



# Educational Linguistics

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## **Applied Linguistics and Theories of Language**

Educational linguistics, as a branch of applied linguistics, varies based on the theory of language and language acquisition that one holds. One crucial area where theories of language differ is in how they see the relationship between language structure and language function. Another area where they differ is how they view the relationship of areas like discourse and pragmatics to the more formal parts of linguistic theory such as the theory of syntax and logical form, and, indeed, whether they have a developed theory of discourse and pragmatics or not. And yet another crucial area where they differ is in the importance and role they assign to a biological basis for language acquisition.

Functional theories of language, such as Halliday's Systemic Functional Grammar (Halliday 1994, Martin 1992, Thompson 1996), which have informed a good deal of educational linguistics, especially outside the U.S., see a very close and direct match or fit between language structure and language function, a match that has developed through history as language is used in different cultures and different social practices (e.g., science) for different purposes. Functional theories tend to view discourse and pragmatics as the fundamental level of language, since language use (the functions of language) shape both the structure and meaning of language. Functional theories downplay the role of biology in language acquisition and tend to see all language acquisition, whether a child's first language or the child's acquisition of specialist varieties of language and literacy at school, as a process of socialization or enculturation into meaningful sociocultural practices. Acquiring a language or language practice is part and parcel of acquiring a culture or a sociocultural practice (Halliday 1993).

Generativist theories of language, such as Chomsky's various theoretical elaborations (e.g., Chomsky 1988, 1995), see no very close match between language structure and language

function, structure being relatively autonomous from the functions it is used to serve.

Generativist theories see syntax and logical form as the heart of language structure, amenable to scientific study, and see much of discourse and pragmatics as a branch of literary or social science and much less amenable to formal study. First language acquisition is heavily affected by a biological endowment for language and, thus, quite different from the later acquisition of specialist forms of language and literacy that rely much more heavily, indeed, in all likelihood, entirely on learning and overt instruction (see Gee 1994, 2004 for discussion).

Let me take one example where these differing theories have played a major role in an important educational debate. An analogy between language acquisition (a type of immersion learning) and other forms of later learning has been at the heart of many progressive pedagogies (see Cazden 1972: pp. 139-142 for early and critical discussion). Progressive pedagogies, in their late 20th century versions, at least, stressed immersion in hands-on practice in meaningful environments where oral and written language are functional for the learners. Such pedagogies downplay the role of overt instruction. Such movements as “Whole Language” (and the earlier “Language Experience” approach) and “Process Writing” are examples of progressivist pedagogies (Goodman 1986, 1993, see Edelsky 1996 for discussion).

Progressivists tend to make the following sort of argument: Children acquire their native languages not by direct instruction (indeed, overt correction seems to have little impact on them), but by being immersed in rich, meaningful, and natural communicative settings. So, by analogy, it might be argued that in other areas, outside first language acquisition, humans learn best when their learning is self-motivated and self-directed in “natural” settings and not “imposed” on them by direct instruction.

This analogy between first language acquisition and later forms of language, literacy, and

content acquisition has been attacked by a number of generative linguists who have argued that there are important aspects of first language acquisition that are not analogous to other forms of later learning (e.g., Melvold and Pesetsky 1995). One of these involves biology. The child acquiring language is confronted with lots of “data”—the language she hears everywhere around her—though, of course, this data is always a very small subset of the infinite set of sentences in any language. There are always a great many hypotheses or patterns possible about what “rules” underlie the data (i.e., what generalizations there are in the data), especially granted the creativity of the human mind and the infinity of language. Therefore, something must “constrain” the child's “search space” such that the child does not “waste” exorbitant time considering fruitless or misleading hypotheses.

Generative linguists argue that the “something” that “helps” the child out here is in her genes. While there are debates as to what and how much of language is biologically specified, few doubt that the course of human evolution has made us humans “motivated” and “good at” acquiring our first languages (Bickerton 1981; Chomsky 1988; Ellman 1991; Pinker 1994). For other sorts of learning—e.g., physics or literacy—evolution has not had enough time to build into human biology such a substantive and specific “step up”, since things like writing and physics have simply not been around long enough in human history.

