Embedded imperatives in Mbyá[*]

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1   Introduction

This paper discusses the interpretation of embedded imperatives in Mbyá, a Tupi-Guaraní language spoken in Argentina, Brazil and Paraguay.

This paper contributes to the description of recursive structures in Tupi-Guarani languages, which are well represented in this volume, with contributions by Bonfim Duarte, Damaso Vieira, and Lima and Kayabi. Damaso Vieira gives an inventory of recursive structures in Tupinambá and Mbyá Guaraní, which include recursive embedding of clauses under verbs with sentential complements, recursive embedding of causative morphemes, and recursive possessive marking. Clausal subordination and possessive recursion are also discussed respectively by Bonfim Duarte in Tenetehára and by Lima and Kayabi in Kawaiwete. I argue that the embedding of imperatives in Mbyá is an instance of recursive embedding of ForceP, the projection of a Force head located in the left periphery of the clause, which encodes information that constrains the illocutionary force of utterances of the sentence. The focus of the present study on speech reports and reportative evidentials also makes it relevant to another set of studies in this volume, united by their attention to recursion in the expression of speech and/or attitude reports and composed of the contributions by Hollebrande, Sauerland, Correa *et al.* and Stenzel.

2   Embedded imperatives in Mbyá

2.1   Overview of the phenomenon

As the following examples illustrate, Mbyá imperatives such as (1) are attested in construction with the reportative evidential *je* and as complements of the verbs *he'i* ('say') and *jerure* ('ask to'):[1]

(1)   E-me'ẽ   ka'ygua.
      2.SG.IMP-give mate.
      'Give the mate[2]!'

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[1]For a discussion of the place of clausal subordination in recursive structures in Guarani Mbyá, see Damaso Vieira, this volume.

[2]Mate is a drink prepared by steeping dried leaves of Yerba Mate in hot water; a *ka'ygua* is a gourd that is used to drink mate.

(2) E-me'ẽ   ka'ygua je.
     2.SG.IMP-give mate   EVID.
     'Give the mate (I heard)!'

(3) Aureliano he'i e-me'ẽ   ka'ygua.
     Aureliano 3.say 2.SG.IMP-give mate
     'Aureliano said give the mate.'

(4) Aureliano o-jerure e-me'ẽ   ka'ygua.
     Aureliano A3.ask-to 2.SG.IMP-give mate.
     'Aureliano asked you to give the mate.'

Imperatives cannot be embedded under verbs other than *he'i* and *jerure*. The following list of verbs was tested and it was confirmed that they are ungrammatical with imperative complements:

(5) *Porandu* ('ask wh-'), *kuaa* (know), *rovia* ('believe'), *pota* ('want'), *eja* ('let').

(6) *Felipe o-ikuaa/o-guerovia e-me'ẽ   ka'ygua.
     Felipe A3-know/A3-believe 2.SG.IMP-give mate.

(7) *Felipe o-eja e-me'ẽ   ka'ygua (aguã).
     Felipe A3-let 2.SG.IMP-give mate   (PURP).

(8) *Felipe o-porandu e-me'ẽ   (pa) ka'ygua.
     Felipe A3-ask   2.SG.IMP-give (Q) mate.

Embedded imperatives have received some attention recently. It had been claimed that imperatives cannot be embedded (see Han 1998; Katz and Postal 1964; Palmer 1986; Platzack and Rosengren 1997; Rivero and Terzi 1995; Sadock and Zwicky 1985). This generalization was explained by analyzing imperatives as a clause type associated with directive speech acts, and making the hypothesis that speech acts cannot be embedded for semantic reasons. More recently however, new cross-linguistic investigations have revealed that embedded imperatives are attested in a variety of languages, including Mandarin (Chen-Main 2005), Slovenian (Rus 2005), and English (Crnic and Trinh 2009). For a recent overview of this debate, see Kaufmann (2014).

2.2 Fieldwork practices

The Mbyá data for this paper were elicited in the Mbyá community of Kuña Piru in the province Misiones, Argentina, during two field trips (winter 2012/2013, and winter 2011/2012). I worked with three consultants: Aureliano Duarte, Cirilo Duarte, and Germino Duarte.

Elicitation sessions were conducted in Spanish, without the intervention of a translator. All three consultants were fluent in Mbyá and in Spanish. They were native speakers of Mbyá who had been schooled in Spanish (primary and secondary education, and vocational training) and used Spanish in their professional lives.

The research presented in this paper is based on three tasks: elicitation of judgments of acceptability on sentences, elicitation on judgments of well-formedness on discourses, and elicitation of judgments of truth-value, following the methodology of Matthewson (2004).

Before each elicitation session, the consultants gave their consent for the elicitation session to be recorded and/or transcribed, as well as for the resulting data to be used in scientific conferences and publications.

The orthography that was used for the data I elicited is the one that is *de facto* used in Misiones, in written publications in Mbyá. Mbyá examples taken from publications or scientific articles are reproduced with the original orthography.

3 Distribution of embedded imperatives

3.1 Imperatives

Mbyá verbs agree in person and number with their arguments following a split-S system (Dooley 2006). Agreement markers are prefixed to the verb root. Imperatives have a defective agreement paradigm, which is restricted to singular and plural second person subjects. Only the singular agreement is specific to the imperative mood, as illustrated in the following table:

(9) *-me'ẽ* ('to give'), indicative mood vs imperative mood:

Person/Number	Indicative	Imperative
1.SG	A-me'ẽ	
2.SG	Re-me'ẽ	E-me'ẽ
3.SG/PL	O-me'ẽ	
1.INCL.PL	Ña-me'ẽ	
1.EXC.PL	Ro-me'ẽ	
2.PL	Pe-me'ẽ	Pe-me'ẽ

This defective verb form has a number of semantic properties that motivate its description as an imperative mood (see Kaufmann 2011 for a discussion of characteristic properties of imperatives). First, one cannot challenge an imperative by denying its truth, as illustrated by the following examples:

(10) A: E-me'ẽ   ka'ygua Aureliano pe.
         2.SG.IMP-give mate   Aureliano to.
         'Give the mate to Aureliano.'

