

# Corpus-based approach meets LFG: Puzzling voice alternation in Indonesian

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# PRELIMINARIES

- Voice alternation has been viewed as a “meaning-preserving” phenomenon (Kroeger 2005: 271)
  - passive (PASS) and active (AV) “describe the same kind of event” (Kroeger 2005: 271)
    - Hence, PASS and AV verbs of the same root should evoke the same (logical) meaning
    - They just re-align gram. relations and sem. roles

# PRELIMINARIES

- Voice alternation has been viewed as a “meaning-preserving” phenomenon (Kroeger 2005: 271)

1. *murid Go bie-pay yang **meng-(k)ena-kan** baju warna hitam.*  
pupil NAME REL **AV**-hit-CAUS shirt colour black  
'Go bie-pay's student who *wears/puts on* black shirt.' (ind\_mixed\_2012\_1M-sentences.txt:755227)

Active Voice with *meN-* for the base *kena-kan* in the sense of 'to wear'

2. *Gaun yang **di-kena-kan** berwarna hitam*  
dress REL **PASS**-hit-CAUS have.colour black  
'The dress that *is worn* is black' (ind\_mixed\_2012\_1M-sentences.txt:755227)

Passive Voice with *di-* for the base *kena-kan* in the sense of 'to wear'

# PRELIMINARIES

- Looking only at one or two examples to describe voice fails to capture preferred usage co-occurrences for each voice as revealed by language corpora (cf. Michaelis 2012: 36)
- In our case, focusing on AV-PASS constructions of the same root, we investigate whether the PASS counterpart of a presumed AV form always conveys (or preserves) the same meaning (i.e. used in the same way) as the AV.
  - esp. if we look at many usage instances of the PASS and AV pairs
  - we'll show that AV and PASS of a given verbal stem can show distinct statistical preferences to convey certain meaning (or event)

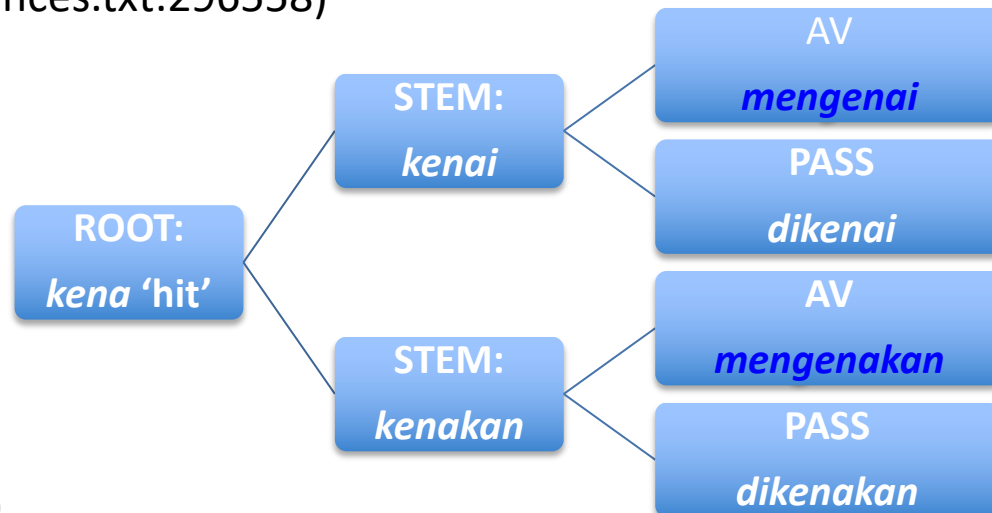
# Aims

- To argue that voice alternation is more than simply re-linking gram. relations and sem. roles, and not always a meaning-preserving phenomenon
  - involves ‘meaning construction’ with constrained, morpho-semantic and usage properties that may differ between voice types (e.g. between AV and PASS)
- To demonstrate this based on quantitative corpus-based evidence
  - contrasting senses of transitive verbs based on the root *kena* ‘(get) hit’ in AV/PASS voice morphologies
- To capture such quantitative, usage evidence in LFG analysis

# Key puzzling examples

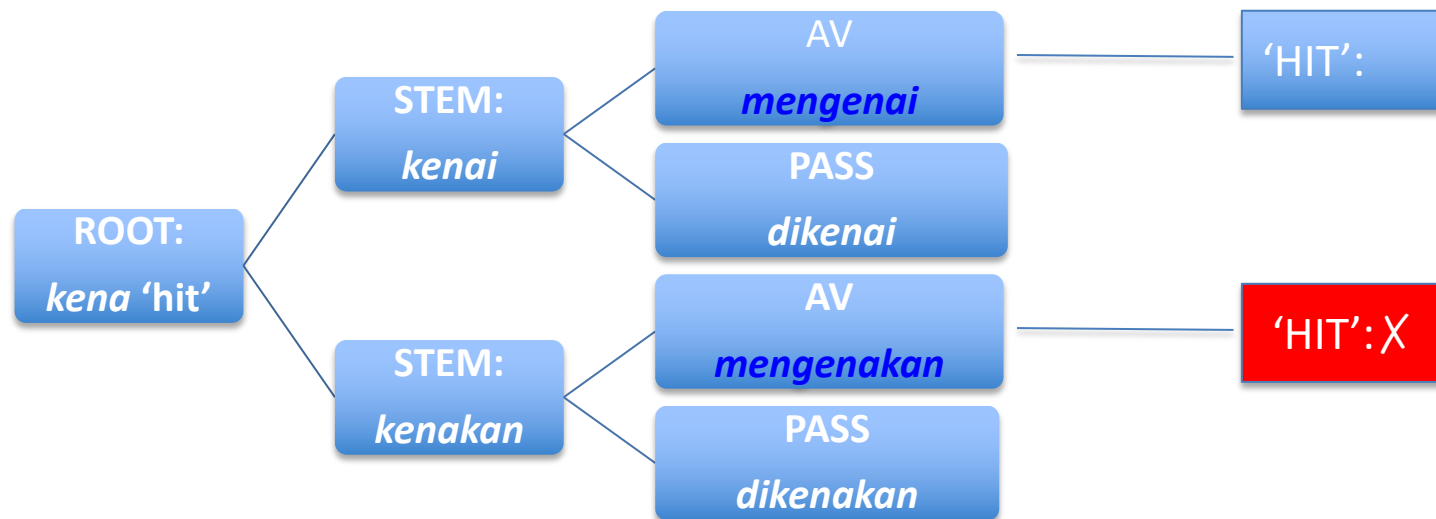
3. *air kotor itu meng-(k)ena-i/\*meng-(k)ena-kan baju Dimas*  
water dirty that AV-hit-APPL / AV-hit-CAUS shirt NAME  
'that dirty water *hits* Dimas' shirt.' (ind\_mixed\_2012\_1M-sentences.txt:774789)

4. *motor kedua akan di-kena-i/di-kena-kan pajak*  
motorbike second FUT PASS-hit-APPL/PASS-hit-CAUS tax  
'the second motorbike will be *subject to/charged with* tax' (ind\_mixed\_2012\_1M-sentences.txt:296558)



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In AV (3), *mengenakan* cannot alternate with *mengenai* to convey the same ('HIT') sense expressed by *mengenai*.

