**Deep and surface anaphora:**
**A Mayan reappraisal**[*]

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## 1. Introduction

The influential Hankamer and Sag 1976 established an empirical asymmetry between two types of expressions. On the one hand, *surface* anaphora have to be syntactically controlled: they require a linguistic antecedent. On the other hand, *deep* anaphora can be pragmatically controlled: they do not require a linguistic antecedent. Within the realm of *silence* in the grammar—our focus in this paper—the construction known today as Null Complement Anaphora (henceforth NCA) instantiates an example of deep anaphora (1), whereas sluicing instantiates an example of surface anaphora (2).[1] Our examples are adapted from data originally provided by Hankamer and Sag:

(1)    **Context**: Two people are disturbed by loud noises of popcorn-eating.

    a.    Don't you think we should complain about this noise?
    b.    Don't you think we should complain?                    =NCA; pragmatic control

(2)    **Context**: Hankamer produces a gun, points it offstage and fires. Screams ensue.

    a.    Sag: Jesus, I wonder who was shot.
    b.    Sag: Jesus, someone was shot! I wonder who.        =sluicing; syntactic control
    c.    Sag: # Jesus, I wonder who.                    =sluicing; # pragmatic control

[1]To be precise, a pragmatically controlled example of NCA involves deixis; see Shopen (1972), Hankamer and Sag (1976).

In addition to the (non)requirement of a linguistic antecedent, the literature has explored further asymmetries between silent expressions of the kind in (1)-(2). Here, we offer a reappraisal of Hankamer and Sag's classic finding through the lens of Chuj, a Mayan language that has thus far played no role in adjudicating between competing theories of the representation(s) of silent expressions. We will assess how certain aspects of this language's morphosyntax (see §2) provide novel evidence that the distinction between deep and surface anaphora—even among silent expressions—replicates cross-linguistically, and is thus deeply rooted in the grammar. In a nutshell, (i) Chuj's overt morphological marking of valency alternations and (ii) its rich voice system allow us to refine our theory of the syntax underpinning the differences between (silent) deep and surface anaphora.

Regarding deep anaphora, and NCA in particular, we argue in §3 that Chuj demonstrates that there is a silent, non-nominal complement in the construction—namely, a *null proform*. Put differently, we provide evidence that there *is* something in the silence. We thus support the original proposal about the representation of NCA in Hankamer and Sag 1976 and elaborated on in subsequent works like Depiante 2001, 2019. At the same time, we argue against a family of approaches that does not consider there to be anything in the silence in NCA, a proposal most prominently defended by Napoli (1983, 1985).

Turning to surface anaphora in §4, we argue that Chuj supports the proposal that ellipsis is regulated by an identity condition predicated on "featural non-distinctness". This conclusion is supported by our empirical observation that a subset of voice mismatches are well-formed under sluicing in the language (in contrast to languages like English; see Merchant 2013). We thus replicate Ranero's (2021) results for the related Mayan language Kaqchikel. We argue that competing proposals that posit that strict identity regulates ellipsis cannot account for this now-established cross-Mayan pattern. Instead, the looser condition we defend is necessary and universal.

## 2.     Background on Chuj

Chuj is an understudied Mayan language spoken by roughly 80,000 speakers primarily in Mexico and Guatemala. Our data here come from original work on the San Mateo Ixtatán dialect, using a hypothesis-driven fieldwork methodology (see e.g., Davis et al. 2014). The next two sub-sections provide the necessary morphosyntactic background on Chuj regarding its encoding of valency alternations (§2.1) and its voice system (§2.2).

### 2.1     Valency alternations

Mayan languages are known for indicating valency alternations overtly, often multiple times on the same verb (Grinevald and Peake 2012). Chuj is no exception: valency is indicated on the verb via (i) person marking (i.e., ergative subject marking entails transitivity), (ii) voice morphology (e.g., active entails transitivity, but passive or antipassive voice entails intransitivity), and (iii) "status suffixes", which seem to explicitly signal the verb's

(in)transitivity. There are four status suffixes and they are sensitive to aspect and/or the underlying root of the stem. The three that appear in this paper's data are in (3)-(5a):[2]

(3)  *Transitive verb template*

    a.   ASP–ABS–**ERG**– ROOT –{**VOICE**}–**TV/DTV**

    b.   Ix-  ach-  w-    il  -a'.
         PFV- ABS2S- ERG1S- see -TV
         'I saw you.'

