drawn between. Her utterances are not crafted to scaffold Emma through

the argument. In fact, only once toward the very end of the interaction does Daisy provide her audience such assistance (56, emphasis added):

> 56 Daisy Something that I thought was a very important point that the con article brought out was that scientific views are always changing as new evidence comes about, **whereas** creation stories never change with new evidence.

This instance, however, occurs *after* Emma has presented a joint statement that effectively repeats back Daisy's position. This is curious given that tracing one's line of thought via rhetorically linked claims would seem to be a fairly important strategy for convincing one's audience - by the time Daisy engages in it, Emma has already acquiesced.

Second, while Emma situates her claims within a framework of competing ones and, within that framework, accounts for her own, Daisy appears to *holds Emma accountable but not herself.* Daisy repeatedly challenges Emma's statements via repredications of Emma's just prior subjects or questions constructed as verbatim repetition of Emma's prior rheme (foregrounded information) as illustrated below (22-25, emphasis added).

> 22 Emma I think in America though, acknowledging that there is growing diversity in religion, **the majority of everything that we learn is based on**...
>
> 23 Daisy Do you realize that we are not disagreeing? I'm NOT saying that creationism shouldn't be taught, I'm saying that it shouldn't be taught in the SCIENCE classroom
>
> 24 Emma **Judeo-Christian beliefs**. I understand what you are saying, but I think that it should be in the SCIENCE classroom as an alternative to evolution.
>
> 25 Daisy What do you mean that **the majority of everything we learn is based on Judeo-Christian beliefs**?

Daisy queries and challenges most of Emma's claims, but at no point does she voluntarily expand on or elaborate prior claims of her own. When Emma does query or challenge them - for example, in turn 24 above - Daisy often responds with

counterchallenges rather than answers (25). She formulates the "issue" again and again (7, 10, 14) as well as her position on it (10, 17, 20, 23), but does not justify either in response to Emma's queries (8, 15-16). Given the importance of situating one's claims in a framework of competing ones (Kuhn, Shaw, & Felton, 1997) and the central role of counterargument in cognitive development and belief change (Leitao, 2000), Daisy's disregard of Emma's challenges and counterarguments is unfortunate.

Moreover, Daisy *positions herself as the local authority.* While Emma identifies herself student (3, 16, 18, 21, 37, 39), Daisy identifies herself as "teacher" (64, 65). While Emma frames her claims with interpersonal metaphors of modality (1, 2, 6, 18, 22, 24, 33, 40, 51), Daisy chooses modifiers that imply that she must "translate" statements she has made into 'plain English' in order for her partner to understand (17, 31). She represents herself as one who knows what the "important points" are (56) and what the status of their negotiation is (23) and, therefore, can reveal it to her partner. She presents herself as someone who can say "all students should take" (turn 47), who can make the final evaluation on the joint statement (54), who can decide when their task is complete (62). Where Emma does not to take an authoritarian stance on the discussion topic, Daisy does: "I am not a scientist...but..." (Emma, 40); "I AM..." (Daisy, 44).

Finally, while Emma uses conditionals ("if") to effect a compromise, Daisy *uses conditionals to rule out her partner's alternative claim.* In response to Emma's example of a course in which alternative theories are presented, Daisy states, "If there is no repeatable evidence, then it's not really science" (38, emphasis added). Where Emma constitutes the issue as one about competing theories, Daisy construes the issue as one of what does and does not qualify as science. Thus, while Emma uses conditionals to transform Daisy's position into a qualification on her own proposal and thereby reach consensus, Daisy uses the very same device for excluding the position Emma presents.

Examination of the collocational grammatical patterns of each participant's talk reveals how the activities of the two participants conflict. Where one uses the vernacular style of two peers talking, the other uses a formal style reminiscent of theoretical critique. Where one represents herself and her coparticipant as a "we" with

one mutual goal, the other maintains social distance and mitigates that "we" with a "you" versus "I." Where one requests engagement, the other pursues disagreement outright. In virtue of these two opposing patterns we recognize two likewise opposing situated social activities: *establishing interpersonal subjectivity* versus *intellectual one-upmanship and knowledge display.*

