A Modal Approach to *no*-clauses in Japanese

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1 Introduction

Classification of embedded clauses

- Factivity (Karttunen 1971, 1973; Kastner 2015)
- Root phenomena (Emonds 1970; Hooper and Thompson 1973)
- *wh*-movements (Erteschik-Shir 1973; Cattell 1978)
- Mood selections (Villalta 2008; Portner 2018)

Distinction between *no*-clauses and *koto*-clauses

-*Koto* clauses: an abstract concept

-*No*-clauses: a concrete/direct event

(Kuno 1973; Josephs 1976; Inoue 1976; Kageyama 1977; Hashimoto 1990; Noda 1997).

1 Introduction

Question: Do *no*-clauses encode an event in the sense of Davidson (1967)?

(1) *Ore-wa* [$_{CP}$[$_{TP}$ *monban-ga* *tobira-o* *aker-u*]-{*no*/**koto*}]-*o* ***mi-ta.***
I-TOP gateman-NOM door-ACC open-PRS-{no/koto}-ACC see-PST
'I saw [the gateman open the door].'

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I-TOP gateman-NOM door-ACC open-PRS-{no/koto}-ACC see-PST
'I saw [the gateman open the door].'

Naïve event analysis

(A) **Analysis**: the complement clause depicts an event, which is existentially bound.

(3) $\exists e.\, \exists \boldsymbol{e'}.\, see(e) \wedge \mathrm{EX}(I, e) \wedge \mathrm{STIMULUS}(e, e') \wedge \boldsymbol{open(e') \wedge \mathbf{AG}(e', \textbf{the gateman}) \wedge \mathbf{PAT}(e', \textbf{the door}).}$

(4) $\exists \boldsymbol{e'}.$ $\boldsymbol{open(e') \wedge \mathbf{AG}(e', the\ gateman) \wedge \mathbf{PAT}(e', the\ door)}$

(B) **Advantage**:

- Entailment: the proposition expressed in the complement clause is entailed.

(2) **Ore-wa* [$_{CP}$[$_{TP}$ *monban-ga* *tobira-o* *aker-u*]-*no*]-*o* ***mi-ta-ga,***
I-TOP gateman-NOM door-ACC open-PRS-no-ACC see-PST
tobira-wa *ak-anak* *at-ta.*
doors-TOP open-NEG be-PST
'I saw [the gateman open the door] but the door did not open (intended).'

2 A problem

2 Problems

Question: Do *no*-clauses encode an event in the sense of Davidson (1967)?

(5) [$_{CP}$[$_{TP}$ *monban-ga* *tobira-o* *aker-u*]-{*no*/?*koto*}]-*o* ***mat-ta.***
gateman-NOM door-ACC open-PRS-{no/koto}-ACC wait-PST
'(I) waited [for the gateman to open the gate].'

Naïve event analysis

(C) **Prediction**: The sentence in (5) entails that the door opened, which is wrong.

(3) $\exists e.\, \exists \boldsymbol{e'}.\, wait(e) \wedge \mathrm{EX}(I, e) \wedge \mathrm{STIMULUS}(e, e') \wedge \boldsymbol{open(e') \wedge \mathrm{AG}(e', \text{the gateman}) \wedge \mathrm{PAT}(e', \text{the door})}$

(4) $\exists \boldsymbol{e'}.$ $\boldsymbol{open(e') \wedge \mathrm{AG}(e', \textit{the gateman}) \wedge \mathrm{PAT}(e', \textit{the door})}$

(7) Research questions

a. Question 1: What verbs prefer to take *no*-clauses?

b. Question 2: How does the entailment property appear in (1) but not in (5)?

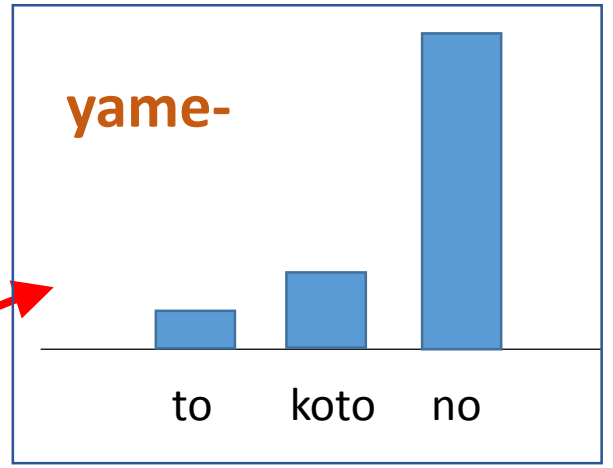
3 A corpus study

3 A corpus analysis

Question 1: What verbs prefer to take *no*-clauses?

a. Question 1: What verbs prefer to take *no*-clauses?

3 A corpus analysis



Question 1: What verbs prefer to take *no*-clauses?

Method: To examine selectional tendencies,
Collect examples from a corpus
which have the form of [**a complementizer + a verb**].

