Two Voices Calling Out as One: A Split Voice Analysis of Javanese Passives

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1 Overview

Surakarta Javanese (henceforth *SkJ*, Austronesian), has two non-actor voice constructions:

- *di-* construction:
  - Implicit Agent, or
  - By-Phrase (PP) Agent, any person/number, or
  - Bare DP Agent, any person/number other than 1SG and 2SG
- *tak-/kok-* construction: restricted to 1SG and 2SG Agents respectively.

In this paper, we show that *tak-/kok-* and Bare DP *di-* form a Split Object Voice, while other *di-* constructions with PP by-phrase are simple passives (1).

(1)

Agent Realization	Agent Restriction	Morphology	Syntax Proposal
Implicit Agent	—	*di*-V	simple passive [$_{vP}$ v_i VP]
by-phrase (PP)	all person/numbers		
Bare DP	all but 1sg/2sg		split object voice[1] [$_{VoiceP}$ Voice$_i$ [$_{vP}$ v_i VP]]
proclitic *tak-/kok-*	1sg/2sg	*tak-/kok*-V	

We demonstrate that SkJ's non-actor constructions display mixed A/A′ properties for Movement to Pivot[2] Position (MPP), contra Patrianto and Chen (2023)'s analysis for Surabaya Javanese.

- A Properties of MPP in Javanese non-actor voice:
  - MPP creates new binding relations, circumvents weak crossover and reconstruction effects
  - Only nominal arguments are able to serve as pivots
- A′ properties of MPP in Javanese non-actor voice:
  - Pivots must be definite, indicating topicality
  - Pivots feed A′-extraction

[1]Following Wurmbrand (2021), we define the object voice with three characteristic features: i. object is promoted, ii. subject is not demoted, iii. Agent is a true argument and obligatory.

[2]Pivots are privileged arguments realized in a specific morphological form and/or structural position, irrespective of grammatical function. This argument is very often cross-referenced by voice morphology on the verb.

2 Basics of non-actor voices in Surakarta Javanese

2.1 THE *TAK-/KOK-* CONSTRUCTION

The *tak-/kok*-construction is restricted to first and second person singular Agents, and is formed via the proclitics *tak-* (1SG) and *kok-* (2SG) — (2)

(2) Surat-é { tak / kok }-tulis.
letter-DEF { 1SG.CL / 2SG.CL }-write
'The letter was written by {me / you.SG}.'

The *tak-/kok*-construction is incompatible with Agent-denoting bare DPs or by-phrases (3).

(3) * Surat-é { tak / kok }-tulis (dening) { aku / kowe }.
letter-DEF { 1SG.CL / 2SG.CL }-write by { 1SG / 2SG }

2.2 THE *DI-* CONSTRUCTION WITH OVERT AGENTS

In *di*-constructions, Agent may be realized as by-phrase headed by *dening* — any person/number features are possible (4).[3]

(4) Surat-é di-tulis dening { Surti / aku / kowe / aku saklorong }.
letter-DEF NAV-write by { Surti / 1SG / 2SG / 1 two }
'The letter was written by { Surti / me / you$_{SG}$ / us two}.'

Agents may be realized as bare DPs, only if Agent is not 1SG and 2SG (5).

(5) Surat-é di-tulis { Surti / aku saklorong / *aku / *kowe }.
letter-DEF NAV-write { Surti / 1 two / 1SG / 2SG }
'The letter was written by {Surti / us two / *me / *you$_{SG}$}.'

Bare DP can otherwise be a pronoun, such as a 3SG pronoun (6).

(6) Surat-é di-tulis dheweke .
letter-DEF NAV-write 3SG
'The letter was written by {him/her'}.

Bare DP Agents in *di*-constructions are not a case of Preposition dropping(see Appendix A).

- Preposition dropping is generally prohibited.
- Flexible word order is available for by-phrases, but not bare DP Agents of *di*-constructions.
- By-phrase Agents can undergo wh-extraction; bare DP Agents of *di*-constructions cannot.

[3]While she indicated that the *di-* passive with a by-phrase is compatible with 1SG/2SG Agents, especially in story/written contexts, my informant also pointed it out that she has a preference using tak-/kok- construction.

2.3 The *di-* Passive with Implicit Agents

When no bare DP or by-phrase is present, *di*-passive construction contains implicit Agent, which can bind into adjuncts (7).

(7) Surat-é di-tulis kanggo PRO ngundang tamu.
letter-DEF NAV-write in.order.to PRO ACT.invite guest
'The letter was written (by x) in order (for x) to invite a guest.'

Implicit Agent can be bound by higher quantifiers (8), being treated like a pronoun — impossible in English without an overt by-phrase.

(8) Ora ana sing ngaku [nèk surat-é wis di-tulis].
NEG there.is REL ACT.admit [COMP letter-DEF PFV NAV-write]
'No one$_i$ admits that the letter was written (by them$_i$).'

Implicit Agents cannot refer to contextually salient individuals (9), suggesting they are not dropped pronouns.

(9) surat-é di-tulis. dheweke têka ana péstané
letter-DEF PASS-write 3-DEF come LOC party-DEF
'The letter was written (by x). {*x / he (some contextually relevant individual)} came to the party.'

2.4 Local summary

- **A complementary distribution** is observed between the bare DP *di-* configuration, which is compatible to all but 1SG/2SG Agents, and the *tak-/kok-* construction, which is strictly confined to 1SG/2SG Agents.
- **A syntactic distinction** is implied between the bare DP and the by-phrase *di-* constructions.
- **The pronominal nature of implicit Agents** is found in their availability to be bound by higher quantifiers.
- **A syntax-morphology mismatch** is yielded in (10):

(10)

Agent Realization	Agent Restriction	Morphology	Syntax
Implicit Agent	—	*di*-V	simple passive [$_{vP}$ v_i VP]
by-phrase (PP)	all person/numbers		
Bare DP	all but 1sg/2sg		split object voice [$_{\text{VoiceP}}$ Voice$_i$ [$_{vP}$ v_i VP]]
proclitic *tak-/kok-*	1sg/2sg	*tak-/kok*-V	

3 Resolving the Syntax-Morphology Mismatch

3.1 Distinguishing the two *di-* Constructions

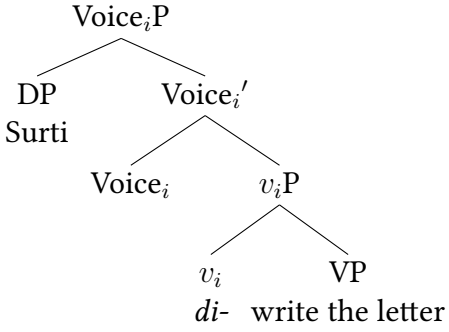
A decomposed voice domain contains a three-layered verb phrase structure (Harley 2013):

- **lexical VP**: introduces selected internal argument
- **mandatory verbalizing vP**: only semantically refers to a pronominal Agent
- **optional functional projection VoiceP**: overt Agents are syntactically introduced

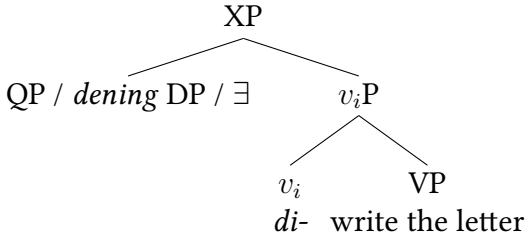
The syntactic division of the two subtypes of *di*-configurations (i.e., the bare DP *di-* passive and the by-phrase *di-* passive) arises from the optional projection of Voice.

