Semantic meaning and the representation of Indonesian applicative constructions

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Background

1. Indonesian verbal suffixes -i and -kan are highly polyfunctional.
2. These suffixes mark both causative constructions and applicative constructions.
3. In other cases, the suffixes mark a semantic change in verbal meaning (e.g. aspect, intensity, scope, lexicalized changes, etc.).
4. Many other western Indonesian languages exhibit similar phenomena.

Goals

1. To identify constructional meanings (i.e. pairings of form and meaning) associated with *-kan* and *-i*
2. To describe semantic factors that influence the compatibility of bases with these constructional meanings
3. To demonstrate how lexical meaning may be incorporated into representations of relevant applicative and causative constructions, based on usage and constructional approaches.

Terminology

- Because Indonesian is a symmetrical voice language, the terms "subject" and "object" do not apply neatly to the most relevant grammatical relations.
- I use the following labels in this paper (see Comrie 1989, Haspelmath 2015):
  - S - sole core argument of an intransitive clause
  - A, P - two core arguments of a transitive clause (i.e. most agent-like, most patient-like)
  - A, R, T - three core arguments of a ditransitive clause (e.g. agent, recipient, theme)
- For simplicity, I primarily show examples in A-Voice (AV), where A is the most syntactically privileged argument.

Background examples

Base verb	Affixed verb	Apparent function
pecah 'S breaks'	*pecah-kan* 'A breaks P'	Causative
keluar 'S comes out'	*keluar-kan* 'A takes out P'	Causative
panggang 'A bakes P'	*panggang-kan* 'A bakes R T'	Ben. Appl.
kirim 'A sends P to Obl.'	*kirim-kan* 'A sends P to Obl.'	"No effect"
tanam 'A plants P in Obl.'	*tanam-kan* 'A plants P in Obl.'	"No effect"
takut 'S is afraid'	*takut-i* 'A frightens P'	Causative
duduk 'S sits'	*duduk-i* 'A sits on P'	Loc./Goal Appl.
pandang 'A looks at P'	*pandang-i* 'A gazes at P'	+ Intensity

See Cole & Son (2004), Kroeger (2007), Arka et al. (2009), Sneddon et al. (2010).

Background examples

Base verb	Affixed verb	Intended function
tari 'S dances'	**tari-kan* 'A makes P dance'	Causative
tonton 'A watches P'	**tonton-kan* 'A watches R T'	Ben. Appl.
duduk 'S sits'	**duduk-kan* 'S sits'	"No effect"
lompat 'S jumps'	**lompat-i* 'A makes P jump'	Causative
makan 'A eats P'	**makan-i* 'A eats in P'	Loc./Goal Appl.
hidup 'S lives'	**hidup-i* 'S lives with gusto'	+ Intensity

- Previous claims that distribution of function is determined by syntactic subclass of base have been shown to be unsupported (see Kroeger 2007 cf. Vamarasi 1999).
- How do speakers create, interpret and predict the meaning of affixed *-kan* and *-i* constructions? What type of information informs this?

Usage-based and constructional approach

- In this study I adopt a constructionist approach to the suffixes *-i* and *-kan*.
  - "Item-specific knowledge exists alongside generalizations" (Goldberg 2006: 12).
  - Generalizations are formed over adequately-frequent patterns in language.
- Specifically, I use the concept of "argument-structure construction" (see Perek 2015, Perek & Patten 2019).
  - Form includes fixed content (e.g. suffix) and some specific information about argument structure (e.g. # core arguments, grammatical relations, syntactic cat.)
  - Meaning is the semantic content associated with fixed content.
- Identify patterns in usage: frequent co-occurrence of argument structure, constructional meaning, meaning of compatible bases.

The study

1. Data: 1 million Indonesian sentences from the Leipzig Corpora Collection (Goldhahn, Eckart & Quasthoff 2012), taken from news sources.
2. Using R software, identified verbs marked with *-kan* and *-i* and computed frequency.
3. Matched affixed verbs with lexical bases (roots) and POS information using dictionary resources (Pusat Bahasa (Indonesia) 2007)
4. Focused on affixed constructions with verbal lexical bases in the top quartile of frequency by base.
5. Matched each with a semantic frame (describing type of event/relation and detailed participant roles) (Fillmore, Johnson & Petruck 2016) that is predominant in the data and recorded the most common mapping of participant role to argument structure.

General distribution of affixed constructions

- Total frequency of -*kan* marked constructions is significantly higher.
  - -*kan* marked constructions: n = 615,649
  - -*i* marked constructions: n = 221,557
- Productivity of -*kan* marked constructions is significantly higher.
  - -*kan* marked constructions: 1,239 unique bases
  - -*i* marked constructions: 450 unique bases
- Together, these facts suggest that -*kan* marked constructions may be more generalized and -*i* marked constructions may be more lexicalized compared to one another.
- Focused on bases that are verbs in top quartile by frequency: 105 bases with -*kan* (n = 188,172), 31 bases with -*i* (n = 65,186).