The point put (too) bluntly is this: humans have an “instinct” for language and this greatly aids them in its acquisition (as certain species of birds have an instinct that helps them build their characteristic nests or sing their distinctive songs). We humans have no such instinct for acquiring any school subject like physics or literature, or for learning to read and write. As a result, there is far more variation in how people acquire these things than there is in how they acquire their first languages (the “failure rate”, for instance, is dramatically different in the two

cases).

The generative linguists' argument above about language and literacy addresses a very real problem. It, indeed, demands that progressivists develop a coherent theory of instructional guidance in the case of literacy and school subjects that can play (replace) the focusing (“scaffolding”) role that human biology plays in first language acquisition (Gee 1994).

However, some people have taken the argument further than this and argued for a great deal of lots of direct (“skill and drill”) instruction in literacy education. This, of course, does not logically follow from the argument. All that follows is the need for some theory of teaching that can make up for the role that biology plays in the case of first language acquisition.

The argument for the biological basis of language is an argument about grammar, not everything else that goes under the rubric “language”. To a generative linguist, “grammar” names the structural properties of sentences (phonological, morphological, syntactic, and logical). And it is about grammar in this sense that generative linguists make biological claims (and only grammar in this sense and, then, too, only the parts of grammar—parameters included—relevant to the basic design of all languages). Properties of meaning beyond semantics (as “type” meaning, not meaning adjusted to contexts of use) and logical form and nearly all properties of “discourse” (both in terms of how language is put to use in context and in terms of how sentences are connected together to form “texts”) do not fall under “grammatical theory” as generative linguists conceive it. But meaning and discourse are obviously crucial to later forms of language, content, and literacy learning and any recommendations we can make about teaching and learning in school (Gee 2011).

## Social Languages

Children do not just learn a “native language” at home in their early socialization in life. They learn many different varieties or styles of language at school and throughout their lives. They may learn the “languages” of school-based talk and texts, mathematics, literary criticism, law, courts, street gangs, carpentry, and many more. Today, thanks to the growth of digital media and the ever greater sophistication of popular culture, children learn new varieties of language out of school as well as in, including quite technical varieties of language such as the language of *Yu-Gi-Oh*, video-game modding and theory-crafting, and language varieties that go with many forms of media production and citizen science. I will call such varieties of language—varieties fit for given tasks and social identities “social languages” (Gee 2011, 2014—the term “registers” is sometimes used in a similar way).

All social languages (whether the language of physicists or of street gangs) involve a mapping from the lexical, morphological, grammatical, and discourse resources of the language as a whole (e.g., “English” or “Spanish”) to the distinctive grammatical and discourse features of the particular social language. This point sounds a bit arcane, so let me make it concrete with an example. Consider the following sentence (adapted from Halliday and Martin 1993):

1. Lung cancer death rates are clearly associated with an increase in smoking.

A whole bevy of linguistic features mark this sentence as part of a distinctive academic social language. Some of these are: a heavy subject (“lung cancer death rates”), deverbal nouns (“increase”, “smoking”), a complex compound noun (“lung cancer death rates”), a low transitive

relational predicate ("are associated with"), passive or passive-like voice ("are associated"), the absence of agency (no mention of who does the associating), an abstract noun ("rates"), and an assertive modifier to the verb ("clearly").

No one grammatical feature marks the social language of this sentence. Rather, all these features (and a great many more, including many discourse-level features in longer stretches of text) form a distinctive configuration—a correlation or, better, co-relation, that marks the social language. And, just like the mapping between phonemes and graphemes, this involves a form-form mapping (a mapping from formal features like de-verbal nouns, heavy subject, passive voice, etc., to distinctive configuration of features that represents the social language).

This sort of form-form mapping is no easier for learners than the phonics (letter to sound mapping) one is. In fact, it is a good deal harder. Far more people fail to acquire a distinctive type of literacy because of a failure to acquire such “higher order” form-form mappings (mappings that lead to the recognition of social languages and genres of spoken and written language) than because of failing to acquire the phonics mapping.

