A Nanosyntactic Analysis of Causative-Inchoative Alternations in Japanese

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DM meets NANO II
(Masaryk University)

1. Introduction

1. Introduction

- The morphology of transitive-intransitive (causative-inchoative) alternating verbs in Japanese.
  - Transitivity suffixes (TS) with root-determined conditional allomorphy
- There are several Distributed Morphology (Halle and Marantz 1993, Embick and Noyer 2008, Bobaljik 2017) accounts
  - Harley (1995, 2008), Miyagawa (1998), Oseki (2017), Akimoto (2018)
- Nanosyntax (Starke 2009, Caha 2009, Baunaz and Lander 2018, De Clercq et al. 2025) is better suited for Japanese TSs than DM

Roadmap

1. Introduction

2. Causative-Inchoative Alternations
   2.1 Transitivity Suffixes in Japanese
   2.2 A Distributed Morphology Account

3. A Nanosyntactic Proposal
   3.1 The Verbal Architecture
   3.2 L-trees for Transitivity Suffixes
   3.3 Derivations (Class I-V)
   3.4 Reinterpreting the Root Sizes
   3.5 Interim Summary

4. Beyond Transitivity "Pairs": Triplets and α

5. Summary

1. Introduction

2. Causative-Inchoative Alternations

Causative-Inchoative Alternations: Morphology

- Ergative verbs (Hale and Keyser 1987)

(1) a. The window **broke**.
b. John **broke** the window.

- No morphological change between transitive and intransitive in English
- Morphological distinction of transitivity (Haspelmath 1993)

(2) *Causative (C):*

a.	**Mongolian:**	*xajl-ax*	'melt$_{\textbf{intr}}$'	→	*xajl-**uul**-ax*	'melt$_{\textbf{tr}}$'
b.	**Georgian:**	*duɣ-s*	'cook$_{\textbf{intr}}$'	→	***a**-duɣ-**ebs***	'cook$_{\textbf{tr}}$'
c.	**French:**	*fondre*	'melt$_{\textbf{intr}}$'	→	***faire** fondre*	'melt$_{\textbf{tr}}$'
d.	**Arabic:**	*darasa*	'learn'	→	*darrasa*	'teach'

(3) *Anticausative (A):*

a.	**Russian:**	*rasplavit'-**sja***	'melt$_{\textbf{intr}}$'	←	*rasplavit'*	'melt$_{\textbf{tr}}$'
b.	**Lezgian:**	*xkaž **x̌un***	'rise'	←	*xkažun*	'raise'
c.	**Hindi-Urdu:**	khol-naa	'open$_{\text{intr}}$'	←	khul-naa	'open$_{\text{tr}}$'

(4) *Equipollent (E):*

a.	**Japanese:**	atum-**aru**	'gather$_{\text{intr}}$'	↔	atum-**eru**	'gather$_{\text{tr}}$'
b.	**Hindi-Urdu:**	šuruu **honaa**	'begin$_{\text{intr}}$'	↔	šruu **karnaa**	'begin$_{\text{tr}}$'
c.	**Lithuanian:**	*lūžti*	'break$_{\textbf{intr}}$'	↔	***laužti***	'break$_{\textbf{tr}}$'

2. Causative-Inchoative Alternations

2.1. Transitivity Suffixes in Japanese

Transitivity Suffixes in Japanese

Class	Root	Inch	Caus	Gloss	Type
I	*maw*	*maw-ar*	*maw-as*	'spin/turn'	E
II	*wak*	*wak*	*wak-as*	'boil'	C
III	*tukam*	*tukam-ar*	*tukam*	'catch'	A
IV	*ak*	*ak*	*ak-e*	'open'	C
V	*war*	*war-e*	*war*	'break'	A
VI	*huy*	*huy-e*	*huy-as*	'increase'	E
VII	*hazim*	*hazim-ar*	*hazim-e*	'begin'	E

Table

- Cited from Jacobsen (1992)
- Transitivity suffixes (Root-conditined):
  - *ar*: intransitive marker
  - *as*: transitive marker
  - *e*: ambiguous

2. Causative-Inchoative Alternations

2.2. A Distributed Morphology Account

A Distributed Morphology Account

- Miyagawa's (1998) vocabulary items (VIs) for TSs.

(5)
a. *s* ↔ CAUSE / List 1_____ (Class I)
b. *as* ↔ CAUSE / List 2_____ (Class II, VI)
c. *e* ↔ CAUSE / List 3_____ (Class V, VII)
d. *Ø* ↔ CAUSE / List 4_____ (Class III, IV)

(6)
a. *r* ↔ BECOME / List 1_____ (Class I)
b. *ar* ↔ BECOME / List 5_____ (Class III, VII)
c. *e* ↔ BECOME / List 6_____ (Class IV, VI)
d. *Ø* ↔ BECOME / List 7_____ (Class II, V)

(7)
a. List 1 = { $\sqrt{\text{MAW}}$, ... }
b. List 2 = { $\sqrt{\text{WAK}}$, $\sqrt{\text{HUY}}$, ... }
c. List 3 = { $\sqrt{\text{AK}}$, $\sqrt{\text{HAZIM}}$, ... }
d. List 4 = { $\sqrt{\text{TUKAM}}$, $\sqrt{\text{WAR}}$, ... }
e. List 5 = { $\sqrt{\text{TUKAM}}$, $\sqrt{\text{HAZIM}}$, ... }
f. List 6 = { $\sqrt{\text{WAR}}$, $\sqrt{\text{HUY}}$, ... }
g. List 7 = { $\sqrt{\text{WAK}}$, $\sqrt{\text{AK}}$, ... }

A Distributed Morphology Account

- Multiple VIs for zero
  - Zero form should be default (also appears in non-ergatives)
  - Do we have to specify all the contexts?

