# Verb-stranding predicate ellipsis in Greek, implicit arguments, and ellipsis-internal focus[*]

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## 1    DISTINGUISHING AMONG THE MISSING

When expected arguments of predicates go missing, it can be a challenge to analyze why: are missing elements suppressed in the argument projection of a predicate, or are they actually projected but merely unpronounced? If the latter, is it because the language has in its lexicon a set of null pronouns or null indefinite arguments (or, equivalently, a set of lexical processes that return predicates with such arguments added or saturated), or is it because a phrase containing the elements has been elided? I show that all three possibilities exist in standard modern Greek (henceforth, Greek): some arguments are suppressed in the lexicon, some are projected, but realized as null nominal phrases, and some are missing because they are inside a predicate which has undergone phrasal ellipsis. This last option interacts with an independent property of Greek, the movement of the main verb to a higher functional projection, to yield what McCloskey (1991) called verb-stranding verb phrase ellipsis, more recently named verb-stranding ellipsis (VSE) in Gribanova (2017a), a more flexible terminology I will adopt here. I show that Greek is like Russian, and unlike Irish, in allowing for mismatched verbs, and that this conclusion is in alignment with that reached in Gribanova (2017b). Finally, I propose a possible way to understand the difference between Greek and Irish: in Irish, unlike in Greek (and the other languages with VSE), the realization of focus on the verb is subject to a number of peculiar prosodic and other constraints that conspire to prevent simple verb stem mismatches.

    Studying ellipsis is much like studying black holes: we do not have tools to probe them directly, but rather we learn about their properties by examining

their effects on surrounding material (Thomas et al. 2016). When something is gone from the linguistic form, but nevertheless speakers produce and hearers interpret the resulting structure with a determinate (within reason) meaning, given a particular linguistic context, it is up to the analyst to discover the mechanisms that give rise to these meanings. One of the ways we do this is to determine whether the syntactic properties of the missing element are the same as those of its putative overt counterpart. When these align, Ockam's razor impels us to conclude that the element is present, but unpronounced. When these properties do not align, our task is harder, but application of Ockam's razor in such cases suggests that the element is not there.

## 2 PREDICATE ELLIPSES AND V-TO-T MOVEMENT

Greek allows the ellipsis of a post-copular predicate, marked in the following examples with the placeholder Δ. Adjectival predicates, nominal predicates, and prepositional predicates can all be absent after *ime* 'be', provided that an antecedent is available (see Merchant 2014).[1]

(1) a. O Petros ine ikanos, ala o Alexandros dhen ine Δ.
       *the Petros is capable.m.sg but the Alexander not is*
       'Petros is capable, but Alexander isn't.'

    b. O Petros ine kalos adherfos, ala o Kostas dhen ine Δ.
       *the Petros is good.masc brother.masc but the Kostas not is*
       'Petros is a good brother, but Kostas isn't.'

    c. I Maria ine sto dhomatio, ala i Anna dhen ine Δ.
       *the Maria is in.the room but the Anna not is*
       'Maria is in the room, but Anna isn't.'

But Greek does not have ellipsis of the verb phrase complement to the perfect auxiliary *exo* 'have', nor does it allow for sentential negation to appear by itself (*dhen* is a clitic on the finite verb complex).

(2) a. *I Maria exi teliosi tin ergasia tis, ke i Anna exi Δ, episis.
       *the Maria has finished the homework her and the Anna has too*
       ('Maria has finished her homework, and Anna has, too.')

    b. *O Petros ine ikanos, ala o Alexandros dhen Δ.
       *the Petros is capable.m.sg but the Alexander not*
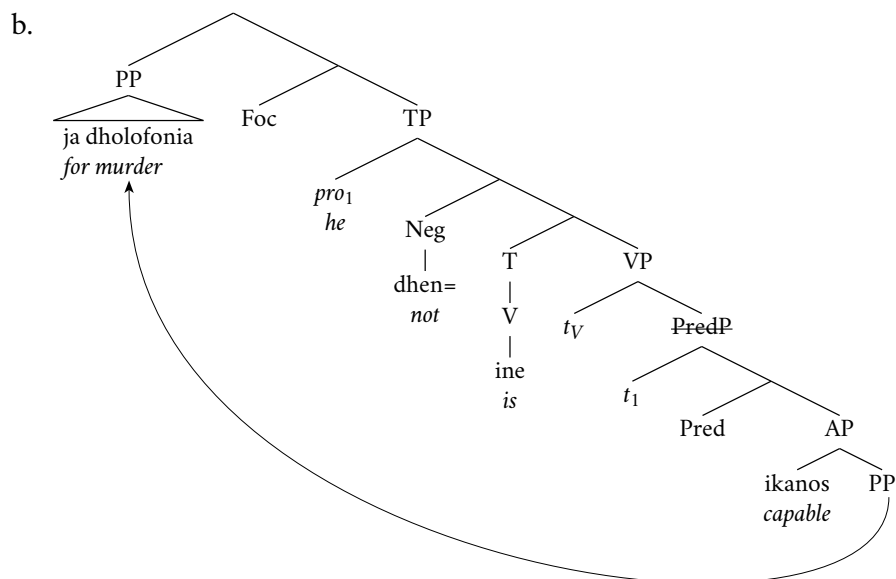       ('Petros is capable, but Alexander isn't.')

These facts are most readily understandable if the target of ellipsis in Greek is a predicate phrase, which we can conveniently identify with Bowers' (1993, 2002) PredP. For an example such as (1a), then, we have the following structure, where strikethrough indicates the node targeted for non-pronunciation (the position of the clitic negation *dhen=* and any potential internal structure of the verb+tense *ine* are not relevant here):

(3)
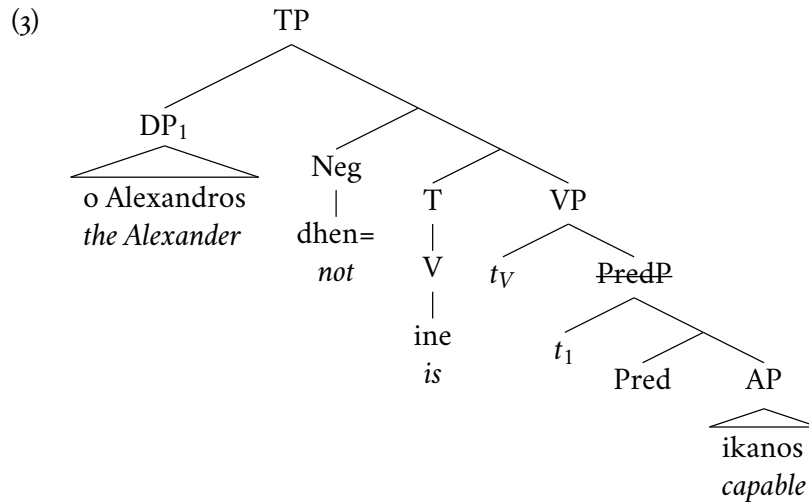


Clear evidence that PredP is elided, and not merely suppressed with its content somehow understood, comes from extraction of internal arguments of the elided predicate head. In (4a), the contrastively focused PP argument of *ikanos* 'capable', *ja dholofonia* literally 'for murder', is fronted to the clause-initial focus position in the second clause. This PP is headed by a preposition, *ja*, that is lexically selected by the adjective *ikanos*—its appearance here is not predictable from its own meaning or from the meaning of *ikanos*, nor is it a default preposition. Standard assumptions about such idiosyncratic lexical selection, therefore, require that there be in the syntactic representation of (4a) a head that selects it. This full structure is precisely what an ellipsis analysis makes available, as shown in (4b).

(4) a. O Alexis ine sigura ikanos ja kapja englimata, ala ja dholofonia,
   *the Alexis is surely capable for some crimes  but for murder*
   dhen ine.
   *not is*
   'Alexis is surely capable of *some* crimes, but of *murder*, he isn't.'

b.

PP
  ja dholofonia
  *for murder*

Foc

TP
  *pro₁*
  *he*

Neg
|
dhen=
*not*

T
|
V
|
ine
*is*

VP

$t_V$

PredP

$t_1$

Pred
  ikanos
  *capable*

AP

PP

Additional evidence that the complement of *ine* is elided (that is, that it is 'surface anaphoric' in the sense of Hankamer & Sag 1976 or is true ellipsis, in the sense of Sag & Hankamer 1984), and not merely suppressed by a general mechanism of argument suppression (that is, that it is not a kind of 'deep anaphor' in Hankamer and Sag's sense, or model-theoretic anaphora in Sag and Hankamer's) comes from the differing interpretations available to the two structures. When the AP is elided, the predicate of the second conjunct is interpreted exactly as the first is. This can give rise to covarying or coreferential readings with pronouns in (5b), for example:

(5)   a.  O  Alexis ine ikanos ja  dholofonia, ala o   Petros dhen ine.
           *the Alexis is   capable for murder     but the Petros  not   is*
           'Alexis is capable of murder, but Petros is not capable of murder.'

      b.  O  Alexis ine perifanos ja ton jo   tu, ala o   Petros dhen ine.
           *the Alexis is   proud      of the son his but the Petros   not   is*
           'Alexis₁ is proud of his$_{1/2/3}$ son, but Petros₂ is not proud of his$_{1/2/3}$ son.'

When just the PP internal argument to an adjective is missing, the adjective receives a general interpretation, with its internal argument specified only pragmatically. This means that the internal argument could take as its value *murder* or *his son*, as in (5) above, but it need not; by Gricean principles, the availability of the expressions in (5) in fact make this reading highly marked. The most natural interpretation of the following examples is precisely that of their English counterparts, with an unspecified internal argument, and the predicate attributing a generic individual-level property to the subject.
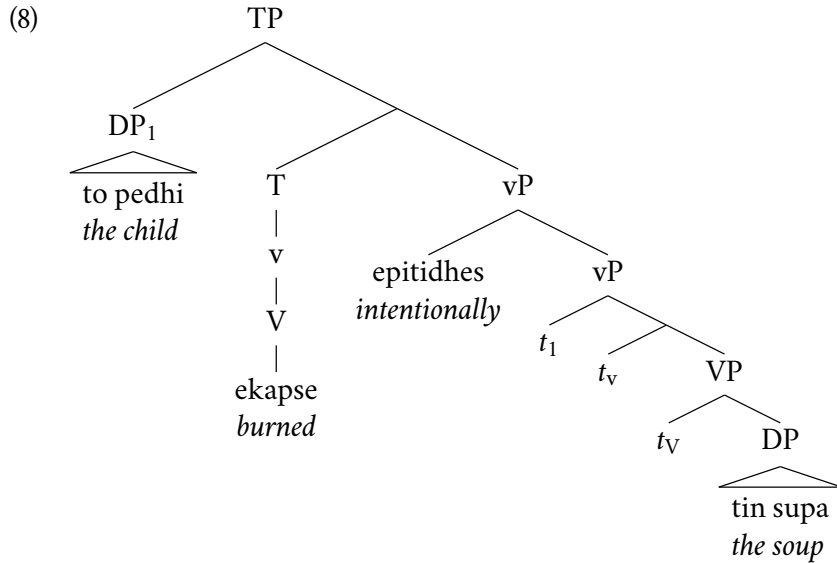
(6)   a.  O  Alexis ine ikanos ja  dholofonia, ala o   Petros dhen ine ikanos.
           *the Alexis is   capable for murder     but the Petros  not   is   capable*
           'Alexis is capable of murder, but Petros is not capable.'

b. O Alexis ine perifanos ja ton jo tu, ala o Petros dhen ine
*the Alexis is proud of the son his but the Petros not is*
perifanos.
*proud*
'Alexis is proud of his son, but Petros is not proud.'