(4)  *Intransitive verb template*

    a.   ASP–**ABS**– ROOT –{**VOICE**}–**IV/IRR**

    b.   Ix-  onh-   b'at -i.
         PFV- ABS1P- go  -IV
         'We went.'

In sum, several morphemes in the Chuj verbal complex signal valency status. For instance, in (**??**) (i) ergative agreement *w-* entails the presence of a transitive subject and (ii) the status suffix *-a'* signals that the verb is transitive. Chuj's multiple signaling of transitivity and valency alternations will be instrumental in adjudicating between different theories of NCA—a type of (silent) deep anaphora—in §3.

## 2.2   The voice system

Mayan languages such as Chuj possess a rich voice system, including various types of passives and antipassives. Some of the voices discussed in this paper (exemplified with the verbal root *tum* 'to scold') are shown below.

(5)    a.  Ix-Ø-s-tum-ej        heb' unin ix  Malin.
         PFV-ABS3-ERG3-scold-DTV PL   child CLF Malin
         'Malin scolded the children.'                   *active voice*

      b.  Ix-Ø-tum-**j**-i        heb' unin yuj ix  Malin.
         PFV-ABS3-scold-PASS-IV PL   child by  CLF Malin
         'The children were scolded by Malin.'         *passive voice*

      c.  Ix-Ø-tum-**waj**<-i>      ix  Malin t'a  heb' unin.
         PFV-ABS3-scold-ANTIP-IV CLF Malin PREP PL   child
         ≈ 'Malin did some scolding at the children.'     *antipassive voice*

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[2]Glosses follow the Leipzig Glossing Rules, with the following additions: AF = Agent Focus, DTV = derived transitive status, IV = intransitive status, P/PL = plural, PREP = preposition, TV = transitive status.

    Three of the four status suffixes—including TV and IV but not DTV—are deleted when they are not at the right edge of an intonational phrase (roughly corresponding to the right edge of a CP). However, they do not delete if their absence would result in an illicit consonant cluster (Royer 2022). We represent deleted status suffixes with brackets on the stem; e.g., (<-i>) in (5c).

Crucial for us in this paper will be a voice known as "Agent Focus" (henceforth AF) that is found across a subset of Mayan languages that are syntactically ergative. AF has received considerable attention in the theoretical literature (see e.g., Aissen 2017, Coon et al. 2021). It is used when the subject of a transitive verb is A'-extracted:

(6)     Ha   ix   Malin ix-in-tum-**an**-i.
        FOC CLF Malin PFV-ABS1S-scold-AF-IV
        'MALIN scolded me.'                                        *Agent Focus voice*

While there are two DP arguments in the AF voice, notice that the verbal stem does not bear the same morphemes as in the active voice. First, the verb in (6) lacks ergative marking cross-referencing the transitive subject and only absolutive appears, cross-referencing the object.[3] Second, a status suffix appears that is otherwise exclusively used in intransitive configurations, namely *-i*.

As discussed in §4 on surface anaphora, A'-extraction is sensitive to voice in Chuj. Thus, we can force voice mismatches under sluicing by manipulating the *wh*-remnant outside the silence. Analyzing which mismatches are well-formed and which are ill-formed provides insight into the identity condition regulating ellipsis.

## 2.3    Summary

Chuj possesses (i) morphology signaling valency alternations and (ii) a voice system that includes AF. We will argue that these grammatical ingredients can be leveraged to refine our understanding of (silent) deep and surface anaphora. The former is discussed via NCA in §3 and the latter is discussed via sluicing in §4.

