Analyzing Japanese Cleft Construction in Combinatory Categorial Grammar

Kohei Kajikawa

The University of Tokyo
kohei-kajikawa@g.ecc.u-tokyo.ac.jp

November 19, 2023 @LENLS20
Osaka University Nakanoshima Center

Contents

Introduction

Background In the Japanese cleft construction, multiple NPs can occupy the focus position, while single *ga*-marked NP cannot be in the focus.

- cleft: *X no wa Y da*, where *Y* is the focus.

Problem Previous analysis in Combinatory Categorial Grammar (CCG) (Kubota and Smith, 2006, 2007) overgenerates a *ga*-marked NP in the focus.

- They assumed some independently motivated principles to ban a single *ga*-marked NP in the focus.

Proposal Address this issue by partially incorporating *constructivist* analysis from the mainstream generative grammar (Kratzer, 1996) into CCG.

Extension The revision correctly predicts two syntactic phenomena where the ga-marked NP behaves differently from other case marked NPs.

- Long-distance scrambling, small clause

Contents

Japanese cleft construction

(1) Ken-ga Mary-ni watasi-ta no wa sono hon-o da.
Ken-NOM Mary-DAT give-PAST NMLZ TOP that book-ACC COP
'It was that book that Ken gave to Mary.'

(2) Ken-ga watasi-ta no wa Mary-ni sono hon-o da.
Ken-NOM give-PAST NMLZ TOP Mary-DAT that book-ACC COP
'It was that book to Mary that Ken gave.'

- *X no wa Y da*, where *X* is the topicalized and *Y* is the focus.
- Multiple NPs (*Mary-ni sono hon-o* in (2)) can occupy the focus position.
  - Categorial Grammar-based analysis has an advantage of deriving the cleft (Kubota and Smith, 2006, 2007).

Distribution of ga-marked NP in cleft

- Single *ga*-marked NP cannot be in the focus.[1]

(3) *Mary-ni sono hon-o watasi-ta no wa Ken-**ga** da.
Mary-DAT that book-ACC give-PAST NMLZ TOP Ken-NOM COP
'It was Ken that gave Mary that book.'

- However, *ga*-marked NP is **not always** excluded from the focus position.

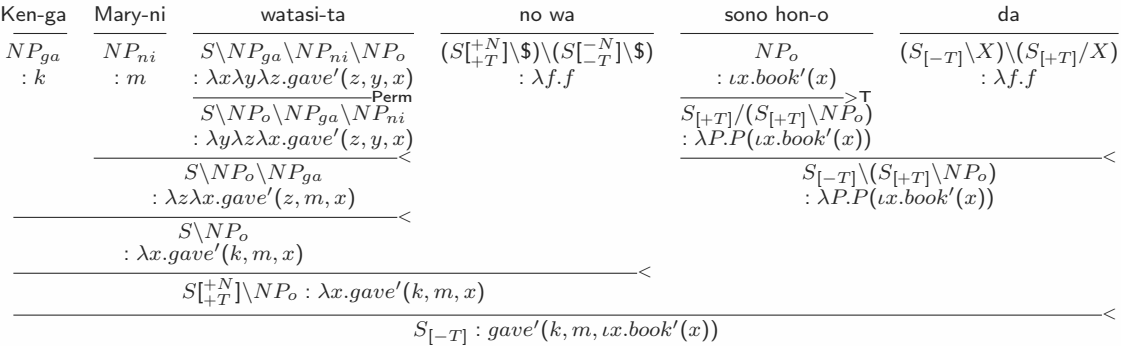
(4) Sono hon-o watasi-ta no wa Ken-**ga** Mary-ni da.
that book-ACC give-PAST NMLZ TOP Ken-NOM Mary-DAT COP
'It was Ken to Mary that gave that book.'

(5) Sono hon-o watasi-ta no wa Mary-ni Ken-**ga** da.
that book-ACC give-PAST NMLZ TOP Mary-DAT Ken-NOM COP
'It was Ken to Mary that gave that book.'