     B: # Añete-'ỹ.
          true-NEG
        '# That's not true.'

In this respect, imperatives contrast with universal deontic statements formed with the modal operator *va'erã*:

(11) A: Re-me'ẽ   va'erã ka'ygua Aureliano pe.
         A2.SG-give must   mate   Aureliano to.
         'You must give the mate to Aureliano.'

     B: Añete-'ỹ.
          true-NEG
        'That's not true.'

Secondly, the use of an imperative is infelicitous when the speaker does not want the addressee to perform the action that is described by the imperative. Here again, the restriction applies to imperatives but not to universal deontic statements:

(12) #E-me'ẽ   ka'ygua Aureliano pe, va'eri nd-a-ipota-i   re-me'ẽ   ka'ygua
      2.SG.IMP-give mate   Aureliano to but   NEG-A1.SG-want-NEG A2.SG-give mate
      ichupe.
      him.to
      # 'Give the mate to Aureliano! But I don't want you to give him the mate.'

(13) Re-me'ẽ   va'erã ka'ygua Aureliano pe, va'eri nd-a-ipota-i   re-me'ẽ
      A2.SG-give must   mate   Aureliano to but   NEG-A1.SG-want-NEG A2.SG-give
      ka'ygua ichupe.
      mate   him.to
      'You must give the mate to Aureliano, but I don't want you to give him the mate.'

Likewise, the use of an imperative is infelicitous when the speaker does not have the authority to
direct the addressee to perform the action it describes, contrary to universal deontic statements:

(14) # E-me'ẽ   ka'ygua, va'eri nd-a-ikuaa-i   re-me'ẽ   ta pa.
       2.SG.IMP-give mate   but   NEG-A1.SG-know-NEG A2.SG-give FUT Q
      #'Give the mate, but I don't know if you will give it.'

(15) Re-me'ẽ   va'erã ka'ygua, va'eri nd-a-ikuaa-i   re-me'ẽ   ta pa.
      A2.SG-give must   mate   but   NEG-A1.SG-know-neg A2.SG-give FUT Q
      'You must give the mate, but I don't know if you will give it.'

Finally, imperatives can be used to perform different kinds of directive speech acts beyond
orders, such as invitations and permissions:

(16) Context: When you visit someone at their place, they usually invite you to sit down:

      E-guapy.
      2.SG.IMP-sit
      'Sit down.'

(17) E-ka'y-'u,   re-ka'y-'u-che   vy.
      2.SG.IMP-mate-drink A2.SG-mate-drink-want ss
      'Drink some mate, if you want to.'

3.2   The reportative evidential *-je*

The particle *je* is a reportative evidential. The use of *je* indicates that the evidence that supports
the speaker's utterance is hearsay. In the absence of hearsay evidence, or if the speaker has
direct evidence to support his utterance, the use of *je* is infelicitous:

(18) Juan o-jau   je.
      Juan A3-bathe EVID
      'Juan was bathing (I heard).'

(19) Felicity of (18) in various contexts:

      a.   The addressee's brother asks him: "Where was Juan this morning?". The ad-
           dressee didn't see Juan, but his wife told him that Juan was bathing at the lake.
           FELICITOUS

      b.   This morning, the addressee went to the lake and he saw Juan bathing. During the
           afternoon, his brother asks him "Where was Juan this morning?"   INFELICITOUS

Reportative evidentials have been analyzed either as epistemic modals or as illocutionary modifiers (see a.o. Faller 2002, Faller 2007, Faller 2011; Matthewson 2007, Matthewson 2012; Murray 2010; Peterson2010; see also section 5.3). I will discuss three facts that support an analysis of *je* as an illocutionary modifier.

First, *je* is felicitous when the speaker knows that the prejacent is false:

(20) Maria o-menda je, va'eri chee nd-a-rovia-i.
      Maria A3-marry EVID, but I   NEG-A1.SG-believe-NEG
      'Maria got married, I heard, but I don't believe it.'

(21) Maria o-menda je, va'eri a-ikuaa   n-o-menda-i-a.
      Maria A3-marry EVID, but   A1.SG-know NEG-A1.SG-marry-NEG-NMLZ
      'Maria got married, I heard, but I know she didn't get married.'

Secondly, *je* is not embeddable in complements of verbs of attitude and in antecedents of conditionals:

(22) A-ikuaa   Maria o-menda-a.
      A1.SG-know Maria A3-marry-NMLZ
      'I know that Maria got Married.'

(23) *A-ikuaa   je Maria o-menda-a.
      A1.SG-know EVID Maria A3-marry-NMLZ
      Intended: 'I know that (I heard) Maria got Married.'

(24) *A-ikuaa   Maria je o-menda-a.
      A1.SG-know Maria EVID A3-marry-NMLZ EVID.

The following examples show that *je* is unacceptable in the antecedent of a conditional. The unacceptable sentence in (25-a) should be compared to the acceptable sentence (25-b), whose meaning is similar to the intended interpretation of (25-a). In (25-b), the so-called impersonal form *hea* ('someone said') of the verb of report *he'i* (Dooley 2006) is used, rather than the reportative evidential, in order to convey hearsay. (25-a) should also be compared to (26), which shows that the conditional without the reportative evidential *je* is well formed.

(25) Context: The speaker's father told him that he killed a jaguar yesterday (which is illegal), and that no one had seen him. But today the speaker can hear people saying that his father killed a jaguar.

      a. *Che-ru   o-juka   je ramo jaguarete, mava'erã o-echa ra'e.
         B1.SG-father A1.SG-kill EVID DS   jaguar,   someone A3-see MIR
         Intended: 'If someone said that my father killed a jaguar, someone must have seen him.'
      b. Hea   ramo che-ru   o-juka-a   jaguarete, mava'erã o-echa ra'e.
         say.IMPRS DS   B1.SG-father A1.SG-kill-NMLZ jaguar,   someone A3-see MIR
         'If someone said that my father killed a jaguar, someone must have seen him.'

(26) Che-ru   o-juka   ramo jaguarete, mava'erã o-echa ra'e.
      B1.SG-father A1.SG-kill DS   jaguar,   someone A3-see MIR
      'If my father killed a jaguar, someone must have seen him.'

