

Instructions for Interpretation as Separate Performatives*

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1 Overview

1. Vocatives

- (1) a. Mary, what's that you're eating?
b. Mary, please have a seat.

2. Topics

- (2) a. MARY, I like a lot, but JOHN, I hate.
b. Mary, I like her a lot.

3. "Force" markers

- (3) a. IMP [sit down]!
b. Q [does Mary like John]?
c. ASSERT [John likes Mary].

Main ideas:

- I draw on Potts (2003a) idea that meaning is "multi-dimensional" to analyze the vocatives, topics, and force markers. These forms add **expressive** meanings to the sentence's main **at-issue** meaning.

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- The intuition:
 1. The vocatives' expressive meaning in (1) is something like "I request Mary's attention".
 2. The topics' expressive meaning in (2) is something like "My mental representation of Mary is active".
 3. The force marker's expressive meaning in (3)a is something like "The at-issue meaning of this sentence is to be added to the addressee's To-do List".
- Embedded topics (embedded vocatives and force markers as well, if they exist) can be interpreted with respect to a context provided by embedding operator.

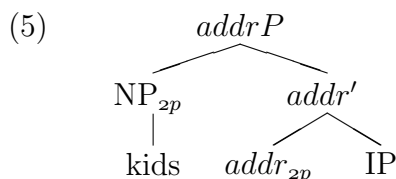
2 Vocatives

2.1 Vocatives and Reference to the Addressee

- The addressee may be overtly represented in the syntax by a vocative phrase:
 - (4) a. John, you may be interested in this.
 - b. Maria, what's that on your nose?
 - c. Test takers, no one touch your pencils!
 - d. Kids, Anna play the piano and Kristin turn pages for her!
 - e. Susan, did John finish the illustrations?

The examples in (4) show that vocatives may occur with all clause types, and need not correspond to an argument. In imperatives, of course, they must correspond to the subject, since the vocative refers to the addressee(s) and the subject must refer to, overlap with, or quantify over the set of addressees. (This last point about imperatives is not true in all languages, but it is in English and many others; cf. Mauck et al. 2004.)

- We propose that vocatives occur in the specifier of a particular syntactic phrase, which we label *addrP* (cf. Zanuttini 2004 for a more useful syntactic discussion):



- XP_{2p} presupposes that XP denotes the set of addressees, and otherwise it doesn't affect the ordinary semantic meaning of what it combines with. This reflects the intuition that a sentence with a vocative is truth-conditionally equivalent to the corresponding sentence without a vocative.

- (6) a. $\llbracket XP_{2p} \rrbracket_c = [\lambda w \lambda x : \{y : \llbracket XP \rrbracket_c(w_c)(y)\} = \text{addr}(c) . \llbracket XP \rrbracket_c(w)(x)=1]$
 b. $\llbracket \text{addr}_{2p} \rrbracket_c = [\lambda p \lambda Q . p]$

We set aside issues pertaining to the possible role of *addr* in imperative semantics.

2.2 The Expressive Meaning of Vocatives

2.2.1 Informal Description

The pragmatic contribution of vocatives remains to be characterized explicitly later on, but can be described informally as indicating that the meaning expressed by the clause is of special relevance to the referent of the vocative (the addressee).¹

- Subtypes of vocatives
 Zwicky (1974, 2004) distinguishes two types of vocatives: **calls** and **addresses**.
 1. “Calls are designed to catch the addressee’s attention.”
 2. Addresses “maintain or emphasize the contact between speaker and addressee.”
 (Zwicky 1974, 787)
- Some items can only be used as calls:
 - (7) a. Cabby, take me to Carnegie Hall.
 b. *I don’t think, cabby, that the Lincoln Tunnel is the best way to go to Brooklyn.
 - (8) a. Hey you, give me that boat hook!
 b. *What I think, you, is that we ought to take the money and run.
 (Zwicky 1974, (32)–(35); also Schegloff 1978)

To the extent that (7)b is acceptable, it is extremely condescending.