[1] I follow Takano (2015) for the grammatical judgment.

Previous work

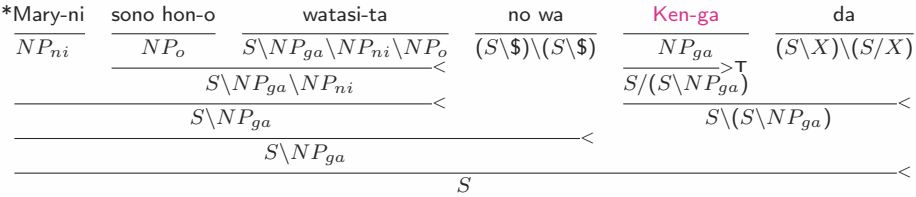
- The derivation of a single-focus cleft (according to the analysis of Kubota and Smith (2006) (K&S))



- However, the analysis does not deal with the distinctive behavior of *ga*-marked NP within the grammar.

Problem of previous work

- K&S analysis incorrectly derives the **ungrammatical** single *ga*-marked NP focus cleft.
  - Because K&S analysis distinguishes cases solely based on the feature-values of the NP category.



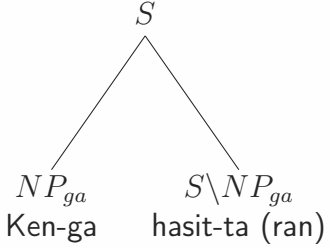
- It does not seem appropriate to attribute the ungrammaticality of the *ga*-marked NP in the focus to *morpho-phonological constraints* that ban the linear sequence of *ga da*, as argued in Takano (2015).
- It would be better if the distribution could be explained within the grammar formalism.

Contents

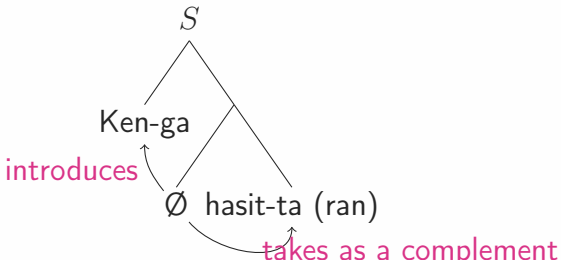
Proposal

- To treat the *ga*-case distinctly from other cases, I incorporate an idea proposed within the mainstream generative grammar into CCG in line with Isono et al. (2023) (@LENLS2022).
- I assume that *ga*-marked NPs occupy a *structurally distinct position* compared to other case marked NPs.

- Tree structure in K&S:

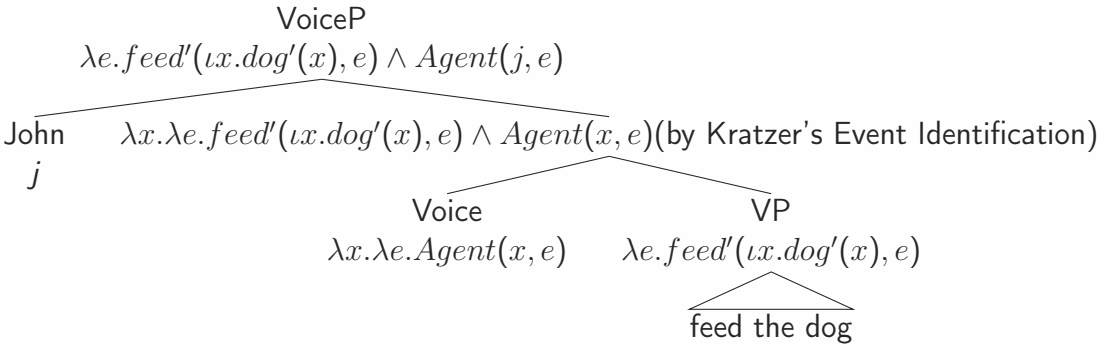


- My proposal:



Constructivist analysis of Kratzer (1996)

- Kratzer (1996) strips the verb of its ability to take an external argument and introduces a phonologically null *Voice* head.
- The Voice head takes a verb phrase as its complement and introduces the external argument as its specifier.
- The argument structure is analyzed using the neo-Davidsonian semantics.