Finally, utterances modified by *je* cannot be felicitously challenged by denying that the speaker heard that the prejacent was true:

(27) Aureliano o-ĩ   je Aristobulo py.
      Aureliano A3-be EVID Aristobulo LOC
      'Aureliano is in Aristobulo, I heard.'

      Anhete'ỹ! #O-ĩ, va'eri mava'eve n-o-mombe'u-i ndevy pe!
      false   A3-be but   nobody NEG-A3tell-NEG you   to
      'That's false! #He is, but nobody told you this!'

The first of the two aforementioned tests shows that the speaker is not committed to believing the propositional content of the reported utterance, so much so that she might even believe its negation. This is expected if *je* is an illocutionary modifier that conveys that the person who is responsible for the speech act is neither the speaker nor the addressee but a third individual, as proposed by Faller (2002) for the Quechua reportative evidential *-si*. On the contrary, if *je* was a universal epistemic modal with a realistic modal base, denying the truth of the propositional content would be contradictory.

The second of these tests only shows that *je* cannot be embedded under verbs of attitudes and in the consequent of conditionals. This is expected if *je* is an illocutionary operator (i.e. a modifier of speech act potentials) and is unattested in these environments for type theoretic reasons: complements of verbs of attitude and antecedents of conditionals must denote propositions, and speech act potentials do not have the type of propositions.

The third test shows that the evidential contribution of *je* cannot be challenged directly, which is expected if *je* is an illocutionary operator that does not affect the propositional content of the speech acts it modifies.

Interestingly, *je* can be embedded in the complement of the verb of report *he'i*, which as we have seen also embeds imperatives. In such contexts, *je* does not constrain the evidential base of the utterance. For instance, (28) is felicitous even if the speaker has direct evidence that Juan said that Maria got married (i.e. he was there when Juan said that):

(28) Juan he'i   je Maria o-menda-a.
      Juan A3.say EVID Maria A3-marry-NMLZ
      'Juan said that Maria got married.'

The effect of *je* on the reported assertion remains to be investigated (one outstanding question is whether *je* indicates that Juan had indirect hearsay evidence that Maria got married). If *he'i* can select a complement that denotes a SAP, and *je* is a SAP modifier, then it is expected that *je* can occur in its complement.

3.3   Embedded imperatives are not quotations

Let us now convince ourselves that Mbyá embedded imperatives are not quotations. A first piece of evidence is that there is no indexical shifting in these constructions. Imagine that a speaker (Aureliano) says (29) to Germino in the presence of Cirilo, but Germino does not hear it.

(29) E-me'ẽ   ka'ygua Cirilo pe.
      2.SG.IMP-give mate   Cirilo to
      'Give the mate to Cirilo.'

Cirilo could report (29) to Germino using (30-a) or (30-b). This shows that the first person pronoun in the embedded imperative has not shifted, i.e. is not interpreted as in a quotation.

(30) a. E-me'ẽ   je ka'ygua chevy pe.
          2.SG.IMP-give EVID mate   me   to
          'Give me the mate, I heard.'

      b. He'i e-me'ẽ   ka'ygua chevy pe.
          3.say 2.SG.IMP-give mate   me   to
          'He said give me the mate'

A second piece of evidence is that a quantifier can bind a pronoun in an imperative used as the complement of *he'i*. If three speakers each say (31) to the addressee, but she does not hear it, another speaker can report it to her as in (32):

(31) E-me'ẽ   ka'ygua chevy pe.
      2.SG.IMP-give mate   me   to
      'Give me the mate.'

(32) Ha'ejavive he'i e-me'ẽ   ka'ygua ichu pe.
      everyone   3.say 2.SG.IMP-give mate   him to
      'Everyone$_i$ said give him$_i$ the mate.'

4   Interpreting embedded imperatives

In section 3.1 we observed that matrix imperatives are infelicitous when the speaker does not want the addressee to perform the action described by the imperative, or when the speaker has no authority over the action. Interestingly, these properties are not shared by embedded imperatives, in the sense that the speaker does not have to desire that the action be performed, nor must she have authority over it. This is shown by the felicity of the following sentences:

(33) E-me'ẽ   je chevy pe ka'ygua, va'eri nd-a-ipota-i.
      2.SG.IMP-give EVID me   to mate,   but   NEG-A1.SG-want-NEG
      'Give me the mate, I heard, but I don't want it.'

(34) He'i e-me'ẽ   chevy pe ka'ygua, va'eri nd-a-ipota-i.
      3.say 2.SG.IMP-give me   to mate,   but   NEG-A1.SG-want-NEG
      'She/he said give me the mate, but I don't want it.'

(35) E-me'ẽ   je ka'ygua, va'eri nd-a-ikuaa-i   re-me'ẽ   va'erã pa.
      2.SG.IMP-give EVID mate   but   NEG-A1.SG-know-NEG A2.SG-give must   Q
      'Give the mate, I heard, but I don't know if you have to give it.'

(36) He'i e-me'ẽ   ka'ygua, va'eri nd-a-ikuaa-i   re-me'ẽ   va'erã pa.
      3.say 2.SG.IMP-give mate   but   NEG-A1.SG-know-NEG A2.SG-give must   Q
      'He said give the mate, but I don't know if you have to give it.'

This does not mean that there are no constraints on embedded imperatives however; the author of the imperative that is being reported is still subject to these requirements, as the next examples demonstrate:

(37) #Aureliano he'i e-me'ẽ   ichu pe ka'ygua, va'eri nd-o-ipota-i.
       Aureliano 3.say 2.SG.IMP-give him to mate,   but   NEG-A3-want-NEG
       'Aureliano$_i$ said give him$_i$ the mate, but he$_i$ doesn't want it.'

(38) #Aureliano he'i e-me'ẽ   ka'ygua ichu pe, va'eri nd-o-ikuaa-i   re-me'ẽ
    Aureliano 3.say 2.sg.imp-give mate   him to but   neg-a1.sg-know-neg a2.sg-give
    va'erã pa.
    must   q
    'Aureliano*i* said give him*i* the mate, but he*i* doesn't know if you have to give it.'