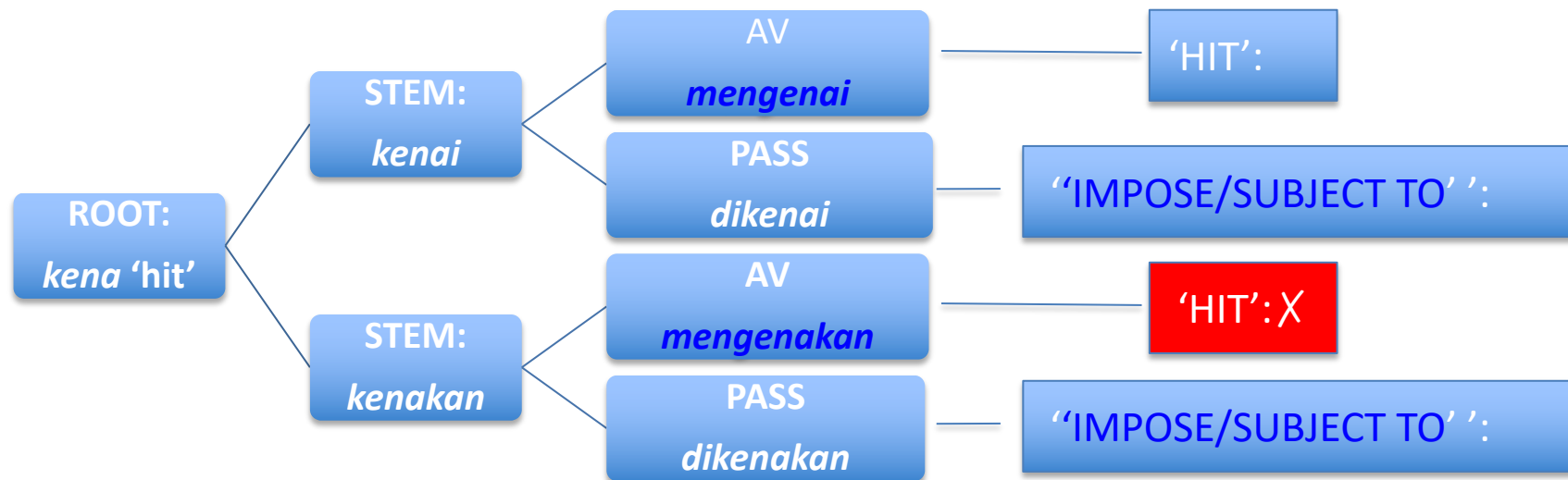
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- In PASS, *dikenakan* can convey similar 'IMPOSE/SUBJECT TO' sense as *dikenai*.
- As we'll see, 'IMPOSE/SUBJECT TO' is the most strongly associated sense for *dikenai* and *dikenakan*



# Key puzzling examples



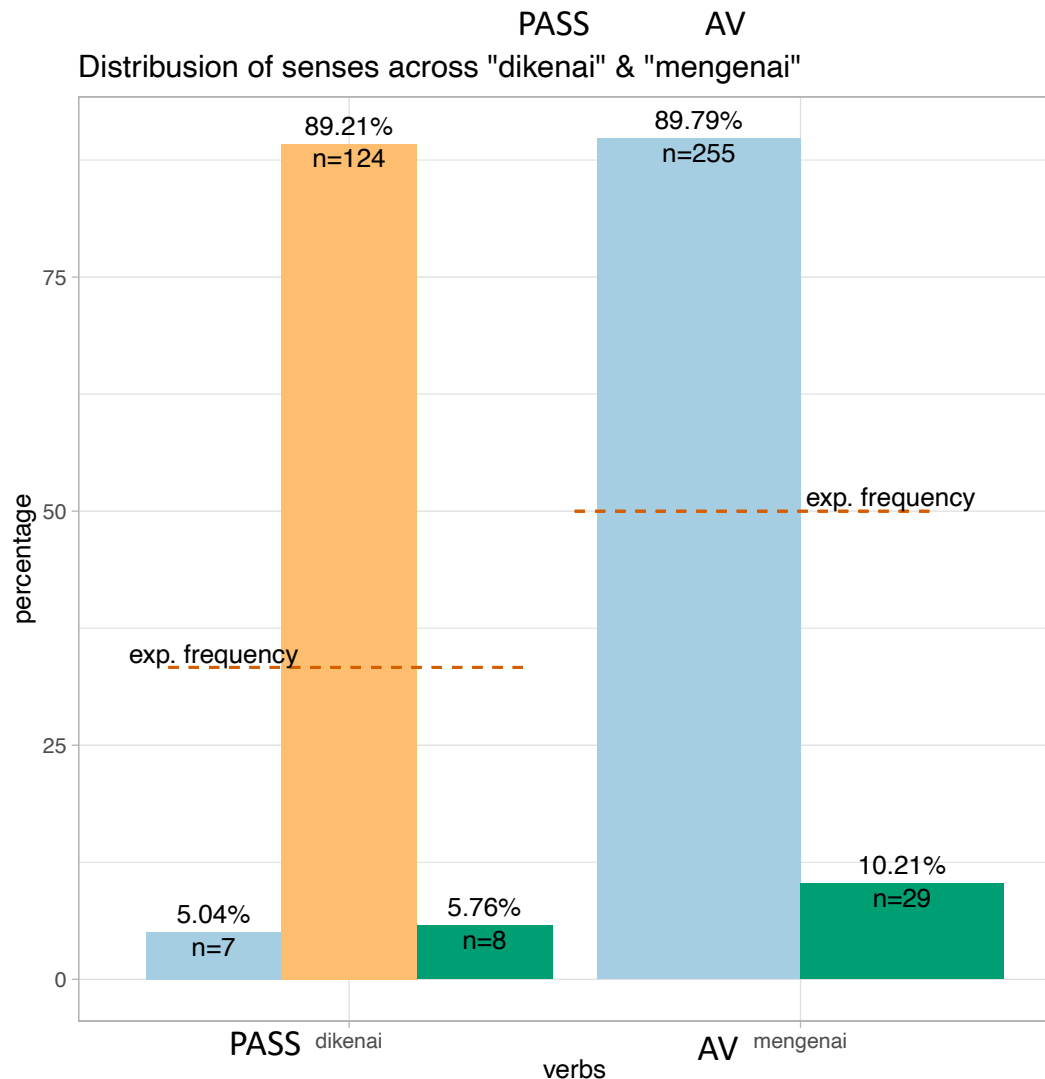
# OUR CORPUS-BASED STUDY

# Methods

- One file of the *Indonesian Leipzig Corpora Collection* (<https://wortschatz.uni-leipzig.de/en/download>)
  - ind\_mixed\_2012\_1M-sentences.txt
  - 15,052,159 word-tokens
- All usage tokens of:
  - AV (lexical, non-prepositional) *mengenai* (n=288),
  - AV *mengenakan* (n=1,101),
  - PASS *dikenai* (n=139), &
  - PASS *dikenakan* (n=446)
- Analysed the senses they convey and summarise the frequencies

# Results:

## PASS *di-kena-i* vs. AV *meng-(k)ena-i*



$\chi^2 = 195.29$ ,  $df = 2$ ,  $p < 0.001$

$\chi^2 = 179.85$ ,  $df = 1$ ,  $p < 0.001$

- predominant sense differs in each PASS and AV forms
  - 'IMPOSE' is NOT available in AV, but only in PASS
  - (physical) 'TOUCH/CONTACT/HIT' is strongly associated with AV

### senses

- come into touch/contact; hit
- subject to/imposed
- affect (medical; mental)

