Meaning and Speech Acts
Volume I: Principles of Language Use
Volume II: Formal Semantics of Success and Satisfaction

Daniel Vanderveken
(Université du Québec à Trois-Rivières)

Reviewed by
Amichai Kronfeld
Natural Language Inc.

This two-volume study is a very ambitious undertaking. As the author, Daniel Vanderveken, explicitly states in the introduction to Volume I, the main purpose of the book is to formulate (and formalize) the general principles that correlate sentence meanings with speech acts in the use and comprehension of language. On the basis of these principles, the author aims to construct a general formal semantics for natural languages that articulates the deep semantic structure common to all natural languages. In so doing, he intends to proceed to a partial unification of speech act theory with classical truth-conditional formal semantics, thereby defining a line of convergence between the two main trends of contemporary philosophy of language. Yet Vanderveken aims even higher than this: "[t]he conclusions of the book are transcendental. They state universal laws of language use and comprehension that reflect the *a priori* forms of thought and of experience of human speakers" (p. 5).

By raising expectations to such a level, the author inevitably sets himself up for failure—which is a pity, since the book is quite interesting and useful in what it does accomplish. After presenting an outline of the book, I will offer brief critical comments and then describe what I consider to be its major accomplishments for computational linguistics.

1. Outline of the Book

The book—a follow-up of Searle and Vanderveken (1985)—attempts to formulate the logic of *illocutionary acts* (Austin 1962). Illocutionary acts are "complete" speech acts such as assertions, requests, promises, apologies, etc., in contrast with "incomplete" ones such as referring and predicating. The first volume provides the meta-logical foundations for the formal theory that is presented in the second volume.

Chapter 1 of the first volume explains the book's fundamental hypothesis, namely, that illocutionary acts are the primary units of sentence meaning in the use and comprehension of natural language. It is this hypothesis that is the basis for Vanderveken's claim that his illocutionary logic characterizes not only the semantic structure of language, but the general structure of thought and experience.

In Chapter 2, Vanderveken incorporates general conditions of success and satisfaction into his formal general semantics. Traditionally, a formal semantics of a language

deals with entities (assertions, sentences, or propositions) that are assigned *truth values*. The goal of formal semantics, at least according to some, is to assign truth values to sentences under an interpretation (Davidson 1984; Montague 1974). However, this relatively simple picture is not adequate for a formal semantics of illocutionary acts. First, some illocutionary acts (for example, commands) cannot be true or false (rather, they are either satisfied or not satisfied). Second, illocutionary acts can either be successfully or unsuccessfully performed, and Vanderveken takes the theory of the *success under interpretation* of an illocutionary act to be as much a part of semantics as the theory of satisfaction.

Every illocutionary act has two main components. One is the illocutionary force that determines what kind of illocutionary act it is. The other is its propositional content. Chapter 3 is Vanderveken's account of the logical form of propositions, while Chapter 4 shows the logical forms of illocutionary forces. Each illocutionary force consists of six components:

1. the illocutionary point (the general type of the speech act)

2. its mode of achievement (conditions on the way the speech act is to be satisfied)

3. its propositional content conditions (what kind of propositions can constitute its content)

4. its preparatory conditions (what must be true in the context of a successful performance of the speech act)

5. its sincerity conditions (the mental states that the speaker is presumed to have when the speech act is successfully performed) and

6. its degree of strength (e.g., the difference between a request and a command).

Chapter 5 states a series of "fundamental laws of language use that are both philosophically and linguistically significant" (p. 5). For example, "the law of the *a posteriori* truth of the propositional content of any satisfied utterance with the world-to-words direction of fit"; translation: "[a] speaker who performs a speech act with the aim of achieving a success of fit from the world-to-words direction [i.e., trying to make the world fit the words and not vice versa] must express a proposition whose truth is dependent on a future contingent action of one of the protagonists of the utterance; otherwise, his speech act is not satisfiable" (p. 141).

Chapter 6 offers the semantic analysis of a large number of English performatives. The discussion is surprisingly informal and in many cases goes little beyond a dictionary entry (e.g., "To stipulate is to declare the terms under which something is to be understood" p. 204), but the chapter contains interesting tree structures representing how various illocutionary acts can be derived from other, more basic ones. For example, in the tree of directives, one can see how from the performative *suggest* one branch leads to *recommend* (through *advice*), while another branch leads to *alarm* (through *warn, caution,* and *alert*).

The second volume is much more technical. The guiding idea of the entire project is to construct an ideal formal language representing the logic of abstract illocutionary acts, and then provide translation rules from English phrases to the formal language. After a critical survey of earlier attempts to formalize the logic of speech acts and the semantics of nondeclarative sentences (Chapter 1 of the second volume), Chapters 2

and 3 formally present a first-order logic of illocutionary acts; Chapter 4 presents the logical syntax of the ideal object-language of the author's general semantics; Chapter 5 further develops the model theory of intensional logic in order to formalize the theory of sentence meaning of general semantics; and Chapter 6 presents the axiomatic system, which is generally complete in the sense that it axiomatizes the valid set of laws of general semantics.

Chapter 7 should be the most interesting chapter for computational linguists. It contains translation rules for a series of English performative verbs. The author applies the logical apparatus of his general semantics to English and states rules by which a series of English performatives can be mapped onto specific illocutionary acts expressed in the logic that the author has developed. Such rules of translation map (aspects of) the syntactic structure of an English sentence onto the logical form of an illocutionary act that is named by the performative in that sentence.