## 3.      Deep anaphora: NCA involves a null *proform*

Null Complement Anaphora (NCA), a term coined by Hankamer and Sag, is a construction where a verb's non-nominal complement is missing on the surface. An example illustrating NCA was already provided in (1); we provide a second example in (7). Notice that context alone suffices to license the speaker's utterance in (7a); in other words, NCA can be pragmatically controlled. Notice as well that nothing follows *agree* on the surface:

(7)     **Context**: A speaker is defending a controversial analysis of Agent Focus.

        a.   Do you agree?                                              =NCA
        b.   Do you agree **with what they're saying**?          PP complement
        c.   Do you agree **that this is a reasonable analysis**?   CP complement

Three analytical options have been acknowledged and defended to derive NCA, which are summarized below:

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[3]Which argument gets cross-referenced on the verb in AF via ABS is subject to variation within the family; see Coon et al. 2021 for discussion.

(8) *Analytical options for the status of the silent element in NCA*

    a. NCA involves the ellipsis of XP.

    b. NCA involves a null *proform* in the silence (Depiante 2001, 2019 and others; see Hankamer and Sag 1976).

    c. NCA involves nothing in the silence, i.e., (in)transitivity alternation / WYSIWYG (Shopen 1972, Napoli 1983, 1985; Xiang et al. 2019 and others).

Option (8a) has largely been discarded since Hankamer and Sag 1976 and Napoli 1983, 1985. The first core argument against (8a) is that NCA does not require a syntactic antecedent and is not regulated by an identity condition. A second argument is that sub-extraction from the silence is impossible in NCA, but possible in clear-cut cases of ellipsis such as VP-ellipsis (Merchant 2013, Napoli 1983; see Ranero and Royer 2023 for the impossibility of sub-extraction from NCA in Chuj, in contrast to data like (14c).) [4] We will therefore set aside (8a) moving forward.

The literature has thus sought to adjudicate between the two remaining analytical options: whether NCA verbs have a null *proform* complement (8b) or whether they alternate in transitivity and they lack a complement altogether (8c). These debates, however, have not used data from languages like Chuj, which signals valency alternations explicitly. We thus have an opportunity to adjudicate anew these analytical competitors: if NCA verbs bear transitive-signaling morphology, it follows that they must involve a syntactically-represented null *proform* (8b); if they bear intransitive-signaling morphology, it follows that they take no complement at all (8c).

With this prediction in mind, let's move on to the data. A Chuj NCA verb involving the root *tak'* 'accept', with an overt complement—here, a CP—is provided in (9). Crucially, (10) shows that this verb does not take nominal complements regardless of person specification.

(9)     Ix-Ø-a-tak'-a'         [ to     tz-ach-b'at     k'atzitz ].
       PFV-ABS3-ERG2S-accept-TV   COMP IPFV-ABS2S-go log
       'You accepted to go cut wood.'

(10)     a.  *Ix-Ø-in-tak'        nok' tz'i'.
           PFV-ABS3-ERG1S-accept CLF  dog
           *Int*: 'I accepted the dog.' (i.e., 'I agreed to have the dog in my life.')

    b.  *Ix-ach-in-tak'-a'.
           PFV-ABS2S-ERG1S-accept-TV
           *Int*: 'I accepted you.'

NCA uses of *tak'* are provided in (11) and (12). As expected, notice that NCA does not require a linguistic antecedent: the context in (12) suffices to license the configuration.

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[4]Nevertheless, see Depiante's (2019) discussion of Aelbrecht's (2010) suggestion of an ellipsis approach to NCA that manipulates the timing of the operation to account for the sub-extraction facts; for a foreshadowing of this kind of analysis, see fn. 25 in Hankamer and Sag 1976.

(11)  Hayik' ix-Ø-w-al           t'ay-ach    to    tz'-ach-b'at    k'atzitz,
      when  PFV-ABS3-ERG1S-say PREP-ABS2S COMP IPFV-ABS2S-go woodlog,

      ix-Ø-a-tak'-a'.
      PFV-ABS3-ERG2S-accept-TV
      'When I asked you to go cut wood, you accepted.