- DP Agent: VoiceP projects above vP, needs saturation (11a).
- Implicit/PP Agent: no VoiceP is projected, no position for a bare DP to fill (11b).

(11) a. **Bare DP (not 1SG/2SG)**



b. **Implicit Agent/By-Phrase**



3.2 Deriving Complementary Distribution

We assume the following span-based spell out rules:

(12) Three spell-out rules

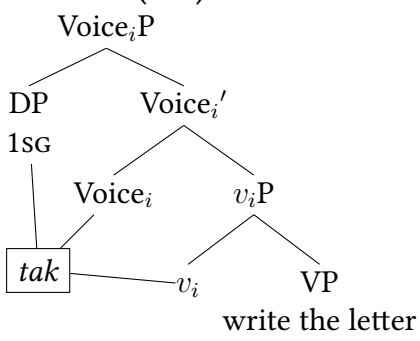
a. $< v_{non-actor} > \rightarrow$ /di-/

b. $< v_{non-actor}$, Voice, 1SG $> \rightarrow$ /tak-/

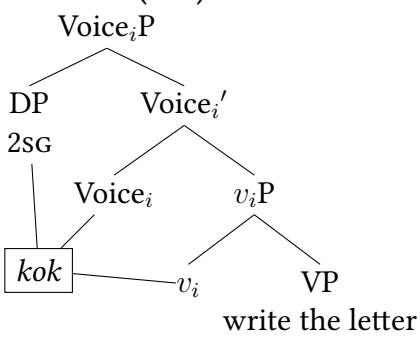
c. $< v_{non-actor}$, Voice, 2SG $> \rightarrow$ /kok-/

The *tak-/kok-* configurations are underlyingly instances of bare DP passives (13).

(13) i. **Proclitic (1SG)**



ii. **Proclitic (2SG)**



- Span formation: *tak-/kok-* are spans which respectively contains a first or second singular DP and v and Voice heads.[4]
- Allomorph competition: When the sufficient features required for *tak-/kok-* constructions are present (v, Voice, and 1SG/2SG DP), competition between the *di-* and *tak-/kok-* spellouts favor the more specific *tak-/kok-*.
- The resulting complementary distribution: The necessity of span formation for *tak-/kok-* results in the complementary distribution between *tak-/kok-* and *di-*constructions with bare DP Agents.

3.3 Local summary

Split 1 — Syntax:

- The Passive involves no position for DP Agent $[_{vP}\ v\ \text{VP}\ ]$
- The Split Object Voice involves Position for DP Agent $[_{\text{VoiceP}}\ \text{DP Voice}\ [_{vP}\ v\ \text{VP}\ ]]$

Split 2 — Morphology :

- Both Passive and Object Voice share v_i, spelled out as *di-*
- *tak-/kok-* is a spellout of v_i, Voice$_i$ and certain person features.

For syntactic-semantic derivation for these structures, including derivation of pronominal nature of implicit Agent, see Appendix B.

4 Movement to Pivot Position and A′ extraction in SkJ

MPP in Surakarta Javanese Non-Active Voice has the following properties, which includes both A and A′ properties. Today we will discuss four of them.

	Properties		A	A′	Discussion
Movement	Forms new antecedents for anaphor binding		✓	*	Section 4.1
	No weak crossover		✓	*	Appendix D.1
	No reconstruction		✓	*	Appendix D.2
Pivot	Pivot restricted to DP		✓	*	Appendix D.3
	Pivot Must be Definite		*	✓	Appendix D.4
	Pivot is Targeted by A′-extraction	— Relativization	*	✓	Section 4.2
		— Topic	*	✓	Appendix D.5
		— Wh-Movement	*	✓	Appendix D.6

[4]This goes against the requirement that spans only consist of heads, and not specifiers (Svenonius 2012), one may instead posit that the pronoun undergoes agreement with some functional head such as Voice — the functional head gains the relevant features to spell out a given span, and the pronoun undergoes chain reduction, similar to how Holmberg et al. (2009) and Rabinovitch (2022) derive null subjects in partial null subject languages.

4.1 A Property: MPP Forms New Antecedents for Binding

In actor voice, Agents asymmetrically c-command themes and so themes are unable to bind anaphora in Agent position (14).

(14) * Dhèwèké dhèwèk ngamplêng Surti. [Actor Voice]
herself AV-punch Surti
Intended: 'Herself$_{*i}$ punched Surti$_i$.'

In non-actor voices, the theme moves into pivot position. If MPP were purely A′ we would expect that the pivot position cannot form a new antecedent, and so the theme should still be unable to bind the Agent.

However, pivot themes can bind the Agent, both when the Agent is a bare DP (15a) or a by-phrase (15b).

(15) a. Surti di-kamplêng dhèwèké dhèwèk. [Object Voice]
Surti NAV-punch herself
'Surti$_i$ was punched by herself$_i$.'

b. Surti di-kamplêng dening dhèwèké dhèwèk. [Passive Voice]
Surti NAV-punch by herself
'Surti$_i$ was punched by herself$_i$.'

4.2 A′ Property: Pivots are Targeted for Relativization

Non-pivot arguments cannot be extracted from their base positions.

- In order for theme arguments to undergo movement to the left periphery of a clause, the clause must have object or passive voice to promote the theme.
- This process leads to a surface extraction restriction, characterized by voice morphology that cross-references the argument undergoing A′-extraction.

Agents can be relativized from within Actor Voice clauses, where they are the pivot (16a), but not from within Object Voice clauses, where they are not (16b)

(16) a. Surti wêruh asu-né [$_{AV}$ sing ___ mangan pisa-né]. [Actor Voice]
Surti see dog-DEF REL AV.eat pizza-DEF
'Surti saw the dog that ate the pizza.'

b.* Surti wêruh asu-né [$_{OV}$ sing pisa-né di-pangań ___]. [Object Voice]
Surti see dog-DEF REL pizza-DEF NAV-eat
Intended: 'Surti saw the dog that ate the pizza.'

Themes cannot be relativized from within Actor Voice clauses (17a), where they are not pivots, but can from within Object (17b) and Passive (17c) Voice clauses, where they are pivots.

