On ineffable predicates: Bilingual Greek–English code-switching under ellipsis☆

Jason Merchant [*]

Linguistics Department, University of Chicago, 1010 E. 59th St., Chicago, IL 60637, USA

Abstract

In Greek–English code-switching contexts, Greek verb phrases can antecede apparent verb phrase ellipsis after English auxiliaries, even when a non-elliptical code-switched continuation with a Greek verb would not be well-formed. These facts, together with others from the previous literature, are compatible with a theory of ellipsis that posits an identity relation stated over abstract syntactic structures: mere semantic identity is too generous and fails to block sentences which are judged unacceptable.
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The nature of the identity (or antecedence, or parallelism, or recoverability[1]) condition on ellipsis has always been at the center of a great deal of work on ellipsis, as the answer has the potential to inform our theories of syntax and semantics (see van Craenenbroeck and Merchant, 2013 and Merchant, in press for recent overviews of the literature). Several strands of work have identified a number of areas in which it seems reasonable to require that there be some kind of syntactic identity imposed between the antecedent and the elided material: see especially Chung (2013) and Merchant (2013) for discussions from Chamorro and English (and Kehler, 2002 and Lasnik, 2003 for important earlier contributions). In this paper, I build on some new observational data from code-switching in two Greek–English early, balanced bilingual children and show not only that the data are compatible with these syntactic identity accounts and problematic for purely semantic identity accounts that eschew abstract syntactic structures, but also that the data support a view of the syntax–morphology interface that permits feature bundles to be active syntactically without being realizable by the morphological component: there are predicates which are ineffable—they cannot be pronounced.

One source of insight into the identity condition comes the phenomenon of code-switching in bilinguals. Bilingualism is the natural state of most human societies throughout history, from the Rosetta stone to modern urban communities; it is estimated that the majority of humans today are multilingual for some purposes (Grosjean, 1982; Edwards, 2004).

[1] Although these four terms can be taken as interchangeable here, and probably should be so construed in much of the work on ellipsis of the past 40 years, different strands of work have tended to use one or the other without acknowledging the other terms and without any consideration whether they do in fact cover the same ground. They do not, but for the purposes of this paper, I will be concerned only with identity conditions.

Multilingual speakers are capable of mixing their languages or code-switching. Code-switching (or code-mixing; see Muysken, 2000), the midstream changing of language code from one to another within a single utterance, is widespread, rule-governed, and an important source of information into the nature of grammatical knowledge (in addition to its well-studied functions as an index of perceived, constructed, and performed social and individual identity and identification). Work on the morphosyntactic properties of code-switching can roughly be categorized into two groups: analyses that posit constraints or rules that are specific to the phenomenon of code-switching itself, and those that claim that there is no such set of rules specific to code-switching per se, but rather that the attested patterns are simply those that emerge from the union of the constraints and patterns that each language's grammar imposes or consists of to begin with (see MacSwan, 2013 for an overview and discussion). In this context, data from ellipsis across languages provides a valuable source of insight for the analyst, since such code-mixed and code-switched ellipses give rise not only to structures that would otherwise be anomalous in the grammar of only one or the other of the codes used, but even to structures that are judged unacceptable in code-mixed variants.

An example of the former kind of structure is furnished by code-switching between Spanish and English: a switch can occur after a light verb *hacer* 'do' in Spanish into English, as observed by Pfaff (1979:301):

(1) ¿Por qué te   hicieron *beat up*?
      for   what you.acc did.3p   beat up
     'Why did they beat you up?'

A structural equivalent to (1) is not possible in a monolingual utterance of Spanish, however (where *hacer* + infinitive has only a causative reading, not a simple transitive one), as Pfaff (1977:254) points out on the basis of an example much like (2)[2]:

(2) *¿Por qué te   hicieron pegar?
      for   what you.acc did.3p   beat.up
     ('Why did they beat you up?')

The example in (1) also shows that grammatical dependencies, including those typically analyzed as involving movement, can span a code-switch boundary: in (1), the accusative pronoun *te* is the object of *beat up*, but appears proclitically on the finite Spanish verb.

The same pattern can be observed in Greek–English code-switching, where the verb *kano* 'make, do' can be used as an auxiliary to a bare verb form in English, as Seaman (1972:167–168) documents:

(3) óti   nomízome   pu   íne oréo, to kánome   *tape*
      whatever think.PRES.*1p that is   nice, it   do*.PRES.*1p tape*
     'Whatever we think is nice, we tape record it.'   (Seaman, 1972:237)

Unlike Spanish, there is no equivalent to these structures in monolingual Greek: *kano* can take only nominal objects in Greek (and Greek lacks infinitives).[3]

It has also long been known that bilinguals can use VP-ellipsis structures in English with an antecedent VP in the other language, as in the following Spanish–English code-switching examples:

(4) A: Estudie   ahí! 'Study there!'   (Pfaff, 1979:313)
          study.imp.2s there
      B: No, I can't.

(5) A: Vamos a   jugar! 'Let's play!'   (Wentz and McClure, 1976:656)
          go.1p   to play
      B: I don't want to.

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[2] See MacSwan (2013), van Dulm (2007), and González-Vilbazo and López (2011, 2012) for recent discussion of the syntactic constraints on such switching.

[3] Seaman shows that *kano* also occurs with English nouns, in a pattern reminiscent of the Greek. For examples like (3), it is most likely that *tape* is intended here as a verb, given the meaning; otherwise, it would mean something like 'we turn it into a tape', which the continuation (which Seaman translates as '... and what we don't like, we erase') makes unlikely. This confound is not seen in examples like the following, which is modeled on a sentence recorded in Seaman (1972:238) and judged acceptable by a bilingual speaker today:

(i) θa   to kánume   *celebrate* tin áli   kiriakí.
     FUT *it   do*.PRES.*1p celebrate the other Sunday* 'We will celebrate it [=Easter] next Sunday.'

Such data would seem to indicate that the relation between the ellipsis and its antecedent must be one of semantic equivalence: if and only if the intended meaning of missing elements can be recovered from the context (here, the linguistic context, but also permitting nonlinguistic antecedents in some circumstances) can the verb phrase be omitted (or go unpronounced). Since the Spanish utterances introduce such meanings into the context, the English ellipsis is licit.