Example:

「 これ と 似 た よう な 事件 が 今年 起き た	こと を おぼえ	て いる ？ 」 「 どの 事件 だ ？ 」
洛 に 戻ろう 」 バーウェル は チャック が うなずく	の を 待っ	た 。それ から 右舷 の 走査 器 で 位
「 し 、静か に 帰っ て 来る	の は **止めろ**	」 「 … なん で ？ 」 な の に 蛍
わ ず 、僕 の 行為 に よっ て 犠牲 者 が 出る	こと を 好ま	ない 」 「 狡い 」 「 ああ 狡い さ 。
いえ ば 、センター 試験 の 願書 もらっ て くる	の 忘れ	た ！ 」 もちろん 、明日 で も あさ
「 そう か 、梟 の 黒 三郎 に 貸し が あっ た	の を 忘れ	て い た 」 田七 が 手 に し て い た
「 それ じゃ 、寝る	の は **やめよう**	」 いっそう 強く 彼女 を 抱きしめる 。「
い た の で 、アンドリア は 憎ま れ 口 を たたく	の を **やめ**	た 。人々 は 華やか な 会場 に 置か
殺 し て もらえ ば 、やつ ら も コカイン を 追う	の は 諦める	。コカ を 失う の は 残念 だ が 、これ
とえ お前 だろう が 、お前 の その 体 を 殺す	事 は 許さ	ない 。自殺 する ん だっ たら 、その
「 で は 、それ で 済む	こと を 祈り	ましょう 。？ お 先 に どうぞ 」 と 蘭馬
「 ばか を 言う	の は **やめろ**	。だいたい 、わし が あんた を 見殺し
「 フ 、フ 、フ 」 と 笑っ て かわさ れ た	こと を 思い出し	た 。 喋り の プロ 、アナウンサー も
な が ぼく に 話しかけ て 看守 の 鞭 を 受ける	の を 恐れ	て い た 。そして ぼく も 、言葉 を 交

3 A corpus analysis

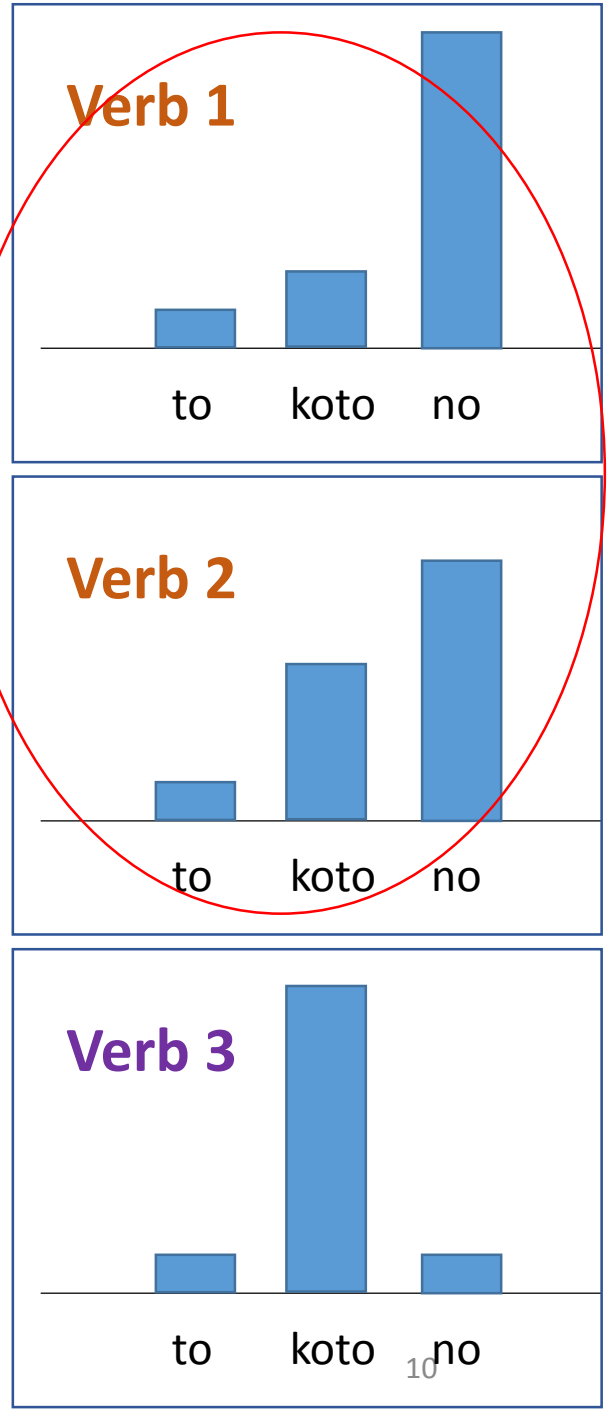
Question 1: What verbs prefer to take *no*-clauses?

Method: To examine selectional tendencies,
Collect examples of **[a complementizer + a verb].**

Example:

Goal: To identify a meaningful cluster

If a verb has the meaning **X**,
it is likely to take a *no*-clause.



3.1 Data

Question 1: What verbs prefer to take *no*-clauses?

