**Possible and Impossible Movements within the Mixtec DP**

Andrew A. Hedding
UC Santa Cruz
ahedding@ucsc.edu

September 9th, 2021

1 Introduction

Many languages of Mesoamerica display a clear connection between A-movements in the clausal and nominal domains.

In San Martín Peras Mixtec:

- Wh-words move to the initial position of the clause (1a).
- Wh-words move to the initial position of a containing nominal (when they pied-pipe) (1b).

(1)  

\[
\begin{align*}
\text{a. } & \quad \text{Yóó} \quad \text{xàxi} \quad \text{kwì'i?} \\
& \quad \text{who} \quad \text{ate} \quad \text{fruit} \\
& \quad \text{Who ate the fruit?}
\end{align*} \\
\begin{align*}
\text{b. } & \quad \text{[Yóó} \quad \text{tsìnà} \quad \text{sànà]} \quad \text{nìxi'i} \\
& \quad \text{who} \quad \text{dog poss} \quad \text{died} \\
& \quad \text{Whose dog died?}
\end{align*}
\]

"Pied-piping with Inversion" of wh-words has been well described for many languages (e.g. Smith Stark, 1988; Aissen, 1996; Coon, 2009; Broadwell, 2006), but there has been much less investigation into pied-piping patterns of other constituents that A-move.

Foci also move to a clause initial position in Mixtec.

(2)  

\[
\begin{align*}
\text{JUAN} \quad \text{xàxi} \quad \text{kwì'i?} \\
& \quad \text{J. ate} \quad \text{fruit} \\
& \quad \text{JUAN ate the fruit.'}
\end{align*}
\]

However, unlike wh-words...

- Foci cannot "invert" to the beginning of a pied-piped nominal (3a).
- Instead, they remain in their base position within the fronted nominal (3b).

(3)  

\[
\begin{align*}
\text{a. } & \quad \text{[JUAN} \quad \text{tsìnà} \quad \text{sànà}]} \quad \text{nìxi'i} \\
& \quad \text{dog poss J. died} \\
& \quad \text{Intended: JUAN’s dog died.}
\end{align*} \\
\begin{align*}
\text{b. } & \quad \text{[Tsinà} \quad \text{sànà} \quad \text{JUAN]} \quad \text{nìxi'i} \\
& \quad \text{dog poss J. died} \\
& \quad \text{JUAN’s dog died.}
\end{align*}
\]

I am very grateful to Natalia Gracida Cruz and Roselia Durán Cruz for generously sharing their knowledge with me by providing the judgements presented here. I am also grateful for additional judgements provided by Margarita Cruz Salazar, Eracio Gracida Cruz, Juan Gracida Ortiz, Irma López Basurto, and one additional consultant that helped inform this project. I thank Ben Eischens, Ivy Sichel, Maziar Toosarvandani, and an audience at UC Santa Cruz for helpful feedback.
However, though foci do not invert, there is **indirect evidence that they move through the edge of the nominal domain** in some circumstances.

Focused possessors, like wh-possessors, *can subextract* from certain DPs, leaving their possesa stranded in situ.\(^1\)

\begin{align*}
(4) & \quad a. \text{Yóó níxi'i [tsìnà sánà]} \\
& \quad \text{who died} \quad \text{dog} \quad \text{POSS} \\
& \quad \text{‘Whose dog died?’} \\
& \quad \checkmark \\
& \quad b. \text{JUAN níxi'i [tsìnà sánà]} \\
& \quad J. \quad \text{died} \quad \text{dog} \quad \text{POSS} \\
& \quad \text{‘JUAN’s dog died.’}
\end{align*}

Cross-linguistic data suggest that **subextraction out of a nominal is only possible through successive cyclic movement through the edge of the nominal domain** (Szabolcsi, 1984; Horrocks and Stavrou, 1987).

**The puzzle:** if foci can move to the edge of the nominal domain to *extract*, why don’t they move there to *invert*?

Today, I’ll argue that this puzzle gives us a window into a deeper question: **how do foci move syntactically?**

---

**Summary of Proposal**

- Foci front when they are in the scope of a focus sensitive particle that is targeted for movement.
- Focus pied-piping occurs when a moving focus sensitive particle c-commands more than just a focus.
- Semantic foci bear no formal feature, and thus are not targets for movement within the DP.

