Indices in the Voice Domain: A Unified Analysis of Javanese Passives

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1 Overview

The Surakarta dialect of Javanese (Austronesian), has two 'passive voice' constructions in addition to the actor voice: i. *tak-/kok-* passive, and ii. *di-* passive. They correspond to different potential morpho-syntactic profiles (1).

(1)

Agent Realization	Agent Restriction	Morphology	Syntax Proposal
Implicit Agent	—	*di*-passive	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*-passive	

Roadmap:

Data Show morpho-syntactic differences of various passive forms

- *di*-passives with DP agents are in complementary distribution with *tak-/kok*-passives
- *di*-passives with DP agents are structurally different from *di*-passives without DP agents
- *di*-passives with implicit agents can be bound by quantifiers

Analysis Propose a split Voice domain, with indexed Voice and v (based on Privoznov 2019, 2022)

- *di*-passives without DP agents are simple passives, formed through an indexed v_iP which provides an indexed agent — deriving the ability for implicit agents to be bound
- *di*-passives with DP agents, and *tak/kok*- passives form a 'split object' voice through the addition of an indexed Voice, which opens an indexed argument to be saturated by a DP
- *tak/kok*- passives are *di*-passives with 1/2sg DP agents, which are spelled out as proclitics — deriving complementary distribution
- *di-* morpheme is default spell out of v_i, and so *di-* is shared by all non-actor voices, except when is a competing proclitic form.

Implications Discuss various implications

- Diachrony of Javanese passives across different dialects
- Implications for Voice Domain decomposition

[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.

– Implications for a typology of voice which includes indexed functional heads

2 Basics of Passives in Surakarta Javanese

2.1 THE *TAK-/KOK-* PASSIVE

The *tak-/kok*-passive is restricted to first and second person singular Agents, and is formed via the proclitics *tak-* (1SG) and *kok-* (2SG) — (2a). This kind of passive is incompatible with coexistent Agent-denoting bare DPs or by-phrases (2b).

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

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

2.2 THE *DI-* PASSIVE

2.2.1 Overt agents

When we see *di-* on the verb, the Agent is realized as either a by-phrase, which is available for Agents with all person and number features[2] (3a), or a postverbal bare DP (3b), which is available for all Agents except 1SG and 2SG.

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

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

Incompatibility between the bare DP *di-* passives and 1SG/2SG Agents (3b) is not due to the pronominal nature of *aku/kowe*. The structure is completely natural with a 3SG pronoun (4).

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

2.2.2 Implicit agents

When no bare DP or by-phrase is present, *di*-passive construction contains implicit Agent (5).

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

[2]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- passives.

The implicit agent can be bound by higher quantifiers (6), being treated like a pronoun — impossible in English without an overt by-phrase.

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

2.3 Optional preposition dropping in *di-* passives?

Preposition dropping is generally prohibited in Surakarta Javanese.

(7) 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-* passives with by-phrase do not pattern with the *di-* passives with bare DP.

- Flexible word order is only available for by-phrase passives (8a) but not bare DP passives (8b).

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

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

- Adverbial Insertion is only licensed with a by-phrase passive (9a), but not with bare DP or proclitic passives (9b–9c) based on diagnostics in Nurhayani (2014).

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

b. Surat-é di-tulis (*cêpêt-cêpêt) Surti .
letter-DEF PASS-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 (10a) but not a bare DP passive (10b), based on diagnostics in Nurhayani (2014).

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

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

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

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

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

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

2.4 Local summary

- **A complementary distribution** is observed between the bare DP *di-* passive, which is compatible to all but 1SG/2SG Agents, and the *tak-/kok-* passive, which is strictly confined to 1SG/2SG Agents. (See Sections 2.1 and 2.2.1)
  - This suggests an intrinsic identity of the two and calls for a unification despite their distinct morphological forms on the surface.
- **A syntactic distinction** is implied between the bare DP and the by-phrase *di-* passives, as indicated by three pieces of syntactic diagnostics. (See Section 2.3)
  - This suggests that the two subtypes should be teased apart from each other in syntax, instead of deducing the bare DP *di-* passive as a simple reduced form of the by-phrase *di-* passive.
- **A syntax-morphology mismatch** is yielded in (11):

