DE GRUYTERMOUTON

POLARITY-SENSITIVE EXPRESSIONS

COMPARISONS BETWEEN JAPANESE AND OTHER LANGUAGES

Edited by Hideki Kishimoto, Osamu Sawada, and Ikumi Imani



THE MOUTON-NINJAL LIBRARY OF LINGUISTICS





Polarity-Sensitive Expressions

The Mouton-NINJAL Library of Linguistics

Edited by Yukinori Takubo Haruo Kubozono Yo Matsumoto

Volume 7

Polarity-Sensitive Expressions

Comparisons Between Japanese and Other Languages

Edited by Hideki Kishimoto, Osamu Sawada and Ikumi Imani



ISBN 978-3-11-075499-5 e-ISBN (PDF) 978-3-11-075512-1 e-ISBN (EPUB) 978-3-11-075521-3 ISSN 2626-9201 e-ISSN 2626-921X DOI https://doi.org/10.1515/9783110755121



This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. For details go to https://creativecommons.org/licenses/by-nc-nd/4.0/.

Creative Commons license terms for re-use do not apply to any content (such as graphs, figures, photos, excerpts, etc.) not original to the Open Access publication and further permission may be required from the rights holder. The obligation to research and clear permission lies solely with the party re-using the material.

Library of Congress Control Number: 2023943019

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available on the internet at http://dnb.dnb.de.

© 2024 the author(s), editing © 2024 Hideki Kishimoto, Osamu Sawada and Ikumi Imani, published by Walter de Gruyter GmbH, Berlin/Boston The book is published open access at www.degruyter.com.

Cover image: rai/iStock/Getty Images Plus Typesetting: Integra Software Services Pvt. Ltd. Printing and binding: CPI books GmbH, Leck

www.degruyter.com

Series preface

The Mouton-NINJAL Library of Linguistics (MNLL) series is a new collaboration between De Gruyter Mouton and NINJAL (National Institute for Japanese Language and Linguistics), following the successful twelve-volume series Mouton Handbooks of Japanese Language and Linguistics. This new series publishes research monographs as well as edited volumes from symposia organized by scholars affiliated with NINJAL. Every symposium is organized around a pressing issue in linguistics. Each volume presents cutting-edge perspectives on topics of central interest in the field. This is the first series of scholarly monographs to publish in English on Japanese and Ryukyuan linguistics and related fields.

NINJAL was first established in 1948 as a comprehensive research organization for Japanese. After a period as an independent administrative agency, it was re-established in 2010 as the sixth organization of the Inter-University Research Institute Corporation "National Institutes for the Humanities". As an international hub for research on Japanese language, linguistics, and Japanese language education, NINJAL aims to illuminate all aspects of the Japanese and Ryukyuan languages by conducting large-scale collaborative research projects with scholars in Japan and abroad. Moreover, NINJAL also aims to make the outcome of the collaborative research widely accessible to scholars around the world. The MNLL series has been launched to achieve this second goal.

The authors and editors of the volumes in the series are not limited to the scholars who work at NINJAL but include invited professors and other scholars involved in the collaborative research projects. Their common goal is to disseminate their research results widely to scholars around the world.

The current volume explores various aspects of "polarity-sensitive expression," negative polarity items (NPI), and positive polarity items (PPI), by comparing Japanese with other languages. The volume extensively examines these issues, focusing on the syntax, semantics, and pragmatics of both NPI and PPI, as well as including research employing experimental, corpus-based, and historical approaches. Each chapter presents new empirical findings and raises theoretical questions that can only be fully addressed from a cross-linguistic perspective, offering fresh insights into the study of polarity-sensitive expressions in natural language.

Yukinori Takubo Haruo Kubozono Yo Matsumoto

Preface

This book is concerned with polarity-sensitive expressions. Polarity is crucially related to the opposition between the concepts of affirmation and negation, which is one of the fundamental oppositions in natural language systems. Polarity-sensitive expressions encompass several distinct classes, including negative polarity items (NPIs) and positive polarity items (PPIs). Recently, there have been many important developments in the studies of polarity-sensitive expressions. The present book includes chapters inquiring into various types of polarity-sensitive expressions, such as negative-, positive-, and discourse-sensitive polarity items, as well as their variations, and contributes to the field through its consideration of theoretical issues that can arise from comparisons between Japanese and other languages.

The main thrust for this book project came from a series of meetings in which researchers sharing research interests had extensive discussions on polarity-sensitive expressions, the initial one being the symposium on "polarity-sensitive items" at the annual meeting of the English Linguistic Society in 2016. The edited book *Kyokusei Hyoogen-no Koozoo, Imi, Kinoo* [Polarity-sensitive expressions: their forms, meanings and functions] (2019) published by Kaitakusha was the outcome of these meetings. As our understanding of polarity-sensitive expressions deepened, we came to be aware of the importance of the topic. Then, we started to make further inquires into the syntax, semantics, and pragmatics of polarity expressions and their relationships, and to expand the horizons of the research to include historical linguistics, corpus linguistics, and psycholinguistics. We are pleased to report that these subsequent strenuous efforts culminated in the present book, which makes it possible for the research results to be available to researchers around the world. We believe that this book brings to light new directions for research on polarity-sensitive expressions.

We would like to thank the series editors of the Mouton-NINJAL Linguistics Library, Yukinori Takubo and Haruo Kubozono, for their interest and advice. We are also grateful to an anonymous reviewer for helpful comments and suggestions regarding the book manuscript and to the external chapter reviewers Jun Abe, Setsuko Arita, Tomohiro Fujii, Thomas Grano, Stefan Kaufmann, Kimiko Nakanishi, Tetsuya Sano, Sanae Tamura, Makoto Kaneko, Toshiyuki Ogihara, Satoshi Oku, and Wataru Uegaki for their valuable comments and feedback. We would like to thank the Mouton editor and the staff of NINJAL for their support in editing the manuscript and Zicheng Xu for his editorial assistance.

Hideki Kishimoto Osamu Sawada Ikumi Imani

Contents

Series preface —— V Preface —— VII

Contributors — XIII

Introduction

Osamu Sawada, Hideki Kishimoto and Ikumi Imani

Chapter 1

Empirical and theoretical issues of polarity-sensitive expressions — 3

Part I: Syntax of negative polarity items

Hideki Kishimoto

Chapter 2

Negative polarity and clause structure in Japanese —— 39

Kiyoko Kataoka

Chapter 3

Negation-sensitive elements outside the Neg-domain —— 83

Part II: Syntax/semantics of polarity-sensitive expressions

Akira Watanabe

Chapter 4

Degree quantification, minimum quantity predicates, and polarity in Japanese —— 117

Ikumi Imani

Chapter 5

Polarity sensitivity of existential sentences with numerals in Japanese —— 145

Eri Tanaka, Kenta Mizutani and Stephanie Solt

Chapter 6

Polarity sensitivity and equative markers in Japanese and German —— 165

Part III: Positive polarity items

Yasushi Yoshimoto

Chapter 7

On the rescuing of positive polarity items in Japanese and English:

A hybrid approach —— 185

Takuya Goro

Chapter 8

Cross-linguistic variation in the scope of disjunction: Positive polarity, or anti-reconstruction? —— 225

Part IV: Discourse/pragmatic properties of polarity-sensitive items

David Y. Oshima

Chapter 9

The forms and meanings of negative polar interrogatives in English and Japanese: Epistemic bias, information structure, prosody, and further issues —— 261

Osamu Sawada

Chapter 10

The polarity sensitivity of reactive intensifiers in Japanese and English —— 297

Elizabeth Bogal-Allbritten, Keir Moulton and Junko Shimoyama

Chapter 11

On propositional anaphora: 'Referential' propositions and propositional proforms —— 343

Misato Ido, Ai Kubota and Yusuke Kubota

Chapter 12

Two types of attenuation strategies for polarity-sensitive items: The semantics of degree adverbs *amari* and *sonnani* in Japanese —— 377

Part V: Historical study of polarity-sensitive items

Tomohide Kinuhata

Chapter 13

Scope ambiguity and the loss of NPI feature: Evidence from the history of Japanese scalar particle *dani* —— 415

Index —— 453

Contributors

Elizabth Bogal-Allbritten

Faculty of Natural Sciences, Norwegian University of Science and Technology Realfagbygget, NTNU, Trondheim, NO-7491, NORWAY elizabeth.bogal-allbritten@ntnu.no

Takuya Goro

Department of English, Tsuda University 2-1-1 Tsuda-machi, Kodaira-shi, Tokyo 187-8577, JAPAN takuya.goro@gmail.com

Misato Ido

National Institute for Japanese Language and Linguistics 10-2 Midori-cho, Tachikawa City, Tokyo, 190-8561, JAPAN

ido.misato@ninjal.ac.jp

Ikumi Imani

Department of Foreign Studies, Nagoya Gakuin University 1-25 Atsutanishimachi, Atsuta-ku, Nagoya City, Aichi, 456-8612, JAPAN imani@ngu.ac.jp

Kiyoko Kataoka

Faculty of Foreign Languages, Kanagawa University 4-5-3 Minatomirai, Nishi-ku, Yokohama, 220-8739, JAPAN kykk925@yahoo.co.jp

Tomohide Kinuhata

Faculty of Humanities, Fukuoka University 8-19-1 Nanakuma, Jonan-ku, Fukuoka, 814-0180, JAPAN

tkinuhata@cis.fukuoka-u.ac.jp

Hideki Kishimoto

Graduate School of Humanities, Kobe University Rokkodai-cho, Nada-ku, Kobe, 657-8501, JAPAN kishimot@lit.kobe-u.ac.jp

Ai Kubota

Graduate School of Arts and Sciences, the University of Tokyo 3-8-1 Komaba, Meguro-ku, Tokyo, 153-8902, JAPAN aikubota@g.ecc.u-tokyo.ac.jp

Yusuke Kubota

National Institute for Japanese Language and Linguistics 10-2 Midori-cho, Tachikawa City, Tokyo, 190-8561, JAPAN kubota@ninial.ac.ip

Kenta Mizutani

School of Foreign Studies, Aichi Prefectural University 1522–3, Nagakute-city, Aichi, 480–1193, JAPAN kmizutani@for.aichi-pu.ac.jp

Keir Moulton

Department of Linguistics, University of Toronto 100 St. George St. Toronto, Ontario, M5S 3G3, CANADA keir.moulton@utoronto.ca

David Y. Oshima

Graduate School of Humanities, Nagoya University Furo-cho, Chikusa-ku, Nagoya, 466-8601, JAPAN davidyo@nagoya-u.jp

Osamu Sawada

Graduate School of Humanities, Kobe University Rokkodai-cho, Nada-ku, Kobe, 657-8501, JAPAN sawadao@lit.kobe-u.ac.jp

Junko Shimoyama

Department of Linguistics, McGill University 1085 Doctor Penfield Avenue, Montreal, Quebec H3A 1A7, CANADA junko.shimoyama@mcqill.ca

⊗ Open Access. © 2024 the author(s), published by De Gruyter. © This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. https://doi.org/10.1515/9783110755121-205

Stephanie Solt

Leibniz-Zentrum Allgemeine Sprachwissenschaft (ZAS)

Pariser Str. 1, 10719 Berlin, GERMANY solt@leibniz-zas.de

Eri Tanaka

Graduate School of Humanities, Osaka University 1-5, Machikaneyamacho, Toyonaka-city, Osaka, 560-8532, JAPAN tanaka.eri.hmt@osaka-u.ac.jp

Akira Watanabe

Graduate School of Humanities and Sociology, the University of Tokyo 7-3-1 Hongo, Bunkyo-ku, Tokyo, 113-0033, JAPAN akirawat@l.u-tokyo.ac.jp

Yasushi Yoshimoto

Graduate School of Community Engagement and Development, University of the Ryukyus 1 Senbaru, Nishihara-cho, Okinawa, 903-0213, JAPAN yasushi@grs.u-ryukyu.ac.jp Introduction

Osamu Sawada, Hideki Kishimoto and Ikumi Imani

Chapter 1 Empirical and theoretical issues of polarity-sensitive expressions

1 Introduction

Polarity-sensitive expressions (words, phrases, constructions) are items whose distributions are sensitive to polarity. Generally, there are two types of polarity-sensitive items: negative polarity items (NPIs) and positive polarity items (PPIs). NPIs can be used with negation but cannot be used in a positive (episodic) sentence. For example, the English *any* and the Japanese wh-*mo* in (1) can be construed as NPIs:

- (1) (Negative polarity items)
 - a. John {didn't buy/*bought} any books.

(English) (Japanese)

b. John-wa nani-mo {tabe-na-i /*tabe-ru}.

John-TOP what-MO eat-NEG-PRES/eat-PRES

'John doesn't eat anything.' (*John eats anything.)

Beginning with Klima (1964), a diverse range of studies has been conducted regarding the syntax, semantics, and pragmatics of NPIs, and there have been many influential works regarding the distribution patterns of NPIs (e.g., Ladusaw 1979; Linebarger 1980; Laka 1990; Kadmon and Landman 1993; Progovac 1994; Giannakidou 1998, 2011; Chierchia 2013).

By contrast, PPIs usually appear in positive sentences and cannot be used with negation (and when they do occur with negation, they must have wider scope than negation). For example, English *some* and Japanese *sukosi* 'a bit' are construed as PPIs. (Note that in the case of English *some*, the sentence with negation is acceptable only if *some* scopes over negation, or *not* is interpreted as an emphatic denial (Szabolcsi 2004: 409)):

Acknowledgements: We are grateful to Yukinori Takubo, an external reviewer, and the authors of this volume for their valuable comments on the content of this chapter.

(2) (Positive polarity items)

a. I(*don't) see something.

(English) (Japanese)

b. Kono hon-wa sukosi {taka-i this book-TOP a.bit expensive-PRES /*takaku-na-i}. /expensive-NEG-PRES 'This book {is/is not} a bit expensive.'

Traditionally, PPIs have not received as much attention as NPIs (at least in theoretical approaches). However, since Szabolcsi's (2004) seminal work on the English indefinite *some*, various studies have advanced important insights into the status of PPIs, which include English *some* (Szabolcsi 2004), speaker-oriented adverbs (Nilsen 2004; Ernst 2009), and modality (Homer 2011; Iatridou and Zeijlstra 2013; Giannakidou and Mari 2018).

Polarity-sensitive expressions have received a great deal of attention in the field of pragmatics as well. There have been studies of the relationship between NPIs and scalar implicature (Horn 1989; Chierchia 2013); the relationship between polarity and conventional implicature (CI) (Liu 2012; Sawada 2018); the speaker's bias in polar questions (Romero and Han 2004); and the rhetorical functions of polarity-sensitive expressions (Israel 1996, 2004).

Given the recent advances noted above in the study of polarity-sensitive expressions, this book attempts to reassess some of the currently influential theories via comparisons of Japanese with other languages and examines recent issues of polarity-sensitive expressions from a wide range of perspectives, including syntax, semantics, pragmatics, language acquisition, corpus study, and historical linguistics. The fundamental research questions pursued in this volume include:

- (3) a. In what environments can polarity-sensitive expressions (NPIs, PPIs) occur, and how can they be explained theoretically?
 - b. What kinds of (cross-linguistic) variations are there regarding the structure and meaning of polarity items? What are their sources?
 - c. What is the relationship between scalarity and polarity?
 - d. Is there a systematic relationship between negative and positive polarity items?
 - e. In what context can polarity-sensitive expressions be used and what role do they play in discourse?

The subsequent sections outline the empirical and theoretical issues surrounding polarity-sensitive expressions in Japanese and other languages and present

an overview of how the main issues regarding polarity-sensitive phenomena are addressed in the contributions included in this volume.

2 Empirical and theoretical issues

2.1 Distribution patterns of negative polarity items

Klima (1964) has first introduced the theoretical investigation of the distributional patterns of NPIs. Some subsequent studies have offered proposals on how NPIs are licensed (Ladusaw 1979; Linebarger 1980; Progovac 1994; Giannakidou 1998, 2011; Chierchia 2013, etc.). These studies share the assumption that NPIs are divided into two types: strong (strict) and broad. Strong NPIs can appear with negation, but not in positive declaratives. Furthermore, they cannot be used in environments such as questions, conditionals, and sentences with a modal auxiliary, as exemplified by the NPI either in (4):

(4)		Iohn didn't attend the meeting, either.	(negative)
(4)	a.	ionn alan i allena ine meeling, eilner.	(negative)

b. *John attended the meeting, either. (positive)

c. *Did John attend the meeting, either? (question)

d. *If John attended the meeting, either, Mary would have noticed

(conditional)

e. * John may attend the meeting, either. (modality)

Likewise, broad NPIs can occur with negation, but not in positive declaratives. Broad NPIs differ from strong NPIs, however, in that they can appear in contexts such as questions, sentences with a modal auxiliary, and conditionals:

(5)	a.	John didn't have any question.	(negative)
	b.	*John has any question.	(positive)
	c.	Did John have any problems?	(question)
	d.	If you have any problems, please let us know.	(conditional)
	Д	John may talk to anyhody	(modality)

There are two major theoretical approaches to broad NPIs, namely a downward entailing-based (DE-based) approach (e.g., Ladusaw 1979) and a non-veridicalitybased approach (e.g., Giannakidou 1998). In general, according to the DE approach, broad NPIs are licensed in the environment where an entailment relationship holds from a set to a subset of the set, while according to the non-veridical-based

approach, broad NPIs are licensed in the environment where there is uncertainty/ lack of commitment regarding the truth of a proposition.

NPIs in Japanese are often assumed to be strong NPIs, as exemplified by NPIs in the "wh-mo" form in (6):

- (6) a. Dare-mo ko-nakat-ta. (negative) who-MO come-NEG-PST 'No one came.'
 - b. *Dare-mo ki-ta. (positive) who-MO come-PST 'Anvone came'
 - c. *Dare-mo ki-masi-ta-ka? (question) who-MO come-POLITE-PST-O 'Did anvone come?'
 - d. *Mosi nani-mo tabe-tara osie-te kudasai. (conditional) by.any.chance what-MO eat-COND tell-TE please 'If you eat anything, tell me.'
 - e. *Nani-mo tabe-te vo-i. (modality) what-MO eat-TE good-PRES 'You may eat anything.'

However, it has been pointed out that Japanese also has broad NPIs. For example, Kishimoto (2008) observes that Japanese koreizyoo 'anymore' parallels English any in its distribution, in the sense that it can appear in contexts similar to those in which English any is allowed. As is shown in the following examples, not only can the NPI koreizyoo appear in negative sentences, but it can also appear in conditional clauses and guestions:1,2

(7) a. Taro-wa sono-koto-ni-tuite koreizyoo hanasa-nakat-ta. (negative) Taro-TOP that-matter-about anymore talk-NEG-PST 'Taro didn't talk about that matter anymore.'

¹ As Kishimoto (2008) observes, if koreizyoo is interpreted as a deictic nominal (e.g., kore-izyoo-no kooken 'this-more.than-GEN contribution) 'a contribution more than this'), it does not behave as an NPI.

² Kishimoto (2008) observes that koreizyoo can also appear in before-clauses, comparative clauses, and complement clauses selected by predicates like deny/refuse.

- b. ??Taro-wa sono-koto-ni-tuite koreizyoo hanasi-ta. (positive)
 Taro-TOP that-matter-about anymore talk-PST
 'lit. Taro talked about that matter anymore.'
- c. *Mosi* sono-koto-ni-tuite koreizyoo hanasi-tara (conditional) by.any.chance that-matter-about anymore talk-COND mondai-ni nar-u.

 problem-to become-PRES

 'If we talk anymore about it it will be a problem'
- 'If we talk anymore about it, it will be a problem.'

 d. Taro-wa sono-koto-ni-tuite koreizyoo hanas-u (question)
 Taro-TOP that-matter-about anymore talk-PRES
 daroo-ka?
 will-Q
 'Would Taro talk anymore about it?' (Rhetorical interpretation: No, he wouldn't.)

Moreover, Ido (2019) and Ido, Kubota, and Kubota (this volume) argue, on the basis of corpus data, that the NPI *sonnani* 'such, that much' can appear not only in negative contexts, but also in non-veridical/non-affirmative contexts such as conditionals and questions. Kinuhata (2019, this volume) observes that Old Japanese *dani* 'even' often appears with negation but can also occur in the modal context of intention, command, optative, desiderative, and hypothetical. As broad NPIs often have item-specific distributional properties, it is important to consider how item-specific characteristics can be theoretically explained.

2.2 Syntax of negation and NPI licensing

Another issue regarding the licensing of NPIs is the cross-linguistic variation regarding their syntactic positions. It is often observed in the literature (e.g., Laka 1990; Roberts 2010) that in English, the NPI *any* can appear in an object position, but it cannot appear in a subject position, as in (8):

- (8) a. John did not read anything.
 - b. *Anyone did not read the book.

Interestingly, this asymmetry in NPI licensing is not observed in Japanese. As the following example shows, the NPI wh-mo can appear in both subject and object positions:

- (9) a. John-ga nani-mo yoma-nakat-ta.

 John-NOM what-MO read-NEG-PST

 'John didn't read anything.'
 - b. Dare-mo hon-o yoma-nakat-ta. who-MO book-ACC read-NEG-PST 'No one read a book.'

The NPIs are not licensed in English or Japanese if they do not fall under the scope of negation, as exemplified in (10):

- (10) a. *Anyone said that John did not read the book.
 - b. *Dare-mo [John-ga hon-o yoma-nakat-ta-to] it-ta.
 who-MO John-NOM book-ACC read-NEG-PST-that say-PST
 'Anyone said that John did not read the book.'

In (10) the embedded negative does not extend its scope beyond the subordinate clause, so both sentences with NPIs in the matrix clauses are not acceptable.

In the literature, the difference in NPI licensing between English and Japanese observed in (8) and (9) is often assumed to be a result of the subject occupying different syntactic positions (Aoyagi and Ishii 1990; Takahashi 1990; Kato 1994). The English subject is positioned in Spec TP, whereas the Japanese subject is positioned in Spec VP, as in (11):

- (11) English vs. Japanese (approach 1)
 - a. English: [TP Subj T [NegP Neg VP Subj V Obj]]]
 - b. Japanese: [TP [NegP [VP Subj Obj V] Neg] T]

In contrast to the approach mentioned above, Kishimoto (2007, 2008) proposes an alternative view that attributes the difference between (8) and (9) to the difference in the position of a negative element. According to this view, there is no difference between English and Japanese in terms of the subject position, but in Japanese the negative element na(i) 'not', unlike English not, undergoes overt head movement to T, as in (12b):

- (12) English vs. Japanese (approach 2)
 - a. English: [TP Subj T [NegP Neg [VP Subj V Obj]]]
 - b. Japanese: [TP Subj [NegP [VP Subj Obj V] Neg] Neg-T]

(Kishimoto 2007, 2008)

These two approaches have clearly different theoretical implications and different predictions. Based on the above backgrounds, Kishimoto and Kataoka (both in this volume) investigate the structures of negation and polarity expressions from new perspectives and taking into consideration new empirical facts.

2.3 Locality and NPIs

The issue of "locality" is often discussed as a restriction on the syntactic licensing of negation polarity items. For example, the English NPI *any* is licensed even if a clausal negator appears in a syntactically superordinate clause (rather than in the same clause).

(13) John does not think that Mary offended anyone.

In contrast, the Japanese NPIs wh-mo and sika 'only' are not licensed by negation in the superordinate clause.

(14) *Taro-wa [Hanako-ga {nani-mo /ringo-sika} tabe-ta]-to-wa
Taro-TOP Hanako-NOM what-MO /apple-SIKA eat-PST-that-CT
omowa-na-i.
think-NEG-PRES
'lit. Taro does not think that Hanako ate {anything/only apple}.'

In light of the above facts, it is often stated that Japanese NPIs must be in the same clause as the negation element of the sentence (that is, the so-called "clause-mate" condition is imposed). However, some Japanese NPIs can be licensed by "cross-clausal" negation. For example, NPIs such as *amari* 'that much' and *sore hodo* 'that degree' can be licensed by negation in the superordinate clause:

(15) Watasi-wa [kare-ga {amari /sore-hodo} hayaku
I-TOP he-NOM that.much /that-degree fast
hasir-e-ru]-to-wa omowa-na-i.
run-can-PRES-that-CT think-NEG-PRES
'I don't think he can run that fast.'

Kishimoto (this volume) discusses the issue of locality in detail on the basis of wider empirical facts.

2.4 Approaches to NPI and negative concord item

It has been widely recognized that, in addition to NPIs and PPIs, there is another type of polarity-sensitive expression, which is often referred to as a negative concord item (NCI). To a certain extent, NCIs possess similar properties to NPIs, but the relationship between NPIs and NCIs is controversial. Descriptively, negative concord is a phenomenon where so-called "n-words" show "concord" with negation, resulting in a single-negation reading (Laka 1990), as in (16):

(16) a. *Non ho* visto nessuno. has seen n-body not 'I haven't seen anybody.'

(Italian: Based on Zanuttini 1991: 149)

b. *(Dhen) ipa **TIPOTA** not said.1sg n-thing 'I didn't say anything.'

(Greek: Giannakidou 2000: 458)

Giannakidou (2006: 328) defines n-word as follows:

- (17) *N-word*: An expression α is an n-word iff:
 - i. α can be used in structures that contain sentential negation or another α-expression, yielding a reading equivalent to one logical negation; and
 - ii. α can provide a negative fragment answer (i.e., without the overt presence of negation).

(Giannakidou 2006: 328; see also Giannakidou and Zeijlstra 2017: 2105)

As Giannakidou and Zeijlstra (2017) state, the definition in (17) does not appeal to morphological negative marking, despite the prevalent presence of *n*- in n-words. This is motivated by the observation that although some n-words contain n- (e.g., ningu, nessuno), others do not (e.g., Catalan res or Greek n-words). Furthermore, there are wh-marked n-words (e.g., in Japanese and Korean):

(18) Hanako-wa tabe-nakat-ta. nani-mo (Japanese) Hanako-TOP what-MO eat-NEG-PST 'Hanako didn't eat anything.'

Based on the phenomenon of Greek n-words, Giannakidou (2000) claims that there is an NCI involving scoping of a universal quantifier over negation. The question is whether the Japanese negative-sensitive expressions should be analyzed as NPIs that take scope under negation or as NCIs, which scope over negation. For example, in Japanese linguistics, two competing analyses have been compared regarding the semantics of wh-mo: narrow-scope existential and wide-scope universal analyses (see, e.g., Kataoka (2006) and Shimoyama (2011) for discussions and specific data/ tests regarding the two approaches). In the narrow-scope existential analysis, the wh-mo is viewed as an existential quantifier over which negation takes scope, as in (19):

(19)
$$\neg \exists x P(x)$$
 (Narrow-scope existential)

This view is consistent with the assumption that NPIs are licensed by negation or DE operators (Ladusaw 1979) or non-veridical operators, such as guestion, modal, and conditional (Giannakidou 1998; see also Progovac 1994 for the syntactic/binding approach to NPI). In contrast, in the wide-scope universal analysis, wh-mo is considered a universal quantifier that takes scope over negation (Shimoyama 2011; Kataoka 2006, this volume), similar to the case of n-words in Hungarian (Szabolcsi 1981) and Greek (Giannakidou 2000):

(20)
$$\forall x \neg P(x)$$
 (Wide-scope universal)

Kataoka (this volume) further discusses the above issues by means of a comparison between Japanese and Spanish data.

Furthermore, there is the issue of whether NCI is a type of NPI. NCI is often considered a special type of NPI (Watanabe 2004; Zeijlstra 2004, 2008; Giannakidou and Zeijlstra 2017), but there is also the view that NPIs and NCIs should be analyzed differently (Miyagawa, Nishioka and Zeijlstra 2016).

There are many types of negative-sensitive items in Japanese as well as in other languages. The validity of the classification or typology of negative-sensitive expressions needs to be assessed on both empirical and theoretical grounds.

