

Copy theory of movement and PF conditions on spell-out

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Introduction

- Subject-in-situ

(1) a. **John** arrived.

b. Standard Arabic (Wurmbrand and Haddad 2014, (2))

qaraʔ-at **l-fataja:t-u** l-dars-a

read-3.F.SG **the-girls-Nom** the-lesson-Acc

The girls read the lesson.

c. Adyghe (Potsdam & Polinsky 2012, (2))

[**a-xe-mei** pjəsmə-r a-txə-new] ø-fjeZ'a-Re-x

DEM-PL-ERG letter-ABS 3PL. ERG-write-INF 3ABS-begin-PAST-3PL.ABS

‘They began to write a letter.’

Introduction

- Wh-in-situ

(2)a. **Who** did you meet?

b. Hindi

Sita-ne **kya:** soca: ki Ravi:-ne **kis-ko** dekha:?

Sita-ERG **EXPL** thought that Ravi-ERG **who-ACC** saw

Who did Sita think that Ravi saw?

c. Korean

John-i **mwuess-ul** ilk-ess-e/ni?

John-Nom what-acc read-past-C/Q.

What did John read?

Introduction

“Insituness” problem

- In-situ *wh*-phrases in different languages/structures show different properties.
- No satisfactory explanation for in-situness (wrt. licensing, interpretation...) has been provided.
- In many instances, in-situ phrases appears with prosodic/morphological marker → Appeals to interface levels.

Introduction

In this talk,

I will suggest a system that typologically generates different types of in-situ phrases.

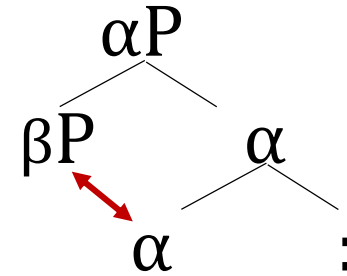
Organization

1. Backgrounds
2. Proposal and predictions
3. Analysis
4. Implications and conclusion

Background - Agreement

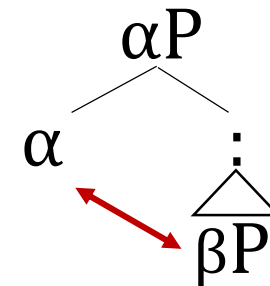
In early minimalist program

: Spec-head agreement



After Chomsky (2000, 2001)

: Agree (Probe-goal theory)

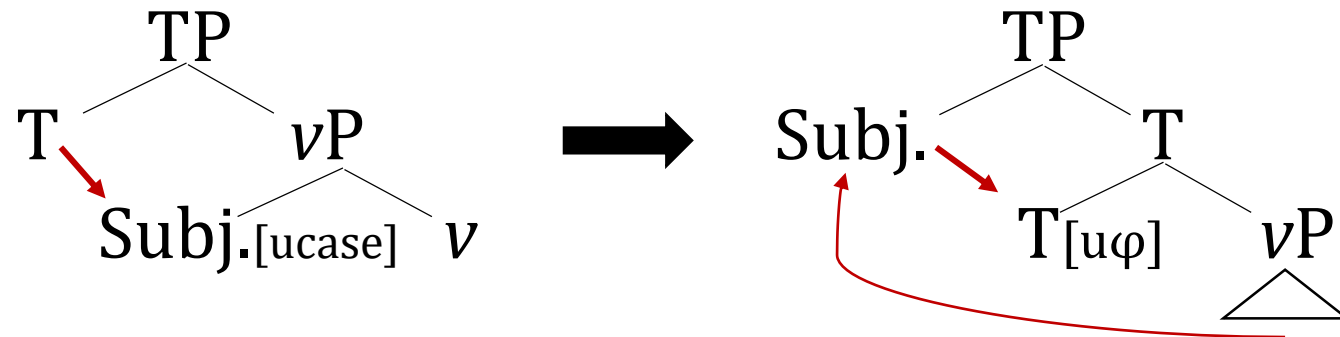


Background – Reverse Agree

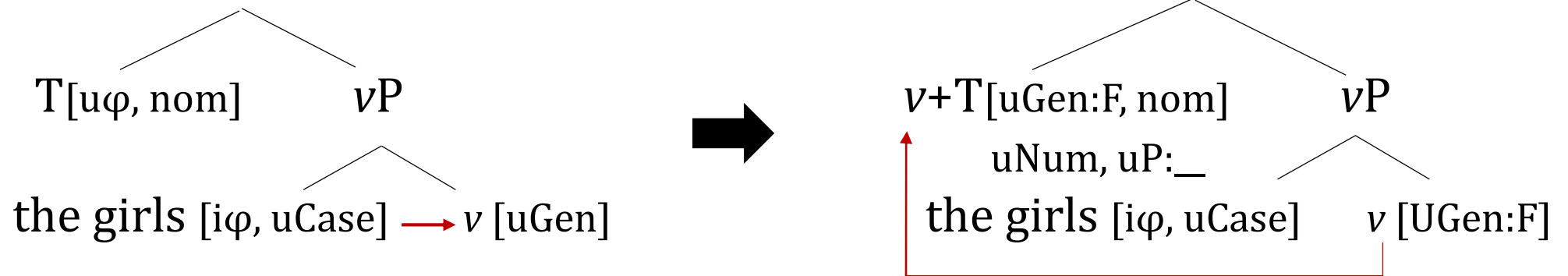
Reverse Agree (Wurmbrand 2012, (1))