But not everything is permitted when code-switching occurs between an antecedent and an elided expression, even when the intended meaning is easily recoverable. González-Vilbazo and Ramos (2012) conducted an experiment that shows that while code-switching into the elided sentential portion of a constituent question is permitted—that is, that sluicing is found in utterances that feature code-switching—such code-switching is subject to an unexpected constraint. It is possible to finish a sentence after the wh-phrase in either language, and the case of the wh-phrase will be the one that the pronounced verb assigns: for example, if the verb is the German verb *drohen* 'threaten', which assigns the dative to its animate object, the wh-phrase will appear in the dative, as in (6a). If the verb is the Spanish verb *amenazar* 'threaten', which assigns the accusative, the wh-phrase will appear in the accusative, as in (6b).

(6) a.   Juan amenazó a alguien,   *aber ich weiss nicht*, *wem*   *Juan gedroht   hat*.
          Juan threatened ACC *someone but I   know not*   *who*.DAT *Juan threatened has*
          'Juan threatened someone, but I don't know who Juan threatened.'
     b.   Juan amenazó a alguien,   *aber ich weiss nicht*, *wen*   Juan amenazó.
          Juan threatened ACC *someone but I   know not*   *who*.ACC *Juan threatened*
          'Juan threatened someone, but I don't know who Juan threatened.'

However, if the clause following the wh-phrase is elided, as it is in sluicing, then the wh-phrase can appear only in one form: the form that the verb in the language of the antecedent determines. In this case, only the accusative is possible:

(7) a.   *Juan amenazó a alguien,   *aber ich weiss nicht*, *wem*.
           Juan threatened ACC *someone but I   know not*   *who*.DAT
     b.   Juan amenazó a alguien,   *aber ich weiss nicht*, *wen*.
          Juan threatened ACC *someone but I   know not*   *who*.ACC
          'Juan threatened someone, but I don't know who.'

González-Vilbazo and Ramos (2012) analyze this fact as a straightforward consequence of a syntactic identity condition on ellipsis: the elided material must be syntactically identical to its antecedent. The missing material, in other words, must contain the same Spanish words that the antecedent contains, and cannot, under a potentially more permissive semantic identity condition on ellipsis, contain the semantically equivalent German words (which it would however be possible to pronounce deaccented, under the semantic relation that governs focus structures). The structure of (7b) is (8b), where struck-through text indicates ellipsis of that material, licensed by the fact that the elided material is syntactically identical to the relevant Spanish phrase in the first clause. The fact that (7a) is unacceptable indicates that a structure such as (8a) is not licensed by the grammar; that is, the identity condition on ellipsis does not permit the German phrases to be elided (though of course the grammar otherwise generates those phrases, as we saw above in (6a): the question is how to block ellipsis of such a phrase, when deaccenting is perfectly possible).[4]

(8) a.   *Juan amenazó a alguien,   *aber ich weiss nicht*, *wem*   ~~*Juan gedroht   hat*~~.
           Juan threatened ACC *someone but I   know not*   *who*.DAT *Juan threatened has*
          'Juan threatened someone, but I don't know who Juan threatened.'
     b.   Juan amenazó a alguien,   *aber ich weiss nicht*, *wen*   ~~Juan amenazó~~.
          Juan threatened ACC *someone but I   know not*   *who*.ACC *Juan threatened*
          'Juan threatened someone, but I don't know who Juan threatened.'

In an investigation of sluicing and code-switching in Spanish–Zapotec bilinguals in Teotitlán del Valle, Nee (2012) uncovers a paradigm that is reminiscent of the Spanish–German facts above. A bare Spanish wh-phrase can be the sole

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[4] At a certain level of abstraction, the pattern in (7) is reminiscent of the case-matching effects studied in Ross (1969) and Merchant (2001). Some recent analyses of those effects, and others, have taken not abstract syntactic case features like Case:ACC to be determinative, but rather morphological case, with identical morphemes being what is matched, allowing for syncretisms to play a role (see van Craenenbroeck, 2010; Barros, 2014). It is at best unclear why such accounts would block (7a) but allow (7b): on the most straightforward reading of those accounts, both should be ruled out.

remnant of sluicing, where the antecedent verb in Zapotec is a simple transitive, but the corresponding verb in Spanish would require a preposition (Zapotec given in italics).

(9) a. *Juany gunien*, pero no sé   quién.   (Nee, 2012:43 (115))
         Juan spoke   but not know.1s who
         'Juan spoke, but I don't know who to.'
     b. *Juan habló con alguien, pero no sé   quién habló   con.
         Juan   spoke with someone but not know.1s who   he.spoke with*
         ('Juan spoke with someone, but I don't know who he spoke with.')

(10) *cf.* Juany gunien   Maria.   (Nee, 2012:43 (112))
          Juan   spoke.to Maria
          'Juan spoke to Maria.'

As Nee (2012) documents, the reverse situation is also consistent with González-Vilbazo and Ramos's observations: when the antecedent is in Spanish, the elided material must correspond to a licit Spanish extraction dependency, even if the dependency is headed by a Zapotec wh-phrase (as shown in (11)), and despite the fact that Zapotec has a simple transitive form that would license a direct object NP (compare (10)). Although an entire PP must be extracted (since Spanish is not a P-stranding language), the word order found in the PP is the Zapotec one, not the Spanish, as seen in the pair in (12).

(11) *Juan habló con alguien, *per kednanadia tu   ~~habló~~ ~~con~~.
      Juan   spoke with someone but not.know.1s who   spoke with*
      ('Juan spoke with someone, but I don't know who.')

(12) a. Juan habló con alguien, *per kednanadia tu   cun ~~habló~~.
         Juan   spoke with someone but not.know.1s who   with spoke*
         'Juan spoke with someone, but I don't know who with.'
     b. *Juan habló con alguien, *per kednanadia cun   tu   ~~habló~~.
         Juan   spoke with someone but not.know.1s with who spoke*
         ('Juan spoke with someone, but I don't know with who.')

These facts are consistent with the following generalization:

(13) **Code-Switching Ellipsis Generalization**
      All apparently cross-language ellipses involve code-switching at the ellipsis site (into the language of the antecedent).

