VP ellipsis in St'át'imcets and its implications

Henry Davis
UBC

Whilst there has been relatively extensive investigation of anaphoric relations between null arguments in Salish, there has been little or no work on null predicates; in fact, the very existence of non-argument ellipsis has gone unrecognized until now. In this paper, I give the first systematic description of VP ellipsis in St'át'imcets, and outline some important consequences of its properties for syntax (including head movement, the position of the subject and the nature of predicate initial order) and for semantics (in particular, the choice function analysis of wide scope indefinites and the status of Quantifier Raising). To the extent that VP ellipsis is possible in other Salish languages, these conclusions may have broader implications across the family.

1 Introduction[1]

In this paper, I will give the first systematic account of VP ellipsis in St'át'imcets.[2] In fact, as far as I know it is also the first systematic account of VP ellipsis for any Salish language: perhaps as a result of the prominent role played by null arguments in Salish and the extensive investigation of pronominal anaphora that this has engendered, VP ellipsis has been overlooked up until now. As we shall see, this is certainly not because it lacks interest from a descriptive or theoretical perspective. On the contrary, its implications are far-reaching and rather profound for both the syntax and semantics of St'át'imcets, and by extension, for other Salish languages.

The paper is structured as follows. In Section 2, I establish the existence of VP ellipsis in St'át'imcets, and outline its basic properties. In Section 3, I discuss the prosody of ellipsis. In Section 4, I consider its syntactic

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[2] 'VP ellipsis' is a slight misnomer, since ellipsis works equally well with non-verbal predicates, as long as an appropriate auxiliary is available to license the ellipsis site. I will retain the traditional term here mainly for ease of comparison with the equivalent process in English.

implications, focusing on what it tells us about verb raising, the position of the subject, and the implications of these findings for configurationality. In Section 5, I turn to two semantic implications of VP ellipsis: the first concerns the choice function analysis of wide scope indefinites (Matthewson 1999), the second the absence of antecedent contained deletion, and its implications for Quantifier Raising in St'át'imcets. Section 6 concludes.

2   VP ellipsis in St'át'imcets

The process which I am claiming corresponds to VP ellipsis is illustrated by the examples in (1-3):

(1)   a.   wá7=lhkacw=t'u7   máwal'
             IMPF=2SG.SU=PART   alive
             "So you're still alive!"

       b.   wá7=lhkan=wi7,   n-s-tsut
             IMPF=1SG.SU=EMPH   1SG.POSS-NOM-say/think
             "I am indeed, I think!"

(2)   a.   plán=lhkacw=ha   tsukw-s   ta=s7álkst-sw=a
             already=2SG.SU=YNQ   finish-CAU DET=work-2SG.POSS=EXIS
             "Have you already finished your work?"

       b.   plán=lhkan
             already=1SG.SU
             "I already have."

(3)   a.   cúz'=lhkacw=ha   nas   áts'x-en
             going.to=2SG.SU=YNQ   go   see-TR
             ta=kwékwa7-sw=a   nátcw?
             DET=grandmother-2SG.POSS=EXIS   tomorrow
             "Are you going to go see your grandmother tomorrow?"

       b.   iy,   cúz'=lhkan
             yes   going to=1SG.SU
             "Yes, I'm going to."

In each of these pairs, the response (b) consists only of a subject and an auxiliary verb. In each case, the missing part of (b) is interpreted as identical to a constituent in the antecedent sentence (a). This constituent minimally consists of a predicate and its complements, but can also include other auxiliaries and adjuncts (such as the motion auxiliary *nas* "go" and the temporal modifier *natcw* "tomorrow" in (3)). In other words, the constituent looks exactly like a VP, and the process looks remarkably like VP ellipsis in English.

Moreover, just as in English VP ellipsis, St'át'imcets allows a predicate phrase to be missing only if an auxiliary is available to license the 'deletion site'. (St'át'imcets is rich in auxiliaries: besides the three primary aspect markers *wa7* 'imperfective', *plan* 'already' and *cuz'* 'going to' illustrated

in (1-3) respectively, all motion verbs and many adverbs can also function as auxiliaries.)

In other words, since it walks like VP ellipsis and talks like VP ellipsis, I would like to conclude that the St'át'imcets process illustrated in (1-3) *is* VP ellipsis. Before coming to a definitive conclusion, however, I need to dismiss an alternative analysis: namely the possibility that what I am treating as an ellipsis process licensed by an auxiliary actually involves no auxiliary and no ellipsis. Under this alternative analysis, the 'auxiliary' is an ordinary intransitive main verb, with an antecedent-related interpretation supplied by general pragmatic principles of inference. Since many auxiliaries *can* function as main predicates, this is at least a conceivable possibility.

There are at least two good reasons to be dubious about such an alternative. First, some verbs can have different interpretations when employed as auxiliaries from those they have when used as main predicates: these verbs include the motion predicates *ts7as* "come", which has an auxiliary meaning of "begin to" and *t'ak* "go along", which has an auxiliary meaning of "continue", as well as the locative predicate *wa7* "be (at a location)", which has a specialized imperfective meaning when functioning as an auxiliary. If 'VP ellipsis' cases were really just main verb uses of auxiliaries, we would expect such verbs to have only non-auxiliary (main verb) interpretations when used without a following main predicate. But they don't. You can see this with *wa7* in (1) above, and with *ts7as* and *t'ak* in (4) and (5) below; in all these cases, the auxiliary in the answer retains its distinctive auxiliary interpretation, contrary to what would be predicted if it were an ordinary (non-auxiliary) intransitive verb.

(4) a. ts7ás=ha   má-7-eg'
         come=YNQ   daybreak(INC)
         "Is daylight beginning to break?"

     b. iy,   ts7ás=t'u7
         yes   come=PART
         "Yes, it is."

(5) a. t'ak=ha=t'ú7=ti7   ama-wíl'c
         go.along=YNQ=PART=DEM good-become
         "Is s/he getting better?"

     b. iy,   t'ák=t'u7
         yes   go.along=PART
         "Yes, s/he is."

Other predicates with distinctive auxiliary meanings include *stexw*, "straight" and *kéla7* "first", both of which have the auxiliary interpretation "really, very"; both also retain this distinctive auxiliary interpretation under ellipsis.[3]

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[3] The auxiliary use of *kéla7* to mean "really, very" is generally confined to the Lower (lil'wat7úl) dialect.