A feature $F: _$ on α is valued by a feature $F: \text{val}$ on β , iff

- i. β asymmetrically c-commands α AND
- ii. There is no γ , γ distinct from β , with a valued interpretable feature F such that γ commands α and is c-commanded by β .



Background – Reverse Agree



(3) Standard Arabic (Wurmbrand and Haddad 2014, (2))

a. qaraʔ-at l-fataja:t-u l-dars-a
 read-**3.F.SG** the-**girls**-Nom the-lesson-Acc

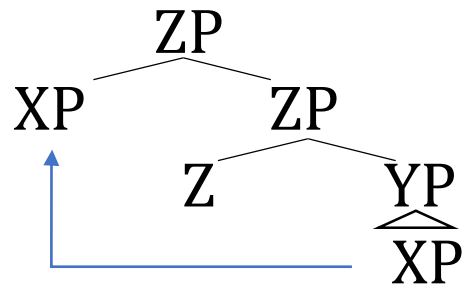
The girls read the lesson.

b. *qaraʔ-na l-fataja:t-u l-dars-a
 read-**3.F.PL** the-**girls**-Nom the-lesson-Acc

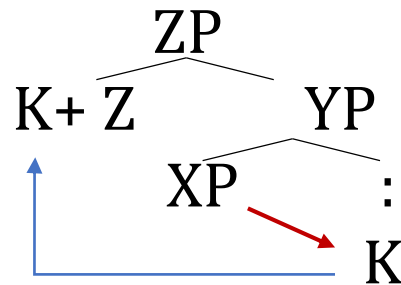
Background – Reverse Agree (Wurmbrand2012)

- Agreement does not require a Spec-head relation.
- “Upward valuation” is not allowed contrary to Agree (Chomsky 2000, 2001) system.
- A phrase can indirectly agree with a functional category mediated by another head.
- Movement takes place for the EPP satisfaction.

Phrasal movement



Parasitic head movement



Background - Movement

Feature-driven movement

: In accordance with spec-head agreement

(Generalized) EPP-driven movement

: In accordance with Agree

Proposal – Three types of movement

In accordance with Reverse Agree,

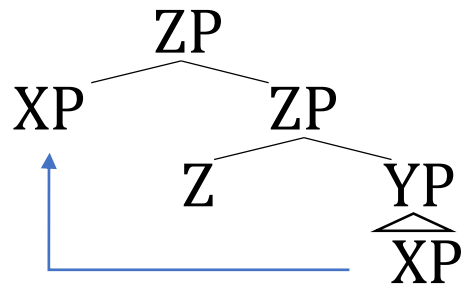
Condition on Movement

X substitutes a specifier of the probe Y or X adjuncts to the head of the probe Y iff

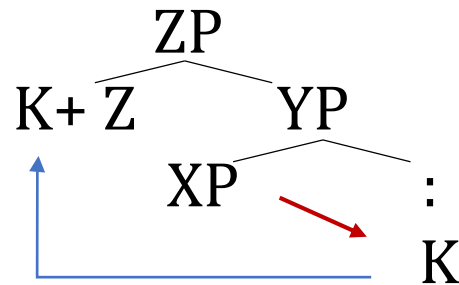
- (i) an uninterpretable feature of Y is valued by the movement
- (ii) the movement is a necessary step for some later Agree in which an uninterpretable feature of Z will be valued by a corresponding feature of X