This generalization follows as a theorem from theories of ellipsis resolution that incorporate a syntactic matching condition of some sort, such as (14) (either operating alongside of a semantic condition, or in place of one, or complementing one in certain circumstances[5]):

(14) A phrase E may be elided only if E has a salient antecedent A and the LF of A is isomorphic to the LF of E, modulo F-marked material.[6]

Such a condition straightforwardly captures the data in (7): if the German verb *drohen* requires an LF verbal structure which is different from that of the Spanish verb *amenazar*, then the elided material can only satisfy (14) if it contains LF-isomorphic structure. These structures will differ if the extended verbal projections of dative-assigning verbs differ from that of accusative-assigning verbs in any way, which they do on several analyses (whether because they differ in the *v* which they co-occur with, responsible for dative vs. accusative, or for some other reason, is immaterial to (14)). The data in (7) also tell against a theory that would incorporate translation from the language of the antecedent

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[5] See Merchant (2009) for a survey of these and other alternatives.
[6] Such a condition is well known to be reducible to more general conditions on felicitous focus-marking in discourse, along with an economy condition on accommodation of antecedents, if focus alternatives are themselves LF structures. Accommodation is necessary not just for certain mismatches, discussed in the literature, but also for dealing with exophoric ellipses (ellipses that lack an overt linguistic antecedent; in other words, which occur linguistic-discourse-initially, in Stainton, 2006's term). See Johnson (2013) for discussion.

to the putative language of the elided material: if such translations were possible, we would expect, contrary to fact, the example in (7a) to be well-formed.

One possibility for accounting for these data without resorting to a syntactic recoverability constraint of the kind in (14) would be to posit a very strict semantic recoverability condition, one that would deny the possibility of recovering the exact meaning of the missing German material on the basis of the actual meaning of the Spanish antecedent. It may well be true that the truth conditions or other semantic or pragmatic aspects of the Spanish clause differ from those of the German equivalent (the struck-through material in (8a), for example). While showing this for truth conditional meaning may be difficult, it is surely the case that the two differ in their pragmatic functions (if only simply by making use of different language codes). But since such mixed-language antecedents allow for focal deaccenting, and since we can thus conclude that they participate in the usual mechanisms of accommodation that such phenomena require, it is unclear why ellipsis would not have access to those mechanisms in these cases as well. The usual answer to such concerns is to require that there be some material, local to the elided material (typically inside the structure over which its focus alternative set is computed) which is not focussed, and which guides the accommodation of a new antecedent by virtue of its being unfocussed (see Fox, 1999). This material is known as the accommodation-seeking material, and one could claim that (7a) lacks any such material.[7] Such an approach is very close to the spirit of (14) indeed. If no accommodation-seeking material is present, then no accommodation of a differing language antecedent can be made, and we predict that the only material that can be elided is that which matches in language that of its antecedent.

But in either case—whether the ellipsis is resolved by identity to other linguistic material exactly or to an accommodated version of such material—the question is whether such an account is general enough to capture all the attested possibilities for ellipsis whose antecedent is in a different language. Can all such cases be assimilated to code-switching at the ellipsis site into the language of the antecedent?

A large set of data from Greek–English code-switching would allow for such an analysis. Greek, like English, has a form of predicate ellipsis after the copular verb *ime* 'be': an understood NP, PP, or AP predicate can be elided in this position; this is illustrated for AP predicates in the examples in (15) (see Merchant, 2014 for more discussion of the monolingual Greek facts: these predicate ellipses are not restricted to question/answer pairs, for example). The juncture between the verb and its complement is also a licit point at which code-switching can occur, as seen in (16).[8]

(15)   A: Ise   eksangliméni?
            be.PRES.2*sg exhausted.fem.sg*
            'Are you exhausted?'
       B: Ime   (eksangliméni).
            be.PRES.1*sg exhausted.fem.sg*
            'I am (exhausted).'

(16)   I am *eksangliméni*.
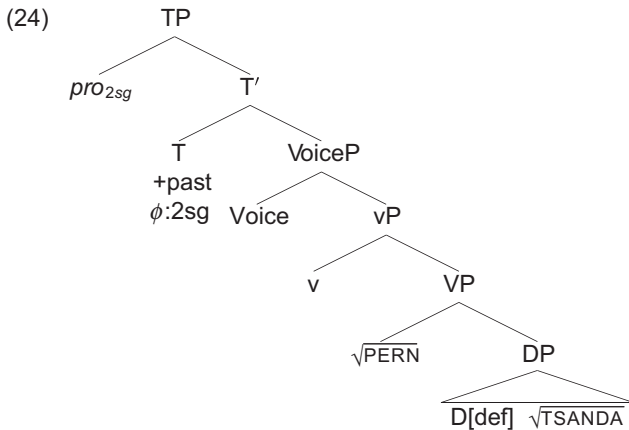   *exhausted.fem.sg*
      'I am exhausted.'

These facts lead to the correct expectation that the English predicate ellipsis after *be* can be resolved to the Greek adjectival predicate:

(17)   A: Ise   eksangliméni?
            be.PRES.2*sg exhausted.fem.sg*
            'Are you exhausted?'
       B: I am   ~~eksangliméni~~.
            exhausted.fem.sg

The same pattern is found in code-switching from English into Greek, and in ellipsis with an English antecedent and Greek elided predicate:

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[7] Naturally, accounts that use accommodation take some pains to limit the extent, typically by defining some limited domain inside which the accommodation-seeking material must exist, where accommodating-seeking material is not focus-marked: in the case at hand, the claim would be that the domain is the CP dominating *wem*, and that *wem* itself is focus-marked, and as such cannot trigger accommodation.

[8] Just like its monolingual Greek counterpart, (16) presupposes that the speaker is female; this poses a potential puzzle for monolithic theories of gender agreement, which would require that there be two English pronouns *I*: one for males and one for females (*mutatis mutandis* for *you*). Theories that allow agreement *ad sensum*, on the other hand, handle this fact with no trouble. See Pfaff (1979:305) for a parallel example in Spanish, and Wechsler and Zlatić, 2003 and Alsina and Arsenijevic, 2012 for discussion of the varieties of agreement relations.