2.5 Semantics of EVEN

NPIs tend to have the function of emphasizing and strengthening (Heim 1984; Kadmon and Landman 1993; Lee and Horn 1994; Krifka 1995; Lahiri 1998; Israel 1996: Chierchia 2013). Chierchia (2013) assumes that (21a) with the minimizer NPI give a damn has a logical structure like (21b), where a hidden operator E (=EVEN) takes a negative proposition as its argument:

- (21) a. John doesn't give a damn.
 - b. E[John doesn't give a damn].

(Based on Chierchia 2013)

In Japanese, the minimizer NPI mo 'even' (which can also mean 'also') plays an important role in deriving an emphatic meaning (Nakanishi 2006; Yoshimura 2007):

(22) (Context: The speaker has just entered a lecture room.) Gakusei-ga hito-ri-mo i-na-i. student-NOM one-CL-even be-NEG-PRES 'There isn't even one student'

In (22), if mo is deleted, the sentence carries a non-emphatic meaning "one student is not here". Similar phenomena are found in Hindi koii bhii and ek bhii (koii means 'some', ek means 'one', and bhii means 'even, also'; Lahiri 1998; Chierchia 2013).

Minimizer NPIs share the same semantic source in many languages, i.e., EVEN, and one theoretical issue is the extent to which the semantics of EVEN NPIs are universal. A cross-linguistic inspection of scalar phenomena shows that there is a variety of EVENs in natural language, and that each EVEN item can have different semantic/pragmatic characteristics. Giannakidou (2007) argues that EVENs have different polarity characteristics by examining the behavior of three lexically distinct Greek counterparts of even, namely the positive polarity akomi ke, the negative polarity *oute*, and the "flexible scale" *esto* (which does not introduce likelihood but is associated with scales made salient by the context).

Regarding Japanese, both polarity-sensitive EVEN and non-polarity-sensitive EVEN have been attested. Sawada (2007) observes that Japanese has an EVEN NPI *hito-tu*, which can only appear in a negative context:

(23) *Taro-wa* aisatu hito-tu {deki-na-i /*deki-ru}. Taro-TOP greeting one-CL can.do-NEG-PRES /can.do-PRES (Based on Sawada 2007) 'Taro cannot even offer a greeting.'

Sawada (2007) considers that in this case, the "one + classifier" complex itself behaves like a minimizer-forming suffix (see also Nakanishi 2008; Kataoka (this volume)).

³ In fact, the meaning of (22) can be expressed differently without using *mo*:

⁽i) (Context: The speaker has just entered a lecture room.) Gakusei hito-ri i-na-i. student one-CL exist-NEG-PRES 'There isn't even one student.'

Sawada (2007) claims that *hito-tu* 'even' in (23) behaves as an NPI, and that this type of *hito-tu* has been grammaticalized from *hito-tu* 'one-classifier' to a single scalar particle 'even'.⁴

Kinuhata (this volume) also demonstrates that Old Japanese *dani* 'even' is a polarity-sensitive EVEN and that it typically appears in a negative context, in the antecedent of a conditional, imperative, or optative, or in the context of intention. The existence of this type of EVEN in Japanese suggests the issue of polarity sensitivity in the domain of scalar particles – the problem that Kataoka (this volume) also discusses.

2.6 Equatives, proportional quantifiers, and maximality

While languages have a variety of degree expressions, an interesting point is that there is cross-linguistic variation regarding whether certain degree expressions (or constructions) are polarity-sensitive or not. Equatives and proportional quantifiers are important phenomena to consider in this regard. For instance, in English, the equative is not polarity-sensitive in that it can appear in both positive and negative contexts:

- (24) a. Taro is as tall as Ziro.
 - b. Taro is not as tall as Ziro.

By contrast, the Japanese equative *hodo* is polarity-sensitive in that it can only appear in negative contexts:

- (25) a. *Taro-wa Ziro-hodo se-ga taka-i.

 Taro-TOP Ziro-degree height-NOM tall-PRES

 'Taro is as tall as Ziro.'
 - b. Taro-wa Ziro-hodo se-ga takaku-na-i.
 Taro-TOP Ziro-degree height-NOM tall-NEG-PRES
 'Taro is not as tall as Ziro.'

It has been standardly assumed that English equatives involve maximality, namely expressing a relationship between two maximum degrees (Beck 2011; Crnič and Fox 2019). By contrast, the *hodo* equative does not encode maximality but only

⁴ *Tu* is a classifier for counting separable inanimate entities. It cannot count animate or inseparable entities or acts.

existential quantification over degrees. Tanaka, Mizutani, and Solt (this volume) claim that the NPI-hood of Japanese equatives results from a triviality of meaning (i.e., meaninglessness) and that the polarity sensitivity of Japanese equatives can be attributed to their weak existential semantics.

2.7 Polarity and indeterminate pronouns

Since Kuroda's (1965) seminal work, indeterminate pronouns have been a major topic of debate in the literature (e.g., Kishimoto 2001; Kratzer and Shimoyama 2002; Shimoyama 2011). In Japanese, the function of an indeterminate pronoun changes depending on the type of particles with which it is associated. When an indeterminate pronoun occurs with ka, it becomes a wh-question word (=26a) or an existential quantifier/PPI (=26b), and when an indeterminate pronoun occurs with mo, it behaves as either an NPI (=26c) or a universal quantifier (=26d). Furthermore, when an indeterminate pronoun occurs with demo, it functions as a free choice item as in (26e):

ki-ta-ka (26) a. *Dare-ga* wakara-na-i. (Wh-question) who-NOM come-PST-Q know-NEG-PRES 'I don't know who came.'

b. Dare-ka-ga ki-ta. (Existential) who-KA-NOM come-PST 'Someone came.'

c. Dare-mo ko-nakat-ta. (NPI) who-MO come-NEG-PST 'No one came.'

d. Dare-mo-ga ki-ta. (Universal) who-MO-NOM come-PST 'Everyone came.'

(Free choice) e. Dare-demo ki-te vo-i. come-TE fine-PRES who-FC 'Anyone can come.'

Although this paradigm is well-known, it cannot be a full paradigm of indeterminate pronouns. Watanabe (this volume) investigates the under-discussed phenomenon of the indeterminate involving donnani 'how (much)'. As demonstrated in (27), donnani 'how (much)' often appears in a concessive context, and shows polarity sensitivity:

(27) a. (Positive sentence)

Hanako-wa donnani kantanna mondai-mo toku-koto-ga Hanako-TOP how.much easy problem-MO solve-NML-NOM deki-na-i.

can.do-NEG-PRES

'No matter how easy the problem is, Hanako cannot solve it.'

b. (Positive sentence)

*Hanako-wa donnani kantanna mondai-mo toku-koto-ga Hanako-TOP how.much easy problem-MO solve-NML-NOM deki-ru.

can.do-PRES

'No matter how easy the problem is, Hanako can solve it.'

Building on the ideas of scalarity (Fauconnier 1975) and mirativity (Coppock and Engdahl 2016), Watanabe (this volume) proposes a new account of the syntax and semantics of the polarity sensitivity of *donnani* 'how (much)'. Related to the expression *donnani* 'how (much)' are indeterminate pronouns with the concessive expression *tatte* 'even if', *yooga* 'even if', and *niseyo* 'even if', discussed by Nakanishi and Hiraiwa (2019):

(28) Dare-ga {ki-tatte /ko-yooga /kuru-niseyo} Taro-wa who-NOM come.even.if /come-even.if /come-even.if Taro-TOP yorokobu-daroo. pleased-will 'Whoever comes, Taro will be pleased.'

In (28), there are no particles such as *mo*. However, the sentences are semantically (almost) equivalent to the following sentence with the concessive conditional marker *te.mo* (which involves the particle *mo*):

(29) Dare-ga ki-te.mo Taro-wa yorokobu-daroo. who-NOM come-even.if Taro-TOP pleased-will 'Whoever comes, Taro will be pleased.'

Nakanishi and Hiraiwa (2019) call the indeterminate pronoun that does not appear with *ka*, *demo*, or *mo* a "bare indeterminate." As seen in (28), the bare indeterminate *dare* appears in an adverbial clause with the meaning of unconditional or concession. How the meaning of bare indeterminate is compositionally interpreted and how it relates to other phenomena involving indeterminate pronouns constitute important research questions.

2.8 Varieties of PPIs

PPIs usually appear in a positive sentence, while they cannot appear in a negative sentence. Even if they can appear with negation, they must have wider scope than negation.

Previously, PPIs have not received as much attention as NPIs, but recently various PPI phenomena have attracted much research interest. For example, in the literature some, modality, and speaker-oriented adverbs have all been identified as PPIs and a number of theoretical proposals have been offered to account for their PPI status.5

(30) a. # John didn't see someone.

 $(not > some)^6$

b. John must not eat meat. (deontic)

(must > NEG)

c. Iohn probably left the city. (cf. # John didn't probably leave the city.)

d. Unfortunately, John didn't come.

(unfortunately > NEG)

Regarding the PPI of some in English, Szabolcsi (2004) uses the concept of "rescue" to analyze the characteristics of PPI some appearing in complex negative environments, which seemingly constitute counterexamples. In Japanese, the meaning corresponding to the English someone (also something, somewhere etc.) is expressed by wh-ka, which behaves as a PPI (Sudo 2010; Alonso-Ovalle and Shimoyama 2014; Imani 2016), as we will discuss below. With respect to modality, the English deontic must in (30b) behaves as a PPI, and some PPI properties are observed for epis-

⁵ Liu and Iordăchioaia (2018) classify and list expressions that behave as PPIs as follows, which shows that there are many different types of PPIs:

⁽i) Kinds of PPIs:

PPI adverbs (e.g., Baker 1970; van der Wouden 1997; Klein 1998; Liu 2012; Spector 2014; Ruppenhofer and Michaelis 2016; Sawada 2016; Kellert 2018)

b. PPI adjectives (e.g., Liu and Soehn 2009)

c. PPI predicates (e.g., Hoeksema 2010; Hoeksema 2018; Liu and Soehn 2009; Sailer 2018)

d. PPI indefinites (e.g., Szabolcsi 2004; Jayez and Tovena 2007; Chierchia 2013; Lee 2015; Fălăuș 2018)

e. PPI connectives (e.g., Goro and Akiba 2004; Spector 2014)

f. PPI determiners and quantifiers (e.g., Seuren 1985; Hasegawa 1991; Progovac 1994; Giannakidou 2011; Larrivée 2012; Zeijlstra 2013, 2017)

g. PPI measure constructions (e.g., Israel 2011)

h. PPI idioms (e.g., Liu and Soehn 2009; Hoeksema 2018; Sailer 2018)

PPI modal expressions (e.g., Homer 2011; Iatridou and Zeijlstra 2013; Giannakidou and Mari 2018) (Based on Liu and Iordăchioaia 2018)

⁶ This sentence becomes natural when some takes a wider scope than not, or when not is used to express emphatic denial (see, e.g., Szabolcsi 2004).

temic *must* as well (Homer 2011; Iatridou and Zeijlstra 2013; Giannakidou and Mari 2018). Some Japanese modalities also behave as PPIs. For example, the deontic *beki* 'should' is a PPI modal:

(31) Taro-wa huhei-o i-u-beki-de.wa-nai. (should > NEG)
Taro-TOP complaint-ACC say-PRES-should-de.wa-NEG
'Taro should not complain.'

Sawada (2006, 2014) claims that although *nai* 'not' in (31) is syntactically a sentential negation, semantically it is scoped over by *beki* 'should'. An interesting point is that not all kinds of modality expressions behave as PPIs. For example, English *have to* and *can* (both epistemic and deontic) are semantically interpreted in the scope of negation. Also, the English deontic *may* is ambiguous, falling either in or out of the semantic scope of negation (de Haan 1997; Sawada 2006). One of the major issues within PPI research is precisely how these properties of polarity sensitivity, which can vary from modality to modality, should be treated (see Francis and Iatridou (2020) for a summary of various approaches).

With regard to the speaker-oriented adverbs in (30c) and (30d), various ideas have been proposed, including the domain shrinking approach (Nilsen 2004) and the veridicality approach (Ernst 2009). Furthermore, there are studies of PPI-food of speaker-oriented adverbs from the perspective of conventional implicature (CI) (Potts 2005), such as the one proposed by Liu (2012). (We will discuss this point in Section 2.9.1.)

There are many phenomena that can be called PPI, but in this volume we will discuss the phenomenon of PPI involving the disjunction operator *ka* and *there*-sentences with numerals, as shown in Sections 2.8.1 through 2.8.3 below.

2.8.1 Differences between English some and Japanese wh-ka

Szabolcsi (2004) discusses the rescuing phenomenon of the English indefinite *some* and proposes the constraint in (32):

(32) (Constraint on the rescuing of PPIs)

PPIs do not occur in the immediate scope of a clause-mate anti-additive operator AA-Op, **unless** [AA-Op > PPI] itself is in an NPI-licensing context.

(Szabolcsi 2004: 419)

According to (32), (33b), as opposed to (33a), is expected to be natural because "negation (= anti-additive operator) plus PPI" itself is an NPI.

(33) a. # John didn't see someone.

(NOT>some)

b. I don't believe that you didn't see something. (Can mean 'I don't believe that you saw nothing') (Szabolcsi 2004: 411)

The question is to what extent the rescuing constraint in (32) is general. Yoshimoto (2019, this volume) investigates Japanese wh-ka and claims that it actually may appear in the immediate scope of a clause-mate additive operator, even if the sentence does not obey the rescuing constraint.

2.8.2 Differences between English or and Japanese ka

There is an issue of cross-linguistic variation of PPI-hood. Szabolsci (2002) claims that in English, the disjunctive expression or occurring with negation takes a narrow scope with respect to negation and is interpreted as AND (by obeying the de Morgan laws):

- (34) We didn't close the door or the window.
 - → We didn't close the door AND didn't close the window.

cf.
$$\neg(p \lor q) = \neg p \land \neg q$$

In contrast, the Japanese disjunctive expression ka takes scope over negation (Goro and Akiba 2004; Goro 2007):

(35) John-wa susi-ka pasuta-o tabe-nakat-ta. John-TOP sushi-or pasta-ACC eat-NEG-PST → John didn't eat sushi OR didn't eat pasta (but I don't know which).

Goro (this volume) discusses how cross-linguistic variations of PPI-hood can be theoretically explained from the perspective of language acquisition.

2.8.3 There-sentences and numerals

Ever since Milsark's (1974, 1977) proposal that weak NPs, but not strong NPs, can occur in a postverbal position in there-sentences in English, the relationship between existential sentences and determiners has been studied extensively. Typical examples of strong NPs are "definite" descriptions, which include demonstratives, possessives, pronouns, NPs with universal quantifiers (*all, every, each*) and *most*, and typical examples of the weak NPs are *a/an, some, several, many, no* and numerals. However, Milsark did not treat negative *there*-sentences with weak NPs, which show positive polarity, as exemplified in (36) (see Szekely 2015; McNally 1998):

(36) #There are not two students who are sleeping in the room.

(36) is infelicitous unless there is a contrastive emphasis on *two* (cf. *There are not two, but three students who are sleeping in the room*). The same phenomenon is true of existential sentences with numerals in Japanese. Imani (this volume) proposes that three types of domain-restrictions are relevant to the polarity of Japanese existential sentences with numerals.

2.9 Polarity sensitivity in pragmatics

As seen in Sections 2.1 through 2.8 above, polarity sensitivity has often been studied from the viewpoint of syntax and semantics. However, this topic has recently attracted attention in the field of pragmatics as well. For example, there are several specific issues concerning polarity sensitivity, such as the relationship between polarity sensitivity and conventional implicature, the source of speaker's positive/negative bias in negative interrogatives, and the difference between emphatic NPIs and attenuating NPIs.

2.9.1 Speaker-oriented adverbs and conventional implicature

As we mentioned above, some studies, such as Nilsen (2004) and Ernst (2009), argue that speaker-oriented adverbs like *unfortunately* and *surprisingly* are PPIs.

- (37) a. They unfortunately withdrew their funds.
 - b. *Did they unfortunately withdraw their funds? (Ernst 2009: 506)

Nilsen (2004) analyzes the PPI-hood of speaker-oriented adverbs in terms of domain-shrinking and pragmatic strengthening (cf. Kadmon and Landman's (1993) analysis of *any*, where domain-widening and pragmatic strengthening play an important role in explaining the distribution of *any*). Ernst (2009) analyzes the PPI-hood of speaker-oriented adverbs based on veridicality.

In terms of the semantics-pragmatics interface, many speaker-oriented adverbs, including unfortunately and luckily, are classified as conventional implicature (CI)-triggering expressions (Potts 2005). CIs are considered a part of the meanings of words, but they are independent of "what is said" (e.g., Grice 1975; Potts 2005; Horn 2007; McCready 2010; Sawada 2010, 2018; Gutzmann 2012). Furthermore, CI expressions are speaker-oriented (Potts 2007). Liu (2012) claims that PPI-hood of speaker-oriented adverbs can be attributed to a mismatch between their at-issue meaning and CI dimension.

One seemingly inexplicable puzzle is that some speaker-oriented adverbs are used as NPIs, as seen in the Japanese reactive attitudinal nani-mo (Sawada 2019, 2021):

(38) (Context: The hearer asked if everything needs to be done now.) ima zenbu suru {hituyoo-wa nai-desu what-MO now all dο necessity-TOP exist.NEG-POLITE.PRES /*hituyoo-ga ari-masu}. /necessity-NOM exist-POLITE.PRES At-issue: You don't need to do everything now. CI: I am thinking that "to do everything now" is too much.

The reactive attitudinal *nani-mo* in (38) is different from the quantifier *nani-mo* 'what-mo' in (39), in that its meaning does not contribute to the at-issue propositional content, but expresses a speaker's negative reactive meaning:⁷

(39) *Taro-wa* nani-mo tabe-nakat-ta. Taro-TOP what-MO eat-NEG-PST 'Taro didn't eat anything.'

Although it is usually assumed that NPIs must be scoped under negation, the reactive attitudinal *nani-mo* cannot (CIs by definition cannot be scoped by logical operators). Sawada (this volume) shows that, besides nani-mo, there are various other types of NPIs that invoke CIs, and suggests that there is a new type of NPI that requires a negative element to satisfy its pragmatic function.

⁷ Descriptively, the reactive attitudinal nani-mo conveys that a judge (the speaker in the case of main clauses) considers that the given proposition p, which is salient in the discourse (here "the hearer does everything now"), is extreme and unnecessary. It is used in a situation where the judge objects to p in a weak manner (see Sawada 2021). In contrast, the quantifier nani-mo has a meaning equivalent to the English any and its meaning is part of a propositional content. As for the exact meaning of the quantifier *nani-mo*, there are various theories (see Section 2.4).

2.9.2 Speaker's negative/positive bias in negative interrogatives

English negative interrogatives like (40) have both a positively biased interpretation and a negatively biased interpretation (Ladd 1981; Romero and Han 2004):

- (40) Isn't Jane coming?
 - a. Positively biased reading: double-checking *p* (=Jane is coming)
 - b. Negatively biased reading: double-checking $\neg p$

In the positively biased reading, the speaker is double-checking the information that Jane is coming, whereas in the negatively biased reading, the speaker is double-checking the information that Jane is not coming. If the PPI *too* is inserted, the sentence has a positively biased reading, and if the NPI *either* is inserted, the sentence has a negatively biased reading (e.g., Romero and Han 2004).⁸

- (41) a. *Isn't Jane coming too?* (Positively biased reading: double-checking *p*)
 - b. *Isn't Jane coming either?* (Negatively biased reading: double-checking $\neg p$)

A similar phenomenon exists in Japanese negative questions. As in (42a), when a negative question co-occurs with the positive polarity item *kanari* 'rather/quite', the negative question phrase acquires a positive bias reading (i.e., the speaker anticipates that "quite a number of people came"), but when it is accompanied by the negative polarity item *amari* 'that much' as in (42b), the speaker is double-checking that "not many people came," which is a negative bias reading:

(42) a. *Hito-ga kanari ko-nakat-ta?* (Positively biased reading: people-NOM quite come-NEG-PST double-checking *p*) 'Didn't quite a number of people come?'

(Romero & Han 2004: 610)

The utterance by S can be understood in this context as an epistemically unbiased question. Thanks to David Oshima for bringing this to our attention.

⁸ Note, however, that there can also be a neutral (non-biased) reading in examples like "Does John not drink either?" (Romero & Han 2004:610):

⁽i) (Scenario: The speaker is organizing a party and she is in charge of supplying all the non-alcoholic beverages for teetotalers. The speaker is going through a list of people that are invited. She has no previous belief or expectation about their drinking habits.)

A: Jane and Mary do not drink.

S: OK. What about John? Does he not drink (either)?

b. (Context: The speaker knows that Mary expected many people to come to the party. But now she looks depressed. The speaker asks her about the party.)9

Hito-ga amari ko-nakat-ta? (Negatively biased reading: people-NOM that.much come-NEG-PST double-checking ¬p) 'Didn't many people come?'

If the polarity items do not co-occur, the negative question can be interpreted as either a positive bias reading or a negative bias reading, but the sentence can be disambiguated by prosody, background assumption, context, and the position of negative markers (Ito and Oshima 2016; Shimoyama and Goodhue 2019). Oshima (this volume) further investigates how English and Japanese negative polar questions differ in the way they are interpreted.

2.9.3 Polarity and discourse

Some polarity-sensitive items are highly related to discourse structure. Sawada (this volume) observes that the Japanese polarity expressions *totemo* and *zenzen* are used in a reactive context. Roughly speaking, the reactive *totemo* is construed as an NPI since it appears in a negative context and intensifies the impossibility of a given proposition p in a context in which p is discourse given and expected:

(43) A: Kono mondai tok-e-masu-ka? this problem solve-can-POLITE-Q 'Can you solve this problem?'

⁹ In order to obtain a negative bias interpretation, we need to posit a context in which the negative bias was formed (by overriding the original positive bias) in the utterance situation. (42b) is natural in the following conversation (David Oshima, personal communication):

⁽i) A: Kyoo-wa ippai hito-ga ki-ta-daroo-ne. today-TOP many people-NOM come-PST-seem-PRT I bet a lot of people came today.

B: Silent (smile)

A: E? amari ko-nakat-ta? what that.much come-NEG-PST 'What? Didn't many people come?'

B: Iya, boku-ni-wa totemo {tok-e-masen /*tok-e-masu}.

no I-to-TOP TOTEMO solve-can-NEG.POLITE / solve-can-POLITE
'No, I can't solve this problem.'

(CI: I am emphasizing the inability.)

By contrast, the reactive *zenzen* 'totally' appears in a positive context and intensifies the degree of a given gradable predicate or the degree of a speaker's commitment toward a proposition in a situation in which the given proposition is not expected (e.g., Arimitsu 2002; Odani 2007; Sawada 2008):

- (44) A: Kono hon omosiroku-na-i-to kii-ta-kedo omosiro-i? this book interesting-NEG-PRES-that hear-PST-but interesting-PRES 'I heard that this book is not interesting, but is this interesting?'
 - B: Zenzen omosiroi-yo.

 ZENZEN interesting-PRES-PRT
 'It is zenzen interesting!'

Sawada (2019) argues that polarity sensitivity in the reactive intensifiers *totemo* and *zenzen* comes from the reversal of expectation, more specifically, from the item-specific characteristic of directionality of reversal (reversal of positive expectation or negative expectation). Sawada (this volume) further shows that similar reactive properties hold for English *totally* and *possibly* as well.

Bogal-Allbritten, Moulton, and Shimoyama (this volume) focus on nominalized clause complements involving *-ta-nun-kes* in Korean and (*-to-yuu*)*-no* in Japanese and show that such complements exhibit behavior anaphoric to familiar propositions in the discourse:

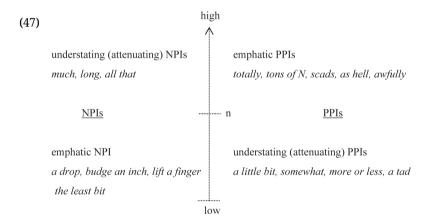
(45) Watasi-wa [kare-ga syukudai-o zenbu
I-TOP he-NOM homework-ACC all
si-ta(-to-yuu)-no]-o sinzi-{tei-ru /tei-na-i}.
do-PST-to-yuu-no-ACC believe-tei-PRES /tei-NEG-PRES
'I {believe/don't believe} that he finished his homework.'
("He finished his homework" is anaphoric to a proposition in discourse.)

Since the embedded propositions of the nominalized clause complements involving (-to-yuu)-no in Japanese and -ta-nun-kes in Korean are always anaphoric to a proposition in discourse even if the entire sentence is negated as in (45), (-to-yuu)-no and -ta-nun-kes seem to behave as PPIs in a broader sense. It goes without saying that further research is needed on the relationship between polarity-sensitive items and discourse.

2.9.4 Emphatic NPIs vs. attenuating NPIs

Generally, studies of scalar NPIs tend to focus on emphatic NPIs such as *any* and *drink a drop* (e.g., Heim 1984; Kadmon and Landman 1993; Lee and Horn 1994; Krifka 1995; Lahiri 1998; Chierchia 2013; see Section 2.5), but as Israel (1996, 2004, 2011) shows, there are also so-called attenuating NPIs. Israel argues that all polarity items have a quantitative value on a "high/low" scale and an informational value such as "emphatic" or "understating" (pragmatic function) as in (46), and argues that the combination of these two values results in four types of polarity representations in natural language, as represented in (47):

- (46) a. Quantitative Value (Q): high or low relative to norm
 - b. Informative Value (I): understating or emphatic relative to norm (Based on Israel (1996))



(Based on Israel (1996, 2004))

For example, the English a tad is an understating (attenuating) PPI with a low degree value, whereas the least bit is an emphatic NPI with a low degree value.¹⁰

¹⁰ Krifka (1995) also analyzed the meaning of *a sound* and *any*, assuming the speech act function of emphatic assertion.

⁽i) John didn't hear a SOUND.

(48) Henry is a tad overweight. (Understating (attenuating) PPI) (cf. * Henry isn't a tad overweight.) (Israel 1996: 635–636)

(49) Henry isn't the least bit overweight. (Emphatic NPI) (cf. *Henry is the least bit overweight.) (Israel 1996: 635–636)

On the other hand, *all that* is an understating (attenuating) NPI with a high degree, whereas *awfully* is an emphatic PPI with a high degree.

(50) Lewis isn't all that clever. (Understating (attenuating) NPI) (cf. * Lewis is all that clever.) (Israel 1996: 636)

(51) Lewis is awfully clever. (Emphatic PPI) (cf. *Lewis isn't awfully clever.) (Israel 1996: 636)

Whether Israel's theory applies to all polarity expressions needs to be carefully investigated, but there are polarity expressions in Japanese that fit Israel's typology:¹¹

- (52) Kono hon-wa sukosi taka-i. (Understating this book-TOP a.bit expensive-PRES (attenuating) PPI)

 'This book is a bit expensive'

 (cf. *sukosi takaku-na-i (a.bit expensive-NEG-PRES) 'lit. not sukosi expensive')
- (53) Taro-wa soto-ni i-ppo-mo de-nakat-ta. (Emphatic NPI)
 Taro-TOP outside-LOC 1-CL.step-even go.out-NEG-PST
 'Taro never stepped outside.'
 (cf. *i-ppo-mo de-ta (1-CL.step-even go.out-PST) 'even took one step')
- (54) Kono ie-wa totemo ooki-i. (Emphatic PPI) this house-TOP very big-PRES (cf. *totemo ookiku-na-i (very big-NEG-PRES) 'lit. not totemo big')

¹¹ For example, it is not obvious whether the reactive NPI *totemo* 'very' is directly applicable to the type of Israel (Sawada (2014, this volume)).