(11)

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

- **The pronominal nature of implicit Agents** is found in their availability to be bound by higher quantifiers. (See Section 2.2)

3 Analysis

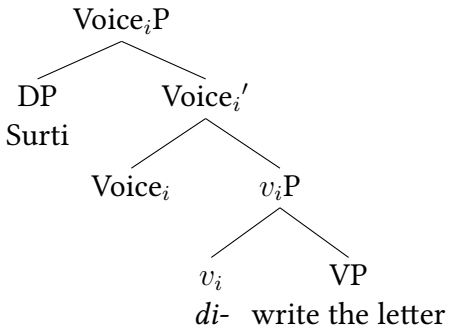
- Questions
  - Why are the *di-* passive with a bare DP Agent and the *tak-/kok-* passive in complementary distribution, conditioned by the person of Agents? [Sec 2.3]
  - How do we account for the observed syntax-morphology mismatch? [Sec 3.1]
  - What allows implicit Agents to be bound by quantifiers in Javanese passives? [Secs 2.2.2 and 3.2.3]

3.1 Resolving the syntax-morphology mismatch

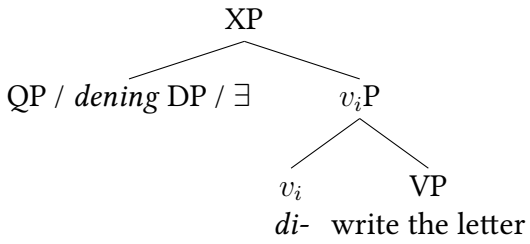
3.1.1 Formalizing the syntactic distinction of the two subtypes of *di-* passives

- A decomposed voice domain contains a three-layered verb phrase structure (Harley 2013):
  - lexical VP, which introduces selected internal argument
  - mandatory verbalizing vP, which only semantically refers to a pronominal Agent
  - optional functional projection VoiceP, where an overt Agent is syntactically introduced
- The syntactic division of the two subtypes of *di*-passives (i.e., the bare DP *di-* passive and the by-phrase *di-* passive) arises from the optional projection of Voice.
  - When the Agent is realized as a DP, a VoiceP is projected above vP, which provides an open argument which must be filled by a bare DP in Spec, VoiceP (see (12i)).
  - When the Agent is implicit or realized as a PP by-phrase, no VoiceP is projected, and so there is no position for a bare DP to fill (see (12ii)).

(12) i. **Bare DP (not 1SG/2SG)**



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



3.1.2 Deriving the complementary distribution

- Accounting for the surface morphological patterns:

(13) Three spell-out rules

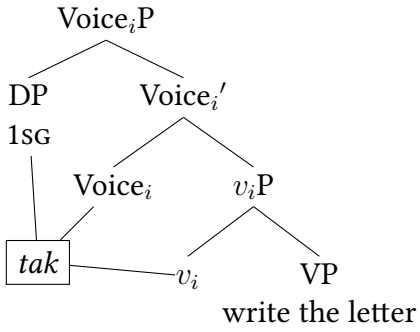
a. $< v_{non-actor} > \rightarrow$ /di-/

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

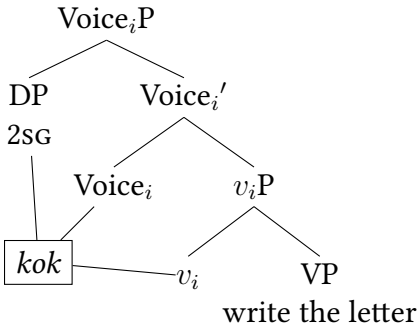
c. $< v_{non-actor}$, Voice, 2SG $> \rightarrow$ /kok-/

- The *tak-/kok-* passives are underlyingly instances of passives with a bare DP, as in (14).

(14) 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.
  - Allomorph competition: When the sufficient features required for *tak-/kok-* passives 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-*passives with bare DP agents.

3.1.3 Local summary

- Syntactic structures for the two non-actor voices:
  - The passive exhibits syntactic traits of simple passives: [$_{vP}$ v VP]
  - The split object voice shows syntactic traits of object voice, which is conditioned by person features of the Agent: [$_{\text{VoiceP}}$ Voice [$_{vP}$ v VP]]
- Resolving the syntax-morphology mismatch:
  The categorization of Javanese passives should be purely syntactic (i.e., passive vs. split object voice) and the surface syntax-morphology mismatch is only a byproduct that is derived from general principles of span formation in Javanese. The overlap of having *di-* exponed in both voices is due to the fact that the two share the same v head in their syntactic structure (more details in Section 3.2).