There is overwhelming evidence (Alexiadou & Anagnostopoulou 1998, Alexiadou et al. 2015) that verbal roots in Greek (which I will represent as V for simplicity's sake) raise to T (or to some head that c-commands vP, at least), and that even participial verbs in the perfect raise to a higher, vP-external position. Classic evidence for this verb movement comes from the relative position of subject-oriented adverbials between the verb and its direct object (PP indicates the perfect participle, which does not agree with any argument):

(7)  a. Itan safes oti to pedhi ekapse epitidhes ti supa.
*it.was clear that the child burned.3s intentionally the soup.*ACC
'It was clear that the child burned the soup intentionally.'

   b. Itan safes oti to pedhi ixe idhi kapsi epitidhes ti
*it.was clear that the child had.3s already burned.*PP *intentionally the*
supa.
*soup.*ACC
'It was clear that the child had already intentionally burned the soup.'

Bowers' Pred has been variously redubbed Voice or v when it is used in the verbal extended projection: it is the head that introduces the external argument. As Bowers points out, Pred is cross-categorical, given that nouns, adjectives, and prepositions can take subjects as well. For reasons of perspicuity and consistency with much recent literature (including Merchant 2013c and Alexiadou et al. 2015), I will use v as the label for Pred when Pred takes a VP as its sister, but I stress that this is merely a notational convenience. (In any case, the reader should bear in mind that this v is the argument-introducing one; some work takes v to be a categorizing node, a function I would attribute to a V node combining with an uncategorized root if this were salient.) This means that the structure of the embedded clause in (7a) will be that given in (8); again, because the details of head movement are not relevant to our concerns, I will follow Bennett et al. (2017) in representing the result of head movement simply as a vertical stack of labels, and I will omit additional functional material that associates with verbs in particular, such as Voice and Aspect (see Merchant 2015 and Spyropoulos et al. 2015 for exploration of these details in Greek).