Formal relationships like those we discussed in regard to sentence 1 do not exist, and are not learned, outside the distinctive social practices of which they are an integral part. They are part and parcel of the very “voice” or “identity” of people who speak and write and think and act and value and live that way (for a given time and place). To learn such relationships is part of what it means to learn to recognize the very social context one is in (and helping to create). Social languages can be acquired in a variety of different ways.

For the purposes of educational linguistics, it is best not to operate at the level of whole languages, but, rather, at the level of social languages. A given social language is composed of the lexical and grammatical resources (whether in speech or writing) a recognizable group of

people uses to carry out their characteristic social practices (“functions”). Los Angeles African-American street gang members, laboratory physicists, medical doctors, successful middle school science students, and Los Angeles street policemen all have characteristic linguistic resources they use to carry out their distinctive social practices.

Distinctive social languages are constructed by social groups as tools to get special work done, whether this being playing *Yu-Gi-Oh* or doing physics. The “ways with words” of any social language are a matter of social conventions and conventions are not biologically specified but must be learned. While any social language uses the resources of a language like English or Spanish (whose core grammar may well be biologically specified), the conventions about how to use these resources for special tasks and practices are social and cultural.

Let me give an example to make matters clearer here. Biologists, and other scientists, write differently in professional journals than they do in popular science magazines. The popular science article is not merely a “translation” or “simplification” of the professional article. To see this consider the two extracts below, the first from a professional science journal, the second from a popular science magazine, both written by the same biologist on the same topic (example from Myers 1990, p. 150):

1. Experiments show that *Heliconius* butterflies are less likely to oviposit on host plants that possess eggs or egg-like structures. These egg-mimics are an unambiguous example of a plant trait evolved in response to a host-restricted group of insect herbivores.

(Professional journal)

2. *Heliconius* butterflies lay their eggs on *Passiflora* vines. In defense the vines seem to

have evolved fake eggs that make it look to the butterflies as if eggs have already been laid on them. (Popular science)

The first extract, from a professional scientific journal, is about the conceptual structure of a specific theory within the scientific discipline of biology. The subject of the initial sentence is “experiments”, a methodological tool in natural science. The subject of the next sentence is “these egg mimics”: note how plant-parts are named, not in terms of the plant itself, but in terms of the role they play in a particular theory of natural selection and evolution, namely “coevolution” of predator and prey (that is, the theory that predator and prey evolve together by shaping each other). Note also, in this regard, the earlier “host plants” in the preceding sentence, rather than the “vines” of the popular passage.

In the second sentence, the butterflies are referred to as “a host-restricted group of insect herbivores”, which points simultaneously to an aspect of scientific methodology (like “experiments” did) and to the logic of a theory (like “egg mimics” did). Any scientist arguing for the theory of coevolution faces the difficulty of demonstrating a causal connection between a particular plant characteristic and a particular predator when most plants have so many different sorts of animals attacking them. A central methodological technique to overcome this problem is to study plant groups (like *Passiflora* vines) that are preyed on by only one or a few predators (in this case, *Heliconius* butterflies). “Host restricted group of insect herbivores”, then, refers to both the relationship between plant and insect that is at the heart of the theory of coevolution and to the methodological technique of picking plants and insects that are restricted to each other so as to “control” for other sorts of interactions.

The first passage, then, is concerned with scientific methodology and a particular

theoretical perspective on evolution. On the other hand, the second extract, from a popular science magazine, is not about methodology and theory, but about animals in nature. The butterflies are the subject of the first sentence and the vine is the subject of the second. Further, the butterflies and the vine are labeled as such, not in terms of their role in a particular theory. The second passage is a story about the struggles of insects and plants that are transparently open to the trained gaze of the scientist. Further, the plant and insect become "intentional" actors in the drama: the plants act in their own "defense" and things "look" a certain way to the insects, they are "deceived" by appearances as humans sometimes are.

