

Hidden imperatives

Natural language imperatives take many forms and follow many paths. Alongside canonical speaker-to-addressee imperatives like (1a), we find *let's* imperatives such as (1b), which speakers use to direct the actions of all discourse participants. Similar diversity is found among *hidden imperatives*, the term we use to capture the imperative illocutionary force of examples like those in (2), in which the utterance-modifying adverbial follows a speaker-to-addressee path in (2a), and a speaker-to-speaker path in (2b). The nature of the reading depends on the semantics of both the modifier and its complement.

- (1) a. Frolic in the park!
 b. Let's frolic in the park!
- (2) a. Confidentially, Ed is dead. \approx Keep the information that Ed is dead confidential.
 b. Confidentially, is Ed dead? \approx I promise to keep the answer to *Is Ed dead?* confidential.

The examples in (1)–(2) share important properties. Notably, none embeds syntactically (or semantically) outside of direct quotation, as seen in (3).

- (3) a. *I believe frolic in the park!
 b. *I believe let's frolic in the park!
 c. # Bill said that, confidentially, Al's wife is having an affair. (Bach 1999:358)
 d. I {say/*mention/*believe}, “(let's) go for it!”

Adapting and expanding the ideas of Searle (1969), Hamblin (1987), Han (1998), Lascarides and Asher (2003), and others, we propose a semantic theory of imperatives that includes hidden imperatives and explains the unembeddability of all types of imperative. Building on insights of Gunlogson (2001) and Potts (2003), we define a class of *discourse structures*, which permit us to bring a formerly metagrammatical domain into the grammar itself, thereby putting a great deal of speech-act theory in range of a narrowly grammatical analysis. The definition of these discourse structures is (4).

- (4) A *discourse structure* is a tuple $\mathcal{D} = (D, A, \mathfrak{M}, \bar{h}, \mathbf{PLAN}, \pi)$, where
- D is a set of entities containing a subset A of discourse participants;
 - \mathfrak{M} is a set of intensional models; each $\mathcal{M}_i \in \mathfrak{M}$ is a tuple (D, W_i, V_i) , where W_i is a set of worlds and V_i is a valuation function, taking formulae of our interpreted logic to subsets of D ;
 - \bar{h} is a function that associates each $a_i \in A$ with the intensional model $\mathcal{M}_{a_i} \in \mathfrak{M}$;
 - \mathbf{PLAN} is a set of plan-sets, where a plan-set is a set of propositions; and
 - π is a function that associates each $a_i \in A$ with the plan-set $\mathbf{plan}_i \in \mathbf{PLAN}$.

We interpret the intensional models in \mathfrak{M} dynamically. That is, propositions are functions from sets of worlds into sets of worlds. The discourse structure containing \mathfrak{M} is dynamic in only one sense: we can add to the plan-sets in \mathbf{PLAN} . This is the basis of our theory of imperatives; an imperative does not denote a proposition, but rather an update to a plan-set (via set union). We formalize this idea by translating imperative force as a logical term δ , which denotes a function that takes a discourse participant and a proposition to a tuple of plan-sets. Two representative analyses are given in (5) and (6). (The wavy arrow, \rightsquigarrow , is our translation function; $\llbracket \cdot \rrbracket^{\mathcal{D}, s, a}$ is the interpretation function for the discourse structure \mathcal{D} with $A = \{s, a\}$, in which $\llbracket \mathbf{the-speaker} \rrbracket^{\mathcal{D}, s, a} = s$ and $\llbracket \mathbf{the-addressee} \rrbracket^{\mathcal{D}, s, a} = a$.)

- (5) a. *Frolic!* $\rightsquigarrow \delta(\mathbf{the-addresssee})(\mathbf{frolic}(\mathbf{the-addresssee}))$
 b. $\llbracket \delta(\mathbf{the-addresssee})(\mathbf{frolic}(\mathbf{the-addresssee})) \rrbracket^{\mathcal{D},s,a} = \langle \mathbf{plan}_a \cup \{w \in W_a \mid a \text{ frolics in } w\} \rangle$
- (6) a. *Let's frolic!* (independent-frolickers reading) \rightsquigarrow
 $\delta(\mathbf{the-speaker})(\mathbf{frolic}(\mathbf{the-speaker})) \wedge \delta(\mathbf{the-addresssee})(\mathbf{frolic}(\mathbf{the-addresssee}))$
 b. $\llbracket \delta(\mathbf{the-speaker})(\mathbf{frolic}(\mathbf{the-speaker})) \wedge \delta(\mathbf{the-addresssee})(\mathbf{frolic}(\mathbf{the-addresssee})) \rrbracket^{\mathcal{D},s,a} = \langle \mathbf{plan}_s \cup \{w \in W_s \mid s \text{ frolics in } w\}, \mathbf{plan}_a \cup \{w \in W_a \mid a \text{ frolics in } w\} \rangle$