(8)

```
                        TP
              ┌──────────┴──────────┐
           DP₁               ┌──────┴──────┐
          /  \               T            vP
      to pedhi              │         ┌────┴────┐
     the child             v      epitidhes   vP
                           │     intentionally │
                           V              ┌────┴────┐
                           │             t₁    ┌────┴────┐
                        ekapse                t_v      VP
                        burned                      ┌───┴───┐
                                                   t_V     DP
                                                          /  \
                                                       tin supa
                                                       the soup
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The finite verb can invert with the subject in questions and relative clauses (and even in simple declaratives under certain discourse conditions); if such inversions must be fed by movement of the verb to T, then their presence in Greek is a further argument for V-to-T movement.

## 3 VERB-STRANDING ELLIPSIS

We have concluded that Greek is a language with predicate (PredP/vP) ellipsis and with V-(to-v-)T movement. The question, then, is whether these two things can be combined. The combination of the movement of a head H with ellipsis of HP (or of an XP contained HP, if H moves out of XP) has been the focus of a large literature (see Funakoshi 2012, Lipták & Saab 2014, Gribanova & Mikkelsen 2018, Manetta 2018, and Sailor To appear for recent approaches), in particular with respect to the movement of verbs out of elided verb phrases. The primary analytical issue revolves around examples like the response in (9) and the second clauses in (10)-(11).

(9) Question: Agorases psomi? Answer: Ne, agorasa.
          *bought.2s bread*       *yes bought.1s*
    'Did you buy bread?' 'Yes, I did. (buy bread)'

(10) Epidhi i    Anna ithele   na    agorasi psomi, agorase.
    *because the Anna wanted* SUBJ *buy.3s   bread    bought.3s*
    'Because Anna wanted to buy bread, she did. (buy bread)'

(11) Prota irthe ena agori pu   agorase psomi. Meta irthe ena koritsi pu
    *First came a   boy   who bought   bread   then came a   girl    who*
    episis ithele   na    agorasi.
    *also    wanted* SUBJ *buy.3s*
    'First a boy came who bought bread. Then a girl came who also wanted to. (buy)'

Examples like these have been the object of sustained and insightful investigation in Irish in a series of works by Jim McCloskey (McCloskey 1991, 1996, 2017, Bennett et al. 2017), who has shown beyond a doubt that the finite verb in an Irish example such as (12) raises to a position outside the target of ellipsis (in his recent work, the verb moves to Pol, above a lower TP, which can elide).

(12)  Gabh      ar mo dhroim anseo. Chuaigh.
      *go.*IMPERV *on my back*    *here*   *go.*PAST
      'Get up here on my back. He did.' (McCloskey 2017:23 (54d))

A number of researchers, building on McCloskey's seminal work, have expanded this line of analysis in a number of other languages (see Goldberg 2005, Gribanova 2013b, 2013a, 2017a, 2017b, 2017c, for extensive discussion and references).

For a Greek example like (9), then, the combination of verb movement and vP ellipsis is represented as follows.[2] The diagram in (13a) gives the antecedent clause, and (13b) gives the clause hosting the ellipsis. The ellipsis is licensed by an E-feature on T, which triggers the non-pronunciation of the struck-through boxed vP (each terminal node in the elided vP is marked as not being subject to Vocabulary Insertion; see Saab 2009, 2016 for details). The calculation of identity of meaning, modulo focus-marking (Merchant 2001) is also successful (a similar result would be achieved if syntactic identity were taken as criterial, in whole or in part, whether entailed or implied; see Chung 2000, 2013, Chung et al. 2010, Merchant 2013c).

(13)  a.

TP
├─ T
│  └─ v
│     └─ V
│        └─ agorases / *bought.2s*
└─ vP
   ├─ pro₂ₛ
   └─ tᵥ
      └─ VP
         ├─ t_V
         └─ DP
            └─ psomi / bread

b.

TP
├─ T_E
│  └─ v
│     └─ V
│        └─ agorasa / *bought.1s*
└─ [vP]
   ├─ pro₁ₛ
   └─ tᵥ
      └─ VP
         ├─ t_V
         └─ DP
            └─ psomi / bread
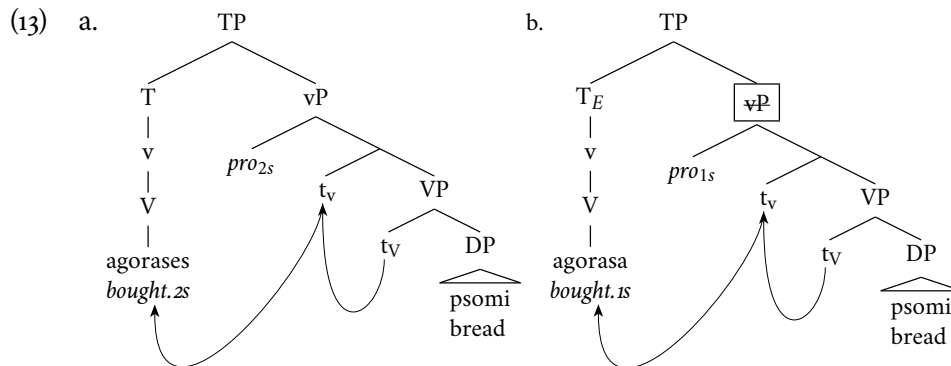
The primary analytical challenge in coming to a secure understanding of these structures is excluding alternative possibilities. We must be sure that there are no independently available mechanisms in the grammars of the relevant languages that would give rise to equivalent structures and meanings. In practice, this means we must closely investigate the other possiblities for omitting understood arguments, and ensure that those mechanisms cannot generate the structures in question.

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[2] Greek is a pronominal subject-drop language, which I represent here for convenience with an in situ *pro*; as Alexiadou & Anagnostopoulou (1998) persuasively argue, there is no reason to believe that Greek has an EPP requiring a filled specifier of TP.

# 4 ARGUMENT OMISSION?

Greek is not at all unusual in having verbal and predicate alternations that appear to be due to the optionality of certain arguments. This alternation, when it affects definite pronominal subjects, is generally known as *pro*-drop, and, generalizing, when it affects arguments of any kind, as argument drop.

The differences between dropped pronouns, with definite anaphoric reference, and dropped indefinite arguments, can be seen in the following example, from Giannakidou & Merchant (1997).

(14)    a.  Q: Irthan  {deka/kapji/meriki} fitites?
             *came.3p ten/some/several       students*
             'Did ten/some/several students come?'

        b.  A: Ne, irthan.
             *yes came.3p*
             'Yes, {ten/some/several} students came.' or 'Yes, they came.'

As indicated in the translations, the Greek answer is compatible with two intended readings: either the answerer intends to refer to the individuals in the set of students introduced in the question (the definite anaphoric reading, compatible with a specific reading of the indefinite), or the answerer intends merely to affirm that a certain set with the given cardinality came, without being willing or perhaps able to specify who the members of that set in the actual world might be. Notice that the English pronoun *they* in this context lacks the second reading. This is evidence that Greek argument drop, including of subjects, does not always involve traditional *pro*-drop. (As Giannakidou & Merchant (1997) claimed, there are several ways to get to a null DP, including combining a null indefinite determiner with NP-ellipsis.)

Bare singulars, both mass and count, can also go missing, as in B's responses to A's questions in (15) and (16):

(15)    a.  A: Agorases efimeridha?
             *bought.2s newspaper*
             'Did you buy a newspaper?'

        b.  B: Oxi, dhen ixe.    Dhen boresa   na   vro.
             *no   not   had.3s not   could.1sg* SUBJ *find.1s*
             'No, there weren't any. I couldn't find one.'

(16)    a.  A: Agorases zaxari?
             *bought.2s sugar*
             'Did you buy sugar?'

        b.  B: Oxi, dhen ixe.    Dhen boresa   na   vro.
             *no   not   had.3s not   could.1sg* SUBJ *find.1s*
             'No, there wasn't any. I couldn't find any.'

Count singulars with the indefinite article and bare plurals also license omission:

(17) Agorasa ena sfungari jati     mu ipes   na   fero    (ena).
*bought.1s a/one sponge    because me  told.2s* SUBJ *bring.1s  one*
'I bought a sponge because you told me to bring one.'

(18) Agorasa sfungaria jati     mu ipes   na   fero.
*bought.1s sponges    because me  told.2s* SUBJ *bring.1s*
'I bought sponges because you told me to bring some.'

But such indefinites do not license omission if they are the objects of prepositions:

(19)  a.  M'aresi n'agoraso efimeridha to proi—panda matheno ta panda apo
         *(efimerida).

     b.  *Dhen tro zaxari jati ime alergiki se.

     c.  Idhame vivlia, ala dhen milisame ja *(vivlia).

     d.  Ta pedhia  piran apo ena vivlio, epidhi i   gonis   plirosan apo
         *the children got    from one  book   because the parents paid.for  from*
         *(ena).
           *one*
         'The children each got a book because the parents each paid for (one).'

When the antecedent is definite, however, whether on a type or token use, this kind of omission is not possible; this is true both inside and outside of islands:

(20)  A: Agorases to  vivlio?
          *bought.2s  the book*
      'Did you buy the book?'

      B: Oxi, dhen *(to) ixan.  Dhen boresa na    *(to) vro    puthena.
         *no    not    it  had.3p not   could.1s* SUBJ *it  find.1s anywhere*

      'No, they didn't have it. I couldn't find it anywhere.'

(21)  a.  Dhen agorasa to  vivlio jati     dhen boresa na    *(to) vro
          *not   bought.1s the book  because not   could.1s* SUBJ *it  find.1s*
          puthena.
          *anywhere*
          'I didn't buy the book because I couldn't find it anywhere.'

     b.  Dhen agorasa  to  vivlio ala gnorisa tin jineka  pu  *(to) egrapse.
         *not   bought.1s the book  but met.1s   the woman that   it  wrote.3s*
         'I didn't buy the book, but I met the woman who wrote it.'

In this respect, this kind of definite pronominal argument omission is very different from the situation in Hebrew or Russian, both of which permit definite objects to be dropped when the verb whose argument they are is not inside an island (Gribanova 2013b). Hebrew also allows this kind of argument omission inside islands, as Landau (2017) documents.

The empirical pattern, then, is somewhat complex. In all the above cases, the verb whose argument is omitted is not that same as the verb that introduces the antecedent argument. These examples are chosen in order to help minimize the possibility that these examples involve a kind of VSE. But as we will see below, it is not an absolute requirement that the verbs match: instead, contrastive focus can allow for mismatched verbs. Absent such focus, however, it seems that Greek has limited ability to license null arguments when the antecedent is a full DP (whether definite or indefinite). This is particularly clear in the distributive prepositional case in (19): if arguments could be freely omitted (assuming they have the appropriate kind of antecedent, as would be the case in (19)), the fact that (19) is unacceptable without an overt DP complement to the preposition *apo* would be unexplained.

This is not to imply that Greek lacks predicates that allow for implicit arguments. It does possess such predicates, and it is important to examine such cases carefully to distinguish them from VSE.

### 4.1 Implicit arguments

To ensure that the cases of verb-stranding ellipsis above do not involve mere argument drop, it is important to fully delimit the range of possible implicit arguments. A complete typology must include missing selected DPs, PPs, and CPs of various types. Beyond the often noted indefinite (existential) implicit arguments, there are definite ones, reflexive ones, and reciprocal ones. I illustrate first with English, before turning to the Greek cases.

(22) Implicit indefinite arguments (Fodor & Fodor 1980, Dowty 1981, Mittwoch 1982)

    a. John {baked / ate / hunted / read / served the guests}.

    b. John {baked a cake / ate a carrot / hunted a rabbit / read a book / served the guests the salad}.

(23) Implicit definite arguments (Fillmore 1986)

    a. Susan {noticed / understood / saw}.

    b. Susan {noticed / understood / saw} the error / that something was wrong.

(24) Implicit reflexive arguments

    a. Maxwell {shaved / bathed / scratched}.

    b. Maxwell {shaved / bathed / scratched} himself.

(25) Implicit reciprocal arguments

    a. Adam and Beth {kissed / screwed / divorced}.

    b. Adam and Beth {kissed / screwed / divorced} each other.

It is striking to note that all of these kinds of implicit arguments can be found with predicates which, when they take these arguments overtly, mark them obligatorily with lexically selected prepositions.[3] This observation, to my knowledge, has not been made previously in the literature, and indicates that any system that merely suppresses DPs (or NPs) in these positions, or which posits null DPs, does not generalize to the full range of facts.

(26) John {flirted (with someone) / was shooting (at something) / argued (with someone)}.

(27) Susan {agreed (to it / with it / us) / looked (at it)}.

(28) Maxwell is proud (of himself).[4]

(29) Adam and Beth {are married (to each other) / broke up / argued (with each other)}.

Not all predicates allow for implicit arguments. Even predicates that have very similar meanings to those that license implicit arguments do not themselves always license such arguments. It is not predictable from the meaning of the predicate whether it will allow for an implicit argument, as the following sets of near minimal pairs with the above show.

(30) John ingested / devoured / created / overcooked *(something).