(17) a.* Surti wêruh pisa-né [$_{AV}$ sing asu-né mangan ___]
Surti see pizza-DEF REL dog-DEF AV.eat

[Actor Voice]

Intended: 'Surti saw the pizza that the dog ate.'

b. Surti wêruh pisa-né [$_{OV}$ sing ___ di-pangań asu-né]. [Object Voice]
Surti see pizza-DEF REL NAV-eat dog-DEF
'Surti saw the pizza that was eaten by the dog.'

c. Surti wêruh pisa-né [$_{PV}$ sing ___] di-pangań dening asu-né]. [Pass. Voice]
Surti see pizza-DEF REL NAV-eat by dog-DEF
'Surti saw the pizza that was eaten by the dog.'

This pattern matches that of a 'dependent' probe pattern (Van Urk 2015; Lohninger et al. 2022), see Appendix E.

5 An Account of Mixed A/A′ Movement

We follow the featural view of the A/A′-distinction (Van Urk 2015).

- A-movement is motivated by a pure ϕ probe — attracts the closest element with ϕ features.
- A′-movement is triggered by a probe that carries pure A′ features (e.g., [+TOP], [+WH]).
- Movement which has mixed properties are caused by a composite probe, which seeks a goal that carries both A and A′ features.

We propose that in SkJ, C and T heads are bundled together as CT (see also Martinović 2015, 2017; Erlewine 2018, 2020).

- CT hosts A features of T, and A′ features of C; Spec,CTP is pivot position.
- SkJ CT inherits case-licensing property from T, assigns case to Spec,CTP.
- SkJ CT inherits A′ features which probe for definite DPs, deriving definiteness restriction on pivots.

We model Actor Voice as involving an agentive verbalizing head v_{Agentive}, which provides an open argument for an agent without the need for Voice.

- v_{Agentive} is spelled out as initial nasalization on verb /N/-.
- Actor voice does not involve a Voice projection at all — only Object Voice does.

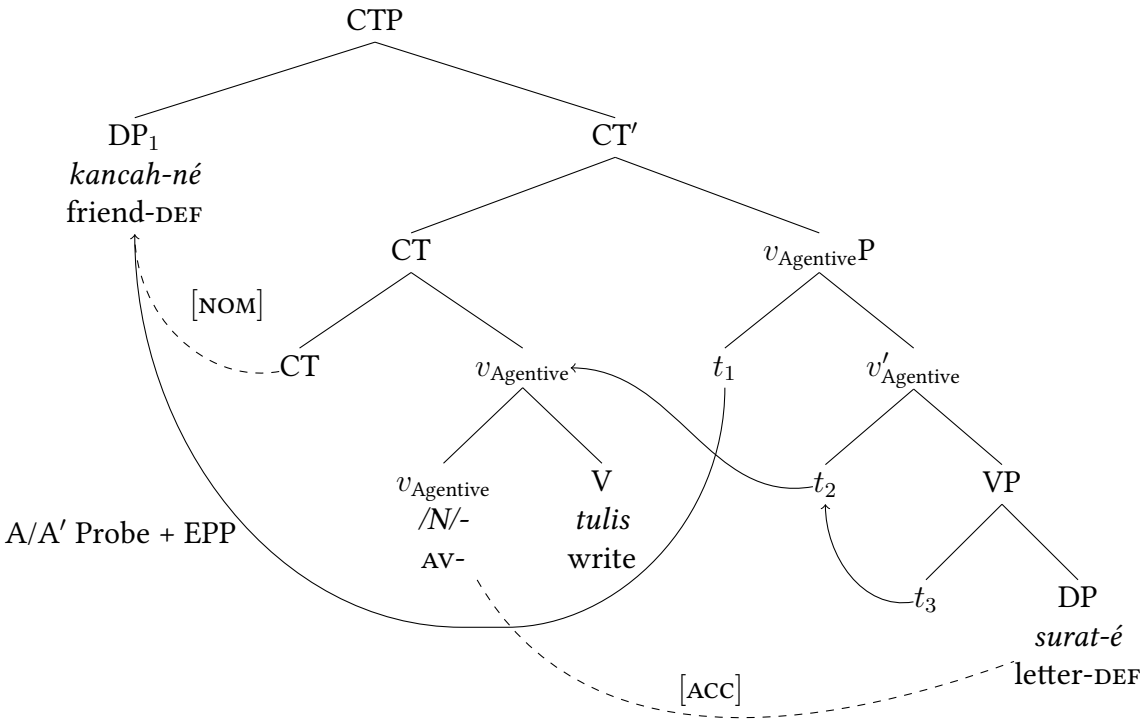
We propose that SkJ exhibits split case alignment, involving two different CT-heads:

- CT$_{fin1}$ licenses [NOM] case and selects vP — v_{Agentive} licenses [ACC]
  - Actor and Passive Voice (other *di*-constructions) involve NOM-ACC alignment.
- CT$_{fin2}$ licenses [ABS] and selects VoiceP — Voice$_i$ licenses [ERG]
  - Object Voice (bare DP *di*- and *tak/kok*-constructions) involve ERG-ABS alignment.

5.1 Deriving Actor Voice

Underlying Structure: [$_{\text{CTP}}$	CT_{fin1}	[$_{v\text{P}}$	v_{Agentive}	[VP]]]]
Spellout:			*n-*	
EPP:	[D∗]		—	
Case:	[NOM]		[ACC]	
Probe:	[ϕ : __, A′]			

(18) Kancah-né n-ulis surat-é. [Actor Voice]
friend-DEF AV-write letter-DEF
'The friend wrote the letter'



Agentive v_{Agentive} licenses accusative case and provides an open argument without use of Voice projection.[5]

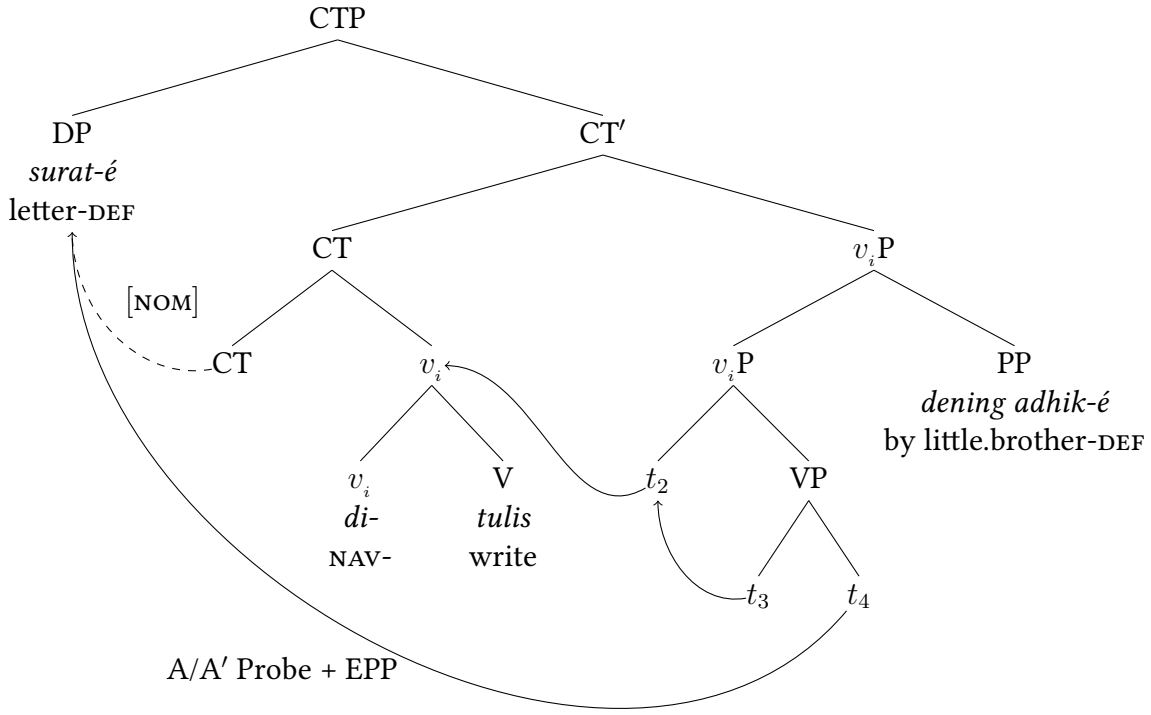
- CT_{fin1} selects for vP, regardless of features
- Agent argument moves due to EPP D* feature on CT
- Agent gets nominative case in Spec,CTP
- Theme gets accusative case in situ