These two examples replicate in the present what, in fact, is an historical difference. In the history of biology, the scientist's relationship with nature gradually changed from telling stories about direct observations of nature to carrying out complex experiments to test complex theories (Bazerman 1989). But here I want simply to note the ways in which the language of the professional passage generalizes over the sorts of events discussed in the language of the popular passage, and formalizes them within a specific set of (in this case, experimental) practices. To master the sorts of language used in the professional passage--whether orally or in writing--requires one to not be able to understand and use language like that in the popular passage, but to have some meta-awareness of the relationship between these two forms of language—e.g., the different role of subject position in both.

And, we might add, the popular passage itself, as a form of "academic literacy" in its own right, represent a regimentation of yet more everyday forms of language—for example, the creation of technical terms that categorize things more "strictly" than we do in everyday language and the more specific and careful delineation of the grammar of argument form than is typical of everyday language (e.g., the chain "In defense, ... "seem to have" ... "that make it

look” ... “as if” ....).

## **Equity**

Educators have long worried about equity issues. There is ample evidence that children from poor and some minority homes do less well in school than do more advantaged children (Gee 2004). There is also concern today that such children may also fare less well in learning literacy, content, and technological skills out of school digital and popular culture practices, at least in terms of the sorts of skills that lead to mainstream success in society.

One reason such gaps exist is due to children’s early socialization in life at home. Research has shown that the number of words a child has heard in conversation with an adult and the child’s oral vocabulary at the age of five are two correlates with later success in school and society (Hart & Risley 1995). Extend talk with adults and hearing school- and book-based words from adults early in life appears to prepare children for the later complex language and cognitive demands of schooling. This is not meant to imply that children from poor families do not develop, at home early in life, complex linguistic and cognitive skills. It is meant only to say that some homes get their children ready for the specific sorts of styles of language—and their related ways of thinking—that will appear later in school and get ever more complex as schooling proceeds.

In regard to gaps between rich and poor in education an important issue arises over the nature of meaning in language. At the level of semantics, words have definition like meanings. A word like “coffee” means a drink made from a particular type of plant (shrub) or just the plant itself. Such “literal” meanings actually set the possible range of meanings a word can have in context. In actual contexts of use, words have “situated meanings”, contextually construed or

contextually sensitive meanings. Thus, in “The coffee spilled, go get a mop”, coffee means a liquid. In “The coffee spilled, go get a broom”, it means a grain or bean. In “The coffee spilled, go stack it again”, it means tins. And in “The coffee got smeared all over my shirt”, it might mean coffee-flavored ice-cream. We can understand “Big Coffee fights back” on analogy with “Big Oil fights back” and see “big coffee” as naming an industry.

On current theories of embodied cognition (Bergin 2012, see also Gee 1992)—closely related to older theories of localism or the locative hypothesis in linguistics and to new theories in cognitive linguistics (Lakoff & Johnson 1999)—humans think through the embodied experiences they have had. They use elements from these experiences to give situated meanings to words and language in use. On this theory, people only know, at deep and useful level, what a specific social language means—such as the language of *Yu-Gi-Oh* or of physics—if they have had ample experiences in or with the world the language is about. Otherwise, their understandings are primarily verbal (definitional, literal). Of course, once people have a great deal of experience in an area, they can learn more readily from texts and texts may be able, to some extent, to replace or actually be a form of experience in the domain.

These ideas from embodied cognition were in some ways anticipated by Vygotsky (1987). Vygotsky called concepts a person does not have reflective awareness of and conscious control over “spontaneous concepts”. He called concepts over which a person does have reflective awareness of and conscious control over “nonspontaneous concepts”.

