

Intonation of Gapping in Japanese

Shigeto Kawahara

UMass

Intonation matters

May 17th, 2004

Background

Japanese gapping minimally contrasts with coordinate construction:

Coordination

Murasugi-wa mamemochi-o tabe, Morimura-wa aemono-o tabeta.
TOP ACC ate TOP ACC ate

Gapping

Murasugi-wa mamemoshi-o, Morimura-wa aemono-o tabeta.
TOP ACC TOP ACC ate

Why look at gapping?

- Each constituent stands in FOCUS relationship with a corresponding item in a different clause (semantic).
 - We can look at the intonation of verbless clauses, which is otherwise impossible (phonological, syntactic).
- Gapping is where phonology meets syntax and semantics!

Background – A bit of Syntax

- There are several versions of the syntactic account for “gapping”.
 1. Right-node raising that involves ATB movement (Kuno 1978; Saito 1987; Johnson 1997; Kasai&Takahashi 2000)
 2. Base generation + LF Copying (Abe and Hoshi 1997)
 3. PF-Deletion under identity (Sohn 1994; Kim 1997)

Background – A bit of Semantics

- Each argument stands in contrastive FOCUS.

*John-wa ringo-o, Mary-wa ringo-o tabeta.

top apple-acc top apple-acc ate

‘John ate apples, Mary apples’

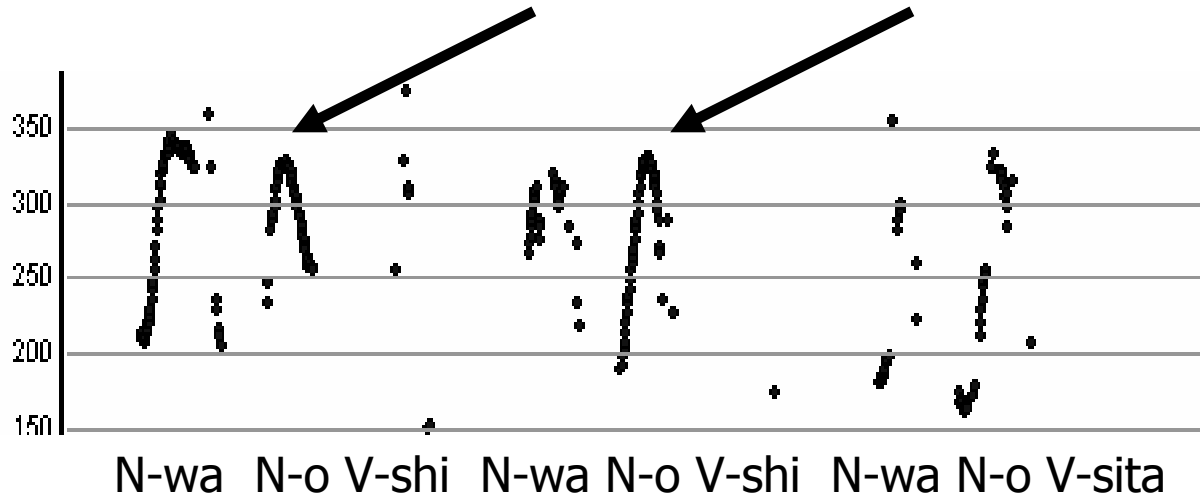
- For α to be contrastive with β , $[[\alpha]]^0 \neq [[\beta]]^0$

The phonological puzzle

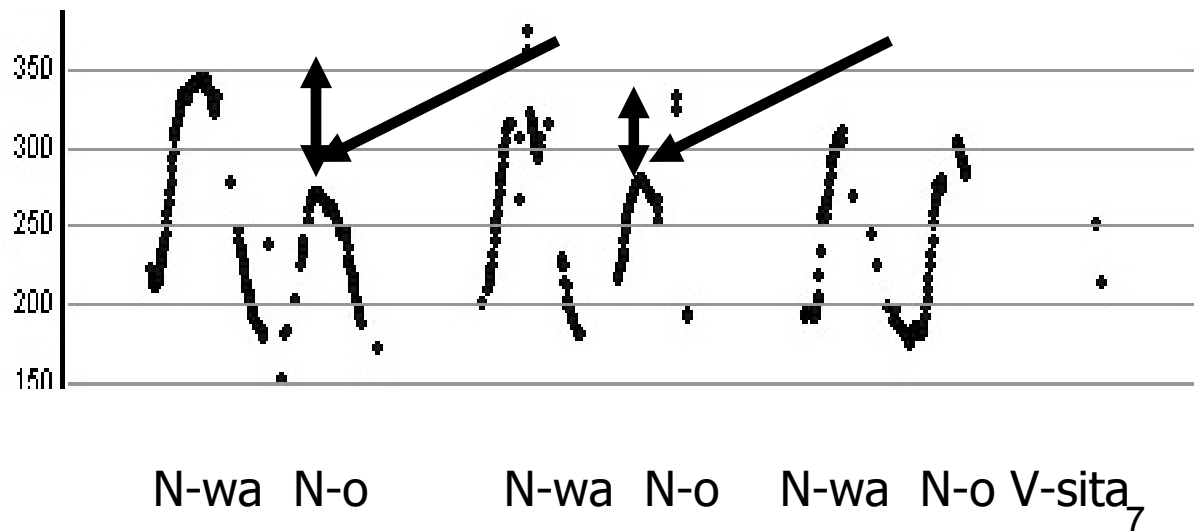
- So gapping is where phonology and FOCUS interact.
- An interesting puzzle emerges when we compare the intonation of gapping with its corresponding coordination.