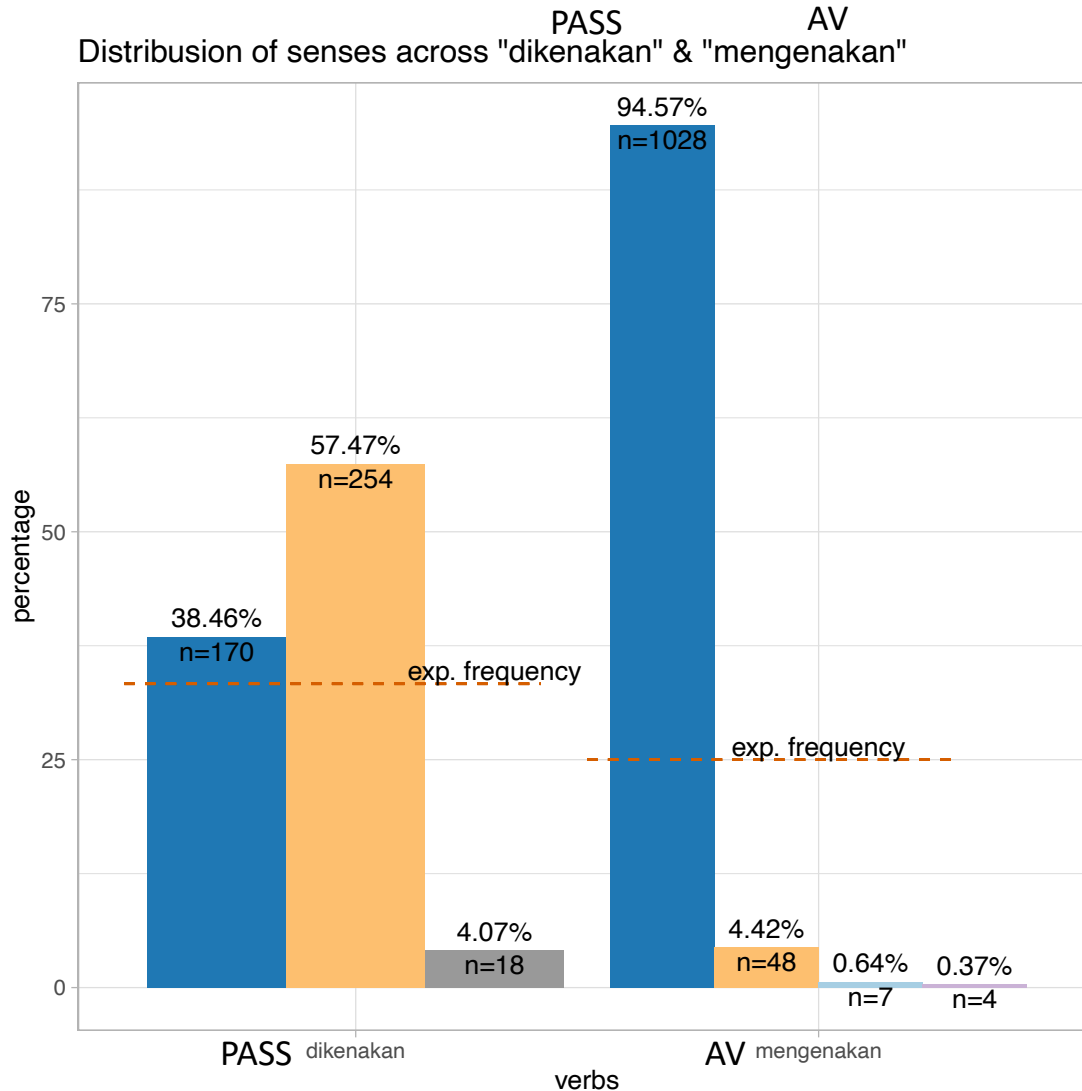
- Empirical evidence:** 'IMPOSE/SUBJECT TO' is constructed and augmented in PASS
  - morphological construction involving senses of formatives in *di-kena-i*
  - PASS is not derived from AV**

# ‘come into touch/contact with; hit’

3. *air kotor itu meng-(k)ena-i/\*meng-(k)ena-kan baju Dimas*  
water dirty that AV-hit-APPL / AV-hit-CAUS shirt NAME  
‘that dirty water *hits* Dimas’ shirt.’ (ind\_mixed\_2012\_1M-sentences.txt:774789)

# Results:

## *PASS di-kena-kan vs. AV meng-(k)ena-kan*



- 'IMPOSE' and 'WEAR' are significantly more frequent in PASS (compared to other senses)

- Only 'WEAR' (not other senses, incl. 'IMPOSE') is significantly more frequent in AV than expected by chance

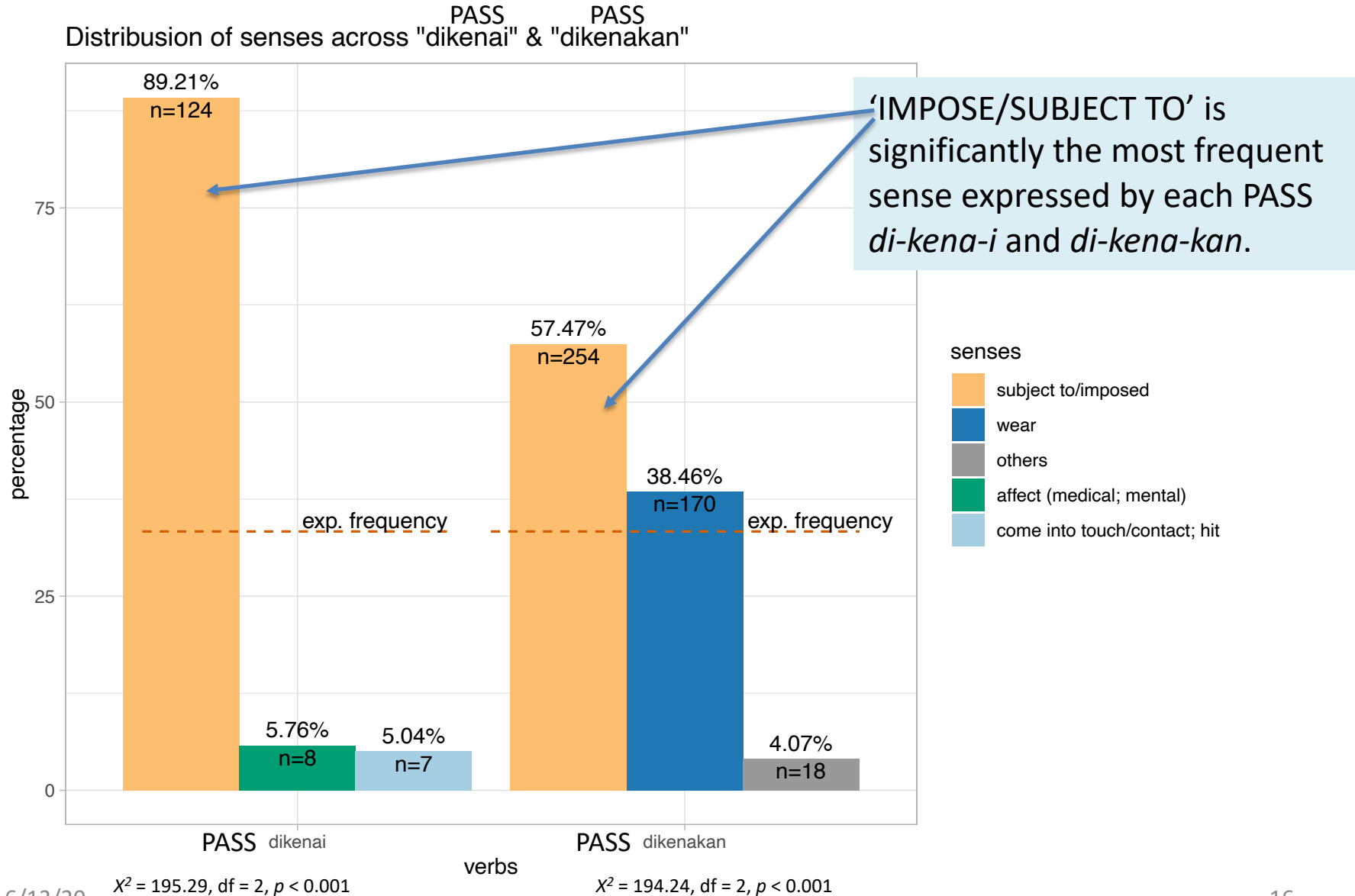
# ‘impose’ (4), ‘wear’ (5), and ‘hit’ (6)

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4. *motor kedua akan di-kena-i/di-kena-kan pajak*  
motorbike second FUT PASS-hit-APPL/PASS-hit-CAUS tax  
‘the second motorbike will be *subject to/charged* with tax’ (ind\_mixed\_2012\_1M-sentences.txt:296558)
5. *dilihat dari seragam yang di-kena-kan, aku berkesimpulan*  
PASS.see from uniform REL PASS-hit-CAUS 1sg conclude  
‘Looking at the uniform that is *worn*, I conclude ...’ (ind\_mixed\_2012\_1M-sentences.txt:900144)
6. *Pukulan itu meng-(k)ena-kan tepat di punggung Touw Tay Kim*  
punch DEM AV-hit-CAUS exact LOC back NAME  
‘That punch *hits* right at Touw Tay Kim’s back...’

