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The linguistic perspective invoked here in inform the following discussion represents an amalgam of sorts of two theoretical and descriptive traditions in linguistics, both of which extend to incorporate language behaviors at a discourse level. The first and older tradition is referred to *functional grammar* and the other as *cognitive linguistics*. Both traditions have been advanced in different ways and with different points of view by various researchers. Rather than pick and choose from among these different perspectives, though, two of the most fully elaborated and cohesive theories in each tradition were selected. In the functional grammar tradition, the target theory is the one advanced over more than fifty years of work by M.A.K. Halliday and his co-workers and most comprehensively described in Halliday and Matthiessen (2004). In the cognitive linguistics tradition, the target theory is that advanced by Leonard Talmy under the more specific name *cognitive semantics* and most comprehensively described in Talmy (2003). Cognitive semantics has itself a long development history and may be looked on as synthesizing work in a number of earlier and still independent traditions in linguistically oriented semantics, lexical studies, pragmatics, and cognitive psychology.

It is beyond the scope of this paper to detail either of these traditions, but both have provided essential insight and guidance in structuring the following arguments. In particular, certain distinctions and terminology of the operational framework, shown diagrammatically in Figure, have been borrowed directly from one or both traditions. For instance, the characterization of discourse structure as comprising *experiential*[1], *interpersonal*, and *textual* functions comes directly from functional grammar, as do the characterizations of the general situational context of a discourse in terms of *field*, *tenor & mode*, and *mood*. Likewise, the characterization of the experiential function of discourse as comprising *schema configurational*, *perceptual*, and *attentional* components comes from the cognitive semantics tradition as do the terms *windowing* and *perspective* and the notion of *warrants* and *salience*. Other specific terms carrying semantic weight, such as *register*, *participant relations*, and *cohesion* are widely embedded in many semantic traditions and have even entered the general language of education and assessment in ways that are congruent with their specialized semantic senses.

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[1] Halliday and Matthiessen (2004) use the term *ideational* to name the metafunction, here labeled as experiential. *Ideational* in their usage incorporates experiential and logical discourse functions (p. 29). The breakdown is intended to highlight a difference between the objects of experience (experiential) and the relations that obtain between these objects (logical). However, for purposes of the arguments advanced here the distinction is overly nuanced and the term *experiential* seems more accessible and apt, given the instructional context in which testing is embedded.

One purpose of the diagram in Figure 2 is to sketch a basis for investigating the claim that the representations in parallel dynamic computer-based items like ONPAR versus standard items of the type occurring on today's tests make similar content demands on the test taker and to better identify and describe the differences in their ancillary components. The comparison model rests on three assumptions: first, that the test items constitute examples of human discourse; second, that both discourses are predicated on common semantic cores stemming from a common cognitive framework; and third, that the realizations of the parallel items – one largely language based, the other largely graphic – functionally share essential organizational and meaning components.

The model structures a claim that a test item entails a communication between a test giver (or item writer) and a test taker. This communication forms the basis for the characterization of the item as a discourse and motivates the inclusion of the *interpersonal* function in the model. There are expectations on the part of both these participants in the discourse that will ideally abide by the guidelines governing all well-formed and well-executed discourse. These guidelines are most succinctly expressed in Grices's (1975) *cooperative principle*, which states that participants in a conversation or text exchange will cooperate with one another in assuring that the message of the communication is transmitted accurately, succinctly, relevantly, and appropriately for its purpose. These four desiderata for a successful communication are encoded in what are called *conversational implicatures* expressed by maxims of quality, quantity, relation, and manner, respectively.
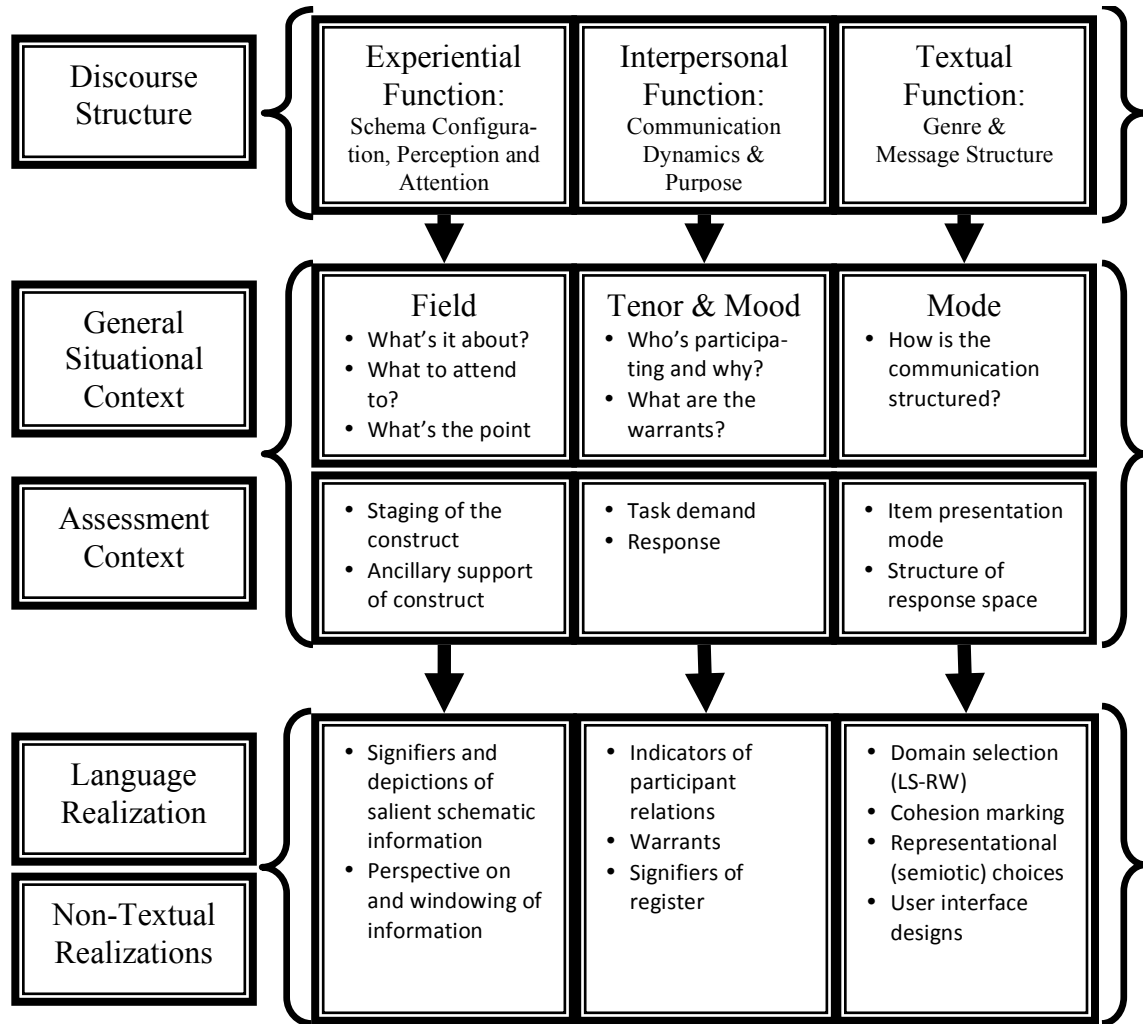
As a test item is concerned, the conversational implicatures pertain to the purpose of the item, that being to determine the test taker's proficiency in a well-delineated area of content. The item writer communicates a request for information from the test taker for an appropriate demonstration of that proficiency. This is to be accomplished within the constraints set up by the item writer's choice of item type and by some statement pertaining to the scope of the required response. These requirements are controlled through meanings conveyed via the textual function of the discourse (the third column in Figure 2).