3.2 Deriving the compositionality of passive

- We want a semantic account which can compositionally match the syntax we have laid out, as well as explain:

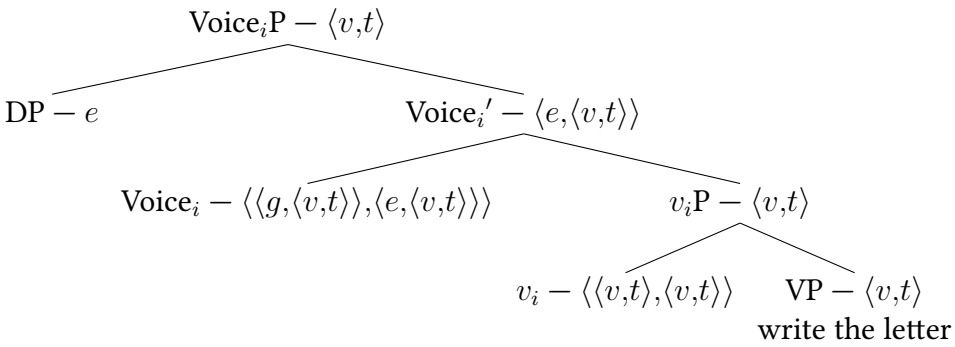
- The ability for implicit agents to be bound by higher quantifiers
- S-selection of by-phrase vs. DP for the two syntactic structures

- 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 (15)

(15) 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:
$[\![\alpha]\!]^{w,g} = [\![\beta]\!]^{w,g}(\lambda g'_g.[\![\gamma]\!]^{w,g'})$

3.2.1 Deriving Split Object Voice

(16)



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

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

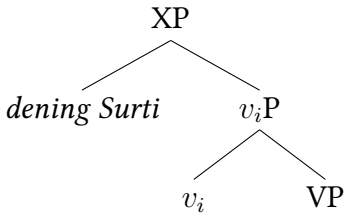
c. $[\![\text{Voice}_i']\!]^{w,g} = [\lambda F_{\langle g,\langle v,t\rangle\rangle}\lambda x_e\lambda e_v.F(g[x/i],e)](\lambda g'_g.[\![v_i\text{P}]\!]^{w,g'})$
$= \lambda x_e\lambda e_v.[\lambda g'_g\lambda e'_v.\text{write}(e') \wedge \textsc{th}(e') = \text{the-letter} \wedge \textsc{ag}(e') = g'(i)](g[x/i],e)$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

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

3.2.2 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.

(17)



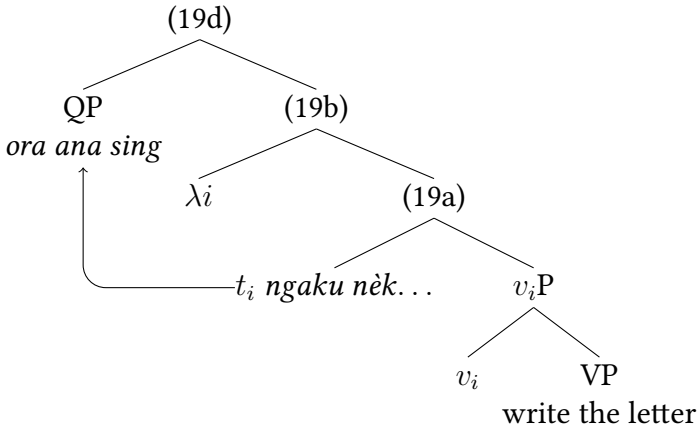
$[\![\text{XP}]\!]^{w,g} = \lambda e_v.\text{write}(e) \wedge \textsc{th}(e) = \text{the-letter} \wedge \textsc{ag}(e) = g(i) \wedge g(i) = \text{Surti}$

3.2.3 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

(18) [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$_i$.'