Overview of constructions

Suffix	Arg. str.	Const. mean. (Frame)	Uniq. Bases
-kan	P = Theme	Cause motion	32
-kan	P = Theme	Transfer	6
-kan	P = Perceived	Cause perception	8
-kan	P = Message	Communication	9
-kan	P = Cog. Content	Mental activity	8
-kan	R = Beneficiary, T = Theme	Cause benefit + Bringing	2
-kan	Various	Other causation	23
-kan	Various	Other	25
	TOTAL	(112 base + frame pairs)	104
-i	P = Goal/path	Traversing	9
-i	P = Goal/path	Cause motion	3
-i	P = Addressee	Communication	2
-i	A = Perceiver, P = Perceived	Active perception	6
-i	A = Participant, P = Event	Participation	3
-i	Various	Other	14
	TOTAL	(37 base + frame pairs)	31

Theme-selecting *-kan* constructions

- This set of constructions takes an agentive A-argument and a theme P-argument.
- Appears with 38 (of 104) unique bases in the data.
- Split into two constructions by meaning.

Form	NP_A	*V-kan*	NP_P	PP_{Obl}
Meaning:	|		|	|
Cause motion	$Agent$		$Theme$	$\{Goal / Path\}$

Form	NP_A	*V-kan*	NP_P	PP_{Obl}
Meaning:	|		|	|
Transfer	$Donor$		$Theme$	$Recipient$

- Compatible with bases that describe location of an entity in space (locative relations, wide range of motion events) and transfer events.

Theme-selecting *-kan* constructions

(1) **Causative construction**

a. *Kodri tiba-tiba keluar dari ruangan kerja Jamal.*
K. suddenly come.out from room work J.

'Kodri suddenly came out from Jamal's office.' [430654]

b. *...terdawa meng-(k)eluar-kan barang tersebut dari*
suspect AV-come.out-KAN goods aforementioned from
kantong=nya.
bag=3

'...the suspect took out the aforementioned goods from his bag.' [207743]

Theme-selecting *-kan* examples

(2) **Applicative construction**

a. *Ando yang men-(t)embak=nya dengan pistol...*
A. REL AV-shoot=3 with pistol

'Ando was the one who shot him with a pistol...' [181429]

b. *Kubu oposisi men-(t)embak-kan roket-roket dari*
stronghold opposition AV-shoot-KAN RDP-rocket from
truk-truk pick-up ke gurun...
RDP-truck pick-up to desert...

'The opposition shot rockets from pick-up trucks into the desert...' [47786]

Theme-selecting *-kan* examples

(3) **"No effect" construction**

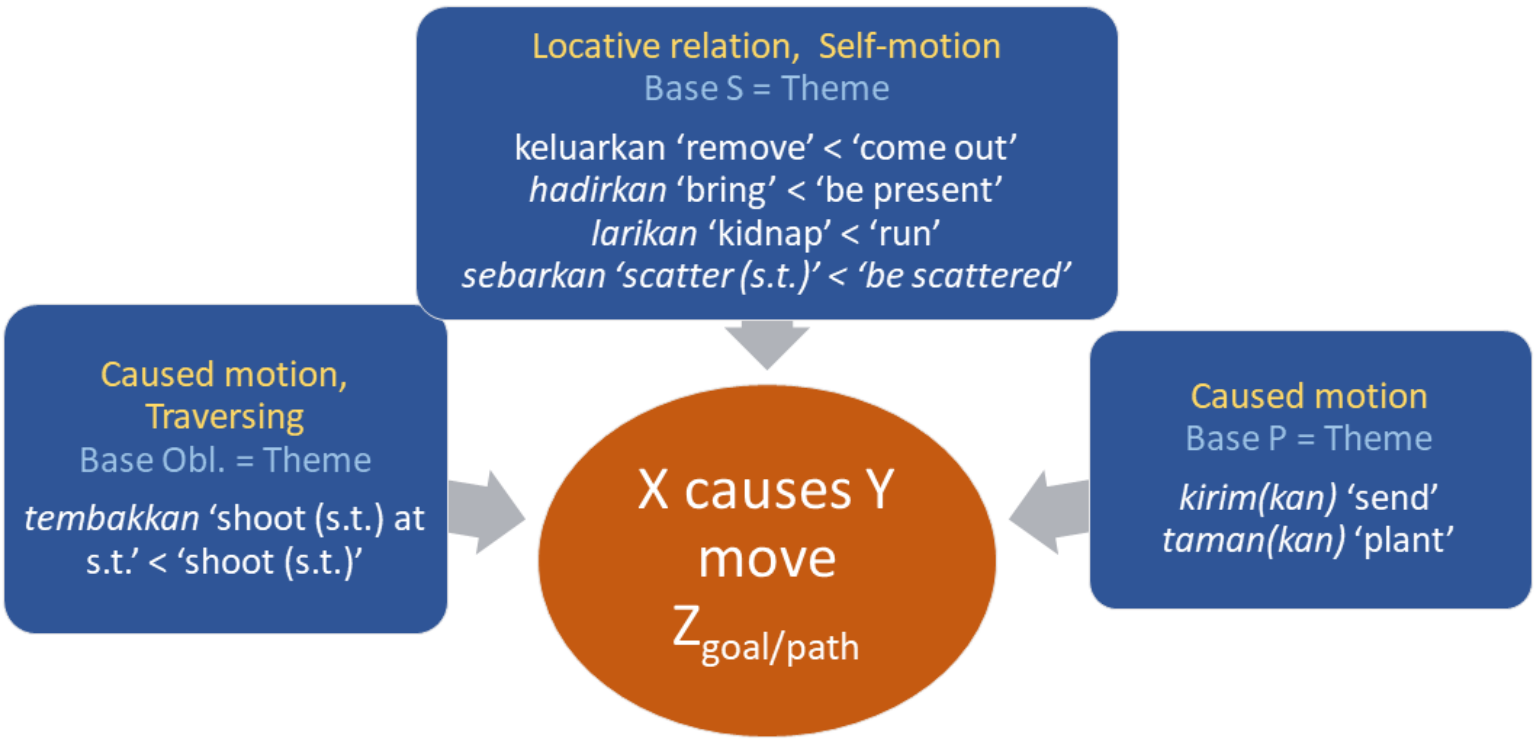
a. *Paman meng-(k)irim(-kan) uang kepada saya tiap bulan.*
uncle AV-send(-KAN) money to 1s every month