The takeaways:

- Foci move indirectly, analogously to wh-words (Cable, 2010).
- This indirect movement allows foci to extract, but not invert.

---

**2 Background**

**2.1 San Martín Peras Mixtec**

San Martín Peras Mixtec (Otomanguean, ISO: JMX), also called Tu’un Sávi or Tu’un Ndá’vi:

- A Southern Baja Mixtec language spoken by about 11,000 people in the municipality of San Martín Peras in the state of Oaxaca (Instituto Nacional de Estadística y Geografía, 2020).\(^2\)

The bulk of the data in today’s talk come from ongoing fieldwork over Zoom with two speakers of SMPM currently living in Watsonville, California.

- Some initial generalizations about focus and wh-movement in SMPM were made working with speakers living in the town of Ahuejutla, in Oaxaca, Mexico.

---

1\(^{\text{Subextraction of wh-words and foci is possible out of unaccusative subjects and transitive objects, but is blocked out of transitive and unergative subjects (Hedding, 2020a). A similar extraction pattern is found in the Mayan languages Tsotsil (Aissen, 1996) and Ch’ol (Coon, 2009).}}\)

2\(^{\text{As of 2020, 97% of residents of the municipality speak Mixtec (or some other indigenous language) and 59% speak Spanish. According to a recent report from the Mexican government, the variant of Mixtec spoken in San Martín Peras is not immediate risk of language loss (Instituto Nacional de Lenguas Indígenas, 2012).}}\)
2.2 SMPM Basics

SMPM has VSO order (Ostrove, 2018; Mendoza, 2020), like other Mixtec languages (Macaulay, 2005).

(5) Kotô Agustina chichi likes A. avocado 'Agustina likes avocados.'

**Wh-movement to a pre-verbal position is obligatory,** as in other Mixtec languages (e.g. Caponigro et al., 2013)

(6) a. Yóó shìshi kiwi'i? who ate fruit 'Who ate the fruit?'

b. Nà shì Marta what bought M. 'What did Marta buy?'

c. Nashá yávi yá how.much costs it.neut 'How much does it cost?'

d. Ntsyá chíchí ndó where bathe 2PL 'Where do you (pl) bathe?'

In addition, several different types of focus must move to a preverbal position, including information focus (7a), corrective focus (7b), and foci associated with focus sensitive particles (7c).

(7) a. What did the dog eat?

kôñù shìshi rí meat ate AML 'It (an animal) ate meat.'

b. Gloria ate all the avocados!

ú'ú, ntsinana ri shìshi ntsí'í ná no tomatoes it.fruit ate all she 'No, she ate all the TOMATOES!'

c. Does everyone in your town know how to make mole?

ú'ú, inta Maria ná và'á kása’a rá no only Maria she well makes it.liq 'No, only MARIA can make it.'

I assume, following previous work, that inversion involves Ā-movement of the possessor to the specifier of DP (Aissen, 1996; Coon, 2009)

(8) a. Yóó karro ñà'a who car poss 'Whose car?'

(9) **Possessor Inversion**

```
      DP
      |   
      |  
      | POSS
      | 
      |  
      | DP1
      | 
      |  
      | who
      |  
      | D
      | 
      |  
      | N
      |  
      | car
      | 
      |  
      | P
      |  
      | t1
```
2.3 Pied-piping

I assume that wh-words must be contained within a Question Phrase (QP), headed by a (potentially null) Question Particle (Q) (Cable, 2010).

In languages with overt wh-movement, QP is attracted to the specifier of CP.

- When Q is sister to a wh-word alone, this is wh-movement with no pied-piping (10a).
- When Q is sister to some XP that contains a wh-word, movement of QP triggers “pied-piping” of XP (10b).

![Diagram of Wh-Movement and Wh-Movement with Pied-Piping]

This particle is focus sensitive: it requires the focus alternatives introduced by a wh-word in order to be semantically interpreted.

A similar approach to focus movement in Hungarian is proposed by Horvath (2007).

- A null Exhaustive Identification Operator c-commands exhaustive foci.
- This operator is targeted for movement by a left-peripheral head.
- When it moves, the exhaustive focus that it c-commands moves along with it.
- If ei-OP c-commands more than just a focus, then the focus will “pied-pipe” additional material when it moves.