Coordination vs Gapping

coordination

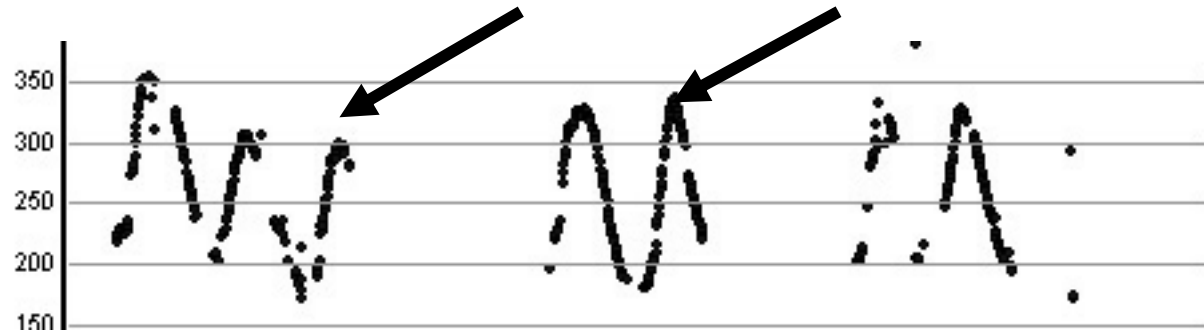


Gapping



Coordination and gapping II

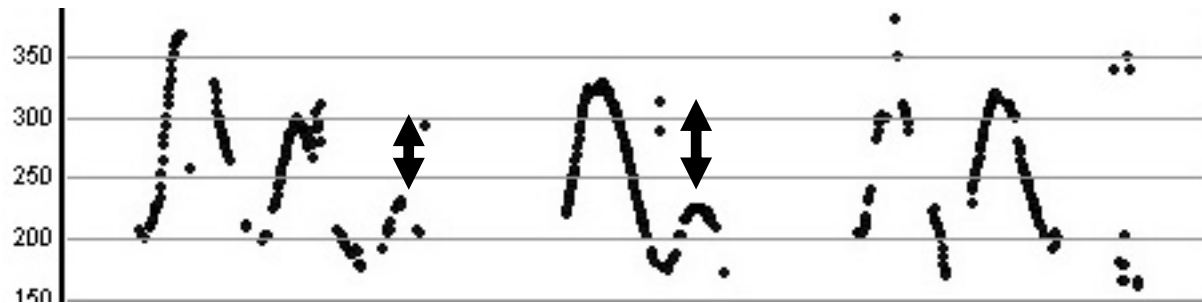
Coordination



N-wa N-ni N-o V-si

N-ni N-o V-si N-ni N-o V-sita

Gapping



N-wa N-ni N-o

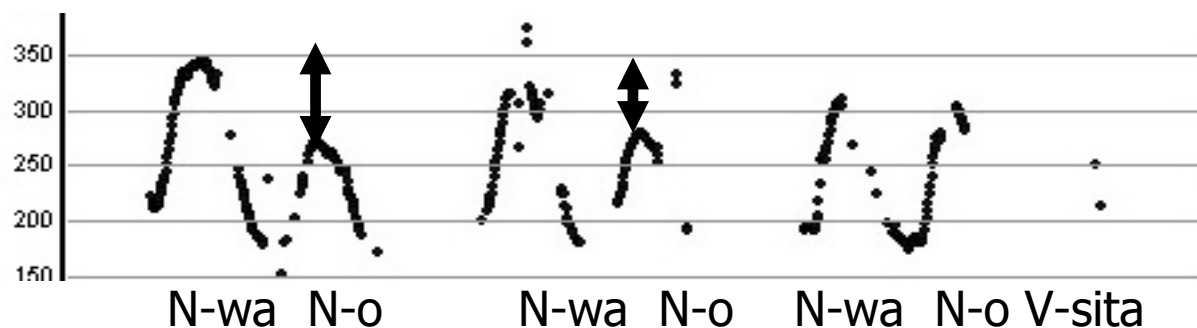
N-ni N-o

N-ni N-o V-sita

Puzzle

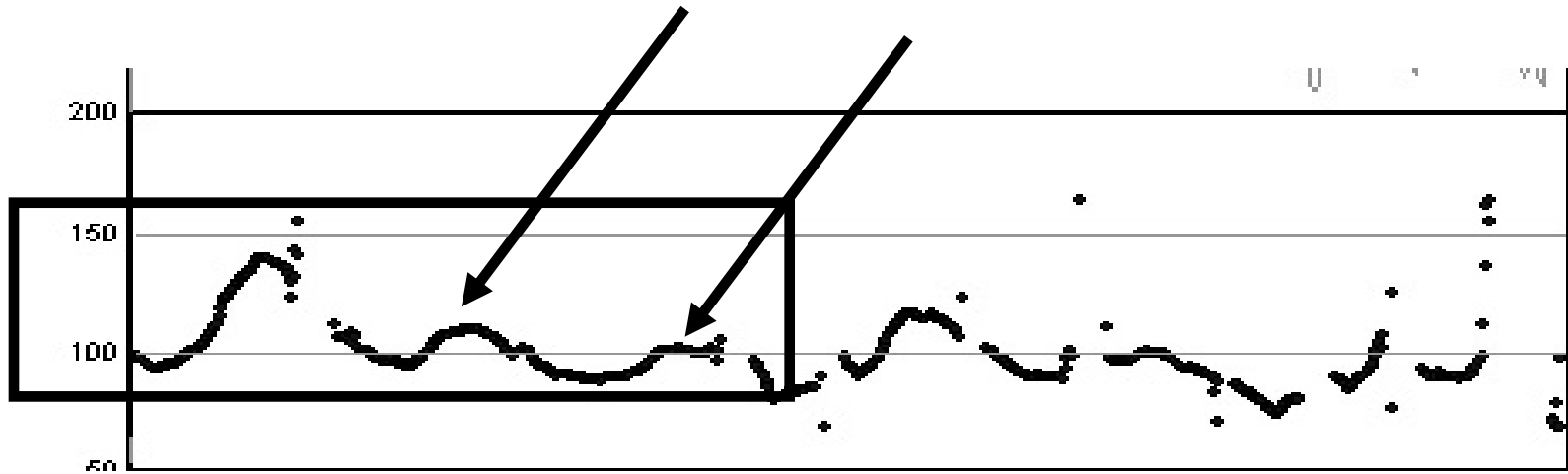
- This is in no way a sporadic pattern.
- Why is it that when verbs are gapped, the H peaks of the object are lowered?