Vygotsky argues that learners get nonspontaneous concepts only through working collaboratively with others who know more than they do and (simultaneously) via overt instruction that focuses on putting things into words, conscious and intentional use of the new concepts, and the relationships among forms and meanings. By working with others to carry out

joint tasks that require the use of nonspontaneous concepts in such a way that the learner is focused consciously on conceptual connections, verbal links, and connections between form and meaning (not typical of everyday learning outside the classroom), the child comes to be able to use concepts in a reflective, controlled, and conscious way. This process eventually leads not just to the acquisition of some nonspontaneous concepts, but also to the transfer of this ability (conscious control and mastery) to the realm of everyday spontaneous concepts.

The child's everyday concepts become reorganized such that the child comes to realize the links and connections among her concepts; she comes to see them as, and to operate with them as, a system. The everyday spontaneous concept no longer hooks directly and singly to the world of experience, but hooks to experience now only via a whole network of relationships with other concepts.

To take one of Vygotsky's examples, the concept of "because" no longer hooks directly to concrete instances, but reaches reality now only through an intricate network of relationships to other concepts (e.g., physical causation, responsibility, contingency, various sorts of non-causal associations, and so forth). The child becomes aware that the concept has something of a life of its own and that it is related in various ways to other concepts. In turn, the child can now control her attributions of causal relationships with more reflection and mastery.

Vygotsky sums up his views as follows:

The scientific concept is not related to its object directly. ... this relationship is mediated by existing concepts.

... the everyday concept acquires a whole series of new relationships with other concepts as it comes to stand between the scientific concept and its object. Its relationship with the object

is also transformed in this process (Vygotsky, 1987, p. 223).

Vygotsky believes that it is because “scientific” school-based concepts were primarily invented and are learned at a conscious level and as part of an intricate system of links to other concepts that they can serve to develop the child’s reflective abilities and reorganize the child’s early conceptual development.

However, it is also clear that Vygotsky leaves us with having still to delineate just what sorts of overt forms of instruction are fruitful. He clearly does not believe that rote drill or working on “irrelevant” materials is efficacious—he explicitly disowns such approaches (see Vygotsky 1987, pp. 198-200). He does believe that the sorts of overt instruction that do work involve the learner actively working on problems with others so as to bring off accomplishments that she is not capable of alone. But beyond that, Vygotsky clearly believes also that there are certain sorts of overt focusing on words, relationships, forms and functions, on conscious control and reflection, that must supplement mere collaborative problem solving--and we have not done well at cataloging these.

### **Language Out of School**

One of the most pressing issues in education today is the fact that many children from lower socioeconomic homes, many of them minority children, do poorly in school (Miller 1995). Such children have often had little practice at home with school-based forms of language and interaction. Because of this, it is often assumed that they come to school with “nothing” relevant in the way of language practices on which to base their initiation into schooling.

However, in many cases, this is not true. Many of these children come to school well versed in language practices that, while not typical school-based literacy practices, are, nonetheless, rich verbal practices that can be leveraged to good effect by the school. Unfortunately, as I have said, the language practices of these children are often invisible to teachers and even, at times, denigrated. It should be a goal of schooling to allow such children to gain reflective awareness and conscious control over their own indigenous verbal practices as part of their acquisition of school-based social languages (in addition to their acquisition of “standard English”).

School-based forms of language favor certain ways of seeing the world and certain ways of representing it. Schools, however, often are ignorant of or ignore styles of language that are home-based but less aligned with the school’s ways with words. Rather than honoring and building on these practices, schools tend to denigrate them.

For example, sociolinguistics have long known now that the African-American Vernacular English that some (but not all) African-American children bring to school is a perfectly well designed and logical dialect, no better or worse in grammatical terms than any other dialect (Baugh 1983, Labov 1972). Sociolinguists have also known for years now that such children also bring to school richly intricate discourse practices, such as forms of storytelling (Smitherman 1977, Gee 2011). For instance, consider the story below, told by a seven-year-old African-American girl (“Leona”) in school at “sharing time” (“show and tell”). I have organized the story in terms of a line and stanza structure that helps to bring out its overall discourse organization: LEONA'S STORY