Corpus: BCCWJ (one of the largest annotated corpora)

Restrictions: 1) Main clause uses

- in order to avoid spurious cases

(8) [[*tasya-ga* *tasya-de* *ar-u* ***koto***]-***o*** [*yorokon-de*] ***uketomer-u***]
others-NOM others-being COP-PRS koto-ACC become happy-being admit-PRS

'that you happily admit that others are others' (PB41_00164)

(9) [verb / adjective / auxiliary] [koto / no] to (+o) (+o) (+wa) TOP *verb* (+teir) PRF (+mas) HON_A [(+en) / (+nai) NEG] (+des) HON_A (+ta) PST + punctuation.

2) Punctuations

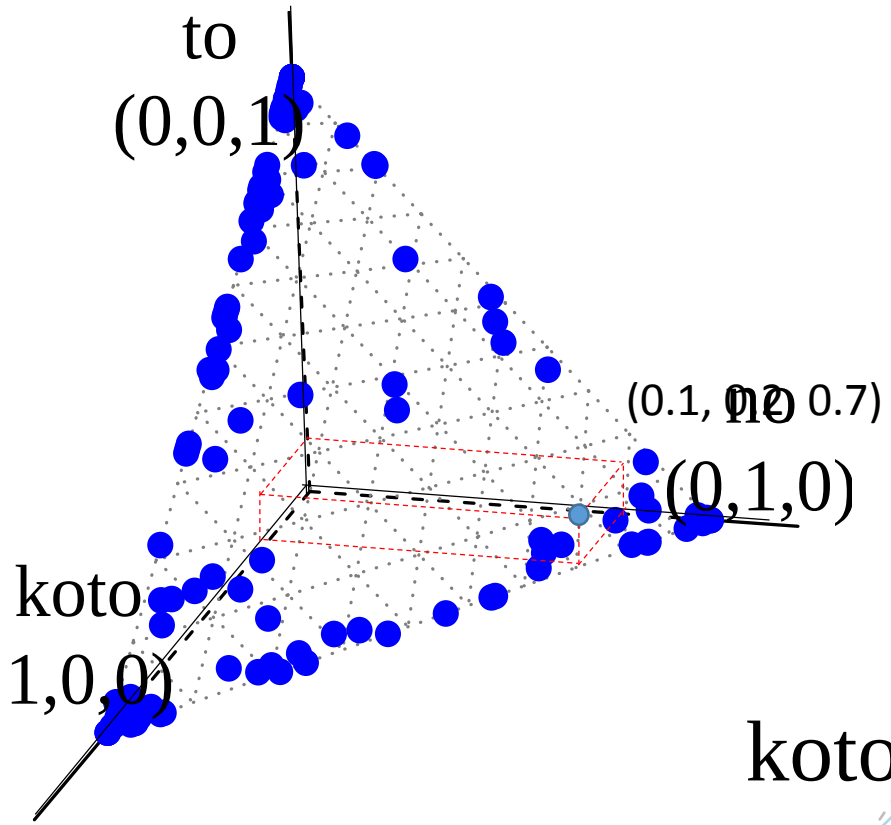
- *Commas
- *a conditional form, a negative conjectural form
- *an adnominal form, an infinitive form, or a provisional form