Analysis



- Japanese has a mechanism called downstep whereby the H peak following another H within a MaP is realized in lower pitch range.

Downstep example



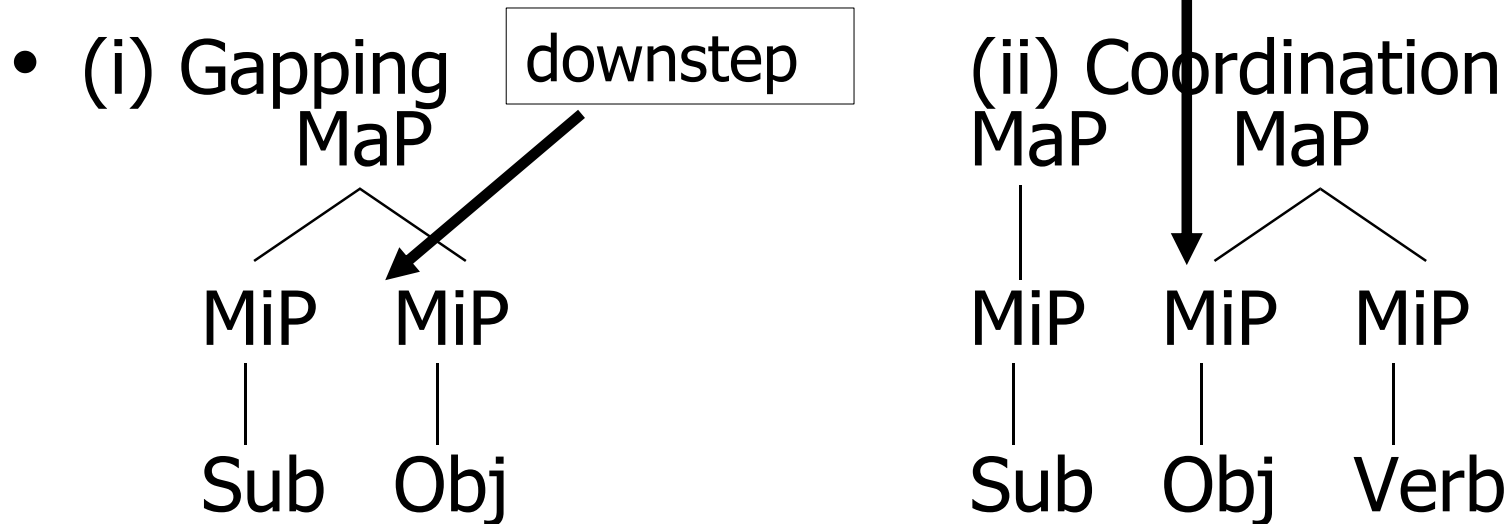
yamanashi-no omawari-no nemawasi-ga

Yamanashi's policeman's plot

MaP()

Deriving the difference from MaP structuring

- In gapping, the subject and the object form a single MaP.
- In coordination, the subject and the object are in separate MaPs.



But...

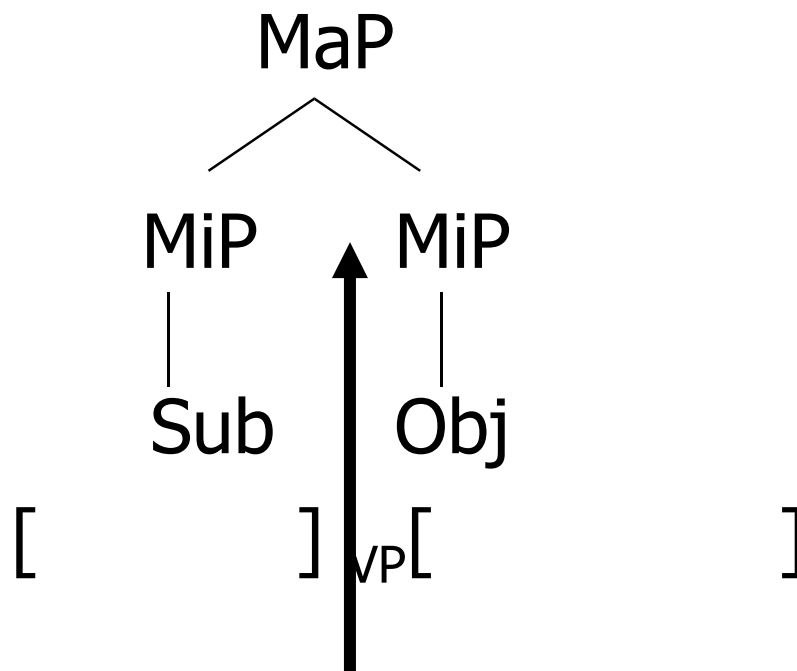
- Selkirk and Tateishi (1990, 1991), Selkirk et al (2004) suggest that a MaP boundary left-aligns with a syntax XP.

Align-L(XP, MaP): the left edge of every XP coincides with a left edge of a MaP (Selkirk 2000).

- ✓ This would require a MaP boundary to the left of the objects.

Visually...

- Gapping



Align-L(XP, MaP) is not satisfied.

Binarity on prosodic structure

- What forces a violation of Align-XP in gapping construction?
- There's a general observation in Intonational phonology of Japanese that the last two elements form a single MaP.
- In other words, the last MaP is usually binary

The constraint

- The last MaP is arguably the head of an IP. (Truckenrodt 1995).
- $\text{MaPBin}_{\text{Head}}$: The head MaP must be minimally binary (at the level of MiP or Prosodic Word).
- With this constraint, the lack of a verb in gapping requires the subject and the object to form a single MaP.