(31) Susan noted / comprehended / realized *(something / that something was wrong).

(32) Maxwell combed *(himself / his hair).

(33) Adam and Beth despise *(each other).

The literature on implicit arguments highlights three properties to be captured by any analysis of implicit arguments:

(34) a. implicit arguments are lexically dependent (some predicates license them, others don't)

b. implicit arguments don't occur as subjects or objects of transitive prepositions

c. implicit indefinite arguments always take narrowest possible scope

The first and second properties point to a lexical operation on predicates, or an encoding of syntactic optionality in the lexical entry. One formalization of the selectional features of predicates like *eat* and *ingest* is given below, where the selectional features form a list (an ordered n-tuple) whose elements must be satisfied in the order given:

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[3]Chung (2006) discusses implicit PPs which are understood as existentials, as in (26).

[4]In such cases, the simple adjective seems to have a characterizing, individual-level meaning, while the adjective with a PP can have a stage-level meaning as well.

(35)　a. *eat*$\begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{V, -AUX} \end{bmatrix} \\ \text{SEL} & \begin{bmatrix} < (D) > \end{bmatrix} \end{bmatrix}$

　　　b. *ingest*$\begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{V, -AUX} \end{bmatrix} \\ \text{SEL} & \begin{bmatrix} < D > \end{bmatrix} \end{bmatrix}$

The crucial device is the parenthesis, following Chomsky (1965), to collapse two otherwise equivalent lexical entires. This device is employed in more familiar representations of lexical entries in Levin & Rappaport (1988), Sadock (1991), Pollard & Sag (1994), Bresnan (2001), and Culicover & Jackendoff (2005).

　　　Work on existential implicit arguments of predicates such as *eat* and *read* handle the restriction to narrowest scope in a variety of ways. Fodor & Fodor (1980) use meaning postulate like that in (36), while Dowty (1981) posits the lexical rule in (37).

(36)　x *read$_i$* iff $\exists y$ x *read$_t$* y

(37)　DETRANSITIVIZATION
　　　If $\alpha \in P_{TV}$, then $F(\alpha) \in P_{IV}$ (where $F(\alpha) = \alpha$).
　　　TRANSLATION RULE:
　　　$\lambda x \exists y [\alpha'(\hat{P}[Py])(x)]$

However, as the most comprehensive account of the full range of implicit arguments, Gillon (2012), shows, such accounts are inferior to one that uses specific VP-interpretation rules that depend on the presence of diacritics on the particular predicates (for existential, definite, reflexive, and reciprocal interpretations), as in (38):

(38)　Let $D$ be the domain of the model and let $G$ be the set of ordered pairs, or graph, of the binary relation assigned to a lexical entry with the argument frame of $< \underline{NP}; NP, q >$. Then, the function assigned to $q$ assigns $\{x : \exists y \in D$ and $< x, y > \in G\}$ to the VP node of the V node dominating the lexical entry.

This approach extends straightforwardly to the cases of implicit PPs as well.

　　　Greek also has predicates in the first two of these classes as well: existential and definite (the latter may be partially identified under 'Null Complement Anaphora', if these differ in fact). Reflexive and reciprocal implicit arguments trigger obligatory use of the nonactive form of the verb, and so no simple argument drop is possible with these classes (see Alexiadou et al. 2015).

(39)　I　Ariadne majirepse / efage / dhiavase / paleve / flertare.
　　　*the Ariadne cooked　　ate　　read　　fought　flirted*
　　　'Ariadne cooked / ate / read / fought / flirted.'

(40)  I  Ana  iksere / idhe / katalave.
*the Anna knew    saw    understood*
'Anna knew / saw / understood.'

Note that such uses of these predicates is not restricted to non-island or non-embedded contexts; they are perfectly acceptable inside islands:

(41)  An majirevi i    Ariadne, oli tha  xaromaste.
*if  cooks    the Ariadne  all* FUT *be.glad.1p*
'If Ariadne is cooking, we will all be glad.'

(42)  I    astinomia milise me   kathe pliroforiodhoti pu   idhe / iksere.
*the police      spoke  with every  informant      who saw   knew*
'The police spoke with every informant who {saw it/knew}.'

There are numerous predicates that take obligatory internal DP or selected PP arguments (in English, the latter include *rely on, wallow in, depend on, consist of*).

(43)    a.  Mikra mora? Dhen filao   *(mikra mora) pote!
*small  babies not    kiss.1s  small  babies ever*
'Little babies? I never kiss little babies!'

        b.  Oson    afora    tin prostasia tis    ergasias, to  ikonomiko modelo
*as.far.as concerns the protection of.the labor      the economic    model*
stirizete *(s'aftin).
*depends    on.it*
'As far as protection of labor is concerned, the economic model depends on it.'

        c.  Oson    afora    tin erotisi  dio, o   dhaskalos epimeni *(s'aftin).
*as.far.as concerns the question two  the teacher    insists    on.it*
'As for question two, the teacher insists on it.'

Such predicates that take obligatorily expressed internal arguments, whether DP or PP, make up a crucial first testing ground for VSE: if such predicates occur without their expected DP or PP sisters when the predicate head has an antecedent, but not otherwise (as just demonstrated in (43)), we are licensed to conclude that something else is at work. That something else is VSE.

This prediction is borne out. We see in (44) that the object can be missing but understood just in case there is an antecedent VP headed by the identical verb:

(44)    a.  A: Filas   mikra mora?
*kiss.2s small   babies*
'Do you kiss small babies?'

        b.  B: Dhen filao   pote!
*not    kiss.1s ever*
'I never do!' (lit. 'I never kiss!')

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This pattern is replicated with verbs that take obligatory PP arguments. In (45a-c), we see the verb *stirizome* 'depend' without its obligatory PP complement. In all cases, the verb has an antecedent that heads a VP with the requisite PP. (46) shows the same for the verb *epimeno* 'insist'.

(45)  a.  A: Stirizete katholu to  ikonomiko model stin    prostasia tis
          *depends    at.all     the economic      model  on.the protection of.the*
          ergasias?
          *labor*
          'Does the economic model depend at all on the protection of labor?'
          B: Ne, stirizete.
          *yes  depends*
          'Yes, it does.'

     b.  To politiko modelo stirizete stin    prostasia tis     ergasias —
         *the political  model    depends  on.the protection of.the labor*
         dhistixos,     to  ikonomiko modelo dhen stirizete.
         *unfortunately the economic    model    not    depends*
         'The political model depends on the protection of labor — unfortunately, the economic model does not.'

     c.  To oti  dhio stus   tris  neus  stirizunte stus   gonis   tus  simeni
         *the that two  on.the three young depend      on.the parents their means*
         oti  enas stus   tris   dhen stirizete.
         *that one  on.the three  not    depends*
         'The fact that one out of three young people depend on their parents means that one out of three does not.'

(46)  Parolo pu  o  dhaskalos epemine stin    erotisi  dio, o  voithos dhen
      *despite  that the teacher      insisted  on.the question two  the aide      not*
      epemine.
      *insisted*
      'Although the teacher insisted on question two, the aide didn't.'

Another kind of obligatory argument is the definite pronoun in a context that supports one. These pronouns are proclitic on the finite verb in Greek, making examples with verbs and clitic objects useless for testing for VSE, since both the verb and its object will have raised out of the putatively elided vP:

(47)  a.  A: Idhes  tin tenia?
          *saw.2s the movie*
          'Did you see the movie?'

     b.  B: Ne, *(tin) idha.
          *yes   it  saw.1s*
          'Yes, I did.' or 'Yes, I saw it.'

The only exception to this pattern is found with certain verb+noun idioms, where the object of the combined verb+noun can be a full DP or a pronoun, but when

the verb is used in VSE, both the noun part of the idiom and any potentially pronominal object must be elided.

(48) A: Pires prefa tin katastasi?
    *took.2s prefa the situation*
    'Did you get wind of the situation?'[5]
    B:  a.          Pira.
        b.  *Tin    pira.
        c.  (Tin)   pira     prefa.
            *it      took.1s   prefa*
            'I did/I got wind of it.'

(49) A: Pires xabari tin kopela?
    *took.2s notice the girl*
    'Were you aware of the girl?'
    B:  a.  Dhen           pira.
        b.  *Dhen   tin    pira.
        c.  Dhen    (tin)  pira     xabari.
            *not     her    took.1s   notice*
            'I was/I was aware of her.'

What is unusual about these idioms, and sets them apart from regular transitive verbs like (47) above, is that they also allow for a dropped object without any ellipsis, as seen in the (c) examples. It is the possibility of this pronoun-less alternant that gives rise to pronoun-less VSE in the (a) examples. (Why precisely the otherwise expected, and indeed possible, definite pronoun is omissible just with these idioms, I leave for future work, but the solution seems orthogonal to questions about ellipsis.)

### 4.1.1 NPI, disjunctive, generic, quantificational, and idiom chunk arguments

Gribanova (2013a,b) argues persuasively that Russian has VSE, partly on the basis of a series of well-constructed examples that involve objects that cannot be easily anaphorized, and therefore are poor candidates for pronominal 'object-drop' or some other process of object omission (which Russian has). These involve five kinds of objects: negative polarity items (NPIs), disjunctions, bare singular generic nouns, weak quantificational noun phrases, and certain idiom chunks.

Each of these DPs fails to provide a licit antecedent to a pronoun or, in the case of weak quantifiers and disjunctions, gives rise to a different meaning. Therefore, if we find examples that involve a verb whose object is one of these DPs, we can be sure that the missing DP is not a definite pronoun that has somehow been omitted (as we have seen, Greek lacks a general process of object drop in any case).

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[5]*Prefa* is the Greek name of the Russian card game Preferans, though many Greeks may know neither the game nor the word outside of this idiom. Cf. *cahoots* in the idiom *be in cahoots with* in English.

Very briefly, I give the results of attempting VSE with each of these kinds of objects, and contrast the licit VSE with illicit pronouns.

The first case comes from NPIs headed by the n-word determiner *kanenas* (see Giannakidou (2000). As can be seen below, both negative and positive responses are possible (see Merchant (2013b) for discussion of this alternation, which is found in English as well). Responses with a definite pronoun are anomalous: the NPI does not introduce a referent into the discourse context that the pronoun could pick up on.

(50)  Dhen vrikes    kanena meros ja  na    parkaris to  amaksi?
      *not  found.you any     spot  for* SUBJ *park.2s   the car*
      'Didn't you find any spot to park the car?'

(51)  a.  Oxi, dhen vrika.
          *no   not  found.I*
          'No, I didn't (find any spot to park the car).'

      b.  Ne, vrika.
          *yes found.I*
          'Yes, I did (find a spot to park the car).'

(52)  a.  #Ne, to vrika.
           *yes  it found.I*
          #'Yes, I found it.'

      b.  #Oxi, dhen to      vrika.
           *no    not  found.I*
          #'No, I didn't find it.'

Disjunctions deliver a parallel set of facts. A definite pronoun would give rise to an unwanted existential presupposition in the following example, but the VSE variant is well-formed.

(53)  a.  Paratirises i      kena i  lathi sto    xirografo?
          *observed.2s either gaps  or errors in.the manuscript*
          'Did you observe either lacunae or errors in the manuscript?'

      b.  Oxi, dhen (#ta)    paratirisa.
          *no    not    them observed.1s*
          'No, I did not.'

Bare singular noun phrases can have generic meanings (or, in some circumstances, singular indefinite nonspecific existential readings). These generic readings do not license following pronouns, but they do participate in VSE:

(54)  a.  Foras  kaskol?
          *wear.2s scarf*
          'Are you wearing a scarf?' or 'Do you wear scarves?'

      b.  Ne, (*to) forao.
          *yes   it wear.1s*
          'Yes, I am.' or 'Yes, I do.'

Quantificational noun phrases can license pronominal anaphora, of course. But VSE, like VPE in English, gives rise to a second quantificational set, as seen in the following example:

(55)  a. Example from Giannakidou & Merchant (1997) (1):

| Efere | o | Andreas | merika | vivlia? |
|---|---|---|---|---|
| *brought.3s* | *the* | *Andreas* | *several* | *books* |
|  |  |  | kapja |  |
|  |  |  | *some* |  |
|  |  |  | liga |  |
|  |  |  | *a.few* |  |
|  |  |  | dheka |  |
|  |  |  | *ten* |  |
|  |  |  | tulaxiston tria |  |
|  |  |  | *at.least three* |  |
|  |  |  | parapano apo tria |  |
|  |  |  | *more than three* |  |