(Understating (attenuating) NPI) (55) Kono hon-wa sonnani this book-TOP that omosiroku-na-i. interesting-NEG-PRES 'This book is not that interesting.' (cf. *sonnani omosiro-i (that interesting-PRES) 'that interesting')

Israel (2004: 717) links the pragmatic function of polarity expressions to the theory of politeness (Brown and Levinson 1987), arguing that emphatic expressions are used to mark a speaker's emotion and involvement in a communicative exchange, whereas the attenuation functions to both protect a speaker's credibility and show deference to a hearer by minimizing any demands on his credulity.

In the formal semantics/pragmatics literature, while there is an abundance of formal research on emphatic polarity items (as we have seen in Sections 2.4 and 2.5), the literature on attenuating polarity items has been limited. Gradually, however, research on the attenuating type has also increased (for example, see Onea and Sailer (2013) for a study of the English attenuating NPI all that, and Matsui (2011, 2013) for the Japanese attenuating NPIs amari 'all that/that much' and sonnani 'all that/that much'. As for the semantics/pragmatics of attenuating PPIs, see, e.g., Sawada (2010, 2018) on Japanese tyotto 'a bit' and sukosi 'a bit'). In this volume, Ido, Kubota, and Kubota discuss differences in the meanings and distributions between the Japanese attenuating NPIs sonnani 'all that/that much' and amari 'all that/that much', using corpus data from the Balanced Corpus of Contemporary Written Japanese (BCCWJ).

3 Overview of individual chapters

The main aim of this book is to explore the theoretical and empirical issues surrounding comparisons between Japanese and other languages. These issues are addressed from the syntactic, semantic, pragmatic, experimental, psycholinguistic, and historical perspectives.

Chapters 2 and 3 discuss the licensing conditions of negative polarity items in Japanese through comparison with English and Spanish data.

Hideki Kishimoto's "Negative polarity and clause structure in Japanese" (Chapter 2) investigates the licensing condition of NPIs from a comparative perspective of Japanese and English. In Japanese, unlike in English, NPIs are allowed to occur in both the subject and object positions of simple clauses. The author argues that the extent of negative scope changes in accordance with Neg-head raising in both English and Japanese, and that even in Japanese a subject-object asymmetry is observed in the licensing of NPIs in the subject-raising and the subject-control constructions. This chapter provides evidence that in Japanese, long distance licensing is possible for local NPIs, which are often seen as subject to the clause-mate condition, provided they appear in a nonfinite clause and there is no CP projection between the NPI and the negator.

Kiyoko Kataoka's article "Negation-sensitive elements outside the Neg-domain" (Chapter 3) examines the syntax and semantics of negative-sensitive elements (NSEs) in Japanese and Spanish. It is argued that in order for an NSE to be considered an NPI, it must be commanded by Neg to induce scale-based universal negation in the sense of Fauconnier (1975) and Ladusaw (1979). The author claims that there are NSEs in Japanese and Spanish that cannot be treated by the usual c-command condition by Neg and that the problematic distributions of Japanese and Spanish NSEs can be accounted for by their syntactic and language-specific lexical semantic role, which is different from a scale-based universal negation.

Chapters 4 through 6 focus on the syntax and semantics of polarity-sensitive expressions from phenomena related to minimum quantity expressions, existential sentences with numerals, and equatives.

In Chapter 4, Akira Watanabe's "Degree quantification, minimum quantity predicates, and polarity in Japanese" shows that Japanese minimal quantity predicates (such as wazuka 'slight'), which can be independently identified by the degree modifier hon-no 'really', become polarity-sensitive when placed within the universal degree quantification structure defined by the indefinite degree modifier donna-ni 'how' and the quantifier particle mo. Watanabe shows that the Japanese quantification structure, unlike the English superlative, blocks the "negation-of-existence" reading, and that it is not the inherent nature of the minimal quantity predicate itself that explains the negation-of-existence reading. In this analysis, degree quantifiers are related to a restrictor that refers to standard values, which are sensitive to the comparison class involved.

Ikumi Imani's contribution "Polarity sensitivity of existential sentences with numerals in Japanese" (Chapter 5) proposes a modification of Milsark's (1977) generalization of strong and weak determiners. According to Milsark, only weak determiners can occur in a postverbal position in English there-sentences. This chapter first shows that even weak determiners cannot be used in English existential sentences (i.e., there-sentences) with negation and their Japanese counterparts (unless a contrastive reading is induced), and then argues that the distributions are regulated by three types of domain-restrictions, namely observation, subtraction and trivial-setting. A detailed inspection of the data shows that an analysis making crucial use of the notions of domain restrictions is favored over Milsark's analysis in accounting for the polarity sensitivity of existential sentences with numerals.

In Chapter 6, the article "Polarity sensitivity and equative markers in Japanese and German" by Eri Tanaka, Kenta Mizutani, and Stephanie Solt discusses cross-linguistic differences in the semantics of equative constructions, with special focus on the Japanese and German equative markers hodo and dermaßen, respectively. The authors argue that these markers show a wider distribution than the more well-studied markers such as English as. . .as. Remarkably, some of these usages are polarity-sensitive and others are not, which is a pattern that has not been previously reported. Building on their previous claim that the peculiar behavior of these items comes from the lack of maximality semantics that leads to trivial interpretations in some configurations, the authors suggest that the polarity sensitivity of these markers results from their inducing a norm-relatedness presupposition.

Chapters 7 and 8 consider the PPI status of the Japanese indefinite and disjunction from the perspectives of semantics and acquisition theory.

In Chapter 7, **Yasushi Yoshimoto**'s article "On the rescuing of positive polarity items in Japanese and English: A hybrid approach" examines Japanese and English sentences containing someone-type PPIs and proposes a hybrid account of PPI rescuing that combines Homer's (2021) polarity theory and Larrivée's (2012) rescuing theory. While Szabolcsi (2004) claims that PPIs are rescued in contexts that license weak NPIs, it has been shown in the literature that both English and Japanese PPIs can be rescued in contexts that do not allow weak NPIs. To explain the data that remain unaccounted for under Szabolcsi's analysis, Yoshimoto proposes a revision of Larrivée's theory in such a way that a PPI in a negative proposition is authorized (or rescued) if the corresponding positive proposition that contrasts with that negative proposition is activated.

Takuya Goro's article (Chapter 8) "On the scope behavior of Japanese disjunction ka: Positive polarity, or anti-reconstruction?" considers the PPI-hood of Japanese disjunction from the perspective of language acquisition. In the literature, two competing accounts have been advanced for the peculiar scope restriction on the Japanese disjunction ka, which resists taking scope under local negation, unlike the English disjunction or. Goro (2007) argues that this restriction comes from the PPIhood of ka, while Shibata (2015) claims that this is due to object raising, and that once ka moves outside the scope of negation, it does not take lower scope because it is not subject to reconstruction (the anti-reconstruction approach). This chapter argues for the PPI approach drawing on children's data.

Chapters 9 through 12 focus specifically on the relationship between polarity and discourse.

In "The forms and meanings of negative polar interrogatives in English and Japanese: Epistemic bias, information structure, prosody, and further issues" (Chapter 9), David Y. Oshima explores the pragmatic meaning conveyed by negative polar questions (e.g., "Isn't it raining?") both in English and Japanese. He shows

that the two languages are similar in that (i) negative interrogatives convey a positive epistemic bias, a negative one, or no epistemic bias, (ii) negation in positively biased interrogatives is inert with respect to allowing polarity items, (iii) negation in the positive bias type is inert in the licensing of polarity items, etc. On the other hand, he claims that the interpretation of polar negative questions is signaled in different ways in the two languages: In Japanese, the prosodic reduction of the negative predicate systematically selects for a positive bias interpretation, whereas in English, the position of the negation plays an important role.

In Chapter 10 ("The polarity sensitivity of reactive intensifiers in Japanese and English") Osamu Sawada investigates the discourse-pragmatic functions of scalar expressions by employing the Japanese intensifiers totemo 'very' and zenzen 'at all', which have not only semantic but also discourse-pragmatic uses. The discourse-pragmatic totemo appears in negative modal environments and strengthens the impossibility of a discourse salient proposition. In contrast, zenzen appears in positive environments and strengthens the degree of a gradable predicate in situations in which the predicate is not expected to be true with respect to the individual in question (Sawada 2017, 2019). The discussion also reveals that possibly and totally in English have similar discourse-pragmatic functions. This chapter clarifies the existence of a discourse-sensitive polarity item whose distribution patterns are constrained by pragmatic factors rather than syntactic/semantic mechanisms.

In Chapter 11, Elizabeth Bogal-Allbritten, Keir Moulton, and Junko Shimoyama's article "On propositional anaphora: 'Referential' propositions and propositional proforms" presents a case study on nominalized clausal complements in non-factive belief reports, with -ta-nun-kes in Korean and (-to-yuu)-no in Japanese. Such nominalized clauses require the proposition to be "anaphoric" to the proposition in the discourse. However, this chapter shows that the behavior is much more limited than might be expected from the assumption that they only refer to familiar propositions in the discourse. The authors argue that while propositional anaphora (e.g., response particles (yes/no)) can refer to the proposition embedded by negation or the positive proposition (the "highlighted" proposition) of a polar question that occurred in the previous utterance, the anaphoric nominalized clauses with kes and to-yuu-no do not have such referential properties because they refer to individual entities which bear propositional content.

As we discussed in Section 2.9.4, there are two types of NPIs that have scalar properties, emphatic NPIs and attenuating NPIs. In Chapter 12, Misato Ido, Ai **Kubota**, and Yusuke Kubota's article "Two types of attenuation strategies for polarity-sensitive items: The semantics of degree adverbs amari and sonnani in Japanese" focuses on attenuating NPIs and argues that the attenuating effects of Japanese amari and sonnani are attained through different pragmatic strategies. The authors propose that the attenuating effect of sonnani emerges by virtue of the speaker's

(or attitude holder's) suspension of agreeing to add a contextually provided degree to the common ground, while amari gives rise to this effect due to the speaker's (or attitude holder's) belief about the "natural/unsurprising consequence" of accepting a contextually determined degree.

Finally, in Chapter 13 ("Scope ambiguity and the loss of NPI feature: Evidence from the history of Japanese scalar particle dani") Tomohide Kinuhata discusses the semantics of dani in Old and Middle Japanese. In Old Japanese, dani must appear in the scope either of negation or a predicate expressing a wish. Kinuhata claims that dani adds the presupposition that its prejacent proposition is more likely to occur, and negations or wishes strengthen the statement. In Early Middle Japanese, however, dani appeared in sentences without either negation or a wish (Kinuhata 2005). Kinuhata argues that dani in Early Middle Japanese is ambiguous between NPIs and non-NPIs, and demonstrates the complete loss of the NPI feature by analyzing instances of dani in texts written in Late Middle Japanese. The ambiguous status of dani resulting from reanalysis has a theoretical implication for cross-linguistic studies on even-like expressions.

4 Conclusion

This chapter has discussed various empirical and theoretical issues behind polarity items through comparisons between Japanese and other languages. This volume will address these issues in further detail, focusing on the syntax and semantics of both NPI and PPI, the pragmatics of polarity items, and the experimental, corpus, and historical approaches to polarity-sensitive expressions. All chapters include new empirical findings and raise several theoretical issues, which can only be examined from the crosslinguistic contrastive perspective of Japanese and other languages (e.g., English, German, Spanish, Korean, Greek, Swedish, and Old Japanese). We hope that this book will shed new light on the study of polarity-sensitive expressions in natural language.

References

Alonso-Ovalle, Luis & Junko Shimoyama. 2014. Expressing ignorance in the nominal domain: Japanese wh-ka. In Robert E. Santana-LaBarge (ed.), Proceedings of the 31st West Coast Conference on Formal Linguistics, 11-20. Somerville, MA: Cascadilla Proceedings Project.

Aoyagi, Hiroshi & Toru Ishii. 1990. On NPI licensing in Japanese. In Noriko Akatsuka (ed.), Japanese/ Korean Linguistics 4, 295-311. Stanford, CA: CSLI Publications.

- Arimitsu, Nami. 2002. Hiteiteki bunmyaku-to hitei kyokusei koomoku-nikansuru ichi koosatsu: Not at all vs zenzen-o chuushinni [Notes on the negative context and negative polarity items: not at all vs. zenzen]. Papers in Linquistic Science 8. 63-80.
- Baker, C. L. 1970. Double negatives. Linguistic Inquiry 1, 169–186.
- Beck, Sigrid. 2011. Comparative constructions. In Claudia Maienborn, Klaus von Heusinger & Paul Portner (eds.), Semantics: An International Handbook of Natural Language Meaning, Vol. 2. 1341-1389. Berlin: Mouton de Gruyter.
- Brown, Penelope & Stephen C. Levinson. 1987. Politeness: Some Universals in Language Usage. Cambridge: Cambridge University Press.
- Chierchia, Gennaro. 2013. Logic in Grammar: Polarity, Free Choice, and Intervention. Oxford: Oxford University Press.
- Coppock, Elizabeth & Elisabet Engdahl. 2016. Quasi-definites in Swedish: Elative superlatives and emphatic assertion. Natural Language & Linguistic Theory 34. 1181–1243.
- Crnič, Luka & Danny Fox. 2019. Equatives and maximality. In Daniel Altshuler & Jessica Rett (eds.), The Semantics of Plurals, Focus, Degrees, and Times, 163–184. Cham: Springer.
- Ernst, Thomas. 2009. Speaker oriented adverbs. Natural Language & Linguistic Theory 27, 497–544.
- Fălăus, Anamaria. 2018. Positive polarity indefinites? On how (not) to identify them: An exhaustification-based perspective. Linguistics 56. 301-331.
- Fauconnier, Gilles. 1975. Pragmatic scales and logical structures. Linguistic Inquiry 6. 353–275.
- Francis, Naomi & Sabine Iatridou. 2020. Modals and negation. In Viviane Déprez & M. Teresa Espinal (eds.), The Oxford Handbook of Negation, 285-300. Oxford: Oxford University Press.
- Giannakidou, Anastasia. 1998. Polarity Sensitivity as (Non)veridical Dependency. Amsterdam: John Benjamins.
- Giannakidou, Anastasia. 2000. Negative. . . concord? Natural Language & Linguistic Theory 18. 457-523.
- Giannakidou, Anastasia, 2006. N-words and negative concord. In Martin Everaert & Henk van Riemsdijk (eds.), The Blackwell Companion to Syntax, Vol. III: Chapter 45, 327-391. Malden, MA Wilev-Blackwell.
- Giannakidou, Anastasia. 2007. The landscape of EVEN. Natural Language & Linguistic Theory 25. 39-81.
- Giannakidou, Anastasia. 2011. Positive polarity items and negative polarity items: Variation, licensing, and compositionality. In Claudia Maienborn, Klaus von Heusinger & Paul Portner (eds.), Semantics: An International Handbook of Natural Language Meaning Vol. 2, 1660–1712. Berlin: Mouton de Gruyter.
- Giannakidou, Anastasia & Alda Mari. 2018. The semantic roots of positive polarity: Epistemic modal verbs and adverbs in Greek and Italian. Linguistics and Philosophy 41, 623-664.
- Giannakidou, Anastasia & Hedde Zeijlstra. 2017. The landscape of negative dependencies: Negative concord and n-words. In Martin Everaert & Henk van Riemsdijk (eds.), The Wiley Blackwell Companion to Syntax, 2nd edn., 2099–2136. New York: Wiley-Blackwell.
- Goro, Takuya. 2007. Language-specific constraints on scope interpretation in first language acquisition. College Park, MD: University of Maryland at College Park dissertation.
- Goro, Takuya & Sachie Akiba. 2004. The acquisition of disjunction and positive polarity in Japanese. In Vinetta Chand, Ann Kelleher, Angelo I. Rodriguez & Benjamin Schmeiser (eds.), Proceedings of the 23rd West Coast Conference on Formal Linguistics, 251–264. Somerville, MA: Cascadilla Press.
- Grice, Paul. H. 1975. Logic and conversation. In Peter Cole & Jerry L. Morgan (eds.), Syntax and Semantics, Vol.3: Speech Acts, 43-58. New York: Academic Press.
- Gutzmann, Daniel. 2012. Use-conditional meaning. Frankfurt: University of Frankfurt dissertation.
- De Haan, Ferdinand. 1997. The Interaction of Modality and Negation: A Typological Study. New York: Garland.

- Hasegawa, Nobuko. 1991. Affirmative polarity items and negation in Japanese. In Carol Georgopoulos & Roberta Ishihara (eds.), Interdisciplinary Approaches to Language: Essays in Honor of S.-Y. Kuroda, 271-285. Dordrecht: Kluwer Academic Publishers.
- Heim, Irene. 1984. A note on negative polarity and downward entailingness. In Proceedings of North East Linguistics Society, Vol. 14, 98-107. Amherst, MA: GLSA Publications.
- Hoeksema, lack, 2010. Negative and positive polarity items: An investigation of the interplay of lexical meaning and global conditions on expression. In Laurence R. Horn (ed.), The Expression of Negation, 187-224. Berlin & New York: De Gruvter Mouton.
- Hoeksema, lack, 2018. Positive polarity predicates, *Linguistics* 56(2), 361–400.
- Homer, Vincent. 2011. Polarity and modality. Los Angeles: UCLA dissertation.
- Homer, Vincent. 2021. Domains of polarity items. Journal of Semantics 38. 1-48.
- Horn, Laurence R. 1989. A Natural History of Negation. Chicago, IL: University of Chicago Press.
- Horn, Laurence R. 2007. Toward a Fregean pragmatics: Voraussetzung, nebengedanke, andeutung. In Istvan Kecskes & Laurence R. Horn (eds.), Explorations in Pragmatics, 39-69. Berlin: Mouton de
- Iatridou, Sabine & Hedde Zeijlstra. 2013. Negation, polarity, and deontic modals. Linguistic Inquiry 44(4). 529-568.
- Ido, Misato, 2019, Sonnani, amari-no hi-hiteisetsu-niokeru bunpu to imi IThe meaning of sonnani and amari based on their distribution in non-negative clauses]. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kyokusei Hyoogen-no Koozoo, Imi, Kinoo [Polarity-sensitive expressions: their forms, meanings and functions], 336-355. Tokyo: Kaitakusha.
- Imani, Ikumi. 2016. Semantic and pragmatic analysis of wh-ka in Japanese. Paper presented at the symposium "Polarity-Sensitive Items: Their Forms, Meanings, and Functions". English Linguistic Society of Japan. Kanazawa University. November 13, 2016, Conference Handbook 34, 258-263.
- Israel, Michael. 1996. Polarity sensitivity as lexical semantics. Linguistics and Philosophy 19. 619–666.
- Israel, Michael. 2004. The pragmatics of polarity. In Laurence R. Horn & Gregory Ward (eds.), The Handbook of Pragmatics, 701-723, Oxford: Blackwell.
- Israel, Michael. 2011. The Grammar of Polarity: Pragmatics, Sensitivity, and the Logic of Scales. Cambridge: Cambridge University Press.
- Ito, Satoshi & David Y. Oshima. 2016. On two varieties of negative polar interrogatives in Japanese. In Michael Kenstowicz, Ted Levin, & Ryo Masuda (eds.), Japanese/Korean Linguistics, Vol. 23, 229-243. Stanford: CSLI Publications.
- Jayez, Jacques & Lucia Tovena. 2007. Evidentiality and determination. In Atle Grønn (ed.), Proceedings of Sinn und Bedeutung 12, 271-286.
- Kadmon, Nirit and Fred, Landman. 1993. Any. Linguistics and Philosophy 16(4). 353-422.
- Kato, Yasuhiko. 1994. Negative polarity and movement. In Hiroykui Ura & Masatoshi Koizumi (eds.) Formal Approaches to Japanese Linguistics 1: MIT Working Papers in Linguistics 24, 101–120. Cambridge, MA: MITWPL.
- Kellert, Olga, 2018, PPIs under negation: A case study of Italian aià, Linguistics 56, 333–359.
- Kinuhata, Tomohide. 2005. Fukujoshi dani-no imi-to koozoo-to sono henka: Joodai chuuko-niokeru [Focus particle dani: its syntax, semantics, and their evolution from the Nara to the Heian period]. Journal of Japanese Grammar 5(1). 158-175.
- Kinuhata, Tomohide. 2019. Joodai nihongo-no hitei kyokusei hyoogen: Fukujoshi dani-no imi saikoo [Negative polarity expression of Old Japanese: reconsidering the meaning of adverbial particle dani]. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kyokusei Hyoogen-no Koozoo, Imi, Kinoo [Polarity-sensitive expressions: their forms, meanings and functions], 356–379. Tokyo: Kaitakusha.

- Kishimoto, Hideki. 2001. Binding of indeterminate pronouns and clause structure in Japanese. Linauistic Inquiry 32, 597-633.
- Kishimoto, Hideki. 2007. Negative scope and head raising in Japanese. Lingua 117. 247–288.
- Kishimoto, Hideki. 2008. On the variability of negative scope in Japanese. Journal of Linguistics 44. 379-435.
- Klein, Henry. 1998. Adverbs of Degree in Dutch and Related Languages. Amsterdam & Philadelphia: John Benjamins.
- Klima, Edward E. 1964. Negation in English. In Jerry A. Fodor & Jerrold J. Katz (eds.), The Structure of Language, 246-323, Englewood Cliffs, NI: Prentice-Hall Inc.
- Kratzer, Angelika & Junko Shimoyama. 2002. Indeterminate pronouns: The view from Japanese. In Yukio Otsu (ed.), The proceedings of the third Tokyo Conference on Psycholinguistics, 1–25. Tokyo: Hituzi Syobo.
- Krifka, Manfred. 1995. The semantics and pragmatics of polarity items in assertion. Linguistic Analysis 15. 209-257.
- Kuroda, S.-Y. 1965. Generative grammatical studies in the Japanese language. Cambridge, MA: MIT dissertation.
- Ladd, Robert D. 1981. A first look at the semantics and pragmatics of negative questions and tag questions. Papers from the Seventeenth Regional Meeting of the Chicago Linguistic Society. 164-171.
- Ladusaw, William A. 1979. Polarity sensitivity as inherent scope relations. Austin: University of Texas at Austin dissertation. Published in 1980. New York and London: Garland Publishing.
- Lahiri, Utpal. 1998. Focus and negative polarity in Hindi. Natural Language Semantics 6. 57–123.
- Laka, Itziar. 1990. Negation in syntax: On the nature of functional categories and projections. MIT: Ph.D. dissertation.
- Larrivée, Pierre. 2012. Positive polarity items, negation, activated propositions. Linguistics 50(4). 869-900.
- Lee, Chungmin. 2015. Wh-indefinites as PPIs in Wh-NPI languages. Paper presented at the Workshop Varieties of Positive Polarity Item. Paper presented at The Annual Meeting of the German Linguistic Society (DGfS), University of Leipzig, 4–6 March, 2015.
- Lee, Young-Suk & Laurence Horn. 1994. Any as indefinite plus even. Manuscript. Yale University. Linebarger, Marcia C. 1980. The grammar of negative polarity. Cambridge, MA: MIT dissertation.
- Liu, Mingya. 2012. Multidimensional Semantics of Evaluative Adverbs. Leiden/Boston: Brill.
- Liu, Mingya & Gianina Iordăchioaia. 2018. Introduction: Current perspectives on positive polarity. Linguistics 56(2). 283-300.
- Liu, Mingya & Jan-Philipp Soehn 2009. An empirical perspective on positive polarity items in German. In Susanne Winkler & Sam Featherston (eds.), The Fruits of Empirical Linguistics, Vol. 2, 197–216. Berlin & New York: Mouton de Gruyter.
- Matsui, Ai. 2011. On the licensing of understating NPIs: Manipulating the domain of degrees for Japanese *a*(*n*)*mari* and *sonnani*. In *Proceedings of Semantics and Linquistic Theory* 21. 752–769.
- Matsui, Ai. 2013. Revisiting the licensing problem through understating NPIs: The case of Japanese anmari '(not) very'. In Eva Csipak, Regine Eckardt, Mingya Liu & Manfred Sailer (eds.), Beyond "Any" and "Ever": New Explorations in Negative Polarity Sensitivity, 299-322. Berlin/Boston: De Gruyter Mouton.
- McCready, Elin. 2010. Varieties of conventional implicature. Semantics and Pragmatics 3. 1-57. McNally, Louise. 1998. Existential sentences without existential quantification. Linguistics and Philosophy 21. 353-392.
- Milsark, Gary. 1974. Existential sentences in English. Cambridge, MA: MIT dissertation.

- Milsark, Gary. 1977. Toward an explanation of certain peculiarities of the existential construction in English. Linauistic Analysis 3. 1-29.
- Miyagawa, Shigeru, Nobuaki Nishioka & Hedde Zeijlstra. 2016. Negative sensitive items and the discourse-configurational nature of Japanese. Glossa: a journal of general linguistics 1(1) 33. 1–28.
- Nakanishi, Kimiko. 2006. Even, only, and negative polarity in Japanese. In Proceedings of Semantics and Linauistics Theory 16, 138-155.
- Nakanishi, Kimiko. 2008. Focus, numerals, and negative polarity items in Japanese. Manuscript. Ochanomizu University.
- Nakanishi, Kimiko & Ken Hiraiwa, 2019, Nihongo-no hadaka futeigo: looho jookensetsu-njokeru ninka mekanizumu-o toosite [Bare indeterminates in Japanese: through the licensing mechanism in concessive conditionals]. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kyokusei Hyoogen-no Koozoo, Imi, Kinoo [Polarity-sensitive expressions: their forms, meanings, and functions], 154-179. Tokyo: Kaitakusha.
- Nilsen, Øystein. 2004. Domains for adverbs. Lingua 114(6). 809-847.
- Odani, Masanori. 2007. Koobun-no kakuritsu-to goyooron-teki kyooka: Zenzen . . .nai-no rei-o chuushin-ni [The establishment of construction and pragmatic strengthening: the case of Japanese zenzen. . .nai construction]. In Proceedings of the 9th Conference of the Pragmatic Society of lapan, 17-24.
- Onea, Edgar & Manfred Sailer. 2013. Really all that clear? In Eva Csipak, Regine Eckardt, Mingya Liu & Manfred Sailer (eds.), Beyond "Any" and "Ever": New Explorations in Negative Polarity Sensitivity, 323-350. Berlin/Boston: De Gruyter Mouton.
- Potts, Christopher. 2005. The Logic of Conventional Implicatures. Oxford: Oxford University Press.
- Potts, Christopher. 2007. The expressive dimension. Theoretical Linguistics 33(2), 165–197.
- Progovac, Ljiljana. 1994. Negative and Positive Polarity. Cambridge: Cambridge University Press.
- Roberts, Ian. 2010. Agreement and Head Movement: Clitics, Incorporation, and Defective Goals. Cambridge, MA: MIT Press.
- Romero, Maribel & Chung-hye Han. 2004. On negative "yes/no" questions. Linguistics and Philosophy 27, 609-658.
- Ruppenhofer, Josef and Laura A. Michaelis. 2016. Frames, polarity and causation. Corpora 11. 259-290.
- Sailer, Manfred. 2018. 'Doing the devil': Deriving the PPI-hood of a negation-expressing multi-dimensional idiom. Linguistics 56. 401–433.
- Sawada, Harumi. 2006. Modaritii [Modality]. Tokyo: Kaitakusha.
- Sawada, Harumi. 2014. Gendai Imi Kaishaku Koogi [Lectures on contemporary semantic interpretation]. Tokyo: Kaitakusha.
- Sawada. Osamu. 2007. From classifier construction to scalar construction: The case of the Japanese N hitotu V nai and N 1-classifier V nai constructions. In Naomi McGloin & Junko Mori (eds.), Japanese/Korean Linguistics 15, 161–172. Stanford, CA: CSLI Publications.
- Sawada, Osamu, 2008. Two types of adverbial polarity items in Japanese: Absolute and relative. In Proceedings of the 10th Conference of the Pragmatics Society of Japan, 263–270.
- Sawada, Osamu. 2010. Pragmatic aspects of scalar modifiers. Chicago: University of Chicago dissertation.
- Sawada, Osamu. 2016. Varieties of positive polarity minimizers in Japanese. Manuscript. Mie University.
- Sawada, Osamu. 2017. The Japanese negative totemo 'very': Toward a new typology of negative sensitive items. In Jessica Kantarovich, Tran Truong & Orest Xherija (eds.), Proceedings of the 52nd Annual Meeting of the Chicago Linguistic Society, 437–451.