(18)   Ime   exhausted.
        be.PRES.*1sg*

(19)   A: Are you exhausted?
        B: Ime   ~~exhausted~~.
              be.PRES.*1sg*

The same analysis can be given to the examples of English–Spanish code-switching in (4) and (5), where the missing VP could simply be the Spanish one; that is, we could imagine the elided structure in those examples to be equivalent to or derived from the felicitous code-switching examples seen in (20).

(20)   a.   No, I can't   esudiar   ahí.
                             study.INF *there*
        b.   I don't want to jugar.
                             play.INF

Because code-switching at the site of the ellipsis appears to be possible (given the well-formedness of code-switching in otherwise equivalent non-elliptical sentences), these data are easily accommodated on a syntactic identity theory, and are consistent with the Code-Switching Ellipsis generalization in (13).

    More challenging, and surprising, would be data in which ellipsis is possible, but no non-elliptical counterpart incorporating code-switching is found. Precisely this situation is attested in Greek–English ellipses.

    Consider the following attested example from a Greek–English bilingual dialog between two adults.

(21)   A: Píres   tin   tsánda   mazí   su? 'Did you take the bag with you?'
              took.2s *the*   *bag*   *with*   *you*
        B: Yes, I did.

On purely internal structural grounds, it would appear that the elided verb phrase in B's response is in English, and equivalent to its unelided (and indeed equally felicitous in this context) counterpart (22) (see Sag and Hankamer, 1984 and Chung, 2000 for discussion of the 'strict identity' of the pronouns in such examples).

(22)   Yes, I did take the bag with me.

But we have already seen the inadequacy of any theory that would take something like (22) to be the source of B's elided VP in (21): such a monolingual derivation violates the Code-Switching Ellipsis generalization in (13).

    Nevertheless, there is no nonelliptical variant of B's response that would involve code-switching into Greek after the English auxiliary *did*: the closest one might come is (23a), involving the regular finite inflected verb form, or (23b), which shows the bare stem form of the verb (a form that does not occur as a free-standing word in the language). Both variants are ill-formed. Greek, unlike Spanish and English, lacks an infinitival verb form. Unlike what was the case with the facts in (17) or (19), no possibility for a code-switched matching nonelliptical structure is possible.

(23)   a.   *Yes, I did píra   tin   tsánda mazí mu.
                           take.ACT.PERF.PAST.*1s* *the*   *bag*   *with*   *me*
        b.   *Yes, I did pern   tin   tsánda mazí mu.
                           take[stem.form] *the*   *bag*   *with*   *me*

In order to understand the implications of the well-formedness of the response in (21), it is important to understand the range of possibilities for accounting for the unacceptability of the examples in (23). The details of such an account depend on how the syntax of the Greek question in (21) in analyzed. Following much previous work (see Alexiadou et al., 2015 for a recent approach and extensive references, and Merchant, 2013 on the particular separation of Voice from v I assume here), I analyze the Greek verbal phrase as projecting from a root (categorized as a V here for convenience); the root will undergo head movement into v, then Voice, then T, due to movement features on those heads that require movement. In the notation of Stabler (2001), v is => $\sqrt{}$, Voice is =>v, and T is =>Voice. T contains an unvalued set of ϕ-features, which receive values by an application of Agree to the second person singular subject *pro*, here represented as in specTP, and T. (24) gives the structure without representing the posited head movement, containing the roots $\sqrt{\text{PERN}}$ and $\sqrt{\text{TSANDA}}$ and the definite article (and suppressing other details for the sake of exposition, such as the PP, the categorizing features or nodes, the predicate-internal trace of the subject, etc.).

(24)

```
           TP
          /  \
    pro₂ₛg    T′
             /  \
            T    VoiceP
          +past  /    \
          φ:2sg Voice   vP
                      /    \
                     v      VP
                   √PERN   /   \
                         DP
                      D[def] √TSANDA
```

The result of head movement is given in (25), where the complex head is formed by successively cyclic head movement of the root to v, of that complex head to Voice, and of that one to T:

(25)