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The second reason to doubt that auxiliaries in ellipsis contexts are being employed as intransitive main predicates is that there is a miscellaneous class of 'adverbial' auxiliaries which can't be used as main predicates at all, but quite happily control ellipsis sites. These include *papt* "always" *tqilh* "nearly", and *aylh* "have just", as illustrated in the ellipsis cases below:

(6)   papt   wa7   qelh-n-ítas   i=tsuw7-íh=a
            always IMPF put.away-TR-3PL.ERG PL.DET=own-3PL.POSS=EXIS
            sáy'si7ten tákem   i=smelh.mé.m'lhats=a
            toy   all   PL.DET=girls(REDUP)=EXIS
            l=ta=alk'wilh-álhcw=a,   t'u7   cw7aoz
            at=DET=babysit-place=EXIS but   NEG
            kw=s=papt   i=sqay.qé.qy'ecw=a
            DET=NOM=always   PL.DET=boys(REDUP)=EXIS
            "The girls at the daycare always put away their own toys, but the boys don't always."

(7)   tqílh=kan=t'u7   tsúk-un'   ta=píph=a
            almost=1SG.SU=PART finish-TR   DET=paper=EXIS
            múta7   tqílh=t'u7   t'it   kw=s=Lisa
            and   almost=PART   also   DET=NOM=Lisa
            "I've almost finished a paper, and Lisa almost has, too."

(8)   áylh=t'u7   áts'x-en-as   ta=swúw'h=a   kw=s=Lémya7
            just.now=PART see-TR-3ERG DET=cougar=EXIS   DET=NOM=Lémya7
            múta7   áylh=kan=t'u7   t'it
            and   just.now=1SG.SU=PART   also
            "Lémya7 just saw a cougar, and I just did, too."

Other auxiliaries of this type include *tsáma* "try hard (in vain)", *páwel'* "finally", *ilpalh* "barely", and *put* "just, sufficient, exactly", all of which license ellipsis. Since main verb use of all these auxiliaries is ungrammatical, when they occur in contexts similar to those given in (6-8), we can conclude that VP ellipsis is involved.

I conclude that the process illustrated in (1-8) and discussed in the rest of this paper is indeed a genuine case of VP ellipsis: the first such process to be recognized in Salish.

3   A prosodic condition on ellipsis

Before going on to explore some of the syntactic and semantic consequences of VP ellipsis in St'át'imcets, I want to mention an important prosodic condition which constrains its distribution:

(9)   *Minimal Foot Condition on Ellipsis*
        The remnant left by ellipsis must end in a well-formed foot.

The Minimal Foot Condition ensures that a 'light' auxiliary cannot be stranded at the right edge of the remnant string created by ellipsis. This condition

probably ultimately derives from the fact that light auxiliaries (in particular, the imperfective auxiliary *wa7*) must procliticize to a following constituent, which is obviously impossible when there is nothing to procliticize to. In such cases, only a heavy auxiliary consisting of a full prosodic word (minimally a foot) is licit.[4]

The effects of the Minimal Foot Condition are illustrated below in (10-12):

(10)   a.   wá7=ha   es-(s)7ilhen?
                IMPF=YNQ   STA-food
                "Does s/he have any food?"

        b. ??   wa7,   iy
                IMPF   yes
                "S/he does, yes."

        c.   wá...a7,   iy
                IMPF   yes
                "S/he does, yes."

(11)   a.   wá7=ha=t'u7   áma
                IMPF=YNQ=PART   good
                "Is s/he doing okay?"

        b. ??   wa7
                IMPF
                "S/he is."

        c.   wá7=t'u7
                IMPF=PART
                "S/he is."

(12)   a.   plán=lhkacw=ha   wa7   p'an't   alkst
                already=2SG.SU=YNQ IMPF   return   work
                "Have you already gone back to work?"

        b.   iy,   plán=lhkan
                yes   already=1SG.SU
                "Yes, I have."

        c. ??   iy,   plán=lhkan   wa7
                yes   already=1SG.SU IMPF
                "Yes, I have."

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[4] There are other morphophonological phenomena in St'át'imcets which seem sensitive to 'optimal foot structure'. In particular, an extra *[a]* is optionally inserted at the end of clitic combinations ending in a stray mora to create a final trochaic foot (van Eijk 1997: 212).

d. iy, plán=lhkan wa7 p'an't
yes already=1SG.SU IMPF return
"Yes, I have gone back."

In (10), we see that the imperfective auxiliary *wa7* is not heavy enough to occupy the right edge of an ellipsis remnant: hence the deviance of (b). However, St'át'imcets allows 'rhetorical' lengthening of vowels: the lengthened vowel in (c) is sufficiently heavy to convert the monosyllable *wa7* to a foot, so it may count as an ellipsis remnant. In (11), we see a different way in which *wa7* can increase its weight to that of a foot: here, the second position enclitic *t'u7* can act as a second mora, again allowing *wa7* to occupy the right edge of the remnant left by VP ellipsis.

The examples in (12) illustrate a slightly different aspect of the Minimal Foot Condition. In (12a), the antecedent question contains three auxiliaries: *plan* "already", *wa7* "imperfective", and the motion verb *p'an't* "to return". In (12b) we see that the combination of the auxiliary *plan* and the enclitic pronoun *=lhkan* is sufficiently heavy to license ellipsis. In (12c) we see that when we add auxiliary *wa7* after *plán=lhkan*, ellipsis is degraded: since it is monomoraic, *wa7* must procliticize to a following constituent, but proclisis is impossible, since no host is available. Adding the third auxiliary *p'an't* restores the acceptability of ellipsis, as in (12d), by providing a second mora so that the two auxiliaries can together meet the Minimal Foot Condition.

4 Syntactic consequences of VP ellipsis

Now that I have established the existence of VP ellipsis and given a basic account of its prosodic properties, it is time to turn to some of its syntactic and morphosyntactic consequences. In the following subsections, I discuss the existence of a VP constituent; the extent of verb raising; the position of the subject; consequences for configurationality; and consequences for the morphology-syntax interface.

4.1 St'át'imcets has a VP

The most obvious – but nonetheless highly significant – syntactic consequence of VP-ellipsis in St'át'imcets is simply that it provides direct and striking evidence for the existence of a VP constituent – that is, for a phrase containing the predicate and its internal arguments, but crucially excluding the subject. (This point is independent of whether one adopts the VP-Internal Subject Hypothesis or one of its variants; if the reader prefers to interpret these findings as arguing for a 'small' VP inside, say *v*P, that's fine by me.)

Notice that VP ellipsis doesn't care about the morphological form of arguments. Internal arguments (and only internal arguments) may be elided, whether they would otherwise surface as full DPs (13), encliticized demonstrative pronouns (14), or pronominal suffixes (15).