Tableau for gapping

| | MaPBin _{Head} | Align-XP |
|---|------------------------|----------|
| [(S-wa)(O-o)]... [(S-wa)(O-o V-shita)] | *! | |
| [(S-wa O-o)]... [(S-wa)(O-o V-shita)] | | * |
| [(S-wa)(O-o)]... [(S-wa O-o V-shita)] | *! | |
| [(S-wa O-o)]... [(S-wa O-o V-shita)] | | **! |

Tableau for coordination

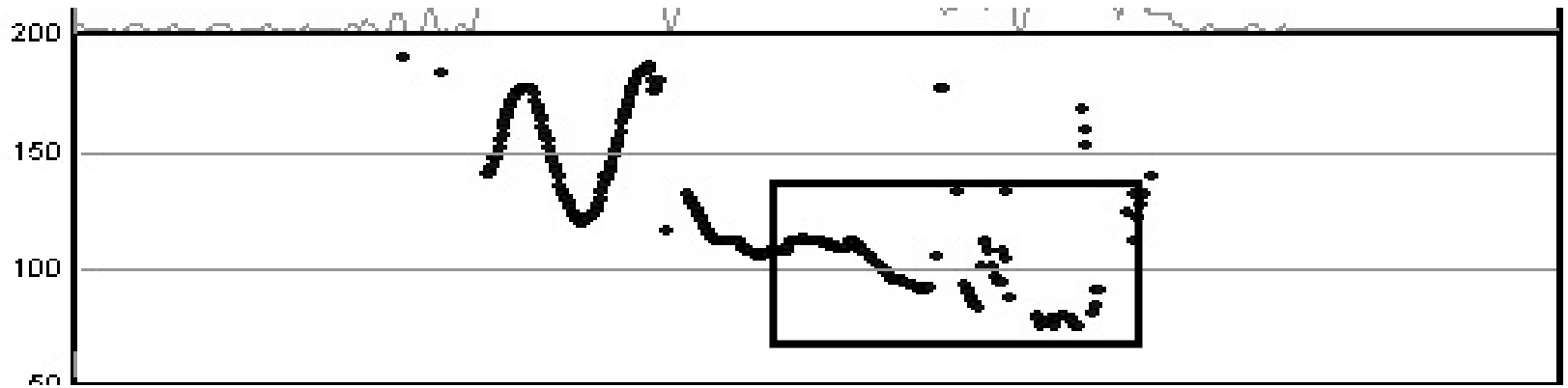
| | MaPBin _{Head} | Align-XP |
|---|------------------------|----------|
| [(S-wa) (O-o V-shi)]... [(S-wa) (O-o V-shita)] | | |
| [(S-wa O-o V-shi)]... [(S-wa) (O-o V-shita)] | | *! |
| [(S-wa) (O-o V-shi)]... [(S-wa O-o V-shita)] | | *! |
| [(S-wa O-o V-shi)]... [(S-wa O-o V-shita)] | | **! |

An alternative and more support for the proposed theory

- An alternative:

Can the lowering of the object peaks be accounted for by post-FOCUS reduction (Deguchi and Kitagawa 2002; Ishihara 2003; Sugahara 2003)?

Post-FOC Reduction



mari-wa na'nte uma'i me'ron o tabeta ndaroo
Mary-TOP what yummy melon ate EXCLAM
'what a yummy melon Mary ate!'

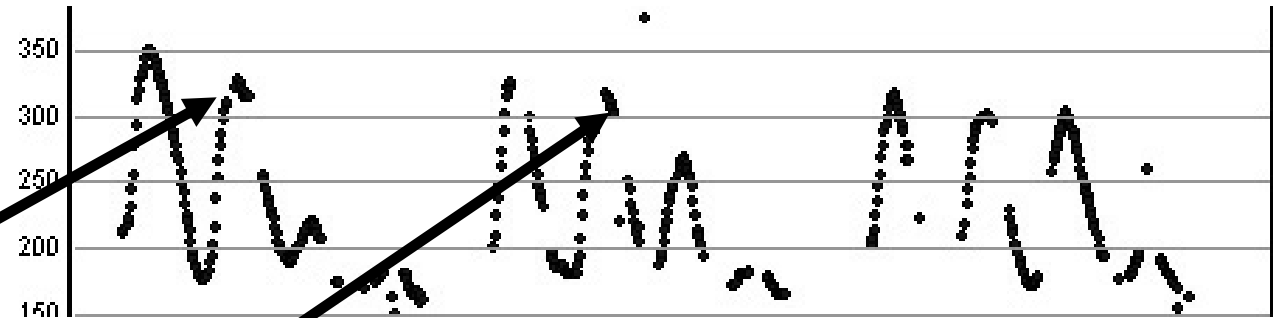
- Can we make use of this to account for lowering observed in gapping?

Arguments against the post-FOC approach

- Hirotani (2000) shows that two FOCUSed elements do not induce reduction in Japanese (also Ishihara 2003).
- It's not clear why the corresponding coordination does not induce post-FOCUS reduction.
- Moreover...