|  |  |  | tipota |  |
|  |  |  | *any* |  |
|  |  |  | Ø |  |
|  |  |  | Ø |  |

'Did Andreas bring {several/some/a few/at least three/more than three/any/Ø} books?'

b. Ne, (%ta) efere.
*yes them brought.3s*
'Yes, he brought {several/some/a few/at least three/more than three/any/Ø} books' ≠ 'Yes, he brought them.'

As can be seen from the two translations in (55b), there are two possible readings to the Greek. In the first, the anaphoric reading, the neuter plural definite anaphoric pronoun *ta* refers to the set of books introduced in the question; this reading is possible only if the indefinites can be read with specific reference, that is, with the first six of the collapsed examples, and not with the last two (no specific readings are possible with *tipota* 'any' or the bare plural): the '%' diacritic means that *ta* is licit with these first six antecedents, and not with the last two. In the second possible reading, when the *ta* is omitted, we have a quantificational reading: the indefinite inside the ellipsis site is understood with its own quantificational force, and there is no commitment on the part of the answerer to the set they answer about to be extensionally identical to any set the questioner may have had in mind—only the cardinality is at stake.

Finally, there are many VP idioms that consist of a verb with its object and which do not allow an anaphoric pronoun (since there is nothing to be anaphoric to, on the idiomatic reading). Nevertheless, such idioms allow their object to omitted;[6] the inclusion of the pronoun makes the literal reading (*eating wood* in

[6]The judgments here are somewhat variable across speakers, with some speakers finding all of

(56), for example) the only one available, to some amusement of my Greek consultants).

(56)   a.  To pedhi tha fai ksilo, ke  o   Kostas epikis tha (#to) fai ki  aftos!
           *the kid   FUT eats wood and the Kostas also  FUT it  eats and he*
           'The kid will get hit, and Kostas will, too!'

       b.  To pedhi tha fai ksilo, ala o   Kostas dhen tha (#to) fai.
           *the kid   FUT eats wood but the Kostas not  FUT it  eats*
           'The kid will get hit, but Kostas won't.'

The following examples further illustrate the same point, using a wider variety of Greek VP idioms.

(57)   O  Dimitris kani   tin papia; mono i    Ariadne dhen (#tin) kani.
       *the Dimitris makes the duck   only   the Ariadne not    it    makes*
       'Dimitris is playing dumb; only Ariadne isn't.'

(58)   a.  O  Petros efige ke  erikse mavri petra piso   tu.
           *the Petros left  and threw  black  stones behind him*
           'Petros left and will never return.'

       b.  Ke i    Maria erikse.
           *and the Maria threw*
           'And Maria also will never go back.'

(59)   I  Elines politiki   tazun lagus me  petraxilia,   ala i  Amerikani
       *the Greek  politicians vow    rabbits with priests' habits but the American*
       politiki    pote  dhen tazun.
       *politicians never not   vow*
       'Greek politicians promise the moon, but American politicians never do.'

(60)   O  nearos     ekane kamaki se mia jineka. Afti tu   ipe na figi.  Otan
       *the young.man made  advance to a    woman she  him told to  leave when*
       ksanaekane, ton evrise.
       *again.made   him cursed*
       'The young man hit on a woman. She told him to leave. When he hit on her again, she yelled at him.'

(61)   O  Janis     ke i   Maria ithelan na dhosun logo, ala i   gonis   tus
       *the Giannis and the Maria wanted to  give.3pl word but the parents theirs*
       dhen ithelan na dhosun.
       *not    wanted  to  give.3p*
       'Giannis and Maria wanted to get engaged, but their parents didn't want them to.'

Finally, Greek has particle-verb-like combinations that involve a light verb and an adverbial particle. These may not be entirely like idioms, since their meanings may be computable from the regular contributions of the pieces, but their

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these permit the idiomatic readings, and some more conservative, who accept only a literal reading.

behavior is not easily explicable if Greek lacks VSE. One such is *perno piso*, literally 'take back', meaning *take back* or *get back*. As indicated in (62), this particle can occur anywhere in the clause, even preverbally, though there its placement is presumably due to focus movement, and it cannot be used out-of-the-blue (and which I omit for that reason). This verb+particle combination appears with a direct object and a source PP.

(62)　Pire　{piso} i　Ana {piso} xrimata {piso} apo　tin trapeza {piso}?
　　　*took.3s　back　the Ana　back　money　back　from the bank　back*
　　　'Did Anna get money back from the bank?'

The question in (62) can be answered as follows:

(63)　Ne, pire　(*piso).
　　　*yes　took.3s　back*
　　　'Yes, she did. (get money back from the bank)

Note that VSE is licit with just the verb remaining. The particle does not, and cannot, survive VSE.[7] This is entirely expected if the verb has moved to T, and if the arguments and particle must remain inside the boxed elided VP:

(64)
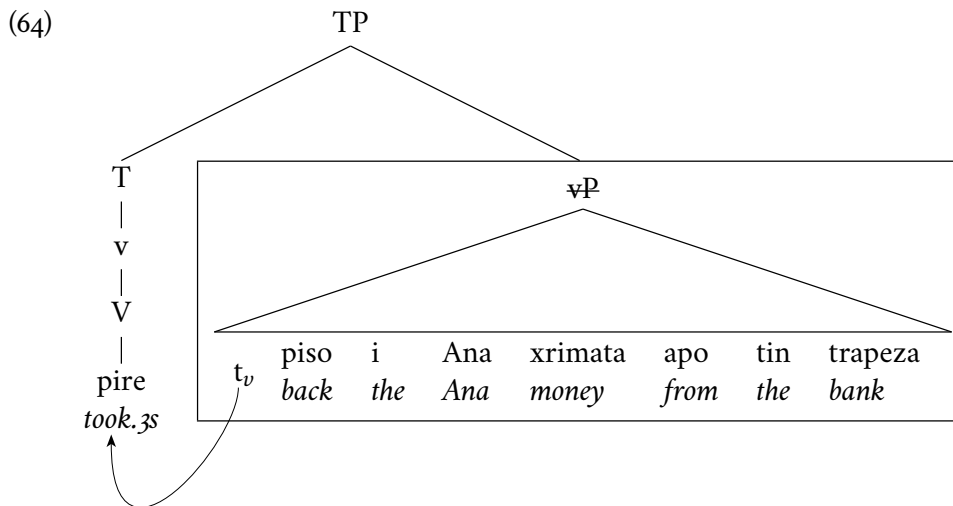


All of these data indicate that Greek is not merely dropping pronominal or indefinite arguments; the data are only consistent with a derivation by VSE.

### 4.1.2　What is the target of ellipsis?

If VSE requires verb movement to vacate a verbal projection targeted by ellipsis, we can justifiably ask, what precisely is being elided? Is there evidence that the verb must move at least that much? If the verb can be shown to be in situ, no VSE analysis should be possible.

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[7]In this Greek contrasts with Hungarian, which allows such phrasal 'verbal modifiers' to strand, as Lipták (2012) shows.

Landau (2017) argues that in Hebrew, there are object gap examples where the verb stays in situ, and which therefore cannot be due to VSE (but rather are due to argument ellipsis). His evidence that the verb remains in its base position comes from the fact that the verb can occur to the right of the lowest adverbial on Cinque's hierarchy, namely the frequentative *often*, and co-occur with completive *completely*. Landau takes this to mean that the verb has not raised to T, but rather has stayed in situ; such a position would rule out a VSE analysis, and yet sloppy identity in the missing object can still be understood.

Such examples can be produced in Greek as well (modeled on Landau 2017 (34b)):

(65)  O   Nikos mia fora ksirise to  kefali tu  en meri afu     akuse  oti  o
      *the Nikos one time shaved the head his in part because heard.3s that the*
      Petros sixna ksirizi endelos.
      *Petros often shaves completely*
      'Nikos once shaved his head partially because he had heard that Petros often shaves his head completely.'

A similar point can be made on the basis of low participles. Such participles do not move to T (the finite auxiliary verb does), and if such movement were required to license VSE, then these examples would show that VSE is not available.

(66)  To agori exi fai    ksilo; to  koritsi dhen exi fai.
      *the boy    has eaten wood  the girl    not  has eaten*
      'The boy got smacked; the girl didn't.'

(67)  a. Tin exo    grameni sta    palia mu ta  paputsia.
         *her I.have written on.the old   my the shoes*
         'I won't have anything to do with her.'

      b. Ki  ego tin exo!
         *and I  her have*
         'I won't either!'

Fortunately for the argument in favor of the existence of VSE in Greek, there is reason to believe that even participles move out of their vP. As seen above in (7ab), repeated here, participles can appear to the left of relatively 'high' adverbs, such as *epitidhes* 'intentionally' (see Alexiadou 1997).

(68)  Itan  safes oti to pedhi ixe   idhi   kapsi            epitidhes  ti
      *it.was clear that the child had.3s already burned.*PARTICIPLE *intentionally the*
      supa.
      *soup.*ACC
      'It was clear that the child had already intentionally burned the soup.'

The evidence from the placement of adverbs in (65) rests on a supposition that adverbs like *often* cannot be adjoined higher in the extended projection of the VP, which I know of no reason to believe is true in Greek.

We can conclude that if the verb raises to at least the lowest Aspect head, then ellipsis could target VoiceP or vP beneath Aspect.
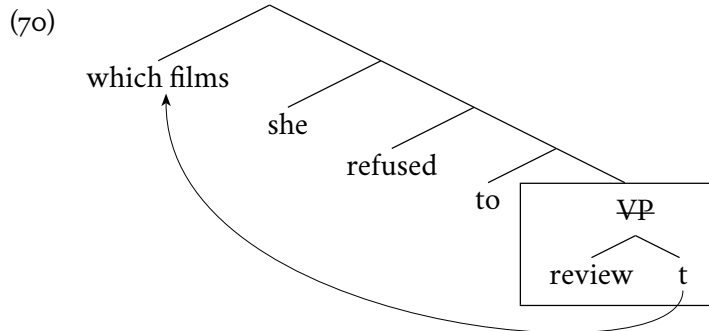
## 4.2 EXTRACTION

As discussed in Merchant (2013a, 2016), one of the most important and persuasive diagnostics for ellipsis of syntactic material comes from movement dependencies (see especially the seminal discussion in Hankamer & Sag 1976 and Sag & Hankamer 1984). Selection is local to particular heads. Thus, when we observe a selectional relationship that appears to hold between a displaced phrase and something inside an ellipsis site, we conclude that the ellipsis site contains a head with the relevant selectional ability or feature. In this respect, ellipses such as VP-ellipsis in English differ from otherwise interpretationally similar constructions such as Null Complement Anaphora.

VP-ellipsis after *to* allows for the extraction of the object of the missing verb:

(69)  **VP-ellipsis**:

   a. We need to know which films Anna refused to review, and which ones she agreed to.

   b. We need to know which films Anna agreed to review, and which ones she refused to.

(70)



The same verbs, when used in their Null Complement Anaphora guises, fail to license the extraction of the object of an understood complement predicate:

(71)  **Null Complement Anaphora:**

   a. We asked Anna to review these five films, and she agreed. (*sc.* to review them)

   b. *We need to know which films Anna refused to review, and which ones she agreed.

This has a straightforward interpretation if Null Complement Anaphora involves a suppression of a selectional feature and thus the absence in the syntactic representation of any complement at all. In its use in (71), then, the verb *agree* is syntactically intransitive: its only syntactically projected argument is its subject. Although the meaning is computable as a relation between the denotation of the subject and a set of events of reviewing films, the process for this computation takes place without the aid of syntactic structure meaning 'review these five films' that is local to *agree*.

We therefore conclude that there is active syntactic structure (licensing extraction, agreement, and other syntactically mediated dependencies) inside ellipsis sites. There is no evidence for such structure inside the understood argument in Null Complement Anaphora. By Ockham's razor, we suppose that the simplest explanation of this fact is the absence of such structure.

The Greek case is similar, with the difference that verb-raising occurs before the ellipsis of the VP: movement of a verb out of an ellipsis site can be combined with movement of a phrase from within the elided phrase as well.

(72)  Thelo    na    miliso  ja     to proto thema. Ja     to deftero, dhe thelo.
      *want.1s* SUBJ *speak.1s about the first   topic    about the second   not want.1s*
      'I want to speak about the first topic. About the second one, I don't (want
      to speak).'

As in (4b) above, it is crucial that what is extracted in (72) is an l-selected PP, here *ja to deftero* 'about the second one'. The preposition *ja* 'for, about' is selected by the predicate *milao* 'speak': it is not in any conceivable way an argument of the matrix verb *thelo* 'want'. Yet it appears in the second clause, fronted. This is only consistent, given any restrictive theory of l-selection, with the PP having been, at some stage of the derivation, a complement to the head of *milao*. We can therefore securely conclude that the second clause contains a missing VP.

The same point is made by the following questions:

(73)  Me pjon  ithele  i   Maria na    milisi, ke  me  pjon  ithele  i   Ana?
      *with whom wanted the Maria* SUBJ *speaks and with whom wanted the Ana*
      <na    milisi t>
       SUBJ *speaks*
      'With whom did Maria want to speak, and with whom did Anna?' <want
      to speak>

Here, the wh-phrase *me pjon* 'with whom' undergoes regular wh-movement to a clause-initial position, along with V-movement of the matrix verb *ithele* 'wanted', to T.

(74)
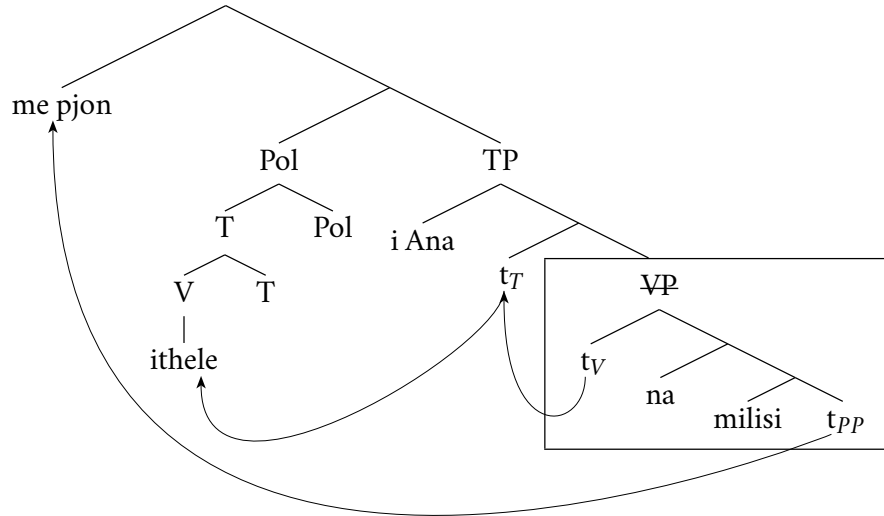


Similar remarks hold for the following examples, which demonstrate PP questions, PP relatives, case-marked left-dislocated topicalization, and selected PP left-dislocations:

(75)  Ja  pjes  tenies simfonise i   Ana na   grapsi kritiki, ke  ja  pjes
      *for which films   agreed      the Ana* SUBJ *writes  review  and for which*
      simfonise i   Maria?
      *agreed     the Maria*
      'Of which films did Anna agree to write a review, and of which ones did
      Maria?' <agree to write a review>

(76)  Aftes ine i   tenies stis   opies simfonise i   Ana  na   kani kritiki ke
      *These are the films   to.the which agreed     the Anna* SUBJ *make review and*
      aftes ine i   tenies stis   opies simfonise i   Maria (na kani).
      *those are the films   to.the which agreed      the Maria  to make*