- Sociolinguistic Contribution
 Zwicky (1974) also discusses the fact that vocatives may express a wide variety of features of the discourse situation, specifically those concerning the nature of the relationship between speaker and addressee: cf. *honey, dumbass, ma’am, your honor, Franz, Franz Kafka, Mr. Kafka, waiter, dude, son, comrade* (all of these from Zwicky 1974). It’s possible that this should be part of the pragmatic contribution of vocatives, or alternatively it might represent an independent effect due to lexical choice.
- There are probably further subtypes. As pointed out by Robert Frank (p.c.), *cabby* can be used sentence-finally, while *you* is either odd or has a special meaning. This is not a plausible position for a call:

¹Lambrech (1996b) proposes that a general notion of “RELEVANCE” is the basis for the meaning of vocatives and topics. However, he doesn’t explain at all what RELEVANCE is, either in terms of a general theory of meaning or the specifics of different kinds of topics and vocatives. As we’ll see, it is possible to do better.

- (9) a. Please take the Lincoln tunnel, cabby.
 b. ?Please take the Lincoln tunnel, you.

In some varieties of American English, (9)b is allowed with an affectionate connotation to the use of *you*. This use is not possible in initial or medial position, so (8)a is not particularly affectionate in this variety, and (8)b is still bad. Thus, this use of *you* may be revealing of the pragmatic contribution of the sentence-final vocative subtype.

- We'll focus on calls, because my major concern here is figuring out what kind of semantic framework should be used to understand vocatives, and the meaning of calls seems to be the most clear. I include some thoughts on the other varieties as well.

- Calls

Many initial vocatives are calls in Zwicky's sense. They function to get the addressee's attention, and can be introduced by *hey*. It also makes sense that they may be realized by certain quantifiers: *everyone*, *someone* but not *nobody*.

- Tags

Final vocatives are as Zwicky describes addresses. They are used to maintain contact with the addressee. It makes sense that they may be realized by *everyone*, but not *nobody*, *you*. It is not expected that we find tags with *someone*; examples with *someone* in final position seem especially good when it's not clear to the speaker whether there is an addressee:

- (10) Help me someone!

They may be calls which turn up in an unusual position because of the special pragmatics of this type of situation.²

- Addresses

Medial vocatives and initial vocatives which aren't calls are similar to tags, but they convey an additional emphasis on the sociolinguistic import of the lexical choice. As with final vocatives, they can be realized by *everyone*, but not *someone*, *nobody*, *you*, and it also makes sense that something like *cabby* would be inherently condescending and so virtually ruled out.

2.2.2 Towards a Theory

- Expressive content

I suggest that the meaning of vocatives be formulated as **expressive content** in the sense discussed recently by Potts (2003a,b, 2004). Potts has applied his theory of expressive content to conventional implicatures, epithets, appositives, and honorifics. All of these present meaning which is separate from the central at-issue content expressed by a sentence. For example, the appositive in (11) (= Potts 2004, (22)a) adds the non-at-issue content "*Lance is a cyclist.*" The antihonorific in (12) (= Potts & Kawahara 2004, (11)) adds the non-at-issue content "*It sucks that Mary overslept.*"

²This would mean that the vocative subtypes aren't defined by their position, but rather just tend to correlate with particular positions.

- (11) Lance, a cyclist, is from Texas.
- (12) John-wa [Mary-ga nesugoshi-chimat-ta] -koto-o shitteiru.
 John Mary oversleep-antihon-PAST -fact know
At-issue: ‘John knows that Mary overslept.’
Expressive: ‘It sucks that that Mary overslept.’