These two distinct social activities shape the very arguments (and counterarguments) each participant constructs and, as such, the conflict between those activities manifests as an incongruity in their rhetorical strategies. While the first participant displays her line of reasoning to her partner, the second participant does not. While the first situates her claims within a framework of competing ones and, within that framework, accounts for her own, the second holds her coparticipant accountable but not herself. While the first owns the alternative before contesting it, thereby opposing two ideas rather than opposing her partner, the second positions herself as the local authority on each issue. While the first uses conditionals ("if") to effect a compromise, the second uses conditionals to rule out her partner's claims. Thus, their contradictory activities result in contradictory forms of argument, or, more precisely, *because the activity and argument of each participant are mutually constitutive, misalignment in one is essentially misalignment in the other.*

Conclusions

Argumentation is not just field dependent but also socially situated. Toulmin's (1958) notion of field dependence is a useful theoretical tool for enabling us to tease out how alignment and affiliation with a particular domain of knowledge shapes distinct aspects of how one *construes the issue* (an issue of social groups and the functions institutions should serve them or one of what should or shouldn't be taught in science courses?), *formulates the problem* (a problem of alignment between the historical and present day origins of curricula content, or one of what does and does not legitimately fall under the rubric of science based on evidence?), and therefore *constructs one's argument* (composed of culturally bracketed and qualified claims supported by narrative knowledge and

personal anecdote, or ideational statements of fact shored up by general definitions demands for evidence?). However, as hopefully demonstrated in this case study, field-dependence does not sufficiently account for the variations in how people construct an argument via interaction with a peer. Arguments and the strategies that generate them are equally contingent on the situated social activity of those engaged in the discussion. As such, our research on argumentative reasoning ought to better account for how the argument an individual produces is an outcome of not only the *field of knowledge* that individual makes relevant but also *the socially situated activity* it reflects and helps constitute.

References

Belluck P. (1999, August 12). Board for Kansas deletes evolution from curriculum. The New York Times.

Carver, R. (1988). Where I'm calling from. New York: The Atlantic Monthly Press.

Darwin, C. (1859) On the origin of species by means of natural selection, or the preservation of favoured races in the struggle for life. Chicago : W. B. Conkey.

Derry, S. DuRussel, L. A., & O'Donnell, A. M. (1997). Individual and distributed cognitions in interdisciplinary teamwork: A developing case study and emerging theory. (Research monograph No. 7). Madison, WI: National Institute for Science Education, University of Wisconsin-Madison.

Foucault, M. (1980). Power/Knowledge: Selected interviews and other writings 1972-1977. C. Gordon (Ed.). Brighton: Harvester Press.

Fountain, J. W. (2001, February 15). Kansas puts evolution back into public schools. The New York Times.

Gee, J. P. (1999). An introduction to discourse analysis: Theory and method. London: Routledge.

Geertz, C. (1983). Local knowledge: Further essays in interpretive anthropology. New York: Basic Books.

Golde, C. M., & Gallagher, H. A. (1999). The challenges of conducting interdisciplinary research in traditional doctoral programs. Ecosystems, 2, 281-285.

Knorr-Cetina, K. (1999). Epistemic cultures: How the sciences make knowledge. Cambridge, MA: Harvard University Press.

Kuhn, D. (1991). The skills of argument. Cambridge: Cambridge University Press.

Kuhn, D. (1992). Thinking as argument. Harvard Educational Review, 62(2), 155-178.

Kuhn, D., Shaw, V., & Felton, M. (1997). Effects of dyadic interaction on argumentative reasoning. Cognition and Instruction, 15(3), 287-315.

Labov, W. (1972). Sociolinguistic patterns. Philadelphia: University of Pennsylvania Press.

Leitao, S. (2000). The potential of argument in knowledge building. Human Development, 43(6), 332-360.

Malinowski, B. (1961). Argonauts of the western pacific. New York: Dutton.

Martin, J. R., Matthiessen, C. M. I. M., & Painter, C. (1997). Working with functional grammar. London: Hodder.

Metz, M. H. (2001). Intellectual border crossing in graduate education: A report from the field. Educational Researcher, 30(5), 12-18.

Naiman, R. J. (1999). A perspective on interdisciplinary science. Ecosystems, 2, 292-295.

Ortner, S. B. (1984). Theory in anthropology since the sixties. Comparative Study of Society and History, 26(1), 126-166.