(8)
a. Taro-ga kawa-de oyoi-da. (*Unergative*)
Taro-NOM river-LOC swim-PST
'Taro swam in the river.'
b. Taro-ni(-wa) musuko-ga i-ru. (*Unaccusative*)
Taro-DAT-TOP son-NOM be-PRS
'Taro has a son.'
c. Taro-ga Jiro-o nagut-ta. (*Transitive*)
Taro-NOM Jiro-ACC hit-PST
'Taro hit Jiro.'

- Two VIs for *e*
  - No account for why *e* is ambiguous (it can be both transitive and intransitive)

(9)
a. *e* ↔ CAUSE / List 3_____ (Class V, VII) =(5c)
b. *e* ↔ BECOME / List 6_____ (Class IV, VI) =(6c)

3. A Nanosyntactic Proposal

A Nanosyntactic Proposal

- In order to overcome the remaining issues of the DM analysis, I think that Nanosyntax (Starke 2009, Caha 2009, Baunaz and Lander 2018, De Clercq et al. 2025) is better suited to correctly capture the distribution of the TSs in Japanese.
- Based on Caha et al. (2023), I propose a nanosyntactic analysis for TSs in Japanese.

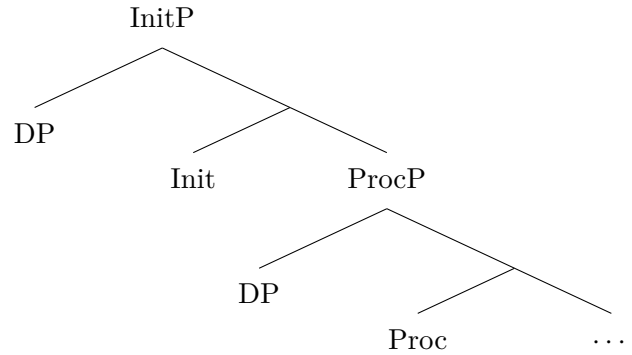
3. A Nanosyntactic Proposal

3.1. The Verbal Architecture

The First Phase Syntax (Ramchand 2008)

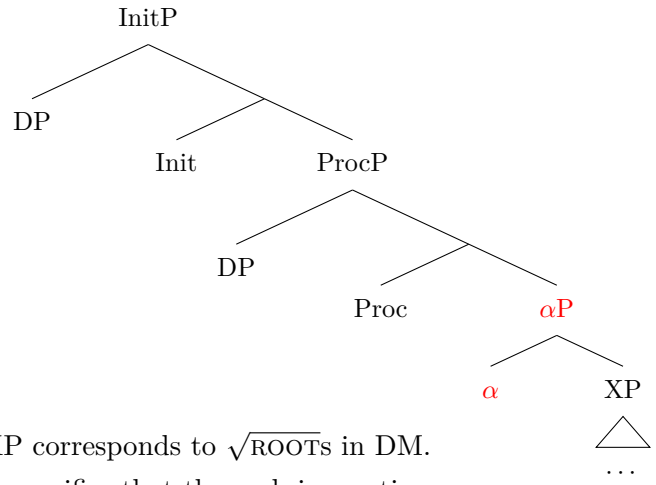
- The "first phase" syntax (Ramchand 2008)

(10)



The Verbal Architecture

(11)



- XP corresponds to $\sqrt{\text{ROOT}}$s in DM.
- α specifies that the verb is ergative.

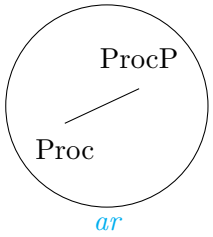
(12) Ergative verbs contain a feature α below ProcP.

3. A Nanosyntactic Proposal

3.2. L-trees for Transitivity Suffixes

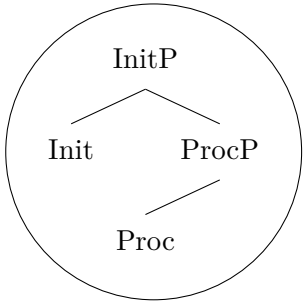
L-trees for Transitivity Suffixes

(13) a.



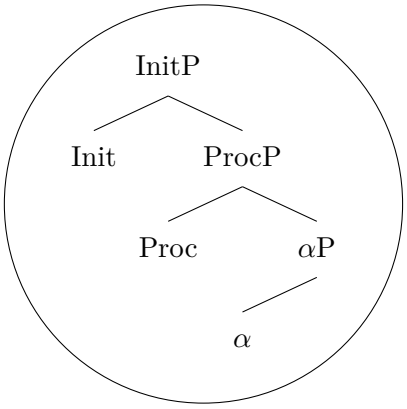
ar

b.



as

(12) c.



e

3. A Nanosyntactic Proposal

3.3. Derivations (Class I-V)

Derivations (Class I-V)

(14) *Lexicalization Algorithm (LA)* (cf. Starke 2018: 245)

a. **Merge F, and spell out FP:**
   ▶ Merge feature F and spell out

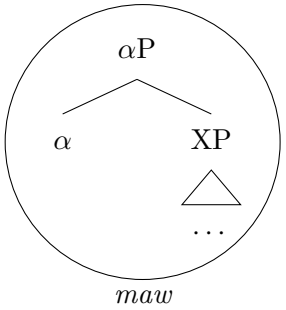
b. **Move Spec, and spell out FP:**
   ▶ If fail, try a cyclic (spec-to-spec) movement of the node inserted at the previous cycle and spell out.

c. **Move Comp, and spell out FP:**
   ▶ If fail, try a snowball movement of the complement of the newly inserted feature and spell out.

d. **Backtrack:**
   ▶ If fail, go back to the previous cycle, and try the next option for that cycle.