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              T
            /   \
           /     T
        Voice
       /    \
    √PERN    v
```

In a theory of lexical realization that separates the root from its morphological realization, such as Distributed Morphology (see Arregi and Nevins, 2012 and Bobaljik, 2012 for recent expositions), head movement (or other mechanisms) can create a complex syntactic structure to which Vocabulary Insertion applies. Vocabulary Insertion is an operation that matches lexical entries, or *Vocabulary Items*, with the contexts in which they can appear, and inserts morphemes according to Vocabulary Item specifications. On such a theory, the verb *pires* in (21), which is the second person active perfective past of the verb *perno* 'to take', is the result of Vocabulary Insertion operating with Vocabulary Items like the following (ignoring aspect, and assuming that the stem *pir* expresses the root, v, and Voice; see Merchant, 2015 for a fuller treatment of the morphology of the Greek verb).

(26) a. $\sqrt{\text{PERN}} + v + \text{Voice} \leftrightarrow pir$ / __ T[+past]
      b.   T[+past, ϕ:2s] $\leftrightarrow es$

English T, on the other hand, can only attract [+aux] verbal elements. There are two ways to capture this fact: either +aux verbs (including modals) are specified in some way to require that they move to T (and when embedded under other auxiliaries, have that feature satisfied in situ), or English has two variants of the finite T, one for auxiliaries and one for 'main verbs' (i.e., nonauxiliary verbs): T_{aux} and T_{mv}. T_{aux} is specified as => [+aux] (cf. C in German V2 structures, where C attracts a verb); this means that it will only be well-formed if its sister is headed by a [+aux] head that can undergo head movement to T. T_{mv} lacks this feature. (I assume, following Gerald et al., 1985, that the auxiliary *do* is simply a verb specified as +aux, and like a defective modal in its distributional behavior; for simplicity, I'll represent it below as simply being in T, without committing myself to whether it has been moved there or not.) Greek verbs make no distinction between +aux and -aux: the latter feature is relevant only to English, and there is no reason to assume that it is present at all in the specifications of Greek verbs. This has as a consequence the fact that it will be impossible to combine an English T_{aux} with a Greek VP (or whatever suitable extended projection of V one posits): the English T requires head movement of a +aux element, and Greek cannot supply such an element. Therefore the Greek verbal root (+v+Voice, etc.) will never be in a sufficiently local relation (a sister in a complex head) to allow Vocabulary Insertion to use the Vocabulary Item in (26a). Since *pires* is formed only when the Greek root (+v+Voice) is adjacent to a T node, there is no way to form (23a).

Note that while my analysis is different in the particulars of its implementation, it bears an overall analytical similarity to the proposals in González-Vilbazo and Struckmeier (2008) and González-Vilbazo and López (2011) regarding the co-occurrence of auxiliaries and light verbs in Spanish and German code-switching: they posit a particular feature on the Spanish v and participle that cannot be satisfied by the German verb or auxiliary, respectively. My implementation differs from those in that it attributes the ill-formedness of code-switching in (23a) to a conspiracy of the morphology and the syntax.

Another possibility I will not pursue for ruling out (23a), in a theory that eschewed head movement and morphological decomposition and rules of insertion such as those in (26), would be to claim that the subject cannot provide two different heads in this structure with values for ϕ-features. What goes wrong in (23a) on such an approach is that the ϕ-features on *píra* remained unvalued (the higher presence of agreeing *did* blocks the application of Agree from the subject), or, equivalently, that the controller for agreement cannot unify with the target of agreement in the appropriate way. Under this analysis, as on the one mooted above, the sentence in (23a) is correctly ruled out: there is not enough agreement to go around.

What, then, rules out the structure in (23b), which combines the English *do* with a Greek bare stem? The answer must build on the fact that Greek bare stem forms are simply not separately pronounceable forms in the language. That is, however implemented, (23b) should be ruled out under the reasonable assumption that bare stem forms in Greek suffer from some morphological insufficiency that blocks them from surfacing at PF. The exact nature of this insufficiency need not be a focus here, but it is crucial that this be a fact about the morphological realization of such stems, not about their syntactic distribution. The syntactic feature bundle corresponding to the stem (the indexed root of List 1, in the perspicuous terminology of Harley, 2014) can be inserted: it will either have to combine with a head that has ϕ-features (or receive them itself, on other variants of the syntax-morphology interface), or fail to be subject to Vocabulary Insertion at all, due to the presence of ellipsis.

Technically, this result is already achieved by the analysis I have presented above. The only Vocabulary Item corresponding to $\sqrt{\text{PERN}}$ in the active perfective past is that given in (26a), and the context for insertion for this Item is not met in the code-switching example, because the root has not moved to T. The root may move to v or Voice, but in order for the rule in (26a) to apply, the resulting complex head must be a sister to T. Since each indexed node must be spelled out, and since there is no default Item for roots, the resulting phrase marker, given below in (27) fails to satisfy the well-formedness conditions on the derivation (or on the final phrase-marker).[9]