Adapt the Voice head to CCG

- To represent Kratzer's analysis in CCG, I split *ga*-marked NP as shown below.
  - Ø corresponds to the Voice head.
  - NP_{nc} represents an NP without a case marker.
  - $\hat{S}$ indicates the entire verb phrase without the external argument.
  - Adopt the approach of Champollion (2015), regarding the semantics of the verb.

$$\dfrac{\dfrac{\dfrac{\text{Ken}}{NP_{nc} : k} \quad \dfrac{\text{ga}}{(S/(S\backslash NP_{ga}))\backslash NP_{nc} : \lambda x.\lambda P.P(x)}}{S/(S\backslash NP_{ga}) : \lambda P.P(k)}< \quad \dfrac{\dfrac{\text{Ø}}{(S\backslash NP_{ga})/\hat{S} : \lambda P.\lambda x.P(\lambda e.Agent(x,e))}}{}}{S/\hat{S} : \lambda P.P(\lambda e.Agent(k,e))}>\text{B}$$

Adapt the Voice head to CCG

- Strips the verb of its ability to take an external argument:
  watasi-ta $\coloneqq \hat{S}\backslash NP_{ni}\backslash NP_o$ ($S\backslash NP_{ga}\backslash NP_{ni}\backslash NP_o$ in K&S)

(6) Ken-ga Mary-ni sono hon-o watasi-ta.
Ken-NOM Mary-DAT that book-ACC give-PAST
'Ken gave that book to Mary.'

Ken-ga	Mary-ni	sono hon-o	watasi-ta
$S/\hat{S}$: $\lambda P.P(\lambda e.Agent(k,e))$	NP_{ni} : m	NP_o : $\iota x.book'(x)$	$\hat{S}\backslash NP_{ni}\backslash NP_o$: $\lambda x.\lambda y.\lambda P.\lambda e.gave'(y,x,e) \wedge P(e)$

$\hat{S}\backslash NP_{ni}$: $\lambda y.\lambda P.\lambda e.gave'(y, \iota x.book'(x), e) \wedge P(e)$ (<)

$\hat{S}$: $\lambda P.\lambda e.gave'(m, \iota x.book'(x), e) \wedge P(e)$ (<)

S : $\lambda e.gave'(m, \iota x.book'(x), e) \wedge Agent(k,e)$ (>)

Analysis of cleft

- The category of *no wa* and *da* is revised.

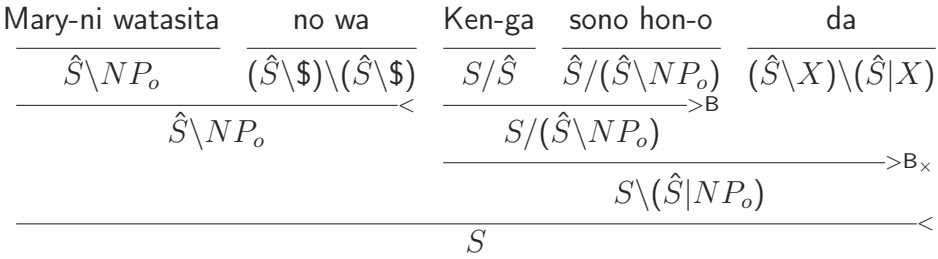
(7) *no wa* $\vdash (\hat{S}[^{+N}_{+T}]\backslash\$)\backslash(\hat{S}[^{-N}_{-T}]\backslash\$)$
da $\vdash (\hat{S}_{[-T]}\backslash X)\backslash(\hat{S}_{[+T]}|X)$

- The derivation of a single-focus cleft.