- minor (7 examples)
- mostly (4 exs) with PP, not full NP DObj

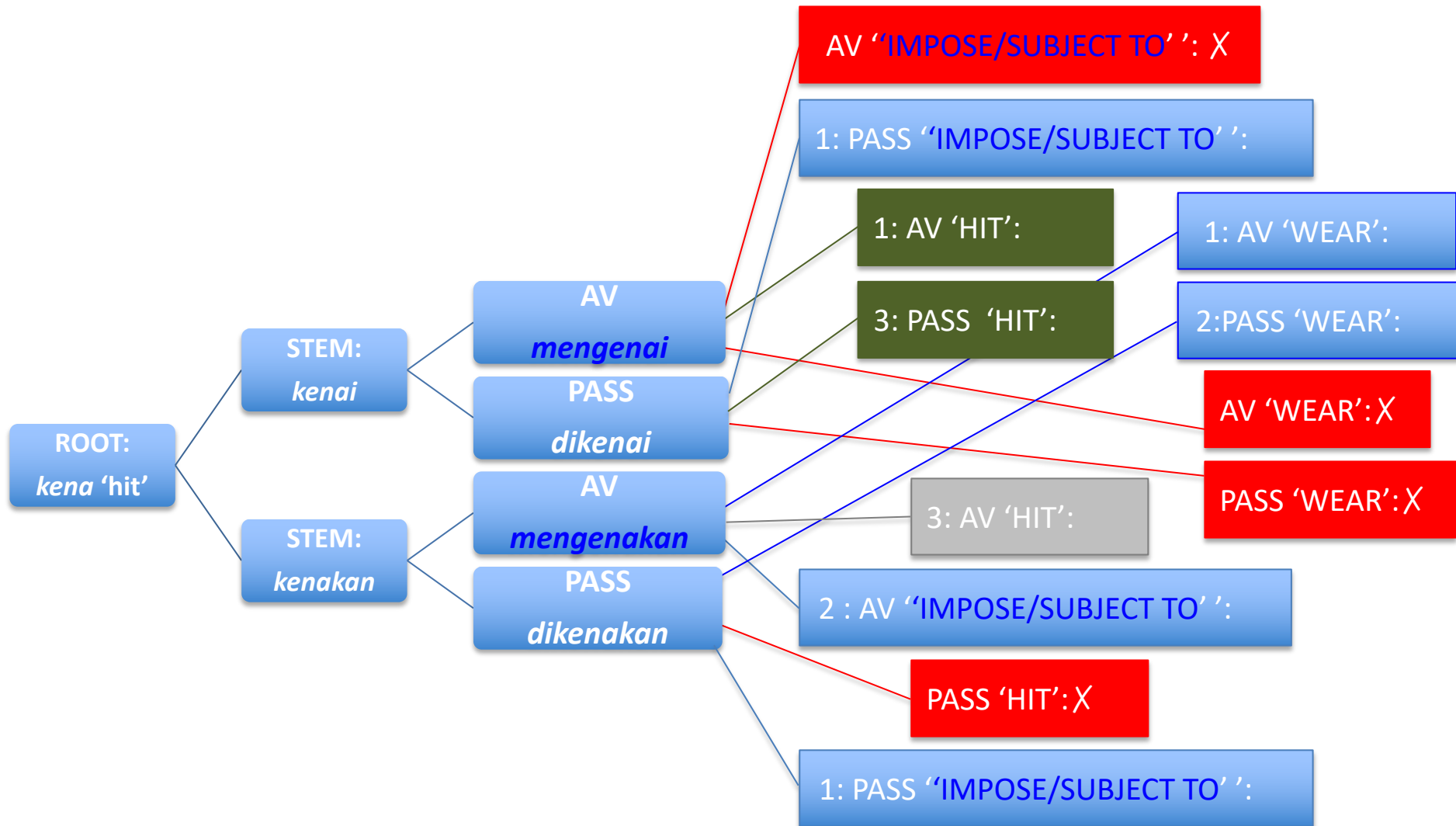
# Results:

## PASS *di-kena-i* & PASS *di-kena-kan*





# Interim summary: distribution of main senses



# LFG ANALYSIS

How to capture  
the complex dynamics of  
meaning constructions in morpholexical derivation  
and language use (usage)  
showing lexicalisation and grammaticalisation?

# Main components of the LFG analysis

- (1) An **argument-structure based analysis**, with entries of the morphological formatives:
  - root (*kena*), the transitiviser (*-i/-kan*), and the voice prefix (*meN-/di-*)
- (2) Principles for **predicate composition**, **argument fusion** and **argument linking** to capture:
  - relative argument prominence, markedness, voice selection mechanism
  - constructional meaning in morphology and syntax
  - collocational restrictions and preferential AV/PASS usage

# A-str Representation: argument prominence

- Prominence is determined along different parameters; e.g.
  - Thematic/semantics: A>G>T
  - Syntactically privileged: SUBJ-PIVOT>non SUBJ-PIVOT; CORE > NonCORE
  - Discourse pragmatics; e.g. Contrastive (focused) DF >non-contrastive DF, TOP > non-TOP
- **UPPERCASE** = a prominent role vs.  
**lower case** = non-prominent role, or thematically specific role
  - *kena* 'HIT<(a:t), P:goal>'

# Argument prominence & SUBJ/PIVOT selection

- SUBJ/PIV selection: prominence matching, harmonic alignment
  - Unmarked: the most prominent ARG is the argument-structure list is the selected/preferred SUBJ-PIVOT argument
  - A-like argument is by default more prominent than P-like argument:

*cium* 'kiss':

SUBJ  
|

- 'KISS<A, p> → 'KISS<A, p>'.

*kena*: semi-transitive

- The verbal root *kena* is lexically P-oriented:  
'HIT<(a:t), P:goal>'
  - The causer is not prominent, or less prominent than P, and is often left-out.

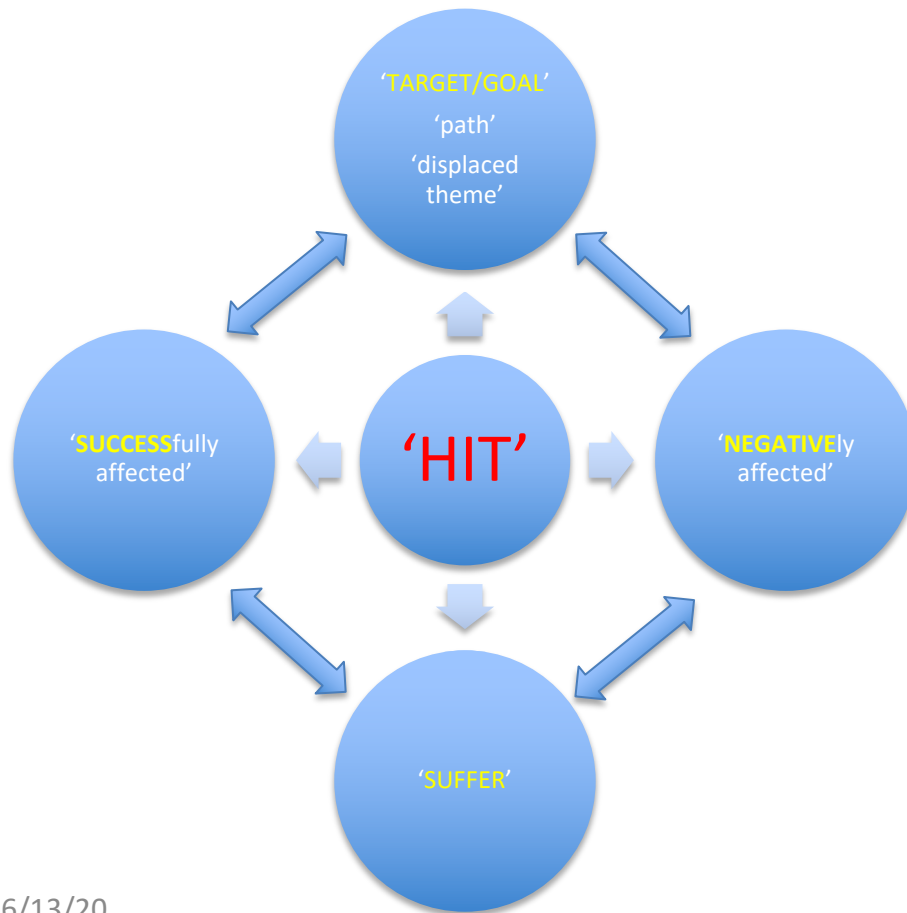
seperti <sup>P:goal</sup> orang yang kena hukuman di kursi listrik.  
as.if person REL hit punishment at chair electricity

SUBJ '...as if a person who **gets punished/punishment** on an electrifying chair.'  
(ind\_mixed\_2012\_1M-sentences.txt:848667)

segala    penghasilan                      otomatis                      kena                      pajak.  
all            income                      automatic                      hit                      tax  
'...all **income** automatically **gets charged with tax.**' (ind\_mixed\_2012\_1M-sentences.txt:664222)

# *kena*: its a-str and prototypical meaning

- Lexical entry: *kena* V 'HIT<(a:t), P:goal>'
- Core and related senses of *kena*:



DERIVED FORMS:  
{*meN*/*di-kena-kan*  
|  
*meN*/*di-kena-i*}

DERIVED MEANINGS:  
{ 'IMPOSED/SUBJECT TO'  
| 'WEAR'  
| ..  
}.