The intents of the item writer and of the test taker are expected to align. In a typical conversational exchange the intents are made clear or are implied through warrants of the truth value of the communication and of the right of the participants to participate in the communication. The test taker must accept the warrant that the test giver proffers that he or she is entitled to request information, while the test giver must accept the warrant that the test taker is providing a good faith response. The details of these warrants are more often tied to claims of status and authority existing outside of a particular exchange, but the language of the exchange, through the adoption of particular communication registers, will often buttress and support these claims. Meanings of this sort are conveyed through the interpersonal function of the discourse (the second column in Figure 2).

Finally, the test item itself is aimed at a well-conceived construct that becomes operationalized in the item–together with the request for specific, related information–as the assessment target, or item target, at a smaller grain size. The assessment target focuses and sets bounds on the construct, which lies within the scope of the test taker to

engage; that is, it lies within his or her experience. Essentially, then, the test item predicates a schema and poses a demand for the test taker to demonstrate some skill or knowledge relevant to that schema. The meanings attendant to this part of the discourse are described in the experiential function (the first column of Figure 2).

Figure 1 Linguistic Framework for Describing Active Elements of Test Items

Discourse Structure	**Experiential Function:** Schema Configuration, Perception and Attention	**Interpersonal Function:** Communication Dynamics & Purpose	**Textual Function:** Genre & Message Structure
General Situational Context	**Field** • What's it about? • What to attend to? • What's the point	**Tenor & Mood** • Who's participating and why? • What are the warrants?	**Mode** • How is the communication structured?
Assessment Context	• Staging of the construct • Ancillary support of construct	• Task demand • Response	• Item presentation mode • Structure of response space
Language Realization Non-Textual Realizations	• Signifiers and depictions of salient schematic information • Perspective on and windowing of information	• Indicators of participant relations • Warrants • Signifiers of register	• Domain selection (LS-RW) • Cohesion marking • Representational (semiotic) choices • User interface designs

Violations of the cooperative principle can take place either through a willful action on the part of one or both participants, or more typically in a testing context, by some unintentional means. For instance, an intentional violation of the relation maxim would occur if the item writer wrote an item he or she expected no test taker could successfully respond to. While it's reasonably to claim that maliciousness intent is rare, it does happen, and quite often, that test items are given to students who lack the ability to comprehend the task demand or to respond, not by virtue of their lack of knowledge of the construct, but because of the ancillary demands of the item—those that concern in this example the choice of an inappropriate language or register in which to communicate the item demands and in which to produce a requisite response. The consequences of

such violations are well known, of course, and they have in particular motivated the current effort to produce a science test that is more equitable for ELLs. In any attempt, though, to ameliorate a poor communication channel—as in this example, by reducing the language load—a risk is incurred that other elements necessarily introduced to compensate for the reduced language will themselves become causes of bias. Hopefully, by being more cognizant of the communication implications of various item components, we will ultimately be able to create items that we can be more sure will adhere to the cooperative principle.