- Major points of Potts’ analysis

1. Expressive content can be introduced in various ways, including intonation, particular morphemes, and syntactic structures.
2. Expressive meaning never has complex compositionality. For example, there is no intonational pattern which needs to be combined with another intonational pattern in order to express a meaning. (This would be like a predicate, which must combine with a subject to express a proposition.) Of course it’s possible to combine multiple intonational patterns, but the result is simply the sum of what you’d get if you used each independently.
3. This means that we can compute the overall expressive meaning of a sentence as simply the result of gathering together all of the simple expressive meanings introduced somewhere in the structure.

(13) I met that bastard Lance, a cyclist.

4. The final meaning of a sentence has two “dimensions”, and can be represented as a pair, $\langle A, C \rangle$, where A is the ordinary, at-issue meaning and C is the set of expressive meanings.
5. Expressive meanings are performatives (Potts & Kawahara’s 2004). This implies that they are automatically true once understood. So, the expressive meaning of (11) could perhaps be better paraphrased as “*I hereby assert that Lance is a cyclist.*” (I won’t make much of the idea that expressive content is performative today.)

- Interpretation Principles

Potts handles the parallel calculation of A and C via the type theory; specifically, a given domain of meaning may have two types, τ_A and τ_C . The details of the available types explain what kinds of expressive meanings we find (e.g., the lack of complex compositionality). I think it’s more straightforward to calculate the two meanings explicitly using separate interpretation functions, following the idea of Rooth’s (1985) focus semantics. We have two interpretation functions, $\llbracket \]_c$ for regular content and $\llbracket \]_c^C$ for expressive content.

1. For all nodes N with daughters D_1 and D_2 , (**Ordinary function application**) if $\llbracket D_2 \rrbracket_c$ is in the domain of $\llbracket D_1 \rrbracket_c$, then
 - (a) $\llbracket N \rrbracket_c = \llbracket D_1 \rrbracket_c(\llbracket D_2 \rrbracket_c)$
 - (b) $\llbracket N \rrbracket_c^C = \llbracket D_1 \rrbracket_c^C \cup \llbracket D_2 \rrbracket_c^C$

2. For all nodes N with daughters D_1 and D_2 , (**Expressive function application**) if $\llbracket D_2 \rrbracket_c$ is in the domain of $\llbracket D_1 \rrbracket_c^C$, then
 - (a) $\llbracket N \rrbracket_c = \llbracket D_2 \rrbracket_c$
 - (b) $\llbracket N \rrbracket_c^C = \{\llbracket D_1 \rrbracket_c^C(\llbracket D_2 \rrbracket_c)\} \cup \llbracket D_2 \rrbracket_c^C$.
3. For all nodes N with single daughter D , then (**Unary branching**)
 - (a) $\llbracket N \rrbracket_c = \llbracket D \rrbracket_c$
 - (b) $\llbracket N \rrbracket_c^C = \llbracket D \rrbracket_c^C$

According to these rules, expressive meanings can only be introduced via two methods: They may arise via functions from ordinary meanings to expressive meanings; they are applied to their argument and then placed in a set of “finished” expressive meanings by expressive function application. Alternatively (and I’m not sure if this ever happens), they may be introduced directly as members of some node’s set of finished expressive meanings (e.g., they could enter the derivation as the member of a singleton $\llbracket T \rrbracket_c^C$, for some terminal node T). Once an expressive meaning is a member of set of expressive meanings, there is no rule which allows it to take additional arguments; it will simply percolate up the tree.³ Additional constraints (cf. (31) below) might restrict what the members of the set may look like.

- Expressive analysis of vocatives

1. Calls

- The idea of non-at-issue content as a separate performative is natural for calls. The meaning of *John* as a call in (14)a is something like (14)b:

- (14) a. John, your dinner is ready!
- b. “*I hereby request John’s attention.*”

- Meaning of call intonation:⁴

- (a) $\llbracket \text{CALL} \rrbracket_c^C = [\lambda x \lambda w . \text{speaker}(c) \text{ requests } x\text{'s attention in } w]$

- (b) CALL is not in the domain of $\llbracket \rrbracket_c$.