      'These are the films of which Anna agreed to write reviews, and those are
      the films of which Maria did.' <agreed to write reviews>

(77)  Ton Pavlo,      simfonise i   Ana na   ton antikatastisi. Ton Petro,
      *the  Pavlos.*ACC *agreed      the Ana* SUBJ *him replace.3s      the  Petros.*ACC
      simfonise i   Maria.
      *agreed     the Maria.*
      'Pavlos, Anna agreed to replace; Petros, Maria agreed to.'

(78)  Sto    kratos, o  neos  dhen drepete    na stirizete, ala stus   gonis,
      *on.the state    the young not   is.ashamed to depend    but on.the parents*
      drepete.
      *is.ashamed*
      'On the state, the young man is not ashamed to depend, but on his parents,
      he is.'

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It is important to remember that care must be taken when designing such stimuli; for many years, extraction from VP-ellipsis sites in English was thought to be almost uniformly ungrammatical, except for antecedent-contained deletions. In fact, such extraction is very sensitive to additional parallelism requirements (see Schuyler 2001, Merchant 2008) and other factors that are poorly understood; this is illustrated by (79). Some of the factors that lead to degradation in English also give rise to similar effects in Greek. For example, though Greek allows extraction of genitive DP possessors from definite DPs (Horrocks & Stavrou 1987), such extraction is highly degraded in a VSE context:

(79) ??[Tu Yanni]$_1$       dhiavasa [to  vivlio $t_1$], ala tu  Kosta       dhen
       *the  Giannis.*GEN *read.1s     the book       but the Kosta.*GEN *not*
     dhiavasa.
     *read.1s*
     'I read the book by Giannis, but I didn't read the book by Kosta.'

Compare the ill-formedness of the English as well (as noted for similar examples in Sag (1976)):

(80)    *By Giannis, I read the book, but by Kosta, I didn't.

On the other hand, extraction of PP from a bare singular indefinite object or an object headed by the n-word *kanenas, kamia* 'any' is licit, whether that object is overt, as in (81a) or inside a predicate ellipsis site, as in (81b).

(81)   [$_{PP}$ Apo ta  pafsipona]$_1$ dhiegnose i    jatros [eksartisi $t_1$];      [$_{PP}$ apo
         *from the painkillers    diagnosed   the doctor  addiction                     from*
       tin iroini]$_2$ ...
       *the heroin*
       'To painkillers, the doctor diagnosed an addiction; to heroin ...'
      a. dhe dhiegnose   [$_{PP}$ kamia ekartisi   $t_2$].
         *not  diagnosed.3s     any      addiction*
         '... she didn't diagnose any addiction.'

      b. dhe dhiegnose   Δ.
         *not  diagnosed.3s*
         '... she didn't (diagnose an addiction)'.

In sum, it is impossible to reconcile the possibility for extraction as seen in Greek with the idea that what is missing is either not projected in the syntax at all (as in Null Complement Anaphora) or is some kind of unpronounced pronoun or null argument (even a structurally complex indefinite NP one, along the lines of Giannakidou & Merchant 1997). The lexical selectional idiosyncrasies of a verb or noun internal to the elided material cannot plausibly be recapitulated by a semantic or pragmatic mechanism. Theories that eschew such syntactic structure (such as Culicover & Jackendoff 2005 or Jacobson 2016) have no recourse to

l-selection except through the highly implausible suggestion that the purely semantic incorporation of the PP is mediated in some way by the matching preposition. To my knowledge, no working mechanism with these properties has been proposed, and in my estimation, doing so would mean making purely idiosyncratic, lexical selectional information available to the semantics. This move has the same prospects for success as making the height of the vowels in a verb stem available to the syntactic computation for consideration in triggering verb movement. The syntactic ontology consists of features that determine part of speech and selectional information, among other things; the semantic ontology contains things like entities, properties, eventualities, times, etc., but not nouns and verbs. Needing to conflate the two is the sign of a theory in distress.

### 4.2.1 Sloppy identity is not a test

Greek definite pronouns easily allow what in English are considered marginal, 'paycheck' uses. This is true even for nonreferential DP antecedents with bound pronouns inside them, with inalienably possessed nouns in expressions that require binding by the local subject. In other words, this holds even with DPs that require sloppy identity.

(82)  O   Alexandros edhose ton kalitero tu  eafto afu      ton edhose kai  o
      *the Alexandros gave    the better  his self  because it   gave    and the*
      Pavlos.
      *Pavlos*
      'Alexandros did his best because Pavlos did.'

(83)  I   Ana exase tin zoi tis  afu      tin exase kai  i   Maria.
      *the Ana lost   the life her because it   lost    and the Maria*
      'Ana lost her life because Maria did.'

Therefore, the presence of sloppy identity readings in putative VSE examples such as (58) above and (84) here, which is ambiguous between a strict and sloppy reading, cannot be reliably used to diagnose ellipsis per se. See also Merchant (2013a) for skepticism about the value of sloppy identity as a diagnostic.

(84)  O   Pavlakis tha fai    ksilo apo  ton ksadherfo tu, ala o   Aleksis dhen
      *the Pavlakis* FUT *eat.3s wood from the  cousin       his but the Aleksis  not*
      tha  fai.
      FUT *eat.3s*
      'Pavlakis$_1$ will get hit by his$_1$ cousin, but Aleksis$_2$ won't (get hit by his$_{2/1}$ cousin).'

Note that the ability of pronouns to allow 'sloppy identity' readings (that is, to covary with different subjects) is found in English only in the highly restricted contexts of 'paycheck' pronouns. In examples parallel to (82) and (83), English speakers have great difficulty in allowing for a covarying reading. Even when the bound reading is possible, it is not possible to find a new binder, for reasons ill-understood at present.

(85)   a.   Arnold lost his life in the war, but before he lost it, he had written a letter to his mother.

   b.   Arnold lost his life in the war, and #Bernard lost it, too.

# 5   Focus on the verb: A point of cross-linguistic difference

## 5.1   Do the verbs have to be identical?

One of the best known claimed characteristics of VSE is dubbed in Goldberg (2005) the Verbal Identity Requirement (VIR): the stems of the antecedent V and the elided V must be identical. This requirement is carefully documented for Irish by McCloskey (2017); other languages have been claimed to have it as well, most prominently Hebrew. Recently, Gribanova (2017a) has shown that such a requirement does not hold for the otherwise similar VSE found in Russian, and Landau (2017) has shown that it does not hold in Hebrew, either (Landau goes further and argues that Hebrew lacks VSE altogether).

Gribanova (2017a) gives the following example (her (39)) to demonstrate that Russian verbs under VSE can in fact differ, at least when they are appropriately contrastive:

(86)   Našel        li Paša knigu      v biblioteke?  Net, poterjal.
       *find.*PST.SG.M Q *Paša book.*ACC *in library.*PREP *No    lose.*PST.SG.M
       'Did Pasha find a book in the library? No, he lost one there.'

Precisely this pattern holds in Greek as well. An acceptable example such as (87) must in fact be produced with a heavy contrastive focus (realized as a rise-fall pitch contour; see Arvaniti et al. 2006) on the verb in the question. By adding this focus, the speaker is explicitly raising the possibility of other verbs being part of the true answer to the implicit polar question (as well as the sentence with the given verb being false). This, of course, is just the very nature of contrastive focus on any element in a question.

(87)   Vrike$_F$   o   Petros ena vivlio sti      vivliothiki? Oxi, exase$_F$.
       *found.3s the Petros a    book in.the library       no   lost.3s*
       'Did Petros FIND a book in the library? No, he LOST one/it there.'

If this strong focus is absent, either as contrastive focus or as verum focus, as is the case in a neutral polar question such as (88), the response with VSE is ill-formed; in that case, an overt object is required:

(88)   Vrike   o   Petros ena vivlio sti      vivliothiki? Oxi. Exase #(ena).
       *found.3s the Petros a    book in.the library       no   lost.3s  one*
       'Did Petros find a book in the library? No, he lost one/it there.'

Data showing this result were already given in Giannakidou & Merchant (1997), though the conclusion drawn there was different. Mismatched verbs are possible as in the following example, where the questioner puts an implicit contrastive focus on the verb, seeing the addressee with bread and thinking that the addressee may have stolen it (as opposed to buying it or baking it):

(89)  a.  Eklepses psomi?
          *stole.2s    bread*
          'Did you steal bread?'

      b.  Oxi! Agorasa!
          *no    bought.1s*
          'No, I bought bread.'

The examples are judged perfect if the same speaker is responsible for both verbs, because in this case, the speaker can decide beforehand that the verbs will contrast, and mark them both accordingly:[8]

(90)  O   Petros dhen VRIKE$_F$ ena vivlio sti    vivliothiki — EXASE$_F$.
      *the Petros  not   found.3s a    book  in.the library       lost.3s*
      'Petros didn't FIND a book in the library — he LOST one there.'

So what distinguishes Irish from Greek (and Russian, Portuguese, etc.)?

### 5.1.1  Is verb movement is special in Irish?

One possibility is that Greek verb movement should be analyzed as Gribanova (2017a) proposes to do for Russian verb movement: as a kind of (potentially) long syntactic movement, which leaves a regular trace that can be abstracted over for the purposes of the computation of elliptical identity, however stated. In Irish, on the other hand, Gribanova proposes, the nature of the operation that builds the Irish verb complex is different. The syntactic verb does not actually leave the VP; rather, a different mechanism (called amalgamation, as developed in Harizanov & Gribanova 2017) ensures that the phonological material associated with the verb root is pronounced ex situ, but there is no actual syntactic movement. This move distinguishes Irish verbs from the many other elements that are able to move out of ellipsis sites and generate appropriate alternatives. As is well known, A- and A′-movements out of ellipsis sites are licit as long as they give rise to parallel binding dependencies:

(91)  a.  Abby tends [ $t_{Abby}$ to work too hard], and Ben does ~~tend [ $t_{Ben}$ to work too hard]~~, too.

b. We need to know how many people Abby thinks we should invite $t_{how\ many\ people}$, and how many Ben does ~~think we should invite $t_{\overline{how\ many}}$~~.

This follows on any theory of ellipsis resolution that allows for traces to be interpreted as variables, and under which the index of a bound variable does not matter for the purposes of this computation, such as the LF-identity theory of Sag (1976), the semantic identity theory of Merchant (2001), or many others.

Note that Gribanova's claim is not the same as claiming that all head movement is 'at' PF, or that head movement leaves no trace, as Messick & Thoms (2016) do, expanding on Lasnik's (2003) claim that A-movement leaves no trace. The idea that head movement leaves no trace was appealing as part of an account of the Warner facts (Warner 1985), along with the putative constraint in (92) proposed in Thoms (2015):

(92) "A variable cannot provide an antecedent for ellipsis of a non-variable." (Thoms 2015:187)

Unfortunately, (92) cannot be sustained in the face of examples like the following, involving head movement (V2 in Dutch), A′-movement, and A-movement, respectively (and see the works cited for many more such examples).

(93) [$_{CP}$ Nu gaat [$_{TP}$ zij $t_{nu}$ $t_{gaat}$]], maar ik weet niet waarom.     Dutch
    *now goes     she        but  I  know not  why*
    'She's going now, but I don't know why.' (Merchant 2001:21)

   a. ≠ *... waarom ~~zij~~.
   b. = ... waarom ~~zij nu gaat~~.

(94) a. The FBI knows which truck$_4$ they rented $t_4$, but figuring out from where ~~they rented it$_4$~~ has proven difficult. (Merchant 2001:206)

   b. This is Washington, where everyone keeps track of who$_1$ $t_1$ crossed whom$_2$ and when ~~they$_1$ crossed them$_2$~~. (Merchant 2001:202)

(95) These facts should be carefully studied, but it's clear you haven't ~~carefully studied these facts~~. (Merchant 2013c)

This state of affairs is fortunate, given that any claim that A-movement fails to leave a trace or a copy would leave us in the lurch for understanding passive of intensional transitives, and reconstructed scope under modals, negation, and quantificational adverbs, all of which indicate that for semantic reasons, the DP behaves as though it were in its base position (see Erlewine (2014) for extensive discussion of the mechanisms of reconstruction):

(96) a. A miracle would be needed/desired/wanted.
   b. Several magical beasts were hoped/prayed/looked for by the children.