Imperatives embedded under *he'i* or *jerure* and *je* differ with respect to the encoding of the recipient of the reported speech act. When reporting an imperative with *je*, the recipient of the reported directive speech act has to be the addressee of the reporting speech act. To illustrate, assume that Aureliano says (39) to the Germino, in the presence of Cirilo and Vera:

(39) E-me'ẽ   ka'ygua Cirilo pe.
    2.sg.imp-give mate   Cirilo to
    'Give the mate to Cirilo.'

If Germino and Vera did not hear what Aureliano said, Cirilo can report it to Germino as (40). However, (40) would be infelicitous as a report of (39) to Vera, since in that case Vera would interpret incorrectly that she was the recipient of Aureliano's order. In sum, when reporting an imperative with *je*, the addressee of the reported utterance is understood to be the same as the addressee of the reporting utterance.

(40) E-me'ẽ   je ka'ygua.
    2.sg.imp-give evid mate
    'Give the mate (I heard)!'

When reporting an imperative with *he'i* or *jerure*, the identity of the addressee of the reported utterance can be specified by the indirect object of the embedding verb. In the absence of indirect object, it is understood that the addressee of the reported utterance is the same as the addressee of the reporting utterance. Let us illustrate. Assume that Aureliano said (41) to Vera, in the presence of Cirilo and Germino:

(41) E-me'ẽ   ka'ygua Cirilo pe .
    2.sg.imp-give mate   Cirilo to
    'Give the mate to Cirilo.'

If Germino and Vera did not hear what Aureliano said, Cirilo can report it to Germino as (42). Reporting it to Germino as (43) would be infelicitous, since Germino would then assume that Aureliano's order was directed to him. However, Cirilo can use (43) to report (41) to Vera:

(42) Aureliano he'i Vera pe e-me'ẽ   ka'ygua.
    Aureliano 3.say Vera to 2.sg.imp-give mate
    'Aureliano said to Vera*i* give the mate!'

(43) Aureliano he'i e-me'ẽ   ka'ygua.
    Aureliano 3.say 2.sg.imp-give mate
    'Aureliano said give the mate!'

## 5   Embedding speech act potentials

In this section, I present Krifka's analysis of Speech Act Potentials and their embeddings (Krifka2014), and I will propose an analysis of *je* as a speech act modifier in this framework.

5.1 Speech Act Potentials

We begin with the definition of the model frames in which linguistic expressions are interpreted. The formalism follows Krifka (2014), with some minor modifications for the sake of simplicity. There are four basic types: individuals (objects and events, e), truth-values (true and false, t), indices (world/time points, s) and contexts (identifying speaker c_s, addressee c_a and utterance time c_t; type symbol c). Functional types are defined from these basic types in the usual way.

A model contains a set of entities E and a set of indices I. I is ordered by a relation of precedence $\leq$, which is not linear but generates a tree structure: $\leq$ is transitive, reflexive and left linear. A maximal subset I' of I that is linear is called a history. In the following set of indices, there are 18 different histories. An option space is a rooted set of histories:

(44)   A set of indices with 18 histories:
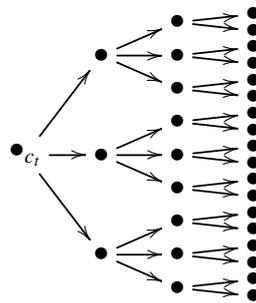
A context c is a triple $\langle c_s, c_a, c_t \rangle$ where c_s is a speaker, c_a is an addressee, and c_t is an index of utterance. A common ground CG is a set of contexts.[3] Note that every index of utterance is the root of an option space such as (44), which represents its possible future histories, and is at the end of a linearly ordered set of indices, which represents its past.

A proposition is a function from indices to truth values, as we might expect. A speech act however, is a function from indices to indices. Let us assume that the performance of a speech act A by a speaker c_s can be analyzed as an action in which c_s takes up certain commitments C with the addressee c_a as witness. We may represent the performance of A in an option space as a mapping from an old index of utterance in which it is not the case that some individual a has commitments C with b as a witness, to a new index of utterance in which a is the speaker c_s, b is the addressee c_a, and it is true that c_s has commitments C with c_a as a witness. This is represented in the following diagram:

(45)   A speech act is an update of the context that moves every utterance index forward in its option space:

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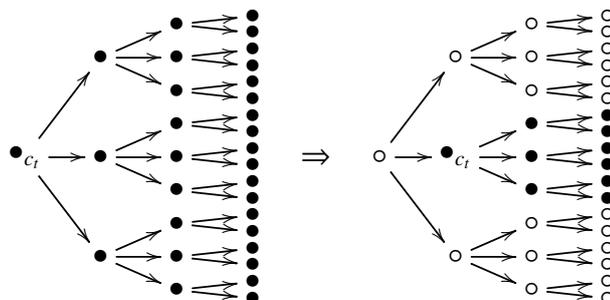
[3]Here, I am departing slightly from Krifka's terminology.

This movement from indices to indices is defined with the auxiliary notion of index incrementation in (46):[4]

(46) For any indices i and i', i' is the incrementation of i with condition F ($i \leq i'[F(i')]$) if and only if:

$i \leq i'$ and
$F(i')$ and
$\forall i''[i \leq i'' < i' \rightarrow \neg F(i'')]$ and
for all formulas G such that F and G are logically independent:
$\forall i'', i'''[(i \leq i'' \leq i' \wedge i \leq i''' \leq i') \rightarrow G(i'') = G(i''')]$

I.e. $i \leq i'$, and i' is maximally like i with the exception that F is true of i'.

We may now define a Speech Act Potential (SAP) as a function that maps a speaker x, an addressee y and an index i to an index i' that increments i with some condition relating x and y:

(47) $\lambda y.\lambda x.\lambda i.\iota i'[i \leq i'[F(x)(y)(i')]]$

A speech act results from the update of a common ground CG with a speech act potential A:

(48) $CG + A = \{\langle c_s, c_a, A(c_a)(c_s)(c_t)\rangle \mid \langle c_s, c_a, c_t\rangle \in CG\}$

5.2 Illocutionary operators

The analysis of speech acts in terms of SAPs must include a theory of the conditions that different types of speech acts impose on indices: how does the world change when an assertion or an order is issued, and how can we capture this change propositionally using the notion of index incrementation?