$\llbracket \text{CALL} \rrbracket_c$ is not defined, but $\llbracket \text{CALL} \rrbracket_c^C$ is. This marks the resulting proposition, which is the meaning of the vocative, for inclusion in C rather than A .

We don’t have time to discuss the other types of vocatives in any detail, but I include some thoughts below.

2. Tags

I suggest that the expressive meaning of *John*, used as a tag, is the separate performative in (15)b.

³This point changes somewhat with the addition of rule (30) below.

⁴It’s a bit complex to figure out the extent to which calls are identified by intonation vs. syntactic position. Since in English the relevant intonation seems restricted to a particular position, we can attribute the meaning to the intonation and assume that position plays a role only indirectly. But a broader understanding of vocatives may show that this way of seeing the situation is a mistake.

- (15) a. What are you doing, John?
 b. “*I hereby reiterate that John is my addressee.*”

Tags don’t seem to do much at all! But they would have a communicative function in a situation in which the hearers are unsure who is the actual addressee, or in one in which the possibility that someone else might have been the addressee is in the context (contrast reading). The oddness of *you* would be due to the redundancy of *I hereby reiterate that you are my addressee.*

3. Addresses

I hypothesize that addresses are like tags, as in (16)b, and furthermore express the additional separate performative in (16)c:

- (16) a. I don’t know, my lord, if we have any potted meat in the house.
 b. “*I hereby reiterate that my lord is my addressee.*”
 c. “*I hereby address you as ‘my lord’.*”

An unusual aspect of this hypothesis is that the vocative is both mentioned and used. Anyway, the performative corresponding to (16)c would be odd with *cabby* in (7)b, because *cabby* is not a title; there’s no problem with *doctor*, while *teacher* is slightly odd. I think this goes along with the ability of these words to function as titles. The problem with *you* may be that the resulting performative – *I hereby address you as ‘you’* – is devoid of any possible communicative function (except in the “affectionate *you*” dialect).

3 Topics

- Topics can be thought of in a similar way to vocatives. The main idea would be that *Maria* in (17) introduces an expressive meaning:

- (17) Maria, I like her very much.

The strategy of modeling the contribution of topics by means of a separate performative leaves open to a significant extent what the nature of that contribution is. We can draw ideas about how to formulate this expressive meaning from various intuitive ways of characterizing topics.

- Aboutness

Many theories of topics try to take account of the intuition that they refer to the thing which the sentence is “about”. Such a view can be labeled the **information structure theory of topics** (e.g., Reinhart 1981, Vallduvì 1992, Lambrecht 1996a, Portner & Yabushita 1998, Jacobs 2001). Some theories of this sort:

1. Reinhart attaches the propositional content of a sentence to the referent of its topic phrase. One can think of a sentence meaning as a pair of a thing and a proposition, and this expresses the idea that the proposition is about that thing.

2. Portner & Yabushita flesh out a Reinhart-style analysis within a dynamic semantics model. This allows for the case where the topic doesn't refer to anything in reality. The idea is that the common ground is partitioned into cells, each of which is a proposition connected to a particular discourse referent. The context is the intersection of all of the cells. This analysis models aboutness as a relation between discourse referents and information.
 3. Vallduvì proposes a new level of syntactic representation, **Information Structure**. IS is kind of like LF, but with notions like topic (link in his terminology) represented rather than purely semantic notions. These IS representations are translated into a representation of meaning based on Heim's (1982) file card metaphor. The idea is that the way we store knowledge can be modeled as a set of file cards, with one card for each thing we know about. On each card, we write down what we know about that thing.
- These theories of sentence topics propose structures to represent aboutness in the formal model of discourse (Reinhart, Portner & Yabushita) or the mind (Vallduvì), but only rarely has actual data been offered in support of these structures. And when data has been offered, the grammaticality/acceptability judgments are not categorical and robust in the way we'd expect if these are linguistic structures on a par with other familiar ones. They are even much less robust than the presupposition data which motivates the common ground.