# Markedness and OT-like Voice selection

- GFs (PIVOT/SUBJ>OBJ) and argument roles (A>P/G>T) are ranked and (un)marked for linking and the morphosyntactic expression as SUBJ
  - ^ARG = most prominent in a given argument structure
- Indonesian shows a **symmetrical voice system**; e.g. both AV and PASS are equally morphologically marked.
- OT-style analysis as implemented in XLE/ParGram (cf. Sells 2006)

Mark_L	Mark_5	+Mark_5	Mark_4	Mark_3	Mark_2	Mark_1
$\wedge[P/G]_L = \text{SUB}$	$*\wedge\text{ARG} = \text{SUB}$ & $*\emptyset$	$*\wedge\text{ARG} = \text{SUB}$ & $*\emptyset$	$*\text{NCORE}/\text{SUB}$ & $*\emptyset$	$*\text{T} = \text{SUB}$ & $*\emptyset$	$*\text{P}/\text{G} = \text{SUB}$ & $*\emptyset$	$*\wedge\text{A} = \text{SUB}$
(1)	(2)					(3)

- (1) **Lexically specified linking**: a **lexically specified prominent non-A (P/G) argument** can be selected as SUBJ without (voice-)marking (i.e. with bare verbs); e.g. the linking of the root *kena*.
- (2) 'Don't link an ARG (role) to SUBJ without marking':  
 AV *meN-* marks [ $\wedge\text{A} = \text{SUBJ}$ ]  
 PASS *di-* marks [ $\wedge[\text{non-A}] = \text{SUBJ}$ ]  
 +Mark\_5: this preferred over Mark\_5
- (3) The lowest-ranked negative constraint to capture the default  $\wedge\text{A} = \text{SUBJ}$  (when the verb has no voice marker).



# Voice and Lexically specified SUBJ selection:

- A lexically specified prominent argument ( $^{\text{ARG}}_{\text{L}}$ ) is selected SUBJ:
  - *kena* (i.e. root, bare form) carries a lexically prominent [ $^{\text{P}}\text{goal}$ ] argument

<i>kena</i> :	SUBJ
	'HIT<(a:t), [ $^{\text{P}}\text{goal}$ ] <sub>L</sub> >'

- In derived verbs with {AV *meN* | PASS *di-* } in combination with {-*kan* | -*i*}, the affixes impose their own argument prominence, to which the root's argument prominence is **embedded** and **possibly changed** or **augmented**.

# Voice and SUBJ selection

- In our OT-style (XLE) analysis, the **voice prefix** selects a particular ARG role as  **$\wedge$ ARG**, assigning it Mark5, a high-ranked OT mark:
  - AV *meN*- carries Mark 5, associated with  $\wedge$ A
  - PASS *di*- carries Mark 5, associated with  $\wedge$ non-A (i.e. P/G/T)

*meN*- PREF ( $\uparrow$ PRED)=**AV**<  **$\wedge$ A**, (p), 'STEM\_PRED<(a), p >'>

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( $\uparrow$ OT-ORDER<sub>[ $\wedge$ A]</sub>)= {**Mark5**}

( $\uparrow$ SUBJ) <sub>$\sigma$</sub>  =  $\uparrow_{\sigma}$   $\wedge$ A

*di*- PREF ( $\uparrow$ PRED)=**PASS**<  **$\wedge$ P**, 'STEM\_PRED< **a**, p >' | (**\_**) >'

└────────────────────────────────┘

( $\uparrow$ OT-ORDER<sub>[ $\wedge$ P]</sub>)= {**Mark5**}

( $\uparrow$ SUBJ) <sub>$\sigma$</sub>  =  $\uparrow_{\sigma}$   $\wedge$ P

# The transitiviser *-i/-kan*

- Effect of *-kan/-i* derivation:
  - predicate composition, argument fusion, alternation of the stem's argument prominence
- Discussed under the rubric of **causativisation** and **applicativisation**:
  - The **causative *-i*** results in the **introduction of Causer A**, or **augmenting the stem's A** (through argument fusion), assigning  **$\wedge A$**  (by default, Mark 1).
  - The applicative **locative *-i*** results in the promotion of a **<loc/goal> argument** to **(prominent) P/G** (i.e. the 2<sup>nd</sup> position) in the argument structure list.

# -i: ARG-Fusion

- We only show the types of the *-i* fusion here relevant for our discussion on *kena* (cf. Arka et al 2009 for the details of other fusion types):

Type 4 **CAUSATIVE** (HARMONIOUS, SINGLE) FUSION:

*-i*      SUF    ( $\uparrow$ PRED)='AFFECT< **A** , [**p=go/loc**], 'STEM\_PRED< \_ , ( \_ ) >'>'



*kena*      V    'HIT<(a:t), P:goal>'



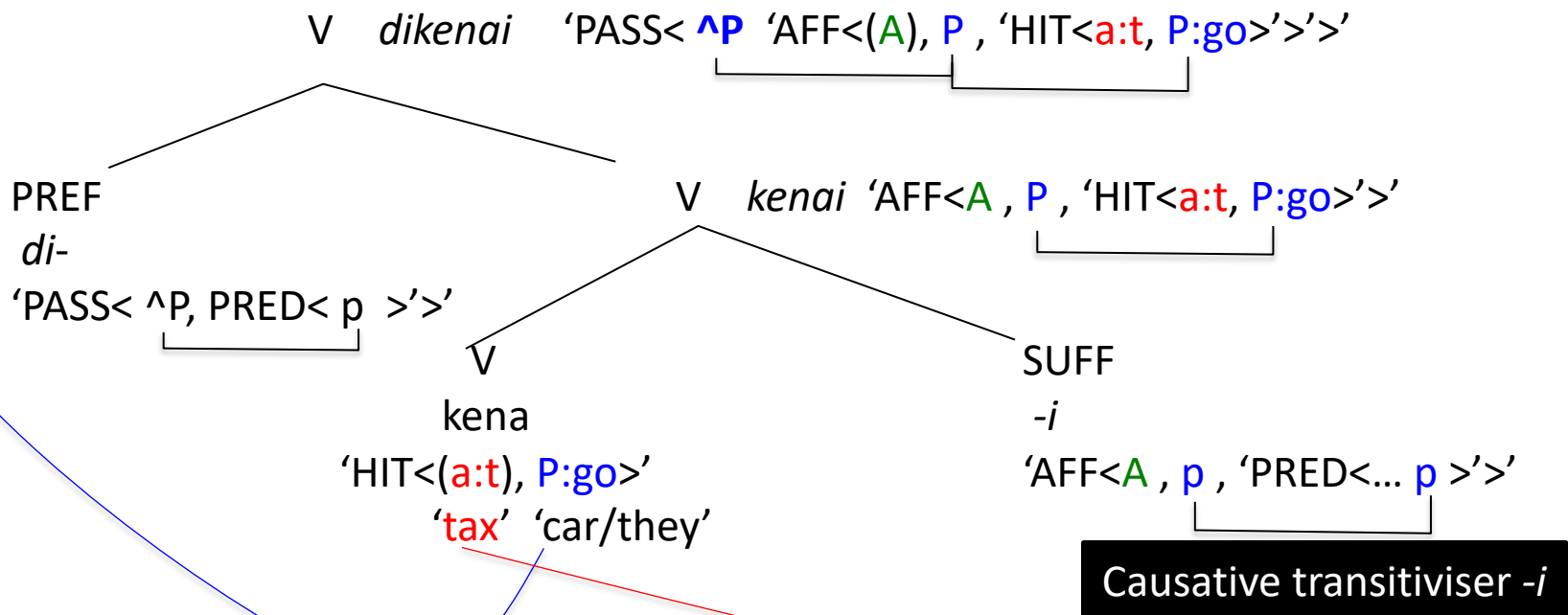
*kena-i*      V    ( $\uparrow$ PRED)='AFFECT< **A** , **P:go/loc**, 'HIT< a:t , **P:goal**>'>'



# Morpho-lexical derivation: *dikenai*

- Diagrammatic representation of the derivation of *dikenai*:

[Mobil/mereka]<P:go> di-kena-i [pajak tinggi]<a:t>  
 car/they PASS-hit-i tax high  
 'The cars/they were **charged/imposed** with a high tax.'