- Sawada, Osamu. 2018. Pragmatic Aspects of Scalar Modifiers: The Semantics-Pragmatics Interface. Oxford: Oxford University Press.
- Sawada, Osamu. 2019. Kanjoo hyooshutu hyoogen-toshite furumau hitei kyokusei hyoogen-no imi kinoo-nitsuite: Nani-mo-to totemo-o chuushin-ni [The meanings and functions of expressive negative polarity items: with special reference to nani-mo and totemo]. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kvokusei Hvoogen-no Koozoo, Imi, Kinoo [Polarity-sensitive expressions: their forms, meanings, and functions], 311–334. Tokyo: Kaitakusha.
- Sawada, Osamu. 2021. The Japanese reactive attitudinal nani-mo: A new class of negative polarity items. Genao Kenkvu 160. 43-68.
- Seuren, Pieter A. M. 1985. Discourse Semantics. London: Routledge.
- Shibata, Yoshiyuki. 2015. Negative structure and object movement in Japanese. Journal of East Asian Linguistics 24. 217-269.
- Shimoyama, Junko. 2011. Japanese indeterminate negative polarity items and their scope. Journal of Semantics 28(4). 413-450.
- Shimoyama, Junko & Daniel Goodhue. 2019. Two types of non-canonical negation in Japanese and reducing one to the other. Paper Presented at Semantics Workshop in Tokai. July 27, 2019.
- Spector, Benjamin.2014. Global positive polarity items and obligatory exhaustivity. Semantics and Praamatics 7, 1-61.
- Sudo, Yasutada. 2010. Wh-ka pronouns in Japanese and the semantics of indeterminate pronouns. Paper presented at the Workshop on Epistemic Indefinites, University of Göttingen, June 2010.
- Szabolcsi, Anna. 1981. The semantics of topic/focus articulation. In Groenendijk, Jeroen, Theo Janssen, & Martin Stokhof (eds.), Formal Methods in the Study of Language, 513-540. Amsterdam: Mathematical Center.
- Szabolcsi, Anna. 2004. Positive polarity-negative polarity. Natural Language & Linguistic Theory 22.
- Szekely, Rachel. 2015. Truth without Predication: The Role of Placing in the Existential There-Sentence. New York: Palgrave Macmillan.
- Takahashi, Daiko. 1990. Negative polarity, phrase structure and the ECP. English Linguistics 7. 129-146.
- Watanabe, Akira. 2004. The genesis of negative concord: Syntax and morphology of negative doubling. Linguistic Inquiry 35(4). 559-612.
- van der Wouden, Ton. 1997. Negative Contexts: Collocation, Negative Polarity, and Multiple Negation. London: Routledge.
- Yoshimoto, Yasushi. 2019. Kootei kyokusei-o motanai kootei kyokusei hyoogen: nihongo-no "wh-ka"-no bunseki [Positive polarity items without positive polarity: an analysis of "wh-ka" in Japanese]. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kyokusei Hyoogen-no Koozoo, Imi, Kinoo [Polarity-sensitive expressions: their forms, meanings and functions]. Tokyo: Kaitakusha.
- Yoshimura, Keiko. 2007. Focus and polarity: Even and only in Japanese. Chicago: University of Chicago dissertation.
- Zanuttini, Raffaella. 1991. Syntactic properties of sentential negation: A comparative study of Romance languages. Philadelphia: University of Pennsylvania dissertation.
- Zeijlstra, Hedde. 2004. Sentential negation and negative concord. Amsterdam: University of Amsterdam dissertation.
- Zeijlstra, Hedde. 2008. Modal concord. In Proceedings of Semantics and Linquistic Theory 17, 317–332.
- Zeijlstra, Hedde. 2013. Universal quantifier PPIs. In Proceedings of the Amsterdam Colloquium 2009, 273-280.
- Zeijlstra, Hedde. 2017. Universal quantifier PPIs. Glossa: a Journal of General Linquistics 2(1) 91. 273–280.

Part I: Syntax of negative polarity items

Hideki Kishimoto

Chapter 2 Negative polarity and clause structure in Japanese

1 Introduction

Negative polarity items (NPIs) are licensed under the scope of negation. Notably, some differences are observed between English and Japanese as to where they are allowed to appear in clauses. In English, NPIs can occur in object position, but not in subject position in simple negative clauses. In Japanese, unlike English, NPIs are allowed in subject position as well as in object position. Even in Japanese, some constructions exhibit a subject-object asymmetry in NPI licensing. The present paper argues that the extent of negative scope changes in accordance with Neghead raising in both English and Japanese, and that in Japanese, just like English, a subject-object asymmetry is observed in NPI licensing when subjects are extracted from the scope domain of a negator via A-movement.

Japanese complex verb constructions which take either raising or control complements exhibit intriguing behaviors in regard to the admissibility of NPIs. In particular, subject-related NPIs behave differently in the subject-raising and subject-control constructions. I show that the differences naturally fall out on the assumption that the subject of the subject-raising construction is originated from the embedded clause, while the subject of the control construction is generated in the matrix clause. Moreover, in both subject-raising and subject-control constructions, object NPIs appearing in the embedded clauses are licensed by a matrix negator across a clause boundary even if they belong to the local (i.e. clause-bound) type. It is shown that in Japanese, long-distance NPI licensing is allowed for local NPIs if the embedded clause is nonfinite and does not project CP.

The discussion of the present paper proceeds as follows. Section 2 goes over the general properties of NPIs. This section shows that NPIs are licensed under the

Acknowledgements: Part of this article was originally presented at the Workshop on "The Structure, Meaning and Functions of Polarity Expressions". Since then, the paper has been extensively revised to include other materials on the relevance of NPIs to clause structure in Japanese. I am thankful to Osamu Sawada, Ikumi Imani, Akira Watanabe, David Oshima, Yasushi Yoshimoto, Takuya Goro, Kiyoko Kataoka, Misato Ido, Nobuaki Nishioka, Keiko Murasugi, Hiroaki Tada, Hideaki Yamashita, and the two anonymous reviewers for their comments and suggestions. This research is supported by JSPS Grants-in-Aid for Scientific Research (Grant no. JP20K00605).

scope of negation, and that in Japanese, simple negative clauses extend the scope of negation over TP by virtue of Neg-head raising, while they do not in English. Section 3 shows that in the Japanese subject-raising and subject-control constructions, overtly realized subjects fall outside the scope of an embedded negator. In section 4, it is argued that local NPIs cannot be licensed by a clausal negator across a finite-clause boundary, but can be licensed across a nonfinite clause without CP projection. A conclusion is presented in section 5.

2 Asymmetries in NPI licensing

First of all, let us illustrate some basic facts about negative polarity items (NPIs). The most basic property of NPIs is that they are licensed under the scope of negation.¹ While Japanese and English NPIs share this property, there is a difference between the two languages as to where they are allowed to occur in simple negative clauses. I suggest that the difference is derived from the fact that Japanese, unlike English, implements Neg-head raising.

In Japanese, simple negative clauses allow NPIs to occur either in subject position or in object position. For instance, NPIs with the particle sika are licensed in negative clauses regardless of whether they appear in subject or object position, as exemplified in (1).2

- (1) a. Ken-sika kono hon-o yoma-nakat-ta. Ken-only this book-ACC read-NEG-PST 'Only Ken read this book.'
 - b. Ken-ga kono hon-sika yoma-nakat-ta. Ken-NOM this book-only read-NEG-PST 'Ken read only this book.'

¹ In this article, NPIs are divided into the local and non-local types. NPIs with the particle sika 'only' belong to the local type, and are licensed only under the scope of negation. On the other hand, NPIs such as English anyone and anything are non-local and may appear in downward-entailing contexts (Ladusaw 1980) or non-veridical contexts (Giannakidou 1998).

² When nominative and accusative arguments are accompanied by sika, their case marking often does not show up on the surface, but it can be assumed that they bear nominative or accusative case marking. Many speakers detect the scope effect of NPIs with sika that arises from their structural position relative to the negator, but I occasionally came across speakers who allowed a DP with sika to be licensed by a negator regardless of their hierarchical position. The discussion in this paper is based on the judgments by the first group of speakers.

In English, on the other hand, NPIs are not allowed in subject position, but can occur in object position. Thus, a subject-object asymmetry in the licensing of NPIs is observed in simple negative clauses, as illustrated in (2).

- (2) a. *Anyone did not read the book.
 - b. John did not read anything.

Given that NPIs are licensed under the scope of negation, the data show that negative scope extends over the subject position in Japanese, but not in English. Note that since licensing of NPIs is based on the overt constituent configuration, passivization affects the possibility of NPI licensing in English, as exemplified in (3).

- (3) a. John did not see anyone.
 - b. *Anyone was not seen by John.

This effect is not observed in Japanese, as shown in (4), since the subject position falls under the scope of negation.

(4) Kono hon-sika (Ken-ni) yom-are-nakat-ta. this book-only Ken-by read-PASS-NEG-PST 'Only this book was read (by Ken).'

In both Japanese and English, a clausal negator looks like appearing in the same structural position, which is lower than TP and higher than vP, suggesting that the two languages should have the layered structure of [$_{TP}$ [$_{NegP}$ [$_{VP}$]]]. Nevertheless, the extent of negative scope differs between English and Japanese.

One issue that arises here is why Japanese does not show a subject-object asymmetry in NPI licensing. In the literature on Japanese, there have been two different proposals that attempt to account for the fact. In one approach (e.g. Takahashi 1990; Aoyagi and Ishii 1994; Kato 1994), the presence or absence of a subject-object asymmetry is attributed to the overt syntactic position of subjects, as illustrated in (5).

(5) a. English: $\begin{bmatrix} TP & Subj & T \end{bmatrix}$ $\begin{bmatrix} NegP & Neg & [VP & Subj & V & [VP & V & Obj]] \end{bmatrix}$ b. Japanese: $\begin{bmatrix} TP & [NegP & [VP & Subj & [VP & Obj & V]V]Neg]T \end{bmatrix}$

Under this view, the structural position of the Neg-head is invariant in English and Japanese, and the clausal negator extends its scope over NegP but not TP. Then, the difference in NPI licensing between English and Japanese is reduced to the question of whether the subject is located in TP or vP-internal position. This approach maintains that in Japanese, subjects stay in vP-internal position, which falls under

the scope of negation, whereas, in English, subjects appear in Spec-TP, which lies outside the scope of negation.

Another analysis has been advanced by Kishimoto (2007, 2008, 2012, 2017, 2018). Kishimoto claims that the difference in the possibility of NPI licensing comes from the position of Neg-head, while subjects are raised to Spec-TP in both English and Japanese, as illustrated in (6).

(6) a. English: $[F_{inP}]_{TP}$ Subj T $[N_{egP}$ Neg $[V_{P}]_{VP}$ V $[V_{P}]_{VP}$ V Obj]]]]] b. Japanese: $[F_{InP}]_{TP}$ Subj $[F_{NegP}]_{VP}$ Subj $[F_{VP}]_{VP}$ Obj $[F_{VP}]_{Neg}$ Neg-T Neg-T-Fin]

In this analysis, the difference in NPI licensing between the two languages derives from the presence or absence of Neg-head raising to T. For expository purposes, I assume with Kishimoto (2013, 2017) that the head raising of the Neg-T complex to Fin makes it possible for negative scope to extend over TP.3 In Japanese, the clausal negator is raised to Fin, so that subjects located in TP lie inside the scope of negation. In English, on the other hand, the clausal negator stays in NegP, so that subjects fall outside the scope of negation.

For the first analysis, the crucial assumption is that subjects are not raised to TP in Japanese. While it has been claimed by some researchers (Fukui 1995; Kuroda 1988) that subjects in Japanese stay in vP, this analysis is called into question, since several sorts of empirical evidence are presented in the literature that nominative subjects are raised to TP (see Kishimoto 2010, 2017). There is also good independent reason to hypothesize that the position of the Neg-head plays a crucial role for the licensing of NPIs in subject position.

To be concrete, in English, negative scope does not extend over subjects in simple negative clauses, but NPIs in subject position are licensed if the Neg-head not is raised to a higher position to make TP fall under its scope. Roberts (2010) and Laka (1990) note that anyone in subject position is licensed if a modal onto which the negative *not* is cliticized is moved into a higher position that c-commands TP.

³ In this paper, I postulate the clause structure in which FinP is projected between CP and TP (cf. RIzzi 1997, 2004). It is important to note that even in the analysis taking the Neg-complex to undergo head movement to Fin, Neg-head raising to T is a crucial factor to make negative scope extend over TP, since negative scope does not extend beyond NegP if this Neg-head raising does not take place. It is reasonable to assume that both English and Japanese include the same projections in clause structure, but FinP is represented only when it is relevant to the discussion for the sake of brevity.

- (7) a. Why didn't anyone like to eat it?
 - b. *Why did anyone not like to eat it?

While *anyone* in (7a) can be interpreted as an NPI, *anyone* in (7b) cannot (see also Progovac 1994). This fact suggests that movement of a negator effects a change on the extent of negative scope in English.

Secondly, there is evidence that Neg-head raising makes it possible for the negator to extend its scope over TP in Japanese. One piece of evidence comes from the behavior of an NPI temporal adverb, which can be assumed to be adjoined to TP (see section 3.1).

(8) Ken-ga kinoo-sika hataraka-nakat-ta. Ken-NOM yesterday-only work-NEG-PST 'Ken worked only yesterday.'

In (8), the NPI *kinoo-sika* 'only yesterday' is licensed by the clausal negator. The negator will not be able to license *kinoo-sika* if it appears in NegP and does not undergo movement to a higher position. Since the adverbial NPI *kinoo-sika* is adjoined to TP, it is reasonable to state that the negator is moved to a structural position where it takes scope over TP.

Another kind of evidence comes from the fact that the negative *nai* resists the addition of an adverbial particle to its right. Observe that adverbial particles can be added to the right of verbs and adjectives, as shown in (9).

- (9) a. *Ken-ga kono hon-o yomi-mo si-nakat-ta.*Ken-NOM this book-ACC read-also do-NEG-PST 'Ken also did not read this book.'
 - b. Sono kodomo-wa {kawai-i/kawaiku-**mo** ar-u}.
 that child-TOP {cute-PRS/cute-also be-PRS}
 'That child is (also) cute.'

When adverbial particles are added to verbs and adjectives, the supportive verb *suru* 'do' (for verbs) or *aru* 'be' (for adjectives) is inserted to the left of bound morphemes separated from the predicates. In contrast, the clausal negator *nai* resists the addition of an adverbial particle on its right, as shown in (10).

(10) *Ken-ga kono hon-o yoma-naku-**mo** at-ta.

Ken-NOM this book-ACC read-NEG-also be-PST 'Ken also did not read this book.'

The negative nai has adjectival inflection, so yoma-naku-mo at-ta has a well-formed morphological form. Nevertheless, (10) is not acceptable.

The contrast in acceptability between (9) and (10) can be accounted for on the assumption that negative nai undergoes head raising to T, while verbs and adjectives do not. To be more concrete, if verbs and adjectives do not undergo head raising to T, a syntactic space is available in clause structure which makes it possible for an adverbial particle and a supportive verb to be inserted between them, as depicted in (11a) (Kishimoto 2007, 2008). Thus, the verbal complexes in (9) are well-formed.

(11) a.
$$[_{TP}[_{vP/aP}]$$
 V-v/A-a] T]
b. $[_{TP}[_{NegP}]$ Neg-T]

By contrast, the impossibility of adding an adverbial particle in (10) comes from the negative head forming a complex head with T in the syntax, as represented in (11b). By virtue of the complex head formation that takes place between *nai* and T, an adverbial particle and a supporting verb cannot be inserted between them. Thus (10) is not acceptable. Given that NegP is projected in the same underlying position in both English and Japanese, it is reasonable to assume that the negator extends its scope over TP by virtue of its head raising from Neg to T (and further to Fin).

Under the Neg-head raising analysis, it is expected that even in Japanese, a clause negator will not be able to license an NPI located in TP if it does not undergo Neg-head raising. This expectation is borne out. To make this point, consider (12).

- (12) a. Ken-ga kodomo-o heya-ni hair-e-naku(-mo) si-ta. Ken-NOM child-ACC room-into enter-POTEN-NEG(-also) do-PST 'Ken (also) caused children to be unable to enter the room.'
 - b. $[F_{inP}]_{TP}$ Ken-ga $[V_{vP}]_{NegP}$ $[V_{vP}]_{kodomo-o}$ hair-e] naku] si] -ta]-ta]

(12a) is a causative construction formed on the causative verb suru 'make', where the negative nai is embedded under the causative suru. In this type of causative construction, the accusative causee is located in the embedded clause, while the nominative causer appears in the matrix clause. Accordingly, the structure in (12b) can be posited for (12a). The admissibility of the adverbial particle placed to the right of the negator in (12a) suggests that the negator does not extend its scope over TP due to the absence of its raising to T.

The well-formedness of (12a) with the particle mo leads to the predication that an NPI in subject position will not be licensed by the negator appearing in the embedded clause. This is in fact the case, as shown in (13).

- (13) a. Ken-ga **Eri-sika** kono heya-ni hair-e-naku si-ta.

 Ken-NOM Eri-only this room-into enter-POTEN-NEG do-PST 'Ken caused only Eri to be able to enter this room.'
 - b. Ken-ga Eri-o kono heya-ni-sika hair-e-naku si-ta.

 Ken-NOM Eri-ACC this room-into-only enter-POTEN-NEG do-PST 'Ken caused Eri to be able to enter only this room.'
 - c. *Ken-sika Eri-o kono heya-ni hair-e-naku si-ta.

 Ken-only Eri-ACC this room-into enter-POTEN-NEG do-PST 'Only Ken caused Eri to be able to enter this room.'

In (13), the causee argument *Eri* and the locative argument *heya-ni* 'into the room' lie within the scope of negation, but the causer argument *Ken*, located in Spec-TP in the matrix clause, falls outside the scope of negation. Hence the contrast in acceptability is found between (13a-b) and (13c). Observe also that in the causative construction, an NPI temporal verb is not licensed by the embedded negator, as shown in (14).

(14) *Ken-ga kinoo-sika Eri-o heya-ni hair-e-naku si-ta.

Ken-NOM yesterday-only Eri-ACC room-into enter-POTEN-NEG do-PST

'Ken caused Eri to be able to enter the room only yesterday.'

The unacceptability of (14) shows that the NPI adverb *kinoo* 'yesterday' adjoined to TP falls outside the scope of negation. The patterns of distribution observed in (13) and (14) follow if the negative *nai* in the causative construction stays in NegP without Neg-head raising.

Furthermore, the matrix causative verb *suru* 'make' Case-licenses the causee argument. Accordingly, the causee can be rendered as the subject when direct passivization applies to the matrix clause. In the passivized causative construction in (15), the passive subject NPI *Eri-sika*, which is the causee, cannot be licensed by the embedded negator, while the locative argument residing in the embedded clause can.⁴

The unacceptability of (i) comes from the fact that the NPI *Ken-ni-sika* is located in the matrix clause, which falls outside the scope of negation.

⁴ The demoted logical subject NPI *Ken-ni-sika*, which is accompanied by the postposition *ni* 'by', is not licensed by the embedded negator, as shown in (i).

⁽i) *Eri-ga Ken-ni-sika kono heya-ni hair-e-naku s-are-ta.

Eri-NOM Ken-by-only this room-into enter-POTEN-NEG do-PASS-PST

'Eri was caused to be able to enter this room only by Ken.'

- (15) a. *Eri-sika (Ken-ni) kono heya-ni hair-e-naku s-are-ta. Eri-only Ken-by this room-into enter-POTEN-NEG do-PASS-PST 'Only Eri was caused to be able to enter this room (by Ken).'
 - (Ken-ni) kono heya-ni-sika hair-e-naku b. Eri-ga s-are-ta. Eri-NOM Ken-by this room-into-only enter-POTEN-NEG do-PASS-PST 'Eri was caused to be able to enter only this room (by Ken).'

The fact falls out if the clausal negator does not extend its scope over TP due to the absence of Neg-head raising.

The discussion thus far suggests that in both English and Japanese, the scope of negation extends over TP if the Neg-head is raised out of NegP to a higher head position which includes TP under its scope. The facts of NPI licensing in Japanese and English lend empirical support to the Neg-head raising analysis taking the constituent position of a Neg-head to be an important factor determining the extent of negative scope. In the next section, I will turn to the discussion of subject-raising and subject-control constructions.

3 NPI-licensing in auxiliary verb constructions

This section discusses the auxiliary verb constructions formed with a raising verb iru 'be' and a control verb oku 'put', which take gerundive te-complements, and illustrates how NPIs behave in these constructions. The distributions of these NPIs in the auxiliary verb constructions show that whether or not subject NPIs are licensed is determined according to whether they are located under the scope of negative nai.

3.1 The subject-raising construction

A subject-raising construction can be constructed from the auxiliary verb *iru* 'be'. In this section, I show that in the subject-raising construction with *iru* 'be', a subject-object asymmetry is observed in NPI licensing when a negator appears to the right of the main verb, but not when it appears to the right of the aspectual verb.

Let us begin by noting that the English raising construction in (16a), formed on the predicate *likely*, has the configuration given in (16b).

- (16) a. John is likely to win the race.
 - b. $[_{TP}$ John is likely $[_{TP}$ John to win the race]]

In the English subject-raising construction in (17a-b), an asymmetry in the licensing of NPIs is observed, since the matrix subject position falls outside the scope of the negative *not*.

- (17) a. It does not seem that anyone likes it.
 - b. *Anyone does not seem to like it.
 - c. [TP Subj [NegP not [TP Subj V Obj]]]

In (17), the negative *not* is located in NegP, which means that Spec of TP in the matrix clause lies outside its negative scope. The difference in acceptability between (17a) and (17b) is due to the fact that while the subject NPI *anyone* in (17a) stays in the embedded clause, the subject NPI *anyone* in (17b) undergoes A-movement to the matrix TP, which is outside the scope of negation.

The raising construction in (18), where the auxiliary verb *iru* takes a *te*-complement clause, may be construed as a Japanese analogue of the English subject-raising construction in (16a).

(18) Ken-ga hon-o yon-de i-ru.

Ken-NOM book-ACC read-GER be-PRS

'Ken is reading the book.'

The subject-raising construction in (18) displays a subject-object asymmetry in NPI licensing if the negator precedes the aspectual verb *iru*, as I will discuss at length below.

Prior to discussing the question of how NPIs are licensed in the subject-raising construction, it should be mentioned that the embedded subject is never realized overtly in the subject-raising construction.

(19) *Ken-ga [{Mari-ga/zibun-ga} hon-o yon-de] i-ru.

Ken-NOM {Mari-NOM/self-NOM} book-ACC read-GER be-PRS (lit.) 'Ken, {Mari/self} is reading the book.'

(19) shows that the nonfinite TP in the *te*-complement clause does not serve as the (final) landing site of the subject undergoing subject raising, i.e. A-movemnt to TP (see Kishimoto 2017, 2019). Given this fact, the configuration in (20a) can be posited for (18) if the thematic subject of the main verb undergoes subject raising. If subject raising is not implemented, the subject-raising construction has the structure in (20b).

(20) a.
$$[_{TP}Subj [_{vP} Subj [_{TP} Subj [_{vP} Subj] Obj V-v]T]BE-v]T]$$

b. $[_{TP} [_{vP} [_{TP} [_{vP} Subj Obj V-v]T]BE-v]T]$

The aspectual construction has a bi-clausal structure. In the subject-raising construction formed with the aspectual verb iru 'be', the clausal negator nai may appear in two distinct syntactic positions. As shown in (21), the negator can either precede or follow the aspectual verb.

(21) a. Ken-ga hon-o von-de i-na-i. Ken-NOM book-ACC read-GER be-NEG-PRS 'Ken is not reading the book.' (V-BE-NEG) b. Ken-ga hon-o voma-nai-de i-ru.

Ken-NOM book-ACC read-NEG-GER be-PRS 'Ken is not reading the book.' (V-NEG-BE)

The aspectual verb iru 'be' takes a raising complement regardless of the position of the negator. This can readily be verified by the fact that the aspectual construction allows inanimate subjects, as in (22a), as well as the fact that clausal idioms can be embedded with their idiomatic meanings intact, as in (22b).

- (22) a. Sora-ga mada {hare-nai-de i-ru/hare-te i-na-i}. {clear-NEG-GER be-PRS/clear-GER be-NEG-PRS} sky-NOM still 'The sky has not cleared yet.'
 - b. Kono mise-de-wa imadani kankodori-ga {naka-nai-de this shop-at-TOP still cuckoo-NOM {sing-NEG-GER i-ru/nai-te i-na-i}. be-PRS/sing-GER be-NEG-PRS} 'There are still some customers at this shop.'

In English as well, clausal idioms and inanimate subjects can be embedded in the subject-raising construction (Carnie 2007).

- (23) a. The cat is likely to be out of the bag.
 - b. It is likely to rain.

In the subject-raising construction, the subject starts out from the embedded clause. Since the raising verb does not impose selectional restrictions on arguments, any type of subject is allowed in the subject-raising construction as long as the selectional restrictions imposed by the main verb are satisfied. Thus, the sentences in (23) are acceptable with the intended interpretations. The same facts are observed in (22). Accordingly, it can reasonably be stated that in Japanese, a subject-raising construction is constructed from the aspectual verb *iru* 'be'.⁵

In the Japanese subject-raising construction, the extent of negative scope differs according to whether the negator follows the main verb or the aspectual verb *iru*. When the clausal negator follows the aspectual verb, the Neg-head is raised to Fin in the matrix clause, as (24a) illustrates. Then the negator takes sentence-wide scope and the matrix TP falls under the scope of negation. (The gerundive morpheme *-te* can be assumed to fill the T-head position; see Nakatani 2013).

(24) a.
$$[F_{InP}]_{TP} = [F_{InP}]_{TP} = [F_{InP}]_{TP$$

On the other hand, when the negator is embedded under the aspectual verb *iru* 'be', the Neg-head is raised to the embedded Fin. Accordingly, when the negator occurs in the embedded clause, negative scope does not extend over the matrix TP, but is limited to the embedded TP. In the type of aspectual construction that has the aspectual verb preceded by the negator, the possibility of NPI licensing is affected by A-movement. Thus, this variant of the subject-raising construction allows us to assess whether a subject is raised to Spec-TP or not.

In Japanese, nominative subjects undergo A-movement to Spec-TP (Kishimoto 2010, 2017). Accordingly, it is expected that a subject-object asymmetry in NPI licensing will be observed when a negator is placed in the embedded clause of the subject-raising construction. This is in fact the case, as seen in (25).

- (25) a. *Gakusei-ga* **sono hon-sika** yoma-nai-de i-ru. student-NOM that book-only read-NEG-GER be-PRS 'The students have been reading only that book.'
 - b. *Gakusei-sika sono hon-o yoma-nai-de i-ru. student-only that book-ACC read-NEG-GER be-PRS 'Only the students have been reading that book.'

The object NPI in (25a) is licensed by *nai* 'not', and the sentence is legitimate. On the other hand, the subject NPI in (25b) is not licensed. In the passivized sentence in (26), the subject NPI is not licensed by the embedded negator.

⁵ The Japanese raising construction carries an agentive implication when *nai* precedes the aspectual verb *iru*, as in (21b). In light of this fact, Takezawa (2004) suggests that it has a control structure. On the contrary, the data regarding inanimate subjects and clausal idioms suggest that (21b), as well as (21a), is construed as a raising construction.

gakusei-ni yom-are-nai-de (26) *Sono hon-sika i-ru. book-only student-by read-PASS-NEG-GER be-PRS that 'Only that book has been read by the students.'