FRAME

## STANZA 1

1. Today
2. It's Friday the 13th
3. An' it's bad luck day
4. An' my grandmother's birthday is on bad luck day

## PART 1: MAKING CAKES

## STANZA 2

5. An' my mother's bakin' a cake
6. An' I went up my grandmother's house while my mother's bakin' a cake
7. An' my mother was bakin' a cheese cake
8. My grandmother was bakin' a whipped cream cupcakes

## STANZA 3

9. An' we both went over my mother's house
10. An' then my grandmother had made a chocolate cake
11. An' then we went over my aunt's house
12. An' she had make a cake

## STANZA 4

13. An' everybody had made a cake for nana
14. So we came out with six cakes

## PART 2: GRANDMOTHER EATS CAKES

## STANZA 5

15. Last night
16. My grandmother snuck out
17. An' she ate all the cake
18. An' we hadda make more

## STANZA 6

(she knew we was makin' cakes)

19. An' we was sleepin'
20. An' she went in the room
21. An' gobbled em up
22. An' we hadda bake a whole bunch more

## STANZA 7

23. She said mmmm
24. She had all chocolate on her face, cream, strawberries
25. She said mmmm
26. That was good

## STANZA 8

27. An' then an' then all came out
28. An' my grandmother had ate all of it

29. She said "what's this cheese cake doin' here"-- she didn't like cheese cakes

30. An' she told everybody that she didn't like cheese cakes

#### STANZA 9

31. An' we kept makin' cakes

32. An' she kept eatin' 'em

33. An' we finally got tired of makin' cakes

34. An' so we all ate 'em

#### PART 3: GRANDMOTHER GOES OUTSIDE THE HOME

##### NON-NARRATIVE SECTION (35-41)

#### STANZA 10

35. An' now

36. Today's my grandmother's birthday

37. An' a lot of people's makin' a cake again

38. But my grandmother is goin' t'get her own cake at her bakery

39. An' she's gonna come out with a cake

40. That we didn't make

41. Cause she likes chocolate cream

#### STANZA 11

42. An' I went to the bakery with her

43. An' my grandmother ate cupcakes  
 44. An' an' she finally got sick on today  
 45. An' she was growling like a dog cause she ate so many cakes

#### FRAME

#### STANZA 12

46. An' I finally told her that it was  
 47. It was Friday the thirteenth bad luck day

Leona's story is organized, through syntactic parallelism and lexical and syntactic repetition in an intricately poetic way. Note, for example, that every line in Stanza 2 ends on the word "cake" and that the stanza as a whole is organized by an aabb structure: "...bakin' a cake ... bakin' a cake ... bakin' a type of cake ... bakin' a type of cake". Stanza 3 is organized in terms of an abab structure: "go over a house ... make a cake ... go over a house ... bake a cake". Stanzas 5 and 6 are line by line stylistic variations of each other about the same event, an event which Stanza 7 mimes. Such poetic structuring, typical of African-American oral storytelling, exists throughout the story.

The story also plays on a long-running theme in African-American culture, namely the nature and ambiguities of symbols ("signifying") and the need for symbols to get the proper meaning in context (see Jackson 1974, Smitherman 1977, Stuckey 1987). The grandmother—the matriarch of the home—eats lots of cakes, big and small, at home and never gets sick. However, when she eats little cakes (cupcakes) outside the home at the bakery she does get sick

and “growls like a dog” (loses her human status). What distinguishes humans from animals is their ability to see the symbolic value of things, to recognize for example, that a cake made at home is a true symbol of kinship, while one made at a bakery is not (it is simply a commodity), though it looks like one. The grandmother’s momentary failure to recognize the nature of “real” and “duplicitous” symbols (signs) is what causes her to get sick and “growl like a dog”.

Young African-American children often help listeners interpret their stories by giving crucial non-narrative “evaluative” (Labov 1972) information right before the conclusion of the story (older storytellers spread such evaluative information throughout their stories). Leona does this in Stanza 10 where she stresses the importance of the fact that the grandmother is going to get a cake “that we [the family] didn’t make”.