[5]See Appendix C for the semantics involved.

5.2 Deriving Passive Voice

Underlying Structure:	$[_{\text{CTP}}$	CT_{fin1}	$[_{v\text{P}}$	v_i	[VP]]]]
Spellout:				*di-*	
EPP:		[D∗]		—	
Case:		[NOM]			
Probe:		$[\phi$: __, A′]			

(19) surat-é di-tulis dening adhik-é. [Passive Voice]
letter-DEF NAV-write by little.brother-DEF
'The letter was written by the little brother.'



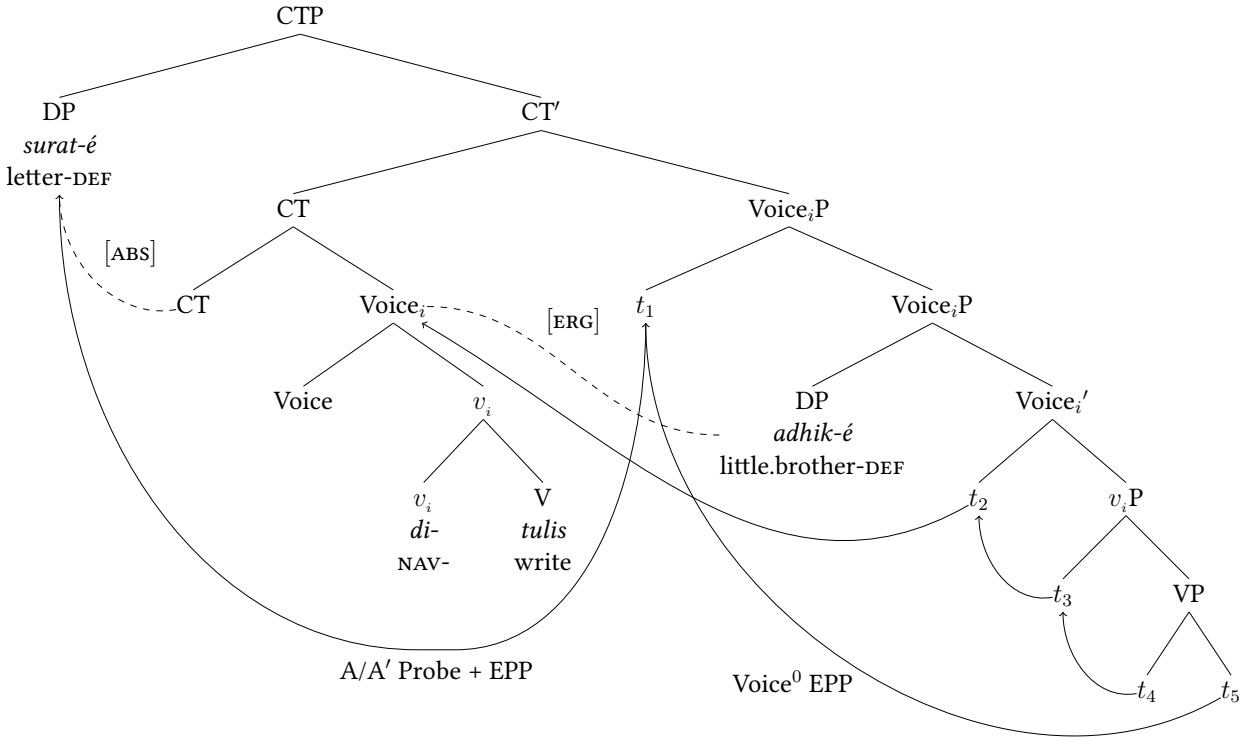
Non-Agentive (indexed) v_i does not license case and does not have a D* feature to induce EPP movement.

- CT_{fin1} selects for vP, regardless of features
- Non-Agentive vPs are weak phases (Chomsky and Kenstowicz 1999; Aldridge 2004; **?**); CT can probe and find the theme argument.
- Theme argument moves due to EPP D* feature on CT
- Theme gets nominative case in Spec,CTP

5.3 Deriving Object Voice

Underlying Structure:	$[_{\text{CTP}}$	CT_{fin2}	$[_{\text{VoiceP}}$	Voice_i	$[_{v\text{P}}$ v_i	[VP]]]]
Spellout:					*di/tak/kok-*	
EPP:		[D∗]		[D∗]	—	
Case:		[ABS]		[ERG]		
Probe:		$[\phi : \_\_, \text{A}']$				

(20) surat-é di-tulis adhik-é. [Object Voice]
letter-DEF NAV-write little.brother-DEF
'The letter was written by the little brother.'



Indexed Voice licenses ergative case on nearest DP (Agent).

- CT_{fin2} selects for VoiceP and licenses absolutive, rather than nominative, case
- VoiceP is a strong phase; CT can only probe to Spec,VoiceP
- Theme argument moves due to EPP D* feature on Voice, then undergoes movement to Spec,CTP
- Theme gets absolutive case in Spec,CTP, matching alignment with the ergative Agent.
- Ergative vs. Nominative alignment is simply the direct result of the presence/absence of the additional VoiceP projection above the vP layer.