Proposal - Three types of movements

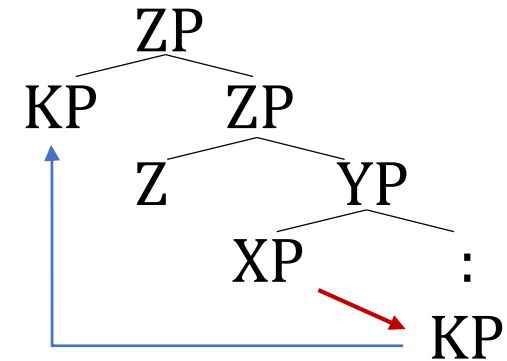
Phrasal movement



Parasitic head movement



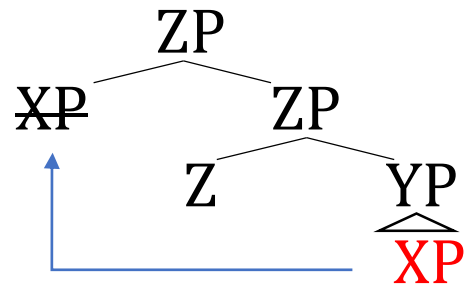
Parasitic phrasal movement



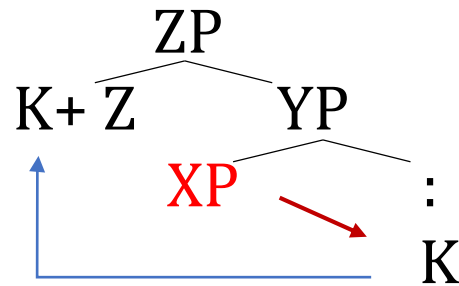
- The EPP *per se* does not trigger syntactic movement.
→ Movement takes place for the sake of “probe’s” feature checking.
- Agreement *per se* does not require movement.
- Speculation: Parasitic movement is available only if a language has a morphological apparatus that can carry the agreement information.

Prediction – Three types of in-situ phrases

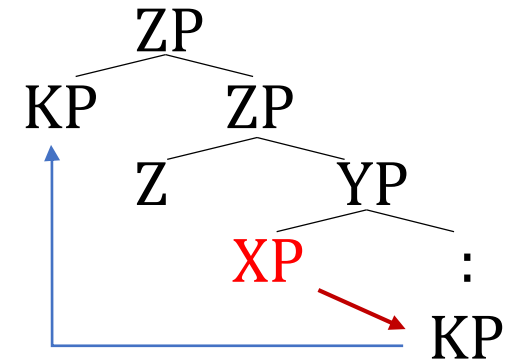
Phrasal movement



Parasitic head movement



Parasitic phrasal movement



- Three types of in-situ phrases
 - i) A realization of the low copy in a case of phrasal movement.
 - ii) An XP that gives values to a higher head via a parasitic head movement.
 - iii) An XP that gives values to a higher head via a parasitic phrasal movement.

Proposal – Three types of movement

i) A realization of the low copy in a case of phrasal movement.

- Assumption: Copy theory of movement (Chomsky 1993)

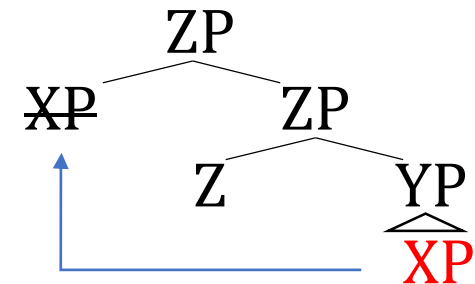
- XP undergoes a (so-called) covert movement. Phrasal movement

- Prediction: XP patterns like phrases that undergo
(so-called) overt movement.

i.e. Island sensitivity

Insensitive to intervention effects

Weak-cross over effects



Proposal – Three types of movement

ii) An XP that gives values to a higher head via a parasitic head movement.

Parasitic head movement

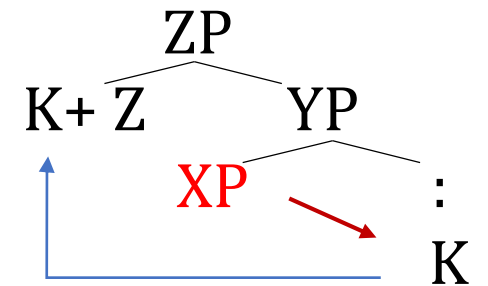
- XP does NOT undergo movement.
- Prediction: XP does not pattern like phrases that undergo (so-called) overt movement.

i.e. Island insensitivity

Sensitive to intervention effects

No weak-cross over effects

- Must have a head that is adjoined to a higher functional head.



Proposal – Three types of movement

iii) An XP that gives values to a higher head via a parasitic phrasal movement.

- XP does NOT undergo movement.
- Prediction: XP does not pattern like phrases that undergo (so-called) overt movement.

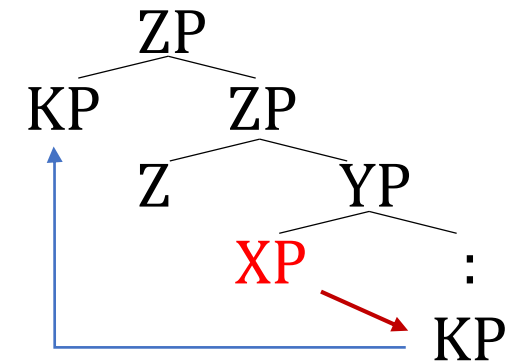
i.e. Island insensitivity

Sensitive to intervention effects

No weak-cross over effects

- Must have a phrase that substitutes the spec of a higher functional head.