Krifka represents the index change characteristic of specific speech acts with dedicated illocutionary predicates, such as ASSERT for assertion. These predicates are part of the denotation of illocutionary operators, which are defined as functions from propositional contents to speech act potentials. In (49), an illocutionary operator ASSERT is defined in terms of the predicate ASSERT:

(49) $[\![ASSERT]\!] = \lambda p.\lambda y.\lambda x.\lambda i.\iota i'[i \leq i'[\text{ASSERT}(p)(x)(y)(i')]]$

Illocutionary operators like ASSERT occupy a ForceP in the LF of sentences, as illustrated in the following examples:

(50) Juan o-jau.
      Juan A3-bathe
      'Juan was bathing.'

(51) $[_{ForceP} [_{Force} \text{ASSERT}] [_{IP} \text{PAST Juan ojau}]]$

(52) $\lambda y.\lambda x.\lambda i.\iota i'[i \leq i'[\text{ASSERT}([\![IP]\!])(x)(y)(i')]]$

Krifka (2014) does not present a detailed analysis of illocutionary predicates, but he suggests that they should be analyzed in terms of commitments, following Alston (2000). In (53) I give a tentative 'commitment' semantics for the predicate ASSERT:

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[4]I will assume that time is discrete. This makes things simpler, but it is not a necessary assumption.

(53) ASSERT$(p)(x)(y)(i)$ is true iff in i, x is committed to act as though she believes that p and y is a witness to this commitment.

Imperatives are speech acts that introduce directive commitments. A directive illocutionary operator DIRECT is defined in (54), which allows us to analyze the imperative sentence in (55) as in (56):

(54) $\llbracket \text{DIRECT} \rrbracket = \lambda P.\lambda y.\lambda x.\lambda i.\iota i'[i \leq i'[\text{DIRECT}(P)(x)(y)(i')]]$

(55) E-me'ẽ   ka'ygua.
      2.SG.IMP-take mate
      'Give the mate!'

(56) $\llbracket [_{ForceP} \text{DIRECT} [_{VP}\text{Eme'ẽ ka'ygua}]] \rrbracket = \lambda y.\lambda x.\lambda i.\iota i'[i \leq i'[\text{DIRECT}(\llbracket VP \rrbracket)(x)(y)(i')]]$

A commitment semantics for the illocutionary predicate DIRECT is proposed in (57):

(57) DIRECT$(P)(x)(y)(i)$ iff in i, x is committed to act as though she wants y to do/have P.

The notion of taking a commitment has been given a model-theoretic analysis by Condoravdi and Lauer (2010, 2011) and (Lauer 2013). Condoravdi and Lauer (2011) defines it as follows:

(58) If an agent a takes on a commitment, he thereby excludes possible future states in which:

      a.   the agent does not act according to the commitment AND
      b.   the commitment is not voided before the agent fails to act according to the commitment AND
      c.   the commitment does not count as violated.

This definition presupposes that commitments to act are evaluated in branching world-models, which are already part of Krifka's analysis of Speech Act Potential. This allows us to make the commitment semantics of ASSERT and DIRECT as follows:

(59) At an index i, an agent is committed to act as though she believes that p iff there is no index i' such that $i < i'$ and:

      a.   the agent does not act as though she believes that p at i' AND
      b.   the commitment is not voided before the agent fails to act as though she believes that p AND
      c.   the commitment does not count as violated.

(60) At an index i, an agent is committed to act as though she wants p iff there is no index i' such that $i < i'$ and:

      a.   the agent does not act as though she wants y to do/have P at i' AND
      b.   the commitment is not voided before the agent fails to act as though she wants p AND
      c.   the commitment does not count as violated.

5.3 Analyzing *je* as a SAP modifier

In subsection 3.2, I argued that *je* is an illocutionary modifier. Faller (2002) analyzes the reportative evidential *si* of Quechua as an illocutionary modifier that manipulates the conditions of

sincerity of a speech act. Speech acts are decomposed into a propositional content, a statement of sincerity conditions, and an illocutionary force. Unmodified assertions are analyzed as in (61). By uttering this sentence, a speaker s performs a speech act of assertion whose propositional content is the proposition that it is raining, and that is sincere if and only if the speaker believes that it is raining.

(61) Para-sha-n
rain-PROG-3
p = 'It is raining.'
ILL = ASSERT$_s$(p)
SINC = {$Bel(s, p)$}

Faller proposes that the speaker of an utterance modified by *si* is not committed to believing the propositional content p of the utterance. This accounts for the fact that speakers can express disbelief about p. Since assertion is tied to sincerity conditions of belief, Faller proposes that illocutionary acts modified by *si* have a force of 'presentation' of p. The sincerity conditions associated with this illocutionary force require that some individual who is neither the speaker nor the addressee performed an assertion of p. Note that the sincerity conditions do not commit the speaker to believing that someone said that p. This accounts for the impossibility to challenge utterances modified by *si* by denying that the speaker was told that/heard p.

(62) Para-sha-n-si
rain-PROG-3-si
p = 'It is raining.'
ILL = PRESENT(p)
SINC = {$\exists s_2[Assert(s_2, p) \wedge s_2 \notin \{h, s\}]$}

Let us try and adapt Faller's proposal in Krifka's theory of SAPs. As an illocutionary modifier, *je* denotes a function from SAPs to SAPs, and it is adjoined to a ForceP:

(63) Juan o-jau   je.
Juan A3-bathe EVID
'Juan was bathing, I heard.'