Consider the following from Portner & Yabushita (1998):

- (18) Jon wa kafe de onna-no-hito ni aimashita. Kanojo wa pianisuto
 John TOP cafe LOC woman DAT met she TOP pianist
 deshita.
 was
 'John met a woman at a cafe. She was a pianist.'
- (19) a. ??Kare ga kafe de atta onna-no-hito wa totemo omoshiroi hito
 he NOM cafe LOC met woman TOP very interesting person
 deshita.
 was
 'The woman he met in the cafe was a very interesting person.'
- b. Pianisuto no onna-no-hito wa totemo omoshiroi hito deshita.
 pianist of woman TOP very interesting person was
 'The woman who was a pianist was a very interesting person.'

The idea is that (19)a is not fully felicitous because the information that John met the woman at a cafe was introduced in (18) while John was the topic. This implies that it is recorded on "John's file card". Topics have a familiarity presupposition which is sensitive to aboutness; so, (19)a expects to find the information that John met the woman at a cafe on the woman's file card. Because the information is not there – it's present in the common ground, but on John's card – the sentence is somewhat infelicitous. In contrast, (19)b is fine because the information that the woman is a pianist was recorded on the woman's file card in (18).

The problem is that the judgments are quite uncertain and unstable, and if this structuring of information were really part of linguistic competence we'd expect the data to be less fuzzy.

- Expressive analysis of topics
Aboutness topics can be thought of as introducing expressive meaning. Two versions which more or less directly expresses the functionalist's conception of aboutness would be the following:

- (20) a. "*I request that you activate your mental representation of Maria.*"
 b. "*You will more easily understand this sentence's at-issue meaning if you activate your mental representation of Maria.*"

However, considerations from embedded topics (to be discussed in section 5) suggest that the following is better:

- (21) a. "*(I report that) my mental representation of Maria is active.*"
 b. $\llbracket \text{TOP} \rrbracket_c^C = [\lambda x \lambda w. \text{speaker}(c)\text{'s mental representation of } x \text{ is active in } w]$

It is virtually guaranteed that the addressee's mental representation of Maria will be activated just by the fact that he or she understands the topic. So a topic can be used to activate the addressee's mental representation right at the beginning of the sentence. One might think we're mistargeting the analysis by not stating this function as the meaning of topics; however, the fact that this is what they are often used for does not imply that this is what they mean. As we'll see, topics embedded under verbs like *think* lead me to the conclusion that the topic's meaning *per se* does not invoke the addressee.⁵

- Is Information Structure part of grammar?
 1. Handling aboutness by means of a separate performative may be an improvement over existing information structure theories of topics because it does not require adding complexity to the simple model of discourse context introduced by Stalnaker (1974, 1978).
 2. In fact, the true nature of the mental representation would not be relevant to the language faculty. It could be an amorphous connectionist web of the kind favored by many cognitive scientists rather than a file card-like structure.
 3. If this is right, it explains why the elaborated common ground of Reinhart and Portner & Yabushita, or the file card structure of Vallduvì, fails to show itself

⁵There are a lot of possibilities along these lines to be thought through. I'm not sure if one of the following might be better:

- (i) "*My mental representation of Maria is my most active mental representation.*"
 (ii) "*My mental representation of Maria is now my most active (but it wasn't just before now).*"

The hypotheses that are fundamentally at issue in this talk are that the meaning of topics is expressive and that it should be encoded as a separate speech act.

through robust linguistic facts. While the instruction to affect the hearer’s knowledge representation is part of the linguistic competence, the knowledge representation itself is not.⁶

4 Force Markers

- I am by no means convinced that force markers exist (cf. Zanuttini & Portner 2003, Portner 2004). But in this talk, I want to explore the consequence of the idea that they do, and that they express non-at-issue meaning, i.e. separate performatives.
- A couple of quotes from Davidson (1979):