HOWEVER,  
A COMPLICATION ARISES  
DUE TO  
THE DYNAMICS OF MEANING INTERACTION  
BETWEEN SENSES CARRIED  
BY THE ROOT/STEM AND AFFIXES  
AND POSSIBLE NEW SENSES CONSTRUCTED IN THE  
DERIVATIONAL PROCESS  
  
WHICH IMPOSES COLLOCATIONAL CONSTRAINTS  
REFLECTING REFERENTIAL USAGE

# *-i* vs. *-kan* : related senses (1)

**The suffix *-i*** introduces an event with the following properties:

- the salient argument being the **goal/locative target** (i.e. the **end point of the affectedness**);
- typically carrying a **negative** impact/evaluation.
  - Captured by the ‘negative’ superscript notation (in contrast to ‘AFFECT<sup>+</sup> < ....>’ for *-kan*)

*-i* SUF (↑PRED)=‘AFFECT<sup>-</sup> < **A**, [**p=go/loc**], ‘STEM\_PRED< \_, ( ) >’>’

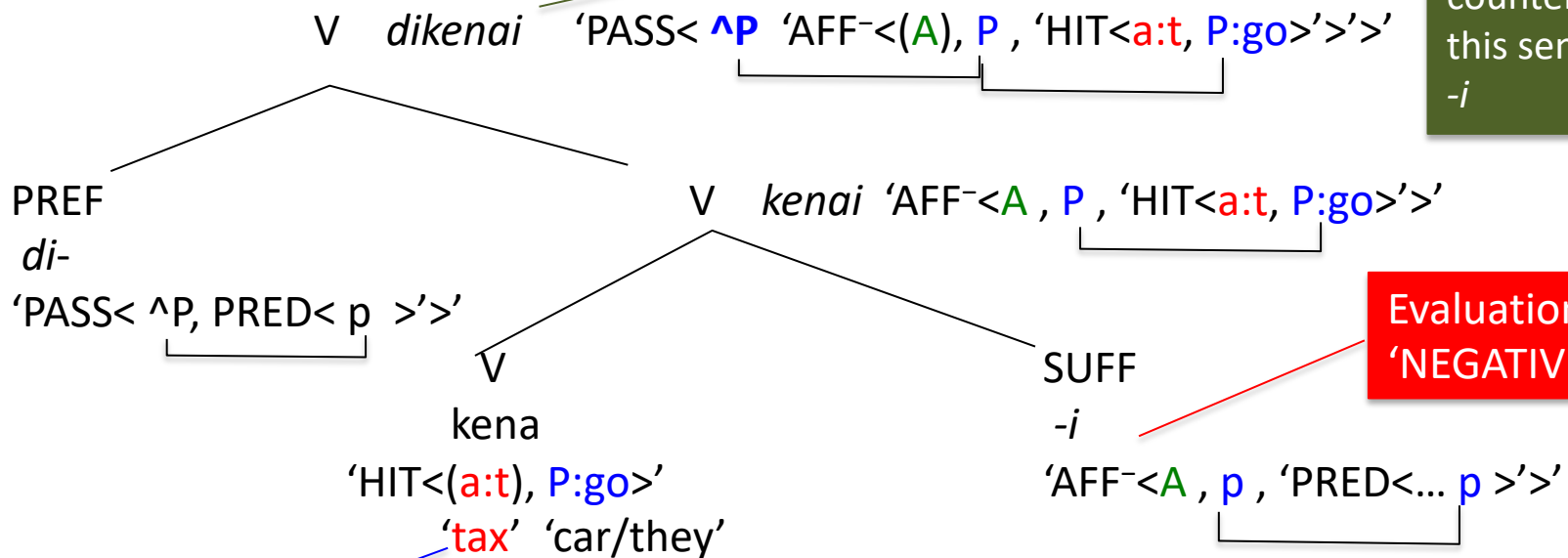
Thus, the semantics of *-i* (not *-kan*) is compatible with the **negative sense** of *kena*, and therefore augments the **negative affectedness of the root *kena***.

# Morpho-lexical derivation: *dikenai*

- *Dikenai*: abstract sense of 'IMPOSE/SUBJECT TO'.

[Mobil/mereka]<P:go> di-kena-i [pajak tinggi]<a:t>  
 car/they PASS-hit-i tax high  
 'The cars/they were **charged/imposed** with a high tax.'

'IMPOSE' sense is morphologically constructed here; no AV counterpart for this sense with -i



Evaluation:  
'NEGATIVE'

'abstract (displaced) entity'

⇒ sense: 'IMPOSE/SUBJECT TO'  
 ⇒ usage: PASS preferred  
 ⇒ Evaluation: **NEGATIVE**

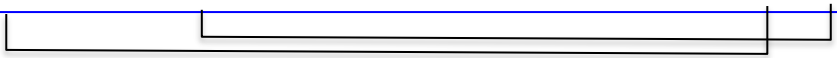


# -i: ARG-Fusion

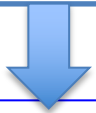
- We only show the types of the *-i* fusion here relevant for our discussion on *kena* (cf. Arka 2009 et al for the details of other fusion types): ‘physical contact HIT’

Type 5 CAUSATIVE(HARMONIOUS, DOUBLE) FUSION:

*-i*   SUF   ( $\uparrow$ PRED)=‘AFFECT’-< a , [p=go/loc], ‘STEM\_PRED< \_ , ( \_ ) >’>’



*kena*   V   ‘HIT<(a:t), P:goal>’