'Uncle sends some money to me every month'

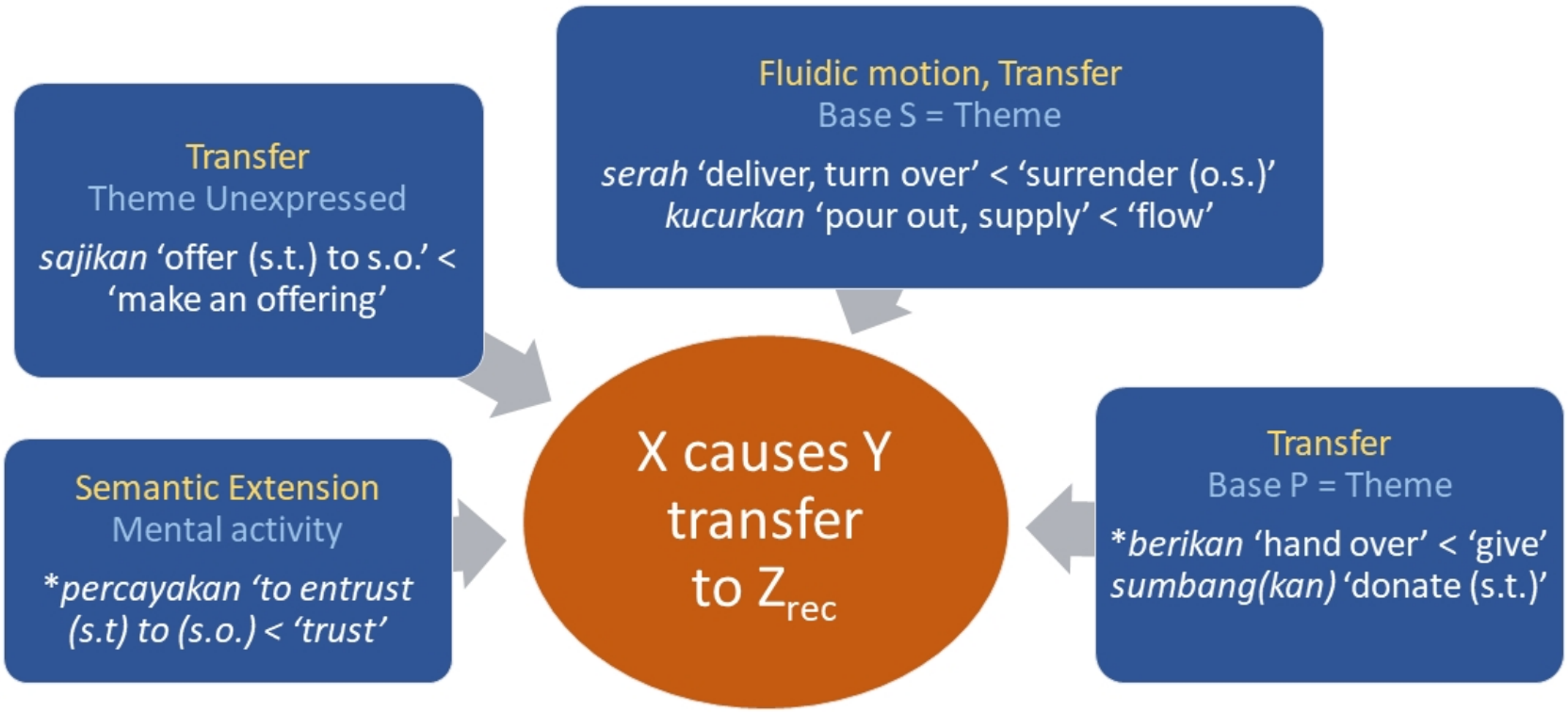
b. *Dia men-(t)anam(-kan) padi itu di sawah=nya.*
3s AV-plant(-KAN) rice that in rice.field=3s

'He planted the rice in his field.' (Kroeger 2007: 245)

Caused-motion *-kan* constructions



Transfer *-kan* constructions



Caused-perception *-kan* constructions

- This set of constructions takes an agentive A-argument and a P-argument that describes a perceived entity or phenomenon.
- Appears with 8 (of 104) unique bases in the data.