Class I: *maw-ar* vs. *maw-as*

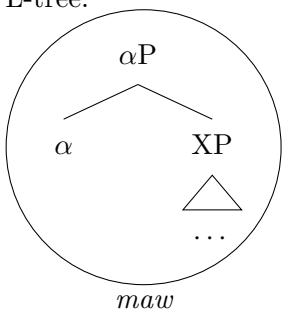
L-tree:
(15)



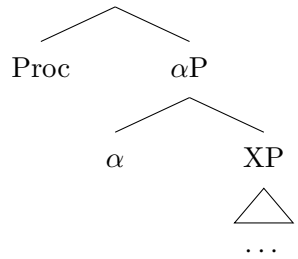
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class I: *maw-ar* vs. *maw-as*

L-tree:



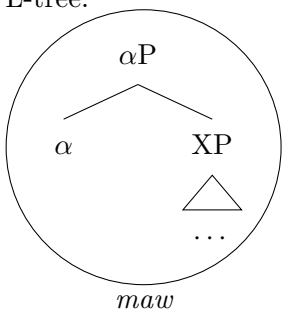
(16) a. Merge Proc



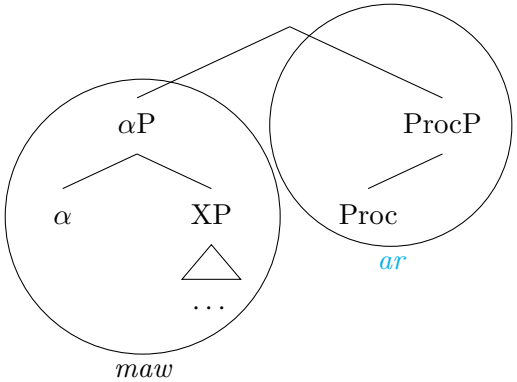
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class I: *maw-ar* vs. *maw-as*

L-tree:



(16) b. Move αP

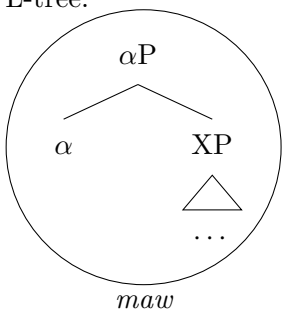


→ */mawar/*

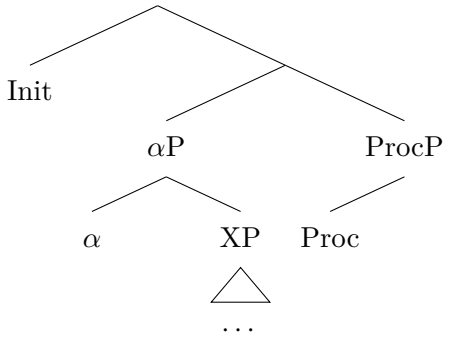
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class I: *maw-ar* vs. *maw-as*

L-tree:



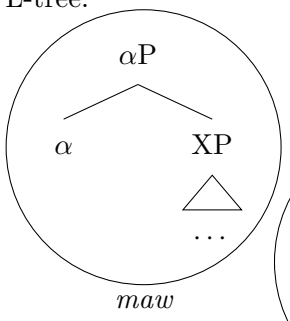
(16) c. Merge Init



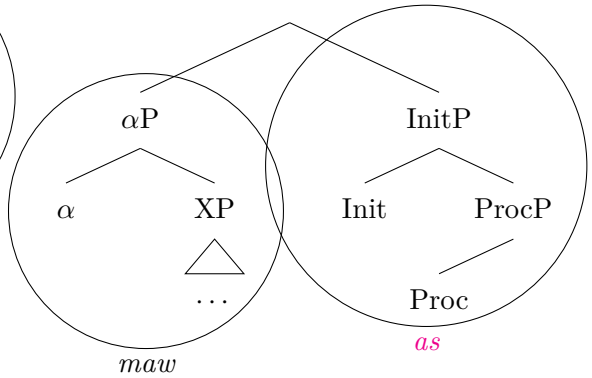
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class I: *maw-ar* vs. *maw-as*

L-tree:



(16) d. Move αP



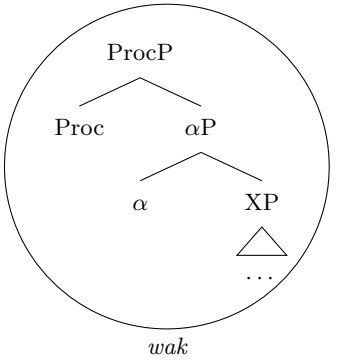
→ */mawas/*

1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class II: *wak* vs. *wak-as*

L-tree:

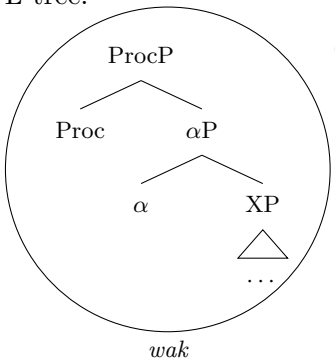
(17)



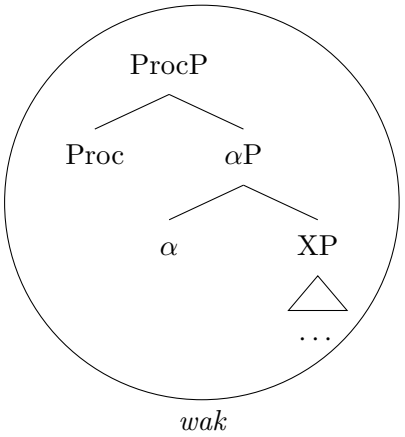
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class II: *wak* vs. *wak-as*

L-tree:



(18) a.