![Diagram of Movement of Exhaustive Identification Operator]

Horvath (2007): 130
3  Generalizing Movement of Focus Sensitive Particles

3.1  Movement of Non-Exhaustive Foci

Horvath (2007)'s proposal of how foci move in Hungarian is not generalizable to SMPM.

- It relies on a syntactic contrast between foci that are interpreted exhaustively and foci which are interpreted non-exhaustively.
- Exhaustive foci undergo movement in Hungarian, and non-exhaustive foci remain in situ (É. Kiss, 1998).

This idiosyncrasy of Hungarian leads Horvath to propose that movement is driven by exhaustivity, not focus.

Crucially, unlike Hungarian, SMPM moves all foci, not just those that are interpreted as exhaustive.

This can be shown in 3 ways:

1. Both exhaustive (only) and non-exhaustive (even) focus sensitive particles must move.

(12)  a. Inta ñá maestra ñá ká’an __ tu’un sá’á
    only cl teacher she speaks language Spanish
    ‘Only the teacher speaks Spanish.’
    b. ‘Ká’an inta ñá maestra ñá tu’un sá’á
    speaks only cl teacher she language Spanish
    Intended: Only the teacher speaks Spanish.

(13)  a. Ntsya Pedro tsyá __ shitá
    even P. makes tortillas
    ‘Even Pedro is making tortillas.’
    b. ‘Tsyá ntsya Pedro shitá
    makes even P. tortillas
    Intended: Even Pedro is making tortillas.

2. Fronted foci can be felicitously followed by a continuation.

(14)  What did Gloria cook for the party?
    a. ndayajyí vá’á kása’a ñá. Kása’a ti ñá nchichi vá
    broth good made she made also she green.bean foc
    ‘She made mole. She also made green beans.’
    b. Inta ndayajyí vá’á kása’a ñá. #Kása’a ti ñá nchichi vá
    only broth good made she made also she green.bean foc
    ‘She only made mole. #She also made green beans.’

3. Non-exhaustive answers to wh-questions are judged to be true.

(15)  Context: I went to a party with Francisca. There was a lot of food there. She ate some mole, beans, tortillas, and some cake for dessert. If someone asks me: ‘What did Francisca eat at the party?’ would the following answers be true?:
    a. TRUE: ndayajyí vá’á shishi ñá
    broth good ate she
    ‘She ate mole.’
    b. FALSE: Inta ndayajyí vá’á shishi ñá
    only broth good ate she
    ‘She only ate mole.’

Thus, SMPM shows us that we need a more general theory of focus movement that is not tied to exhaustivity.
3.2 Focus Sensitive Particles Move

I propose that all movement of wh-words and foci in SMPM results from attraction of a lexical class of particles that are sensitive to the focus semantic value of their c-command domain.

This class of focus sensitive particles includes:
1. Overt focus particles such as inta (only) and ntsya (even).
2. Null "Q" Particle that c-commands wh-words
3. A segmentally null particle which c-commands all other foci

There is some evidence that the segmentally null focus particle is tonally specified in SMPM:
   - This floating tone can account for the unique prosody of fronted foci in SMPM (Hedding, 2021)

This lexical class of particles has several important properties:
   - **Semantic property**: Must c-command a constituent that introduces focus alternatives in order to be properly interpreted, similar to focus sensitive particles like English only (Jackendoff, 1972).
   - **Syntactic Property**: Bear a formal syntactic feature [FOC] which can trigger their attraction (along with their c-command domain)\(^3\)

(16) Movement of Focus Sensitive Particles

![Diagram of movement of focus sensitive particles]

The Claim: *Focus particles are attracted in SMPM (along with their c-command domain), not foci themselves.*

This proposal:
   - Extends Cable (2010)’s theory of pied-piping beyond wh-words to other examples of pied-piping. Crucially, both wh-words and foci introduce focus alternatives (Rooth, 1992).
   - Generalizes Horvath (2007)’s exhaustivity operator to account for a wider-range of cross-linguistic focus phenomena.

Additionally, this analysis assumes that wh-movement and focus movement are fundamentally similar phenomena.
   - Both are moved indirectly by virtue of being in the scope of particles that are sensitive to the alternatives that they introduce.