Form	NP_A	*V-kan*	NP_P	PP_{Obl}
Meaning:	|		|	|
Cause perception	$Agent$		$\left\{ \begin{array}{c} Phenomenon \\ Performance \\ Theme \end{array} \right\}$	$Perceiver$

- Compatible with bases that describe perception events (e.g. becoming visible, causing to perceive) and extended to
  - spatial relations (e.g. rising above, protruding),
  - and caused motion events (e.g. bringing),
  - where the position of an entity affects perception.

Caused-perception *-kan* constructions

(4) **Causative construction**

a. *Ia jarang tampil di depan publik...*
3SG rarely appear in front public...

'He rarely appeared in public...' [16672]

b. *Kita akan tampil-kan ragam budaya yang ada di Jakarta.*
1pl.incl will appear-KAN variety culture REL exist in Jakarta

'We will show the variety of cultures that exist in Jakarta.' [28780]

Caused-perception *-kan* constructions

(5) **"No effect" construction**

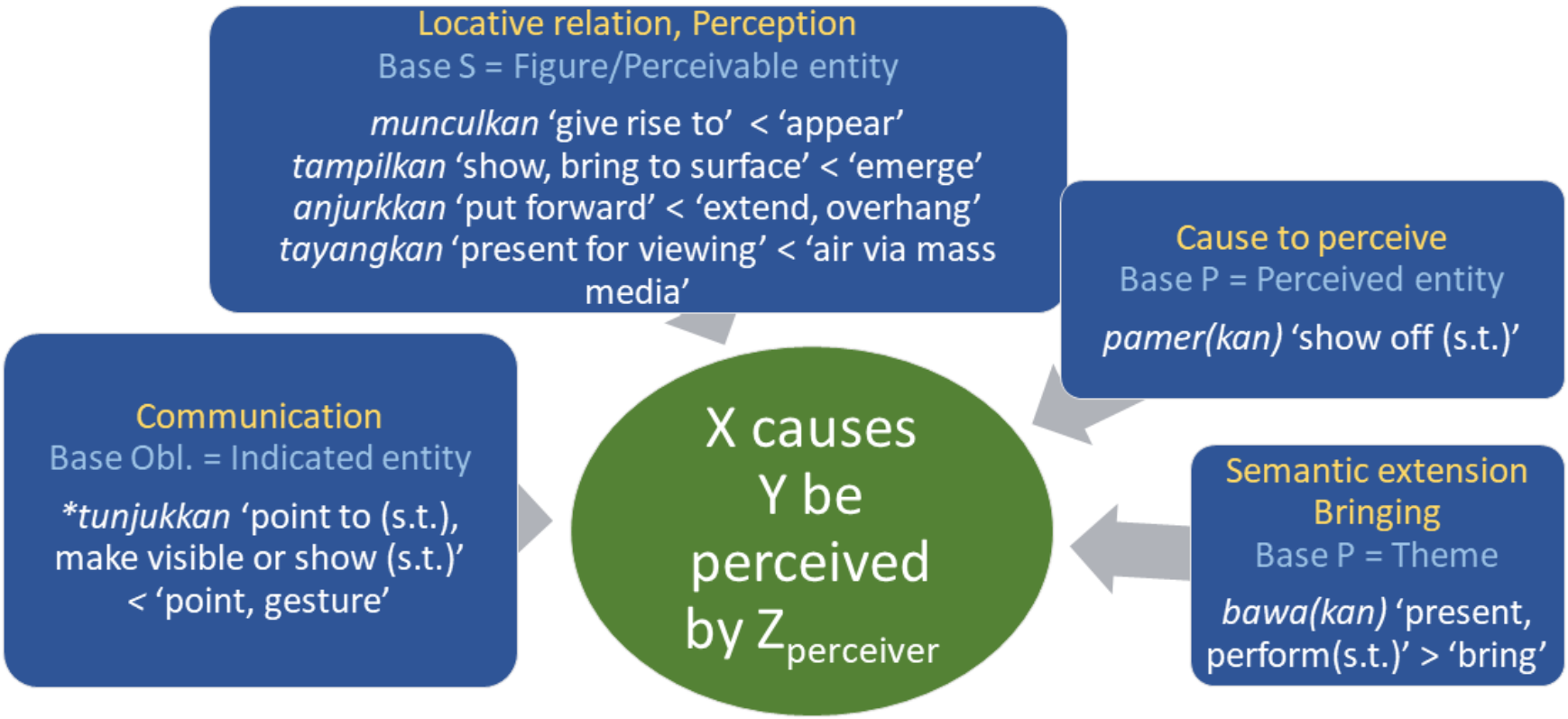
a. *Kim mencoba untuk pamer kebolehan=nya sebagai presenter.*
K. try for show.off ability=3 as presenter

'Kim tried to show off her abilities as a presenter.' [556450]

b. *Kemarin, dia mem-(p)amer-kan mobil listrik sejenis Ferrari...*
yesterday 3sg show.off car electric type Ferrari

'Yesterday he showed off a Ferrari electric car...' [756066]

Caused-perception *-kan* constructions



Content-selecting *-kan* constructions

- This set of constructions takes a communicator A-argument and a content P-argument (propositional or informational).
- Appears with 9 (of 104) unique bases in the data.