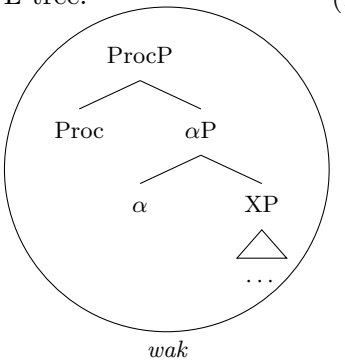


→ */wak/*

1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

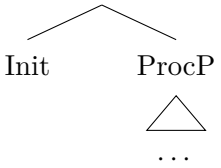
Class II: *wak* vs. *wak-as*

L-tree:



(18) b. Merge Init

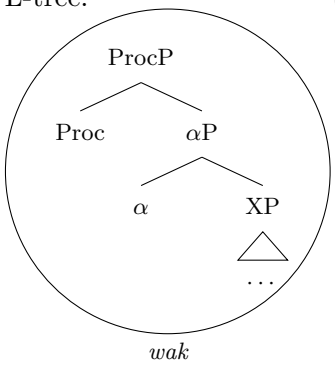
!InitP!



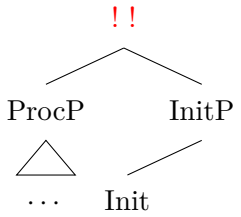
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class II: *wak* vs. *wak-as*

L-tree:



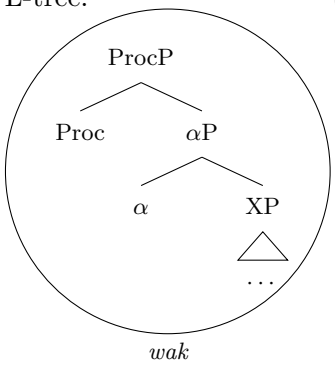
(18) c. Move ProcP



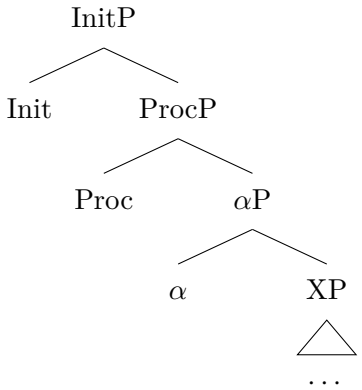
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class II: *wak* vs. *wak-as*

L-tree:



(18) d. Backtrack

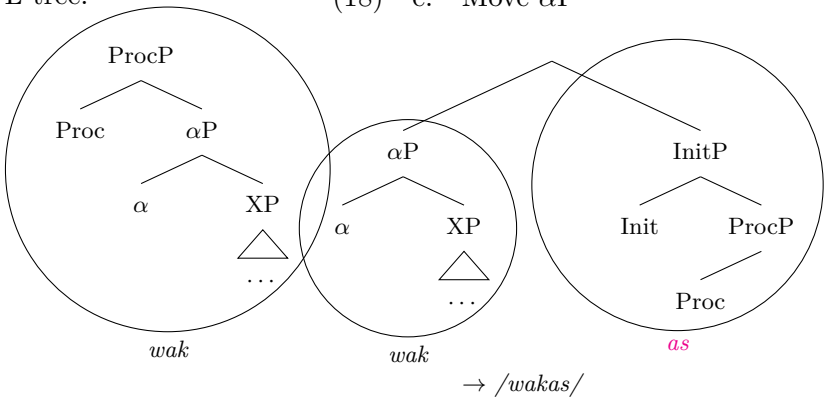


1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class II: *wak* vs. *wak-as*

L-tree:

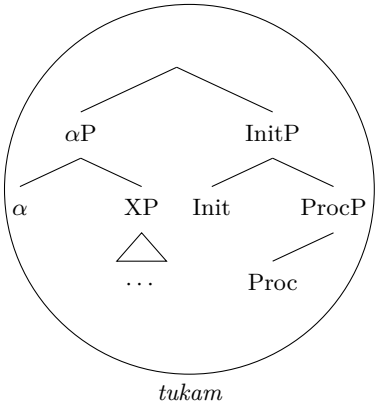
(18) e. Move αP



1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

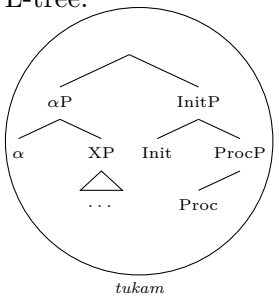
Class III: *tukam-ar* vs *tukam*

L-tree:
(19)

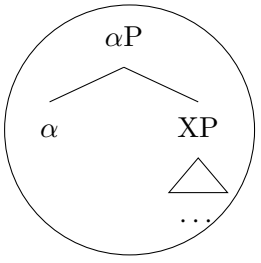


Class III: *tukam-ar* vs *tukam*

L-tree:



(20) a.