(27)
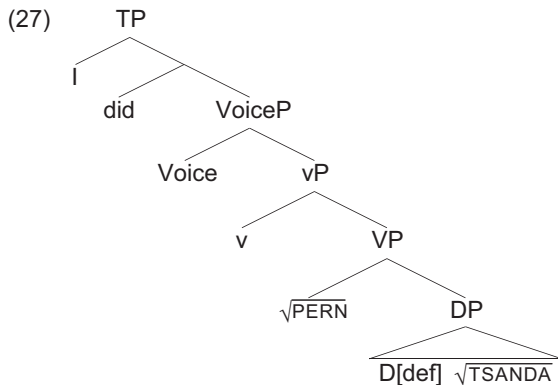
Since the stem is unpronounceable by itself, the vP in (27) is ineffable.

Instead, what is needed is the following representation, in which the elided phrase is a vP, marked with < > to indicate ellipsis (which vP is sister to Voice[E], the Voice head hosting the E feature, which triggers ellipsis) containing the roots $\sqrt{\text{PERN}}$ and $\sqrt{\text{TSANDA}}$ and the definite article (and suppressing other details for the sake of exposition, such as the PP, the categorizing features or nodes, the predicate-internal trace of the subject, etc.).

(28)

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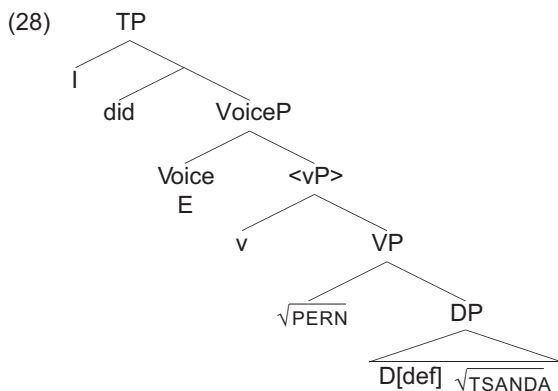
[9] It follows as a consequence of this analysis that the imperfective stem must not be an elsewhere stem, but rather subject to an insertion condition that is fully parallel to that given in (26a); I know of no reason to think that the two active stems stand in an elsewhere relation.

Such a structure satisfies the identity condition on ellipsis in (14) because the antecedent vP in (21) contains a VP with precisely this structure and these roots. Because the E feature on Voice (though licensed by T; see Aelbrecht, 2010 for the distinction) triggers the ellipsis of its complement vP, Vocabulary Insertion does not apply to any of the terminal nodes inside vP. There are several ways to implement this fact: E could trigger a designated Vocabulary Item whose realization is the empty string, preempting Vocabulary Insertion for the other nodes; or E could trigger an operation that is ordered before Vocabulary Insertion, compatible with the proposals in Arregi and Nevins (2012); or E could result in a diacritic being added to every terminal node in its c-command domain which pre-empt Vocabulary Insertion (see Merchant, 2013 for some discussion of these and other alternatives). All of these alternatives make sense in a theory that employs late insertion for all nodes (surely both the default assumption and a reasonable one); it is hard to reconcile or indeed even restate these results in a theory in which ellipsis is implemented as actual deletion of phonological material: on such theories, Vocabulary Insertion has already applied, and the defect in (23b) that is repaired by ellipsis would have to be one that is encoded in the phonological forms itself (those forms targeted by deletion under PF-deletion theories of ellipsis). The mechanisms considered here are compatible with a morphological defect being present in (23b), but not with a purely phonological one.

If, on the other hand, verbal forms such as Greek *píres* and English *take* were to be listed in the lexicon as fully inflected, and licensed in syntactic structure only as such, then cross-language ellipsis would be impossible to reconcile with an identity condition such as (14), since neither form could be generated. While one could consider a theory that posited only semantic identity, such theories have difficulty accounting for the contrast in (7), as we have seen.

Another possibility we can dismiss is that the antecedent is not the Greek VP (or vP) itself, but rather an English version of it, perhaps generated through some process of accommodation (Wentz and McClure, 1976 call this idea, which they rightly reject, the 'Translation Theory': on such a theory, speakers would translate the Greek antecedent into English to use in satisfying the conditions on ellipsis). The difficulties of pursuing such a possibility, however, are both the open nature of accommodation, which would have to be reined in to account for the restrictions we saw above in German–Spanish and Spanish–Zapotec sluicing, and the lack of any evidence that bilinguals perform translations at all.

Equally interesting is the analysis of the daughter's response in the following attested dialog:[10]

(29) a. *Mother*: Pinás?
            hunger.2s.PRES
            'Are you hungry?'
      b. *Daughter*: Yes, I do.

Important here is that the Greek verb *pináo* is a simple intransitive verb, and is the unmarked way to express the property of being hungry (unlike its English equivalent verbal form, 'to hunger'). But no code-mixed version of the daughter's response is possible, as judged by the same speaker who produced (29b):[11]

(30) a. * Yes, I do *pináo*.
            hunger.PRES.1s
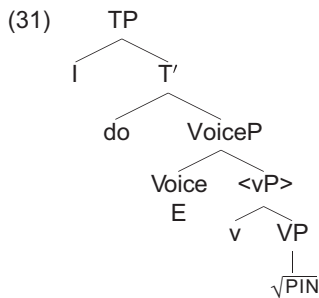   b. * Yes, I do *pin*.
            hunger

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[10] This dialog took place between a 1st generation Greek mother (adult immigrant to the US) and her 9-year-old daughter, who is a balanced bilingual in Greek and English, and who was born and has lived mostly in the US, but with extended periods (2–3 months per year as well as one half year of school) in Greece. Both Greek and English are used extensively at home, as well as Greek–English code-switching. The observed dialog took place in Chicago.

[11] I have not observed discourses of the form reported in Wentz and McClure (1976:656), who give the following example that appears to require a kind of translation.

(i) A: Quién tiene hambre? 'Who's hungry?'
         who   has   hunger
     B: I am.

This example seems to me to be amenable to analysis in terms of scripts, of the kind discussed for ellipsis in Merchant (2010). The inquiry into the hunger of the child is a prototypical one, and, like the abbreviated dialog found in, e.g., restaurants, has a fixed set of stock responses. It seems possible that the child's response in this dialog, 'I am', is not directly elliptical to the question, but rather is drawn from the standing script. On the other hand, Sergio Ramos informs me that he has asked bilingual Spanish–English speakers about this dialog, and all have found it anomalous; he was unable to find speakers who could replicate this judgment.

The daughter's response in (29) has the following structure:

(31)