(64)   [$_{ForceP}$ [$_{Evid}$ je] [$_{ForceP}$ [$_{Force}$ ASSERT] [$_{IP}$ PAST Juan ojau]]]

The effect of *je* on the sincerity conditions of speech acts can be captured by quantifying over the 'speaker' argument of the modified SAP. As defined in (65), the effect of *je* on the interpretation of an utterance is to shift the speaker argument of the embedded SAP to some individual other than the speaker c_s or the addressee c_a:

(65) $[\![je]\!] = \lambda A.\lambda y.\lambda x.\lambda i.\iota i'[\exists z[z \notin \{x, y\} \wedge i' = A(z)(y)(i)]]]$

(66) $[\![[[_{FP} \text{ASSERT} [_{IP} \text{PAST Juan ojau}]] \text{je}]\!] =$
$\lambda y.\lambda x.\lambda i.\iota i'[\exists z[z \notin \{x, y\} \wedge i' = \iota i''[i \le i''[\text{ASSERT}([\![IP]\!])(z)(y)(i'')]]]$

(67) $CG + [\![[[_{FP} \text{ASSERT} [_{IP} \text{PAST Juan ojau}]] \text{je}]\!] =$
$\{\langle c_s, c_a, \iota i[\exists z[z \notin \{c_s, c_a\} \wedge i = \iota i'[c_t \le i'[\text{ASSERT}([\![IP]\!])(z)(c_a)(i')]]]$
$| \langle c_s, c_a, c_t \rangle \in CG\}\rangle$

6 Embedding imperatives

6.1 Embedded imperatives

Imperatives denote directive SAPs. They have the same type as assertive SAPs, and they can therefore be embedded under *je*, which is an SAP modifier. The embedded imperative in (68) is parsed as (69):

(68) E-me'ẽ   ka'ygua je.
      2.SG.IMP-take mate   EVID
      'Give the mate, I heard.'

(69) [$_{ForceP}$ [$_{Evid}$ je] [$_{ForceP}$ [$_{Force}$ DIRECT] [$_{IP}$ eme'ẽ ka'ygua]]]

The interpretation proceeds as for embedded assertions; *je* conveys that the person who is responsible for the embedded imperative is an individual who is neither the speaker nor the addressee:

(70) $\llbracket$je$\rrbracket = \lambda A.\lambda y.\lambda x.\lambda i.\iota i'[\exists z[z \notin \{x, y\} \wedge i' = A(z)(y)(i)]]]$

(71) $\llbracket[$ je $[_{ForceP}$DIRECT $[_{VP}$eme'ẽ ka'ygua]]$\rrbracket =$
      $\lambda y.\lambda x.\lambda i.\iota i'[\exists z[z \notin \{x, y\} \wedge i' = \iota i''[i \leq i''[\text{DIRECT}(\llbracket VP\rrbracket)(z)(y)(i'')]]]]$

(72) $CG + \llbracket[$ je $[_{ForceP}$DIRECT $[_{VP}$eme'ẽ ka'ygua]]$\rrbracket =$
      $\{\langle c_s, c_a, \iota i[\exists z[z \notin \{c_s, c_a\} \wedge i = \iota i'[c_t \leq i'[\text{DIRECT}(\llbracket VP\rrbracket)(z)(c_a)(i')]]]]\rangle$
      $\mid \langle c_s, c_a, c_t\rangle \in CG\}\rangle$

In order to account for imperatives embedded under *he'i* and *jerure*, I assume that these verbs are ambiguous between a proposition selecting reading and an SAP selecting reading (cf. Krifka 2014):

(73) $\llbracket$he'i$_1\rrbracket = \lambda p.\lambda y.\lambda x.\lambda i.\exists i'[i' \leq i[\text{ASSERT}(p)(x)(y)(i)]]$

(74) $\llbracket$he'i$_2\rrbracket = \lambda A.\lambda y.\lambda x.\lambda i.\exists i'[i' \leq i \wedge i = A(x)(y)(i')]$

The analysis of *jerure* is similar:

(75) $\llbracket$jerure$_1\rrbracket = \lambda p.\lambda y.\lambda x.\lambda i.\exists i'[i' \leq i[\text{DIRECT}(p)(x)(y)(i)]]$
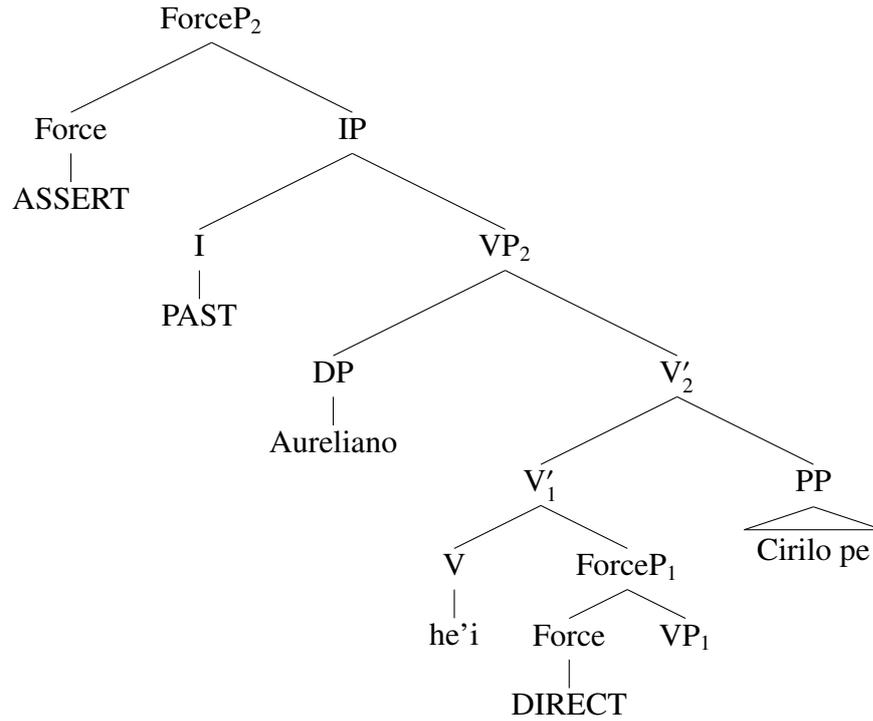
(76) $\llbracket$jerure$_2\rrbracket = \lambda A.\lambda y.\lambda x.\lambda i.\exists i'[i' \leq i \wedge i = A(x)(y)(i')]$

Let us illustrate the analysis with the following sentence:

(77) Aureliano he'i Cirilo pe e-me'ẽ ka'ygua chevy pe.
      Aureliano 3.say Cirilo to 2.SG.IMP-give mate me to
      'Aureliano said to Cirilo give me the mate.'