“Finally, the theory [of sentence mood] should be semantically tractable. If the theory conforms to the standards of a theory of truth, then I would say all is well. And on the other hand if, as I believe Bar-Hillel held, a standard theory of truth can be shown to be incapable of explaining mood, then truth theory is inadequate as a general theory of language.” (p. 15)

“The utterance of a non-indicative is thus always decomposable into the performance of two speech acts.” (p. 18)

- Davidson (1979) suggests that force is expressed through a speech act separate from (but often simultaneous with) the speech act associated with the sentence’s overt content. For example, (22)a is understood something like (22)b:

- (22) a. Put on your hat!
 b. My next utterance is imperative. You will put on your hat.
 (Davidson 1979, p. 19)

According to Davidson, the first part of (22)b, what he calls the “mood-setter”, has truth conditions: it is true if and only if the utterance of the second part is imperative in force.

- Davidson’s idea can be implemented through the same technology as vocatives and topics. The mood-setter, or “force marker”, has a meaning like the following:

- (23) a. “(I hereby assert that) the addressee is to make this sentence’s at-issue meaning true.”
 b. $\llbracket \text{IMP} \rrbracket_c^C = [\lambda p \lambda w . \text{addressee}(c) \text{ is to make } p \text{ true in } w]$

⁶This way of thinking does not require that we push information structure outside of grammar, of course. It could be that a meaning like 6 is more appropriate:

(i) “*I hereby request that you add this sentence’s at-issue meaning to Maria’s ‘file card’.*”

Such a meaning for the topic can be formalized within a concrete analysis of information structure for topics such as Portner & Yabushita’s.

- We would like to express (23) in terms of a more precise theory of meaning in discourse. Portner (2004) proposes that the discourse context contains a To-do List Function and a Question Set, parallel to the Common Ground (cf. also Ginzburg 1995, Roberts 1996, Han 1998, Portner & Zanuttini 2002, Potts 2003).

1. The Common Ground is a set of propositions.
2. The To-do List Function associates each participant in the conversation with a set of properties (his/her To-do List).
3. The Question Set is a set of sets of propositions.

The role of the To-do List is to rank the worlds compatible with the Common Ground, and an agent is considered rational and cooperative to the extent that his/her actions tend to make the real world be among the set of worlds ranked maximally highly by his/her To-do List.

- In this context the imperative force marker would have a meaning as follows:

$$(24) \quad \llbracket \text{IMP} \rrbracket_c^C = [\lambda P \lambda w . (\text{speaker}(c) \text{ requests that } P \text{ is on addressee}(c)\text{'s To-Do List in } w)]$$

5 Embedded Clauses

- Embedded topics are possible.

$$(25) \quad \text{John said that, as for Maria, she is nice.}$$

Embedded vocatives are not possible in English.⁷ There are claims that some verbs embed clauses containing force markers (Krifka 2001, 2002, McClosky to appear). Today I'll focus on topics as I explore the the treatment of embedded expressive, performative meanings.

- A topic embedded under *say*, as in (25), can be interpreted with respect to either the main utterance or the reported act of saying. The former reading is easy to handle; the topic's expressive meaning will simply percolate up the tree unless we do something to stop it. But to get the "embedded" reading, it will be necessary to take care of two things:
 1. The speaker identified in the topic's semantics (cf. (21)b) will have to be shifted to the agent of the reported speech act.
 2. The content of the topic's semantics will have to be related to the world of the reported speech act rather than that of the speech act of the utterance itself.

⁷Kratzer (p.c., 10/29/04) suggests that they may be possible in German, but I have not investigated this yet.