(13) cuz' xlít-en-as i=snek'w.núk'wa7-s=a
going.to call-TR-3ERG PL.DET=friends(REDUP)-3POSS=EXIS

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s=Lisa,        múta7    cuz'       s=Laura      t'it
NOM=Lisa       and      going.to   NOM=Laura    also
"Lisa's going to invite her friends, and Laura's going to, too."
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(14)   plán=lhkan=ti7   mets-cít,
       already=1SG.SU=DEM   write-IND
       múta7   plan   t'it   n-sem7ám=a
       and   already   also   1SG.POSS-wife=EXIS
       "I have already written to him, and my wife has, too."

(15)   cuz'   ts7as   áts'x-en-ts-as   n-sqátsez7=a,
       going.to come   see-TR-1SG.OBJ-3ERG   1SG.POSS-father=EXIS
       múta7   cuz'   t'it   n-sésq'wez'=a
       and   going.to also   1SG.POSS-younger.sibling=EXIS
       "My father is coming to visit me, and my younger sibling is, too."

What this shows is that at the level of derivation where VP ellipsis applies, all arguments must occupy positions in a conventional configurational structure which differentiates subjects (external arguments) hierarchically from complements (internal arguments).

This in turn provides conclusive evidence against any version of the Pronominal Argument Hypothesis (PAH) for St'át'imcets, since the heart of the PAH is the claim that overt DPs occupy systematically different (adjoined) positions than pronominal affixes and clitics (or the *pros* which they license). Such a conclusion should not come as news (see the arguments marshaled against the PAH in e.g. Davis 2001); but I think the evidence presented here is particularly persuasive.

A further important point is that surface word order is irrelevant to VP ellipsis. As documented in Davis (1999), post-predicative word order in St'át'imcets is flexible: though neutral word order is VOS in Upper St'át'imcets, and VSO in Lower St'át'imcets, both dialects tolerate either order. Either order is also possible in the antecedent to ellipsis, as shown in (16).

(16)   plan   qwal'út-s-as   kw=s=John
       already speak-CAU-3ERG   DET=NOM=John
       kw=s=Mary,   plan   t'it   kw=s=Lisa
       DET=NOM=Mary   already   also   DET=NOM=Lisa
       (i)   "Mary has already spoken to John, and Lisa has, too."
       (ii)   "John has already spoken to Mary, and Lisa has, too."
       (iii)   *   "Mary has already spoken to John, and to Lisa too."
       (iv)   *   "John has already spoken to Mary, and to Lisa too."

Even though the VP is apparently 'discontinuous' in the antecedent VSO order reflected in interpretation (ii), VP ellipsis is still licensed, just as in (i) where the antecedent sentence has VOS order with a 'continuous' VP. In neither case can the subject rather than the object be elided, accounting for the impossibility of interpretations (iii) and (iv).

Assuming VP ellipsis must feed LF - an assumption made by all theorists since Sag (1976) and Williams (1977) (see Hornstein 1995 for a useful

summary) - this means that the VOS-VSO word order alternation must take place at a post spell-out level: in other words, that it is a type of 'stylistic' or 'PF' process analogous to Heavy NP Shift or Extraposition from NP in English. This is what I conclude in Davis (2004), where I explore such an approach in more detail. Rather than repeat those conclusions, however, I want to turn to another issue about which VP ellipsis has much to say: that of verb movement.

4.2 There is no syntactic V-raising in St'át'imcets

Consider the following paradigm:

(17) plan   cw'ík'-en-as   ta=sts'úqwaz'=a   k=Lémya7,
     already   butcher-TR-3ERG   DET=fish=EXIS   DET= Lémya7
     múta7   plan   t'it   cwík'-en-as   ta=sts'úqwaz'=a
     and   already also   butcher-TR-3ERG   DET=fish=EXIS
     ta=skícza7-s=a
     DET=mother-3POSS=EXIS
     "Lémya7 has already butchered a fish, and her mother has butchered a fish, too."

(18) plan   cw'ík'-en-as   ta=sts'úqwaz'=a   k=Lémya7,
     already   butcher-TR-3ERG   DET=fish=EXIS   DET= Lémya7
     múta7   plan   t'it   cwík'-en-as   ta=skícza7-s=a
     and   already also   butcher-TR-3ERG   DET=mother-3POSS=EXIS
     !! "Lémya7 has already butchered a fish, and her mother too." (laughter)

(19) plan   cw'ík'-en-as   ta=sts'úqwaz'=a   k=Lémya7,
     already   butcher-TR-3ERG   DET=fish=EXIS   DET= Lémya7
     múta7   plan   t'it   ta=skícza7-s=a
     and   already also   DET=mother-3POSS=EXIS
     "Lémya7 has already butchered a fish, and her mother has too."

In (17), with no ellipsis, we see that the object DP *ta sts'úqwaz'a* "the/a fish" in the second conjunct can have an independent denotation from the identical object DP in the first conjunct; in other words, two fish are involved, not one.

In (18), with a single DP in the second conjunct, we see the effects of the One Nominal Interpretation (ONI) constraint (Gerdts 1988): a single overt DP must be interpreted as the object rather than the subject of a transitive predicate with two third person arguments. This means that the only available interpretation is the absurd one where Lemya7 is butchering her mother.

In (19), with VP ellipsis, however, the original (non-absurd) interpretation is restored: this indicates that the elided VP is interpreted as containing an (overt) object DP, which is exactly what would be expected if the VP in the first conjunct was directly copied onto the elided VP in the second.

Now, consider the implications of this paradigm for verb raising. Suppose that in the absence of an auxiliary, the main predicate could raise into the position of the auxiliary (say, by adjoining to some functional projection

such as tense or aspect: it doesn't matter for the purposes of the argument what it is). Then we'd expect VP ellipsis to be licensed by verb-raising; and in that case, the equivalent of (18) without an auxiliary should have the same (non-absurd) interpretation as (19). It doesn't, as shown in (20):

(20) (plan)   cw'ík'-en-as   ta=sts'úqwaz'=a   k=Lémya7,
      (already) butcher-TR-3ERG   DET=fish=EXIS   DET= Lémya7
      múta7   cwík'-en-as   t'it   ta=skícza7-s=a
      and   butcher-TR-3ERG   also   DET=mother-3POSS=EXIS
      !!"Lémya7 has (already) butchered a fish, and her mother too."

I conclude that verb-raising doesn't take place in (20), and by extension, anywhere else. In fact, if it did, the ONI could always be circumvented, so the very existence of ONI effects points to the systematic failure of main predicates to raise not only in St'át'imcets, but right across Salish.