In (77), the complement of *he'i* is an imperative, i.e. a directive ForceP:

(78)

ForceP$_2$
- Force
  - ASSERT
- IP
  - I
    - PAST
  - VP$_2$
    - DP
      - Aureliano
    - V$'_2$
      - V$'_1$
        - V
          - he'i
        - ForceP$_1$
          - Force
            - DIRECT
          - VP$_1$
      - PP
        - Cirilo pe

The interpretation proceeds as follows:

(79) $\llbracket \text{VP}_1 \rrbracket = \lambda x.\lambda i.\textbf{give}(i)(\textbf{the mate})(c_s)(x)$

(80) $\llbracket \text{ForceP}_1 \rrbracket = \lambda y.\lambda x.\lambda i.\iota i'[i \leq i'[\textsc{direct}(\llbracket \text{VP}_1 \rrbracket)(x)(y)(i')]]$

(81) $\llbracket \text{V}'_1 \rrbracket = \lambda y.\lambda x.\lambda i.\exists i'[i' \leq i \wedge i = \iota i''[i' \leq i''[\textsc{direct}(\llbracket \text{VP}_1 \rrbracket)(x)(y)(i'')]]]$

(82) $\llbracket \text{VP}_2 \rrbracket = \lambda i.\exists i'[i' \leq i \wedge i = \iota i''[i' \leq i''[\textsc{direct}(\llbracket \text{VP}_1 \rrbracket)(\textbf{Aureliano})(\textbf{Cirilo})(i'')]]]$

(83) $\llbracket \text{IP} \rrbracket =$
$\lambda i.\exists i'[i' < i \wedge \exists i''[i'' \leq i' \wedge i' = \iota i'''[i'' \leq i'''[\textsc{direct}(\llbracket \text{VP}_1 \rrbracket)(\textbf{Aureliano})(\textbf{Cirilo})(i''')]]]]$

(84) $\llbracket \text{ForceP}_2 \rrbracket = \lambda y.\lambda x.\lambda i.\iota i'[i \leq i'[\textsc{assert}(\llbracket \text{IP} \rrbracket)(x)(y)(i')]]$

(85) $CG + \llbracket \text{ForceP} \rrbracket = \{\langle c_s, c_a, \iota i[c_t \leq i[\textsc{assert}(\llbracket \text{IP} \rrbracket)(c_s)(c_a)(i)]]\rangle \mid \langle c_s, c_a, c_t \rangle \in CG\}$

The result of updating a common ground *CG* with (84) is a new *CG* whose utterance indices have been incremented with the condition that the speaker took up assertive commitments with the addressee as witness, with respect to the proposition that Aureliano directed Cirilo to give the mate to the speaker. This analysis accounts for the fact that the speaker does not take up the directive commitments of the embedded imperative. However, if the assertion is successful, the discourse participants will exclude from the common ground all triples $\langle c_s, c_a, c_t \rangle$ in which the proposition in (83) that Aureliano took up these directive commitments is false.

Note also that although the speaker does not take up the directive commitment of the embedded speech act, she is still committed to the matrix assertion, as illustrated by the fact that she can be held responsible for the falsity of its propositional content:

(86) A: Aureliano he'i e-me'ẽ   ka'ygua.
Aureliano 3.say 2.sg.imp-give mate
'Aureliano said give me mate.'

B: Añete-'ỹ, nda-e'a-i.
true-neg   neg-3.say-neg
'That's false, he didn't say that.'

6.2 Restrictions on SAP embedding

As it stands, the proposed analysis of *je*, *he'i* and *jerure* as SAP modifiers over-generates. Indeed, nothing in the analysis prevents the embedding of non-directive SAPs under these operators, but there are constraints on the speech acts that these operators can embedded. As the following examples illustrate, *je*, *he'i* and *jerure* cannot embed questions.

Questions are marked with the interrogative particle *pa*, as illustrated in (87). (88) shows that this particle is attested in interrogatives embedded under the verb *porandu* ('ask'):

(87) Juan pa o-ĩ   ng-oo   py?
      Juan Q A3-be REFL-house in
      'Is Juan at home?'

(88) Cirilo o-porandu Juan pa o-ĩ   ng-oo   py.
      Cirilo A3-ask   Juan Q A3-be REFL-house in
      'Cirilo asked whether Juan is at home.'

(89) shows that the use of *je* in interrogative clauses is ungrammatical:

(89)   a. *Juan je pa o-ĩ ng-oo py?
       b. *Juan pa je o-ĩ ng-oo py?
       c. *Juan pa o-ĩ je ng-oo py?
       d. *Juan pa o-ĩ ng-oo je py?
       e. *Juan pa o-ĩ ng-oo py je?

(90) and (91) show that while declarative clauses can be embedded under *he'i*, interrogative clauses cannot:

(90) Cirilo he'i Juan o-ĩ-a   ng-oo   py.
      Cirilo 3.say Juan 3-be-NMLZ REFL-house in
      'Cirilo said that Juan is at home.'

(91) *Cirilo he'i Juan pa ng-oo py.

Finally, (92) and (93) show that purposive clauses can be embedded under *jerure*, but interrogative clauses cannot:

(92) Cirilo o-jerure Juan ng-oo   py aguã.
      Cirilo 3.ask   Juan REFL-house in PURP
      'Cirilo asked that Juan be at home.'

(93) *Cirilo o-jerure Juan pa ng-oo py (aguã).

Assuming that interrogative clauses marked with *pa* denote SAPs of question acts, how can we block their embedding under *je*, *he'i*$_2$ and *jerure*$_2$? I propose that *je* and *he'i*$_2$ select assertive or directive SAPs, and that *jerure*$_2$ selects directive SAPs. Furthermore, I propose that this selection is syntactic in nature. Why syntactic? Because the illocutionary force associated with an SAP cannot be 'read off' its semantic type, which is that of functions of type $\langle e, \langle e, \langle s, s \rangle \rangle \rangle$. It is also unclear how one could retrieve the illocutionary force of the SAP from the extension of this function, i.e. from its graph.