**This is a welcome result,** as there is a long literature establishing the syntactic and semantic similarities between wh-movement and focus movement (Chomsky, 1977; Horvath, 1986; Croft, 1990; Rizzi, 1997; É. Kiss, 1998; Jayaseelan, 2001; Aboh, 2007, a.o.).

---

\(^3\) I assume that Q bears both [FOC] and [Q] features, based on interactions between focus fronting and wh-movement in SMPM (Hedding, 2020b)
3.3 Testing Some Predictions with Overt Focus Sensitive Particles

If phrases headed by focus sensitive particles are targeted for movement then we predict:

1. A focus should not be able to move stranding a focus sensitive particle in situ (17)

(17) Focus Movement cannot Strand Focus Particles

\[
\text{FocP}_{[\text{foc}]} \quad \text{Focus Particle}_{[\text{foc}]} \quad \text{DP} \quad \text{Juan} \quad \text{only}
\]

2. A focus particle should be able to front and move a constituent that is larger than just the focus (18).

(18) Can Be Targeted for Movement

\[
\text{FocP}_{[\text{foc}]} \quad \text{Focus Particle}_{[\text{foc}]} \quad \text{DP} \quad \text{D} \quad \text{NP} \quad \text{N} \quad \text{car} \quad \text{PP} \quad \text{P} \quad \text{DP} \quad \text{Juan} \quad \text{of}
\]

3. If a head is not c-commanded by the focus particle, it should not be able to move (19).

(19) Cannot Be Targeted for Movement

\[
\text{DP} \quad \text{D} \quad \text{NP} \quad \text{N} \quad \text{car} \quad \text{PP} \quad \text{P} \quad \text{FocP}_{[\text{foc}]} \quad \text{Focus Particle}_{[\text{foc}]} \quad \text{DP} \quad \text{Juan} \quad \text{only}
\]

Prediction 1: No Stranding Focus Sensitive Particles

If it is focus sensitive particles that are moved, not foci themselves, then moving a focus and stranding the particle in situ should be ungrammatical.

As predicted, this is ungrammatical (20).

(20) a. "U’un yibá yá shishi Pedro inta — no vegetables it.neut eats P. only
    Intended: No, Pedro only eats VEGETABLES.
b. "U’un NÁ MAÉSTRA NÁ ka’an inta __ tu’un sá’á
   no cl. teacher she speaks only language Spanish
   Intended: No, only the TEACHER speaks Spanish.

Prediction 2: Everything c-commanded by the particle moves

If the focus particle c-commands a possessive DP, the entire DP will front along with it (21).

(21) a. [Inta kárro ná’á JUAN tún] nitsivi ___
    only car poss J. it.wood broke.down
    ‘Only JUAN’s car broke down.’

b. [Inta sé’e MARIA yá] kú’u ___
   only child M. neut sick
   ‘Only MARIA’s child is sick.’

Movement of a focus sensitive particle can pied-pipe even larger constituents, as long as there is a focus that is c-commanded.

(22) [Inta kwì’i táshin NÁNA rà lo’o yo’o] sháshi rà ___
    only fruit gives mother he small here eats he
    ‘This boy only eats the fruit that his MOTHER gives him.’

Prediction 3: No pied-piping of heads not c-commanded by particle

If the focus sensitive particle is sister to the possessor, we don’t expect the possessum to be able to front.

Once again, this is ungrammatical (23).

(23) a. ‘Karro ná’á inta JUAN nitsivi
    car poss only J. broke.down
    Intended: Only JUAN’s car broke down.

b. ‘Sé’e inta MARIA yá kú’u
   child only M. neut sick
   Intended: Only MARIA’s child is sick.

Instead, as predicted, when the particle is sister to the possessor it will stranding the possessum in situ (24).

(24) [Inta JUAN] nitsivi kárro ná’á ___
    only J. broke.down car poss
    ‘Only JUAN’s car broke down.’

3.4 Segmentally-Null Focus Sensitive Particle

Generalizing the movement of overt focus sensitive particles to all focus movement, I propose that SMPM has a segmentally-null focus sensitive particle (marked here with ~) that is targeted for movement operations.