Form	NP_A	*V-kan*	NP_P	PP_{Obl}
Meaning:	|		|	|
Communication	*Communicator*		{*Message*, *Content*, *Information*, *Text*}	*Addressee*

- Core bases describe communication events. But other types of verbs that involve texts, words, or propositional content, may acquire a communicative meaning with this construction.

Content-selecting *-kan* constructions

(6) **Applicative construction**

a. *Lindsay juga ber-ucap bahwa Hilary tidak perlu ber-laku*
L. also MID-speak that H. not need MID-behave
seperti itu,...
like DEM

'Lindsay also said that Hilary did not need to behave like that...'
[608116]

b. *Secara khusus dia meng-ucap-kan penghargaan kepada*
in.manner special 3SG AV-speak-KAN appreciation to
ribuan anakbuahnya ...
thousands subordinate=3

'He especially expressed appreciation to the thousands of his employees who...'
[257008]

Content-selecting *-kan* constructions

(7) **Semantic change**

a. *Saya sudah mem-baca novelnya...*
1SG already AV-read novel=3...

'I have already read her novel...' [343054]

b. *Mereka mem-baca-kan surat terbuka kepada rakyat...*
3PL AV-read-KAN letter open to people

'They read aloud the open letter to the people...' [165821]

Content-selecting *-kan* constructions

Beneficiary *-kan* constructions

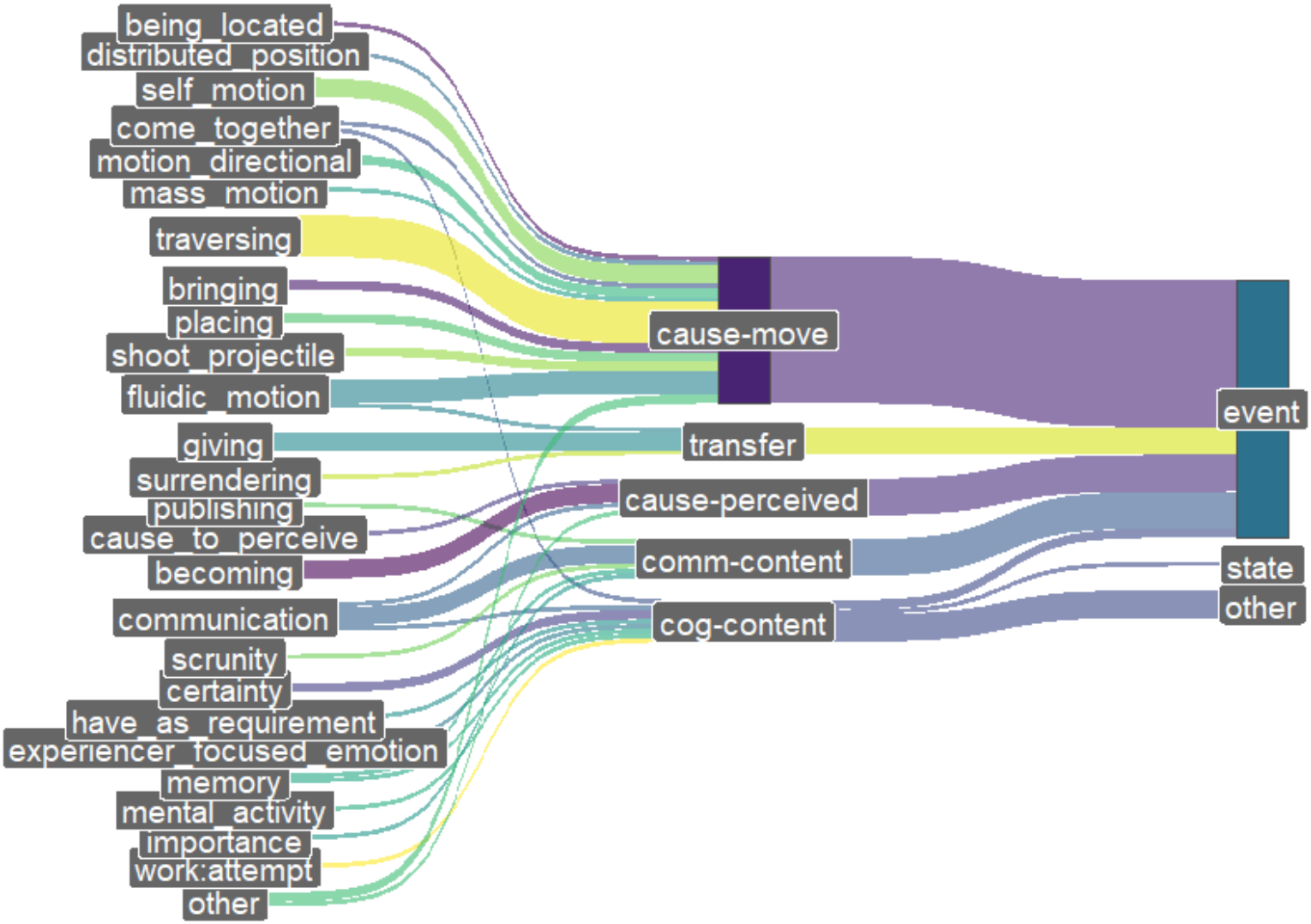
- Beneficiary-selecting constructions were attested only in a small number of sentences for two bases: *bawa-kan* 'bring (s.o.) (s.t.)' *cari-kan* 'find (s.o.) (s.t.)'
- These constructions take an agentive A-argument, a recipient/beneficiary core argument, and a theme core-argument