The data suggest that a subject-object asymmetry in NPI licensing is observed when the negative *nai* follows the main verb in the subject-raising construction with *iru*.

The extent to which the scope of the negative *nai* extends differs according to whether it appears in the embedded clause or in the matrix clause. Then the NPI subjects in (27) are licensed since the negator is placed in the matrix rather than the embedded clause.

- (27) a. **Gakusei-sika** sono hon-o yon-de i-na-i. student-only that book-ACC read-GER be-NEG-PRS 'Only the students have been reading that book.'
 - b. Sono hon-sika gakusei-ni yom-are-te i-na-i. book-only student-by read-PASS- GER be-NEG-PRS that 'Only that book has been read by the students.'

The acceptability of the sentences in (27) illustrates that if the negator follows the matrix aspectual verb, its scope extends over the matrix TP.

Furthermore, (28) is a case involving adjunct NPIs, and shows a pattern of distribution similar to (25). (28) illustrates that temporal and locative adjunct NPIs display an asymmetry with regard to NPI licensing (Kishimoto 2018).

{*asita-sika/koko-de-sika} (28) Ken-wa hataraka-nai-de i-ru. Ken-TOP {tomorrow-only/here-in-only} work-NEG-GER be-PRS 'Ken has been working {only tomorrow/only here}.'

The locative adjunct *koko-de* 'here' specifies the place of the event described by the main verb, which suggests that it appears in the embedded clause. On the other hand, the temporal adverb asita 'tomorrow' appears in the matrix clause and is licensed by the matrix tense head (T). Thus, the adverb asita allows only the nonpast form of the matrix aspectual verb iru 'be', as shown in (29).

(29) Ken-wa hataraka-nai-de {i-ru/*i-ta}. asita work-NEG-GER Ken-TOP tomorrow {be-PRS/be-PST} 'Ken {will not be/was not} working tomorrow.'

The fact suggests that the adverb *asita* is adjoined to the matrix TP.⁶ Given that the subject in (25b) and *asita* in (28), both of which comprise *sika*, fail to be licensed by the embedded negator, it is fair to state that negative scope does not extend over the matrix TP when the negator appears in the embedded clause.

It is worth noting that floating numeral quantifiers with *sika* launched from the subject and the object are both licensed by *nai* appearing in the embedded clause, as seen in (30).

- (30) a. Gakusei-ga san-nin-sika kyookasyo-o mota-nai-de i-ta.
 student-NOM three-CL-only textbook-ACC hold-NEG-GER be-PST
 'Only three students were carrying textbooks.'
 - b. Ken-wa kyookasyo-o is-satu-sika mota-nai-de i-ta.
 Ken-TOP textbook-ACC one-CL-only hold-NEG-GER be-PST 'Ken was carrying only one textbook.'

As argued by Miyagawa (1989), floating quantifiers can occur in a position contiguous with the copies of their hosts, which are left by A-movement. Because of this property, the subject-oriented floating quantifier *san-nin-sika* 'only three persons' can appear in the embedded clause.

(31) $[_{TP} \text{ Subj } [_{VP} \text{ Subj } [_{TP} \text{ Subj } [_{VP} \text{ Subj } \text{ san-nin } \text{ Obj } \text{ V-v}]T]BE-v]T]$

In the syntactic configuration in (31), the floating quantifier *san-nin-sika* falls under the scope of the negator in the embedded clause. Thus, in the subject-raising construction formed with *iru*, no subject-object asymmetry is found for the licensing of floating numeral quantifiers.

Similarly, the subject-oriented NPI depictive *kimono-sugata-de-sika* 'only in kimono' and the object-oriented NPI depictive *nama-de-sika* 'only raw' are both licensed by *nai* in the embedded clause.

(32) a. Gakusei-ga **kimono-sugata-de-sika** miti-o aruka-nai-de student-NOM kimono-figure-COP-only road-ACC walk-NEG-GER i-ta.

be-PST

'The students were walking the road only in kimono.'

⁶ Since the choice of a temporal verb depends on the temporal feature of T, I assume that the temporal adverb is adjoined to TP, but not FinP, i.e. the temporal adverb is licensed by holding a direct relationship with the tense.

b. Gakusei-ga sakana-o tabe-nai-de nama-de-sika i-ta. student-NOM raw-COP-only fish-ACC eat-NEG-GER be-PST 'The students were eating fish only raw.'

The acceptability of (32a) suggests that while the subject is raised to the matrix TP, the subject-oriented depictive kimono-sugata-de is allowed to occur in the embedded clause. The fact follows if the subject-oriented depictive predicate can be appended to a copy of the subject in the embedded clause.

(33) $[_{TP} \text{ Subj } [_{VP} \text{ Subj } [_{TP} \text{ Subj } [_{VP} \text{ Subj } kimono-sugata-de Obj V-v]T]BE-v]T]$

In the subject-raising construction, while the subject is raised to the matrix TP, the numeral quantifier san-nin 'three persons' and the depictive predicate kimono-sugata-de are allowed to occur in the embedded clause. Accordingly, if these expressions are turned into NPIs with the addition of sika 'only', they are licensed under the scope of the embedded negator although both are taken to modify the matrix subject.

Moreover, for NPIs dare-mo 'anyone' and nani-mo 'anything', which have wh-mo forms, no subject-object asymmetry is observed even when nai precedes the aspectual verb iru.

- (34)Imadani **dare-mo** hon-o yoma-nai-de i-ru. still book-ACC read-NEG-GER be-PRS anyone-Q 'Still, no one has been reading books.'
 - nani-mo b. Imadani Ken-ga yoma-nai-de i-ru. still Ken-NOM anything-Q read-NEG-GER be-PRS 'Still, Ken has not been reading anything.'

Semantically, these NPIs correspond to the NPIs anyone and anything in English. The English NPIs behave as arguments and show a subject-object asymmetry with regard to NPI licensing when they are embedded in subject-raising constructions.

- (35)*Anyone is not likely to eat the apple. a.
 - b. He is not likely to eat anything.

It looks as if the NPIs dare-mo 'anyone' and nani-mo 'anything' are arguments on the surface, but they behave like floating numeral quantifiers (Kawashima and Kitahara 1992; Kishimoto 2017). If these NPIs can be positioned in vP-internal position in the same way as floating numeral quantifiers, the acceptability of (34a) as well as (34b) is naturally expected.

3.2 The subject-control construction

In Japanese, subject-control constructions can be constructed from oku 'put' as well as a number of auxiliary verbs expressing intentional meanings. The subject-control construction constructed on the auxiliary verb oku 'put' behaves differently from the subject-raising construction with the aspectual verb *iru* 'be' in regard to the licensing of NPIs. In this section, I argue that the facts of NPI licensing in the subject-control construction follow if overt subjects are selected by the auxiliary verb *oku* 'put' in the matrix clause.

To begin, let us consider the constituent structure of the subject-control construction in (36), where the main verb in the te-form is combined with the control verb oku.

(36) Ken-ga hon-o von-de oi-ta. Ken-NOM book-ACC read-GER put-PST 'Ken has read the books.'

The second verb oku carries an intentional meaning, and the sentence means that the act described by the verb is done for some specific purposes. This interpretive fact suggests that a control structure in (37) can be posited for (36) (Kishimoto 2017, 2019).

(37)
$$\left[_{TP} \text{Subj}_{i} \left[_{vP} \frac{\text{Subj}}{\text{Subj}} \left[_{TP} PRO_{i} \left[_{vP} V-v\right]T\right] o k\right] T\right]$$

In (36), the overt subject is selected by oku, i.e. the thematic subject is placed in the matrix clause, and the embedded subject selected by yomu 'read' is an unpronounced PRO controlled by the matrix subject. Consequently, the embedded subject is taken to refer to the same individual as the individual to which the matrix subject refers. Note that the overt subject and PRO are distinct syntactic entities, so that they form distinct chains, unlike cases involving movement, where an argument and its copy (or trace) form a single chain.

The same configurational structure can be posited for an English subjectcontrol construction such as (38a), where the predicate eager selects an experiencer as its subject, and the complement clause contains PRO.

(38) a. John is eager to eat this dish. b. $[_{TP}] fohn_i is [_{aP}] fohn eager [_{TP}] PRO_i to [eat this dish]]]]$

As noted in section 3.1, whether a given construction involves control or raising can be assessed by looking at whether an inanimate subject is allowed, and also by embedding a clausal idiom. The following examples suggest that eager selects a control complement.

- (39) a. *It is eager to rain.
 - b. #The cat is eager to be out of the bag.

In (39a), the subject is inanimate, and the sentence is not acceptable. (39b) lacks an idiomatic meaning and carries only a literal meaning. The data illustrate that the predicate eager takes a control complement clause, but not a raising complement clause.

In the subject-control construction with the verb oku 'put', just as in the subject-raising construction with the aspectual verb iru, negative nai can either precede or follow the auxiliary verb oku.

(40) a. Ken-ga sono koto-o hanasi-te oka-nakat-ta. Ken-NOM that fact-ACC talk-GER put-NEG-PST 'Ken did not talk about that matter.'

(V-Neg-Put)

b. Ken-ga sono koto-o hanasa-nai-de oi-ta. Ken-NOM that fact-ACC talk-NEG-GER put-PST 'Ken did not talk about that matter.'

(V-Put-Neg)

The verb oku takes a control complement regardless of the position of the clause negator nai. This is confirmed by (41).

- (41) a. *Sora-ga {hare-te oka-nakat-ta/hare-nai-de oi-ta}. sky-NOM {clear-GER put-NEG-PST/clear-NEG-GER put-PST} 'The sky was not cleared.'
 - b. #Kono mise-de-wa kankodori-ga {nai-te this shop-at-TOP cuckoo-NOM {sing-GER oka-nakat-ta/naka-nai-de oi-ta}. put-NEG-PST/sing-NEG-GER put-PST} 'There were many customers at this shop.'

Example (41a), which has an inanimate subject, is not acceptable. (41b) can have a literal interpretation, but not an idiomatic interpretation. These facts suggest that the auxiliary verb *oku* 'put' takes a control complement irrespective of whether *nai* follows or precedes oku.

NPIs appearing in the subject-control construction formed on oku 'put' display syntactic behaviors different from those NPIs found in the subject-raising construction with iru 'be'. First, as shown in (42), the NPI subject of the subject-control construction is not licensed by the embedded negator nai.

- (42) a. *Ano gakusei-sika kyookasyo-o mota-nai-de oi-ta. that student-only textbook-ACC hold-NEG-GER put-PST 'Only that student carried the textbook.'
 - b. Ano gakusei-wa kvookasvo-sika mota-nai-de oi-ta. that student-TOP textbook-only hold-NEG-GER put-PST 'That student carried only the textbook.'

As noted in section 3.1, NPIs dare-mo 'anyone' and nani-mo 'anything' behave like floating quantifiers. Notably, when these NPIs appear in the subject-control construction, they display distributions different from those NPIs appearing in the subject-raising construction.

- (43) a. ***Dare-mo** kyookasyo-o mota-nai-de oi-ta. anyone-Q textbook-ACC hold-NEG-GER put-PST 'Anyone did not carry a textbook.'
 - b. Ken-wa nani-mo mota-nai-de oi-ta. Ken-TOP anything-Q hold-NEG-GER put-PST 'Ken did not carry anything.'

In the subject-control construction in which the negator precedes the verb oku, a subject-object asymmetry is observed in licensing the NPIs dare-mo and nanimo. The same holds true of numeral quantifiers with sika. As shown in (44), a subject-object asymmetry is observed in the licensing of numeral quantifiers with sika when the negative *nai* precedes the verb *oku* 'put' (cf. (30)).

- (44) a. *Gakusei-ga **san-nin-sika** kvookasvo-o mota-nai-de oi-ta. student-NOM three-CL-only textbook-ACC hold-NEG-GER put-PST 'Only three students carried textbooks.'
 - b. Ken-wa kyookasyo-o **is-satu-sika** mota-nai-de oi-ta. Ken-TOP textbook-ACC one-CL-only hold-NEG-GER put-PST 'Ken carried only one textbook.'

The fact that the NPIs dare-mo in (43a) and san-nin-sika in (44a), both of which are associated with the subject, are not legitimate falls out naturally given that they can occur contiguous with the subject in the matrix clause, but not PRO in the embedded clause.

(45) $[_{TP}$ Subj dare-mo/san-nin-sika $[_{VP}$ $[_{TP}$ PRO $[_{VP}$ V-V]T] ok-V]T]

If the NPI dare-mo in (43a) and the NPI floating quantifier san-nin-sika in (44a) can be contiguous with the subjects in the matrix clause, but not PRO, as illustrated in (45), they fall outside the scope of the embedded negator and thus are not licensed. By contrast, the NPI nani-mo in (43b) and is-satu-sika in (44b), which are associated with the objects, are licensed because they appear in the embedded clause.

Depictives differ from floating quantifiers, in that the subject-oriented depictive kimono-sugata-de-sika 'only in kimono', as well as the object-oriented depictive nama-de-sika 'only raw', is licensed in the subject-control construction, as seen from the well-formedness of the sentences in (46).

- (46) a. *Mari-ga* kimono-sugata-de-sika miti-o aruka-nai-de Mari-NOM kimono-figure-COP-only road-ACC walk-NEG-GER oi-ta. put-PST 'Mari walked the roads only in kimono.'
 - nama-de-sika sakana-o tabe-nai-de b. Mari-ga oi-ta. Mari-NOM raw-COP-only fish-ACC eat-NEG-GER put-PST 'Mari ate fish only raw.'

Depictives with sika are allowed to appear in the subject-control construction regardless of whether they have subject or object orientation. This fact follows straightforwardly on the assumption that depictives can be associated with PRO in the embedded clause.

(47) $[_{TP} \text{ Subj } [_{VP} \text{ Subj } [_{TP} \text{ PRO } kimono-sugata-de-sika [_{VP} \text{ V-V}]T] ok-v]T]$

If the subject-oriented depictive kimono-sugata-de-sika can appear contiguous with PRO in the embedded clause, it is licensed under the scope of the embedded negator. The object-oriented depictive nama-de-sika is also licensed since it occurs in the embedded clause. Accordingly, both (46a) and (46b) are acceptable.

In the present analysis, the difference in acceptability observed between the subject-oriented depictive kimono-sugata-de-sika in (46a), on the one hand, and dare-mo in (43a) and san-nin-sika (44a), on the other hand, is attributed to the fact that while the former can be associated with PRO, the later cannot. One piece of independent evidence in support of this view may be adduced from the pseudo-cleft construction with vP-focusing.

(48) a. Ken-ga hon-o yon-da. Ken-NOM book-ACC read-PST 'Ken read books.'

b. [Ken-ga si-ta] no-wa [hon-o yomu] koto da.

Ken-NOM do-PST NOML-TOP book-ACC read that COP

'What Ken did was read books.'

One notable property of the pseudo-cleft construction with vP-focusing is that inanimate subjects are not allowed.

- (49) a. *Hana-ga sai-ta*. flower-NOM bloom-PST 'The flower bloomed.'
 - b. *[Hana-ga si-ta] no-wa [saku] koto da. flower-NOM do-PST NOML-TOP bloom that COP 'What the flower did was bloom.'

In Japanese, a semantic restriction is imposed on PRO such that its antecedent is confined to an animate argument (see Kishimoto 2005, 2016). Then the contrast in acceptability between (48b) and (49b) suggests that the vP constituent in the focus position includes PRO, as represented in (50).

Note that floated quantifiers are not capable of appearing in the focus position of a vP-focus pseudo-cleft construction, as shown in (51).

- (51) a. [Gakusei-ga san-nin toki-ni sono si-tal no-wa student-NOM three-CL that time-at do-PST NOML-TOP [hon-o yomu] koto da. book-ACC read that COP 'What three students did at that time was read books.'
 - b. *[Gakusei-ga sono toki-ni si-ta] no-wa [san-nin student-NOM that time-at do-PST NOML-TOP three-CL hon-o yomu] koto da. book-ACC read that COP

(lit.) 'What students did at that time was three read books.'

In (51a), the floating partitive quantifier *san-nin* 'three persons' appears in the presupposition clause, so it can be linked to the subject, while specifying the number of the students. If the floating quantifier occurs in the vP-focus position, the relevant

interpretation is not available, however. This shows that PRO cannot serve as a host for floating quantifiers.7

By contrast, subject-oriented depictive predicates are allowed to appear in the vP-focus position as well as in the presupposition clause, as shown in (52).

- (52) a. [Ken-ga kimono-sugata-de si-tal [odoru] koto da. no-wa Ken-NOM kimono-figure-COP do-PST NOML-TOP dance that COP 'What Ken did in kimono was dance.'
 - b. [Ken-ga si-tal no-wa [kimono-sugata-de odorul koto da. Ken-NOM do-PST NOML-TOP kimono-figure-COP dance that COP 'What Ken did was dance in kimono.'

Given that the vP constituent in the focus position includes PRO, the acceptability of (52a) illustrates that kimono-sugata-de 'in kimono' can be associated with PRO. This being the case, it is naturally expected that the NPI depictive kimono-sugata-de-sika 'only in kimono' can be licensed by the embedded negator in (46a), since it can appear in the embedded clause.

In light of the data above, it is fair to state that in the subject-control constructions, the quantifiers dare-mo 'anyone' and san-nin-sika 'only three persons', which cannot be associated with PRO, appear in the matrix clause. (43a) and (44a) are not acceptable since the quantifiers NPIs san-nin-sika and dare-mo lie outside the scope of embedded negation. By contrast, the NPI kimono-sugata-de-sika 'only in kimono' in (46a) can be hosted by PRO, and thus is licensed under the scope of embedded negation while occurring in the embedded clause. Given that floating numeral quantifiers cannot be associated with PRO but subjected-oriented depictives can, it falls out straightforwardly that the two types of expressions show distinct behaviors in the subject-control construction.

The facts of the subject-control construction with oku 'put' call the movement analysis of PRO into question (see Hornstein 1999). Under the movement analysis of PRO, A-movement can take place from the position which is often assumed to be occupied by PRO and PRO is treated as a copy left by movement. This analysis leads to the expectation that in the subject-control construction with the verb oku 'put', the subject is construed as undergoing A-movement from the vP-internal position of the embedded clause. If this is the case, floating quantifiers launched off the subject should be allowed to occur in the embedded clause, since they can occur in a position contiguous with a copy of the host DP left by A-movement. As discussed above,

⁷ For one reviewer, (51b) does not sound so bad even if a floating quantifier in the focus position is interpreted to be inked to the subject.

floating quantifiers, unlike depictive predicates, cannot occur in the embedded clause of the subject-control construction, however. The facts of floating quantifiers are not in keeping with the movement analysis of PRO, which suggests that PRO should be construed as a syntactic entity distinct from its antecedent, i.e. PRO is not a copy created by movement.

In a nutshell, subject-control constructions are distinguished from subject-raising constructions, in that the former, but not the latter, disallow floating quantifiers launched off the subjects to appear in the embedded clause. In both subject-raising and subject-control constructions where a negator appears in the embedded clause, subjects lie outside the scope of negation. On the other hand, floating quantifiers associated with subjects fall under the scope of embedded negation in the subject-raising construction, since they can be added to the copies of the subjects in the embedded clause, which are created by movement. Nevertheless, floating quantifiers cannot be hosted by PRO. Thus, NPI floating quantifiers linked to the subjects cannot be placed in the embedded clause of the subject-control construction, and hence they are not licensed by the embedded negator. By contrast, subject-oriented depictives can be hosted by PRO and thus are allowed to occur in the embedded clause. Accordingly, subject-oriented NPI depictives with sika are licensed by the embedded negator in the subject-control construction.

4 Local NPIs and the clause-mate condition

In this section, I will discuss cases where NPIs are located in the lower clause than the one containing a negator, and show how long-distance NPI licensing is made available for local NPIs. It is argued that apparent long-distance licensing is possible with local NPIs if they are included in a nonfinite clause with no CP projection.

4.1 Local and non-local NPIs

There are two classes of NPIs exhibiting distinct syntactic behaviors in regard to NPI licensing. In this section, I show that local NPIs, which need to be licensed by a negator, are subject to the clause-mate condition (e.g. Oyakawa 1975; McGloin 1976; Muraki 1978; Kato 1985), but that non-local NPIs, which can appear in non-negative contexts, are not constrained by the clause-mate condition.8

⁸ The bipartite distinction presented here is more or less in line with the classic analysis of NPIs. More recently, tripartite rather than bipartite distinctions are often proposed in the literature (e.g.

By way of illustrating that some NPIs are susceptible to the clause-mate condition and others are not, observe that the most typical English NPI any allows long-distance licensing. Its licenser does not have to be located in the same clause, as shown in (53a).

- (53) a. John didn't think that Mary bought anything.
 - b. *Anyone thought that Mary did not buy the book.

In (53a), the negator appears in the main clause, and anything in the embedded clause. (53a) shows that the NPI any can be licensed by the negator across a finite clause boundary. On the other hand, anyone in (53b) is not licensed by the negative not located in the embedded clause because the negator does not extend its scope over the matrix clause.

In Japanese, many NPIs are clause-bound, subject to the clause-mate condition. For example, NPIs with sika are not licensed in (54) regardless of whether they are arguments or floating quantifiers.

(54) a. *Ken-wa [{**Mari-sika**/gakusei-ga **huta-ri-sika**} ki-ta tol Ken-TOP {Mari-only/student-NOM two-CL-only} come-PST COMP omowa-nakat-ta.

think-NEG-PST

'Ken did not think that {only Mari/only two students} came.'

b. *{Mari-sika/Gakusei-ga huta-ri-sika} [Ken-ga ko-nakat-ta {Mari-only/student-NOM two-CL-only} Ken-NOM come-NEG-PST tol omot-ta. COMP think-PST

'{Only Mari/Only two students} thought that Ken did not come.'

(54a) illustrates that NPIs with sika are not licensed by a higher negation across a tensed clause boundary. In (54b), NPIs with sika lie outside the scope of nai appearing in the embedded clause, so that they are not licensed. The same holds true of NPIs in the *wh-mo* form, as shown in the examples in (55).

van der Wouden 1997, Zwarts 1998; see also Collins and Postal 2014). Local NPIs correspond to strong NPIs according to the semantic classification of NPIs in van der Wouden (1997) (see Yoshimura 1999). The crucial point here is that the local NPIs are subject to the clause-mate condition.

- (55) a. *Ken-wa [dare-mo ki-ta to] omowa-nakat-ta.

 Ken-TOP anyone-Q come-PST COMP think-NEG-PST

 'Ken did not think that anyone came.'
 - b. *Dare-mo [Ken-ga ko-nakat-ta to] omot-ta. anyone-Q Ken-NOM come-NEG-PST COMP think -PST 'Anyone thought that Ken did not come.'

Nevertheless, not all NPIs are constrained by the clause-mate condition. NPIs *amari* 'very' and *koreizyoo* 'anymore' (as well as its variant *soreizyoo* 'anymore') are licensed by a clausal negator with a long-distance relation (see e.g. Kishimoto 2008; Ido 2019).

- (56) a. Watasi-wa [Eri-ga {amari/koreizyoo} syaber-u to]
 I-TOP Eri-NOM {very/anymore} talk-PRS COMP
 omowa-na-i.
 think-NEG-PRS
 'I do not think that Eri will talk {much/anymore}.'
 - b. *Watasi-wa [Eri-ga {amari/koreizyoo} syaber-u to] omo-u.

 I-TOP Eri-NOM {very/anymore} talk-PRS COMP think-PRS
 'I think that Eri will talk {much/anymore}.'

In (56a), the NPIs *amari* and *koreizyoo* located in the embedded clauses are licensed by the negator in the matrix clause. A comparison of (56a) and (56b) illustrates that *amari* and *koreizyoo* can be licensed under the scope of negation across a finite clause boundary in some grammatical environments.⁹

It is worth noting that the NPIs *amari* and *koreizyoo* are licensed not only by a negator with a long-distance relation, but also in some non-negative contexts, as exemplified in (57).

The fact suggests that *amari* and *koreizyoo* are licensed by a negator across a tensed clause in the the so-called "Neg-raising context" (see e.g. Horn 1989; Collins and Postal 2014).

⁹ The NPIs *amari* and *koreizyoo* are not licensed by the matrix negator if they occur in the embedded clause selected by *iu* 'say' rather than *omou* 'think' (McGloin 1976).

⁽i) *Ken-wa [Mari-ga {amari/koreizyoo} hanas-u to] iwa-nakat-ta. Ken-TOP Mari-NOM {very/anymore} talk-PRS COMP say-NEG-PST 'Ken did not say that Mari would talk {much/anymore}.'

- (57) a. [{Amari/Koreizvoo} tabe-ru-to] onaka-o kowas-u vo. {verv/anvmore} eat-PRS-if stomach-ACC break-PRS PRT 'If you eat {much/anymore}, you will have a diarrhea.'
 - b. [Koreizvoo tabe-ru vori] yasum-u bekida. anymore eat-PRS than rest-PRS should 'You should stop for a moment rather than eat anymore.'

Amari 'very' is licensed in the conditional clause in (57a). Koreizyoo 'anymore' is licensed in the conditional clause in (57a) and the comparative clause in (57b).¹⁰ In both cases, no overt negator appears in the clause, but still the NPIs are licensed.

In contrast, NPIs which are subject to the clause-mate condition are licensed only under the scope of negation. The examples in (58) provide cases in point.

- (58) a. *[{Kore-sika/Nani-mo} tabe-ru-to] onaka-o yo. kowas-u {this-only/anything-O} eat-PRS-if stomach-ACC break-PRS PRT 'If you eat {only this/anything}, you will have a diarrhea.'
 - b. *[{Kore-sika/Nani-mo} tabe-ru yori] yasum-u bekida. {this-only/anything-Q} eat-PRS than rest-PRS 'You should stop for a moment rather than eat {only this/anything}.'

As seen in (58), local NPIs with sika, and NPIs in the wh-mo form cannot appear in the non-negative contexts in which amari and koreizyoo are allowed to occur.

The data illustrate that NPIs with sika and NPIs in the wh-mo form are constrained by the clause-mate condition, while the NPIs amari 'very' and koreizyoo 'anymore' are not.

¹⁰ The NPIs amari 'very' and koreizyoo 'anymore' (as well as its variant soreizyoo) fall into the class of non-local NPIs, but their distributions are not identical. (i) illustrates that these two NPIs are not necessarily allowed in the same non-negative context.

⁽i) [{Koreizyoo/*Amari} tabe-ru-nara] onaka-o kowas-u vo. {anymore/very} eat-PRS-if stomach-ACC break-PRS PRT 'If you eat {anymore/much}, you will have a diarrhea.'

The NPI koreizyoo displays behaviors on a par with any in English in many contexts. For discussion on this point, see Kishimoto (2008).

4.2 Licensing by a higher negation

As noted in section 3, the subject-raising construction with iru 'be' and the subject-control construction with oku 'put' have a bi-clausal structure. Notably, in both subject-raising and subject-control constructions, local NPIs are licensed by the negator of a higher clause without any problem.

(59) Gakusei-ga sono kadai-sika {i-nakat-ta/oka-naka-ta}. vat-tel student-NOM that assignment-only do-GER {be-NEG-PST/put-NEG-PST} 'The students {are doing/have done} only that assignment.'

Given that local NPIs are subject to the clause-mate condition, the facts of subject-raising and subject-control constructions raise the question of how long-distance NPI licensing is made possible in these constructions. I suggest that local NPIs can be licensed by a negator in a higher clause if they are located in a nonfinite clause with no CP projection.

For the purpose of illustrating that the possibility of NPI licensing differs depending on the type of complement clause, I will take up the complex DP construction constructed by kioku-ga aru 'have a memory, remember', in which kioku takes a noun-complement clause.

- (60) a. Watasi-ni-wa kore-o tabe-ta (toiuu) kioku-ga ar-u. I-DAT-TOP this-ACC eat-PST COMP memory-NOM be-PRS 'I remember eating this.'
 - b. Watasi-ni-wa Eri-ga tabe-ta (toiuu) kioku-ga kore-o I-DAT-TOP Eri-NOM this-ACC eat-PST COMP memory-NOM be-PRS 'I remember that Eri ate this.'