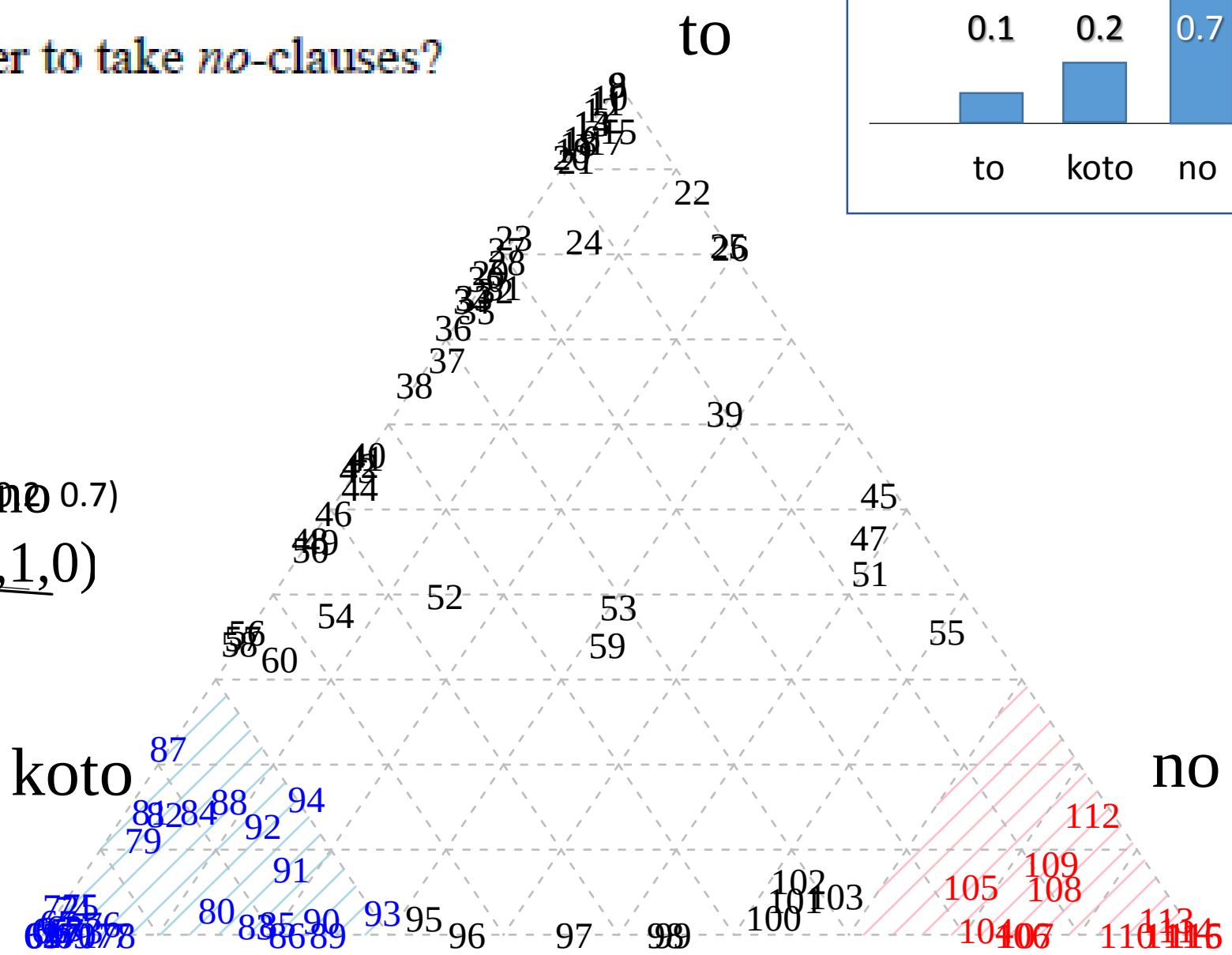
3) Frequency

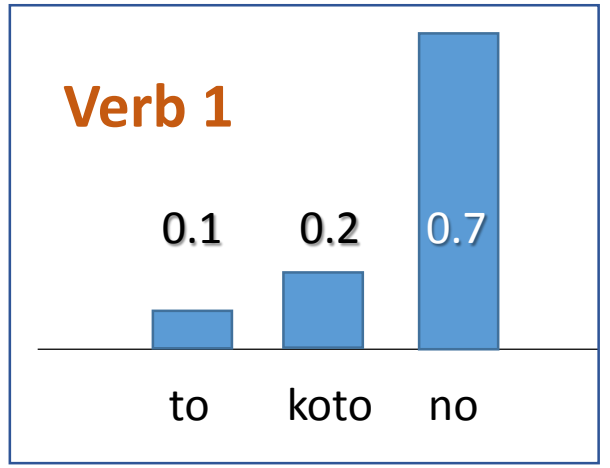
$\geq$ 30 times

3.2 Results

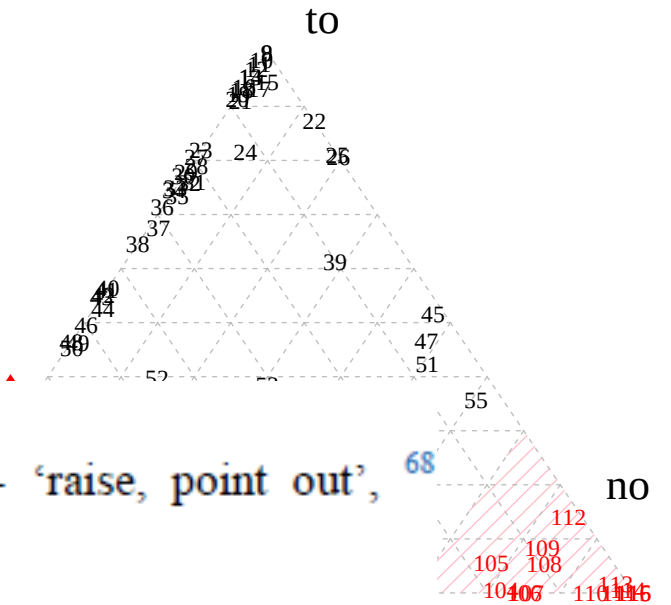
Question 1: What verbs prefer to take *no*-clauses?







3.2 Results



Question 1: What verbs prefer to take *no*-clauses?

(12) *koto*-clauses (transitive predicates)

a. **verbs-of-description**: [71]*sas-* 'refer to', [65]*simes-* 'show', [67]*arawas-* 'express', [70]*age-* 'raise, point out', [68]*monogatar-* 'recount, show'

b. **modals**

(i) **teleological predicates**: [74]*motome-* 'seek', [72]*manab-* 'learn', [69]*mezas-* 'aim', [90]*tasikamer-* 'ascertain'

(ii) **bouletic predicates**: [84]*nozom-* 'desire', [82]*inor-* 'pray', [49]*negaw-* 'wish', [57]*tikaw-* 'swear'

(iii) **epistemic predicates**: [88]*mitome-* 'recognize', [94]*sir-* 'come to know', [77]*miidas-* 'discover, find out (by detecting)'

(iv) **deontic predicates**: [61]*yoosur-* 'need'