   c. Raspberries were often/easily found in those days around the pond.

These kinds of predicates can license VP-ellipsis as well, in two relevant varieties. In the first, in (97), the A-moved antecedent DP of the passive is understood as taking narrow scope, inside the VP that hosts its origin site (see Bruening (2013) for a recent defense of the movement approach to the passive), and the VP-ellipsis involves an active verb. The VP-ellipsis is interpreted as though the indefinite were inside the elided VP, taking narrow scope with respect to the intensional verb, modal, negation, or adverb of quantification.

(97)   a.  A miracle would be needed, and if you do ~~need a miracle~~ then God help you.

   b.  Usually, raspberries were easily found on those hikes, but we didn't manage to ~~easily find raspberries~~ that particular day.

In the second variety of example showing that A-movement can reconstruct inside ellipsis sites, both the antecedent VP and the elided VP involve A-movement (here, passives, though similar examples can be generated with raising predicates and intensional adjectives):

(98)   a.  A unicorn was hoped for, and a dragon was ~~hoped for~~, too.

   b.  Raspberries were often/easily found, and strawberries were ~~often/easily found~~ as well.

   c.  Raspberries will be easily found, and strawberries will ~~be easily found~~ as well.

   d.  A helmet will usually be found in such a grave site, as will a shield ~~usually be found in such a grave site~~.

   e.  A kore wasn't often stationed in such a temple; a kouros wasn't ~~often stationed in such a temple~~, either.

   f.  A shield was never made from gold, nor was a sword ~~ever made from gold~~.

These examples are important for another reason as well. They clearly demonstrate that the theory of ellipsis proposed in Heim (1997) is wrong.

Heim assumes a theory of ellipsis resolution that has three ingredients:

(99)   1.  A constraint banning 'meaningless coindexing'

   2.  Rooth's (1992) focus alternatives condition

   3.  "the deleted VP and its antecedent must be made up of the same lexical material." (Heim 1997, p. 9) where all indexed simple variables count as the same (the condition "doesn't care about matters of indexing").

Heim shows that these conditions, properly applied, can account for a range of data from Kennedy (1994) and additional data that she adduces. But, as she admits, "There would be a problem if the subjects were maximally reconstructed" (Heim 1997:12). In her discussion of (100a) (her (31)), Heim points out that a fully

reconstructed subject, as in (100b), would violate the lexical identity condition. Instead, she proposes (100c) as the LF, with focus-marked second subject, *Mary*, having moved out of the VP and interpreted outside of the VP.

(100)  a. John called, and Mary did too.

     b. __ PAST [VP John call], and __ did [VP ~~Mary call~~] too

     c. John$_x$ PAST [VP <u>x call</u>], and [[Mary$_F$]$_y$ did [VP ~~y call~~]] too

Such a focus-marked subject satisfies the focus-condition, which states the that the focus-marked element must be contained in a phrase that contrasts appropriately with another phrase. This condition is dubbed the 'containment' condition in Merchant (2001), where the details of Rooth's proposal are spelled out. Here, I repeat Heim's slight restatement of Rooth, given in (101):

(101)  A constituent $\phi$ *contrasts appropriately* with a constituent $\psi$ iff
     (i) $\phi$ and $\psi$ don't overlap, and
     (ii) for all assignments g, the (regular) semantic value of $\psi$ w.r.t. g is an element of the focus value of $\phi$ w.r.t. g.

The regular semantic value of the antecedent clause in (100) in Heim's system is just *John called* (from *John$_x$ PAST [VP <u>x call</u>]*). The focus value of the clause containing the ellipsis and the focus-marked binder of the variable inside the elided VP is computed from the LF *[[Mary$_F$]$_y$ did [VP ~~y call~~]]* and is {that x called: x ∈ D}. Since *John called* contains no variables, it is not sensitive to g, and since *John called* ∈ {that x called: x ∈ D}, and doesn't overlap with it, the containment condition is satisfied, and ellipsis is licit.

     Heim was right that her system only works if DPs A-moved out of an elided VP do not have to reconstruct. But unfortunately for her system, and for recent attempts to revive it, the examples in (98) are precisely the kind of data that are impossible to accommodate. In (98), the subjects *must* be maximally (that is, both the restrictor and the quantificational determiner) reconstructed (or at any rate, reconstructed to a position inside the VP which is the target for ellipsis, which comes to the same thing for the purposes of the problem for Heim's account). And so the examples show that Heim's theory fails.

     To see in detail why this is, consider first the LF of the passive of the intensional transitive in (98a):

(102)  __ PAST was [VP hoped for [a unicorn$_F$]] and
     __ PAST was [VP ~~hoped for [a dragon$_F$]~~]

Employing the proposal for the semantics of the passive in Bruening (2013), and ignoring tense, we have:

(103)  $\exists x[\forall w \in W_{hope(x)} : \exists y[unicorn_w(y)]]$ and
     $\exists x[\forall w \in W_{hope(x)} : \exists y[dragon_w(y)]]$

The crucial point is that the existential force of the indefinite article *a* can (and in fact preferentially does) take narrow scope with respect to the intensional quantification. (The descriptive content of *unicorn* and *dragon* can in fact be anchored to the actual world, but this is orthogonal to the question at hand.)

The attested interaction of indefinites with modals, negation, and adverbs also are fatal for Heim's proposal.[9] Consider the LF for (98e):

(104)  a.  __ wasn't [$_{VP}$ often [ stationed [a kore$_F$]] in such a temple]
      b.  __ wasn't [$_{VP}$ ~~often [ stationed [a kouros$_F$]] in such a temple~~]

Here, negation scopes over the adverb of quantification *often*, adjoined to VP and internal to the ellipsis site. *Often*, in turn, can outscope the contrasting indefinite derived subjects *a kore* and *a kouros*. On the most plausible readings of these sentences, which involve many different statues of young women and men, the indefinites must totally reconstruct to a position inside the VP, under *often*:

(105)  $\neg[\text{OFTEN}[\exists x[kouros(x) \wedge \exists y[station(such\_a\_temple)(x)(y)]]]]]$

Note that the problems here are not resolvable by mere reformulation of the conditions, or by retreating from Heim's conclusion that the VPs denote formulas. The solution is that we need to allow focus alternatives to be computed for focus-marked material *internal* to the ellipsis site. Heim, by stipulation, rules out any F-marking inside the ellipsis site. This move is wrong. What *is* true is that there can be no pitch-accent inside an ellipsis site (since there is no phonological material to bear it), so constructions that conspire to require such a pitch accent (such as the fact that a focus-sensitive operator like *only* requires a pitch accent on its associate, as Tancredi 1992 discovered, and Erlewine 2014 discusses) will be ill-formed. But F-marking per se inside an ellipsis site at LF is fine, as long as the pitch accent associated with the F-marked material is outside the ellipsis site at PF. This is the kind of system that I proposed in 2001 (Merchant 2001), building on Schwarzschild's givenness system. In that work, I proposed that ellipsis was licensed just in case the elided XP and its antecedent were semantically equivalent to one another modulo F-marking.[10]

[9] See also Jacobson (1998) and Kennedy (2014) for discussion of additional examples that cannot be handled by Heim's proposal.

[10] As shown by Jeremy Hartman in a presentation in Brussels in 2009, there is a problem with Schwarzschild's type-raising everything to propositional type and comparing entailments. The problem comes from reversible predicates such as *defeat*~*lose to* or *be an older sibling of* ~*be a younger sibling of*:

(i)  a.  Abby defeated Ben ↔ Ben lost to Abby.
     b.  Ben is an older sibling of Abby ↔ Abby is a younger sibling of Ben.

Nevertheless, these predicates don't license ellipsis of their reversed counterparts:

(ii)  a.  *Abby defeated Ben, so we know that Ben did ~~lose~~ to Abby.
     b.  *Ben is an older sibling of Abby, so we can conclude that Abby is ~~a younger sibling of Ben~~.

Hartman suggested retreating to an LF-identity condition, but we can simply use the type-flexible system of Rooth and get the desired result, replacing mutual entailment by semantic equivalence modulo focus (see (107) below); free variables can be bound by $\lambda$-operators for the purposes of the computation. So (ii.a) will be ruled out because $\lambda x \lambda y[\textbf{defeat}(y)(x)] \neq \lambda y \lambda x[\textbf{lose.to}(x)(y)]$.

This point was made most clearly with examples I dubbed 'contrast sluicing' in Merchant (2001):150, such as (106), where the quantificational force has to be calculated within the scope of the modal, and where the restrictors on the quantifiers contrast:

(106)  a.  There may be nine women$_F$ in the play, but I don't know how many men$_F$.

   b.  $\diamond \exists x[women(x) \wedge |x| \geq 9] \dots ?n \diamond \exists y[men(y) \wedge |y| \geq n]$

It is precisely by virtue of this focus that the ellipsis can go through: because both *women* and *men* are focussed, we look at their alternatives when calculating elliptical identity—the ordinary semantic value of the antecedent clause is an element of the focus-semantic value of the elliptical clause, and vice versa. The problem is that in these cases, the focused material must be inside the ellipsis site, which violates Heim's third clause of (99) (and any theory of purely LF identity, such as Fiengo & May 1994).[11]

The technical changes needed to account for the full range of data are trivial[12]: replace the existential closure of free variables of Schwarzschild (1999) with $\lambda$-closure, and replace the entailment condition with an inclusion condition:[13]

(107)  **e-GIVENness** (Roothian version)
   An expression E counts as e-GIVEN iff E has a salient antecedent (expressed or implied) A and, modulo $\lambda$-type-shifting,

   a.  $[\![A]\!] \in [\![E]\!]^f$, and
   b.  $[\![E]\!] \in [\![A]\!]^f$

(108)  Focus condition on ellipsis:
   An XP can be elided only if XP is e-GIVEN.

Once we have such a theory that allows us to abstract over focused elements, even when these reconstruct, or are interpreted inside the ellipsis site, we no longer need to say anything special about Greek verb movement (or Russian, etc.): the

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[11] But see especially Rudin (to appear) for a new take on sluicing licensing that differentiates it from VP-ellipsis in important ways.

[12] I have presented this theory many times over the past fifteen years in precisely these terms, calling it the Roothian version of my original Schwarzschildian formulation: as a matter of record, I discussed such a Roothian version in Merchant (2001) but pursued the one based on Schwarzschild's theory of focus at that time.

[13] This version of e-GIVENness has the added advantage not just of handling Hartman's examples with reversible predicates, but also of handling the example I worried about in (i) (from Merchant (2001):37 fn 17), where focus-closure and $\exists$-closure conspired to make VP$_A$ and VP$_E$ equivalent even when the focus-marking was anaphoric to some other sentence, not to the one containing the ellipsis:

(i)   A: Who did Abby see?
   B: *ABBY saw BEN, and CARLA did ~~see someone~~, too.
   LF: __ PAST [$_{VP:A}$ Abby$_F$ see Ben$_F$], and __ PAST did [$_{VP:E}$ ~~Carla$_F$ see someone~~]

Since *Abby see Ben* $\notin$ $\{\exists y[x \ see \ y] : x \in D_e\}$, clause (a) of (107) isn't satisfied, and ellipsis is correctly ruled out.

verb can move as usual (successive-cyclically, obeying the Head Movement Constraint or Relativized Minimality) and indeed can reconstruct totally, as long as the verb (or its stem) is focused. This is precisely what seems to be the state of affairs in Greek, as we've seen above.

The calculation of focus alternatives is as Rooth proposed: for a 2-place predicate, the set of alternatives are those in $D_{e,et}$. The parallelism condition on ellipsis is satisfied in case the ordinary value of the antecedent vP is an element of the focus value of the elided vP, and vice versa. For the Greek example in (90), repeated here, this will hold if both statements in (110) are true.

(109)    O  Petros dhen VRIKE$_F$  ena vivlio sti    vivliothiki — EXASE$_F$.
          *the Petros  not    found.3s a    book in.the library      lost.3s*
          'Petros didn't FIND a book in the library — he LOST one there.'

(110)    a.  *Petros found a book in the library* ∈ {that Petros *P*'ed a book in the library: $P \in D_{e,et}$}

         b.  *Petros lost a book in the library* ∈ {that Petros *P*'ed a book in the library: $P \in D_{e,et}$}