```
         TP
        /  \
       I    T′
      /    /  \
    do  VoiceP
        /    \
     Voice   <vP>
       E    /    \
           v     VP
           |
          √PIN
```

The analysis of this example is completely parallel to that offered for (21) above: the Vocabulary Item for the stem in *pinao* is in (32a), and there is no default or elsewhere entry such as (32b).[12]

(32)   a.   √PIN ↔ *pin* / __ T[+past]
        b.   No elsewhere Vocabulary Item such as: √PIN ↔ *pin*

Ellipsis voids the effect of there not being a way to realize the Greek verbal stem (or root) in the absence of a local relation to T. There is no infinitival or 'bare' form in Greek, and this makes code-switching at this juncture impossible, but ellipsis can save the day: this is elliptical repair at the morphological level.

    For such an example, it is even more implausible that the daughter's response is entirely in English, given that the requisite verbal form would have to be something like *I do hunger*, which includes a verb that does not belong to the register controlled by the nine-year-old in question.

    While I have shown that the patterns above follow from the lack of an elsewhere Item for the Greek stems, any approach that captures the fact that stems are bound forms in Greek should be able to accommodate these facts, whatever the technical details may be. The traditional bound/free distinction is not clearly reproducible in many variants of Distributed Morphology (where conditions on head movement seem to take up the slack), but it seems likely that the distinction is an irreducibly morphological one, and cannot be reduced to conditions on head movement. Even more challenging are the following examples, overheard in conversation[13]:

(33)   A Greek-English dialog

        a. *Mother*: To   proí   ðe   xriázete
                       the morning NEG   *need*.NONACT.IMPERF.PRES.*3sg*
                       klimatizmó.
                       air-conditioning.ACC
                       'In the morning there's no need for air-conditioning.'
        b. *Son*:   Yes, it does!
        c. *Mother*: Éxi   ðrosúla.
                       have.ACT.IMPERF.PRES.*3sg*   *coolness*.DIM
                       'It's a little cool.'
        d. *Son*:   No, it doesn't.

Two features of the Greek sentences are important here. The first involves the 3rd singular impersonal use of the verb *xriázome* 'need': it is a deponent verb that assigns the accusative case to its object. When used impersonally, as here, it has

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[12] Karlos Arregi (p.c.) points out that the existence of nominal derived forms such as *pin-a* 'hunger' (noun) would suggest that an elsewhere Vocabulary Item rule such as (32b) might be useful after all. What is really needed is simply some way to state that bare roots or stems cannot surface as words in Greek: that roots and stems in Greek are necessarily *bound* forms, in traditional terms (see below for some more discussion). Another possibility would be to claim that cross-categorial similarities of form are captured by stochastic generalizations across the surface lexicon; Greek has only context-sensitive rules such as (32a) and √PIN ↔ *pin* / __ *n* (for the noun *pina* 'hunger'), but that the grammar need not formally encode at this level the similarity in form, just as it does not for a vast number of verb/noun pairs, such as *silamvano* 'to arrest', *silipsi* '(an) arrest'; *strefo* 'to turn', *strofi* '(a) turn'; and many others.

[13] The speakers of these sentences were the aforementioned mother and her 12-year-old son, an early balanced bilingual, born in Greece and living in Chicago, who has spent considerable time in Greece: every summer for 2–3 months, as well as six months in school as an 8-year-old. The recorded dialog took place in Greece.

no overt subject and must be in the third person singular. (The bare adverbial *to proí* 'the morning' is in the accusative case of extent of time and may felicitously be omitted: it is not the subject.) This use of the verb thus corresponds to nothing in English: its syntax is that of a transitive verb for purposes of accusative case assignment; it obligatorily lacks a subject (Greek, as a pro-drop language, lacks overt pleonastic or expletive subjects); and morphologically it is nonactive (or mediopassive) in form. So the son's response in (33b) contains an expletive subject, *it*, which corresponds to the null expletive subject of Greek, and appears to be licensed precisely by the impersonal Greek verb, as English lacks any such correspondent. But, just as we saw above for Greek–English VP-ellipsis, there is no code-switched variant possible corresponding to (33b):

(34) *Yes, it does xriázete   klimatizmó.
              need.NONACT.IMPERF.PRES.3*sg* *air-conditioning*.ACC

The second feature of this dialog is equally interesting: in addition to another expletive subject (here the weather *it*), we find the English auxiliary *does* appearing with a missing VP which corresponds to a form of the Greek idiom *éxi ðrosjá*, literally 'it has coolness'. The actually used noun *ðrosúla* is the diminutive of the noun *ðrosjá*; this diminutivization of the idiom chunk does not affect the idiomaticity of the whole (the pieces of *éxi ðrosjá* are what Nunberg et al., 1994 call idiomatically combining expressions, not an idiomatic phrase). The syntax is the standard syntax for the Greek impersonal use of the verb *éxo* 'have': it occurs with a null subject, in the third person, and with an accusative object, and is the most common existential predicate, typically translated into English with 'there is/are' (cf. French *il y a X*, Spanish *hay X*, both meaning 'there is/are' and using forms of the verb 'have'). As with (33b), the son's response in (33d) has no possible pronounced variant, either in English (whether corresponding to an English translation using 'be (a little) cool' or to a non-existent form of the Greek idiom in English) or in a code-switched English-Greek VP:

(35) a. *No, it doesn't be a little cool.
       b. *No, it doesn't have a little coolness.
       c. *No, there doesn't be a little coolness.
       d. *No, there isn't a little coolness.
       e. *No, it doesn't éxi   ðrosúla.
                            have.ACT.IMPERF.PRES.3*sg* *coolness*.DIM

If, as we have seen, the syntax of the missing material must be identical to that of its antecedent, the actual structure of (33d) must be the following:

(36)
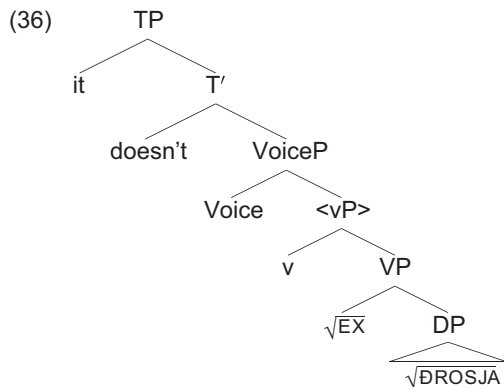
In this structure, the heads of the vP, namely v, $\sqrt{\text{EX}}$, and $\sqrt{\text{drosja}}$ (the latter supplemented by a diminutive affix I omit here), combine to give the idiomatic meaning. They can normally be realized as such by the Greek lexical items *ex-* (which is then inflected) and *ðrosja*. What goes wrong in the variants in (35) is one of two things. In the case of (35b–d), the numeration, drawn from the English lexicon, fails to contain items that give rise to the intended meaning. In (35a), the conditions on the use of auxiliary *do* are not met—this is true of monolingual English predicate ellipsis as well:

(37) a. *It's a little cool today, but it didn't yesterday.
       b. *It'll be a little cool today, but it didn't yesterday.

Finally, (35e) is ruled out for the same reason that (27) above was: either there is no appropriate Vocabulary Item, or there is no way to value the inflectional feature on v/$\sqrt{\text{EX}}$, or the inflectional head cannot be in two places at once. We are left,

therefore, with a predicate that is ineffable—there is no possible set of morphemes that could realize the vP in (36): it must be elided. (See also Saab, 2009 for important related analyses, and Saab, in press for recent discussion.)

The same speaker who produced (33d) judged (38) infelicitous as a possible response:

(38)   *No, there isn't.

And while (39) is an acceptable English sentence containing predicate ellipsis, it too was judged by this speaker to be an infelicitous response to (33c):

(39)   No, it isn't. (kind of cool)

Finally, the nonelliptical version of this, in (40), is a felicitous response, but it does not involve ellipsis. The constraints at play here are not merely those that regulate well-formed discourses (due to information-structure constraints or the like): they are particular to ellipsis.

(40)   No, it isn't kind of cool.