Form	NP_A	*V-kan*	NP_R	NP_T
Meaning:	|		|	|
Cause benefit	$Agent$		$Beneficiary$	$Theme$

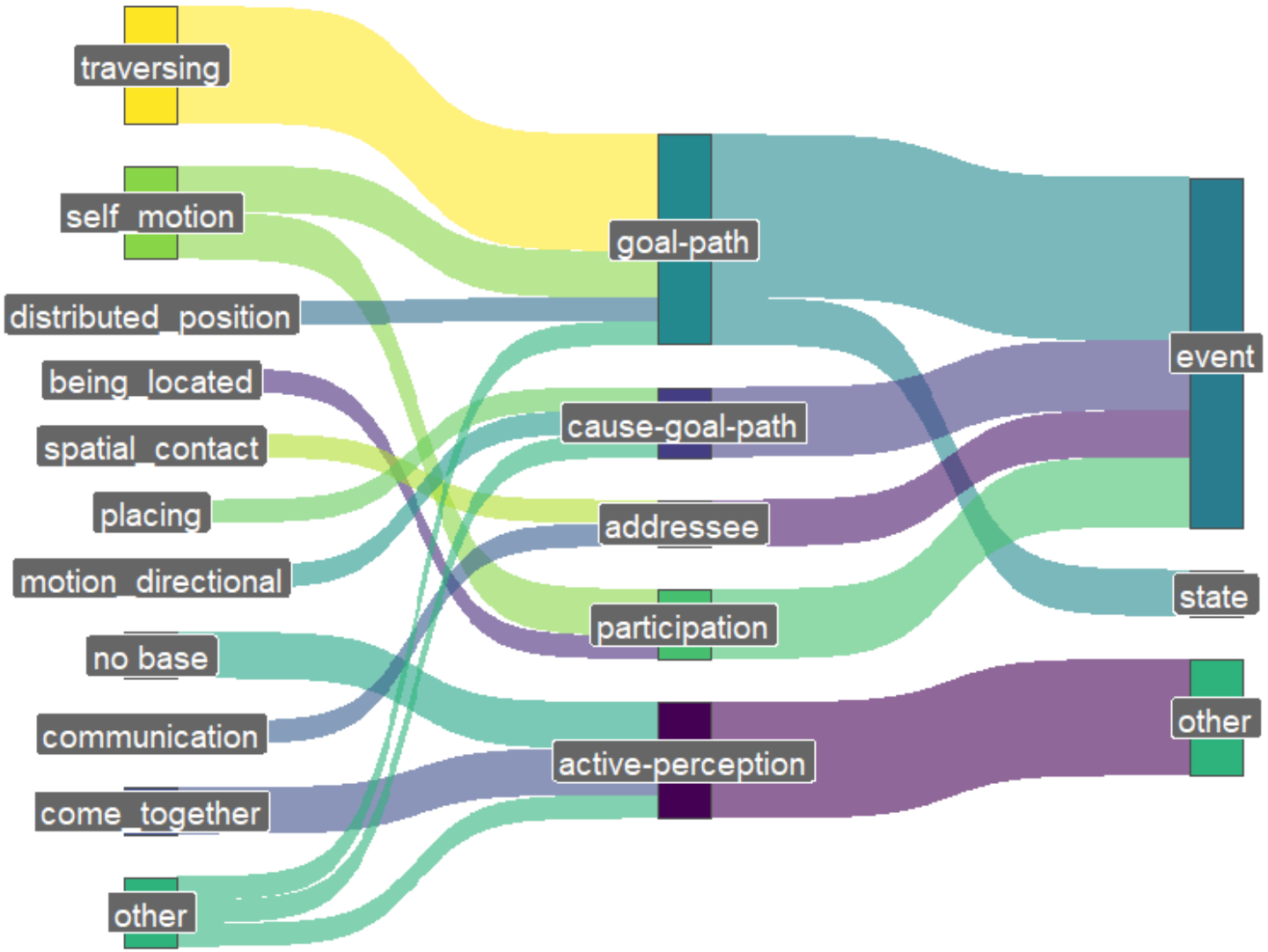
- Based on broader data, appears to be compatible with bases that describe acts of bringing, getting, and creating,
  - In cases where there is a benefit to moving or acquiring some entity.
- A separate benefactive construction takes bases describing actions that intentionally affect some entity to the benefit of a third party.

Beneficiary *-kan* constructions

Partial semantic map of -*kan* constructions



Partical semantic map of -*i* constructions



Discussion

- Examining constructional meaning highlights connection between causative, applicative, "no effect", and "semantic change" affixed verbs.
- Affixed constructions are centered around particular base semantics.
  - Constructions also attract other bases with at least one compatible participant role, which then take on the constructional meaning.
- Speakers likely use these generalizations to interpret and create affixed construction meanings.
- Constructional representation is a useful, meaningful type of representation informed by non-idealized data including variation.