So Greek VSE is simply subject to the usual condition on VP-ellipsis (semantic equivalence modulo focus), and verbs in Greek are just like any other moving element: if focused, they can reconstruct (as predicates typically must, following Heycock (1995)), but the focus marking on their stems will allow that part of their meanings to vary (while other material is interpreted outside the vP in any case: Voice, Aspect, Tense). There is no particular Verbal Identity Requirement at all. Its effects fall out from focus-marking (or its lack, in certain cases).

### 5.1.2   IS FOCUS-MARKING ON VERBS RESTRICTED IN IRISH?

But where does this leave Irish? As McCloskey (2017) shows on the basis of a careful examination of a range of data, examples like the following (his (53)) are judged as unacceptable even when the contrastive interpretation is intended:

(111)    *Níor    cheannaigh mé teach ariamh, ach dhíol.
        NEG.PAST *buy*      *I   house ever    but sold*
        'I never *bought* a house, but I *sold* one.'

It might be that Irish lacks the ability to abstract over focus alternatives on verbs for the purposes of ellipsis resolution. This would be an odd restriction, but if it can be maintained, then the usual semantic computation needed to generate the focus alternatives to resolve the ellipsis (whether using e-givenness or some other parallelism device) will not allow for the replacement of the verb stem's meaning with alternatives. This could be implemented by stipulating that Rooth's F-feature cannot attach to verbs in Irish, but it would be preferable to derive it from some independent property of how focus works in Irish, perhaps along the lines explored in Bennett et al. (2017). The primary initial difficulty with this idea is that, as Bennett et al. (2017) document, there are a range of constructions that make it appear that semantic focus is compatible with a verb root (their (26b)):

(112)  A: An ngéillfidh siad?      B: Caithfidh SIAD.
          Q   *yield.*FUT  *they*        *must*      *they*
       'Will they yield (on this)?' 'They HAVE to.'

What is unusual about this and related examples displaying verum focus is that the pitch accent falls not on the verb itself, but on the following subject pronoun.

Bennett, Elfner, and McCloskey analyze this unusual pitch placement as essentially an 'epiphenomenon of phrasing' (p. 24), the result of the interaction of constraints favoring rightward accent placement and a special subject pronoun incorporation process. In any case, it is surely no accident that the most prominent language in which the Verbal Identity Requirement seems to hold is also the language that seems to have an allergy between focus prominence and verbal stems.[14] When no pronoun is available, as is the case in synthetic verb forms (forms that inflect for person and number), the inflectional ending, not the stem, takes the accent:

(113)  An rabhadar   ann? BhíODAR.
          Q   *be.*PAST.*3pl in.it*  *be.*PAST.*3pl*
       'Were they present? They certainly were.'

Most spectacularly, as Bennett et al. note in their footnote 16: "In the absence of a simple pronoun subject or an appropriate inflectional ending …, other means have to be found to express Verum Focus. … the discourse particle *muis(e)*, whose meaning is, to say the least, unclear, may serve exactly this function in cases like ([114]):"

(114)  A: An raibh    Colm ann? B: Bhí      muis.
          Q   *be.*PAST *Colm  there*    *be.*PAST PARTICLE
       'Was Colm there? He was indeed.'

The crucial empirical question is whether the addition of such a particle would ameliorate even cases of mismatched verb stems, such as (111) above. If so, then the problem with (111) may not be the lack of identity of the verb stems per se, but rather the lack of an appropriate position for the accent to fall, given the unusual requirements of Irish focal accent placement. The usual cases of VSE in Irish simply don't involve such accents, and so can surface as mere verbs, with no following particle or subject, pronominal or otherwise. It is only in the cases where the Verbal Identity Requirement is tested that such accent is obligatory, and imposes these unusual additional requirements.

All of this, I hope, points to a possible solution that ties the appearance of the Verbal Identity Requirement to something special about how focus is handled in the grammar of Irish, as opposed to Greek and other languages.

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[14]Lipták (2012) shows that Hungarian VSE, which can strand either a verb or a phrasal verbal marker, is also subject to a Verbal Identity Requirement except when the stranded verb and its antecedent are both contrastively focused (see especially Lipták (2013):84 fn 13); a full investigation of the interaction of focus and prosody and VSE in Hungarian will have to await a future occasion. Likewise for Brazilian Portuguese, as investigated in Santos (2009), Cyrino & Lopes (2013), and Lopes & Santos (2014).

## 5.2 Certain adjuncts

Landau (2017), building on Oku (1999), points out an important contrast between VSE in Hebrew and English VP ellipsis: English speakers very much prefer (in the absence of contrasting material) to interpret VP adjuncts as being part of an elided VP, while Hebrew speakers do not normally take such adverbs to modify a putative stranded verb. (115a), for example, is preferentially interpreted as 'Beth didn't clean her flute carefully', not as merely 'Beth didn't clean her flute'. Likewise for the adverbs in the other cases as well.[15]

(115)   a. Abby cleaned her flute carefully, but Beth didn't.

   b. Abby has consistently worn her retainer, and Beth has, too.

   c. Sebastian is deliberately wiping his fingers on the tablecloth because Ralph is.

   d. Rufus wasn't frequently seen at the library, but Arnold was.

Greek allows such adverbs to be interpreted inside the ellipsis site as well:

(116)   a. Parakratisan akrivos tris   dhikigori epitidhes     xrimata apo  tus
      *withheld.3p    exactly  three lawyers   intentionally money   from the*
      pelates tus?
      *clients   their*
      'Did exactly three lawyers intentionally withhold money from their clients?'

   b. Ne, parakratisan.
      *yes  withheld.3p*
      'Yes, exactly three did.' (intentionally withhold money from their clients) or 'Yes, they did.'

When the adjunct can be taken as the sole scope of negation, the two readings can be readily distinguished. Landau (2017) provides the following Hebrew example (his (40a)), using the missing antecedent phenomenon (Grinder & Postal 1971) as the crucial test to diagnose ellipsis. The infelicity of the following anaphora (*hi*) shows not just that there was no ellipsis of a VP containing a DP antecedent for *hi* to be anaphoric to, but that such an elided VP cannot be posited at all. (So Hebrew has null definite objects, but not null adjuncts and no VSE at all.)

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[15] One difficulty with the argument from adverbs is that even adverbs that cannot possibly be inside the antecedent VP seem to be able to be interpreted as though they were inside an elided VP, as in (i); perhaps such adverbs are fronted from some position inside the VP.

   (i)  Abby must consistently have worn her retainer; her sister certainly did ~~consistently wear her retainer~~.

(117)  Yosi afa    et   ha-uga lefi       ha-matkon. hi hayta me'ula.
       *Yosi baked* ACC *the-cake according the-recipe    it was   fabulous*
       'Yosi baked the cake according to the recipe. It was fabulous.'

    a.  Gil lo   afa    __. #hi hayta mag'ila.
        *Gil not baked      it  was   gross*
        'Gil didn't bake the cake. It was gross.'

    b.  Gil, lo.  hi hayta mag'ila.
        *Gil  not it  was   gross*
        'Not Gil./Gil didn't. It was gross.'

A similar example in Greek (given with the non-elliptical control in (118) as well)
shows the same pattern:

(118)  O  Petros eftiakse turta     akoluthondas tin sintaji. Itan   nostimi.
       *the Petros  made    cake.fem following      the recipe  it.was delicious.fem*
       'Petros made a cake according to the recipe. It was delicious.'

    a.  O  Markos dhen eftiakse. #Itan   aidhiastiki.
        *the Markos  not   made      it.was disgusting.fem*
        'Markos didn't make one. It was disgusting.'

    b.  O  Markos oxi. Itan   aidhiastiki.
        *the Markos  no   it.was disgusting.fem*
        'Not Markos. It was disgusting.'

    c.  O  Markos dhen eftiakse turta     akoluthondas tin sintaji.
        *the Markos  not   made    cake.fem following      the recipe*
        J'afto,        itan  aidhiastiki.
        *for.that.reason it.was disgusting.fem*
        'Markos didn't make a cake according to the recipe. It was disgusting.'

How can we reconcile these results with the evidence above that Greek does
have VSE? We must seek another reason why the continuation in (118a) is judged
deviant, while (118b,c) are not. That reason has already been hinted at above,
however: some focus-sensitive operators, most famously English *only*, trigger an
obligatory pitch accent on their associate. If this associate is elided while the op-
erator is not, the result is judged infelicitous.[16] Compare the following examples
with and without VP ellipsis:

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[16] See Beaver & Clark (2008):ch. 7 for some discussion. The requirement is one that applied when
the dependency between the operator and the accent spans the boundary of an ellipsis site. If the
operator itself is also elided, no deviance results:
    (i)    Abby said she only plays [the flúte]$_F$, and Ben did, too. (~~say she only plays [the flúte]$_F$~~)
This is presumably because the requirement is one of actual pitch accent, which secondary occur-
rence focus does not have: secondary occurrence focus shows prominence only through length and
intensity, not pitch movement; see Baumann (2016).

(119)   Abby will only play [the flúte]$_F$ at the recital, not the piano.

    a.  Ben also will only play [the flúte]$_F$ at the recital.

    b.  *Ben also will only ~~play [the flúte]$_F$ at the recital.~~

As discussed above, Heim mistakenly took such data to mean that F-marking could not be present inside an ellipsis site. As I have shown, that is incorrect. It is the requirement that pronounced *only* be associated with a pitch-accent on its associate that makes (119b) ill-formed, not the F-marking per se.

    And precisely such a requirement holds of Greek *dhen* as well (but not of constituent negation *oxi*, used in the negative stripping example in (118b)). A more accurate representation of the focus marking of (118c) (similar to the facts studied in Johnson (1994)) would be as in (120), which makes clear why eliding a phrase that properly contains the adjunct would be impossible: the pitch accent required by *dhen* (falling on the final syllable of the adjunct, *jí*) could not be realized. There is no way to reduce or elide any phrase containing the adjunct *akoluthondas tin sintají*.

(120)   O  Markos dhen eftiakse turta     [akoluthondas tin sintají]$_F$.
      *the Markos  not   made   cake.fem following     the recipe*
      'Markos didn't make a cake [according to the recipe]$_F$. (He made it some other way, not according to the recipe.)'

We find the same results when we ensure that ellipsis is present by extracting from the ellipsis site. Since the PP *ja ton baba tu* 'for his father' is licensed by the elided embedded predicate *ftiaksi* 'make', not by the matrix predicate *borese* 'was able', we know that VSE has occurred. Nevertheless, the attempted anaphora is illicit.

(121)   Jan tin mama tu, o   Markos borese   na   ftiaski turta akoluthondas tin
      *for the mother his the Markos  was.able* SUBJ *make   cake following        the*
      sintaji. (Itan   nostimi.) Ja  ton baba  tu, dhen borese. (#Itan   aidhiastiki.)
      *recipe   it.was delicious  for the  father his not     was.able   it.was disgusting*
      'For his mother, Markos was able to make a cake following the recipe. For his father, he wasn't. (able to make a cake following the recipe)'

In this case, the pitch accent falls on the negator *dhen* in the last, contrasting sentence. This stress has the effect of placing the emphasis on the truth of the utterance; it is a kind of a verum focus (or falsum focus, in this case). There is a remaining, larger question why this negation, and the constituent negator *oxi* used in the negative stripping in (118b) above, cannot give rise to a reading that would make these sentences in effect equivalent to the narrow focus on the adjunct (since, of course, one way of ensuring falsity of the whole is to deny the applicability of the adjunct), but that is a question whose resolution raises questions beyond the scope of this paper. For our purposes, it is enough to note that such readings are unavailable with non-elliptical falsum focus sentences.

# 6 Conclusion

Greek has verb-stranding ellipsis, like Irish. Narrow focus on the verb stem can be used to vary the verb between the antecedent and the elided vP, in line with other elements that can move out of ellipsis sites (but still be wholly or in part interpreted inside them), because the ellipsis resolution condition is sensitive to focus alternatives, not to LF structure per se.

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