(v) **decision predicates**: [86]*yurus-* 'forgive', [86]*erab-* 'select, decide'

c. **aspects**

[92]*kurikae-* 'repeat'

(13) *koto*-clauses (intransitive predicates)

a. **modals**

(i) **decision predicates**: [79]*kimar-* 'be decided'

(ii) **epistemic predicates**: [78]*yomitor-e-* 'can be read off', [73]*ukaga-e-* 'can be inferred', [91]*wakar-* 'be known'

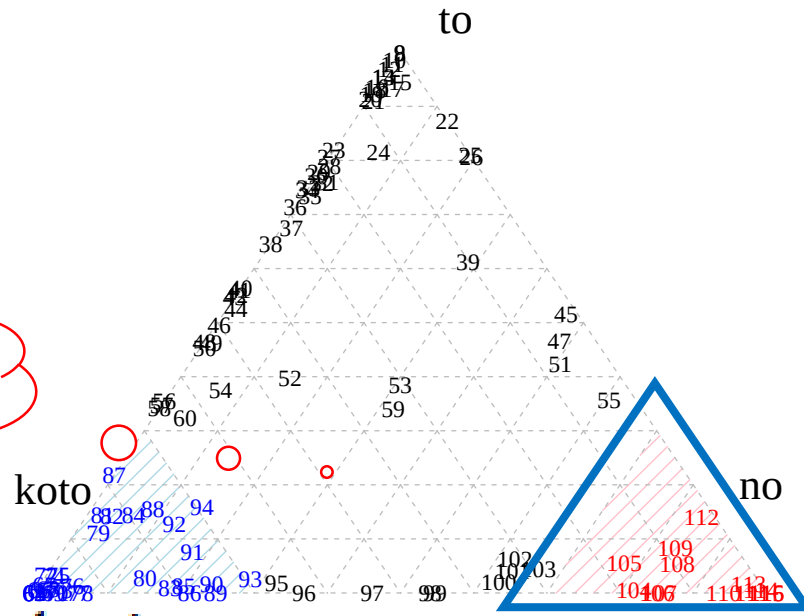
(iii) **ability**: [64]*deki-* 'can'

b. **aspects**: [75]*nakunar-* 'perish', [83]*gozar-* 'be', [76]*ar-* 'be', [63]*ar-* 'be (archaic)'

3.2 Results

Question 1: What verbs prefer to take *no*-clauses?

Eventive, obviative predicates



(14) *no*-clause (intransitive predicates)
- **perception predicates**: [103]*medat-* 'stand out', [112]*mie-* 'can see', [113]*kikoe-* 'can hear'

(15) *no*-clauses (transitive predicates)
a. **verbs-of-visual perception**: [107]*mituke-* 'find', [116]*mimamor-* 'watch, care *sb* by watching', [115]*mikake-* 'see', [111]*nagame-* 'watch, view'
b. **intensional event predicates**: [106]*huseg-* 'prevent', [105]*yurus-e-* 'cannot allow, forgive', [110]*tetudaw-* 'help', [114]*mat-* 'wait'

(16) [$_{CP}$ *Iki-o* *korae-te* *himei-ga* *more-ru-**no***]-*o* ***husei-da***.
breath-ACC hold-and scream-NOM leak-PRS-no-ACC prevent-PST
'(she) prevented [her scream from going out (from her mouth) by holding her breath].' (OB3X_00119)

(17) *Watasitati-wa* [$_{CP}$ *obaatyan-ga* *santakuroosu-ni* *tegami-o* *kak-u-**no***]-*o* ***tetudat-ta***.
we-TOP gramma-NOM Santa Claus-DAT letter-ACC write-PRS-no-ACC help-PST
'We helped [our gramma to write a letter to Santa Claus].' (LBs9_00297)

4 Analysis

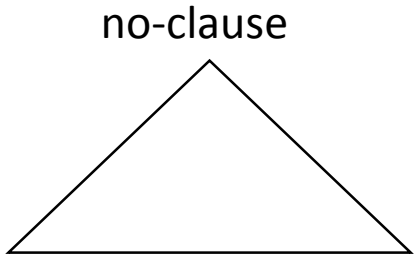
4 Analysis

Question 2: How does the entailment property appear in (1) but not in (5)?

Proposal Claim: *no*-clauses denote a set of events

Remark: e is not ∃-bound yet.

(A) The no-clause does *not* entail its proposition.
(B) Additional restrictions can be added to e.



(18) ⟦**monban ga tobira o akeru no**⟧

$= \boldsymbol{\lambda e}.\lambda w.\, open(\boldsymbol{e}, w) \wedge PAT(\boldsymbol{e}, w, \text{the door})$
$\wedge\, AG(\boldsymbol{e}, w, \text{the door man})$

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(A) The no-clause does *not* entail its proposition. ← (A) MP is responsible for the entailment.
(B) Additional restrictions can be added to e.