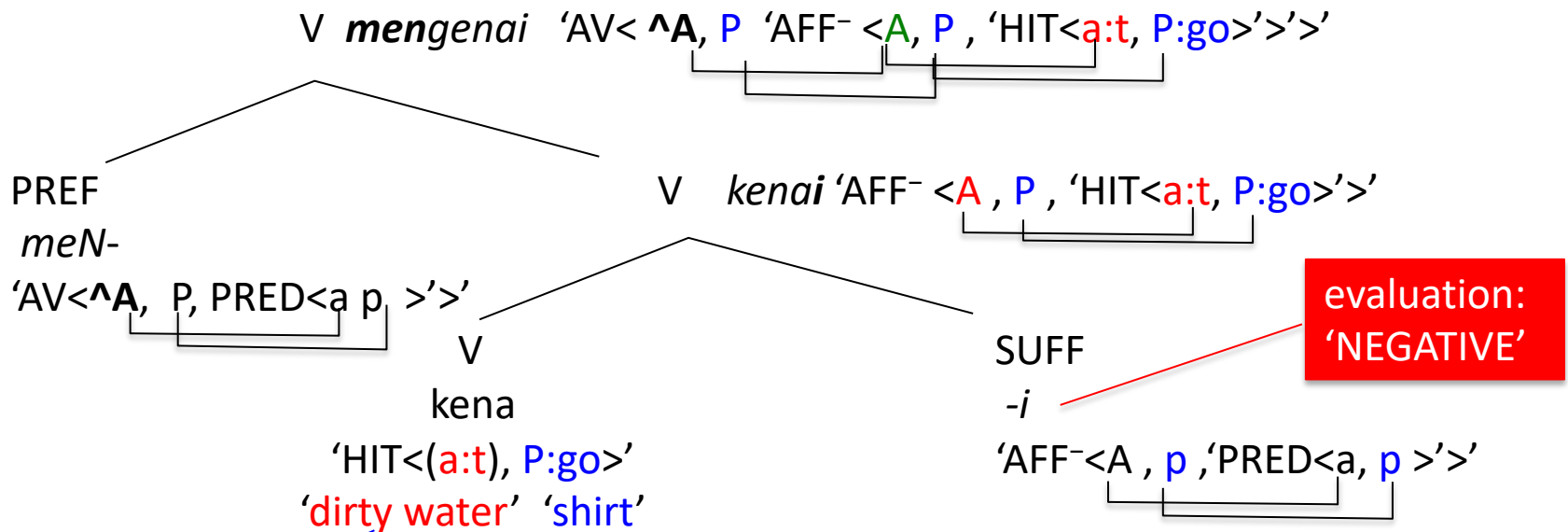


*kena-i*   V   SUF   ( $\uparrow$ PRED)=‘AFFECT’-< a , **p:loc**, ‘HIT< a:t , **P:goal**>’>’



# Morpho-lexical derivation, AV *mengenai* : 'physical contact HIT'

*Air*     *kotor*     *itu*     *mengena-i*     /<sup>\*</sup>     *meng-(k)ena-kan*     *baju*     *Dimas*  
 water   dirty   that   AV-hit-CAUS   /   AV-hit-CAUS   shirt   NAME  
 'that dirty water **hits** Dimas' shirt.'



'physical (displaced) entity'

⇒ sense: '(physical) CONTACT'  
 ⇒ usage: AV preferred

# –i vs. –kan, intriguing difference: ‘WEAR sense’

- The suffix –i:
  - comes **with** a negative evaluative sense:
    - –i DOES NOT construct the meaning ‘WEAR’ with *kena*
    - This is because its core meaning is **incompatible** with the positive socio-cultural meaning of the process of having body accessories decoration.
- The suffix –kan:
  - introduces an event typically with the **salience given to the displaced <th>** (cf. Arka et al 2009, Kroeger 2007);
  - comes with a **neutral** or **positive** evaluation: AFFECT<sup>(+)</sup>
    - used to express ‘**benefactive**’; not surprising that with the root *kena*,  
–kan (but not –i) is the transitiviser that construct the ‘WEAR’ sense. This is because body accessories are **socio-cognitively salient to give a positive effect** in any cultures.

# *-kan*, not *-i*, constructs the 'WEAR' sense

## Type 4, CAUSATIVE FUSION OF -KAN

(CROSSED, "CONSTRUCTIVE" MEANING, POSSIBLY REFLEXIVE):

'POSITIVE' evaluation & 'reflexive'

*-kan*      SUFF      ( $\uparrow$ PRED)= 'AFFECT<sup>+</sup>< A , p, 'STEM\_PRED< a p >'>'

*kena*      V      'HIT<(a),P:goal>'

*kena-kan*      V      ( $\uparrow$ PRED)= 'AFFECT<sup>+</sup>< A , p, 'HIT< a, P:goal >'>'

'POSITIVE' evaluation & 'reflexive'

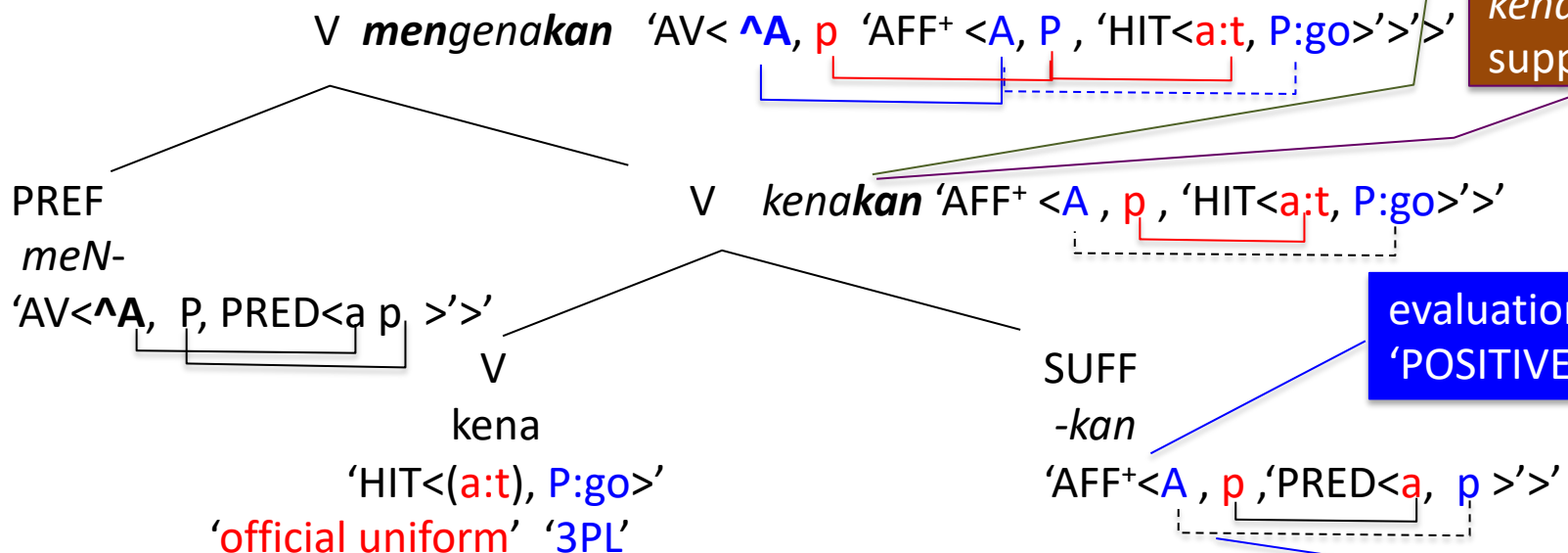
'IN CONTACT' sense is activated & 'NEGATIVE' sense is suppressed

# Morpholexical derivation: *AV mengenakan* 'AV.WEAR'

*Mereka* **meng-(k)ena-kan** *seragam dinas*  
 3PL AV-hit-CAUS uniform official  
 'They are wearing **official uniforms**.'

'WEAR' sense  
 is morpho-  
 logically  
 constructed

'NEGATIVE'  
 sense of  
 the root  
*kena* is  
 suppressed



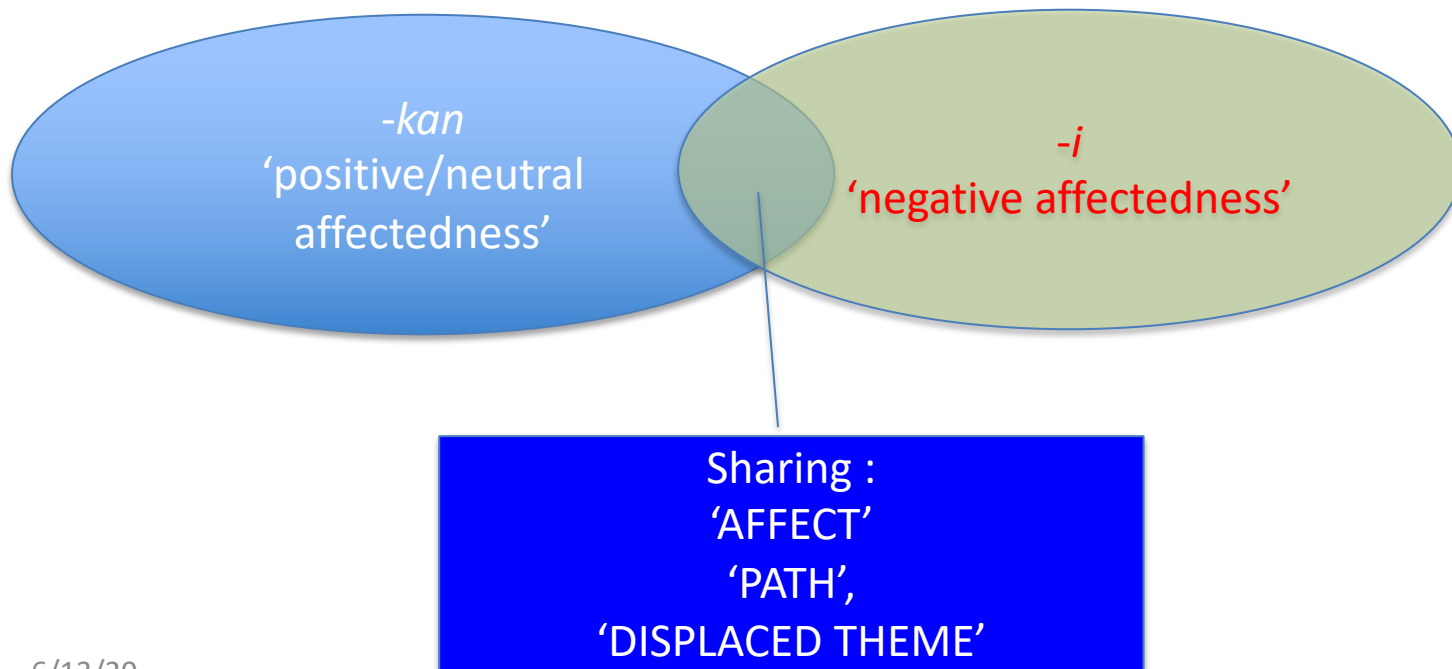
'physical (displaced) entity'