Ken-ga	Mary-ni watasi-ta	no wa	sono hon-o	da
$S/\hat{S}$	$\hat{S}\backslash NP_o$	$(\hat{S}\backslash\$)\backslash(\hat{S}\backslash\$)$	NP_o	$(\hat{S}\backslash X)\backslash(\hat{S}\|X)$
$: \lambda P.P(\lambda e.Agent(k,e))$	$: \lambda x.\lambda P.\lambda e.gave'(m,x,e) \wedge P(e)$	$: \lambda f.f$	$: \iota x.book'(x)$	$: \lambda f.f$
	$\hat{S}\backslash NP_o$ $: \lambda x.\lambda P.\lambda e.gave'(m,x,e) \wedge P(e)$	$<$	$\hat{S}/(\hat{S}\backslash NP_o)$ $: \lambda P.P(\iota x.book'(x))$	$>\mathbf{T}$
			$\hat{S}\backslash(\hat{S}\backslash NP_o)$ $: \lambda P.P(\iota x.book'(x))$	$<$
	$\hat{S} : \lambda P.\lambda e.gave'(m,\iota x.book'(x),e) \wedge P(e)$			$<$
$S : \lambda e.gave'(m,\iota x.book'(x),e) \wedge Agent(k,e)$				$>$

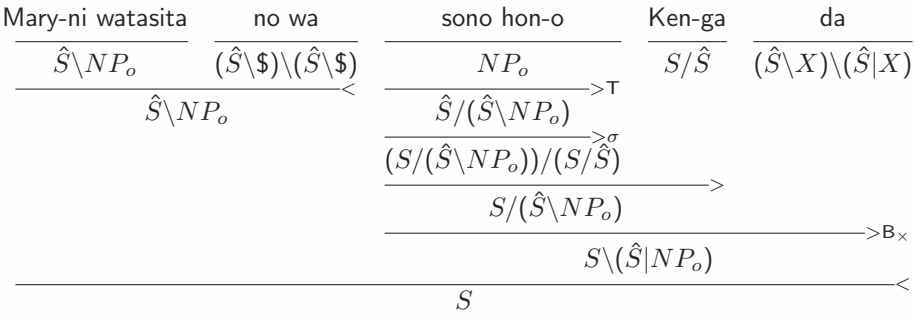
Analysis of cleft

- The derivation of a multiple-foci cleft.



Analysis of cleft

- A multiple-foci cleft, where a *ga*-marked NP is placed immediately before the copula.
- The scrambling rule ($> \sigma$) proposed by Bekki (2010) contributes to syntactically derive the construction where scrambling occurs within the same clause.



Analysis of cleft

- The derivation of a single-focus cleft, where a *ga*-marked NP is focused.
- The revised analysis correctly fails to derive it.

$$\dfrac{\dfrac{\text{*Sono hon-o Mary-ni watasita}}{\hat{S}} \quad \dfrac{\text{no wa}}{(\hat{S}\backslash\$)\backslash(\hat{S}\backslash\$)}}{\hat{S}}\,{<} \qquad \dfrac{\dfrac{\text{Ken-ga}}{S/\hat{S}} \quad \dfrac{\text{da}}{(\hat{S}\backslash X)\backslash(\hat{S}|X)}}{\uparrow \text{fails to derive}}\,{*}$$

Analysis of cleft

- In sum, because the *ga*-marked NP is categorized as $S/\hat{S}$, it exhibits behavior distinct from other case-marked NPs.

$$\dfrac{\dfrac{\dfrac{\text{Ken-ga}}{S/\hat{S}} \quad \dfrac{\text{sono hon-o}}{\hat{S}/(\hat{S}\backslash NP_o)}}{S/(\hat{S}\backslash NP_o)}\,{>}\mathrm{B} \quad \dfrac{\text{da}}{(\hat{S}\backslash X)\backslash(\hat{S}|X)}}{S\backslash(\hat{S}|NP_o)}\,{>}\mathrm{B}_{\times}$$

$$\dfrac{\dfrac{\text{Ken-ga}}{S/\hat{S}} \quad \dfrac{\text{da}}{(\hat{S}\backslash X)\backslash(\hat{S}|X)}}{\uparrow \text{fails to derive}}\,*$$

Contents

Long distance scrambling

- The revised analysis predicts that the *ga*-marked NP is not subject to *long-distance scrambling*.
- On the assumption that Type Raising only applies to basic categories, the *ga*-marked NP cannot move out of a clause, while other case marked NPs can.
- In fact, only the nomivative NP cannot be scrambled out of a clause (Saito, 1985).