(A) The sensitivity comes from MP, which introduces an ∃-operator and can provide a MB.

$$\lambda a.\lambda e.\lambda s.\,\mathrm{EX}(e,s,a)$$
$$\wedge\,\exists \boldsymbol{e'}.\,[\lambda w.\,open(\boldsymbol{e'},w)\wedge PAT(\boldsymbol{e'},w,\text{the door})\wedge AG(\boldsymbol{e'},w,\text{the door man})\ \wedge\exists x.\,AG(e',w,x)\wedge a\neq x]$$

no-clause

(18) $[\![\textbf{monban ga tobira o akeru no}]\!]$
$= \boldsymbol{\lambda e}.\,\lambda w.\,open(\boldsymbol{e},w)\wedge PAT(\boldsymbol{e},w,\text{the door})$
$\wedge\,AG(\boldsymbol{e},w,\text{the door man})$

(19) $[\![\textbf{mi 'see'}]\!]$
$= \boldsymbol{\lambda p}.\,\lambda a.\,\lambda e.\,\lambda s.\,\mathrm{EX}(e,s,a)$
$\wedge\,\exists \boldsymbol{e'}.\,[\boldsymbol{p}(\boldsymbol{e'})\wedge\exists x.\,AG(e',w,x)\wedge a\neq x]$

4 Analysis

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(A) The sensitivity comes from MP, which introduces an ∃-operator and can provide a MB.

$$\lambda a.\lambda e.\lambda s.\,\mathrm{AG}(e,s,a) \wedge \forall \mathbf{w} \in \mathbf{R_{cir}(s)}.$$
$$\exists e'.\Big[\begin{array}{c}\boldsymbol{Sim_w}\big(\lambda w.\,open(\boldsymbol{e'},w) \wedge PAT(\boldsymbol{e'},w,\text{the door}) \wedge AG(\boldsymbol{e'},w,\text{the door man})\big) \\ <_{\mathbf{stereotypical,bouletic},s} \\ \boldsymbol{Sim_w}\big(\neg\lambda w.\,open(\boldsymbol{e'},w) \wedge PAT(\boldsymbol{e'},w,\text{the door}) \wedge AG(\boldsymbol{e'},w,\text{the door man})\big) \\ \wedge \exists x.\,AG(e',w,x) \wedge a \neq x\end{array}\Big].$$

no-clause

(18) $[\![$**monban ga tobira o akeru no**$]\!]$
$= \boldsymbol{\lambda e}.\,\lambda w.\,open(\boldsymbol{e},w) \wedge PAT(\boldsymbol{e},w,\text{the door}) \wedge AG(\boldsymbol{e},w,\text{the door man})$

(20) $[\![\boldsymbol{mat}\ \text{'wait'}]\!] =$
$\lambda p.\,\lambda a.\,\lambda e.\,\lambda s.\,\mathrm{AG}(e,s,a) \wedge \forall \mathbf{w} \in \mathbf{R_{cir}(s)}.$
$\exists \boldsymbol{e'}.\,[\mathbf{Sim_w}(\boldsymbol{p}(\boldsymbol{e'})) <_{\mathbf{stereotypical,bouletic},s} \mathbf{Sim_w}(\neg \boldsymbol{p}(\boldsymbol{e'}))$
$\wedge \exists x.\,AG(e',w,x) \wedge a \neq x].$

4 Analysis

Question 2: How does the entailment property appear in (1) but not in (5)?

Proposal Claim: *no*-clauses denote a set of events

Remark: e is not ∃-bound yet.

(A) The no-clause does *not* entail its proposition. ← (A) MP is responsible for the entailment.

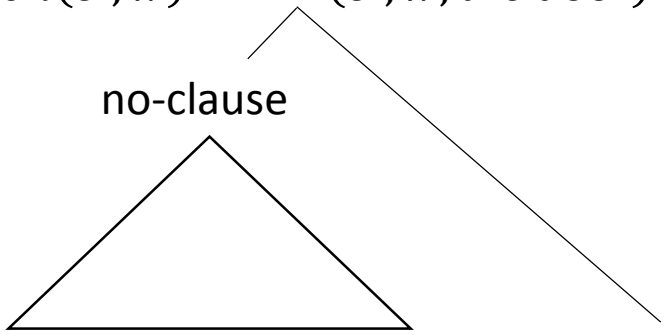
(B) Additional restrictions can be added to e. ← (B) MP introduces an additional restriction

(A) The sensitivity comes from MP, which introduces an ∃-operator and can provide a MB.

(B) The embedding predicate can impose a condition on the theta-role.

> the AGENT-OBVIATION EFFECT (*cf.*, Farkas 1992)

$\lambda a.\lambda e.\lambda s.\,\mathrm{EX}(e,s,a)$
$\wedge\,\exists \boldsymbol{e'}.[\lambda w.\,open(\boldsymbol{e'},w)\wedge PAT(\boldsymbol{e'},w,\text{the door})\wedge AG(\boldsymbol{e'},w,\text{the door man})\ \wedge \exists \boldsymbol{x}.\boldsymbol{AG(e',w,x)}\wedge \boldsymbol{a}\neq\boldsymbol{x}]$



[106]*huseg*- 'prevent'

[105]*yurus-e*- 'cannot allow, forgive'

[110]*tetudaw*- 'help'