(12)  Context: Axul's boss is always giving her new orders and she's been complaining
      to Malin. M. sees that the boss is again asking A. to do additional things. M. asks:

      Tom ix-Ø-a-tak'-a'?
      Q    PFV-ABS3-ERG2S-accept-TV
      'Did you accept?'

Observe that the verb stem in (11) and (12) bears (i) ergative agreement and (ii) the transitive status suffix. Moreover, the only combination of agreement morphemes (ERG vs. ABS) and status suffix (TV vs. IV) that is well-formed is the one observed above. For example, an intransitive version of the verb *tak'* renders (11) and (12) ill-formed—using this specific verb (or other NCA verbs) without ergative agreement and with an intransitive status suffix is judged unacceptable:

(13)    ... *ix-ach-tak'-i
            PFV-ABS2S-accept-IV
        *Int*: '[...] you accepted'

In sum, NCA in Chuj is consistently expressed via verbal stems that exhibit the key transitive markers discussed in §2.1. We thus conclude that there is a *proform* in the silence; i.e., the silence in NCA cannot be due to the wholesale absence of a complement. This entails in turn that the What-You-See-Is-What-You-Get (WYSIWYG) approach to NCA (8c), which analyzes NCA verbs as intransitive, cannot be right for Chuj.[5]

## 4.    The identity condition on ellipsis requires non-distinctness

The grammar of Chuj is also ideal for refining our understanding of surface anaphora. We will focus here on sluicing (Ross 1969). Our discussion and arguments essentially replicate Ranero's (2021) work on Kaqchikel, another Mayan language. In a nutshell, the well-formed status of a subset of voice mismatches in Chuj sluicing provides evidence that the universal identity condition regulating ellipsis requires featural non-distinctness between the antecedent and elided material, instead of strict identity.

    Sluicing is clausal ellipsis with a *wh*-remnant (Ross 1969); e.g., *Someone knocked, but I don't know* **who**. As noted in the introduction, sluicing is felicitous only with a linguistic antecedent, a characteristic of surface anaphora. This requirement for syntactic control is

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[5]See Ranero and Royer 2023 for arguments that the representation of NCA should not be parameterized cross-linguistically and thus involves a null *proform* universally.

replicated in Chuj (i.e., an example like (14c) without a syntactic antecedent would be infelicitous, regardless of the richness of the pragmatic context).

A language-specific diagnostic suggests that sluicing involves sub-extraction from silence that contains complex structure (unlike in NCA). Like other Mayan languages, Chuj requires pied-piping with inversion when prepositional phrases are *wh*-extracted (Aissen 1996). A baseline example illustrates the phenomenon: an *in-situ* PP exhibits the order P+WH (14a), whereas an extracted PP exhibits the inverted order WH+P (14b). In sluicing, this inversion is also obligatory (14c) (i.e., non-inversion is ill-formed; data omitted):

(14)    a.    Ix-Ø-s-pol        anh seboya winhaj Pab'lu [ **yet' k'en kuchilub'** ].
                PFV-ABS3-ERG3S-cut CLF onion  CLF    Pab'lu  with CLF  knife
                'Pab'lu cut the onion with the knife.'
    b.    [ **Tas yet'** ] ix-Ø-s-pol        anh seboya winhaj Pab'lu?
                 what with   PFV-ABS3-ERG3S-cut CLF onion  CLF    Pab'lu
                'With what did Pab'lu cut the onion?'
    c.    Ix-Ø-s-pol        anh seboya waj Xun, pero machekel **tas   yet'ok**.
                PFV-ABS3-ERG3-cut CLF onion  CLF Xun, but  unknown what with
                'Xun cut onions, but I don't know what with.'