(19)



a. $[\![(19a)]\!]^{w,g} = \exists e_v[\text{admit}(e) \wedge \textsc{ag}(e) = g(i) \wedge \exists e'_v[\textsc{th}(e) = e' \wedge \text{write}(e') \wedge \textsc{th}(e') = \text{the-letter} \wedge \textsc{ag}(e') = g(i)]]$

b. $[\![(19b)]\!]^{w,g} = \lambda x_e.\exists e_v[\text{admit}(e) \wedge \textsc{ag}(e) = x \wedge \exists e'_v[\textsc{th}(e) = e' \wedge \text{write}(e') \wedge \textsc{th}(e') = \text{the-letter} \wedge \textsc{ag}(e') = x]]$

c. $[\![\text{QP}]\!]^{w,g} = \lambda P_{\langle e,t\rangle}.\neg\exists x_e[P(e)]$

d. $[\![(19\text{d})]\!]^{w,g} = \neg\exists x_e[\exists e_v[\text{admit}(e) \wedge \textsc{ag}(e) = x \wedge \exists e'_v[\textsc{th}(e) = e' \wedge \text{write}(e') \wedge \textsc{th}(e') = \text{the-letter} \wedge \textsc{ag}(e') = x]]]$

3.3 Local summary

Subject	Voice Type	v^0	Voice^0	Agent			ex.
Patient	Passive	Indexed i	—	PP	Adjunct	contextual binds arg	3a
				Implicit		quantified at root	5
						syntactically bound	6
	Object	Indexed i	Indexed $i \mapsto \lambda x$	DP	Spec,VoiceP	saturates open arg	3b
				procl.			2

4 Implications

4.1 Diachronic traces of Javanese non-actor Voices

- Stage 1 A simple passive only:
  a single by-phrase di- passive compatible with all person features
- Stage 2 A simple passive & A non-split Object Voice:
  a by-phrase di- passive compatible with all person features & a bare DP passive compatible with all person features
- Stage 3 A simple passive & A split Object Voice:
  a di- passive compatible with all person features & a split bare DP passive (i.e., tak-/kok- passives for 1sg/2sg vs. bare DP passive with all but 1sg/2sg), as found in Surakarta Javanese.
- Stage 4 A reduced Passive & A split Object Voice:
  a di-passive compatible with all but 1sg/2sg & a split bare DP passive (i.e., *tak-/kok-* passives for 1sg/2sg vs. bare DP passive with all but 1sg/2sg), as is found in Surabaya Javanese (Patrianto and Chen 2023)

4.2 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.
- 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

4.3 Indices in the Voice domain

- Proposals on indexed verbal functional heads
  - Privoznov (2019, 2022) argues that the causativizing head in Buryat is indexed, in the same two layer structure proposed here, to explain similar phenomena.
  - Buryat causativizing heads can introduce implicit agents, which can be bound by c-commanding quantifiers.
- Indexed Voice Domain within the Typology
  - The abstraction provided by Voice$_i$ may only be possible in combination with an indexed v_i
  - The argument provided by v_i is not compatible with other agent introducing heads except for Voice$_i$
  - Thus, typologically we expect only [v_i VP] and [Voice$_i$ [v_i VP]] to be possible configurations if v_i and Voice$_i$ are present
- Possible Splitting Bundling of Indices
  - Hypothesis for universals: just as verbalizing, causitivizing, and agent introducing functions can be bundled or split onto multiple heads (INSERT CITATIONS), maybe indexing an agent and abstracting over such an index are two functions, which Javanese splits, but most languages do not.

- Typical open agent argument introduction would be a bundled two step process: providing an indexed argument, and then abstracting over it.
- A hypothetically bundled v_i+Voice$_i$ has the same logical form to v_{agentive}