It might be objected that there is no independent evidence that a main predicate can *ever* license VP ellipsis, whether or not verb raising takes place. After all, many languages which have verb-raising, such as those of the Romance family, do not allow VP ellipsis at all. In this respect, the work of McCloskey (1991) on Irish is particularly important. McCloskey argues – convincingly, to my mind – that Irish has both V-raising and VP ellipsis, as in the following examples (from McCloskey 1991:272-3):

(21) a.   ar   chuir   tú   isteach air
           INTERR.COMP   put[PAST]   you   in   on-it
           "Did you apply for it?"

      b.   chuir
           put[PAST]
           "I did."

      c.   nior   chuir
           NEG   put[PAST]
           "I did not."

(22) dúirt mé go   gceannóinn   é   agus   cheannaigh
      said I COMP   buy[1SG.COND] it   and   bought
      "I said that I would buy it and I did."

McCloskey argues that these are genuine cases of VP ellipsis, in spite of surface differences with the equivalent constructions in English and St'át'imcets. Crucially, a (raised) main verb, as opposed to an auxiliary, licenses the ellipsis site: assuming McCloskey's analysis is correct, this provides evidence that the failure of main verbs to license ellipsis in St'át'imcets is due to the absence of (main) verb raising, not to some independent inability of main predicates to license ellipsis.

4.3 The subject is outside the VP in St'át'imcets

Aside from the fact that a raised main verb as opposed to an auxiliary licenses ellipsis, there is a second major difference between ellipsis in Irish on the one hand and in English and St'át'imcets on the other. As can be seen in (21) and (22), the subject in Irish is (obligatorily) omitted along with the rest of the VP. McCloskey argues (reasonably) that this provides support for the VP-Internal Subject Hypothesis, in that if VP ellipsis in Irish includes the subject, the subject must be inside VP.

But now consider the implications of this analysis for St'át'imcets, where – as in English - the subject is never included in the elided constituent. This can be seen in (23); compare (22) above:

(23) tsút=kan   kw=n=s=cuz'   áz'-en,
      say=1SG.SU   DET=1SG.POSS=NOM=going.to   pay.for-TR
      plán*(=lhkan)=wi7   aylh
      already*(=1SG.SU)=EMPH   now
      "I said I was going to buy it, and I did."

It is not really surprising that VP ellipsis excludes the subject in English: the linear order of the subject relative to the auxiliary makes it clear that the subject has evacuated the VP at the level at which VP ellipsis applies. But in St'át'imcets, subjects usually appear post-predicatively, as in Irish, which makes their failure to undergo VP ellipsis more surprising. What this indicates, in fact, is that at the point where VP ellipsis applies the post-verbal subject in St'át'imcets must be very high – as high as in English, which means higher than the VP and all associated auxiliaries.

4.4 Implications for Configurationality

The conclusion that the post-verbal subject is high in St'át'imcets, taken together with the finding that the main predicate stays low, leads us to propose a basic configuration for the St'át'imcets clause such as that in (24).

(24)
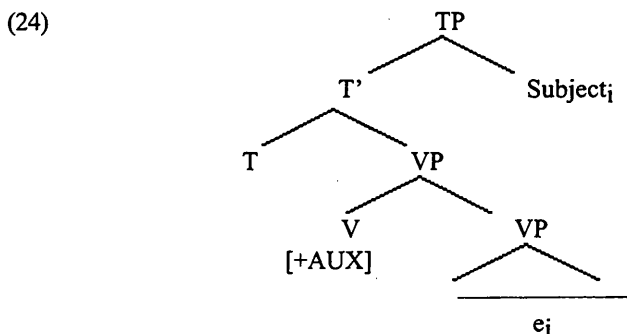
This structure appears both very familiar, since, aside from the linear position of the subject, it looks just like English and – at least from the point of view of

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most contemporary views of phrase-structure – quite unorthodox, since it conspicuously fails to conform to the Linear Correspondence Axiom of Kayne (1994) or any of its numerous variants. (It's also worth pointing out that it is quite close to the structure of the Austronesian language Chamorro, as adduced by Chung 1998, though I do not adopt Chung's subject lowering approach to VSO order: see Davis 2004 for discussion.)

I have included a T(ense)P in (24), following the arguments in Matthewson (2002) and Davis and Matthewson (2003b) to the effect that though St'át'imcets has no inflectionally encoded past or present tense, it must still have an abstract T(ense) node in order to yield the correct range of temporal interpretations. The T node also provides (a rightward) specifier position for the subject. This is crucial, because the subject must occupy a position higher than all auxiliary verbs; were we simply to assume that it could occupy [SPEC, V[+AUX]], then in a sentence containing more than one auxiliary, there would be nothing to stop the subject from occupying the specifier of a non-initial auxiliary; it could then be elided along with the VP headed by that auxiliary.[5]

I am also assuming, partly for the sake of consistency with   - McCloskey's work on Irish, some version of the VP-internal Subject Hypothesis (exactly which version is immaterial to the present discussion). This means that the subject must have raised out of the VP (or vP) to [SPEC, T], rather than being base-generated there, as indicated by the trace inside VP in (24). What exactly motivates this movement? The obvious answer is Nominative Case (or whatever syntactic feature it represents: see Pesetsky and Torrego 2001).[6]

4.5   Implications for the syntax-morphology interface

Before turning to semantics, it is worth spelling out some of the implications of the findings reported here for the syntax-morphology interface. This is of course an extremely important area in Salish linguistics, given ongoing controversies surrounding the relation between inflectional morphology and syntactic structure across the family (see e.g. Jelinek and Demers 1994, Davis 1996, 2001, 2003, Davis and Wiltschko 1999, Wiltschko 2002 amongst many others).

There are essentially three ways in which we can conceive this relation: a purely syntactic approach, in which inflectional affixes and clitics correspond to syntactic heads and their linear relationship is established via permutations of syntactic head movement; a purely lexical approach, where inflectional

[5] To make matters more complicated, it turns out that overt DP subjects in St'át'imcets can occupy intermediate positions, either between two auxiliaries, or between an auxiliary and the main predicate (Davis 1996). I assume that these cases involve post-syntactic movement, in a parallel fashion to post-predicative word order alternations.

[6] Obviously, this runs counter to Wiltschko's (2003) assertion that structural Case is absent in Salish (or at least, Upriver Halkomelem). It is, however consonant with the evidence presented in Matthewson (to appear) and Davis and Matthewson (2003a) that Salish (or, at least St'át'imcets) must have structural Case.

morphology is attached in the lexicon and fully inflected words are inserted into the syntax; and a dual approach, in which inflected words are assembled in the lexicon, but are then subject to checking relations in the syntax.