Leona and other African-American children in her class were often told to sit down during their sharing time turns, because the teacher felt they were not “talking about one important thing” (Michaels 1981), a rule of sharing time in the class. The teacher heard such children as meandering among different topics and places, loosely associating ideas and themes, since she, like many teachers, had little knowledge about the grammatical and discourse features of African-American Vernacular English.

School often focuses children like Leona just on Standard English and not on their own dialect as well. However, if such children were to gain reflective and conscious control over a literary social language or a linguistic one as a “meta-language” with which to reflect also on the grammatical and discourse properties of their own dialectal practices, they would gain deep knowledge about language, literature, and rhetoric (Lee 1993). And they would gain this knowledge in a way that links to their own cultural identity, thereby tying school, and school-based literacy practices, to that culture (rather than setting the two in resistance). After all, the

sorts of poetic oral practices in which Leona is engaged, even as a seven-year-old, are historically at the very root of literature in the West and elsewhere (e.g., the oral tradition from Homer to Chaucer). Through such practices, children like Leona could gain conscious control over the grammatical and discourse code of their community-based social language, as well as conscious control over school-based social languages connected to literature and literary criticism.

### **Linguistic Micro-Analysis**

So far we have concentrated on language and not social interaction in classrooms. But many educational linguists focus on the ways in which language form and meaning, with concomitant consequences for empowering or disempowering people, are interactionally worked out moment by moment in specific educational contexts (Gee 2014; Green and Dixon 1993, Gumperz 1982, Lemke 1995). Discourse linguistics have long realized that even what seem to be very minor aspects of language can have important consequences in communication. I will give one example here of how “minor” details can take on major importance in interaction, and, thus, must, in those instances, be included in linguistics transcripts (see Gee 2014). Consider the following interaction between a white female researcher (“R”) and a fourth grade African American girl (“S” for student) with whom the researcher is discussing light as part of a school science education project:

1. R: Where does the light come from / when it's outside? //
  
2. S: Sun (low pitch) //

3. R: From the sun (low pitch) // .. hum
4. S: Cause the sun comes up / REALLY early //
5. R: um .. And that's when we get light (low pitch) //
6. S: And that's how the, the the me .. my .. me and my class / is talkin' about dinosau:rs / and how they die:d // And we found out .. / some things . about how they die:d //
7. R: Oh really // Does that have to do with LIGHT? //

In this transcript, a double slash ("/") indicates a final contour, that is, a rising or falling pitch of the voice that sounds final, as if a piece of information is closed off and finished (the fall or rise is realized over the underlined words and any words that follow them). A single slash ("/") indicates a non-final contour, a shorter rising or falling contour that sounds as if there is more information to come. Material between single or double slashes is called a tone unit (each tone unit has one word or phrase in it with major stress). Words that are underlined carry the major stress in their tone unit (stress in English is marked by gliding the pitch of the voice up or down or increasing loudness or both). Capitalized words are emphatic (said with extra stress). Two periods (..) indicate a hearable pause. Two dots following a vowel (“die:d”) indicate that the vowel is elongated (drawn out). “Low pitch” means that the preceding unit was said on

overall low pitch. This transcript is certainly nowhere as narrow as it could be, though it includes some degree of linguistic detail.

After a long interaction from which this bit is taken, the researcher felt that the child often went off topic and was difficult to understand. However, it can be argued, from the above data, that the researcher co-constructed (contributed to) these topic changes and lack of understanding.

Children in school are used to a distinctive school activity in which an adult asks them a question (to which the adult already knows the answer, but to which the answer is not supposed to be obvious), the child answers, and the adult responds in some way that can be taken as evaluating whether the child's answer was acceptable or not (Sinclair & Coulthard 1975). In the above interaction, the researcher starts with a question to which the student responds with the word "sun" said on a low pitch and with a final falling contour. This way of answering indicates (in many dialects of English) that the respondent takes the answer to be obvious (this already constitutes a problem with the question-answer-evaluation activity).