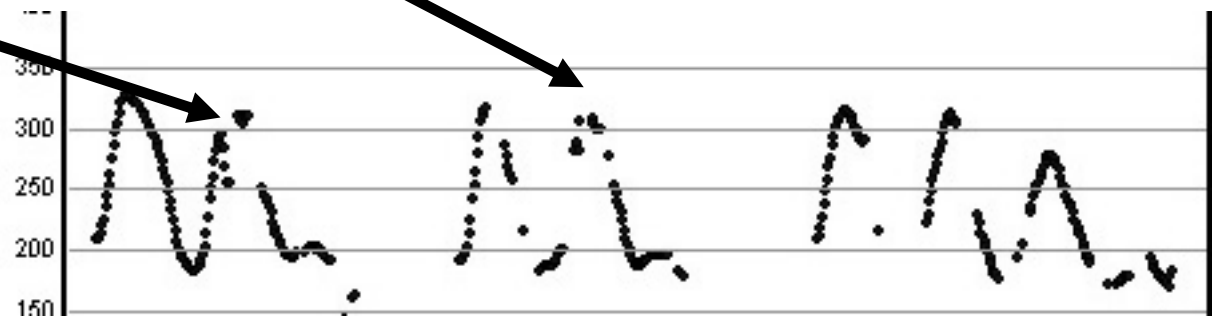
Gapping w/ long object

Coordination



N-wa N-no N-o V-si N-wa N-no N-o V N-wa N-no N-o V-shita

Gapping



N-wa N-no N-o N-wa N-no N-o N-wa N-no N-o V-shita

Gapping w/ long objects

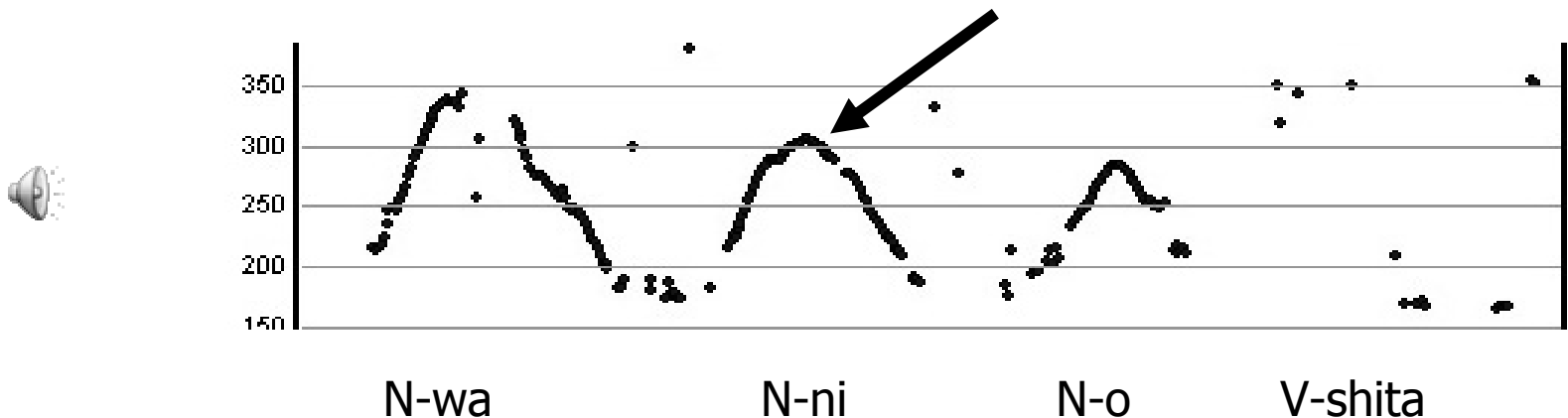
- When the object is long, the difference between gapping and coordination is neutralized.
- This is predicted under my account: when the object consists of two nouns, they happily make their own MaP, satisfying both $\text{MaPBin}_{\text{Head}}$ and Align-XP.
- Post-FOCUS reduction approach cannot explain this pattern.

Tableau for gapping w/ long obj

| | MaPBin _{Head} | Align-XP |
|---|------------------------|----------|
| [(S-wa) (O-no O-o)]... [(S-wa) (O-no O-o V-shita)] | | |
| [(S-wa O-no O-o)]... [(S-wa) (O-no O-o V-shita)] | | *! |
| [(S-wa) (O-no O-o)]... [(S-wa O-no O-o V-shita)] | | *! |
| [(S-wa O-no O-o)]... [(S-wa O-no O-o V-shita)] | | **! |

Discussion I – Why positional markedness?

- Why use context-sensitive markedness $\text{MaPBin}_{\text{Head}}$ rather than general MaPBin?
- Non-final MaPs do not become binary at the cost of violating Align-XP.



Discussion II: Why not faithfulness?

- Prosodic-structures are not present in the input (we cannot assume prosodic structures by Richness of the Base).
- Thus, constraints affect construction of prosodic structures must be markedness rather than faithfulness.
- De Lacy (2002) has a similar argument for positional markedness responsible for sonority-driven stress.

Discussion III: What is MaPBin_{Head} anyways?

- This constraint is a kind of augmentation-requiring constraint for strong positions (Smith 2002).
- Parallel to the fact that a head of a foot (a stressed syllable) is sometimes required to be binary, i.e., (Stress-to-Weight, a.k.a. obligatory branching).
- The head must be prominent – i.e., binary

Discussion IV: IP in Japanese?

- Pierrehumbert and Beckman (1988) and Venditti 1997, in press) do not posit IP in prosodic hierarchy in Japanese.
- But, we do need IP.
- We need to define the head MaP as the one that is final in a domain larger than MaP but smaller than Utterance (the end of a clause is not the end of an utterance in gapping).
- Each clause (syntactic IP=S) in gapping corresponds to IP.

Discussion V: effect of $\text{MaPBin}_{\text{Head}}$ elsewhere?

- Unergative subjects are most probably outside of VP (Kageyama 1993, 1996).
- So Align-XP would require a MaP boundary after the subject.
- If the sentence consists of a single subject and the verb, $\text{MaPBin}_{\text{Head}}$ would favor a big single MaP.

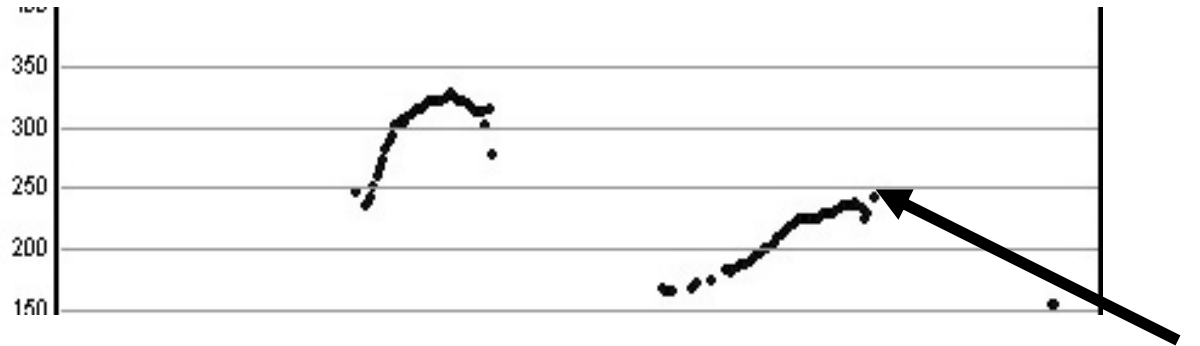
Tableau for unergative construction

| | MaPBin _{Head} | Align-XP |
|--|------------------------|----------|
| [(S-ga)(V-shita)] < > _{VP} < > | *! | |
| [(S-ga V-shita)] < > _{VP} < > | | * |

The prediction is that the H peak of the verb is downstepped with respect to the subject peak.