One of the corollaries of VP ellipsis – the absence of verb raising – is highly problematic for a purely syntactic approach to inflectional morphology in St'át'imcets. This is because on a syntactic approach the right to left stacking of inflectional affixes corresponds to adjunction of the verb to successively higher functional projections, leading to familiar mirror effects.[7] Since the inflected verb fails to raise in St'át'imcets, however, head-movement in the syntax cannot account for mirror effects. Moreover, we cannot rescue the syntactic account by appealing to covert (LF) V-raising, since VP ellipsis is licensed at LF, and that is precisely where we have found evidence that V-raising does *not* take place.

Similar arguments can be made against a checking analysis, since this approach too relies on either overt head movement in the syntax (which feeds LF) or covert (LF) movement (which also feeds LF). The only possible way in which to rescue a head-movement analysis of affix ordering, in fact, would be to do all the movement in a post-syntactic morphological component. This is not inconceivable: something like it has been suggested by Chomsky (1995) within the Minimalist Program, for example, and in a different framework, the prosodically driven syntactic movement proposed by Halpern (1995) would also fall under this type of approach. However, it leaves us with a cross-linguistic puzzle. Continuing to assume that McCloskey's account of ellipsis in Irish is essentially correct, notice that in Irish, verb-raising feeds ellipsis – therefore it cannot possibly be relegated to a post-syntactic component of the grammar. This means that if we wish to maintain a post-syntactic head movement analysis of St'át'imcets, we must parameterize verb raising so that it either takes place in the syntax (thereby feeding LF, as in Irish) or post-syntactically (thereby bypassing LF, as in St'át'imcets).

The alternative is to ascribe the mirror effect to something other than head movement, and take the absence of verb raising in St'át'imcets at face value. This still means that post-syntactic movement will be necessary: subject clitic placement, for example, will have to take place at PF (see Chung 2003 for a recent instantiation of this option in Chamorro, and Davis 2000 for evidence that at least some types of clitic placement in St'át'imcets must take place post-syntactically).

5   Semantic   implications

I'll confine myself in this section to two issues. The first concerns the interaction of VP ellipsis with the interpretation of the 'assertion-of-existence' determiners discussed extensively in Matthewson (1998, 1999). The second concerns the availability of antecedent contained deletion in St'át'imcets.

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[7] These are often attributed to the 'Mirror Principle'. However, since the purported principle is not a principle at all, but an observation, I prefer to term it the 'mirror effect'.

5.1   VP ellipsis and determiner semantics

One of the best-studied aspects of the semantics of St'át'imcets (and of the whole Salish family) has been its determiner system, mainly thanks to the work of Matthewson (1998, 1999). In the latter paper, Matthewson provides a choice function analysis for what she has previously referred to as the 'assertion-of-existence' determiners. (Assertion-of-existence determiners can easily be identified in St'át'imcets by the existential enclitic =a which accompanies them, glossed EXIS in the example sentences.) It turns out that VP-ellipsis provides problems for at least some versions of the choice function analysis.

An immediate observation is that, as in English, VP ellipsis in St'át'imcets yields both 'strict' and 'sloppy' readings with the assertion-of-existence determiner *ta/ti*, as can be seen by comparing the examples below (see also (17-19) above).

(25)   áylh=t'u7   áts'x-en-as   ta=swúw'h=a   kw=s=Lémya7
        just.now=PART see-TR-3ERG DET=cougar= EXIS DET=NOM=Lémya7
        múta7   áylh=kan=t'u7   t'it   áts'x-en ta=swúw'h=a
        and   just.now=1SG.SU=PART   also   see-TR   DET=cougar=EXIS
        "Lémya7 just saw a cougar, and I just saw a cougar, too."
        (Could be the same one, could be different.)

(26)   áylh=t'u7   áts'x-en-as   ta=swúw'h=a   kw=s=Lémya7
        just.now=PART see-TR-3ERG DET=cougar=EXIS DET=NOM=Lémya7
        múta7   áylh=kan=t'u7   t'it   áts'x-en
        and   just.now=1SG.SU=PART   also   see-TR
        "Lémya7 just saw a cougar, and I just saw it, too."
        (Must be the same one.)

(27)   áylh=t'u7   áts'x-en-as   ta=swúw'h=a   kw=s=Lémya7
        just.now=PART see-TR-3ERG DET=cougar=EXIS DET=NOM=Lémya7
        múta7   áylh=kan=t'u7   t'it
        and   just.now=1SG.SU=PART   also
        "Lémya7 just saw a cougar, and I just did, too."
        (Could be the same one, could be different.)

In (25), with no ellipsis, we see the typical interpretations of a DP introduced by an assertion-of-existence determiner: the DP can either get an anaphoric 'definite' reading, in which case the second instance of *ta swúw'ha* "the/a cougar" refers to the same individual as the first one, or an existential 'indefinite' reading, in which case the second instance introduces a new discourse referent. This follows on Matthewson's (1998) account if assertion-of-existence determiners are treated as wide scope indefinites, existentially closed at the sentence level: the 'definite' reading is a case of accidental coreference, where two discourse referents happen to pick out the same individual, and the indefinite reading arises as the default case where they refer to different individuals.

In (26), in contrast, only an anaphoric interpretation is available. This follows from the fact that no V-raising, hence no VP ellipsis is possible here. In

that case, the only way to interpret the missing object is as an empty pronoun (*pro*): since *pro* is always anaphoric, only a coreferential reading is available.

Now look at (27), repeated from (8) above. Here both the interpretations available for (25) are restored: a 'strict' one, in which the object of the antecedent and the elided VP refer to the same individual, and a 'sloppy' one, in which they refer to different individuals. This follows from standard treatments of VP ellipsis, which copy the missing VP from an antecedent, respecting an identity condition known as 'alphabetic variance' (Sag 1976, Williams 1977).[8] This condition allows a VP copy to have different indexing from its antecedent, as long as all the relations between the indices are the same. Here are representations of the 'strict' (a) and 'sloppy' (b) readings of (27):

(28)   a. $\exists y$ (Lémya7 saw y & (cougar, y)) & (I saw y
                 & (cougar, y))

         b.   ($\exists y$ (Lémya7 saw y & (cougar, y)) & ($\exists w$ (I saw w
                 & (cougar, w)))

The interest of this type of example for the semantics of assertion-of-existence determiners relates to a debate in the literature concerning where (if anywhere) to existentially close the variable created by the determiner. Matthewson (1999) adopts a choice function analysis of wide scope indefinites, in which this variable stands not for an individual, but for a function which picks out a member of the set denoted by the predicate to which the determiner applies. (The ultimate justification for the choice function analysis is beyond the scope of this paper, but relates principally to the fact that wide scope indefinites fail to obey the standard island conditions that constrain Quantifier Raising, and fail to show intermediate scope: see Reinhart (1997), Winter (1997), Kratzer (1998), Matthewson (1999).