Next steps

- Using constructional meaning allows for principled comparison of affixed verbs with nominal (& other non-verbal) bases.
  - *tempat* 'place (n.)' > *men-(t)empat-kan* 'put (s.t.) s.w.', *men-(t)empat-i* 'reside (s.w.)'
  - *selimut* 'blanket (n.)' > *meny-(s)elimut-i* 'to put a blanket on (goal)'
- Less frequent constructions should be included, but are predicted to be more lexicalized, less generalized than frequent constructions.

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Goal/path-selecting *-i* constructions

- This set of constructions takes a P-argument that describes a location, esp. a goal or path.
- Appears with 12 (of 31) unique bases in the data.

Form	NP_A	*V-i*	NP_P
Meaning:	|		|
Traversing	$Theme$		$\left\{ \begin{matrix} Goal \\ Path \end{matrix} \right\}$

Form	NP_A	*V-i*	NP_P	PP_{Obl}
Meaning:	|		|	|
Cause motion	$Agent$		$\left\{ \begin{matrix} Goal \\ Path \\ Ground \end{matrix} \right\}$	$Theme$

- These constructions are compatible with bases that describe the position of an entity vis-a-vis some point of reference (e.g. traversing, posture, fullness, directional motion).

Goal/path selecting *-i* constructions

(8) **Applicative *-i* construction**

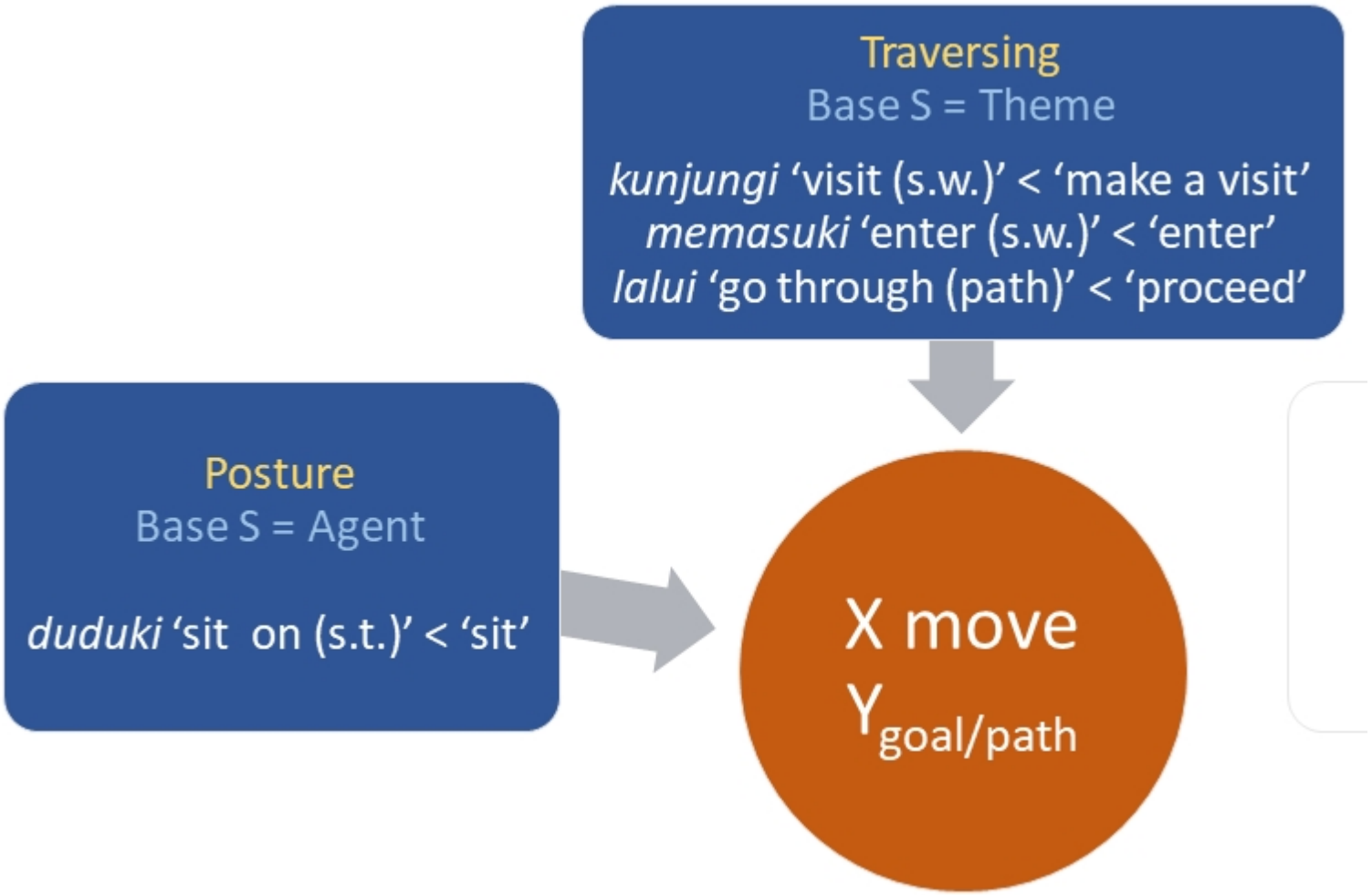
a. *Pagi-pagi John sudah datang ke rumah-ku.*
RDP-morning J. already arrive to house-1SG