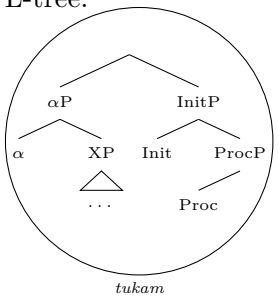


→ */tukam/*

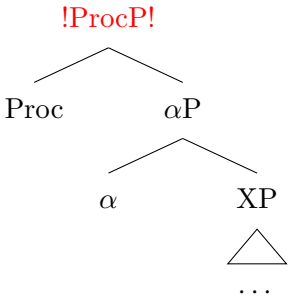
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class III: *tukam-ar* vs *tukam*

L-tree:



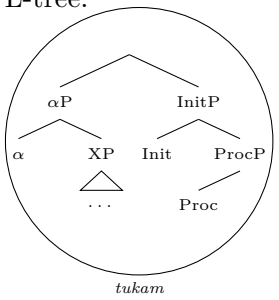
(20) b. Merge Proc



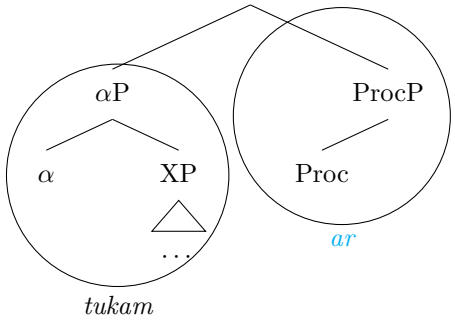
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class III: *tukam-ar* vs *tukam*

L-tree:



(20) c. Move αP

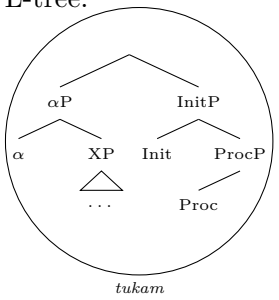


→ */tukamar/*

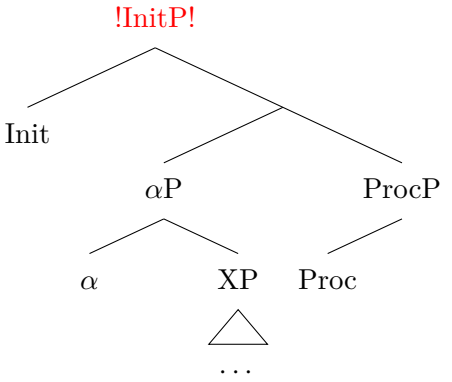
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class III: *tukam-ar* vs *tukam*

L-tree:



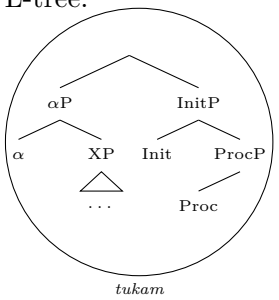
(20) d. Merge Init



1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

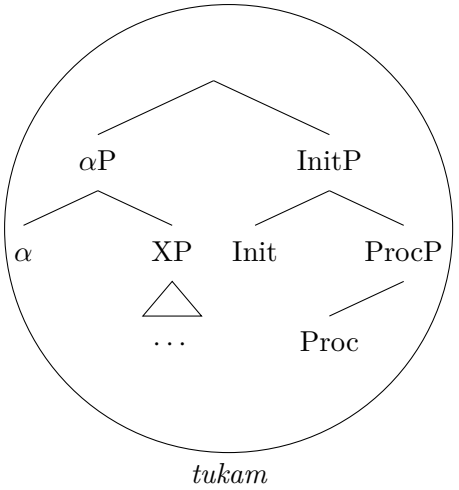
Class III: *tukam-ar* vs *tukam*

L-tree:



1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

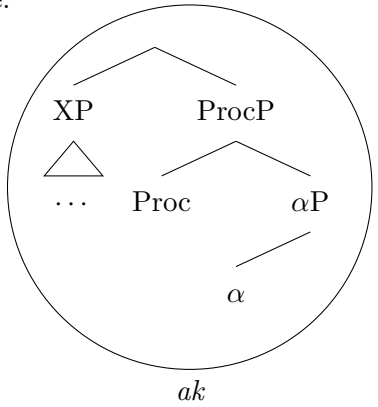
(20) e. Move αP



→ */tukam/*

Class IV: *ak* vs. *ak-e*

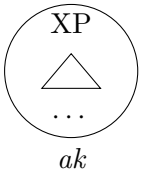
L-tree:
(21)



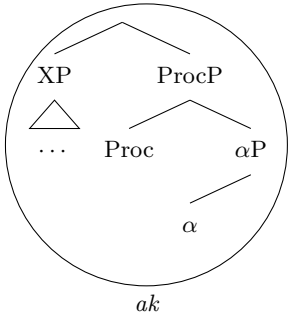
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class IV: *ak* vs. *ak-e*

(22) a.



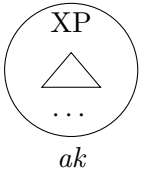
L-tree:



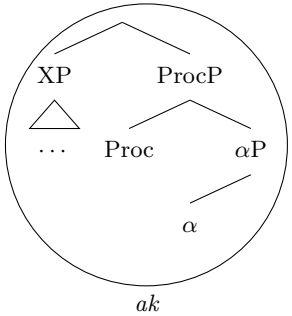
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class IV: *ak* vs. *ak-e*

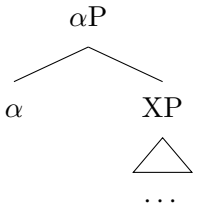
(22) a.



L-tree:



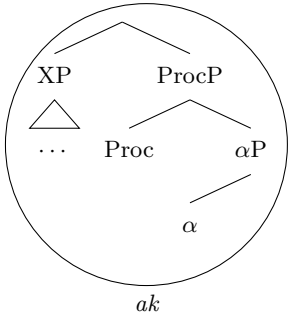
(22) b. Merge α



1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

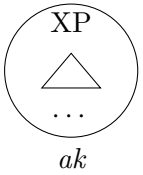
Class IV: *ak* vs. *ak-e*

L-tree:

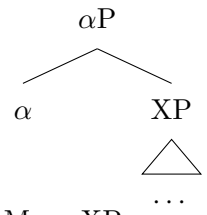


1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

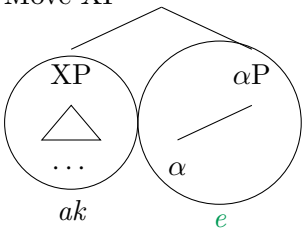
(22) a.