There have been basically three proposals as to where and if existential closure takes place. According to Reinhart and Winter, an existential quantifier can be inserted anywhere, leading to the prediction that 'wide-scope' indefinites can have any kind of scope possibility. According to Kratzer, on the other hand, there is no existential closure at all: choice function variables receive their interpretation from context, and thus always appear to have maximally wide scope.[9] Matthewson takes an intermediate position: she adopts the mechanism of existential closure, like Reinhart and Winter, but claims it takes place at the sentence level only.

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[8] It is known that the alphabetic variance condition cannot deal with certain well-documented counter-examples (see e.g., Fiengo and May 1994 and references therein). I retain it here for ease of exposition.

[9] Kratzer points out that cases of intermediate scope with wide-scope indefinites generally involve a bound variable pronoun in the restrictor clause to the indefinite. She treats these cases as involving an implicit argument which binds the pronoun, leading to 'pseudo-scope' effects. Matthewson finds similar effects in St'át'imcets, and adopts Kratzer's analysis of these cases.

It is not easy to choose between these options: the relevant examples involve complicated cases of intermediate scope, as discussed in detail for St'át'imcets by Matthewson (1999). However, VP ellipsis does provide a potential test between choice function analyses, in the following way. Since the interpretation of VP ellipsis involves copying the missing VP from the antecedent, up to alphabetic variance, as long as the choice function variables in the two conjuncts can be existentially closed by two different instances of $\exists$, a sloppy reading should be possible. But if existential closure takes place at the highest sentence level (including both conjuncts) then only a strict reading will be possible. In this light, consider (28) again, this time construed under a choice function analysis:

(29)   a. $\exists$f (CH(f) & (Lémya7 saw f (cougar)) & (I saw f (cougar)))

        b. $\exists$f (CH(f) & (Lémya7 saw f (cougar))) &
                $\exists$g (CH(g) & (I saw g (cougar)))

Here, f and g are choice functions (CH) subject to existential closure by $\exists$. The strict reading in (a) will be possible under any of the three choice function analyses (since widest scope existential closure is possible under both the Reinhart/Winter analysis (optionally) and the Matthewson analysis (obligatorily), and since the Kratzer 'no-scope' analysis is specifically designed to mimic widest scope. But the sloppy reading in (b) will only be possible if the choice function variable in each conjunct can be existentially closed separately, rather than at the level of the maximal sentence node dominating the conjuncts. This rules out the Kratzer analysis, and only allows the Matthewson analysis if in conjoined sentences widest-scope existential closure can be construed as applying to individual conjuncts. On the other hand, the sloppy reading is not a problem for the Reinhart/Winter analysis, which allows existential closure at any level.

We can go a little further. As in English, VP ellipsis is by no means confined to conjoined structures in St'át'imcets: it is possible in a variety of other environments, including temporal adjuncts (30), conditionals (31), and relative clauses (32).

(30)   plán=tu7   ka-tsúkw-s-as-a   ti=s7álkst-s=a
         already=PAST OOC-finish-CAU-3ERG-OOC DET=work=3POSS-EXIS
         [i=tqílh=an=t'u7   s7ents]
         [when(PAST)=1SG.CNJ=PART   me]
         "H e had already finished his work when I almost had."

(31)   cúz'=lhkacw=ha   t'anam-ílc [lh=cúz'=an   kéla7]
         going.to=2SG.SU=YNQ try-AUT   [COMP=going.to=1SG.CNJ first]
         "Will you try if I do first?"

(32)   wá7=wit lt7u i=nkekalhás=a   sk'wem.k'úk'wmi7t:
         be=3PL   DEM PL.DET=three(human)=EXIS children(REDUP)
         [ta=pápel7=a   [plan   ka-tsúkw-s-as-a
         [DET=one(human)=EXIS   [already OOC-finish-CAU-3ERG-OOC