One notable property of kioku-ga aru is that its complement clause can take a nominative subject or PRO controlled by the matrix dative subject (i.e. the experiencer). 11 The embedded clause is nonfinite when the embedded subject is not overt.¹² (60a) has a control structure which includes PRO in the embedded clause, but (60b) involves simple embedding of a finite clause, as illustrated in (61).

¹¹ The complementizer toiuu can appear optionally in the noun-complement clause of the complex predicate kioku-ga aru. According to one reviewer, it is preferable for (60b) to contain the complementizer toiuu.

¹² Fujii (2006) suggests that an embedded clause is nonfinite if its tense marker cannot alternate between the present and the past forms. Nevertheless, I assume that noun-complement clauses can be finite or nonfinite even if their tense marker does not alternate. For instance, the predicate of

(61) a. [Watasi-ni-wa [PRO kore-o tabe-ta (toiuu)] kioku-ga aru] b. [Watasi-ni-wa [Mari-ga kore-o tabe-ta (toiuu)] kioku-ga aru]

In (60a), PRO is controlled by the matrix subject, so that the subject of the embedded predicate *taberu* 'eat' is identified as *watasi* 'I'. The noun-complement clause in (60b) contains the overtly realized subject of the embedded predicate. The difference in clause structure can be confirmed by applying scrambling to the subjects.

- (62) a. Kore-o tabe-ta kioku-ga watasi-ni-wa ar-u. this-ACC eat-PST memory-NOM I-DAT-TOP be-PRS 'I remember eating this.'
 - b. *Watasi-ni-wa kore-o tabe-ta kioku-ga Mari-ga ar-u.

 I-DAT-TOP this-ACC eat-PST memory-NOM Mari-NOM be-PRS
 'I remember that Mari ate this.'

In (62a), the dative argument *watasi-ni* is postposed to the right of the noun *kioku* 'memory'. (62a) is well-formed, but (62b), where the nominative argument *Mari-ga* is moved to the right of the noun *kioku*, is not acceptable.

Note that scrambling is constrained by the syntactic requirement that a copy left by movement must be c-commanded by its antecedent. If scrambling violates this condition, a Proper Binding Condition (PBC) effect is incurred (Saito 1989). This effect is found in (62b), suggesting that the nominative argument *Mari-ga* is extracted from the embedded clause, and is placed to the right of the clause, as illustrated in (63b).

On the other hand, no such effect is observed for the dative argument *watasi-ni*. This fact follows if the dative argument is located in the matrix clause, as (63a) illustrates.

the noun-complement clause introduced by *kioku-ga aru* 'have a memory' appears only in the past form even if it is finite, since a past event is described by the clause. Likewise, the noun complement clause introduced by *koto-o nozoku* 'wish' can have the predicate only in the non-past form, since the clause refers to a future event. Stowell (1978) argues that nonfinite clauses may contain a tense feature.

On the basis of the two variants of the construction with *kioku-ga aru* in (60a) and (60b), it can be shown that nonfinite clauses are transparent to NPI licensing. ¹³ It is important to see at this point that the complex predicate *kioku-ga aru* 'have a memory' allows an NPI in the complement clause to be licensed by a matrix negator. ¹⁴ This property comes from the fact that the complement clause can be construed as a focus of negation. With *kioku-ga aru*, the nominal *kioku* 'memory' is combined with the existential/possessive verb *aru* to make an existential assertation about a mental process. Since it is not pragmatically plausible to simply mention the presence or absence of a mental process, the content of the mental process, expressed by the complement clause, can readily be highlighted or foregrounded (in pragmatic terms) (see e.g. Kadmon 2001). Since the focus of negation can fall on the complement clause of the mental process predicate *kioku-ga aru*, the complex predicate construction enables us to assess whether an NPI in the embedded clause can be licensed by the matrix negation.

Whether or not a constituent in the embedded clause can be negated by a matrix negation may be evaluated by looking at whether a double negative interpretation is available. In (64), the nominative argument *kioku* 'memory' selected by the negative existential predicate *nai* lies in the scope of the matrix negator, and the double negative interpretation is available. (Note that on the double negative interpretation, the embedded clause conveys an affirmative meaning, since an affirmative is constructed from two negatives.)

- (64) a. Watasi(-ni)-wa syabera-**nakat**-ta (toiuu) kioku-ga **na-i**.

 I-DAT-TOP talk-NEG-PST COMP memory-NOM NEG-PRS
 'I remember that I talked all the time.'
 - b. Ken(-ni)-wa Eri-ga syabera-**nakat**-ta (toiuu) kioku-ga Ken-DAT-TOP Eri-NOM talk-NEG-PST COMP memory-NOM **na**-i.

NEG-PRS

'Ken remembers that Eri talked all the time.'

The double negative interpretation can be obtained only when the embedded clause containing a negator is foregrounded. In both sentences in (64), the focus of the matrix negation falls on the complement clause, and the matrix negation can

¹³ The test implementing the fronting of the embedded clause by scrambling is not usable for the auxiliary verb constructions having the form "V-te V", since the embedded clause cannot be moved by scrambling.

¹⁴ Some complex predicate expressions that readily allow for the foregrounding of their noun-complement clauses include *kioku-ga aru* 'have a memory', {nozomi/kibou}-ga aru 'have a hope', etc.

interact with the embedded negation. Accordingly, (64a) can have the double negative interpretation that I talked in all cases where I can recall, and (64b) can have the double negative interpretation that Eri talked in all the recalled cases.

The double negative interpretation is not obtained if the embedded noun-complement clause is backgrounded or assumed. For example, the noun-complement clause of sirase 'news' in (65) is backgrounded, and as such, it does not count as a focus of negation.

(65) *Ken-wa* [atarasii sensei-ga ko-na-i toiuul sirase-o Ken-TOP teacher-NOM come-NEG-PRS COMP new news-ACC sira-naka-ta. know-NEG-PST

'Ken did not know the news that a new teacher will not come.'

In (65), since the focus of negation does not fall on the embedded clause, the embedded negation is interpreted independently of the matrix negation, and thus, the sentence cannot have the double negative interpretation that Ken heard the news that a new teacher will come.

When the complement clause counts as a focus of negation, NPIs embedded in the complement clause can potentially be licensed. Thus, the non-local NPI amari 'very' can be embedded within the complement clause of kioku-ga aru, as illustrated in (66).

(66)Watasi-ni-wa Eri-nituite **amari** hanasi-ta (toiuu) kioku-ga I-DAT-TOP Eri-about talk-PST COMP memory-NOM verv na-i. NEG-PRS

'I do not remember talking much about Eri.'

b. Watasi-ni-wa Ken-ga Eri-nituite **amari** hanasi-ta (toiuu) I-DAT-TOP Ken-NOM Eri-about very talk-PST COMP kioku-ga na-i. memory-NOM NEG-PRS 'I do not remember that Ken talked much about Eri.'

The NPI amari appearing in the noun-complement clause is licensed due to the matrix negator's exerting the influence on the embedded clause (regardless of whether or not the complementizer toiuu is present).

It goes without saying that if the complement clause does not count as a focus of negation, the NPI amari included in it is not licensed. This is shown in (67).

(67) *Ken-wa [Eri-ga **amari** hatarai-ta toiuu] uwasa-o kika-naka-ta.

Ken-TOP Eri-NOM very work-PST COMP rumor-ACC hear-NEG-PST 'Ken did not hear the rumor that Eri worked much.'

In (67), the NPI *amari* is not licensed by the matrix negator, since the complement clause introduced by the noun *uwasa* 'rumor' is construed as backgrounded.

Local NPIs display behaviors distinct from non-local NPIs with regard to their licensing by a higher negator. When the complement clause of *kioku-ga aru* has a complementizer, local NPIs located in the noun-complement clause of *kioku-ga aru* are not licensed. Furthermore, if the complement clause has a nominative subject, the local NPIs are not licensed by a higher negator, either. It is reasonable to postulate here that the presence of a nominative subject signals that CP is projected, given the theoretical assumption that T can license nominative subjects when it bears nominative Case inherited from C (Chomsky 2008). Then, it can be hypothesized that local NPIs are not licensed by a higher negator if a CP projection intervenes between them.

To be concrete, the examples in (68) show that the accusative-marked NPI argument as well as the dative-marked NPI argument can be licensed by the matrix negator if the complement clause has a control structure with PRO.

- (68) a. **Ken-ni-sika** [PRO sore-o tabe-ta kioku-ga] nakat-ta.

 Ken-DAT-only that-ACC eat-PST memory-NOM NEG-PST 'Only Ken remembered eating that.'
 - b. Ken-ni-wa [PRO sore-sika tabe-ta kioku-ga] nakat-ta. Ken-DAT-TOP that-only eat-PST memory-NOM NEG-PST 'Ken remembered eating only that.'

The acceptability of (68a) is naturally expected, since the dative argument in the matrix clause satisfies the clause-mate condition. The local NPI appearing in the noun-complement clause in (68b) is also licensed by the matrix negator.

At first sight, the examples in (68) look like suggesting that local NPIs in the noun-complement clause are sanctioned by the matrix negator when they appear in subject-control constructions. Nevertheless, not all subject-control constructions allow local NPIs in the embedded clause to be licensed by a matrix negator, however, as exemplified in (69).

(69) a. Ken_i-wa Mari-ni [PRO_i kodomo-o sikar-u to] iwa-nakat-ta.

Ken-TOP Mari-DAT child-ACC scold-PRS COMP say-NEG-PST

'Ken did not tell Mari that he would scold the children.'

b. Ken_i-wa Mari-ni-sika [PRO_i kodomo-o sikar-u to]
 Ken-TOP Mari-DAT-only child-ACC scold-PRS COMP iwa-nakat-ta.
 say-NEG-PST
 'Ken told only Mari that he would scold the children.'
 c. *Ken_i-wa Mari-ni [PRO_i kodomo-sika sikar-u to]

c. *Ken_i-wa Mari-ni [PRO_i kodomo-sika sikar-u to]
Ken-TOP Mari-DAT child-only scold-PRS COMP
iwa-nakat-ta.
say-NEG-PST
'Ken told Mari that he would scold only the children.'

(69a) is a subject-control construction, where the unpronounced PRO is controlled by the matrix subject. The dative argument *Mari* in (69a) appears as complement to the verb *iu* 'say', and is not related to the embedded clause. This dative argument is licensed by the matrix negator, as shown in (69b). On the other hand, the local NPI *kodomo-sika* appears in the embedded clause, and thus is not licensed by the matrix negator, as seen in (69c). The same point can be made with (70), which involves object control.

- (70) a. *Syatyoo-wa syain-ni*_i [PRO_i *Tokyo-ni iku yooni*] *meizi-ta.* president-TOP employee-DAT Tokyo-to go COMP order-PST 'The president ordered the employee to go to Tokyo.'
 - b. Syatyoo-wa syain-ni_i-sika [PRO_i Tokyo-ni iku yooni]
 president-TOP employee-DAT-only meizi-nakat-ta.
 order-NEG-PST
 - 'The president ordered only the employee to go to Tokyo.'
 - c. *Syatyoo-wa syain-ni_i [PRO_i **Tokyo-ni-sika** iku yooni]

 president-TOP employee-DAT Tokyo-to-only go COMP

 meizi-nakat-ta.

 order-NEG-PST

 (The president ordered the employee to go to only Tokyo'

'The president ordered the employee to go to only Tokyo.'

In (70), the matrix negator nai can license the dative argument residing in the matrix clause, but not the goal argument in the embedded clause. ¹⁵

The difference that distinguishes the subject-control construction in (68) from the control constructions in (69) and (70) lies in the presence or absence of a com-

¹⁵ One reviewer notes that (70c) does not sound so bad.

plementizer. This is one crucial factor for long-distance licensing of local NPIs. In fact, local NPs in the noun-complement clause of *kioku-ga nai* are *not* licensed by the matrix negator if the complementizer *toiuu* is present, as shown in (71b).

- (71) a. **Watasi-ni-sika** pan-o tabe-ta toiuu kioku-ga nakat-ta.

 I-DAT-only bread-ACC eat-PST COMP memory-NOM NEG-PST 'Only I remembered eating bread.'
 - b. *Watasi-ni-wa pan-sika tabe-ta toiuu kioku-ga nakat-ta. I-DAT-TOP bread-only eat-PST COMP memory-NOM NEG-PST 'I remembered eating only bread.'

In (71a), the dative argument with *sika* lies in the matrix clause and hence is licensed by the matrix negator. By contrast, the accusative argument with *sika* located in the embedded clause is not licensed, as in (71b). Given that the complementizer appears in the head position of CP, it is reasonable to state that local NPIs are not licensed by a higher negator across a CP boundary.

The complex predicate *kioku-ga aru* can have a complement clause with a nominative subject. When the complement clause includes a nominative subject, embedded NPIs are not licensed, as seen from (72).

- (72) a. *Ken-ni-sika Mari-ga sore-o tabe-ta kioku-ga naka-ta.*Ken-DAT-only Mari-NOM that-ACC eat-PST memory-NOM NEG-PST 'Only Ken remembered that Mari ate that.'
 - b. *Ken-ni-wa **Mari-sika** sore-o tabe-ta kioku-ga nakat-ta. Ken-DAT-TOP Mari-only that-ACC eat-PST memory-NOM NEG-PST 'Ken remembered that only Mari ate that.'
 - c. *Ken-ni-wa Mari-ga **sore-sika** tabe-ta kioku-ga nakat-ta. Ken-DAT-TOP Mari-NOM that-only eat-PST memory-NOM NEG-PST 'Ken remembered that Mari ate only that.'

The complement clause of *kioku-ga aru* can undergo passivization. In the passivized complement clause as well, the possibility of licensing local NPIs depends on the presence or absence of a nominative subject. (73a) shows that when the subject is present in the complement clause, embedded NPIs with *sika* are not sanctioned.

(73) a. *Watasi-ni-wa Mari-ga **Sato-san-ni-sika** sikar-are-ta
I-DAT-TOP Mari-NOM Sato-Mr.-by-only scold-PASS-PST
kioku-ga naka-ta.
memory-NOM NEG-PST
'I remembered that Mari was scolded only by Mr. Sato.'

b. *Watasi-ni_i-wa* [PRO_i *Sato-san-ni-sika sikar-are-ta*] kioku-ga I-DAT-TOP Sato-Mr.-bv-only scold-PASS-PST memory-NOM naka-ta. **NEG-PST** 'I remembered that I was scolded only by Mr. Sato.'

In (73b), the passive subject is not overt, and appears as PRO controlled by the matrix dative subject. In this case, NPIs with sika are licensed even if they are located in the complement clause.

In short, local NPIs located in the complement clause taken by kioku-ga aru are not licensed by a higher negator if the clause has a complementizer, which fills the head position of CP, or a nominative subject. Chomsky (2008) suggests that T comes to bear nominative Case to value a Case feature on the subject by feature inheritance from C. This suggests that the clause with a nominative subject must include a CP projection even if it is not overt. Given this, it can be stated that local NPIs cannot be licensed by a higher negator across a CP boundary, i.e. local NPIs can be licensed by a negator only when no CP projection intervenes between them.

4.3 The source of restructuring effects

Kato (1985) refers to an expression like kioku-ga aru as a "bridge" expression by virtue of the fact that NPIs in its complement clause can be licensed by a matrix negator with a long-distance relation. While local NPIs are generally taken to be subject to the clause-mate condition, the clause-mate condition is relaxed on bridge expressions. This gives us the impression that the complex expression composed of kioku-ga aru plus its complement clause is reduced to a flat single-clause structure.

In fact, it is claimed in the literature on Japanese (Muraki 1978) that the predicate complexes in bridge expressions are restructured to form single predicates, and that the two clauses in the construction are reanalyzed as possessing a monoclausal structure. In this analysis, local NPIs are regarded as licensed by the higher negator, satisfying the clause-mate condition, as a consequence of restructuring.

(74)
$$[_{TP} \ [_{DP} \ [\dots \ -sika \ V] \ kioku-ga] \ aru] \Rightarrow [_{TP} \ \dots \ -sika \ V-kioku-ga-aru]$$

This analysis is more or less in line with the classic analysis of restructuring (e.g. Rizzi 1978). More recently, however, different analyses (e.g. Cinque 2004) are advanced to the effect that restructuring effects are obtained if some functional projections are missing (see also Wurmbrand 2001 for an overview of issues related to restructuring). Under this perspective, the apparent mono-clausal behavior of local NPIs in the complement clause of *kioku-ga aru* should come from the absence of some functional projection(s) (i.e. *kioku-ga aru* does not involve flattening of the matrix and complement clauses into one clause). As discussed in section 4.2, the presence or absence of the complementizer affects the possibility of licensing local NPIs in the *kioku-ga aru* construction. In light of this fact, it is feasible to postulate that a higher negation can license a local NPI located in the noun-complement clause where CP is not projected.

There are at least two facts that point to the conclusion that the bridge expression *kioku-ga aru* does not invoke flattening of the complex DP structure. In the first place, an asymmetry in NPI licensing is found when a negator appears in the noun-complement clause, as shown in (75).

- (75) a. *Watasi-ni-sika pan-o tabe-nakat-ta kioku-ga ar-u.

 I-DAT-TOP bread-ACC eat-NEG-PST memory-NOM be-PRS

 'Only I remember eating bread.'
 - b. Watasi-ni-wa pan-sika tabe-nakat-ta kioku-ga aru.
 I-DAT-TOP bread-only eat-NEG-PST memory-NOM be-PRS 'I remember eating only that.'

The dative argument with *sika* in (75a) is not licensed owing to the fact that it is located in the matrix clause. This argument falls outside the scope of embedded negation, and thus (75a) is not acceptable. In contrast, the object of *taberu* 'eat', which is accompanied by *sika*, is licensed under the scope of negation. This asymmetry in NPI licensing would not be expected if the bridge expression invoked the process of restructuring that turns a bi-clausal structure into a mono-clausal structure.

Secondly, Fukui (1988) and Nishigauchi (1990) argue that when *naze* 'why' is embedded in a syntactic island, it gives rise to an island effect (owing to the LF extraction of *naze*). This effect is observed for the *naze* 'why' question in (76a), but not the *naze* question in (76b).

- (76)*Anata-wa [[Eri-ga naze hanasi-ta tol omot-tal you-TOP Eri-NOM why talk -PST COMP think-PST hito-ni at-ta no? person-with meet-PST 0 'Why_i did you meet a person_i [who_i you think that [Eri talked to t_i t_i]]?'
 - b. Anata-wa [Eri-ga naze hanasi-ta to] omot-ta no? you-TOP Eri-NOM why talk-PST COMP think-PST Q 'Why $_i$ do you think [that Eri talked t_i]?'

(76a) cannot be understood to be a direct question asking the reason why Eri talked. On the other hand, in (76b), naze can be taken to ask the reason why Eri talked, while taking the matrix scope, which suggests that the wh-word naze can be extracted from the clause selected by the verb omou 'think'. Notably, (77) gives rise to an island effect in just the same way as (76a).

(77) *Anata-ni-wa [PRO [Eri-ga naze hanasi-ta to] omot-ta] you-DAT-TOP Eri-NOM why talk -PST COMP think-PST kioku-ga no? ar-u memory-NOM be-PRS 0 'Why, do you remember thinking [that Eri talked t_i]?'

LF extraction of naze from the complement clause introduced by omou is not legitimate in (76a) due to a complex DP island. 16 Since the same island effect as (76a) is obtained in (77), it can be stated that the complex DP expression kioku-ga aru forms a complex DP island. This fact would not be expected if a flat mono-clausal structure is derived from the bi-clausal construction which includes the bridge expression kioku-ga aru by virtue of restructuring.

It is also important to see that DP projections are not barriers to NPI licensing. Thus, adjectival NPIs inside DPs are licensed by a clausal negator, as shown in (78).

(78) Koko-ni-wa {taisita/rokuna} hito-ga i-nakat-ta. {great/decent} person-NOM be-NEG-PST here-at-TOP 'There are not {such great/decent} people here.'

The prenominal NPIs in (78), which modify the nominal head hito 'man', appear inside the DP. The acceptability of (78) suggests that nominal projections, i.e. DP

¹⁶ Ko (2005) suggests that a wh-adjunct naze is merged into Spec of CP (see also Kuwabara 2013). Under this view, (i) does not have a complementizer in the complement clause, and then the sentence might be excluded due to the lack of CP in a complex bridge expression.

⁽i) *Anata-ni-wa [Eri-ga naze hanasi-ta] kioku-ga ar-u no? you-DAT-TOP Eri-NOM why talk-PST memory-NOM be-PRS Q 'Why_i do you remember [that Eri talked t_i]?'

In (76) and (77), the problem of the adjunction site does not arise, since the complement clause includes another clause with a CP projection to which *naze* can be adjoined. Since both (76) and (77) are not acceptable, it can be reasonably stated that they are excluded in violation of the complex DP island.

and NP, do not block NPI licensing, and the clausal negator can have access to the prenominal NPIs.

Incidentally, non-local NPIs are generally not constrained by the island constraints, which restrict the possibility of movement. In English, for instance, the NPI *any* is licensed even if it is embedded in relative clauses, as shown in (79a).

- (79) a. John never reads books which have any pages missing.
 - b. *John never read the book that has any pages missing. (May 1985: 149)

(79a) illustrates that *any* can be licensed across a syntactic island. On the other hand, NPIs in (79b) are not licensed owing to the fact that the DP hosting the relative clause is specific, i.e. the specificity of the relative clause blocks the licensing of the NPI *any* by a higher negation.

The same holds true of Japanese, since the NPI *amari* 'very' located in a relative clause allows long-distance licensing. For instance, (80a) is acceptable if *sono* 'that' is absent, showing that the licensing of *amari* can be long distance. On the other hand, *amari* is not licensed by a negator in the matrix clause if the relative clause is accompanied by *sono* 'that'.

(80) a. Koko-ni-wa [amari nessin-ni hatarak-u] (*sono) hito-tati-ga here-at-TOP very hard work-PRS that person-PL-NOM i-na-i.

be-NEG-PRS

'There are not (those) people who work much hard.'

 b. *Koko-ni-wa [nessin-ni sigoto-sika su-ru] (sono) hito-ga here-at-TOP hard work-only do-PRS that person-NOM i-na-i.

be-NEG-PRS

'There are (those) people who did only the work hard.'

The difference in acceptability observed in the examples in (80a) with or without *sono* shows that licensing of the non-local NPI *amari* by a higher negation is not sensitive to the complex DP island, but to the specificity of the DP in which they are embedded. Note that strong NPIs with *sika* cannot be embedded in the relative clause regardless of whether or not it comprises *sono*, as (80b) illustrates.

The data discussed here suggest that the syntactic operation of restructuring reducing a bi-clausal structure to a mono-clausal structure does not apply to the construction with the bridge expression *kioku-ga aru* 'have a memory'. Since no flattening of clause structure takes place on the *kioku-ga aru* construction even when long-distance NPI licensing is possible, it is fair to state that restructuring

effects are derived when some functional projections are absent. The differences in the pattern of local NPI licensing observed for *kioku-ga aru* are summarized in (81).

(81) a.
$$\begin{bmatrix} TP \end{bmatrix} \begin{bmatrix} TP \end{bmatrix}$$

(81a) represents a case where an overt subject is included in the noun-complement clause. Given that the nominative Case borne by T to license a nominative subject comes from C, it follows that in a clause with a nominative subject, a CP projection is present regardless of whether or not a complementizer is realized overtly. (81b) is a case where CP is projected in a nonfinite clause. In both cases, the noun-complement clause is not accessible to the matrix negator, so that local NPIs appearing in the noun-complement clause are not licensed. In (81c), by contrast, a nonfinite clause with PRO does not have a CP projection. In this case, the matrix negator can license local NPIs appearing in the noun-complement clause.

In light of these considerations, it can be concluded that the long-distance licensing of local NPIs by a higher negator is made available across a clause boundary when they appear in a nonfinite clause with no CP projection.

4.4 Local NPIs and te-complement constructions

In section 4.3, I have argued that long-distance licensing of local NPIs is possible when they are embedded in a nonfinite control clause with no CP projection. In this section, I will return to the question of how cross-clausal NPI licensing is rendered possible with local NPIs located in the te-complement clauses of subject-raising and subject-control constructions. It is shown that in these constructions as well, local NPIs are licensed by a higher negation when the complement clause in which they appear is nonfinite and lacks a CP projection, as illustrated in (82).

(82) a.
$$\begin{bmatrix} TP \end{bmatrix}$$
 SUBJ $\begin{bmatrix} TP \end{bmatrix}$ PRO $\begin{bmatrix} TP \end{bmatrix}$ $\begin{bmatrix} TP \end{bmatrix}$ $\begin{bmatrix} TP \end{bmatrix}$ $\begin{bmatrix} TP \end{bmatrix}$ $\begin{bmatrix} TP \end{bmatrix}$

Recall here that as discussed in section 3, both subject-raising construction with the aspectual verb *iru* 'be' and subject-control constructions with *oku* 'put' allow local NPIs to appear, as shown in (83).

- (83) a. Gakusei-ga [kono kyookasyo-sika kat-te] i-nakat-ta. student-NOM this textbook-only buy-GER be-NEG-PST 'The students were buying only this textbook.'
 - b. Gakusei-ga [PRO kono kyookasyo-sika kat-te] oka-nakat-ta. student-NOM this textbook-only buy-GER put-NEG-PST 'The students have bought only this textbook.'

The present view that the *te*-complements of the subject-raising and the subject-control constructions are nonfinite and lack CP projections receives empirical support from the fact that they do not allow overt subjects to appear.

- (84) a. *Gakusei-ga [karera-ga kyookasyo-o kat-te] i-nakat-ta. student-NOM they-NOM textbook-ACC buy-GER be-NEG-PST 'The students were not buying textbooks.'
 - b. *Gakusei-ga [karera-ga kyookasyo-o kat-te] oka-nakat-ta. student-NOM they-NOM textbook-ACC buy-GER put-NEG-PST 'The students did not buy textbooks.'

The subject-raising construction is distinguished from the subject-control construction, in that the subject position of the embedded clause includes a copy of the overt realized subject rather than PRO controlled by the matrix subject. In addition, the gerundive -te does not allow any complementizer to appear to its right, so the "V-te to" sequence, where -te is combined with the complementizer to 'that', is not grammatical. The impossibility of a complementizer in the embedded clause also suggests that no CP projection is available in the subject-raising and the subject-control constructions. If the te-complement clauses are nonfinite and do not include a CP projection, it is naturally expected that local NPIs will be licensed by the matrix negation in these two types of constructions.

The present analysis leads to the prediction that if a nominative subject appears in a *te*-complement clause, local NPIs in the complement clause will not be visible to a higher negator. This prediction is fulfilled, as shown by the desiderative construction with *hosii* 'want'. As shown in (85), the *te*-complement clause selected by *hosii* can have the subject of the embedded predicate marked with nominative or dative case (Harada 1977; Shibatani 1978; Kishimoto 2005).

(85) a. Watasi-wa [Ken-ga sore-o tabe-te] hosikat-ta.

I-TOP Ken-NOM that-ACC eat-GER want-PST
'I wanted Ken to eat that.'

Watasi-wa Ken-ni hosikat-ta. h [PRO sore-o tabe-te] I-TOP Ken-DAT eat-GER want-PST that-ACC 'I wanted Ken to eat that.'

The argument Ken bears nominative case marking in (85a) and dative case marking in (85b). In (85a), Ken is the subject selected by the embedded predicate. In (85b), the matrix verb selects Ken, and controls PRO in the embedded clause. The difference in the syntactic status can be confirmed by looking at whether the argument *Ken* with *sika* is licensed by the negator in the embedded clause.