Parasitic phrasal movement



Analysis – In-situ phrases via parasitic head movement

Sinhala

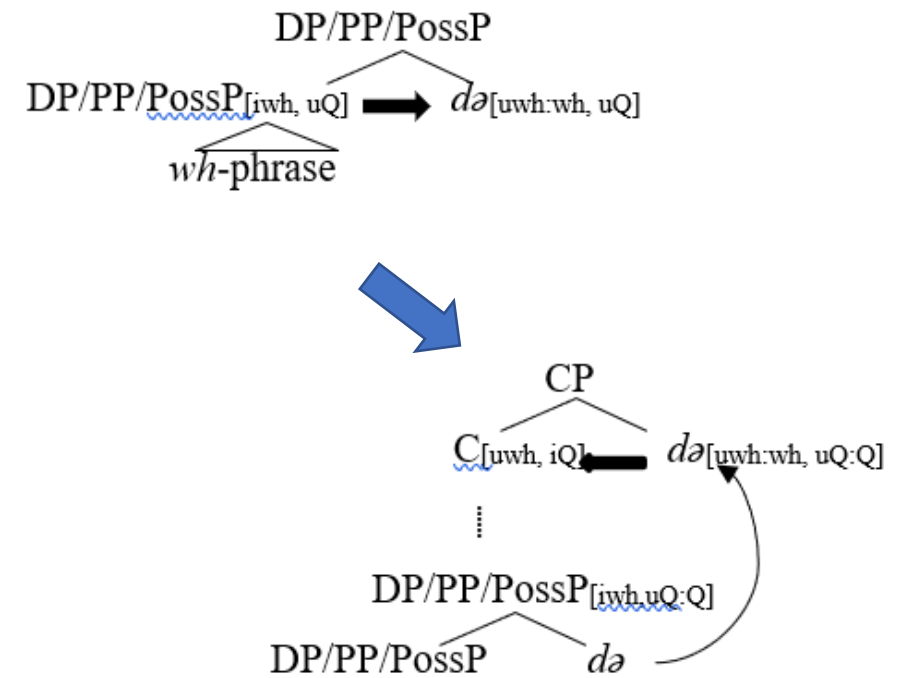
(4) Chitra [monə potə] **də** gatte?

(Kishimoto 2005, (23))

Chitra what book Q bought-E

What book did Chitra buy?

- Kishimoto (2005)
 - The question particle “də” has properties of non-projected head in a sense that it can be either maximal projection or minimal projection (Chomsky 1995).



Analysis – In-situ phrases via parasitic head movement

Sinhala

(5) Island sensitivity of question particle *də* (Kishimoto 2005, (46a,c))

*oyaa [[Chitra kaa-ʈə **də** dunnə] potə] kieuwe?

you Chitra who-Dat **Q** gave book read-E

To whom did you read the book that Chitra gave to whom?

(6) Island insensitivity of *wh*-phrase (Kishimoto 2005, (47a,c))

oyaa [[Chitra **kaa-ʈə** dunnə] potə] də kieuwe?

you Chitra **who-Dat** gave book Q read-E

To whom did you read the book that Chitra gave to whom?

Analysis – In-situ phrases via parasitic head movement

Sinhala

(7) Sensitive to the Intervention Effects

a. ?? kauru-t mokak də kiiwe.

who-T what Q said-E

What did everyone say?

b. mokak də kauru-t kiiwe.

what Q who-T said-E

What did everyone say?

- Intervention Effects (Beck 2006, Kim 2005)

: When a *wh*-restriction is bound by a focus operator, the sentence becomes ungrammatical due to the lack of ordinary semantic interpretation.

Analysis – In-situ phrases via parasitic head movement

- **Korean/Japanese**

- As what happened in Sinhala, *wh*-feature valuation takes place via parasitic head movement.
- Unlike Sinhala's question particle, the question particle in Korean/Japanese are morphologically null (Kim 2010 and Miyagawa 2012), .
- The null question particle is realized with characteristic prosody.

In Korean: Dephrasing (Yun 2012)

In Japanese: Destress (F0 reduction) (Ishihara 2007)

Analysis – In-situ phrases via parasitic head movement

- Korean/Japanese

(8) Korean

- a. John-un Bill-i mwuess-ul **sa-ss-nunci alkoissni**?
John-top Bill-Nom what-Acc buy-past-CompQ know
Lit. What does John know Bill bought?
- b. John-un Bill-i mwuess-ul **sa-ss-nunci** alkoissni?
John-top Bill-Nom what-Acc buy-past-CompQ know
Does John know what Bill bought?

(9) Japanese (Deguchi & Kitagawa 2002, (11), (14a))

- a. [JO'hn-wa [MA'ry-ga NA'ni-o **Øera'nda-to**] i'mademo omo'tteiruØ-nO!]?
-Top -Nom what-Acc selected-Comp even.now think -Q
What does John still think that Mary selected?
- b. [JO'hn-wa [MA'ry-ga NA'ni-o **Øera'ndaØ-ka**] I'mademo sirana'i-nO!]?
-Top -Nom what-Acc selected- CompWH even.now don't.know-Q
Doesn't John know yet what Mary selected?