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ta=s7álkst-s=a]],                          [ta=núkw=a       [tqílh=t'u7]],
DET=work=3POSS=EXIS]]                       [DET=other=EXIS [almost=PART]]
múta7      [ta=núkw=a       [cw7áoz=t'u7]]¹⁰
and        [DET=other=EXIS [NEG=PART]]
```
"There are three children over there: one who has finished his work, one
who almost has, and another who hasn't."

Since assertion-of-existence determiners in these environments take widest scope
with respect to any other scope-bearing elements (Matthewson 1999: 119-121),
the Matthewson analysis predicts that sloppy readings should be impossible
under VP ellipsis in these same environments. In this light, consider the
following paradigm, parallel to that in (25-27), involving the scope-bearing
element *lh*= "if".

(33) cúz'=lhkacw=ha   ts'áqw-an' ta=íxitsa
      going.to=2SG.SU=YNQ eat-TR   DET=woodworm=EXIS
      [lh=cúz'=an   ts'áqw-an' ta=íxitsa   kéla7]
      [COMP=going.to=1SG.CNJ eat-TR   DET=woodworm=EXIS   first]
      "Will you eat a woodworm if I eat a/the woodworm first?"
      (either the same woodworm or a different one)

(34) cúz'=lhkacw=ha   ts'áqw-an' ta=íxitsa
      going.to=2SG.SU=YNQ eat-TR   DET=woodworm=EXIS
      [lh=cúz'=an   ts'áqw-an' kéla7]
      [COMP =going.to=1SG.CNJ eat-TR   first]
      "Will you eat the woodworm if I eat it first?"
      (the same woodworm)

(35) cúz'=lhkacw=ha   ts'áqw-an' ta=íxitsa
      going.to=2SG.SU=YNQ eat-TR   DET=woodworm=EXIS
      [lh=cúz'=an   kéla7]
      [COMP=going.to=1SG.CNJ   first]
      "Will you eat a/the woodworm if I do first?"
      (either the same woodworm or a different one)

The relevant case is (35), which, like the coordinate structure in (27), allows the
sloppy reading under VP ellipsis. This argues against 'widest scope' existential
closure, since in order to yield the sloppy reading, existential closure needs to
take place in the conditional clause containing the VP ellipsis, as well as in the
main clause. The only option left seems to adopt the Reinhart/Winter analysis,
in which existential closure of the choice function variable can take place
anywhere.

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[10] The final ellipsis here, involving negation, cannot be treated in the same way as
the other cases we have been discussing, since negation in St'át'imcets is not an
auxiliary, but a main predicate taking a subordinate clause (Davis to appear). More
investigation is needed here.

This, however, creates a paradox. Matthewson has good reasons not to adopt a Reinhart/Winter analysis. In non-elided clauses in St'át'imcets, assertion-of-existence determiners only take widest scope, even when they are situated in scope islands, including conditional clauses such as those in (33-35). I will not attempt to resolve the paradox here. Instead, I'll turn to a second set of semantic implications raised by ellipsis, this time involving antecedent contained deletion.

5.2   Antecedent contained deletion in St'át'imcets

Anyone who has studied VP ellipsis in any detail has come across the famous cases known as 'antecedent contained deletion' (ACD) illustrated in (36-38).

(36)   I'm going to [$_{VP1}$ see all the movies that Lisa has [$_{VP2}$]].

(37)   I don't like [$_{VP1}$ all the same foods that Lisa does [$_{VP2}$]].

(38)   I [$_{VP1}$ gave my little sister the same two books that Lisa did [$_{VP 2}$]].

The salient properties of this construction are the following:

•   the elided VP is in a relative clause inside the antecedent VP

•   the elided VP must contain a quantified expression

The first of these properties leads to a paradox which can be resolved on a particular interpretation of the second. The paradox is one of infinite regress: if the overt VP (VP1) in the antecedent expression is copied onto the site of the ellipsis (VP2), the ellipsis site itself (contained in VP1) will be copied as well; but then a further copying must take place, which will install another empty VP in the new ellipsis site, and so on ad infinitum.

The solution (first elucidated in May 1985) is to appeal to Quantifier Raising (QR) to move the quantified relative clause to a position outside the deletion site. The relevant LF configuration is given in (39) for the example in (36):

(39)   [[$_{QP}$ all the movies that Lisa has [$_{VP2}$]] I'm going to [$_{VP1}$ see t$_{QP}$]]

In this configuration, VP1 can be copied onto VP2 without regress to yield the correct interpretation, given in (40):

(40) $\forall$x ((x is a movie & Lisa has seen x) $\rightarrow$ I'm going to see x)

ACD, and the support it has provided for the level of Logical Form and the operation of QR have been extremely influential in the study of the syntax-semantics interface. What then, do we make of the fact that it is systematically

disallowed in St'át'imcets? The following examples are attempts to elicit equivalent structures to the English cases in (41-43).[11]

(41)   * cúz'=lhkan   nas   áts'x-en tákem   i=qwéts-p=a
        going.to=1SG.SU go   see-TR   all   PL.DET=move- INC=EXIS
        píktsa   plan   kw=s=Lisa
        picture   already   DET=NOM= Lisa
        "I'm going to see all the movies Lisa already has."

        Consultant's comment: "You'd have to say ...*plan áts'xenas kws Lisa* (i.e., "...Lisa has already seen."), because if it's *plan* Lisa might have done anything."

(42)   * áw-an=lhkan   i=cw7ít=a   pukw
        choose-TR =1SG.SU   PL.DET=many=EXIS   book
        plán=tu7   kw=s=Lisa
        already=PAST   DET=NOM= Lisa
        "I chose many of the books Lisa did."

        Corrected to: ...*plan tu7 áwanas kws Lisa* (i.e., "...Lisa already chose.")

(43)   * cw7áoz=hem'   kw=n=s=wa   t'ec-s
        NEG =ANTI   DET=1SG.POSS=NOM=IMPF   tasty-CAU
        tákem   i=s7ílhen=a   wa7   s=Lisa
        all   PL.DET=food=EXIS   IMPF   NOM= Lisa
        "I don't like all the same foods Lisa does."

        Corrected to: ...*wa7 t'ecsás sLisa* (i.e., "...Lisa likes.")

Two possible reasons for the failure of ACD in St'át'imcets immediately spring to mind. The first is that for some reason VP ellipsis is generally impossible intra-sententially, or perhaps more specifically in relative clauses. Neither of

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[11] It is impossible to construct potential ACD examples with first and second person subjects, since in relative clauses first and second person transitive subject markers are suffixes rather than clitics and therefore inevitably get deleted along with the main verb under VP ellipsis, violating recoverability. Compare (i), for example, with (41):

(i)   cúz'=lhkan   nas   áts'x-en tákem   i=qwéts-p=a
        going.to=1SG.SU go   see-TR   all   PL.DET=move-INC=EXIS
        píktsa   plan   *(áts'x-en-acw)
        picture   already   *(see-TR-2SG.ERG)
        "I'm going to see all the movies you have already (seen)."

Eliding the verb phrase in (i) (in parentheses) will also elide the subject, leading to an ill-formed ellipsis remnant. In contrast, the DP subject in (41) ensures that the ellipsis remnant is well-formed, which means that the deviance of (41) must be accounted for in a different way.

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these is true, since as we already saw in (30-32), VP ellipsis is licensed in all kinds of adjunct clauses, including relative clauses.

The second possible reason for the failure of ACD is that QR fails to take place, and therefore cannot rescue VP ellipsis from the infinite regress problem. This seems more promising, but has far-reaching implications both within and beyond the grammar of St'át'imcets. Within St'át'imcets, it runs counter to the claims of Demirdache and Matthewson (1995) that St'át'imcets has an *overt* operation of QR, and also to Demirdache's (1997) account of Condition C binding violations in St'át'imcets, which crucially depends on QR to account for strong crossover effects. Beyond St'át'imcets, it suggests that the operation of QR is subject to parametric variation – not a particularly palatable conclusion, given that QR is usually a covert operation whose effects are not readily detectable in the Primary Linguistic Data available to the language learner.