5.4 Summary

		OV	PV	AV
Split Voice		[$_{\text{VoiceP}}$ Voice$_{\text{i}}$ [$_{v\text{P}}$ v_{i} VP]]	[$_{v\text{P}}$ v_{i} VP]	[$_{v\text{P}}$ v_{Agentive} VP]
Split case	Case alignment	ERG/ABS	NOM/ACC	NOM/ACC
	Licensing heads	v_{NAV}: [−] $voice^0$: [D*], [ABS]	v_{NAV}: [−] no $voice^0$	v_{a}: [ACC] no $voice^0$
		CT$_{fin2}$: [D*], [A, A′] [ABS]	CT$_{fin1}$: [D*], [A, A′] [NOM]	CT$_{fin1}$: [D*], [A, A′] [NOM]
	Target of A′-extraction	[ABS] Theme	[NOM] Theme	[NOM] Agent

Head Name	Licenses...	Selects for...
CT$_{fin2}$	[ABS]	VoiceP
CT$_{fin1}$	[NOM]	vP
Voice$_i$	[ERG]	vP
v_{Agentive}	[ACC]	VP
v_i	—	VP

6 Implications

6.1 Split Ergativity in Surakarta Javanese

- Object voice demonstrates ergative alignment: Object voice demonstrates ergative alignment: the Voice head with the [EPP] feature (i.e., [D*]) probes into its c-command domain and find the closest DP, extracting it to the specifier position (one layer above the bare DP Agent) and licensing [ABS]. The bare DP Agents which are base generated at Spec,Voice gets an inherent [ERG]. The CT probe with [D*] further extracts the [ABS] argument to its specifier.
- Both passive and actor voices show nominative case alignment. In actor voice, v licenses [ACC] to the thematic object while the caseless Agent gets extracted by the CT probe and gets the [NOM] at its specifier position.
- Split case alignment is fed by the split voice proposal. The ergative vs. nominative alignment is simply the direct result of the presence/absence of the additional VoiceP projection above the vP layer.
- Extraction restriction on A′-construction can be simply understood as A′-extraction targeting on argument with an unmarked case (i.e., [ABS] or [NOM]), or as a restriction on moving DPs within VoiceP after CT has been adjoined (DPs no longer available for successive cyclic movement).

6.2 A Decomposition of the Voice Domain

Proposals on the structure of the voice domain

- A single projection that both verbalizes and introduces the external argument (Chomsky 1995; Harley 1995; Coon and Preminger 2011)
- A split projection with the external-argument introducing projection VoiceP being distinct from the verbalizing head vP (Pylkkänen 2002, 2008; Harley 2013)
- Voice-bundling parameter (Pylkkänen 2002, 2008; Harley 2017): Voice-bundling languages unify the functions of Voice and v in a single projection whereas non-Voice-bundling distribute these functions to separate v and Voice projections.

Surakarta Javanese as a non-Voice-bundling language

- A decomposed three-layered verb phrase structure
  - a lexical VP, which introduces selected internal argument
  - a mandatory verbalizing head v, which only semantically refers an external argument
  - an optional functional projection VoiceP, where an overt external argument is syntactically introduced
- Supporting evidence from Javanese non-actor Voices
  - The coexistence of the split object Voice and the simple passive
  - The pronominal nature of the implicit Agent

7 Conclusion

Javanese has three voice constructions: Actor, Passive, and a split Object voice.

- Passive and Object voice both involve promotion of the patient.
- Only object voice promotes the patient *and* has the Agent expressed as an argument.
- Morphological distinction between *tak/kok-* and *di*-passive is caused by morphological exponence, where *tak/kok-* is a span (causing complementary distribution of the two).

How is the syntactic voice domain structured?

- A two-layered verb phrase structure with v and voice bundled together is not adequate to account for the Javanese passive data.
- Instead, Surakarta Javanese requires a three-layered voice splitting structure.
- Object voice is built on the passive, including Voice$_i$ head, which provides an open argument for the DP Agent to saturate

How does the Voice system derive MPP?

- Merged CT heads select for either VoiceP or vP complements, conditioned by the case feature it carries.
- CTs which select for VoiceP complements license ABS case, Voice$_i$ licenses ERG case
  - Object Voice is ERG-ABS
- CTs which select for vP complements license NOM case, v_{Agentive} licenses ACC case

- Active Voice is NOM-ACC with both cases licensed
- Passive Voice is NOM-ACC, but only NOM case is licensed.

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For the complete handout, with appendices, scan the following QR code:

A Optional Preposition Dropping in *di-* construction?

Preposition dropping is generally prohibited in Surakarta Javanese.

(21) a. Obligatory prepositions
Surti ng-irim-i surat *(nèng) Tono.
Surti ACT-send-I letter to Tono
'Surti sent a letter to Tono.'

b. Word order changes when the preposition is absent
Surti ng-irim-i Tono surat.
Surti ACT-send-I Tono letter.
'Surti sent Tono a letter.'

Further evidence shows that the *di-* construction with by-phrase do not pattern with the *di-* construction with bare DP.

- Flexible word order is only available for by-phrase construction (22a) but not bare DP construction (22b).

(22) a. di-tulis surat-é dening Esti.
NAV-write letter-DEF by Esti
'The letter was written by Esti'

b. *di-tulis surat-é Esti.
NAV-write letter-DEF Esti
'The letter was written by Esti'

- Adverbial Insertion is only licensed with a by-phrase passive (23a), but not with bare DP or proclitic construction (23b–23c) based on diagnostics in Nurhayani (2014).

(23) a. Surat-é di-tulis (cêpêt-cêpêt) dening Surti .
letter-DEF NAV-write quickly by Surti
'The letter was (quickly) written by Surti .'

b. Surat-é di-tulis (*cêpêt-cêpêt) Surti .
letter-DEF NAV-write quickly Surti
'The letter was (*quickly) written by Surti.'

c. Surat-é { tak / kok }-(*cêpêt-cêpêt)-tulis.
letter-DEF { 1SG.CL / 2SG.CL }-quickly-write
'The letter was (*quickly) written by {me / you.SG}.'

- Wh-extraction is only allowed for a by-phrase passive (24a) but not a bare DP passive (24b), based on diagnostics in Nurhayani (2014).

(24) a. i. suraté di-tulis dening Surti.
letter-DEF NAV-write by Surti
'The letter was written by Surti'

ii. dening sapa suraté ditulis?
by who letter-DEF NAV-write
'Who wrote the letter?'

iii. suraté ditulis dening sapa?
letter-DEF NAV-write by who
'Who wrote the letter?'

b. i. suraté di-tulis Surti.
letter-DEF NAV-write Surti
'The letter was written by Surti'

ii.* sapa sing di-tulis suraté
who REL NAV-write letter-DEF
'Who wrote the letter?'

iii. suraté ditulis sapa?
letter-DEF NAV-write who
'Who wrote the letter?'