'Early in the morning, John already had arrived at my house' [749845]

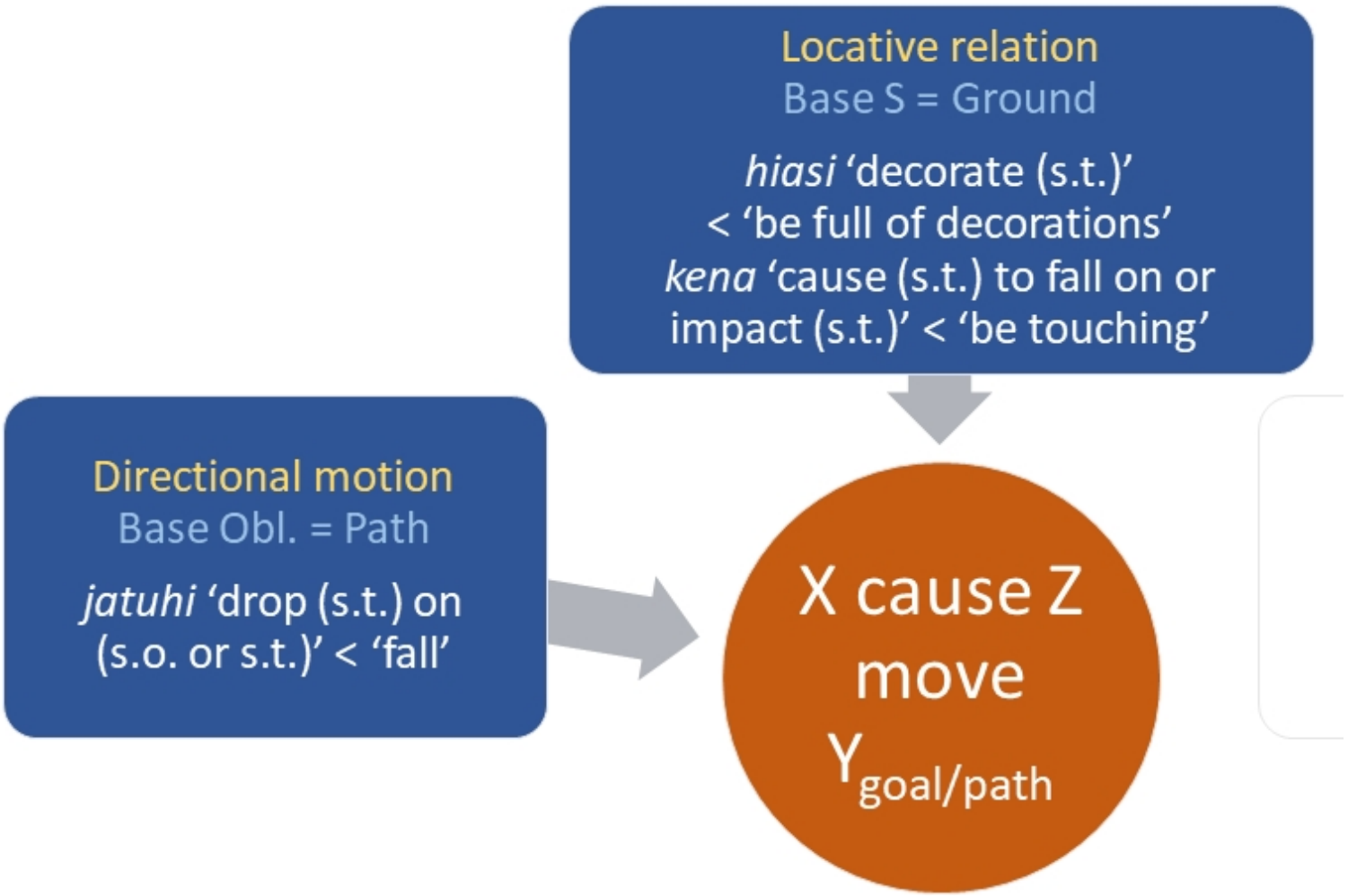
b. *Saya datang-i rumah=nya dan meng-(k)etuk pintu.*
1SG arrive-I house=3 and AV-knock door

'I arrived at his house and knocked on the door.'

Goal/path-selecting *-i* constructions



Goal/path-selecting *-i* constructions



Other *-i* constructions

- An *-i* marked construction may take an active perceiver or cognizer A-argument
  - *awas* 'be aware, alert' > *awasi* 'observe, watch over (s.t.)'; *jajaki* 'examine, explore (s.t.)', *telusuri* 'investigate (s.t.)'; *temu* 'meet' > *temui* 'observe' (s.t.)'; *jumpa* 'be facing' > *jumpai* 'discover (new idea)'
  - No base form:
  - Semantic change: *temu* 'meet' > *temui* 'encounter, experience (s.t.)'; *jumpa* 'be facing' > *jumpai* 'encounter, experience (s.t.)'
- An *-i* marked construction may take a participant A-argument, and an event P-argument.
  - *hadir* 'be present' > *hadiri* 'attend, participate in (event)'; *ikut* 'accompany, follow' > *ikuti* 'join (activity or event)'; 'accompany, escort' > iringi 'follow in (activity)'