Volume II also contains three appendices. Appendix 1 (written with the collaboration of David K. Johnston) is a completeness theorem for illocutionary logic. Appendix 2 (written with the collaboration of David K. Johnston and François Lepage) shows the general completeness of the axiomatic system. Appendix 3 is a (much needed) glossary/index of the symbols used in the book. A similar list of symbols can also be found in the appendix to Volume I.

2. Critical Comments

The book combines three intellectual projects that, to a large extent, can be considered separately. First, there is the underlying speech act theory, which is pretty much taken as is from Searle (1969, 1971, 1979a, 1979b). Second, there is Vanderveken's impressive formalization of it, and finally there are the cognitive and philosophical results that Vanderveken claims are the consequences of his formalization. It is with these supposed consequences that I have the most trouble.

Take, for example, Vanderveken's startling claim that illocutionary acts are the "primary *units of conceptual thought*" (p. 56, italics his) and that "the universal laws that govern the successful performance and satisfaction of illocutionary acts reflect the *a priori* forms of thought and experience" (p. 226).

The major premise for this argument (and for the book as a whole) is that illocutionary acts are the basic units of meaning in the use and understanding of natural languages. What this means is that unlike the Fregean–Russellian tradition in which the meaning of a word is defined solely as its contribution to the meaning of the *sentence* in which it occurs (and sentences, therefore, are the basic units of meaning), in Vanderveken's general semantics, the meaning of a word is taken to be its contribution to *illocutionary acts* that can be performed by sentences containing these words. Generalizing this hypothesis, Vanderveken seems to claim that illocutionary acts are also the basic units of conceptual thought, because any element of such thought—be it a belief, a desire, or what have you—is nothing but a potential illocutionary act waiting to be performed, and the meaning of any constituent of a conceptual thought is nothing but its contribution to the illocutionary act that can express this thought.

I find Vanderveken's approach interesting and promising as far as the semantic analysis of natural languages is concerned. But I don't believe it can be generalized the way he intends it to be. First, the basic units of conceptual thought (whatever they are) do not have conditions of success. A belief, like an assertion, may be either true or false, but one cannot fail to have a wish in the same way that one can fail to issue a successful command. Second, and more significantly, the semantics of illocutionary acts cannot be the same as the semantics of conceptual thought, as I have shown elsewhere

(Kronfeld 1990). The reason, in a nutshell, is that one cannot have a belief about an object without an individuating representation of that object, but in an illocutionary act one can easily refer to an object without intending any particular individuating representation of it to be part of the proposition that is the content of the speech act (this feature of referring is entirely missing from Vanderveken's general semantics). In other words, the semantics of illocutionary acts can (and must) accept singular propositions. But the semantics of conceptual thought cannot.

3. Usefulness for Computational Linguistics

As mentioned above, the underlying speech act theory that this book adopts is Searle's. The formal work, however, both here and in Searle and Vanderveken (1985), is entirely Vanderveken's own. He is obviously a remarkably capable and creative logician who has managed to build a very complex formal structure. This is a very impressive work from a mathematical point of view.

Can his formal work be used in AI and computational linguistics? I think so. Searle's (and Grice's) work on speech act theory, communication intentions, and implicatures was immediately recognized by computational linguists as important and relevant to the field, especially when their approach is combined with the formalization of another cognitive aspect of human activity, namely, planning. One obvious approach to modeling speech acts as a planned activity is based on two related ideas:

- Mental representations can be modeled by logical formulas.

- The process of planning to achieve a goal can be seen as a search for a derivation proceeding from axioms representing the world as it is to theorems that represent a world in which the goal is realized.

The method for implementing these ideas in the simulation of planned speech acts has always been to look for a formal system that is rich enough to capture central concepts of communication, and then use it (see, for example, Cohen and Levesque 1990). Well, Vanderveken offers a formal system that, in terms of its ability to capture concepts of communication, is far richer than anything we have seen so far. It would be a waste not to try to use it. The challenge, of course, is to develop further the translation rules from English to the ideal language.

Vanderveken's formalism has other advantages as well. He offers a coherent and interesting analysis of performative verbs and the way they are related to the illocutionary acts they name. Taking the meaning of phrases to be their contribution to possible illocutionary acts in contexts of use (instead of seeing them as contributing to the senses of sentences), he can formally describe subtle differences between closely related performatives and, for exactly the same reason, he can provide a formal analysis for words such as *alas* and *hurray* that all other formal semanticists simply had no idea what to do with (except, perhaps, relegate them to the ever growing heap of Gricean "conventional implicatures").

4. Concluding Remarks

This is not an easy book to read. The second volume especially is not for the faint of heart. If you have only a general interest in speech act theory, you are better off reading Searle (although Chapter 3 of Volume I is a nice summary of the central concepts of the theory).

If, on the other hand, you are a hard-core cognitive scientist with a solid background in mathematical logic, looking for new frontiers in your attempt to construct computational models of speech acts and communication, this is the book for you. It takes the basic insights of speech act theory and casts them in a way that may have potential for significant computational development. Whether the direction outlined in this book can actually be worked out remains to be seen, but it is definitely worthy of attention.

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Amichai Kronfeld is a senior staff scientist at Natural Language Incorporated, Berkeley, California. His book *Reference and Computation: An Essay in Applied Philosophy of Language* was published by Cambridge University Press in 1990. Kronfeld's address is Natural Language Inc, 2910 Seventh Street, Berkeley CA 94710; e-mail: ami@nli.com.