(20) a. $[\![v_i]\!]^{w,g} = \lambda f_{\langle v,t\rangle}\lambda e_v.f(e) \wedge \textsc{ag}(e) = g(i)$

b. $[\![\text{Voice}_i]\!]^{w,g} = \lambda F_{\langle g,\langle v,t\rangle\rangle}\lambda x_e\lambda e_v.F(g[x/i],e)$

c. Bundled v_i+Voice$_i$

$$[\![v_i + \text{Voice}_i]\!]^{w,g} = [\![\text{Voice}_i]\!]^{w,g} \circ \lambda g'_g.[\![v_i]\!]^{w,g'}$$
$$= \lambda f_{\langle v,t\rangle}.[\![\text{Voice}_i]\!]^{w,g}(\lambda g'_g.[\![v_i]\!]^{w,g'}(f))$$
$$= \lambda f_{\langle v,t\rangle}.[\lambda F_{\langle g,\langle v,t\rangle\rangle}\lambda x_e\lambda e_v.F(g[x/i],e)](\lambda g'_g\lambda e'_v.f(e') \wedge \textsc{ag}(e') = g'(i))$$
$$= \lambda f_{\langle v,t\rangle}\lambda x_e\lambda e_v.[\lambda g'_g\lambda e'_v.f(e') \wedge \textsc{ag}(e') = g'(i)](g[x/i],e)$$
$$= \lambda f_{\langle v,t\rangle}\lambda x_e\lambda e_v.f(e) \wedge \textsc{ag}(e) = g[x/i](i)$$
$$= \lambda f_{\langle v,t\rangle}\lambda x_e\lambda e_v.f(e) \wedge \textsc{ag}(e) = x$$
$$\equiv [\![v_{\text{agentive}}]\!]^{w,g}$$

- Composition Path vs. Promotion
  - Actor and Object voice both introduce open arguments, but through different compositional paths (perhaps even distinguished only by bundling).
  - Unclear why these differences in semantic composition should result in promotion of different arguments — is there causation between bundling-splitting and object promotion?

5 Conclusion

- Javanese has three voice constructions: Actor, Passive, and a split Object voice. [Sec 3.1]
  - 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).
- What diachronic traits of general Javanese passives can this dialect inform us? [Sec 4.1]
  - We propose there are four diachronic stages regarding the morpho-syntactic realization of Javanese passives.
- How is the syntactic voice domain be structured? [Sec 4.2]
  - 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 with additional indices in the voice domain.

- Object voice is built on the passive, including another indexed Voice$_i$ head, which abstracts over assignment functions, taking the index and 'turning it into' an open argument, to be saturated.

- What is the interaction between the syntax and the semantics of the voice domain? [Sec 4.3]
  - Object voice agents are semantically identical to their active equivalents, but the two employ different composition paths, and syntactically promote different arguments.

6 References

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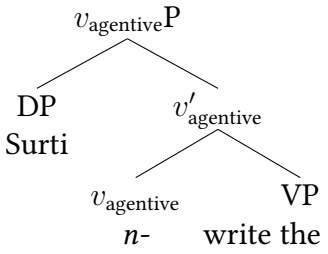
A Modelling the actor voice

- 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-*

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

(22)



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. $[\![v_{\text{agentive}}\text{P}]\!]^{w,g} = \lambda e_v . \text{write}(e) \wedge \text{TH}(e) = \text{the-letter} \wedge \text{AG}(e) = \text{Surti}$

B Bound Implicit Agents are not Covert DPs

- Implicit agents cannot refer to contextually salient individuals.

(23) surat-é di-tulis. dheweke têka ana péstané
letter-DEF PASS-write 3-DEF come LOC party-DEF

'The letter was written (by x). He/she (not x) came to the party.'

C Final Paradigm

<table>
<tr><th>Subject</th><th>Voice Type</th><th>v^0</th><th>Voice^0</th><th colspan="3">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>saturates open arg</td><td>21</td></tr>
<tr><td rowspan="4">Patient</td><td rowspan="2">Passive</td><td rowspan="2">Indexed
i</td><td rowspan="2">—</td><td>PP</td><td>Adjunct</td><td>contextual binds arg</td><td>3a</td></tr>
<tr><td colspan="2">Implicit</td><td>quantified at root</td><td>5</td></tr>
<tr><td rowspan="2">Object</td><td rowspan="2">Indexed
i</td><td rowspan="2">Indexed
$i \mapsto \lambda x$</td><td colspan="2">Implicit</td><td>syntactically bound</td><td>6</td></tr>
<tr><td>DP</td><td rowspan="2">Spec,VoiceP</td><td rowspan="2">saturates open arg</td><td>3b</td></tr>
<tr><td>procl.</td><td>2</td></tr>
</table>