Further work is clearly needed here, but as a final observation, compare the examples in (44-45) with those in (41-43) above:

(44)   takem   i=qwéts-p=a   píktsa   plan   áts'x-en-acw,
          all   PL.DET=move-INC=EXIS   picture already see-TR-2SG.ERG
          cúz'=lhkan=t'u7   t'it   s7ents
          going.to=1SG.SU=PART   also   me
          "All the movies that you've already seen, I'm going to, too."

(45)   takem   i=púkw=a   cuz'   paqw-al'íkst-min-acw,
          all   PL.DET=book=EXIS   going.to look-leaf-RED-2SG.ERG
          plán=lhkan=tu7   s7ents
          already=1SG.SU=PAST   me
          "All the books that you're going to read, I already have."

In these cases, copying of the VP from the topicalized relative clause into the ellipsis site in the main clause will also copy the trace of the relativized object. Schematically, we get the following configuration:

(46)   · $[[_{QP}$ takem i qwétspa píktsa]$_i$ plan $[_{VP1}$ áts'xenacw t$_i]]$ [cúz'lhkan $[_{VP1}$]]

VP1 is copied into VP2, along with the trace it contains. The resulting configuration avoids the regress problem associated with ACD in exactly the same way as standard ACD cases in English after QR has applied. The relevant difference between the grammatical cases in (44-45) and the ungrammatical ones in (41-43) is simply this: in the grammatical cases, movement is overt. This evidence strongly suggests that there is no (covert) rule of QR in St'át'imcets, while indicating that the QR solution to the regress problem associated with ACD is universal.

6   Conclusion

Even this preliminary investigation has shown that the discovery of VP ellipsis in St'át'imcets provides a very powerful instrument for the examination of syntactic and semantic structure, as it has in better-studied languages. In

conclusion, I'll address two further questions. First, what is the likelihood of discovering a similar process elsewhere in Salish? And second, what further issues are likely to be raised (and possibly resolved) by VP ellipsis?

As far as the first question is concerned, the most likely place to look is in languages with extensive auxiliary systems – including Thompson in the Interior and various Central Salish languages. (None of the Southern Interior languages nor Shuswap have clear-cut auxiliaries). Thompson has a full range of auxiliaries similar to, though by no means identical to, those found in St'át'imcets: I think it high likely that VP ellipsis will be found there. Central Salish auxiliary systems are rather different (with Squamish being intermediate): they have two relatively distinct classes of auxiliary-like elements (here defined simply as pre-predicative elements which attract subject clitics): highly-reduced locative and directional auxiliaries (e.g., Squamish *na, mi*, Halkomelem *ʔi, ni/li*) and 'adverbial' auxiliaries with meanings like "again", "very", "just" and so on. The latter have the distinction in Halkomelem and Straits of inducing the mysterious 'link' particle *əẃ/uʔ*, which precedes the main predicate, but does not prevent clitics (including subject pronouns) from attaching to the pre-predicative adverb. Given prosodic conditions on the remnant of ellipsis, I speculate that the most likely place to find VP-ellipsis will be with these adverbial-type auxiliaries, which are 'heavy' enough to act as ellipsis remnants. But of course, this must remain speculation until someone goes and looks.

Turning to the second question, there is lots more work to do with VP ellipsis in St'át'imcets, though the data and judgements tend to get quite complex and variable as one ventures further into the empirical thickets of this tangled area. One direction to take is the investigation of what Fiengo and May (1994) refer to as 'eliminative puzzles of ellipsis' – that is, missing mixed readings in bound variable contexts under ellipsis, involving examples such as those in (47) (the 'many pronouns puzzle') and (48) (the 'many clauses puzzle').

(47) a. Max said he saw his mother, and Oscar said he saw his mother.

      b. Max said he saw his mother, and Oscar did, too.

(48) a. Max saw his mother, Oscar saw his mother too, but Sam didn't see his mother.

      b. Max saw his mother, Oscar did too, but Sam didn't.

In (47), the natural readings of the pronouns in both (a) and (b) are either 'all strict' (where each pronoun refers to Max) or 'all sloppy' where both the pronouns in the first conjunct refer to Max and in the second conjunct to Oscar. In the non-elided example (47a), however, it is possible to get two other 'mixed' readings: one where Max said Max saw Max's mother, and Oscar said Oscar saw Max's mother, and one where Max said Max saw Max's mother, and Oscar said Max saw Oscar's mother. In the elided example (47b), in contrast, the first mixed reading is very marked, and the second is impossible.

In (48), with three conjuncts, the natural readings are also 'all strict' (all pronouns refer to Max's mother) or 'all sloppy' (the pronoun in each conjunct

refers to the subject of that conjunct. But whereas 'mixed' readings (facilitated by stress) are available in non-elided cases such as (48a) (e.g., Max saw Max's mother, Oscar saw Max's mother, but Sam didn't see Sam's mother) they are systematically absent in elided cases such as (48b).

Cases such as these are likely to be of some interest in St'át'imcets because of the absence of prosodic accenting and deaccenting strategies, which help to disambiguate the various readings in English.[12]

Appendix

Abbreviations

ABS = absent, ANTI = antithetical, AUT = autonomous intransitivizer, AUX = auxiliary, CAU = causative transitivizer, CNJ = conjunctive subject clitic, COMP = complementizer, COND = conditional, DEM = demonstrative, DET = determiner, ERG = ergative (transitive) subject suffix, EMPH = emphatic, EXIS = existential enclitic, IMPF = imperfective, INC = inchoative, IND = indirective transitivizer, INTERR = interrogative, MID = middle intransitivizer NOM = nominalizer, OBJ = object suffix, OOC = out-of-control, PL = plural, PART = particle, POSS = possessive, RED = redirective transitivizer, REDUP = reduplication, SG = singular, STA = stative prefix, SU = indicative subject clitic, TR = directive (control) transitivizer, YNQ = yes-no question enclitic. A dash (-) corresponds to an affix boundary, a period (.) separates reduplicants, and an equals sign (=) corresponds to a clitic boundary.

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[12] Another potentially interesting area to investigate is the 'Ellipsis Scope Generalization' of Fox (2000), which (very roughly) disambiguates potential scope ambiguities in the antecedent to ellipsis in favour of surface scope when the elided constituent is scopally unambiguous. However, since sentences with multiple quantifiers in St'át'imcets are not generally ambiguous (Matthewson 1998, 1999), I have so far been unable to come up with cases which might test this generalization.

Conversion chart for American Phonemic and van Eijk St'át'imcets Practical Orthography

orthography	phonemic	orthography	phonemic
p	p	x	x̌
p'	p̓	xw	x̌ʷ
m	m	r	ɣ
m'	m̓	r'	ɣ̓
t	t	g	ʕ
ts	č, c	g'	ʕ̓
ts'	c̓	gw	ʕʷ
s	š, s	g'w	ʕ̓ʷ
n	n	h	h
n'	n̓	w	w
t'	ƛ̓	w'	ẇ
lh	ɬ	y	y
l	l	y'	ẏ
l'	l̓	z	z
k	k	z'	ż
k'	k̓	7	ʔ
kw	kʷ	a	æ
k'w	k̓ʷ	ao	ɑ
c	x	e	ə
cw	xʷ	v	ʌ
q	q	i	i
q'	q̓	ii	e
qw	qʷ	u	u
q'w	q̓ʷ	o	o

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henryd@interchange.ubc.ca