Example (14c) is derived directly: sluicing involves movement of the *wh*-phrase and deletion or non-insertion of the elements left inside the ellipsis site; see Ranero 2021: 103 for Kaqchikel.[6] We will thus assume that sluicing (i) involves complex structure in the silence, (ii) requires a syntactic antecedent, and (iii) that the silence, i.e., the ellipsis site, must satisfy a formal relationship with the antecedent. Put simply, sluicing (and ellipsis in general) must comply with an identity condition that regulates its availability; no such requirement exists for deep anaphora like NCA (see Merchant 2019 on approaches to the condition).[7]

Since sluicing is regulated by the identity condition, the voice system of Chuj provides an opportunity to assess the nature of (dis)allowed mismatches involving VoiceP/vP. As we discussed in §2, A'-movement is sensitive to voice in the language: e.g., AF is compatible only with A'-extracted transitive subjects. Ranero (2021) used parallel facts in Kaqchikel to establish that all voice mismatches involving AF are well-formed in sluicing, in contrast to the widely attested pattern that voice mismatches are ill-formed in that elliptical configuration (e.g., active-passive '*Someone broke the window, but I don't know by who(m)*; see Merchant 2013). This empirical generalization regarding AF replicates in Chuj. To illustrate, consider the well-formed AF-active (15) and passive-AF mismatches (16) (note that < > = ellipsis site). Observe that the voice in the ellipsis site is manipulated via the

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[6]Data like (14c) contrast with the results of the sub-extraction diagnostic when applied to Chuj NCA in Ranero and Royer 2023: a *wh*-phrase cannot be moved from that silence (see Depiante 2019 for the usefulness of this diagnostic). Taken together, Ranero and Royer's sub-extraction result in NCA alongside pied-piping with inversion in sluicing argue further for maintaining a distinction between silence in deep anaphora (e.g., a *proform* as in NCA) and silence in surface anaphora (e.g., sluicing).

[7]This does not mean that the identity condition *alone* regulates ellipsis. Ellipsis must also be licensed in language-specific structural configurations (e.g., English has Aux-stranding VP-ellipsis, but Spanish does not), there are pragmatic conditions on the remnants, etc. See Ranero 2021, Chapter 1.

*wh*-remnant in the target clauses: in (15), an adjunct *wh*-remnant *where* is incompatible with AF, thus forcing a mismatch; in (16), the transitive subject *wh*-remnant triggers AF, also forcing a mismatch. Furthermore, note that non-elliptical baseline examples are well-formed, but omitted due to space:

(15)   A:   Ha   winhaj Xun ix-Ø-**man-an**-i.
            FOC CLF     Xun PFV-ABS3-buy-$\boxed{\text{AF}}$-IV
            'XUN bought them (the candies).'
       B:   Tom ix-Ø-y-al              winh t'ay-ach    b'ajti'il
            Q     PFV-ABS3-ERG3-say he    PREP-you where
            <ix-Ø-s-**man**              winh>?
              PFV-ABS3-ERG3-$\boxed{\text{buy.ACT}}$ he
            'Did he tell you where <he bought them>?'                          *AF-active*

(16)   Ix-Ø-pol-**chaj**          anh seboya tik  yuj jun anima', pero man wojtakoklaj
       PFV-ABS3-cut-$\boxed{\text{PASS}}$ CLF onion   this by  one person  but   NEG I.know
       mach <ix-Ø-pol-**an**            anh>.
       who    PFV-ABS3-cut-$\boxed{\text{AF}}$ them
       'This onion was cut by someone, but I don't know who <cut them>.' *passive-AF*

In contrast to (15)-(16), one specific voice mismatch is ill-formed, just like in Kaqchikel (Ranero 2021): antipassive-active. The mismatch is forced here by the *wh*-object remnant in the target clause, which is only compatible with active voice:

(17)   *Ix-Ø-chonh-**waj**          ix   Malin, pero machekel tas
        PFV-ABS3-sell-$\boxed{\text{ANTIP}}$ CLF Malin  but   not.know what
        <ix-Ø-s-**chonh**           ix>.
        PFV-ABS3-ERG3-$\boxed{\text{sell.ACT}}$ CLF
        *Int*: 'Malin did some selling, but I don't know what.'          **antipassive-active*