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(18) $[\![$**monban ga tobira o akeru no**$]\!]$
$= \boldsymbol{\lambda e}.\lambda w.\,open(\boldsymbol{e},w)\wedge PAT(\boldsymbol{e},w,\text{the door})$
$\wedge\,AG(\boldsymbol{e},w,\text{the door man})$

(19) $[\![\boldsymbol{mi}\ '\mathbf{see}']\!]$
$=\boldsymbol{\lambda p}.\lambda a.\lambda e.\lambda s.\,\mathrm{EX}(e,s,a)$
$\wedge\,\exists \boldsymbol{e'}.[\boldsymbol{p}(\boldsymbol{e'})\wedge\exists \boldsymbol{x}.AG(e',w,x)\wedge \boldsymbol{a}\neq\boldsymbol{x}]$

4 Analysis

Question 2: How does the entailment property appear in (1) but not in (5)?

Agent-obviation effects

✔ (23) **Requirement on Agent obviation**: the agent of the embedded event must not be the same as the external argument of the matrix clause.

(24) **Requirement on Subject obviation**: the subject of the embedded event must not be the same as the external argument of the matrix clause.

**issyookenmei*
'in a dedicated way'

(25) [Matrix Subj: Watasi (I)] [*Haru-o mat-u-yooni*] [*mata* Emb Subj: Watasi (I) *GLAY-ni raibu-de a-e-ru-no*]-*o mat-u*].

Spring-ACC wait-PRS-as again GLAY-DAT live concert-at meet-can-no-ACC wait-PRS

'Just like I wait for the Spring to come, I wait [for me to see GLAY at a live concert again] (lit.).' (OY04_01880)

5 Conclusion

5 Conclusion and remaining issues

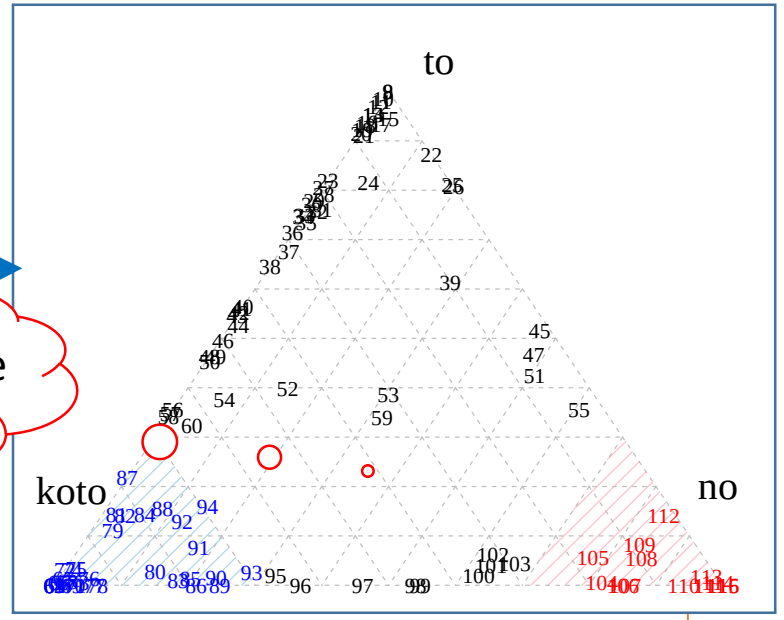
Summary

(7) Research questions

a. Question 1: What verbs prefer to take *no*-clauses?

b. Question 2: How does the entailment property appear in (1) but not in (5)?

Eventive, obviative predicates

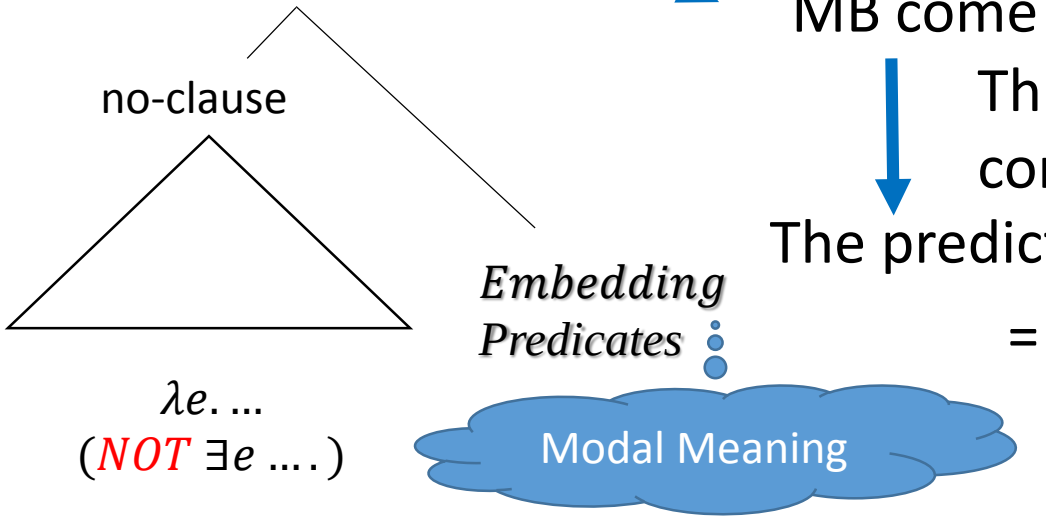


Entailment is sensitive to the EP, because ∃-operator and a MB come from the EP.