Analysis – In-situ phrases via parasitic head movement

- **Korean/Japanese**

(10) Island insensitivity of *wh*-phrase

a. John-un [[**nwu**-ka pilin] chayk]-ul ilk-ess-e? (Korean)

John-Top **who**-Nom rent book-Acc read-past-Comp

Whox did John read the book x rented.

b. Taro-wa [[**dare**-ga katta] mochi]-o tabemasita ka? (Japanese)

Taro-Top **who**-Nom bought rice cake-Acc ate Q

Whox did Taro eat rice cakes that x bought? (Shimoyama 2006, (4))

(11) Sensitive to the Intervention Effects

a. *amwuto nwukwu-lul manna-ci anh-ass-ni? (Korean)

anyone who-Acc meet-CI not-past- CQ

Who did no one meet?

b. *daremo dare-o sasow-ana-katta-no? (Japanese)

anyone who-Acc invite-Neg-Past-Q

Who did no one invite?

Analysis – In-situ phrases via parasitic phrasal movement

Hindi-Urdu

(12) a. Sita-ne **kis-ko** soca: ki Ravi:-ne kis-ko dekha:?

Sita-ERG **who-ACC** thought that Ravi-ERG who-ACC saw

Who did Sita think that Ravi saw?

b. Sita-ne **kya:** socaa [ki Ravi:-ne **kis-ko** dekhaa]? Hindi

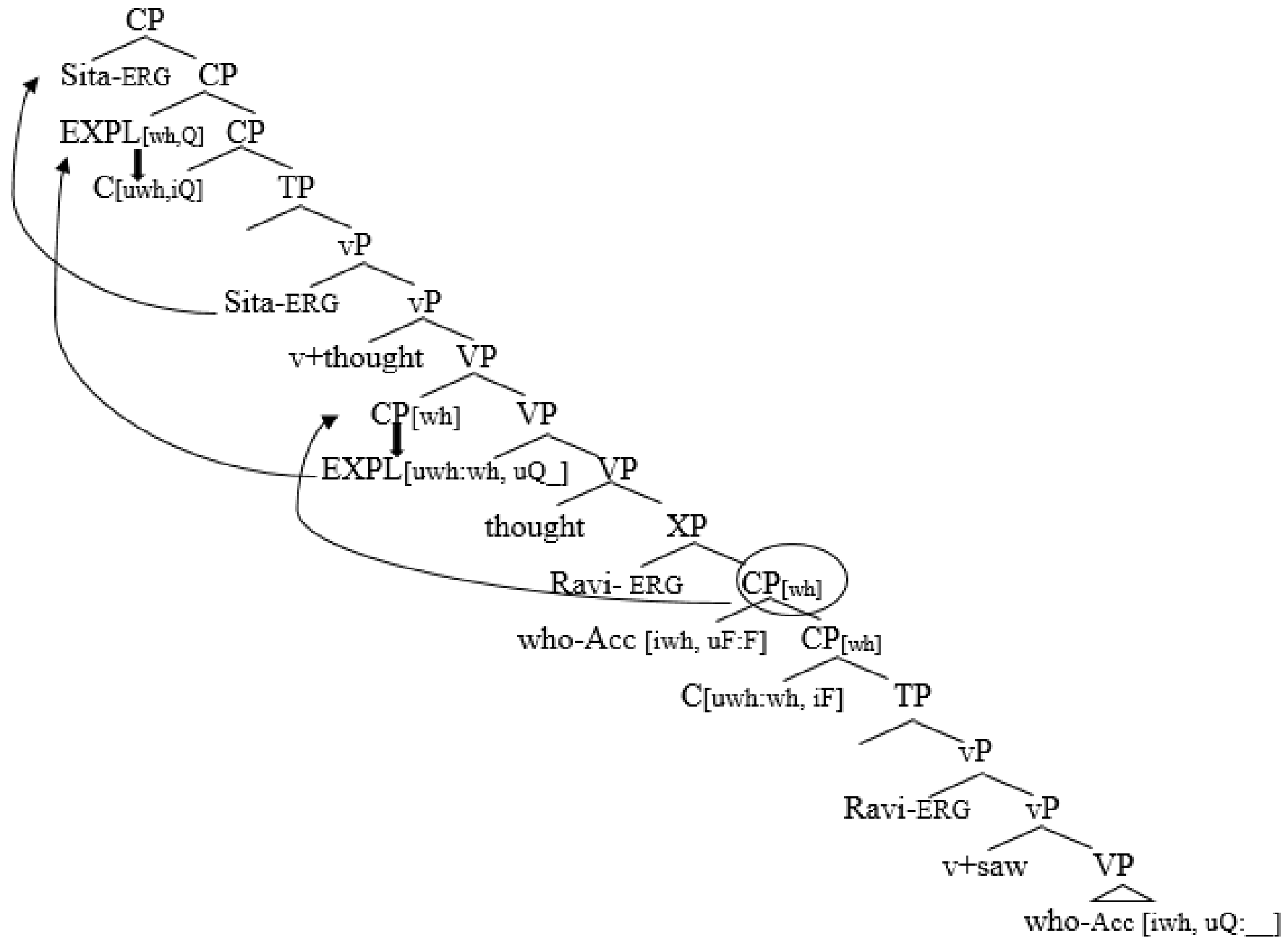
Sita-ERG **expl** thought [that Ravi-ERG **who-Acc** saw]