- Assume that a Context c is a pair $\langle \text{speaker}, \text{world} \rangle$ (cf. Schlenker 2003).⁸ The contribution of the topic phrase should not be a proposition, but rather a function from contexts to propositions:

$$(26) \quad \llbracket \text{TOP} \rrbracket_c^C = [\lambda x \lambda c \lambda w . \text{speaker}(c)\text{'s mental representation of } x \text{ is active in } w]$$

- The embedding verb *say* has a semantics which is sensitive to both dimensions of meaning:

$$(27) \quad \text{a. } \llbracket \text{say} \rrbracket_c = [\lambda \langle A, C \rangle \lambda a \lambda s \lambda w .$$

1. $\forall w' [w' \text{ is compatible with what } s \text{ says to } a \text{ in } w \rightarrow w' \in A]$, and
2. $w \in \cap \{m(\langle s, w \rangle) : m \in C\}$

$$\text{b. } \llbracket \text{say} \rrbracket_c^C = \emptyset$$

This meaning makes *say* absorb all of the complement clause’s expressive meanings. If we wanted it to absorb only some of them, it would be necessary to structure C in a way that would allow *say* to find those particular components.

The context-shifting in (27) affects only the expressive meanings, not the ordinary at-issue meaning, and it is accomplished not by truly shifting the index of interpretation representing the context for the embedded clause, but by providing the expressive meanings with a “simulated” context $\langle s, w \rangle$. These decisions are not crucial as far as the points we’re concerned with here go, and I’m sure the alternatives will be thoroughly discussed during this workshop.

- In the case of (25), we get the following (after \exists closure and assuming that the only expressive meaning introduced in the embedded clause comes from the topic):

$$(28) \quad \llbracket (25) \rrbracket_c = [\lambda w .$$

1. $\exists a \forall w' [w' \text{ is compatible with what John says to } a \text{ in } w \rightarrow w' \text{ is a world in which Maria is nice}]$, and
2. John’s mental representation of Maria is active in w .]

- The same analysis can be applied to a topic embedded under *think*:

$$(29) \quad \text{a. John thinks that, as for Maria, she is nice.}$$

$$\text{b. } \llbracket (29)\text{a} \rrbracket_c = [\lambda w .$$

1. $\forall w' [w' \text{ is compatible with what John thinks in } w \rightarrow w' \text{ is a world in which Maria is nice}]$, and
2. John’s mental representation of Maria is active in w .]

- Loose Ends

1. We need another interpretation rule for creatures like (27):

⁸I suppress the time parameter for simplicity. The context needs to provide an addressee for imperative force (cf. (24)); the addressee could be added to the context itself or accessed via description (“The individual to whom $\text{speaker}(c)$ is talking in $\text{world}(c)$ at $\text{time}(c)$ ”).

- (30) **Expressive-Absorbing Function Application**
 For all nodes N with daughters D_1 and D_2 ,
 if $\langle \llbracket D_2 \rrbracket_c, \llbracket D_2 \rrbracket_c^C \rangle$ is in the domain of $\llbracket D_1 \rrbracket_c$, then
 (a) $\llbracket N \rrbracket_c = \llbracket D_1 \rrbracket_c(\langle \llbracket D_2 \rrbracket_c, \llbracket D_2 \rrbracket_c^C \rangle)$, and
 (b) $\llbracket N \rrbracket_c^C = \emptyset$.

2. We need a rule to discharge the context argument of expressive meanings that make it to the root level:⁹

- (31) **Root Node**
 If N is a root node, then the two-dimensional meaning of N with respect to context c is the pair $\langle A, C \rangle$:
 $\langle \llbracket N \rrbracket_c, \{m(c) : m \in \llbracket N \rrbracket_c^C\} \rangle$.

3. In order to account for the ambiguity of (25), I assume that there is another meaning for *say* which only takes the at-issue meaning of the complement as its argument.

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⁹This rule assumes that all of the expressive meanings that make it to the root node are functions from contexts to propositions. If there are other kinds of expressive meanings, we would redo the Root Node rule so as to apply the ones of the *context* \rightarrow *proposition* type to the context of utterance, and leave the others alone.

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