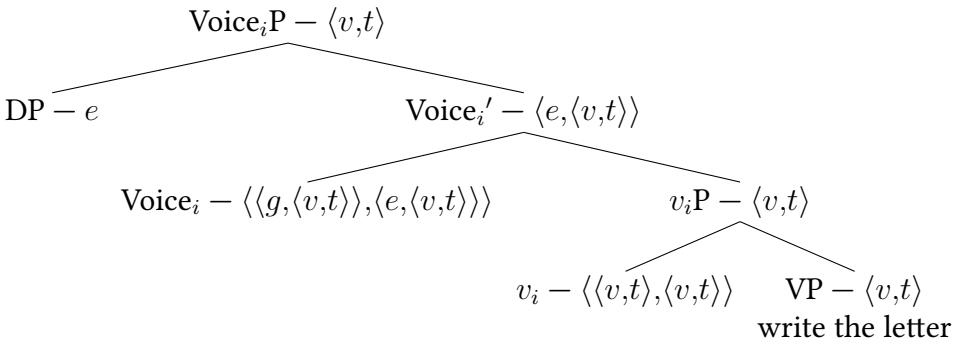
B The Semantic Composition of Non-actor Voices

- We want a semantic account which can compositionally match the syntax we have laid out, as well as explain:
  - The ability for implicit Agents to be bound by higher quantifiers
  - S-selection of by-phrase vs. DP for the two syntactic structures
- We do this by assuming that both simple passive and split object voice involve indexed versions of v/Voice (Privoznov 2022).
  - Indexed v_i functions to provide an indexed Agent i through reference to the assignment function.
    $[\![v_i]\!]^{w,g} = \lambda f_{\langle v,t\rangle}\lambda e_v.f(e) \wedge \textsc{ag}(e) = g(i)$
  - Indexed Voice$_i$ functions to abstract over assignment functions and relates an open entity argument with the entity value of the assignment function at i
    $[\![\text{Voice}_i]\!]^{w,g} = \lambda F_{\langle g,\langle v,t\rangle\rangle}\lambda x_e\lambda e_v.F(g[x/i],e)$
  - We assume a version of intensional function application which can abstract over assignment functions (25)

(25) Intensional Function Application with Assignment Functions
For a node α with daughters β and γ, where i. the domain of β is the set of objects of type $\langle g,a\rangle$, where g is the type of assignment functions and a is any type, and ii. γ is of type a, then:
$[\![\alpha]\!]^{w,g} = [\![\beta]\!]^{w,g}(\lambda g'_g.[\![\gamma]\!]^{w,g'})$

B.1 Deriving Split Object Voice

(26)



a. $[\![\text{write the letter}]\!]^{w,g} = \lambda e_v.\text{write}(e) \wedge \textsc{th}(e) = \text{the-letter}$

b. $[\![v_i\text{P}]\!]^{w,g} = [\lambda f_{\langle v,t\rangle}\lambda e_v.f(e) \wedge \textsc{ag}(e) = g(i)]([\![\text{write the letter}]\!]^{w,g})$
$= \lambda e_v.\text{write}(e) \wedge \textsc{th}(e) = \text{the-letter} \wedge \textsc{ag}(e) = g(i)$

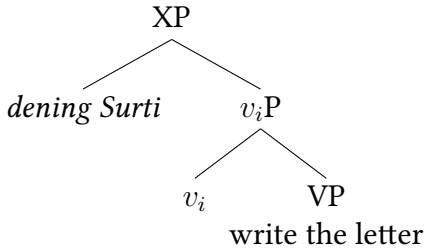
c. $[\![\text{Voice}_i']\!]^{w,g} = [\lambda F_{\langle g,\langle v,t\rangle\rangle}\lambda x_e\lambda e_v.F(g[x/i],e)](\lambda g'_g.[\![v_i\text{P}]\!]^{w,g'})$
$= \lambda x_e\lambda e_v.[\lambda g'_g\lambda e'_v.\text{write}(e') \wedge \textsc{th}(e') = \text{the-letter} \wedge \textsc{ag}(e') = g'(i)](g[x/i],e)$
$= \lambda x_e\lambda e_v.\text{write}(e) \wedge \textsc{th}(e) = \text{the-letter} \wedge \textsc{ag}(e) = g[x/i](i)$
$= \lambda x_e\lambda e_v.\text{write}(e) \wedge \textsc{th}(e) = \text{the-letter} \wedge \textsc{ag}(e) = x$

d. $[\![\text{Voice}_i\text{P}]\!]^{w,g} = \lambda e_v.\text{write}(e) \wedge \textsc{th}(e) = \text{the-letter} \wedge \textsc{ag}(e) = \text{DP}$

B.2 Deriving Simple Passives with Implicit/By-Phrase Agents

- simple passives lack a Voice projection, and so the indexed Agent is not 'opened up' to be saturated overtly.
- For Privoznov (2019, 2022), such referents undergo existential quantification at the root.
- By-Phrases and contextually relevant individuals may contextually bind the implicit Agent.

(27)



$[\![\text{XP}]\!]^{w,g} = \lambda e_v.\text{write}(e) \wedge \textsc{th}(e) = \text{the-letter} \wedge \textsc{ag}(e) = g(i) \wedge g(i) = \text{Surti}$

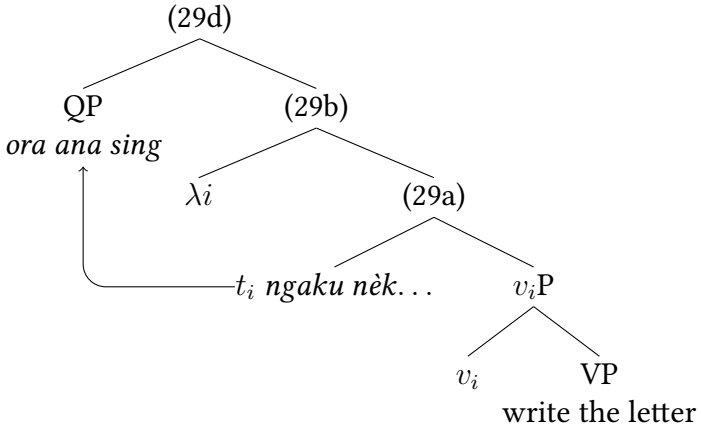
B.3 Deriving Simple Passives with Quantificationally Bound Implicit Agents

- When the implicit Agent is quantificationally bound, syntactic binding occurs, where the sister of the quantificational element undergoes predicate abstraction.
- Modelled with the index provided by v_i being identical to the index assigned to the trace of the QP in its base position

– When the QP moves, a lambda is inserted in the syntax, which abstracts over both the trace of the QP and the implicit Agent provided by v_i

(28) [Ora ana sing]$_i$ λi t_i ngaku [nèk surat-é wis di$_i$-tulis].
[NEG there.is REL]$_i$ λi t_i ACT.admit [COMP letter-DEF PFV PASS$_i$-write]
'No one$_i$ admits that the letter was written by them$_i$.'