(22) b. Merge α

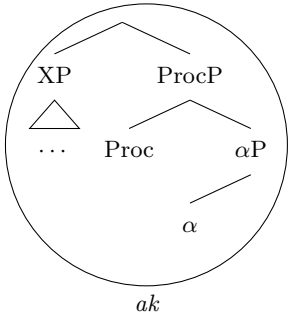


(22) c. Move XP



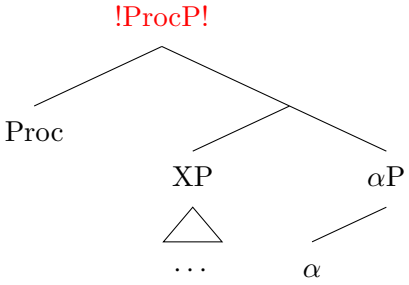
Class IV: *ak* vs. *ak-e*

L-tree:



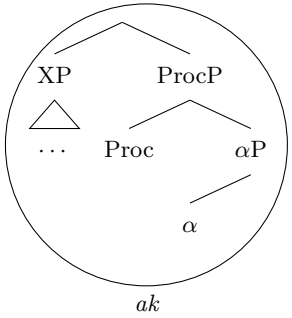
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

(22) d. Merge Proc



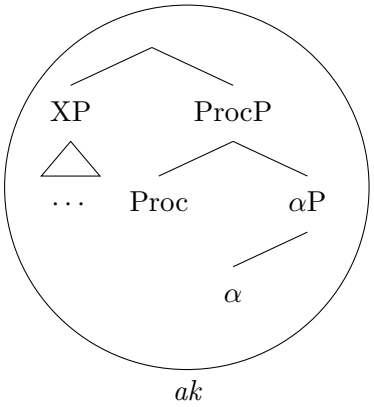
Class IV: *ak* vs. *ak-e*

L-tree:



1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

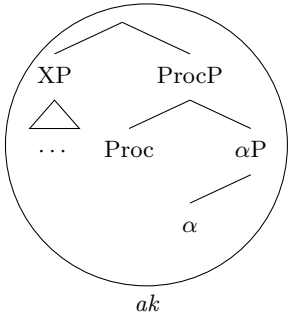
(22) e. Move XP



→ */ak/*

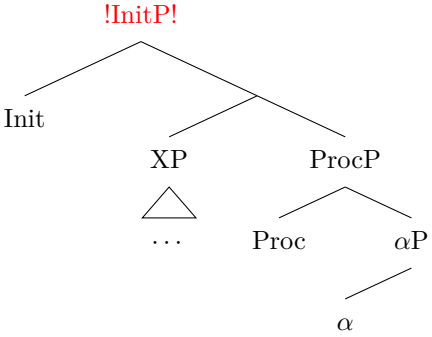
Class IV: *ak* vs. *ak-e*

L-tree:



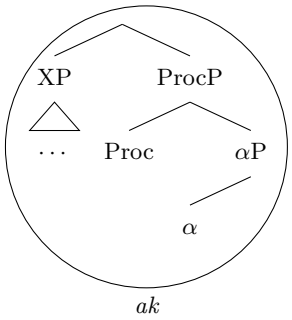
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

(22) f. Merge Init

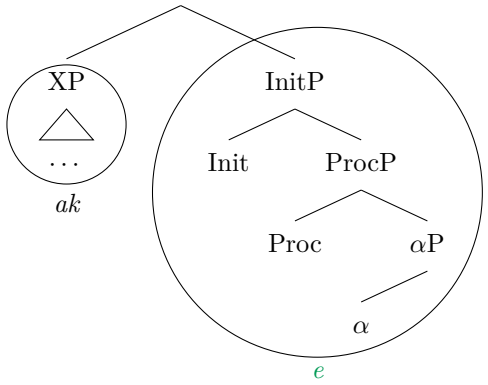


Class IV: *ak* vs. *ak-e*

L-tree:



(22) g. Move XP



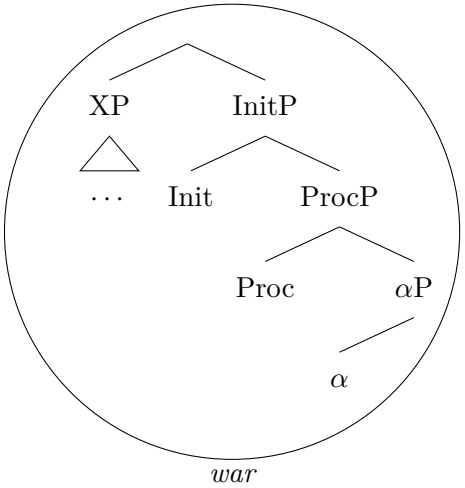
→ */ake/*

1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class V: *war* vs *war-e*

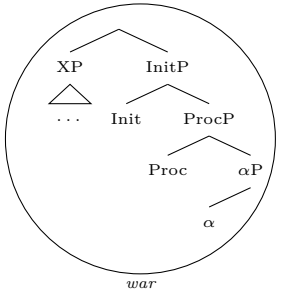
L-tree:

(23)

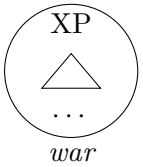


Class V: *war* vs *war-e*

L-tree:



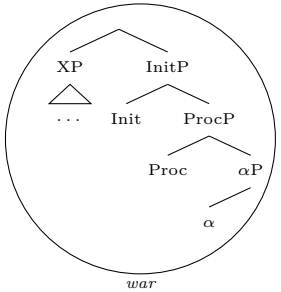
(24) a.