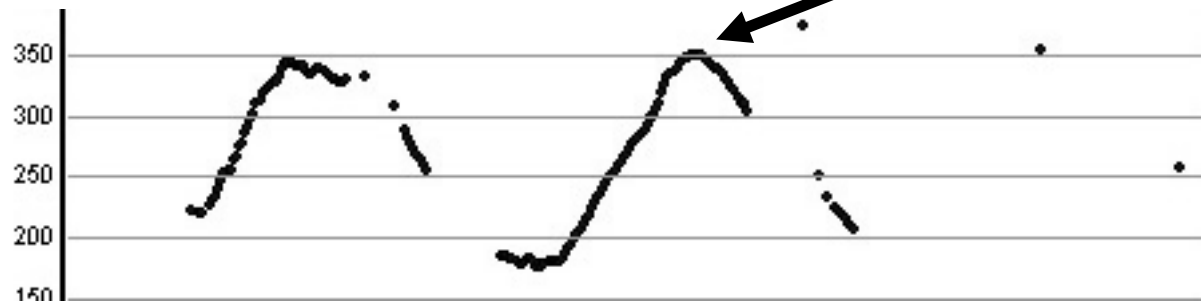
Prediction borne out

Unergative



Arimoto-ga nomiaruita
'Arimoto drank around'

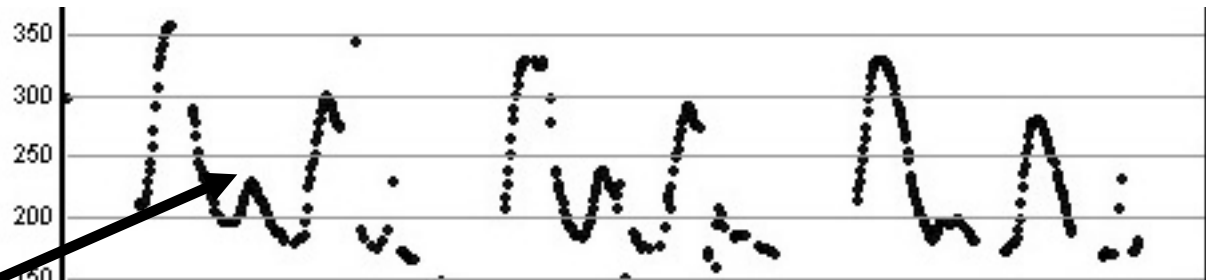
Control



Arimoto-ga nominoichi-o kaisaishita
'Arimoto held a flea market'

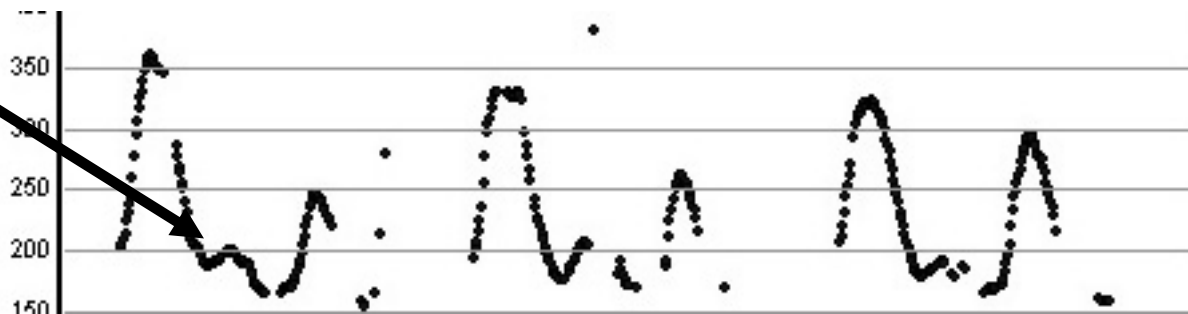
Discussion VI: Is BinMaP_{Head} inviolable?