Resnick, L. B. (1999). Making America smarter: A century's assumptions about innate ability give way to a belief in the power of effort. Education Week, 18(40), 38-40

Sarup, M. (1993). An introductory guide to poststructuralism and postmodernism (2nd ed.). Athens GA: The University of Georgia Press.

Steinkuehler, C. A., Derry, S. J., & Levin, J. R. (2002). Argumentative reasoning in online discussions. Submitted manuscript.

Toulmin, S. E. (1958). The uses of argument. Cambridge: Cambridge University Press.

Wallace, A. R. (1858). On the Tendency of Varieties to Depart Indefinitely From the Original Type. Proceedings of the Linnean Society of London, Vol. 3, (pp. 53-62). London: Academic Press.

Wear, D. N. (1999). Challenges to interdisciplinary discourse. Ecosystems, 2, 299-301.

Appendix

1 Emma	Well, what do you think? I think they should
2 Emma	I think in order for kids to get a rounded education they need to get more than one view on how humans were created.
3 Emma	I went to catholic high school so we were taught both. In biology class we learned evolution, and then in religion class we were taught creationism...
4 Daisy	After reading the pro article, I had several concerns about the argument for including creationism in the science classroom. One was the statement that the majority of Americans are Christian. There is an increasing amount of diversity in the cultural and religious beliefs of Americans.
5 Emma	I do agree with what you are saying, but in the con article they said it was not it is ok to believe in creationism, but it is not an acceptable belief for science...
6 Emma	I think that is contradictory
7 Daisy	The issue is should creationism be taught in science classrooms, not religion classes.
8 Emma	Why should creationism not be taught in religion classes?
9 Emma	That is what creationism is, and that is the fundamental reason that many public school educators do not want it in the science classroom.
10 Daisy	It SHOULD be taught in religion classes, NOT science classes. The issue is: should creationism be taught in SCIENCE classrooms
11 Emma	Oh, whoops, I misunderstood what you said...
12 Emma	Like I said at the beginning- it is important to be taught a variety of perspectives, and then be able to take those perspectives and decide for yourself, based on your...
13 Emma	beliefs what you believe.
14 Daisy	But the issue is not should creationism be taught in school, it's should it be taught in science classrooms...
15 Emma	Isn't that what I am talking about?
16 Emma	We also learned about creationism in science class
17 Daisy	Basically, what I'm saying is I don't believe that creationism belongs
18 Emma	I am an Anthro. major, I think that Darwin is scientific, but I think creationism is an alternative way to make sense of how humans came to be.

19 Emma	I don't think one needs to necessarily believe in creationism, but I do believe that it should be thrown out there to give another view...
20 Daisy	in the science classroom. It SHOULD be taught, but in a class about world religions
21 Emma	Ok, I can see what you are saying, because I did take a world religions class and we did learn many of the creation myths...
22 Emma	I think in America though, acknowledging that there is growing diversity in religion, the majority of everything that we learn is based on...
23 Daisy	Do you realize that we are not disagreeing? I'm NOT saying that creationism shouldn't be taught, I'm saying that it shouldn't be taught in the SCIENCE classroom
24 Emma	Judeo-Christian beliefs. I understand what you are saying, but I think that it should be in the SCIENCE classroom as an alternative to evolution.
25 Daisy	What do you mean that the majority of everything we learn is based on Judeo-Christian beliefs?
26 Emma	If you think about it, the people that came to America and set up the united states were hardcore Christians. The majority of the info taught in the schools..
27 Daisy	The people who started this country came over partly to escape religious persecution, and wanted a separation of church and state
28 Emma	is from the white American perspective, and in general most white Americans are Christian, or at least come from some Christian background
29 Emma	Please don't think I am some crazy Christian fundamentalist, because I'm not
30 Emma	You are right about the first people here, but despite that, they are the people who began the foundations for the educational system, and the information that kids are to learn in schools.
31 Daisy	I would just like to know why you think that creationism should be taught in science classes...
32 Daisy	Can you come up with any scientific evidence for creationism?
33 Emma	I said before that I think that creationism should be taught in science classrooms because it is one ALTERNATIVE to evolution. I cannot personally come up with scientific evidence because I ...
34 Emma	do not think everything has to be proven scientifically either.
35 Emma	Maybe this will help you to understand my view...