(29)



a. $[\![(29a)]\!]^{w,g} = \exists e_v[\text{admit}(e) \wedge \text{AG}(e) = g(i) \wedge \exists e'_v[\text{TH}(e) = e' \wedge \text{write}(e') \wedge \text{TH}(e') = \text{the-letter} \wedge \text{AG}(e') = g(i)]]$
b. $[\![(29b)]\!]^{w,g} = \lambda x_e.\exists e_v[\text{admit}(e) \wedge \text{AG}(e) = x \wedge \exists e'_v[\text{TH}(e) = e' \wedge \text{write}(e') \wedge \text{TH}(e') = \text{the-letter} \wedge \text{AG}(e') = x]]$
c. $[\![\text{QP}]\!]^{w,g} = \lambda P_{\langle e,t\rangle}.\neg\exists x_e[P(e)]$
d. $[\![(29d)]\!]^{w,g} = \neg\exists x_e[\exists e_v[\text{admit}(e) \wedge \text{AG}(e) = x \wedge \exists e'_v[\text{TH}(e) = e' \wedge \text{write}(e') \wedge \text{TH}(e') = \text{the-letter} \wedge \text{AG}(e') = x]]]$

B.4 Local summary

<table>
<tr><th>Subject</th><th>Voice Type</th><th>v^0</th><th>Voice^0</th><th colspan="4">Agent</th><th>ex.</th></tr>
<tr><td rowspan="4">Patient</td><td rowspan="3">Passive</td><td rowspan="3">Indexed
i</td><td rowspan="3">—</td><td>PP</td><td>Adjunct</td><td>contextual binds arg</td><td>4</td></tr>
<tr><td colspan="2" rowspan="2">Implicit</td><td>quantified at root</td><td>7</td></tr>
<tr><td>syntactically bound</td><td>8</td></tr>
<tr><td>Object</td><td>Indexed
i</td><td>Indexed
$i \mapsto \lambda x$</td><td>DP</td><td rowspan="2">Spec,VoiceP</td><td rowspan="2">saturates open arg</td><td>5</td></tr>
<tr><td></td><td></td><td>procl.</td><td>??</td></tr>
</table>

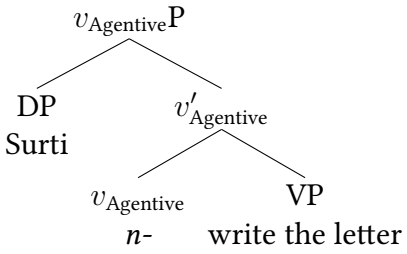
C Modelling Actor Voice

- Actor voice, marked by the prefix *n-* requires an overt DP Agent and involves no promotion of the object.

- We take promotion of object in passive/object voice to occur because of the lack of the available external argument for movement
  - Simple Passive: Agent is either not expressed or expressed as adjunct — unavailable for movement to Subject position
  - Split Object Voice: Agent is generated in Spec of indexed Voice$_i$P — wrong feature matching for movement to Subject position (potentially A′ features in Subject position, see Patrianto and Chen 2023) or otherwise 'transparent' to probes which enforce movement to subject
- Actor voice (active) lacks such feature specification on the specifier. We take it to be introduced in Spec,vP projected by a non-indexed, Agentive v.
- Non-indexed, Agentive v is pronounced *n-*

(30) Surti nulis suraté .
Surti ACT.write letter-DEF
'Surti wrote the letter.'

(31)



a. $[\![v_{\text{Agentive}}]\!]^{w,g} = \lambda f_{\langle v,t\rangle}\lambda x_e\lambda e_v.f(e) \wedge \text{AG}(e) = x$
b. $[\![v'_{\text{Agentive}}]\!]^{w,g} = \lambda x_e\lambda e_v.\text{write}(e) \wedge \text{TH}(e) = \text{the-letter} \wedge \text{AG}(e) = x$
c. $[\![v_{\text{Agentive}}\text{P}]\!]^{w,g} = \lambda e_v.\text{write}(e) \wedge \text{TH}(e) = \text{the-letter} \wedge \text{AG}(e) = \text{Surti}$

D More Data on A/A′ Properties

D.1 A Property: MPP does not Induce Weak Crossover Effects

No weak-crossover effects

- Quantifier binding
  Overt movement of the internal argument across external argument does not obey weak crossover effects in non-actor voices (32a,32b), exhibiting traits of A-movement. The quantificational phrase (QP) that moves to the pivot position binds the bare DP Agent in (32a) and the by-phrase Agent in (32b).

(32) a. Sabên bocah lanang di-rangkul kanca-né dhèwèké. [Object Voice]
every child male NAV-hug friend-DEF 3SG
'Every$_i$ boy was hugged by his friend$_{i/j}$.'
b. Sabên bocah lanang di-rangkul dening kanca-né dhèwèké.
every child male NAV-hug by friend-DEF 3SG

[Patient Voice]

'Every$_i$ boy was hugged by his friend$_{i/j}$.'

D.2 A Property: MPP does not Allow for Reconstruction

No reconstruction effects

- Quantifier binding
  We observe no reconstruction effects in (33a,33b) given that only disjoint interpretation is available and the bound reading is disallowed.

(33) a. Kanca-né dhèwèké di-rangkul sabên bocah lanang. [Object Voice]
friend-DEF 3SG NAV-hug every child male
'His$_{*i/j}$ friend was hugged by every boy$_i$.'

b. Kanca-né dhèwèké di-rangkul dening sabên bocah lanang. [Patient Voice]
friend-DEF 3SG NAV-hug by every child male
'His$_{*i/j}$ friend was hugged by every boy$_i$.'

- Reflexive binding Similarly, it is not possible to have the anaphoric reflexives in pivot positions reconstructed at their base positions. No bound readings are available, resulting in the ungrammaticality of 34a and 34b.

(34) a. *Dhèwèké dhèwèk di-kamplêng Surti. [Object Voice]
3sg alone NAV-punch Surti
Intended: 'Herself$_{*i}$ was punched by Surti$_i$.'

b. *Dhèwèké dhèwèk di-kamplêng dening Surti. [Patient Voice]
3SG alone NAV-punch by Surti
Intended: 'Herself$_{*i}$ was punched by Surti$_i$.'

D.3 A Property: Pivot is Restricted to being a DP

Patrianto and Chen (2023) note that in Surabaya Javanese (SbJ), preposition phrases are eligible as pivots, suggesting that the position involves a pure A′ dependency. We are unable to replicate such data in SkJ. Take (35).

(35) Pirang-pirang kembang arêp tak/kok/di-tandur nang kebun
several-RED flower FUT 1/2SG/NAV-plant in garden
'Several flowers will be planted by me/you/them in the garden.'

The prepositional phrase *nang kebun* can move to the left of the sentence, but only as a hanging topic. When the PP moves to the left, the theme must still pivotize, to be left of tense (36),

(36) [Nang kebun]$_{HT}$, [pirang-pirang kembang] arêp tak/kok/di-tandur
in garden several-RED flower FUT 1/2SG/NAV-plant
'In the garden, several flowers will be planted by me/you/them.'

Changing the order — such that the theme becomes hanging topic and the PP becomes the pivot — is disallowed (37).

(37) * [Pirang-pirang kembang]$_{HT}$ [nang kebun] arêp tak/kok/di-tandur
several-RED flower in garden FUT 1/2SG/NAV-plant
Intended: 'Several flowers, in the garden, will be planted by me/you/them.'

D.4 A′ Property: Pivot must be Definite

Definiteness restriction applies only to pivots (i.e., the preverbal element) and pertains to all three voices in SkJ, indicating the topic nature of pivots which is a prevalent feature of many Austronesian languages.