Coordination



N-no N-wa N-o V N-no N-wa N-o V N-no N-wa N-o

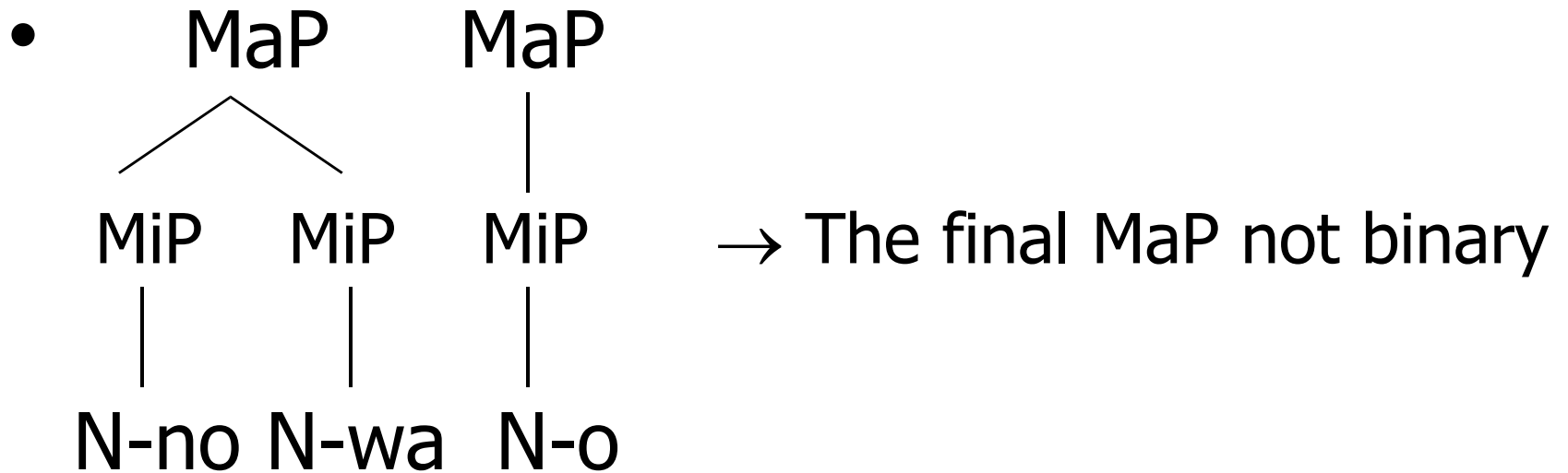
Gapping



N-no N-wa N-o N-no N-wa N-o N-no N-wa N-o V

So structure-wise...

- The second element of the long subject undergoes downstep. Thus:



Wrap-XP

- Wrap-XP (Truckenbrodt 1995) requires that a XP is wrapped within a single MaP.

| | Wrap-XP | MaPBin _{Head} |
|--|---------|------------------------|
| [(N-no) (N-wa N-o)]... XP < > < > | *! | |
| [(N-no N-wa) (N-o)]... XP < > < > | | * |

Discussion VII: OT Prosodic Phonology

- The phonology of gapping provides support for the theory of prosodic phonology that structures prosodic hierarchy from syntax and read off intonation from there (Selkirk 1986 et seq).
- If we are to read off intonation of gapping directly from syntax (Steedman 2000), you would have to say “the pitch reset is found between subj and obj, although it is not the case in gapping unless the subject or the object is long”.

Discussion VII: OT prosodic phonology II

- Violability plays a major role as well (Prince and Smolensky 1993).
- Selkirk and Tateishi's principle (Align-XP) is not an absolute principle i.e., violated in gapping construction (a la Selkirk et al 2004; Sugahara 2003).

FOCUS boost

- Each constituent in gapping stands in the FOCUS relationship.

*John-wa ringo-o, Mary-wa ringo-o tabeta.

top apple-acc top apple-acc ate

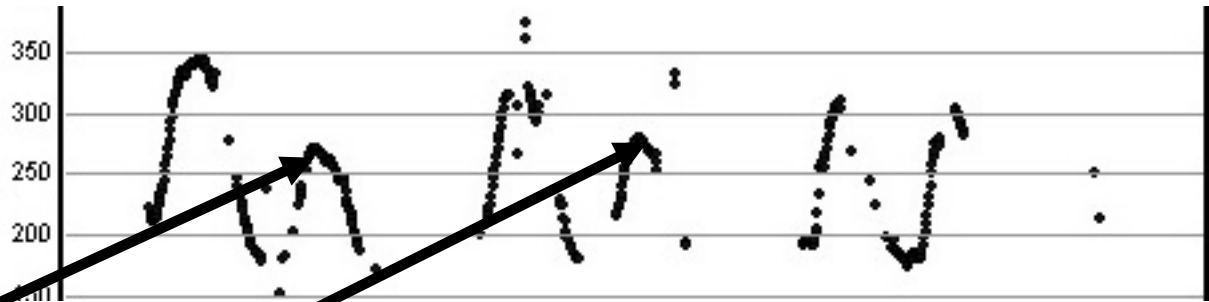
‘John ate apples, Mary apples’

- For α to be contrastive with β , $[[\alpha]]^0 \neq [[\beta]]^0$

FOCUS Boost II

- Does this affect the prosodic pattern of gapping?
 - Yes.

Proposed structure for gapping



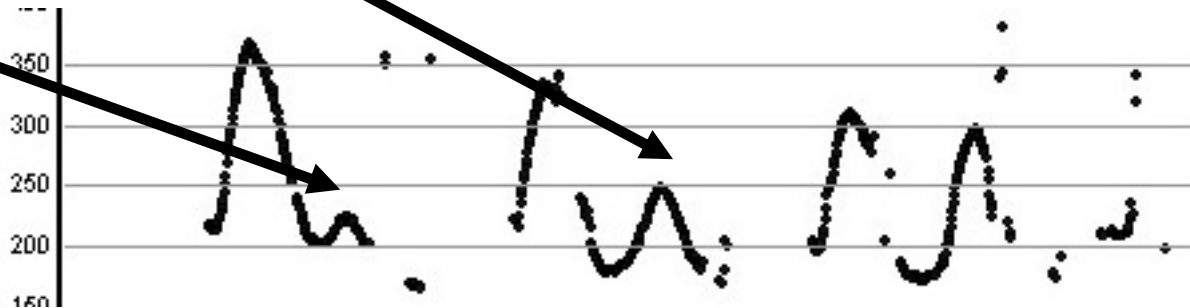
() () () ()

N-wa N-o N-wa N-o N-wa N-o V-shita

() () () ()

N-no N-ga N-no N-de N-ni N-o V-shita

Control



FOCUS boost

- Downstep in the control sentence is more extensive.
- Where does the difference come from?
- This is presumably the effect of FOCUS-boost (Ishihara 2003; Sugahara 2003) where FOCUSed elements receive extra prominence.