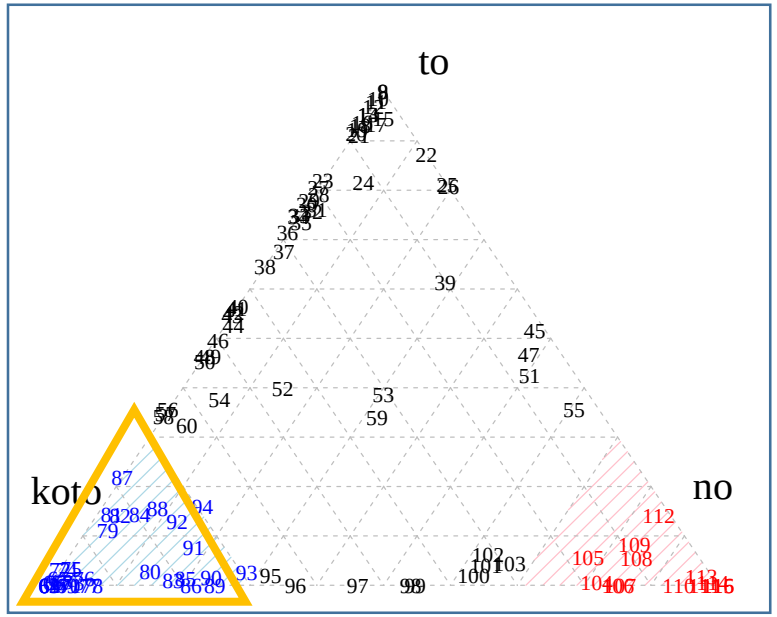
This analysis predicts that the EP can introduce an condition on an *e*.

The prediction is borne out!

= the agent obviation effect



5 Conclusion and remaining issues



Remaining problems

(A) *koto*-clauses

Do *koto*-clauses also denote an event?

On one hand, …

(i) perception predicates repel *koto*-clauses

(ii) some verbs in (12)b, *e.g.*, *sir*- ‘know’ and *mitome*- ‘acknowledge,’ do not show an obviation effect

(iii) some verbs allow tense-distinction but others do not.

On the other hand, …

(i) Some have a condition on the theta-role of the event of the complement clause;

- *deki*- ‘can’ and *tikaw*- ‘swear’
- *negaw*- ‘wish’

(ii) Some verbs take both *no*- and *koto*-clauses.

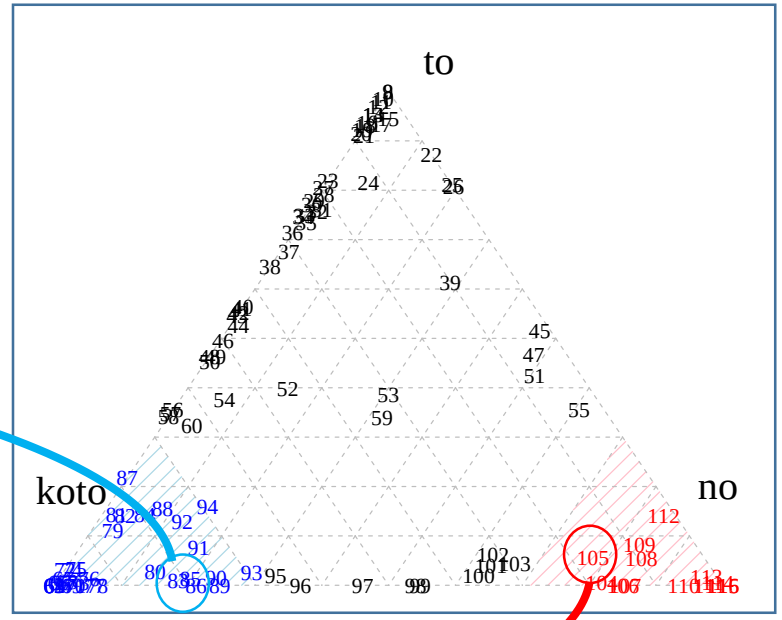
> Perhaps, *koto*-clauses also denote an event but there are other semantic/syntactic factors regulating the selection.

5 Conclusion and remaining issues

Remaining problems

(B) *yurus-* and *yurus-e-*

The presence of other morphemes in the matrix clause (*-e* 'can' and *-nai*) affects the clause selection.



yurus- *with* *koto*

yurus-e- *with* *no*

(26) [*tensuu-de* *hito-no* *nooryoku-o* *kimer-u-no*]*-ga* *yurus-e-nak* *at-ta.*
socore-by person-GEN ability-ACC decide-PRS-GEN-FOC forgive-can-NEG be-PST
'I could not tolerate (their) determining one's ability based on one's score.'

Though I cannot give a reasonable account for this problem, it is also a problem to any theory that tries to explain the clause selection *w.r.t.* the *c/s*-selectional property of the embedding predicate.

Thank you very much for listening!

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