- (86) a. Watasi-wa [Ken-sika sore-o tabe-nai-del hosikat-ta. I-TOP Ken-only that-ACC eat-NEG-GER want-PST 'I wanted only Ken to eat that.'
 - *Watasi-wa Ken-ni-sika [PRO sore-o tabe-nai-del hosikat-ta. I-TOP Ken-DAT-only that-ACC eat-NEG-GER want-PST 'I wanted only Ken to eat that.'

Furthermore, the contrast in acceptability between (87a) and (87b) illustrates that PRO is included in the embedded clause when the logical subject of the embedded predicate is marked with dative case.

- (87)a. Watasi-wa [yuki-ga toke-tel hosikat-ta. I-TOP snow-NOM melt-GER want-PST 'I wanted the snow to melt.'
 - b. #Watasi-wa yuki-ni [PRO toke-tel hosikat-ta. I-TOP snow-DAT melt-GER want-PST 'I wanted the snow to melt.'

(87a) is acceptable, but (87b) is not unless the dative argument is taken to be animate figuratively. Since an animacy condition is imposed on PRO (Harada 1977; Kishimoto 2005), it can be postulated that the embedded clause in (85b), but not the one in (85a), contains PRO.

Let us now consider how local NPIs interact with a higher negation in the desiderative constructions. First, observe that a contrast in acceptability is observed between (88a) and (88b) with regard to the licensing of the embedded object with sika.

?*Watasi-wa [Ken-ga pan-sika tabe-te] hosiku-nakat-ta. (88) a. Ken-NOM bread-only eat-GER want-NEG-PST I-TOP 'I wanted Ken to eat only bread.'

b. Watasi-wa Ken-ni [PRO pan-sika tabe-te] hosiku-nakat-ta.
 I-TOP Ken-DAT bread-only eat-GER want-NEG-PST 'I wanted Ken to eat only bread.'

The difference in acceptability emerges according to whether the subject of the embedded predicate is marked with dative case or nominative case. When the embedded subject is marked with nominative case, as in (88a), the local NPI is not licensed by the matrix negator. On the other hand, the NPI object is licensed if the subject is marked with dative case, as in (88b).

Essentially the same point can be made for the noun-complement clause selected by *nozomu* 'hope'. This noun-complement clause is realized in object position marked with accusative case, and its logical subject may be marked either with nominative case or dative case, as shown in (89) (Muraki 1978; Kato 1985).

- (89) a. *Mari-wa* [*Ken-ga soko-de hatarak-u*] *koto-o nozon-da.*Mari-TOP Ken-NOM there-at work-PRS that-ACC hope-PST 'Mari hoped that Ken will work there.'
 - b. *Mari-wa Ken-ni* [PRO *soko-de hatarak-u*] *koto-o nozon-da.*Mari-TOP Ken-DAT there-at work-PRS that-ACC hope-PST 'Mari hoped that Ken will work there.'

The nominative argument in (89a) and the dative argument in (89b) occupy distinct structural positions. This is confirmed by (90).

- (90) a. *Mari-wa [soko-de hatarak-u] koto-o Ken-ga nozon-da.

 Mari-TOP there-at work-PRS that-ACC Ken-NOM hope-PST 'Mari hoped that Ken will work there.'
 - b. Mari-wa [PRO soko-de hatarak-u] koto-o Ken-ni nozon-da. Mari-TOP there-at work-PRS that-ACC Ken-DAT hope-PST 'Mari hoped that Ken will work there.'

When the nominative argument *Ken-ga* is postposed to the right of the noun-complement clause, unacceptability results. This shows that the nominative argument is located in the complement clause. No such deviance is found when the dative argument *Ken-ni* is postposed, which shows that the dative argument appears in the matrix clause.

PRO is included in the noun-complement clause when the logical subject of the embedded predicate is marked with dative case, but not with nominative case. This is confirmed by the examples in (91).

- (91) a. *Mari-wa* [*yuki-ga toke-ru koto-o*] *nozon-da*.

 Mari-TOP snow-NOM melt-PRS that-ACC hope-PST 'Mari hoped that the snow will melt.'
 - b. #Mari-wa yuki-ni [toke-ru koto-o] nozon-da.

 Mari-TOP snow-DAT melt-PRS that-ACC hope-PST 'Mari hoped that the snow will melt.'

The examples in (91) show that the logical subject of the embedded subject can be inanimate when marked with nominative case, but cannot be inanimate when marked with dative case (unless it is taken to be animate figuratively). This fact illustrates that the noun-complement clause includes PRO when the dative argument is interpreted as the subject of the complement clause via control.

Recall that nominal projections are transparent for the purpose of NPI licensing. The noun-complement clause embedded under the noun *koto* selected by *nozomu* 'hope' can be the focus of negation.

(92) Mari-wa Ken-{ga/ni} hataraka-na-i koto-o nozoma-nakat-ta.

Mari-TOP Ken-{NOM/DAT} work-NEG-PRS that-ACC hope-NEG-PST

'Mari hoped that Ken will work.'

Example (92) is allowed to have the double negative interpretation that Mari hoped that Ken will work. This means that the noun-complement clause can be the focus of the matrix negator.

In the desiderative construction with *nozomu* 'hope', local NPIs display the same behavior as those NPIs appearing in the *te*-complement clause of *hosii* 'want'.

(93) a. ?*Mari-wa [Ken-ga soko-de-sika hatarak-u] koto-o
Mari-TOP Ken-NOM there-at-only work-PRS that-ACC
nozoma-nakat-ta.
hope-NEG-PST

'Mari hoped that Ken will work only there.'

b. Mari-wa Ken-ni [PRO soko-de-sika hatarak-u] koto-o
Mari-TOP Ken-DAT there-at-only work-PRS that-ACC
nozoma-nakat-ta.
hope-NEG-PST
'Mari hoped that Ken will work only there.'

In (93a), a nominative subject appears in the noun-complement clause. In this case, since the noun-complement clause is finite, it is naturally expected that the local NPI cannot be licensed by the matrix negator. On the other hand, (93b) represents a

case where the noun-complement clause is nonfinite, and does not include CP. The local NPI in (93b) is therefore licensed by the matrix negator.

In essence, local NPIs are licensed by a higher negation when embedded in a nonfinite complement which does not project CP. In the subject-raising as well as the subject-control constructions, the embedded clause is non-finite and does not project CP, so that local NPIs appearing in the embedded clause are licensed by a matrix negator across the clause boundary. At first sight, it might look as if longdistance licensing of local NPIs is allowed in bridge expressions when the sentence including them undergo restructuring, which turns a bi-clausal structure into a mono-clausal structure. Nonetheless, a close look at the data shows that long-distance licensing of local NPIs by a higher negator is possible with the bridge expressions without restructuring, i.e. with no reduction of a bi-clausal structure to a mono-clausal structure, when no CP boundary intervenes between them.

5 Conclusion

In this paper, it has been shown that the extent of negative scope changes in accordance with Neg-head raising in both English and Japanese, and that in Japanese, a subject-object asymmetry is observed in the licensing of NPIs in the subject-raising and subject-control constructions when a clause negator appears in the embedded clause. The difference in the pattern of NPI licensing in the two constructions can be accounted for if the subject of the subject-raising construction is originated from the embedded clause, but the subject of the subject-control construction is generated in the matrix clause. Notably, in both subject-raising and subject-control constructions, object NPIs in the embedded clauses are licensed by a matrix negator regardless of whether they are construed as local or non-local ones. It has been shown that while local NPIs cannot be licensed by a clausal negator across a finite-clause boundary, they can be licensed if they are contained in a nonfinite clause with no CP projection.

References

Aoyaqi, Hiroshi & Toru Ishii. 1994. On NPI licensing in Japanese. In Noriko Akatsuka (ed.), Japanese/ Korean Linguistics 4, 295-311. Stanford: CSLI Publications.

Carnie, Andrew. 2007. Syntax: A Generative Introduction. 2nd edn. Malden: Blackwell.

Chomsky, Noam. 2008. On phases. In Robert Freidin, Carlos P. Otero and Maria Luisa Zubizarreta (eds.), Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud, 133–166. Cambridge, MA: MIT Press.

- Cinque, Guglielmo. 2004. "Restructuring" and functional structure. In Adriana Belletti (ed.), Structures and Beyond: The Cartography of Syntactic Structures: Volume 3, 132-191, Oxford: Oxford University Press.
- Collins, Chris & Paul M. Postal. 2014. Classical NEG Raising: An Essay on the Syntax of Negation. Cambridge, MA: MIT Press.
- Fujii, Tomohiro. 2006. Some theoretical issues on Japanese control. College Park: University of Maryland dissertation.
- Fukui, Naoki. 1988. LF extraction of naze: Some theoretical implications. Natural Language & Linguistic Theory 6, 503-526.
- Fukui, Naoki, 1995. Theory of Projection in Syntax. Stanford: CSLI Publications.
- Giannakidou, Anastasia. 1998. Polarity Sensitivity as (Non)veridical Dependency. Amsterdam: John Beniamins.
- Harada, S.-I. 1977. The derivation of unlike-subject desideratives in Japanese. Descriptive and Applied Linguistics 10. 131-146.
- Horn, Laurence R. 1989. A Natural History of Negation. Chicago: University of Chicago Press.
- Hornstein, Norbert. 1999. Movement and control. Linguistic Inquiry 30. 69–96.
- Ido, Misato. 2019. "Sonnani, amari-no hi-hiteisetsu-niokeru bunpu-to imi [The meaning of sonnani and amari based on their distribution in non-negative clauses]. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kyokusei Hyoogen-no Koozoo, Imi, Kinoo [Polarity-sensitive expressions: their forms, meanings and functions], 336-355. Tokyo: Kaitakusha.
- Kadmon, Nirit. 2001. Formal Pragmatics: Semantics, Pragmatics, Presupposition, and Focus. Malden:
- Kato, Yasuhiko. 1985. Negative Sentences in Japanese. Sophia Linguistica 19.
- Kato, Yasuhiko. 1994. Negative polarity and movement. In Masatoshi Koizumi & Hiroyuki Ura (eds.), Formal Approaches to Japanese Linguistics 1, 101–120. Cambridge, MA: MIT Working Papers in Linguistics.
- Kawashima, Ruriko & Hisatsugu Kitahara. 1992. Licensing of negative polarity items and checking theory: A comparative study of English and Japanese. In Proceedings of the Formal Linguistics Society of Midamerica 3, 139-154.
- Kishimoto, Hideki. 2005. Toogo Koozoo-to Bunpoo Kankei [Syntactic structures and grammatical relations]. Tokyo: Kuroshio Publishers.
- Kishimoto, Hideki. 2007. Negative scope and head raising in Japanese. Lingua 117. 247–288.
- Kishimoto, Hideki. 2008. On the variability of negative scope in Japanese. Journal of Linguistics 44. 379-435.
- Kishimoto, Hideki. 2010. Subjects and constituent structure in Japanese. Linguistics 48. 629–670.
- Kishimoto, Hideki. 2012. Subject honorification and the position of subjects in Japanese. Journal of East Asian Linguistics 21. 1–41.
- Kishimoto, Hideki. 2013. Verbal complex formation and negation in Japanese. Lingua 135. 132–154.
- Kishimoto, Hideki. 2016. Bun-no koozoo-to kaku-kankei [Sentence structures and case relations]. In Keiko Murasugi, Mamoru Saito, Yoichi Miyamoto & Kensuke Takita (eds.), Nihongo Bunpoo Handobukku: Gengo Riron-to Gengo Kakutoku-no Kanten-kara [Handbook of Japanese grammar: from the viewpoints of linguistic theory and language acquisition], 102–145. Tokyo: Kaitakusha.
- Kishimoto, Hideki. 2017. Negative polarity, A-movement, and clause architecture in Japanese. Journal of East Asian Linguistics 17. 109-161.
- Kishimoto, Hideki. 2018. Projection of negative scope in Japanese. Gengo Kenkyu 153. 5–39.
- Kishimoto, Hideki 2019. Nihongo-no hitei kyokusei-to toogo koozoo. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kyokusei Hyoogen-no Koozoo, Imi, Kinoo [Polarity-sensitive expressions: their forms, meanings, and functions], 50-79. Tokyo: Kaitakusha.

- Ko, Heejeong. 2005. Syntax of why-in-situ: Merge into [Spec, CP] in the overt syntax. Natural Language & Linguistic Theory 23. 867-916.
- Kuroda, S.-Y. 1988. Whether we agree or not: A comparative syntax of English and Japanese. In William Poser (ed.), Papers from the Second International Workshop on Japanese Syntax, 103–144. Stanford: CSLI Publications.
- Kuwabara, Kazuki. 2013. Peripheral effects in Japanese questions and the fine structure of CP. Lingua 126. 92-119.
- Ladusaw, William. 1980. Polarity Sensitivity as Inherent Scope Relations. New York: Garland.
- Laka, Itziar, 1990, Negation in syntax: On the nature of functional categories and projections, Cambridge. MA: MIT dissertation.
- May, Robert. 1985. Logical Form: Its Structure and Derivation. Cambridge, MA: MIT Press.
- McGloin, Naomi Hanaoka. 1976. Negation. In Masayoshi Shibatani (ed.) Syntax and Semantics 5: Japanese Generative Grammar, 371–419. New York: Academic Press.
- Miyaqawa, Shigeru. 1989. Syntax and Semantics 22: Structure and Case Marking in Japanese. San Diego: Academic Press.
- Muraki, Masatake. 1978. The sika nai construction and predicate restructuring. In John Hinds & Irwin Howard (eds.), *Problems in Japanese Syntax and Semantics*, 155–177. Tokyo: Kaitakusha.
- Nakatani, Kentaro. 2013. Predicate Concatenation: A Study of the V-te V Predicate in Japanese. Tokyo: Kurosio Publishers.
- Nishigauchi, Taisuke. 1990. *Quantification in the Theory of Grammar*. Dordrecht: Kluwer.
- Oyakawa, Takatsugu. 1975. On the Japanese sika-nai construction. Gengo Kenkyu 67. 1–20.
- Progovac, Ljiljana. 1994. Positive and Negative Polarity: A Binding Approach. Cambridge: Cambridge University Press.
- Rizzi, Luigi. 1978. A restructuring rule in Italian syntax. In Samuel Jay Keyser (ed.), Recent Transformational Studies in European Languages, 113–158. Cambridge MA: MIT Press.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In Liliane Haegeman (ed.), Elements of Grammar: Handbook of Generative Syntax, 281-337. Dordrecht: Kluwer.
- Rizzi, Luigi. 2004. On the cartography of syntactic structures. In Luigi Rizzi (ed.), The Structure of CP and *IP: The Cartography of Syntactic Structures, Volume 2*, 3–15. Oxford: Oxford University Press.
- Roberts, Ian. 2010. Agreement and Head Movement: Clitics, Incorporation, and Defective Goals. Cambridge, MA: MIT Press.
- Saito, Mamoru. 1989. Scrambling as semantically vacuous A'-movement. In Mark Baltin & Anthony Kroch (eds.), Alternative Conceptions of Phrase Structure, 188-200. Chicago: University of Chicago Press.
- Shibatani, Masayoshi. 1978. Nihongo-no Bunseki [An analysis of Japanese]. Tokyo: Taishukan.
- Stowell, Tim. 1978. Tense of infinitives. *Linguistic Inquiry* 13. 561–570
- Takahashi, Daiko. 1990. Negative polarity, phrase structure and the EPP. English Linguistics 7. 129–146.
- Takezawa, Koichi. 2004. Nihongo fukugoo-jutsugo-niokeru hiteiji-no ichi-to setsukoozoo [The position of negation in Japanese complex predicates and clause structure]. In Nihongo Bunpoo Gakkai Dai Go-Kai Taikai Happyoo Ronbunshuu [Papers from the fifth annual meeting of the Society of Japanese Grammar], 175-184.
- van der Wouden, Ton. 1997. Negative Contexts. London: Routledge.
- Wurmbrand, Susanne. 2001. Infinitives: Restructuring and Clause Structure. Berlin: Mouton de Gruyter.
- Yoshimura, Akiko. 1999. Hitei Kyokusei Genshoo [The negative polarity phenomena]. Tokyo: Kaitakusha.
- Zwarts, Frans. 1998. Three types of polarity. In Fritz Hamm & Erhard Hinrichs (eds.), Plurality and Quantification, 177-238. Dordrecht: Kluwer.

Kiyoko Kataoka

Chapter 3 Negation-sensitive elements outside the Neg-domain

1 Introduction

1.1 Past analyses

As is well known, many languages have various expressions that must occur with negation. Here we will call them Neg(ation)-Sensitive Elements (*NSEs*). It has been accepted in general that their distribution obeys the syntactic condition in (1), which is in line with the analysis originally proposed by Klima (1964), on the basis of the observation as in (2).¹

- (1) Neg-c-command condition: An NSE must be c-commanded by Neg at LF.
- (2) a. He didn't [$_{VP}$ invite anybody.]
 - b. *Anybody didn't [VP invite him.]

Given the general assumption for the structure of English (Pollock 1989 and many others), the negative element (*Neg*) is higher than VP but lower than the subject at LF so that the subject cannot be in the syntactic domain of Neg (*Neg-domain*). Thus, NSEs are not allowed in the subject position in English, obeying the Neg-command condition.

Ladusaw (1979) proposed a semantic analysis in terms of *entailment* based on an analysis by Fauconnier (1975). Fauconnier (1975) pointed out the interpreta-

Acknowledgements: I would like to thank the external and internal reviewers and the editors of this volume for their helpful comments and suggestions. They made me realize many points that I had not noticed so that, I believe, my understanding of the issues has made a great progress. I also thank Daniel Plesniak for his kind help to improve my poor expressions and articulations in English. All remaining errors are on my own responsibility.

¹ Klima's (1964) original version did not have *c-command*, but it had a structural notion of *in-construction-with*, which is equivalent to *being c-commanded by* (Klima 1964: 297). He described the scope of *wh-* and *neg* in terms of structure rules so that his transformational rules can be translated into rules in LF structure under the framework of minimalist program.

tional characteristics of NSEs like a red cent in (3), which gives rise to the interpretation indicated in (4a) and (4b), in addition to the literal meaning.

- (3) John will not give a red cent to his son.
- (4) a. John will not give even a thing of the least value, let alone any other things of more value.
 - b. All the things are such *x* that John will not give *x* to his son.

His account introduced the notion of pragmatic scale (Fauconnier 1975: 361). For (3) to be interpreted with *universal negation*, a red cent points at the polar point in a scale² associated with negative predicate (negative scale), and establishes a chain of inferences, resulting in universal quantification as indicated in (4a) and (4b). Following Fauconnier (1975), we will use the term scale as in scale reading for the universal quantified reading based on a pragmatic scale, and the term scale-based universal negation for the interpretation involving an NSE like (3).

On the basis of Fauconnier's (1975) idea, Ladusaw (1979) defined the semantic environment of the scale reading as downward-entailing in terms of the set theory. He captured the notion of *negative polarity* as pointing at the *polar* point in a negative scale to induce universal negation by establishing entailment, calling those NSEs *Negative Polarity Items (NPIs)*. His analysis is as follows:

- (5) Semantic condition on NPIs by Ladusaw (1979)
 - a. NPI's are appropriate in structure in the scope of a *downward-entailing* expression. API's are appropriate elsewhere (Ladusaw 1979: 132, (130)).³
 - b. Not is downward-entailing and is the most famous trigger for NPI's (Ladusaw 1979: 113).

² Fauconnier (1975) did not use the term polar or polarity but used other expressions such as highest/lowest element of a scale or end of a scale. He only introduced the expression polarity problems for linguistic phenomena involving scale, which was discussed in Schmerling (1971).

³ The definition of downward-entailing by Ladusaw (1979), which is based on the Fauconnier's (1975) idea, is (i).

⁽i) An expression δ is downward-entailing iff $\forall x \forall y \Box [x \subseteq y \rightarrow [\delta'(y) \{ \rightarrow \subseteq \} \delta'(x)]]$ (Ladusaw (1979: 112, (37))

1.2 Aims

The analyses of these two famous works have been widely accepted in general and every item that requires negation has been treated as an NPI generally in the literature. I however argued for (i) and (ii) in my past works (Kataoka 2009, 2010), making reference to NSEs in Japanese.4

- Not all NSEs can be treated as NPIs in terms of Ladusaw (1979). Not all NSEs need to be c-commanded by Neg at LF. Not all NSEs induce scale-based universal negation.
- (ii) Only those NSEs that induce scale-based universal negation should be regarded as pure NPIs, and pure NPIs must be c-commanded by Neg at LF, as argued by Klima (1964).5

Kataoka (2009, 2010) demonstrated these two factors (Neg-c-command and scalebased universal negation) help us distinguish NSEs in Japanese and gave an account for their problematic distribution by considering those factors in addition to the language-specific lexical and syntactic properties. It was argued that there exist some NSEs which need not be c-commanded by Neg, and that those NSEs play a semantic role other than to induce scale-based universal negation. In Kataoka (2016, 2019) it was suggested that the analysis could be applied to NSEs in Spanish and other languages, too, since the two factors come from universal properties of language and should work universally; Neg-c-command is a structural relation and scale-based universal negation is a semantic notion that could be observed in every language.

The most important aim of this work is to examine, more in detail, NSEs in Spanish following the analysis adopted for NSEs in Japanese, especially those which need not be c-commanded by Neg. Although they are outside the syntactic domain of Neg, they require Neg for some semantic reason other than to induce scale-based universal negation.

In order to apply the analysis for Japanese NSEs to Spanish ones, we first illustrate how the distributions of Japanese NSEs are examined under the universal principle in terms of *c-command*. We show that their distributions can be accounted for by considering their syntactic behavior with respect to Neg and their semantic role. We will then examine and classify Spanish NSEs in the same manner to give

⁴ For NSEs in Korean, it has been argued in Chung & Park (1998) Sells (2001a, 2001b, 2006), and Sells and Kim (2006) that Neg-c-command condition does not work for some NPIs. Giannakidou (2011) and Shimoyama (2011) provide semantic discussion.

⁵ That is why I do not use the term NPI for Neg-sensitive elements but the term NSE.

accounts for their distributions, especially for ones outside the Neg-domain. The negation-related phenomena in the two languages, though they are different from each other typologically and syntactically, can be given an account under the universal principle in terms of c-command (i.e., Merge) combined with language-specific lexical, syntactic, and semantic properties.

2 NSEs in Japanese

2.1 Syntactic position outside the Neg-domain

In Japanese, subject-NPs as well as non-subject NPs, can be in the scope of negation as observed in (6) below (Kuno (1980), Takubo (1985), Kato (1985), and Kataoka (2006b) provide discussion related to the scope issue).

- (6) a. [Gonin-izyô-no gakusei-ga]_{subi} [sono-hon-o]_{obi} yom-**anak**-atta. five-or:more-GEN student-NOM that-book-ACC read-NEG-PST
 - $^{ok}QP_{subj} > Neg$: There are five or more students who did **not** read that
 - (ii) okNeg>QP_{subi}: There are **not** five or more students who read that book.
 - b. [Sono-gakusei-ga] subi [gosatu-izyô-no hon-o] obi yom-**anak**-atta. five-or:more-GEN book-ACC read-NEG-PST that-student-NOM
 - $^{ok}QP_{ohi}$ >Neg: There are five or more books that the student did **not** read.
 - (ii) ${}^{ok}Neg > QP_{obj}$: There are **not** five or more books that the student read.

We assume that the scope relation between elements α and β is based on their syntactic relation in terms of c-command (Reinhart 1983).⁶ We also accept the general assumption that subject-NPs remain inside VP at LF in Japanese (Kitagawa 1986). Given the observation in (6) above, the LF-structure of negative sentences in Japanese must be assumed as in (7) so that subject-NPs as well as non-subject NPs are inside the lower VP thus can be in the c-command domain of Neg. (See also Kishimoto (this volume) for a different analysis of Neg in Japanese.).

⁶ We assume the general assumptions (i) and (ii).

⁽i) The scope of α is its c-command domain at LF. (Reinhart 1976, 1983)

⁽ii) The scope of Neg is its c-command domain at LF. (Klima 1964)

(7) Negative sentences in Japanese:

```
[_S \dots [_{VP} [_{VP} \dots V] [_{Neg} -nai]]]
(Kataoka 2006b: Kato 1985)
```

It is, however, impossible under (7) to test the validity of the Neg-c-command condition in (1) by examining the distribution of NSEs in some position inside the VP. For English NSEs, as illustrated in (2), repeated here again, it is possible to check the viability of an NSE in the subject position, which is generally assumed to be outside the Neg-domain.

- (2) a. He didn't [$_{VP}$ invite anybody.]
 - b. *Anybody didn't [VP invite him.]

It is predicted that, if (1) is the necessary condition, an NSE could not be acceptable if the condition (1) is not satisfied, and, as predicted, anybody in (2b) is not acceptable. We however cannot check, for Japanese NSEs, whether an NSE can be acceptable or not if the condition (1) is not satisfied, i.e., if it is outside the Neg-domain. It is necessary to obtain some position that is clearly diagnosed to be outside the Neg-domain to test the validity of the condition in (1). Kataoka (2006a, 2006b) argued that there is a position that can be forced to be outside the Neg-domain in Japanese sentences.

In Japanese, object-subject word order is possible in addition to subject-object word order as in (8). Although the c-command relation between the subject and the object in S(ubject)-O(bject)-V sentences necessarily corresponds to the order in phonetic sequence, two LF relations are possible for O(bject)-S(ubject)-V sentences as schematized in (9), as argued by Ueyama (1998).

- (8) a. NP-NOM NP-ACC V b. NP-ACC NP-NOM V
- (9) NP-ACC NP-NOM V
 - (i) LF1: [NP-NOM[NP-ACC V]] (ii) LF2: [NP-ACC[NP-NOM V]]

For the sentence (10), for instance, two LF structures are possible as in (11). It is not possible to recognize which LF is the basis of the interpretation for sentences like (10), where the argument NPs refer to a specific entity, since their logical relations to the verb are the same.

- (10) [Sono-hon-o]_{obi} [kono-gakusei-ga]_{subi} yon-da. that-book-ACC this-student-NOM read-PST
- (11) (i) LF1: [kono-gakusei-NOM [sono-hon-ACC V]]
 - (ii) LF2: [sono-hon-ACC [kono-gakusei-NOM V]]

Ueyama (1998) shows that we can recognize on which LF is based the relevant interpretation by making use of bound variable reading (BVA), wide scope distributive reading (DR), and resumption (resumptive pronoun soitu 'that guy', soko 'that place'), each of which requires c-command relation to obtain, as illustrated in (12).

- (12) a. QP_1 must c-command NP-NOM for $BVA(QP_1, a_1)$ to obtain.
 - QP_1 -ACC [_{NP} ... a_1 ...]-NOM V
 - b. QP_1 must c-command QP_2 for $DR(QP_1>QP_2)$ to obtain.
 - (ii) QP₁-ACC QP₂-NOM V
 - c. QP₁ must c-command NP-NOM for *resumption* to be allowed.
 - (iii) QP₁-ACC NP-NOM soko-ACC V

Ueyama (1998) calls the object OP A-scrambled object when each of the interpretations obtains. We thus can force an OSV sentence to correspond to LF2 by embedding BVA, DR, and resumption in the sentence. (Please refer to Ueyama (1998) for more detailed discussion.)

The observation and detailed discussion provided in Kataoka (2006b: 61–98) show that OP₁ in (13a), (13b) and (13c), which are negative sentences corresponding to (12a), (12b) and (12c), cannot be in the scope of Neg (-nai) when the relevant interpretation is forced, arguing that the object NP-ACC in LF2 (A-scrambled object) cannot be in the Neg-domain at LF.⁷ The examples in (14)–(16) show the point.