1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class V: *war* vs *war-e*

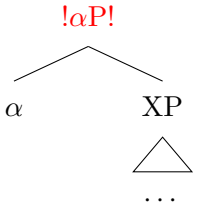
L-tree:



(24) a.



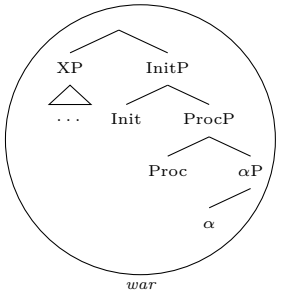
(24) b. Merge α



1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class V: *war* vs *war-e*

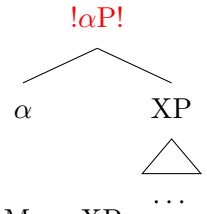
L-tree:



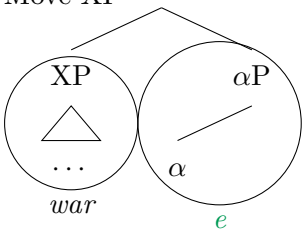
(24) a.



(24) b. Merge α



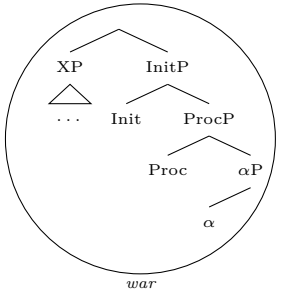
(24) c. Move XP



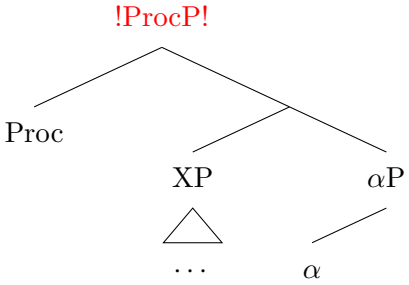
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class V: *war* vs *war-e*

L-tree:



(24) d. Merge Proc

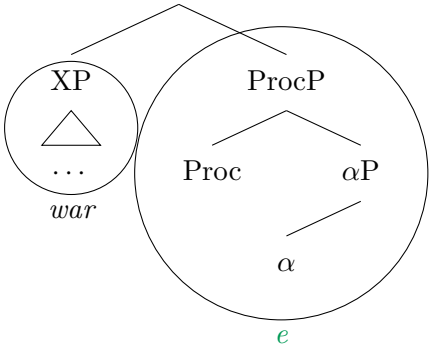


1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class V: *war* vs *war-e*

L-tree:

(24) e. Move XP

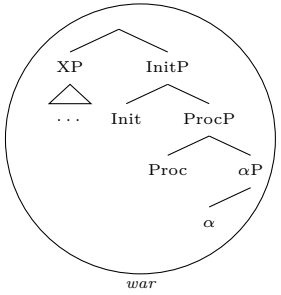


→ */ware/*

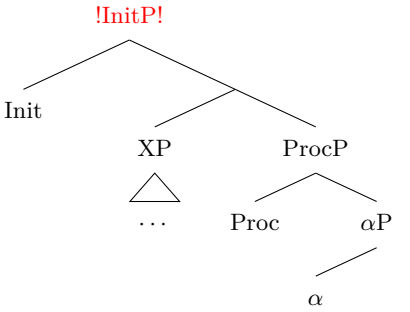
1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

Class V: *war* vs *war-e*

L-tree:



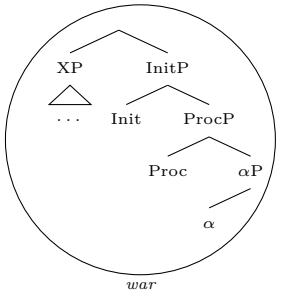
(24) e. Merge Init



1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

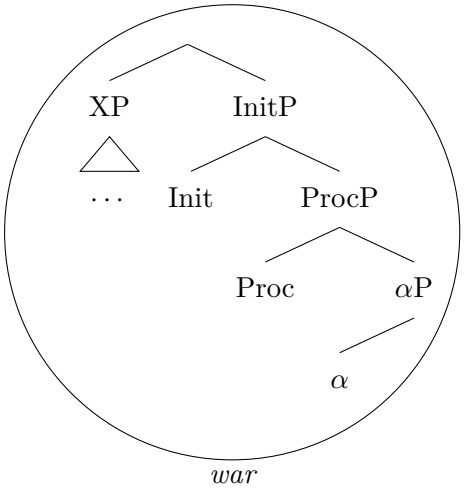
Class V: *war* vs *war-e*

L-tree:



1. Merge F
2. Move Spec
3. Move Comp
4. Backtrack

(24) e. Move XP



→ *war*

3. A Nanosyntactic Proposal

3.4. Reinterpreting the Root Sizes

Reinterpreting the Root Sizes

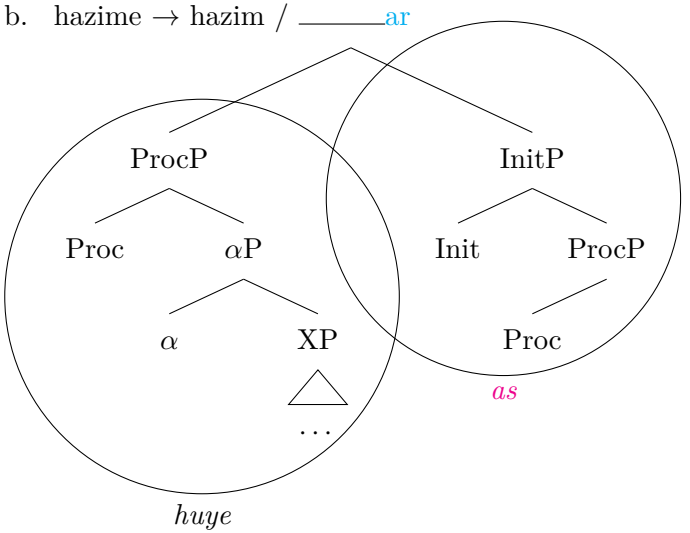
Class	Root	Inch	Caus	Gloss	Type
I	*maw*	*maw-ar*	*maw-as*	'spin/turn'	Equipollent
II	*wak*	*wak*	*wak-as*	'boil'	Causative
III	*tukam*	*tukam-ar*	*tukam*	'catch'	Anticauative
IV	*ak*	*ak*	*ak-e*	'open'	Causative
V	*war*	*war-e*	*war*	'break'	Anticausative
VI	*huy*	*huy-e*	*huy-as*	'increase'	Equipollent
VII	*hazim*	*hazim-ar*	*hazim-e*	'begin'	Equipollent

- *ar* vs. *e* (Class VI) and *e* vs. *as* (Class VII) alternations

Reinterpreting the Root Sizes

(25) a. huye → huy / _____as
b. hazime → hazim / _____ar

(26)

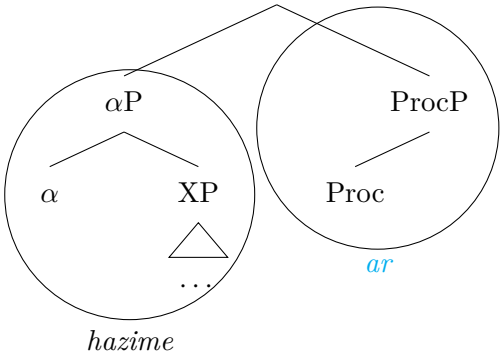


→ *huye-as* → */huyas/*

Reinterpreting the Root Sizes

(24) a. huye → huy / _____as
b. hazime → hazim / _____ar

(27)



→ *hazime-ar* → */hazimar/*

3. A Nanosyntactic Proposal

3.5. Interim Summary

Interim Summary

CLASS	TRANS	XP(=Root)	α	Proc	Init	GLOSS	TYPE
I	intr	maw		ar		spin/turn	E
	tr	maw		as			
II	intr	wak				boil	C
	tr	wak			as		
III	intr	tukam		ar		catch	A
	tr	tukam					
IV	intr	ak				open	C
	tr	ak		e			
V	intr	war		e		break	A
	tr	war					
VI	intr	huye				increase	C
	tr	huye			as		
VII	intr	hazime		ar		begin	A
	tr	hazime					

Table

4. Beyond Transitivity "Pairs": Triplets and α

Beyond Transitivity "Pairs": Triplets and α

- It is reported that transitivity alternations in Japanese are not restricted to transitivity "pairs" of transitive and intransitive, but they sometimes show transitivity "triplets" (Suga 1980) (cf. Oseki 2017).
- I suppose that one of the members of a triplet is non-ergative, which does not contain α.
- I argue that in order to account for the existence of triplets, αP in the first phase syntax is needed at least morphologically.

maw-ar vs. *maw-as* vs. *maw*

(28) Deverbal nominals

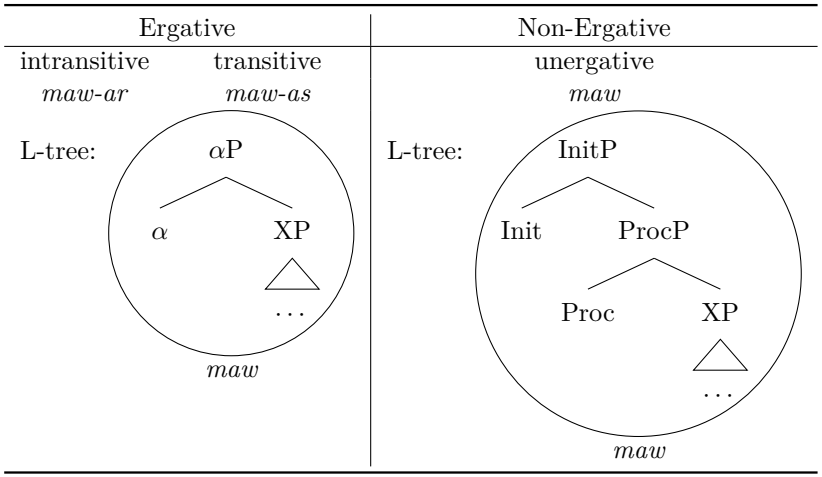
a. maw-i
$\sqrt{\text{MAW}}$-NMLZ
'dance'

b. maw-ar-i
$\sqrt{\text{MAW}}$-INTR-NMLZ
'fringe, neighborhood'

c. maw-as-i
$\sqrt{\text{MAW}}$-TR-NMLZ
'belt'

maw-ar vs. *maw-as* vs. *maw*

(29)



5. Summary

Summary

- In this talk, I proposed a nanosyntactic analysis of Japanese transitivity suffixes.
  - Table 3 shows the distribution.
- Not only eliminating the zero morphology, but the transitivity-ambiguity of the TS e is also explained.
- Furthermore, I proposed that ergative verbs contain a feature α, and the feature is needed to distinguish transitivity triplets in Japanese.

TYPE	XP(=Root)	α	Proc	Init
Anticausative	root	e		
Causative	root	e		
Equipollent	root		ar	as
Anticausative	root		ar	
Causative	root			as

Table

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Thank you for your attention.

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