Imperatives affect only plan-sets. They do not denote updates on any of the intensional models in \mathfrak{M} . For example, (5b) does not reduce the set W_a of \mathcal{M}_a to just those worlds in which a frolics. This is just to say that *Frolic!* does not entail that the addressee frolics. (That would be an amazing sort of performative.) Cooperative speakers follow through on the items in their plan-set by updating their intensional models with the intersection of all the propositions in it. But this is not the purview of imperatives themselves.

These meanings for imperatives also explain their unembeddability. The meaning of *believe*, for example, is defined for sentence-meanings, i.e., functions from sets of worlds into sets of worlds. But an imperative denotes a tuple of plan-sets. Thus, it is not in the domain of *believe* (or any other operator). Because imperative denotations are external to the models in \mathfrak{M} , we formalize rather directly the intuition that imperative force inheres in a different realm than that of regular sentence meanings.

Hidden imperatives are easily brought into the fold. Their semantics is multidimensional in the sense that they have an imperative aspect as well as a regular declarative or interrogative meaning. We account for this by extending the multidimensional logic of Potts 2003 to include δ and by enriching its structures with **PLAN** (which results in (4)). A typical example in this setting is (7).

- (7) *Confidentially, Ed is dead* $\rightsquigarrow \langle \delta(\mathbf{the-addresssee})(\mathbf{keep}(\mathbf{confidential})(\mathbf{dead}(\mathbf{ed}))(\mathbf{the-addresssee})), \mathbf{dead}(\mathbf{ed}) \rangle$

We've so far not mentioned one possibility: an overt, self-directed imperative. We believe that this possibility is realized in the form of *promise*, which we analyze as in (8).

- (8) a. *I promise to frolic* $\rightsquigarrow \delta(\mathbf{the-speaker})(\mathbf{frolic}(\mathbf{the-speaker}))$
 b. $\llbracket \delta(\mathbf{the-speaker})(\mathbf{frolic}(\mathbf{the-speaker})) \rrbracket^{\mathcal{D},s,a} = \langle \mathbf{plan}_s \cup \{w \in W_s \mid s \text{ frolics in } w\} \rangle$

This analysis captures, at a technical level, the close similarity between promises and commands noted by Searle (1969:64). It also explains the well-known observation that *promise* loses its performative force when embedded. For us, this is simply a reflection of the fact that, when embedded, a promise clause cannot denote a function with plan-sets in its range.

Extensions to other kinds of speech act tend to be straightforward, and we are able to capture at a technical level the various connections between interrogatives, requests, and imperatives using this basic mode of analysis.

References

- Bach, Kent. 1999. The myth of conventional implicature. *Linguistics and Philosophy* 22(4):367–421.
 Gunlogson, Christine. 2001. *True to Form: Rising and Falling Declaratives as Questions in English*. Ph.D. thesis, UC Santa Cruz.
 Hamblin, Charles L. 1987. *Imperatives*. London: Blackwell.
 Han, Chung-hye. 1998. *The Structure and Interpretation of Imperatives: Mood and Force in Universal Grammar*. Ph.D. thesis, University of Pennsylvania.
 Lascarides, Alex and Nicholas Asher. 2003. Imperatives in dialogue. In P. Kuehnlein, H. Rieser, and H. Zeevat, eds., *The Semantics and Pragmatics of Dialogue for the New Millenium*. Amsterdam: John Benjamins.
 Potts, Christopher. 2003. *The Logic of Conventional Implicatures*. Ph.D. thesis, UC Santa Cruz.
 Searle, John. 1969. *Speech Acts: An Essay in the Philosophy of Language*. Cambridge, UK: Cambridge University Press.