(25) a. [~ Táta NATALIA rà] kayan ___
    foc.part father N. he collected
    ‘NATALIA’s father collected (mushrooms)’

b. [~ Ntána ná’á JUAN yá] níta’vi ___
    foc.part window poss J. it broke
    ‘JUAN’s window broke.’

c. [~ Chele sánà JUAN ri] kána ___
    foc.part rooster poss.aml J. it.aml crows
    ‘JUAN’s rooster is crowing.’


4 Extraction and Inversion

With this analysis in place, let’s see how it explains the puzzle introduced in §1:

**Puzzle:** If foci can *extract* through the edge of DP (26a), why can’t they *invert* to the edge of DP when they pied-pipe (26b)?

Following previous work, I assume that both subextraction and inversion involve movement to spec-DP.

- To subextract, constituents need to move to a phase edge (Chomsky, 2000).
- To invert, wh-words Ā-move within the DP (Aissen, 1996; Coon, 2009).

Thus, D must bear the features necessary to attract both wh-words and focus particles.

Once a focus particle has moved to spec-DP, it is accessible and can be attracted by a probe on C

\[
\text{(27) Subextraction of Foci } = \text{(26a)}
\]

Crucially, D attracts focus sensitive particles, not constituents that are focused

When foci are fronted within a larger nominal constituent, they will not move because they do not bear any formal syntactic features.

- There is no syntactic motivation for foci to invert.
(28) No Focus Inversion = (29b)

\[
\text{CAN BE ATTRACTION} \quad \rightarrow \quad \sim [\text{FOC}] \quad \sim [\text{FOC}] \\
\sim [\text{FOC}] \\
\text{DP} \quad \text{C} \quad \text{TP} \\
\text{D} \quad \text{NP} \\
\text{N} \\
\text{P} \quad \text{DP} \\
\text{JUAN}
\]

\[
\text{CAN'T BE ATTRACTION}
\]

This suggests that, unlike foci, \textit{wh-words do bear a feature that can trigger their movement}, independent of the movement of QPs.

(29) a. \text{[Tsìnà sànà JUAN] nìxi'i} \\
\text{dog poss J. died} \\
\text{JUAN's dog died.}

b. *\text{[JUAN tsìnà sànà] nìxi'i} \\
\text{J. dog poss died} \\
\text{Intended: JUAN's dog died.}

(30) \text{[Yóó tsìnà sànà] nìxi'i} \\
\text{who dog poss died} \\
\text{Whose dog died?}

(31) *\text{[tsìnà sànà JUAN] nìxi'i} \\
\text{dog poss J. died} \\
\text{JUAN's dog died.}

This highlights an important difference between foci and wh-words:

- Wh-words form a morpho-syntactic class that can be assigned a feature in the lexicon.
- Focus is context-dependent (not a morpho-syntactic class) and have no inherent lexical specifications.

5 Further Implications

An important, contentious question in the theory of information structure: \textit{do foci bear formal features?}

- Focus fronting is just like other Ā-movements, triggered by a formal syntactic feature (Horvath, 1995; Frascarelli, 2000; Frascarelli and Puglielli, 2007; Aboh, 2016).
- Focus is dependent on context, and therefore they shouldn’t bear a formal feature. Focus movement should be explained in another way (perhaps prosodically) (Szendrői, 2001; Horvath, 2007; Fanselow, 2006, 2008; Reinhardt, 2006; Chomsky et al., 2019)

Put another way:

- Is focus movement part of the narrow syntax?
- If so, how do syntactic operations target contextually-determined, pragmatic properties?
If the analysis presented today is on the right track, then both sides of the debate are partially correct:

- Focus fronting can be driven by formal syntactic features.
- These features are not associated with context dependent foci, but with a lexical class of particles that are sensitive to focus alternatives.

Thus we can simultaneously:

- Account for the fact that—in many languages—focus fronting displays the hallmarks of syntactic movement.
- Maintain a more restrictive theory of feature assignment: features are associated with lexical items, not assigned relative to a discourse context.

6 Conclusion

In this talk, I have argued for a novel approach to focus movement and its relation to wh-movement, expanding on the work of Cable (2010) and Horvath (2007).

A key piece of evidence comes from a contrast in Mixtec between focus subextraction (which is possible) and focus inversion (which is impossible)

- This pattern suggests that focus particles move, but not foci themselves.

Confirms the important role that understudied languages—especially indigenous languages—can play in advancing formal linguistic theory.

References