⇒ sense: '(physical) CONTACT'  
 ⇒ usage: AV preferred  
 (to PASS)

'REFLEXIVE' sense:  
 'A does X to/for A's self'

# *-kan* vs. *-i*: overlapping senses

- Both *-kan* and *-i* carry encode **affectedness**, captured by AFFECT in their lexical entries
  - different in terms of evaluative sense: **negative** (typically with *-i*) vs. neutral **vs. positive** (typically with *-kan*): subjective, a matter of degree



# *-kan* vs. *-i*: overlapping senses

- Outcome of the affixation of **kena + -i/-kan**:
  - Subtle nuanced conceptions of ‘affectedness’ are constructed:
    - ① carried out in a process involving a **PATH** with a **(displaced)<theme>**;
    - ② Event types of (1): concrete or abstract processes: **[+/-concrete]** (associated with the **<theme>**)
    - ③ **Socio-cultural evaluation** of (1)-(2): part of institutionalized interactions and cultural practices such as **imposition of social duties and responsibilities and related punishments** (e.g. taxes, punishments etc.)

# *-kan* vs. *-i*: overlapping senses

- Expected & explainable: both *-kan* and *-i* are usable in **abstract affectedness** with overlapping properties:
  - **Abstract affectedness** encapsulates **a very broad range of event construal**. The findings confirm the overlap of *-kan* and *-i* in this abstract semantic field.
- Example:  $X_{<G>}$  di-**kena**{-**kan** | -**i**} pajak $_{<T>}$   
X PASS-HIT-CAUSE tax  
'X was imposed/charged with a tax'



# Full lexical entry specifications of *kena*:

*kena* → {*kenakan* 'WEAR', *kenai* 'imposed' }

*kena*    V    ( $\uparrow$ PRED)='HIT<(a:<sub>th</sub>) P:<sub>goal</sub>>'

{ ( $\uparrow$ TR.SUFF\_FORM)=KAN ⇒

F( $\uparrow$ PRED), (→<sub>H</sub> PRED<sub>KAN</sub>)

1a

( $\uparrow$ FUSE.ARG TYPE)= {4}:<sub>[A=P:goal]</sub>

( $\uparrow$ GF SEM.TYPE<sub>[a:t]</sub>) =c WEARABLE

( $\uparrow$ OT-ORDER<sub>[A=P:goal]</sub>)= {+Mark5}

( $\uparrow$ OT-ORDER<sub>[p=a:t]</sub>)= {Mark5}

|

( $\uparrow$ TR.SUFF\_FORM)=I ⇒

F( $\uparrow$ PRED), (→<sub>H</sub> PRED<sub>I</sub>)

2

( $\uparrow$ FUSE.ARG TYPE)= {4, 5}:<sub>[p=P:goal/loc]</sub>

( $\uparrow$ GF SEM.TYPE<sub>[a:t]</sub>) =c {~WEARABLE, -CONCRETE}

( $\uparrow$ OT-ORDER<sub>[p:goal]</sub>)= {+Mark5}

}.}

[A=P:goal] is ^ARG with +MARK5 making the AV 'WEAR (*mengenakan*) is preferred to the PASS *dikenakan* (as its [a:t] is flagged as MARK5)

The ARG fusion with the suffix *-i* (i.e. in *kenai*) never constructs the 'WEAR' sense, as its [a:th] argument has the semantic constraint of ~WEARABLE

The fused prominent [p=P:goal] is ^ARG, triggering Passive for *kenai*. We make MARK5 explicit here to encode this.

# Full lexical entry specifications of *kena*:

*kena* → {*kenai* 'IMPOSE', *kenakan* 'IMPOSE' }

*kena*    V    ( $\uparrow$ PRED)='HIT<(a:<sub>th</sub>) P:<sub>goal</sub>>'

-kan & -i allow the same fusion with [p=P:goal] being ^ARG, naturally triggering PASS.

'IMPOSED' (physical or abstract/metaphoric al) senses are associated with different ARG fusion types, and SEM.TYPES associated with [a:t], which is ~WEARABLE

{ ( $\uparrow$ TR.SUFF\_FORM)=KAN ⇒  
F( $\uparrow$ PRED), ( $\rightarrow_H$  PRED<sub>KAN</sub>)

**1b** ( $\uparrow$ FUSE.ARG TYPE)= {2,3}:<sub>[p={P:goal[a:t]}]</sub>  
( $\uparrow$ GF SEM.TYPE<sub>[a:t]</sub>) = c ~WEARABLE -CONCRETE  
( $\uparrow$ OT-ORDER<sub>[P:goal]</sub>)= {Mark5}

|  
( $\uparrow$ TR.SUFF\_FORM)=I ⇒  
F( $\uparrow$ PRED), ( $\rightarrow_H$  PRED<sub>I</sub>)  
**2** ( $\uparrow$ FUSE.ARG TYPE)= {4, 5}:<sub>[p=P:goal/loc]</sub>  
( $\uparrow$ GF SEM.TYPE<sub>[a:t]</sub>) = c { ~WEARABLE, -CONCRETE}  
( $\uparrow$ OT-ORDER<sub>[P:goal]</sub>)= {+Mark5}

}.  
}

+Mark5 means that, when (1b) and (2) compete, then (2) is preferred

The fused prominent [p=P:goal] is ^ARG, triggering Passive for *kenai*. We make MARK5 explicit here to encode this.

# Final remarks and conclusion (1)

- We have presented fresh corpus-based empirical evidence showing how properties of a verbal stem (*kena*), the **transitivisers** (-*kan*/*-i*) and **voice affixes** interact in a complex way.
- A voice type (AV/PASS) encodes a selection/statistical preference of a particular meaning/sense of the (derived) verb,
- Certain senses/meanings are **morphologically constructed and augmented by AV or PASS markers**. As such, voice markers are part of specific morphological constructions for particular meanings.
  - Example: the ‘IMPOSE/SUBJ. TO’ sense with the root *kena* is constructed by [**PASS.PREF+KENA+SUFFIX\_I**]: empirically there is no AV counterpart for evoking this sense.
- A voice alternation is therefore not always argument (re-)linking processes in which the stem’s meaning is preserved.

# Final remarks and conclusion (2)

- We have provided an explicit LFG analysis to capture the empirical points, showing that LFG is well equipped with the machinery for this:
  - explicit and precise formalism in the lexical entries to encode the relevant constraints
- Further research ....
  - Testing the analysis in the Indonesian ParGram grammar?
  - Checking with all verbs derived from *kena*.
  - Experimental follow-up (e.g. sentence elicitation task):
    - How strong is such predominant meaning for a given verb (in a given voice) cognitively represented in the speakers' linguistic knowledge of that verb?

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