Who did Sita think that Ravi saw? (Manetta 2010, (1)-(2))

- Assumption

- *Kya:* is generated in the object position and needs a clausal associate with a *wh*-phrase in SpecCP (Fanselow and Mahajan 2000 among many others).

- *Wh*-phrases in Hindi-Urdu undergo movement to SpecCP (Simpson and Bhattacharya 2003).



Analysis – In-situ phrases via parasitic phrasal movement

Hindi-Urdu

(13) Island sensitivity of *wh*-expletives (Manetta 2013, 59)

*[raam=ne **kyaa** kah-aa [ki ravii=ko [yeh baat [ki miiraa
Ram.m=erg expl say-pfv.m.sg that Ravi.m=acc this fact that Mira.f
kyaa khaa-yegii] pataa hai]]]?
what eat-fut.f.3sg know be.pres.3sg

What did Ram say that Ravi knows the fact that Mira will eat?

(14) Sensitive to Intervention effects (Malhotra 2009, 43)

*Meri-ne **kyaa** sochaa [ki John-ne **hi kis-ko** dekhaa]?
Mary-ERG **expl** thought [that John-ERG **only who-ACC** saw]

What did Mary think only John bought?

Reminder

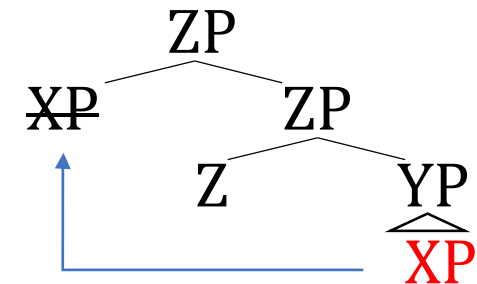
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- Assumption: Copy theory of movement (Chomsky 1993)

- XP undergoes movement.

Phrasal movement

- Prediction: XP patterns like phrases that undergo
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i.e. Island sensitivity

Insensitive to intervention effects

Weak-cross over effects

Analysis – In-situ phrases via low copy pronunciation in a phrasal movement

- **Coptic Egyptian**

(15) a. *wh*-in-situ with relative tense marker (Hilaria 12:29, cited in Reintges 2007, (23a))

ənt-a **nim** špɔ na-f n-tei-hypomenɛ?

REL-PERF **who** achieve for-3SG.M PERP-DEM.SG.F-endurance

Who has achieved for himself such endurance?

b. *wh*-fronting

(KHML I3:7-8, cited in Reintges 2007, (23b))

nim a-f-ent-k e-pei-ma?

Who PERF-3SG.M-bring-2G.SM to-DEM.SG.M-place

Who brought you here?

Analysis – In-situ phrases via low copy pronunciation in a phrasal movement

- **Coptic Egyptian**

(16) a. **ete-mpe-č**həm hən **aš** əm-ma?

REL-**NEG**.PERF.2SG.F-defile in **what** of-place

In which place have you (woman) not been defiled?

(Jeremiah 3,2, cited in Reintges 2007, (36a))

b. tenu **kye** hə e-i-na-tamie u-εi na-I ən-tə-**nau**?

Now **PCL** SELF.1SG REL(-FUT-)1SG-AUX-create INDEF.SG-house for-1SG PREP-**when**

When will I, myself, build me a house as well? (Genesis 30, 30, Reintges 2007, (36b))

- No in-situ *wh*-phrases in island condition.

Analysis – In-situ phrases via low copy pronunciation in a phrasal movement

- **French in-situ *wh*-phrases** (Cheng and Rooryck, 2000)

- French is a *wh*-movement language, but when a rising intonation is applied, *wh*-in-situ is available.

(17) Jean a achete´ **quoi**? (Rising intonation, *Neutral intonation)

Jean has bought what

What has Jean bought?

(18) a. *Jean aime [le livre que **qui** a écrit]? (Island sensitivity)

Jean like [the book that who has written]

Who is the person x such that Jean likes the book that x wrote?

b. *Sai mère a vu **qui**? (Weak cross-over)

his mother has seen who

*Who_i did his_i mother see?

Analysis – In-situ phrases via low copy pronunciation in a phrasal movement

- English multiple *wh*-questions (Pesetsky 2000)

(19) Which person read which book?