The researcher's response is said in exactly the same way as the child's (low pitch, final falling contour)—and in just the position that a student is liable to expect an evaluation—indicating that she, too, takes the answer to be obvious. The student might well be mystified, then, as to why the question was asked.

In 4 the student adds a tone unit that has an emphatic "really" in it and which is said on a higher pitch (basically on her normal level) and with a falling contour. This way of saying her contribution indicates that the student takes this information to be new or significant information. She may well have added this information in a search for some response that would render the initial question something other than a request for obvious or trivial information and in a search

for some more energetic response from the researcher, one that would let the student know she was on the right tract in the interaction.

However, the student once again gets a response from the researcher (low pitch, falling final contour) that indicates the researcher takes the student's contribution, again, to be obvious. The student, then, in 6, launches off on yet another contribution that is, once again, said in a way that indicates she is trying to state new or significant information that will draw a response of interest from the researcher. The student also here uses a technique that is common to some African American students, though not to Anglo-American ones (Gee 1985): she states background information first before stating her main topic (light), though her “found out / some things” clearly implies, in this context, that these things will have to do with light (which they, indeed, do—she has studied how a meteor blocked out sunlight and helped destroy the dinosaurs). The researcher, listening for a more foregrounded connection to light, stops the student and, with emphasis on “light”, clearly indicates that she is skeptical that the student's contribution is going to be about light, a skepticism that is, from the student's perspective, not only unmerited, but actually surprising and a bit insulting (as subsequent interaction shows).

Here the “devil” is, indeed, in the details: aspects of the school-based “known question-answer-evaluation” activity, different assumptions about how information is introduced and connected, as well as details of pitch and emphasis (as well as a good many other such details) all work together to lead to misunderstanding. This misunderstanding is quite consequential when the adult authority figure attributes the misunderstanding, not to the details of language and diversity (most certainly including her own language and diversity), but to the student herself.

One may wonder why the researcher asked the questions she did and responded as she did. To make a long story short, the research project was based on the idea that giving children

too much explicit information or overt challenging responses would restrict their creativity and “sense making”. Ironically, a situation set up to elicit the best from the child by leaving her as “free” as possible, led to her being constructed as not making sense, when, in fact, she was making sense at several levels in a deeply paradoxical setting created by the researchers.

## **Conclusion**

I have ranged through a number of areas where knowledge about language and linguistics is relevant to current debates in education. My basic points have been as follows:

1. Children do not just pick up school-based social languages and literacy through the sorts of rich immersion in socialization that is characteristic of first language acquisition. Teachers need to supplement such immersion, which is necessary but not sufficient for learning in school, with more overt forms of focussing on the structure of language and its complex relationships to communicative functions within different styles of language and texts.
2. An overt focus on social languages and specific genres of spoken and written language leads to conscious control of and meta-awareness about language that is fundamental to real understanding and that reorganizes how students think about their earlier forms of language and ways of thinking about the world. This is, indeed, one of the ultimate goals of schooling, and is particularly important for those children who come to school from homes that have not immersed them in school-based forms of language and interaction.

3. Schools often ignore or miss the resources of children who come from “non-mainstream” homes – homes which may not have immersed their children in school-based forms of language and interaction, but which have, nonetheless, immersed them in complex and culturally distinctive linguistic and interactional practices. Schools can honor the resources these children bring with them to school and build on them. In fact, they can allow such children to focus on form and function in their own styles of language in juxtaposition to other styles, especially those used in school, as a way to appreciate variation in language, respect their own culturally distinctive forms of language, and gain meta-awareness of how form and function work across different social languages in and out of school.

4. And, finally, teachers often assume that when a child appears to make little sense, especially a child from a different social and cultural group than their own, that the problem resides inside the child as a “deficit” of some sort. However, such problems often reside in the very interactions in which the teacher is taking part and in the teacher’s lack of knowledge about the culturally distinctive resources different children bring with them to school. This dilemma calls both for better training for teachers in regard to language and linguistics (training which, in the USA, is now virtually nonexistent) and for teachers to engage in research on their own students and classrooms as a way to better understand the children they teach.

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