Let us then assume that verbs bear an uninterpretable (Chomsky 1995) force feature that must agree with an interpretable feature of the same type on a Force head. For the sake of

simplicity, assume that uninterpretable force features are borne by verbs (V heads).[5] Verbs that bear uninterpretable ASSERTIVE features must agree with interpretable ASSERTIVE features on an ASSERT force head, and verbs that bear uninterpretable DIRECTIVE features must agree with interpretable DIRECTIVE features on a DIRECT force head. I propose that *je* and *he'i$_2$* are subcategorized for ForceP complements bearing ASSERTIVE or DIRECTIVE features, while *jerure$_2$* are subcategorized for ForceP complements bearing DIRECTIVE features only.

6.3   Cross-linguistic perspectives

Finally, let us consider some cross-linguistic consequences of this analysis. If embedded imperatives are embedded SAPs, we predict that verbs that select propositional complements should not embed imperatives. Indeed, SAPs are of type $\langle e, \langle e, ss \rangle \rangle$, while propositions are of type $\langle st \rangle$. Only verbs that select SAPs as complements should embed imperatives. What are these verbs? I propose that only verbs that describe speech acts can have this type. In all languages, we will find verbs like *say* or *ask to*, which take propositional complements and convey that their agent performed a certain speech act (e.g. assertion for *say* or some directive speech act for *ask to*) with the propositional content that is denoted by their complement. In certain languages, these verbs may have a secondary reading, under which their type is lifted to take SAP complements.

In other words, we expect that verbs that embed imperatives will be verbs that describe speech acts when they select a propositional complement, like *say* or *ask to*. We do not expect imperatives to be embedded under verbs that do not describe speech acts, such as *know* or *dream*. This is a hypothesis that ought to be tested rigorously, but a preliminary survey of available data suggests that it is on the right track, as shown by the following summary of imperative embedding verbs in four genetically distinct languages:

(94)   Verbs that embed imperatives cross-linguistically:

   a.   Mbyá: *he'i* ('say'), *jerure* ('ask to').

   b.   English: say (Crnic and Trinh 2009).

   c.   Mandarin: *quan4* ('urge'), *yao1 qiu2* ('request') (Chen-Main 2005).

   d.   Slovenian: *reci* ('say'), *vztrajati* ('insist'), *ukazati* ('order'), *svetovati* ('suggest'), and *'opozoriti'* (warn) (Rus 2005).

7   Relevance for the study of recursion in natural language

A form of recursion that is relevant to syntactic analysis is direct or indirect recursion in the production rules of a formal grammar (see e.g. Power 2002). The following examples illustrate direct (95) and indirect (96) recursion using rewrite rules of context free grammars, where A, B are non-terminals and α, β are terminals or non-terminals:

(95) $A \rightarrow A\alpha$

(96) $A \rightarrow \alpha B$
   $B \rightarrow \beta A$

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[5]In reality, a satisfying account of form/function mapping is likely to be more complicated, since intonation and morphosyntactic phenomena other than verb morphology are likely to be associated with a given type of speech act.

Before we answer the question whether the analysis of embedded imperatives in Mbyá motivates the use of this type of recursion, let us discuss a second type of recursion, which is not defined as a property of functions or production rules, but as a structural property of derived syntactic trees. Pinker and Jackendoff write that "recursion refers to a procedure that calls itself, or to a constituent that contains a constituent of the same kind" (2005:203). It is the second option that interests us here. This concept of recursion can be applied to nodes of syntactic trees that dominate a node of the same category, as illustrated in the following example:

(97)   [$_S$ NP [$_{VP}$ V S]]

The proposed analysis of embedded imperatives makes use of this second form of recursion, since matrix sentences are analyzed as phrases of category Force, and embedded imperatives are analyzed as constituents of category Force themselves. More precisely, the structure of a sentence that contains an imperative embedded under *he'i* or *jerure* match the following description:

(98)   [$_{ForceP}$ Force [$_{TP}$ ... [$_{V'}$ V ForceP]]]

If we were to generate such structures using production rules of a context-free grammar, it would be natural to use the second form of recursion that we discussed in this section, in the form of indirectly recursive production rules:[6]

(99)   ForceP → Force TP
        TP → DP T′
        T′ → T VP
        VP → V$_{force}$ ForceP
        V$_{force}$ → *he'i*$_2$ | *jerure*$_2$

Note that imperative clauses modified by the reportative evidential *je* are not recursive in either of these ways, since they only contain one phrase of category Force, to which *je* is adjoined:

(100)   [$_{ForceP}$ *je* [[$_{Force}$ DIRECT] VP]]

In sum, the form of recursion that is hypothesized in this analysis of imperatives embedded under *he'i* and *jerure* is syntactic: there is syntactic recursion both in the sense that a phrase of category Force contains another phrase of the same category, and in the sense that this structure is most straightforwardly generated in a rewrite grammar using indirectly recursive production rules. Nevertheless, it is important to note that this syntactic analysis is motivated by semantic requirements: the analysis of *he'i* and *jerure* as SAP modifiers is motivated by the observation that imperatives embedded under these verbs are interpreted like matrix imperatives, with the difference that the directive commitments that they introduce are asserted to hold of the subject of the embedding verb, rather than understood to hold of the speaker.

Finally, the present study is clearly relevant to the question whether speech acts can be embedded. More precisely, I have proposed following Krifka (2014) that although speech acts as

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[6]Note that this analysis predicts that, everything else being equal, it should be possible to embed imperatives under embedded verbs of reports. At the time when the fieldwork for this paper was done, my focus was on possibility to embed imperatives and its consequence for the theory of speech act, rather than on the existence of recursive structures in Guarani. Because of this focus, no data relevant to second degree embedding of imperatives were elicited. For a discussion of second-order embedding and semantic factors that limit it, see Hollebrandse, this volume.

such are not denoted by linguistic expressions, the type of speech act that a speaker may perform is constrained by the Speech Act Potential denoted by its utterance. Speech Act Potentials may in turn be embedded, which I argued is the proper analysis of embedded imperatives in Mbyá.

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