- The in-situ (D-linked) *wh*-phrase in superiority obeying configuration (*which book* in (19)) shows a “high” behavior as if it undergoes movement to where it can license ACD (+ Intervention effects insensitivity).

(20) PF: Which person ~~which book~~ read **which book**?

LF: Which person **which book** read ~~which book~~?

- Why the low copy is selected in the second *wh*-chain, instead of the high copy?

Proposal – PF constraints

- Observation

When a low copy is spelled-out, a certain type of morphology (or a certain intonation) is required.

i) **Coptic Egyptian**: Relative tense marker as a scope marker.

ii) **French**: Rising intonation

iii) **English multiple *wh*-questions**: Focal accent on in-situ *wh*-phrase

- Proposal 1: EPP as a PF constraint

The values of uninterpretable features of a functional head must be phonetically realized by

i) pronouncing a phrase with corresponding interpretable feature adjacent to the head and/or;

ii) inserting morphology.

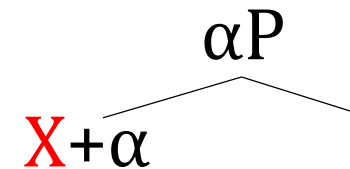
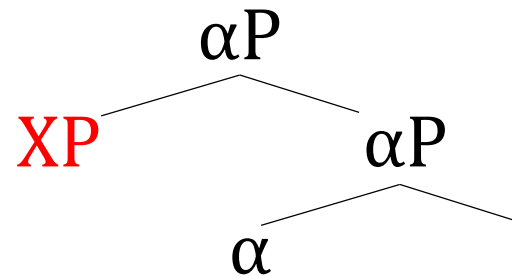
Proposal – PF constraints

- Proposal 1: **The values of uninterpretable features of a functional head must be phonetically realized** by
 - i) pronouncing a phrase with corresponding interpretable feature adjacent to the head and/or;
 - ii) inserting morphology.
- In the minimalist program, it is desirable that any syntactic input must have an interface-driven motivation.
 - I argue that the existence of uninterpretable features in grammar must be motivated by the PF component (= uninterpretable features are expected to have a PF consequence of its presence).

Proposal – PF constraints

- Proposal 1: The values of uninterpretable features of a functional head must be phonetically realized by
 - i) pronouncing a phrase with corresponding interpretable feature adjacent to the head and/or;
 - ii) inserting morphology.

- Adjacency:



Proposal – PF constraints

- Proposal 1: The values of uninterpretable features of a functional head must be phonetically realized by
 - i) pronouncing a phrase with corresponding interpretable feature adjacent to the head or;
 - ii) **inserting morphology.**
- Inserting corresponding morphology is the most transparent way to express the value of uninterpretable features.
 - e.g. Agreement morphology on Verb in many Romance languages.
 - WH-scope marker in Coptic Egyptian.
 - Intonation morpheme in French.

Proposal – PF constraints

- Proposal 1: The values of uninterpretable features of a functional head must be phonetically realized by
 - i) pronouncing a phrase with corresponding interpretable feature adjacent to the head and/or;
 - ii) inserting morphology.



The intuition: EPP is a PF condition.

Proposal – PF constraints

- Proposal 1: The values of uninterpretable features of a functional head must be phonetically realized by
 - i) pronouncing a phrase with corresponding interpretable feature adjacent to the head and/or;
 - ii) inserting morphology.

The intuition: EPP is a PF condition.
(Pronunciation-wise EPP)

Chomsky (2000): When a functional head with uninterpretable features has the EPP feature as well, overt movement takes place.

Proposal – PF constraints

- Proposal 1: The values of uninterpretable features of a functional head must be phonetically realized by
 - i) pronouncing a phrase with corresponding interpretable feature adjacent to the head and/or;
 - ii) inserting morphology.

However, under the syntactic EPP accounts for overt movement, the low copy pronunciation is problematic (e.g. English multiple *wh*-questions) because this account does not split the motivation of movement and the selection of copies for pronunciation.

Proposal – PF constraints

- The EPP as a PF condition (Holmberg 2000, Merchant 2001, Landau 2007, McFadden and Sundaresan 2015)

(21) a. It is raining.

b. * Is raining.

c. * **pro** is raining.

(22) a. * Which Marx brother is [a biography of ~~which Marx brother~~] going to appear [~~a biography of which Marx brother~~] this year?