(38) Kancah*(-né) nulis surat(-é). [Actor Voice]
friend-DEF AV.write surat(-DEF)
'{*A/The} friend wrote {a/the} letter.'

(39) surat*(-é) di-tulis adhik(-é). [Object Voice]
letter-DEF NAV-write little.brother(-DEF)
'{*A/The} letter was written by {a/the} little brother.'

(40) surat*(-é) di-tulis dening adhik(-é). [Passive Voice]
letter-DEF NAV-write by little.brother(-DEF)
'{*A/The letter} was written by {a/the} little brother.'

D.5 A′ Property: Pivots are Targeted for Topic-Movement

- Background sentence

(41) a. Tono ngamplêng Surti ana ndalan.
Tono AV.punch Surti PREP road
'Tono punched Surti on the road.'

- Extracting Agents

(42) a. Tono [$_{AV}$ sing ___ ngamplêng Surti.]
Tono SING AV.punch Surti
'Tono is the person who punched Surti.'

b. [$_{AV}$ sing ___ ngamplêng Surti] Tono
SING Surti NAV-punch Tono
'Tono is the person who punched Surti.'

c.* Tono [$_{OV}$ sing Surti di-kamplêng ___.]
Tono SING Surti NAV-punch
Intended: 'Tono is the person who punched Surti.'

- Extracting themes

(43) a. Surti [$_{OV}$ sing ___ di-kamplêng Tono]?
Surti SING NAV-punch Tono
'Surti is the person who was punched by Tono.'

b. Surti [$_{PV}$ sing ___ di-kamplêng dening Tono]?
Surti SING NAV-punch by Tono
'Surti is the person who was punched by Tono.'

c. *Surti [$_{AV}$ Tono ngamplêng ___]
Surti Tono AV.punch
Intended: ' Surti is the person who Tono punched.'

- Extracting non-arguments: PP as a hanging topic but not pivot

(44) a. ana ndalan [$_{AV}$ Tono ngamplêng Surti].
PREP road Tono AV-punch Surti
'On the road, Tono punched Surti.'

b. ana ndalan [$_{OV}$ Surti di-kamplêng Tono].
PREP road Surti NAV-punch Tono
'On the road, Surti was punched by Tono.'

c. ana ndalan [$_{OV}$ Surti di-kamplêng dening Tono].
PREP road Surti NAV-punch by Tono
'On the road, Surti was punched by Tono.'

D.6 A′ Property: Pivots are Targeted for Wh-Movement

- Background sentence

(45) a. Tono nulis suraté
Tono AV.write letter-DEF
'Tono wrote the letter.'

- Extracting Agents

(46) wh-movement
- Single extraction
  a. Sapa [$_{AV}$ (sing) ___ nulis suraté]? [Actor Voice]
  who SING AV.write letter-DEF?
  'Who wrote the letter?'
- Multiple extraction
  a. *Sapa [$_{OV}$ suraté di-tulis ___]? [Object Voice]
  who letter-DEF NAV-write
  Intended: 'Who wrote the letter?'

b. PP as a hanging topic

c. Dening sapa [$_{PV}$ suraté di-tulis ___]? [Patient Voice]
by who letter-DEF NAV-write
'Who wrote the letter?'

(47) wh-element in situ

a. Suraté di-tulis sapa? [Object Voice]
letter-DEF NAV-write who
'Who wrote the letter?'

b. Suraté di-tulis dening sapa? [Patient Voice]
letter-DEF NAV-write by who
'Who wrote the letter?'

- Extracting themes

(48) wh-movment

a. Apa [$_{OV}$ sing ___ di-tulis Tono]?
what SING NAV-write Tono
'What was written by Tono?'

b. Apa [$_{PV}$ sing ___ di-tulis dening Tono]?
what SING NAV-write by Tono
'What was written by Tono?'

c. [$_{OV}$Sing ___ di-tulis Tono] apa?
SING NAV-write Tono what
'What was written by Tono?'

d. [$_{PV}$sing ___ di-tulis dening Tono] apa?
SING NAV-write by Tono what
'What was written by Tono?'

e. *Apa [$_{AV}$ Tono nulis ___]
what Tono AV.write
Intended: 'What did Tono write?'

(49) wh-element in situ

a. [$_{AV}$ Tono nulis apa]?
Tono AV-write what
'What did Tono write?'

E Dependent Probe

Dependent [A′/A] probes require matching in both A and A′ features, but fail if they encounter a pure A or A′ target before a mixed one.

(50) a. [$CT_{[A/A']}$ [$DP_{[A/A']}$ [$DP_{[A]}$]]]
Probe first encounters A/A′ DP, matches and causes movement.
(51)

b.* [$CT_{[A/A']}$ [$DP_{[A]}$ [$DP_{[A/A']}$]]]
Probe first encounters pure A DP, fails to match, fails to continue to probe (even if mixed DP is accessible).
(52)

(51) a. Sapa$_{[A/A']}$ [$_{AV}$ (sing) ___ nulis surate$_{[A]}$́]? [Actor Voice]
who SING AV.write letter-DEF?
'Who wrote the letter?'

b. Apa$_{[A/A']}$ sing ___ di-tulis Tono$_{[A]}$? [Object Voice]
what SING NAV-write Tono
'What was written by Tono?'

(52) a.* Surti$_{[A/A']}$ Tono$_{[A]}$ ngamplêng ___ [Actor Voice]
Surti Tono AV.punch
Intended: ' Surti is the person who Tono punched.'

b.* Tono$_{[A/A']}$ sing Surti$_{[A]}$ di-kamplêng ___. [Object Voice]
Tono SING Surti NAV-punch
Intended: 'Tono is the person who punched Surti.'

F Final Paradigm

<table>
<tr><th>Subject</th><th>Voice Type</th><th>v^0</th><th>Voice^0</th><th colspan="4">Agent</th><th>ex.</th></tr>
<tr><td>Agent</td><td>Actor</td><td>Agentive
λx</td><td>—</td><td>DP</td><td>Spec,vP</td><td colspan="2">saturates open arg</td><td>38</td></tr>
<tr><td rowspan="4">Patient</td><td rowspan="2">Passive</td><td rowspan="3">Indexed
i</td><td rowspan="3">—</td><td>PP</td><td>Adjunct</td><td colspan="2">contextual binds arg</td><td>4</td></tr>
<tr><td colspan="3" rowspan="2">Implicit</td><td colspan="2">quantified at root</td><td>7</td></tr>
<tr><td colspan="2">syntactically bound</td><td>8</td></tr>
<tr><td rowspan="2">Object</td><td rowspan="2">Indexed
i</td><td rowspan="2">Indexed
$i \mapsto \lambda x$</td><td>DP</td><td rowspan="2">Spec,VoiceP</td><td rowspan="2" colspan="2">saturates open arg</td><td>5</td></tr>
<tr><td>procl.</td><td>2</td></tr>
</table>