The non-elliptical counterpart of (17) is well-formed—i.e., it is not the case that this thought cannot be expressed through a voice alternation across clauses. Instead, the identity condition on ellipsis is responsible for (17)'s ill-formed status. Taking stock, then, a subset of voice mismatches are well-formed in Chuj sluicing—namely, any mismatch where AF is in the antecedent or the ellipsis site. In contrast, antipassive-active is ill-formed.[8]

   The empirical picture challenges approaches to the identity condition based on strict identity (Merchant 2013), including those that require head-by-head matching within the VoiceP/vP domain but freely allow mismatches elsewhere (e.g., Rudin 2019). We argue thus that Chuj lends support for Ranero's (2021) identity condition on ellipsis:

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   [8]It is impossible to assess a passive-active mismatch, since the manipulation needed to test that mismatch triggers AF in the target clause. Furthermore, it is impossible to assess an active-passive mismatch, since a *wh*-question of the thematic agent of a passive (i.e., the by-phrase) is judged ill-formed by our consultants even in baseline examples without ellipsis. The latter observation was noted in Ranero 2021:140 for Kaqchikel and Tz'utujil.

(18)    The antecedent and material properly contained in the ellipsis site must be featu-
        rally non-distinct.                                                    *Identity condition on ellipsis*

The condition in (18) rules out mismatches where there is a featural clash; e.g., a clash
between Voice$_{ACT}$ and Voice$_{PASS}$, the familiar pattern (Merchant 2013). However, it rules
*in* configurations where there is no clash; e.g., a mismatch between a featurally specified
head and the absence of such a head.[9]

  We thus extend Ranero's analysis of Kaqchikel to Chuj and propose that AF is the
absence of VoiceP.[10] Thus, (15) and (16) involve mismatches where the antecedent or the
ellipsis site lacks VoiceP, both correctly ruled-in by (18). In contrast, (17) involves a clash
between Voice$_{ANTIP}$ and Voice$_{ACT}$, a violation of (18). The structurally reduced nature of
AF clauses can be derived via the operation Exfoliation (Pesetsky 2021), which is triggered
in the structural configuration where the subject of a transitive cannot be accessed by a
Probe in the C domain in order to A'-move. In other words, the way to circumvent syntactic
ergativity in the language is by removing the barrier that leads to the extraction restriction:
(i) the external argument is thus able to extract; (ii) if we assume that Voice is the locus of
ERG, then the absence of ERG in AF is derived; (iii) if TV tracks the presence of ERG, then
the absence of TV is also derived in AF. While alternatives to Exfoliation are conceivable,
we cannot discuss them due to space (see Ranero 2021: 96 for discussion).

  Our takeaways in this section are twofold. First, the Chuj sluicing facts provide evi-
dence against strict identity as a condition on ellipsis and support (18). Second, these facts
challenge proposals of AF that analyze the construction as involving a flavor of Voice/v
distinct from other voices (e.g., Coon et al. 2021). Once the behavior of surface anaphora
is considered in tandem with the voice systems of Mayan languages, the structural make-up
of AF can be elucidated freshly, reinvigorating decades of discussion (Aissen 2017).

## 5.    Conclusion

Novel Chuj data show that Hankamer and Sag's (1976) distinction of deep and surface
anaphora—even for silent expressions—continues to be ripe for debate and reassessment.
We argued that Chuj provides the right ingredients to support the following proposals: (i)
NCA involves a null *proform* in the silence (Depiante 2001) and (ii) ellipsis is regulated by
an identity condition predicated on featural non-distinctness (Ranero 2021).

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[9]There is a second component to the identity condition requiring that ROOTS, unlike features, must match
one-to-one. Since this plays no role here, we set it aside; see Ranero 2021, Ranero To appear.

[10]This analysis posits that the AF suffix is not the insertion of Voice proper, but the elsewhere insertion of
*v* instead; see Ranero 2021: 97 for Kaqchikel.

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