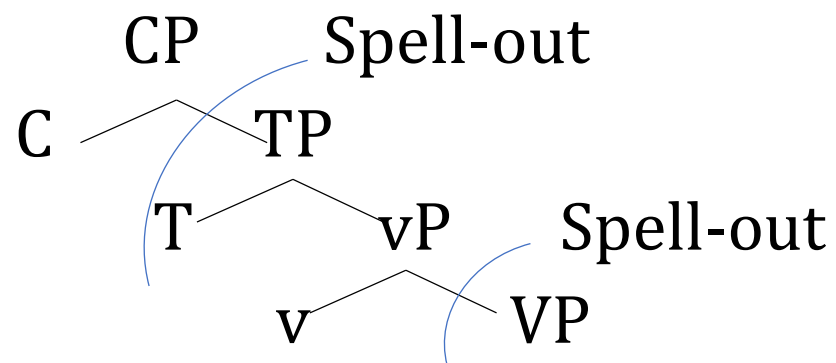
b. A biography of one of the Marx brothers is going to appear this year, but I don't know which (Marx brother).

c. A biography of one of the Marx brothers is going to appear this year, but I don't know [CP [which (Marx brother)] is [~~TP going to appear [a biography of which (Marx brother)] this year~~]].

Proposal – PF constraints

- Proposal 2: Earliness under Cyclicity (Economy condition)
Pronounce the first copy transferred to PF.

(23) Cyclic Spell-out (Chomsky 2001)



cf. As Soon As Possible principle (Collins 2001, (28))

If it is possible for an operation to apply, then it must apply.

Analysis

ii) French in-situ *wh*-phrases: Rising intonation

Cheng and Rooryck (2000)

- The rising intonation is a PF realization of an underspecified Q-morpheme that is represented as [Q:].
- If a *wh*-feature moves to C at LF, the Q-morpheme is valued as [Q: *wh*].
- I adopt the idea that a specific prosody is a PF spell-out form of a certain syntactic morpheme.
 - The in-situ *wh*-phrase actually undergoes phrasal movement since French allows only phrasal movement to give values to uninterpretable features of C.
 - Since the language can use morphology insertion as a way to satisfy the EPP, the intonation morpheme [Q:] is inserted to pronounce the uninterpretable *wh*-feature in C instead of pronouncing the *wh*-phrase with the high copy in SpecCP.
 - At PF, the inserted morpheme is realized with the rising intonation.

Analysis

iii) English multiple *wh*-questions: Focal accent on in-situ *wh*-phrase.

- It has been reported that in English multiple *wh*-questions, in-situ *wh*-phrases have focal stress (Chomsky 1995, Truckenbrodt 2013).
- Stress shift to the head of the phrase (23) → Truckenbrodt (2013) accounts for this shift of stress from a *wh*-word to the head of a phrase with “F-feature percolation” (F represents focus). This resembles *wh*-movement in the sense that *wh*-movement requires moving a whole *wh*-phrase, not only a *wh*-word (note. Echo-questions do not show stress shift).

(24) Who bought [how many BOOKS]?

- Two possibilities for English multiple *wh*-questions:
 - (i) Spell-out of the uninterpretable feature of C would be satisfied by only with the first chain.
 - (ii) Intonation morpheme is inserted to satisfy the EPP of the second chain.

Implication and conclusion

- Under this approach, different types of in-situ *wh*-phrases, which have been discussed with different mechanisms, can be parameterized within the same system.
- The same system can successfully be extended to A-movement cases.
- The proposed PF constraints implicate that there should be three different types of spell-out forms for movement chains.

i) High copy pronunciation
movement

English *wh*-

ii) High copy pronunciation + morphology insertion

French subject raising

iii) Low copy pronunciation + morphology insertion

Coptic Egyptian *wh*-
movement

No Low copy pronunciation + no morphology insertion

Implication and conclusion

- Theoretically, the current proposal has some benefits in the following points:
 - It dissociates the pronunciation rules from the motivation of movement.
Movement (copy/merge) operation → Syntax
Selection of copies for pronunciation (deletion) → PF
 - It sheds some lights on the interface-based motivation for the presence of uninterpretable features.
 - It can explain wider range of data than previous studies have considerate.

감사합니다

References

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Back-up

Proposal

- Wait! This proposal predicts...

(1) ***Who** do you think [TP **who** invite John]? (cf. Groat and O'Neil 1996)

- To avoid such a case, I stipulate the following deletion steps:

- (2) a. [Who]^{EPP} do you think [who]^{EPP} invite John by Pronunciation-wise EPP
b. Who do you think Linearization from the left
c. Who do you think ~~who~~ Deletion of non-distinct copies
d. Who do you think ~~who~~ invite John. of the already linearized item
Finalizing linearization

Proposal

- Proposal 1: The values of uninterpretable features of a functional head must be phonetically realized by
 - i) pronouncing a phrase with corresponding interpretable feature adjacent to the head and/or;
 - ii) inserting morphology.
- One important property of the proposal is that it is basically an economy condition, not a convergent condition.
 - Idea: The introduction of formal features without any consequence in interface components is a non-economical step in a sense that an operation that is semantically or phonetically vacuous takes place.
 - Consequence: It is violable when a derivation that obeys the pronunciation-wise EPP violates convergence conditions (e.g. Linearization).