(8) *Sono-okasi-ga$_i$ John-ga [t$_i$ oisii to] omotte-iru.
that candy-NOM John-NOM tasty COMP think-PRS
('John thinks that that candy is tasty.')

(from Saito (1985, p.185))

Small clause

- The revised analysis predicts that the *ga*-marked NP cannot be situated within a small clause.
- On the assumption that a small clause does not constitute an S node, then the *ga*-marked NP, which forms an S node in the revised analysis, cannot be placed within a small clause.

(9) John-wa [Mary-no yokogao-{*ga/o} totemo utukusiku] omot-ta.
John-TOP Mary-GEN profile-NOM-ACC very beautiful think-PAST
'John thought [Mary's profile (to be) very beautiful].'
(from Takezawa (1987, p.153))

Contents

Conclusion

- It is possible to account for the distribution of the *ga*-marked NP in the cleft construction within the grammar formalism.
- The revised analysis correctly predicts two other syntactic phenomena where only the *ga*-marked NP behaves differently from other case marked NPs.
- These results suggest, in line with Isono et al. (2023), that **it is effective to incorporate the constructivist analysis into CCG**.

Acknowledgement

- My sincere thanks to Yusuke Kubota and Shinnosuke Isono for many helpful comments.
- I also thank the anonymous reviewers for their insightful comments.
- This work is supported by JSPS KAKENHI 18K12393 and the NINJAL collaborative research projects "Cross-linguistic Studies of Japanese Prosody and Grammar" and "Evidence-based Theoretical and Typological Linguistics".

Reference I

Bekki, D. (2010). *Nihongo bunpoo no keisiki riron [Formal theory of Japanese grammar]*. Kurosio, Tokyo.

Champollion, L. (2015). The interaction of compositional semantics and event semantics. *Linguistics and Philosophy*, 38:31–66.

Isono, S., Hasegawa, T., Kajikawa, K., Kono, K., Nakamura, S., and Oseki, Y. (2023). Formalizing argument structures with Combinatory Categorial Grammar. In Bekki, D., Mineshima, K., and McCready, E., editors, *Logic and Engineering of Natural Language Semantics*, pages 83–99, Cham. Springer Nature Switzerland.

Kratzer, A. (1996). Severing the external argument from its verb. In Rooryck, J. and Zaring, L., editors, *Phrase structure and the lexicon*, pages 109–137. Kluwer, Dordrecht.

Kubota, Y. and Smith, E. A. (2006). Syntax and semantics of Japanese nonconstituent clefting in Combinatory Categorial Grammar. In Davis, C., Deal, A. R., and Zabbal, Y., editors, *Proceedings of the Thrity-Sixth Annual Meeting of the North East Linguistic Society*, pages 413–426, Amherst, MA. GLSA Publications.

Kubota, Y. and Smith, E. A. (2007). A Multi-Modal Combinatory Categorial Grammar analysis of Japanese nonconstituent clefting. In Nurmi, V. and Sustretov, D., editors, *Proceedings of the Twelfth ESSLLI Student Session*, pages 161–172.

Saito, M. (1985). *Some Asymmetries in Japanese and their theoretical implications*. PhD thesis, MIT.

Takano, Y. (2015). Surprising constituentas unlabeled syntactic objects. *Nanzan Linguistics*, 10:55–73.

Takezawa, K. (1987). *A Configurational Approach to Case - Marking in Japanese*. PhD thesis, University of Washington.