Remaining questions about FOCUS-boost

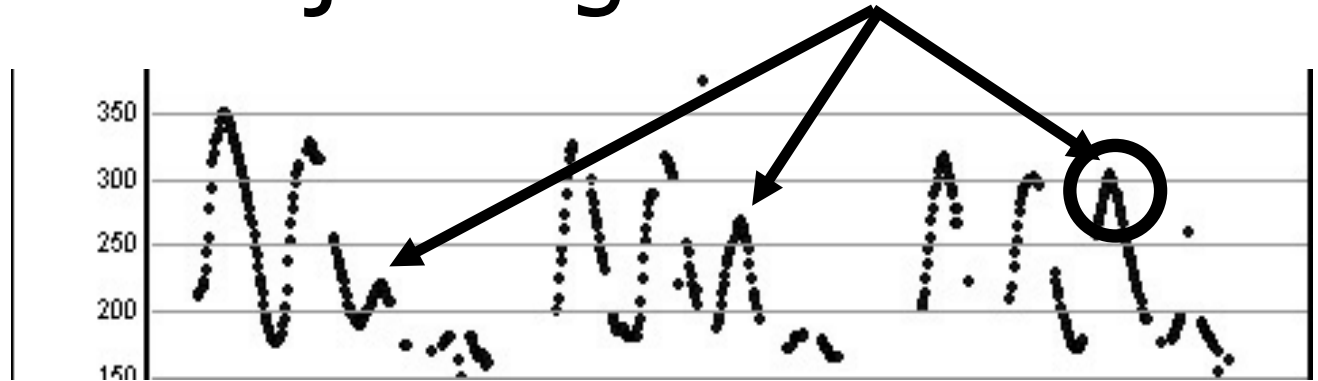
- How do we formally capture FOCUS-boost?
- It cannot be either MaP-level or IP-level prominence assuming UniqueHead.
- So what is it? Floating H?

Some remarks on P&B (1988)

- Downstep is not observed when the element following an accented word is focused, and it is due to the creation of a MaP boundary.
- However, if this were the end of the story, we would not be able to explain the difference between a coordinate structure and gapping.
- In both cases, the non-final objects receive FOCUS, and hence should create a MaP boundary to their left...but this does not explain the difference between the two constructions.

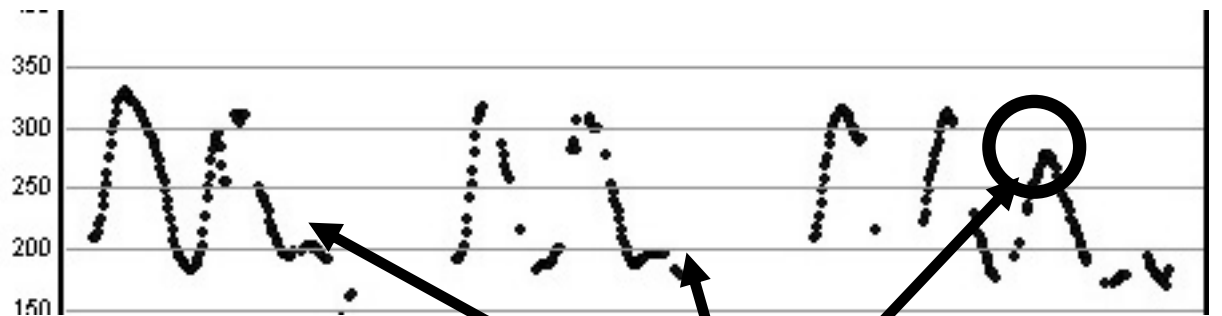
Final mystery: Gapping w/ long object again

Coordination



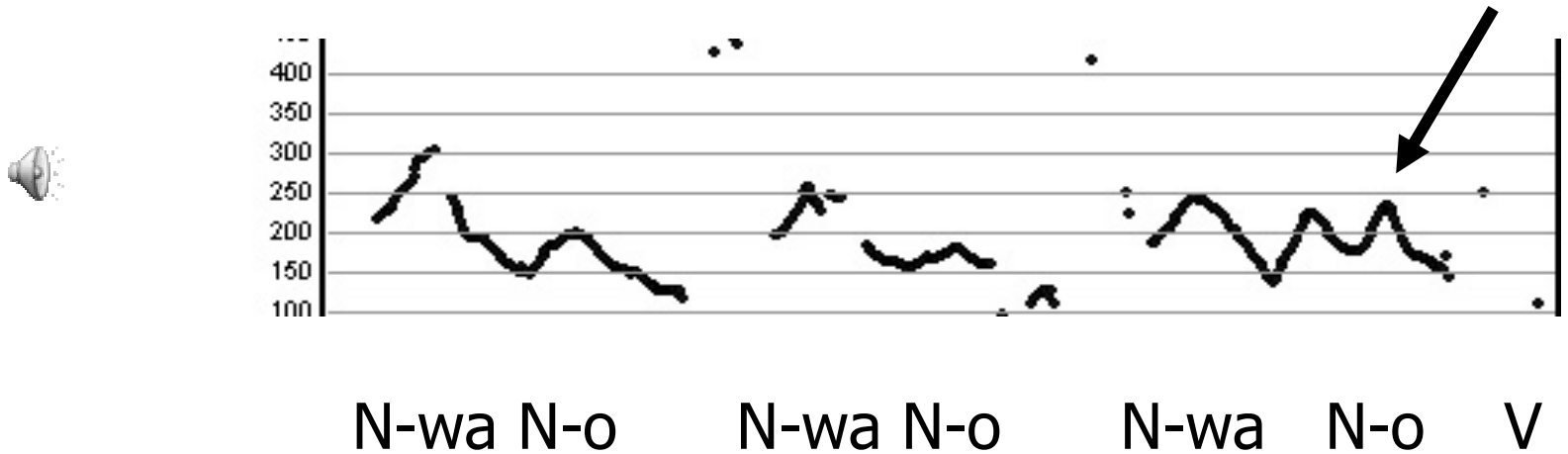
N-wa N-no N-o V-si N-wa N-no N-o V N-wa N-no N-o V-shit

Gapping



N-wa N-no N-o N-wa N-no N-o N-wa N-no N-o V-shita

Young speakers floating H



- Young (female) speakers sometimes exhibit a floating H on the final case particle.
- Maybe, this is related to the mysterious boost.

So...

- The final object head has a floating H with can dock onto the object peak or the case particle.
- Why?
- Where exactly does it occur?
- Is it related to FOCUS?

Future prospectus

- Solving the final mystery.
- More speakers and more data.
- Statistical support for the difference between gapping and coordination.