36 Daisy The fundamental aspect of science is experimental EVIDENCE...

37 Emma Think of an Ed Psych class, they give us many different theories and some you may believe, and others you may not...

38 Daisy If there is no repeatable evidence, then it's not really science.

39 Emma The point is the profs. put them out there to give us a whole view of all of the issues involved with the topic.

40 Emma Like I said I am not a scientist, and I am talking about this from my personal experience. I realize that you need to have repeatable evidence, but I think that the thermodynamics evidence makes sense from what was in the pro article

41 Daisy In the Ed Psych class, all of the views given were backed up by experimental evidence. As people do more experiments, theories change

42 Emma The pro article did say there was evidence out there, as well as experiments, maybe they need to start publishing these arguments and then creationism could become a more viable alternative to evolution in the scientific mind

43 Emma So we have to come up with a joint statement, what do you want to say?

44 Daisy I AM a scientist, a chemist. The pro statement said that there was evidence, but makes no mention of what that evidence might be. Not a very convincing argument!

45 Emma Unfortunately, many pro/con articles are like that. It was also only a paragraph long, it is hard to squash tons of support into a paragraph.

46 Emma Maybe we could say that in order to teach creationism in the science classroom, there must be some way to perform experiments to back up the assertions of creationism?

47 Daisy I think that a joint statement might be that we both agree that creationism should be taught in schools. I would say that all students should take a world religions class, and learn the various creation views as part of that class.

48 Emma and without experiments, then it should be taught in world religions...

49 Emma Yeah, what you said works...

50 Daisy So... what do you want the statement to say?

51 Emma I personally believe that world religion should be taught in all schools, regardless of being public or private... but the I think how you put it is good...

52 Emma That it should be taught, but that there needs to be evidence and ways to get that evidence, and if you can't get the evidence, then it should be left

to a world religions class, taught as part of a creations myth unit. Is that ok?

53 Emma Sorry about the horrible English....

54 Daisy I think that's fine - Are we really supposed to write up our statement?

55 Emma We both agree that creationism should be taught in schools, but we disagree as to where it should be taught. We believe that if it is to be used in science classes that there needs to be a way to experiment to back up the assertions made by creationism. If we cannot recreate the evidence to support creationism, then it should not be taught in the science classroom, but in a world religions classroom. (how about that?)

56 Daisy Something that I thought was a very important point that the con article brought out was that scientific views are always changing as new evidence comes about, whereas creation stories never change with new evidence.

57 Emma True...

58 Daisy I think your statement sounds good

59 Emma but then again evolution has not really changed since Darwin wrote his book,

60 Emma I mean the fundamentals of his theory have not really changed.

61 Emma Are we done?

62 Daisy I think so

63 Emma What part of chemistry do you study?

64 Daisy I used to work as a research chemist studying the path of agricultural chemicals in soil and water. Now I teach labs & discussions here at UW-Madison...

65 Daisy I'm thinking of teaching high school

66 Emma I am a very non-science person, but am an Anthro major, so I have learned a lot of evolution, so it is hard for me to think that you always need repeatable evidence.

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

TM033904

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: A discourse analysis of online social argumentation.	
Author(s): Steinkuehler, Constance A.	
Corporate Source: University of Wisconsin - Madison	Publication Date: AERA 4/4/02

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Level 1 ↑ ☑

Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) *and* paper copy.

The sample sticker shown below will be affixed to all Level 2A documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

Level 2A ↑ ☐

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only

The sample sticker shown below will be affixed to all Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

Level 2B ↑ ☐

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign here, → please

Signature:	Printed Name/Position/Title: Constance Steinkuehler, Researcher
Organization/Address:	Telephone: 608.265.8530 / FAX:
	E-Mail Address: steinkuehler@facstaff.wisc.edu / Date: 4/22/02

(over)

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

ERIC CLEARINGHOUSE ON ASSESSMENT AND EVALUATION
UNIVERSITY OF MARYLAND
1129 SHRIVER LAB
COLLEGE PARK, MD 20742-5701
ATTN: ACQUISITIONS

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706

Telephone: 301-552-4200
Toll Free: 800-799-3742
FAX: 301-552-4700
e-mail: ericfac@inet.ed.gov
WWW: http://ericfac.piccard.csc.com

EFF-088 (Rev. 2/2000)