Andrés Saab (p.c.) points out that the full range of facts here intersects in an important way with what we can call Potsdam's Generalization (after Potsdam, 1997, building on Warner, 1985 and Lasnik, 1995; related discussion in Lightfoot, 2000, Nunes and Zocca, 2005, and Harwood, 2013): forms of auxiliary verbs in English must be identical under ellipsis to their antecedents if those antecedents are finite. This morphological identity requirement does not hold for other kinds of verbs, including suppletive ones, as the following examples, partly from Merchant (2013), show.

(41)   a.   Emily played beautifully at the recital and her sister will, too. <play beautifully at the recital>
         b.   Emily took a break from her studies, and her sister will, too. <take a break from her studies>
         c.   Emily sang the song because she wanted to. <sing the song>
         d.   Emily went to the library because she wanted to. <go to the library>

Under ellipsis, *be*, for example, shows a different, more restrictive, pattern:

(42)   a.   Maria will be at the party, and her sister will, too. <be at the recital>
         b.   *Maria was at the party and her sister will, too.
         c.   Maria was at the party, and her sister will be, too.
         d.   Maria was at the party, and her sister was, too.

Lasnik (1995) analyzes these patterns by positing that forms of *be* are inserted fully inflected, while other verbs get their inflection in the course of the derivation: in (42a) the elided *be* is identical to its antecedent, and in (42b) the elided *be* $\neq$ *was* (in (42c–d), the predicate is elided, and the form of *be* is irrelevant). Potsdam (1997), on the other hand, claims that head movement of the finite auxiliary verb out of the antecedent VP renders that VP an illicit antecedent to ellipsis: movement of *was* in (42b) renders the remaining VP an insufficient antecedent to ellipsis of *be at the party*.

Surprisingly, such identity effects are found in code-switching ellipsis contexts as well:

(43)   a.   I   Maria tha ine   sto   parti, and her sister will (be), too.
               the Maria FUT *be*.NONPAST.3*s* *at.the party*
               'Maria will be at the party...'
         b.   I   Maria ine   sto   parti, and her sister will *(be), too.
               the Maria *be*.NONPAST.3*s* *at.the party*
               'Maria is at the party...'
         c.   I   Maria itan   sto   parti, and her sister will *(be), too.
               the Maria *be*.PAST.3*s* *at.the party*
               'Maria was at the party...'

These facts are particularly striking because the form of the copular verb, *ine*, is the same in the licit (43a) as in the illicit (43b): the future is formed in Greek merely by the addition of the future particle *tha* before the finite nonpast verb (see Giannakidou and Mari, 2014). No previous approach handles this extended data set happily: Lasnik's requirement that elided *be* must be identical to its antecedent cannot distinguish the licit (43a) from the illicit (43b), and Potsdam's ban

on moved verbs seems to be routinely violated in all the Greek antecedent VPs considered so far, given usual assumptions about verb movement in Greek.

Note that the culprit is the verb *be*: with other verbs, including stative verbs in the imperfective, the contrast does not arise:

(44) a. I Maria tha agapai to spiti, and her sister will, too.
  the Maria FUT *love*.IMPERF.NONPAST.3*s* *the house*
  'Maria will love the house...'

  b. I Maria agapai to spiti, and her sister will, too.
  the Maria *love*.IMPERF.NONPAST.3*s* *the house*
  'Maria loves the house...'

  c. I Maria agapuse to spiti, and her sister will, too.
  the Maria *love*.IMPERF.PAST.3*s* *the house*
  'Maria loved the house...'

There is no class of exceptional behaviors with Greek *ime* 'to be' vis-à-vis other verbs in the language: all finite verbs raise and the pattern of inflection on *ime* is the same as on many other verbs as well. It seems that the solution to the puzzle is to be sought in the dummy nature of the English *be*, and its function as a copula or linker: when an elided non-verbal predicate has a tense specification that differs from that of its antecedent, the tense shift must be mediated by an overt *be*. Verbal predicates do not suffer from this restriction, because their tense variable is directly bound by the operator in T. While it is not my intention to suggest a full implementation here, one can imagine a formal analysis along the following lines: the head of an elided complement to an auxiliary like *will* can have its tense variable bound by an operator introduced by *will* (or covary by some other mechanism, in variable-free approaches) or it can have the same binding properties as its antecedent. If it is bound, then it will itself in turn bind the tense variable introduced by the nonverbal predicate. This will create a chain of binding relations, both in the antecedent and in the elided clause. Such chains are subject to parallelism constraints of the kind studied in Fiengo and May (1994), Merchant (2001), Takahashi and Fox (2006), and many others, but which are still poorly understood. It appears that rebinding of the variable by a new operator is possible, but only if that operator is overt, a natural condition that should follow from any version of recoverability. So (43a) is licit without *be* because the tense variable on the copula *ine* and on the PP predicate *sto parti* take the same values under *will* as they did in the antecedent. In (43b) and (43c), on the other hand, the tense variable in the elided PP *sto parti* is bound by an operator with a different range (present and past, respectively) from that in the antecedent. This requires that the rebound variable be rebound from precisely the same position, and this is only possible from an instance of *be*, not from *will* directly. These relations are given schematically in (45):

(45) will be at the party
  └─┘ └─┘

In other words, the intended binding is illicit for the same reason that Dahl's puzzle examples lack a strict-sloppy reading: *John said he loved his mom, and Bill did, too* is 3-ways, not 4-ways ambiguous: *his* cannot be bound by *Bill*: *he* can be, *he* can bind *his*, but a binding relation cannot skip a potential bindee, as Takahashi and Fox (2006) discuss in detail. This cascading binding is not necessary with main verbs: their tense variable is locally bound by T. The effect only emerges with nonverbal predicates, mediated by *be*, and the tense structure of the antecedent, whether in English or in Greek, must be the same as a result. Though this solution is surely only partial, it locates the difficulty in the illicit examples in the combination of antecedent and elided nonfinite *be*, regardless of the language of the antecedent.

It is thus possible to reconcile the apparently strict matching requirement necessitated by the Spanish–German and Spanish–Zapotec cases with the surprising facts documented here from Greek–English code-switching under ellipsis. It is worth noting that the latter facts, of course, follow straightforwardly from semantic identity theories that posit no syntactic structure internal to the ellipsis: on such theories, there is merely a constructional pointer or other device at the ellipsis site whose value must be resolved by reference to the context: a predicate meaning must be found or generated that supplies the value of the predicate. Whether this predicate meaning is from an English or a Greek utterance (or indeed is linguistically expressed at all) is not germane. Thus even apparently anomalous ellipses in English are well-formed not because they have an otherwise unpronounceable structure (they hide no structure at all, on this approach) but because the kind of meaning they need to form part of a well-formed utterance is available. As appealing as this approach is, it cannot accommodate the strict matching data seen above, nor the examples in (37) or (38).

We cannot avoid the conclusion that the recoverability or identity condition on ellipsis has an irreducibly syntactic component, and that therefore there are predicates in English—namely those from VPs whose antecedents are Greek but which are not licit targets of code-switching—that are ineffable. Code-switching once again proves itself, in the apropos

words of Woolford, 1983:520, a "fertile... source of evidence bearing on a wide range of questions in current grammatical theory."

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