- When $BVA(QP_1 \ soko_1)$ obtains (i.e., QP_1 -ACC necessarily c-commands NP-(13) a. NOM), QP₁-ACC cannot be in the scope of Neg.
 - QP_1 -ACC [NP . . . soko₁ . . .]-NOM V-nai
 - b. When $DR(QP_1>QP_2)$ obtains (i.e., QP_1 -ACC necessarily c-commands QP_2), QP₁-ACC cannot be in the scope of Neg.
 - (ii) QP₁-ACC QP₂-NOM V-nai

⁷ Some people may wonder that the dislocated object may be in the domain of Neg at some stage of its derivation under the derivational/movement analysis as in Saito (2003). This is not a problem given the assumptions under the analysis of Ueyama (1998) that I adopt here.

- c. When *resumption* is allowed (i.e., QP₁-ACC necessarily c-commands NP-NOM), QP₁-ACC cannot be in the scope of Neg.
 - (iii) QP₁-ACC NP-NOM soko-ACC V-nai
- (14) Sannin-izyô-no gakusei-o soitu-no sensei-ga three-or:more-GEN student-ACC that:guy-GEN teacher-NOM suisensi**-nak**-atta.

recommend-NEG-PST

With BVA (sannin-izyô-no gakusei, soitu),

- $^{ok}QP_{obi}$ >Neg: There are three or more students that his teacher did **not** recommend.
- (ii) *Neg> QP_{obi} : There are **not** three or more students that his teacher recommended.
- (15) Sannin-izyô-no gakusei-o gonin-no sensei-ga three-or:more-GEN student-ACC five-GEN teacher-NOM suisensi**-nak**-atta.

recommend-NEG-PST

With DR (sannin-izyô-no gakusei, gonin-no sensei),

- $^{ok}QP_{obi}>Neg$: There are three or more students that five teachers did **not** recommend.
- (ii) *Neg>QP_{obi}: There are **not** three or more students that five teachers recommended.
- (16) Sannin-izyô-no gakusei-o Yamada sensei-ga soitu-o three-or:more-GEN student-ACC Yamada-teacher-NOM that:guy-ACC suisensi**-nak**-atta.

recommend-NEG-PST

With resumption (sannin-izyô-no gakusei, soitu),

- ^{ok}QP_{obi}>Neg: There are three or more students that teacher Yamada did not recommend.
- (ii) *Neg> QP_{obj} : There are **not** three or more students that teacher Yamada recommended.

It is thus argued that there is a position outside Neg-domain, which makes it possible to test the validity of the Neg-c-command condition in (1) by examining the distribution of NSEs in that position.

2.2 NSEs outside the Neg-domain

The expressions used in (17)–(20) below are regarded as typical NSEs in Japanese. Although they all require a negative environment and cannot occur without negative marker *-nai*, they induce a different interpretation in terms of scale.

The one in (17) *Noun + Numeral one + classifier (N+one-cl)* establishes a pragmatic scale and induces universal negation.

(17) *N*+one-cl

- a. Gakusei-hito-ri gakkai-de situmon-o si-nak-atta.
 student-one-CLF conference-at question-ACC do-NEG-PST
 'All people, even students, did not raise a question at conferences, where students were most likely to raise a question.' (N+one-cl)
- b. *Gakusei-hito-ri gakkai-de situmon-o si-ta. student-one-CLF conference-at question-ACC do-PST

The one in (18) *rokuna 'good'* + *Noun* (*rokuna-N*) does not give rise to a scale reading or universal negation.

(18) rokuna-N

- a. Rokuna-gakusei-ga gakkai-de situmon-o si-nak-atta. good-student-NOM conference-at question-ACC do-NEG-PST 'No good students raised questions at conferences.'
- b. *Rokuna-gakusei-ga gakkai-de situmon-o si-ta. good-student-NOM conference-at question-ACC do-PST

The one in (19) dare-mo, 'indefinite' + -mo (universal particle)/hito-ri-mo 'one + classifier + -mo' (wh-mo, one-cl-mo) does not give rise to a scale reading, either, but induce universal negation.⁸

⁸ Some may wonder what the difference of interpretation between *N*+one-cl in (17a) and *wh-mo* and *one-cl-mo* in (19a) is. The example (17a) gives rise to a scale of different types of people, for instance, students, professors, researchers, and others, in which *students* occupies the polar point. The one (19a), on the other hand, does not induce such a scale of different people, but gives an assertion only about students, i.e., for all *x*, *x* is a student, and *x* did not raise a question at the conference. The difference comes from the existence of the suffix -mo, which has a universal force as argued in Kataoka (2007). See also Sawada (2007) for the discussion about a particle-like behavior of *one-cl*.

- (19) wh-mo, one-cl-mo
 - a. Gakusei-ga **dare-mo/hito-ri-mo** gakkai-de situmon-o student-NOM wh-MO/one-CLF-MO conference-at question-ACC si-**nak**-atta do-NEG-PST
 - 'No student raised a question at conferences.'
 - b. *Gakusei-ga dare-mo/hito-ri-mo gakkai-de situmon-o si-ta student-NOM wh-MO/one-CLF-MO conference-at question-ACC do-PST

The one in (20) XP-sika 'all but XP' does not induce a scale reading or universal negation.

- (20) XP-sika
 - a. Tarô-sika gakkai-de situmon-o si-**nak**-atta. Taro-all:but conference-at question-ACC do-NEG-PST 'Everyone but Taro did not raise a question at conferences.'
 - b. *Tarô-sika gakkai-de situmon-o si-ta. Taro-all:but conference-at question-ACC do-PST

Kataoka (2006a, 2006b) examined whether those NSEs can occur as A-scrambled object to test the validity of the Neg-c-command condition for the NSEs. It was argued that XP-sika and wh-mo/one-cl-mo can occur as A-scrambled object but N+one-cl and rokuna-N cannot. The point is illustrated below by the examples with resumption.

- (21)Tarô-sika Yamada-sensei-ga soitu-o suisensi-**nak**-atta. Taro-all:but Yamada-teacher-NOM that:guy-ACC recommend -NEG-PST ok with resumption 'Everyone but Taro, Mr. Yamada did not recommend him.'
- (22) Gakusei-o dare-mo/hito-ri-mo Yamada-sensei-ga soitu-o student-ACCwh-MO/one-CLF-MO Yamada-teacher-NOM that:guy-ACC suisensi-**nak**-atta. recommend -NEG-PST ok with resumption 'No student, teacher Yamada recommended him.'
- (23) *Gakusei-hito-ri Yamada-sensei-ga soitu-o student-one-CLF Yamada-teacher-NOM that:guy-ACC suisensi-nak-atta. recommend -NEG-PST unacceptable with resumption

(24) *Rokuna-gakusei-o Yamada-sensei-ga soitu-o good-student-ACC Yamada-teacher-NOM that:guy-ACC suisensi-**nak**-atta. recommend -NEG-PST unacceptable with resumption

The observation that N+one-cl and rokuna-N cannot be interpreted as A-scrambled object shows that they cannot be outside the Neg-domain i.e., they must be c-commanded by Neg at LF. On the other hand, XP-sika and wh-mo/one-cl-mo can be in that position, which means they are outside the Neg-domain at LF.

As the example (19) shows, wh-mo/one-cl-mo gives rise to universal negation but without inducing any scale (see footnote 8). Since they are outside the Neg-domain, they themselves should have universal force in order to give rise to universal negation, according to De Morgan's laws (cf. Watanabe 2004). XP-sika does not induce a scale reading, either, as illustrated by (20). Since they do not induce scalebased universal negation or obey the c-command condition, they cannot be considered as NPIs. Kataoka (2016) proposed that they play the role of Subject and take the negative Predicate as their sister element constituting Predication.9

(25) a. Gakusei-ga dare-mo/hito-ri-mo gakkai-de situmon-o student-NOM wh-MO/one-CLF-MO conference-at question-ACC si-**nai**

do-NEG

'No student raises a question at conferences.' (wh-mo/one-cl-mo: Subject of Predication, with universal negation, but without scale)

b. *Tarô-sika* gakkai-de situmon-o si-**nai**. Taro-all:but conference-at question-ACC do-NEG 'Everyone but Taro does not raise a question at conferences.' (XP-sika: Subject of Predication, without universal negation or scale)

N+one-cl and rokuna-N cannot occur as A-scrambled object, as observed in (23) and (24) above, which means they cannot be interpreted outside the Neg-domain. N+one-cl induces scale-based universal negation as in (17), being c-commanded by Neg at LF. It thus should be treated as a *pure* NPI.

⁹ Predication is supposed to be a motivation of structure-building, characteristic for Japanese, which constructs a structural relation between NP and Verb without any agreement or argument-verb relation, as originally suggested by Fukui (1986).

(26) Gakusei-hito-ri gakkai-de situmon-o si-nai.

Student-one-CLF conference-at question-ACC do-NEG

'All people, even students, do not raise a question at conferences.'

(N+one-cl: pure NPI, with scale-based universal negation)

Rokuna-N, on the other hand, does not induce any scale or universal negation. Although it should be interpreted in the Neg-domain, it cannot be taken as a *pure* NPI. As the interpretation in (18) shows, the expression *rokuna* 'good' must be *directly negated*, as the focus of negation. It is an item that should be the focus of negation, and the focus of negation must be in the c-command domain of Neg, as argued by Takubo (1985). *Rokuna-N* thus must be in the c-command domain of Neg to be interpreted as its focus.

(27) **Rokuna-gakusei-**ga gakkai-de situmon-o si-**nai**.

Good-student-NOM conference-at question-ACC do-NEG
'No good students raise a question at conferences.'

(rokuna-N: focus of Neg, without scale-based universal negation)

Kataoka (2016) thus argued that NSEs in Japanese must be classified into four types as illustrated in (28) based on the factors of Neg-c-command and scale-based universal negation,¹⁰ which claims that the analyses by Klima (1964) and Ladusaw (1979) cannot be always applied to NSEs in Japanese.

(28) NSEs in Japanese

- (i) NSEs which require Neg-c-command at LF.
 - a. with scale-based universal negation (pure NPIs) $\rightarrow N+one-cl$
 - b. without scale-based universal negation (focus of negation)

→ rokuna-N

- (ii) NSEs which do not require Neg-c-command at LF.
 - a. with universal negation, but without scale \rightarrow *wh-mo/one-cl-mo*
 - b. without universal negation or scale → XP-sika
 (to be Subject in Predication with its negative Predicate)

(iii)		scale-based UN -Yes	scale-based UN – No
	Neg-c-command -Yes	pure NPI (N+one-cl)	focus of negation (rokuna-N)
	Neg-c-command -No		Subject in Predication
			(wh-mo/one-cl-mo, XP-sika)

UN: universal negation

¹⁰ Kato (1985) and others have proposed the analysis of Japanese NSEs in the same line as Klima (1964).

3 NSEs in Spanish

In this section, we show that the same classification as obtained for Japanese NSEs can be applied to NSEs in Spanish as well and that there are some NSEs outside the Neg-domain.

3.1 Pre-verbal position and Spanish NSEs

In Spanish sentences, word order is not as fixed as it is in English; subjects can be either in pre-verbal position or in post-verbal position as seen below. These sentences are logically equivalent to each other although they are uttered in different contexts for a different use.

Non-subject elements (objects and adjunct phrases), as well as subjects, can occur in preverbal position.

(30) a. Juan lo vimos en la fiesta. CL(DO) saw at the party 'Juan, we saw him at the party.' (Zagona (2002: 225, (53a))) b. Todos los días compra Juan el diario. every day buys Ţ. the paper 'Juan buys the paper every day.' (Zagona (2002: 213, (23a)))

It thus seems that any element can occur in pre-verbal position in Spanish. However, if we look at negation-related phenomena, we will see that this is not the case; some NSEs can occur in pre-verbal position but others cannot.

Negative indefinites (so-called *n-words*), whether subject or object, require sentential-negative marker no when it occurs in post-verbal position as in (31a) and (31b).

(31) a. *(No) ha venido **nadie**. (not) have-3SG come anvbody 'Nobody has come.' (Bosque (1980: 21, (10a)) b. *(**No**) dijo nada. (not) said-3SG anything 'He said nothing.'

N-words can be in pre-verbal position, whether being subject or object, but only without no as in (32a) and (33). If it occurs with no in pre-verbal position, it is not acceptable with the intended interpretation 'Nobody came,' as in (32b).

(32) a. *Nadie* vino. nobody came 'Nobody came.' (Bosque (1980: 29, (2)) b. *Nadie no vino. nobody not came (Zagona 2002: 198, (63b))

(33) *Nada* dijo. nothing said-3SG 'He said nothing.' (NGLE: 48.3k)

Some adverbial phrases behave the same way as in (34). In pre-verbal position they all induce universal negation without no, which indicates that they give rise to sentential negation by themselves.

(34) a. **No** he estado aquí en {mi/la} vida. not have-1SG been here in my/the life 'I have never been here in my life.' (Bosque (1980: 34, (27b))

b. **En {mi/la vida}** he estado aguí. in mv/the life have-1SG been here 'I have never been here in my life.' (Bosque (1980: 34, (28b))

Since the above expressions all induce universal negation by themselves, it seems that they cannot be treated as NPIs.

On the other hand, the expression in (35) cannot occur in pre-verbal position even without no and does not induce sentential negative force by itself.

- (35) a. No movió un dedo por él. not moved-3SG a finger for him 'She/He did nothing for him.'
 - b. *Un dedo movió por él. (NGLE: 48.7g)
 - *Un dedo no (lo) movió por él. c.

The one in (36) can occur in pre-verbal position but only with no, thus it cannot induce negative force by itself.

- (36) a. No ha perdido todo aún. se not CLI-3SG have-3SG all yet 'He has not lost all yet.'
 - b. Aún *(no) se ha perdido todo. 'He has not lost all yet.' (Bosque (1980: 21, (11b)))

The observations above show that Spanish NSEs cannot be treated uniformly and the pre-verbal position is special for NSEs. In this section we will argue that the distributional differences above are due to their syntactic conditions with respect to Neg, and that some NSEs are required to be outside of the Neg-domain because of their interpretational role.

Spanish shares with Japanese non-existence of the subject-non-subject asymmetry with regard to negation phenomena unlike English (cf. (2)): Subject NPs as well as non-subject NPs can be in the scope of Neg and NSEs can occur as subject as seen in (31a). Given the assumption that the subject occupies the Spec position of IP, the syntactic structure of negative sentences is generally assumed as in (37) below, where NegP is higher than the IP structure.

```
(37)
          [_{\text{NegP}} [_{\text{Neg'}} [_{\text{Neg}} + \text{NEG}] [_{\text{IP}} \dots ]]]
           (Laka 1990; Zagona (2002: 4.5))
```

That means that it is not possible to test the validity of the Neg-c-command condition in (1) for Spanish NSEs, either. However Spanish also has a position that is outside of the Neg-domain. As discussed in Zagona (2002: 5.4), some element a can occupy the position higher than NegP, which is assumed to be outside the Neg-domain.

(38)
$$\left[\alpha\left[NegP\left[Neg'\left[Neg+NEG\right]\left[IP...\right]\right]\right]\right]$$

We can make use of that position to test the validity of the syntactic condition on NSEs.

3.2 Syntactic position outside the Neg-domain

Zagona (2002: 5.4) raises three possible analyses for the pre-verbal element, as indicated in (39), (40), and (41).

- Movement to the specifier of IP motivated by N-feature: (39)[IP SUBJECT_i [INFL V_i + INFL] [VP t_i [V' t_i OBJECT]] (Zagona (2002: 207, (8c))
- (40) Topic Movement to the specifier of IP motivated by the Topic feature: $\left[_{IP} \ \alpha_{j\text{-topic}} \left[_{I'} \left[_{VP} \ t_i \left[_{V'} \ldots t_i \ldots \right] \right] \right] \right]$
- (41) Topic as a clausal adjunct $[_{\text{IP}} \ \alpha_{\text{j-topic}} \, [_{\text{IP}} \ [_{\text{INFL}} \ [_{\text{VP}} \, t_i \, [_{\text{V'}} \ldots t_i \ldots] \,] \,] \,] \,]$ (Zagona (2002: 5.5.2)

As observed in (29), repeated here, whether some element occupies the pre-verbal position or not is optional. Furthermore, as observed in (30), repeated here, a non-subject or non-argument element can occupy the position.

bought (V-O-S) c. Compró un coche María bought a car M. (Zagona (2002: 202, (1a), (1b), (1c)))

(30) a. *Iuan lo* vimos en la fiesta. CL(DO) saw at the party 'Juan, we saw him at the party.' (Zagona (2002: 225, (53a)))

M.

a car

b. Todos los días compra Juan el diario.
 every day buys J. the paper
 'Juan buys the paper every day.'
 (Zagona (2002: 213, (23a)))

We therefore adopt the *optional movement* analysis as a *topic*, rather than *obligatory movement motivated by some feature*, in line with Zagona (2002) as illustrated in (42), though more discussion will be needed regarding whether a pre-verbal element is necessarily a topic or not.

```
(42) a. Juan lo vimos en la fiesta.

J. CL(DO) saw at the party

'Juan, we saw him at the party.'

(Zagona (2002: 225, (53a)))

b. [

[

[

[

]

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]

[

]
```

As a topic, the pre-verbal element is usually assumed to be outside the Neg-domain (or NegP) at LF. The structure of the negative sentences with a topic is assumed to be as below.

```
    (43) a. Juan no cantó eso.
    J. not sang that
    (Zagona (2002: 5.4.3, (34b))
    b. [ α [<sub>NegP</sub> no [<sub>Neg'</sub> [<sub>Neg</sub> +NEG] [<sub>IP</sub> . . . . ] ] ] ]
    (Laka 1990, cf. Zagona (2002: 4.5)
```

As seen in 2.1, we can test the validity of the analysis in (43) through the observation of scope interpretation. It is predicted that a QP, if it occupies the position outside the NegP at LF, cannot be in the scope of Neg, whether it is a topic or not.

In (44), where the QP *más de cinco estudiantes* 'more than five students' is in the c-command domain of Neg, Neg can takes scope over the QP ($^{ok}Neg > QP$), while the QP cannot take scope over Neg ($^*QP > Neg$). On the other hand, in (45), where the QP is in the pre-verbal position, the interpretation Neg > QP is impossible as predicted.¹¹

¹¹ Judgments for the Spanish sentences in (44) and (45) are due to Omar Beas (February 2013).

- (44) La prof. Torrego no [invitó a más de cinco estudiantes.]

 Prof. T. not invite-3SG-PST ACC more than five students
 - (i) okNeg>more than five: The students whom Torrego invited are **not** more than five.
 - (ii) *?more than five>Neg: The students whom Torrego did **not** invite are more than five.
- (45) A más de cinco estudiantes no [invitó la prof. Torrego.]

 ACC more than five students not invite-3SG-PST Prof. T.
 - (i) *?Neg> more than five: The students whom Torrego invited are **not** more than five.
 - (ii) ok more than five >Neg: The students whom Torrego did **not** invite are more than five.

The second test makes use of *contrastive focus*. The pre-verbal element, if it is outside the Neg-domain at LF, cannot be interpreted with *contrastive focus* of negation (i.e., an interpretation of 'it is NOT α but β '), assuming that the Neg-focus must be in the domain of negation at LF (Takubo 1985). As predicted, *tu mamá* in (46a) cannot be taken as the focus of negation, but can in (46b).

- (46) a. Tu mamá **no** llamó ayer, sino tu hermana.
 your mother not call-3SG-PST yesterday, but your sister
 *with contrastive focus on 'tu mamá'
 - b. No llamó tu mamá ayer, sino tu hermana.
 not call-3SG-PST your mother yesterday, but your sister
 'Not your mother but your sister called yesterday.'
 (NGLE: 48.4a)

It should be noted that adjunct phrases can be interpreted in the scope of Neg even when they occur in the pre-verbal position.

(47) **Más claramente no** puedo expresarlo.
more clearly not can-1SG-PRS express-INF-it

ok no>adverb: I cannot express it more clearly.

(NGLE: 48.4d)

- (48) **Por esa razón no** me quedé. for that reason not CLI-1SG stay-1SG-PST
 - (i) ok *adverb>no*: For that reason, I did not stay.
 - (ii) ok no>adverb: It was not for that reason that I stayed. (NGLE: 48.4f)

Based on the observation above, we assume the preverbal position to be outside the Neg-domain at LF, whether it is a topic or not. We assume that elements in the pre-verbal position are derived by adjunction (optional movement), and that argument NPs cannot be reconstructed while adjunct NPs can, although more detailed examination is needed.

Now we can test the validity of the c-command condition in (1) for Spanish, at least for NSEs in argument position. As will be observed, not all NSEs must be c-commanded by Neg at LF. I will argue that not all NSEs should be treated as NPIs as done by Bosque (1980: 1), and that not all NSEs can be treated as *Negative Concord Items* (NCI) as done by de Swart (2010).¹²

3.3 NSEs which do not require Neg-c-command at LF

3.3.1 Negative Concord Items in Spanish: Universal negation without scale

As observed in 3.1, *n-words* can occur in the pre-verbal position but without negative marker *no* as observed in (32), (33), repeated here below.

- (32) a. *Nadie* vino.
 nobody came
 'Nobody came.'
 (Bosque (1980: 29, (2))
 b. **Nadie no* vino.
 - b. *Nadie no vino. nobody not came (Zagona 2002: 198, (63b))
- (33) **Nada** dijo. nothing said-3SG 'He said nothing.' (NGLE: 48.3k)

¹² Aranovich (2007) provides a semantic discussion of NSEs in Spanish.

Since they induce universal negation by themselves, they cannot be treated as NPIs. I assume *n-words* to be *Negative Concord Items (NCIs)* adopting the analysis by Zagona (2002), which follows Haegeman and Zanuttini (1996).

Following Zagona (2002), I assume the structure (49), where the Neg-head is an abstract item with the feature [+NEG], and, under the Spec-head agreement system, one and only one element must move to the Spec of NegP to check the NEG feature to give rise to sentential negation (Negative Concord) as in (50). The negative marker no is assumed to be an NCI, too.

```
(49) a. \left[\alpha \left[_{\text{NegP}} \left[_{\text{Neg'}} \left[_{\text{Neg}} + \text{NEG} \right] \left[_{\text{IP}} \dots \right] \right] \right]\right]
                     (Laka 1990; Zagona (2002: 4.5))
            b. [\alpha [_{NegP} NCI_1 [_{Neg'} [_{Neg} + NEG] [_{IP} ....]]]]
```

(50) Negative Concord: some element with NEG feature must be in the specifier of NegP

```
a. [_{NegP} no [_{Neg'} [+NEG] [_{IP} \dots nadie \dots]]]]
b. [_{NegP} nadie [_{Neg'} [+NEG] [_{IP} ....]]]
```

Given the general assumption that the Spec-head relation is one-to-one, the important consequence under the analysis is that only one NCI is allowed in the pre-verbal position. The examples in (51) show this is as predicted.

```
(51) a. *Nada nadie
                           quiere.
         nothing nobody like
         (Bosque 1980: 48, (82a))
         (Cf. Nadie quiere nada. 'Nobody likes anything.')
     b. *Nadie no vino.
         nobody not came
         (Zagona 2002: 198, (63b))
         (Cf. Nadie vino./ No vino nadie. 'Nobody came.')
     c. *Nadie nada
                           dijo.
         nobody nothing said
         (Zagona 2002: 198, (63c))
         (Cf. Nada dijo nadie. 'Nobody said anything.')
```

As seen in 3.1, there also are some NSEs that can occur in the pre-verbal position but without negative marker no as in (52)–(55).

- (52) a. Tal actitud **no** se puede tolerar **en modo alguno**. such activity not CLI can-3SG-PRS stand-INF in way any 'Such behavior, nobody can bear it in any way.'

 (Bosque (1980: 34, (27a))
 - b. *En modo alguno* se puede tolerar tal actitud. in way any CLI can-3SG-PST stand-INF such activity 'Such behavior, nobody can bear it in any way.'

 (Bosque (1980: 34, (28a)))
- (53) a. **No** he estado aquí en {mi/la} vida.
 not have-1SG been here in my/the life
 'I have never been here in my life.'
 (Bosque (1980: 34, (27b)))
 - b. *En {mi/la vida}* he estado aquí. in my/the life have-1SG been here 'I have never been here in my life.' (Bosque (1980: 34, (28b)))
- (54) a. **No** lo he visto **en todo el día.**not him have-1SG seen in all the day
 'All day long, I have not seen him.'
 (Bosque (1980: 34, (27c)))
 - b. En todo el día lo he visto. in all the day him have-1SG seen 'All day long, I have not seen him. (Bosque (1980: 34, (28c)))
- (55) a. **No** llamó **tampoco** Laura. not call-3SG-PST either Laura 'Laura did not called. either.'
 - b. *Tampoco Laura llamó*.

 neither Laura call-3SG-PST

 'Laura did not called, either.'

 (NGLE: 48.8c)

We propose that all those NSEs are NCIs too, since they induce universal negation, even in the pre-verbal position, without *no*. (Cf. Bosque (1980), which analyzes NSEs that can be in the pre-verbal-position without *no* as topicalized elements.)

3.3.2 Items without non-scale-based universal negation

The expressions in (56a), (56b), (56c) are also generally regarded as NSEs. They do not induce a scale reading or universal negation, but they need to occur with sentential negative marker no.

(56) a. *(No) iré hasta las tres. (not) go-1SG:FUT till three 'I will not go until three o'clock.' (Bosque (1980: 36, (37))

> b. *(**No**) se ha perdido todo aún. (not) CLI has lost all vet 'He has not lost all yet.'

c. *(No) ha llegado todavía (not) has arrived yet 'He has not arrived yet.' (NGLE 2009: 48.8n)

They can be in pre-verbal position but necessarily require the negative marker no as in (57); they are not acceptable if they occur without no as in (58).

(57) a. **Hasta las tres no** iré.

> till three not go-1SG:FUT 'I will not go until three o'clock.'

- b. *Aún* no se ha perdido todo. vet (not) CLI has lost all 'He has not lost all yet.'
- c. Todavía no ha llegado. not has arrived 'He has not arrived yet.'
- a. *Hasta las tres iré. (58)(Bosque (1980: 35, (37)) b. *Aún se ha perdido todo. (Bosque (1980: 21, (11b)) c. *Todavía ha llegado. (NGLE 2009: 48.8ñ)

They thus are not NCIs; if they were NCIs, they should be felicitous in that position being licensed through Negative Concord like *n-words* and those in (52)–(55) in 3.3.1.

If we assume a structure for negative sentences as in (43b) in 3.1, their structural position must be the one that α occupies in (43b).

```
(43) b. [ \alpha [_{NegP} \quad no [_{Neg'} [_{Neg} + NEG] [_{IP} \dots ]]]]
```

Notice that they can occur in affirmative sentences if the predicate expresses a continuous event

- (59) a. Estuvimos en Madrid hasta el domingo. were:1PL in Madrid till Sunday 'We stayed in Madrid till Sunday.'
 - b. Aún/todavía viven en Madrid. still live-3PL-PRS in Madrid 'They still live in Madrid.'

It should be noted that those verbs in (57) above all express a non-continuous event. As is pointed out by Bosque (1980: 24), negation makes non-continuous predicates continuous. If negation is required to make the predicate continuous in (57) above, it is possible that they may not be NSEs inherently but items which require continuous predicates.

3.4 NSEs which require Neg-c-command at LF

There are, of course, *pure* NPIs in Spanish. We can identify them by making reference to the two factors, Neg-c-command and scale-based universal negation. There also are some NSEs that must be c-commanded by Neg but do not induce any scale reading.

3.4.1 Pure NPIs in Spanish

The expressions in (60) require negation but do not give interpretations with literal meanings. The role they take is to indicate the polar point on the relevant pragmatic scale and induce a scale reading. That is why they are called *minimizer*; they give rise to scale-based universal negation with Neg.

(60) a. *(No) tengo la menor idea de qué se trata.

(not) have-1SG the least idea of what CLI treat-3SG:PRS

'I don't have the least idea of what is treated. (I have no idea.)'

(Bosque (1980: 22, (16a)))

- b. *(No) se permite el más mínimo error. (not) CLI permit-3SG:PRS the least idea 'They cannot allow the smallest error. (They can allow no error.)' (Bosque (1980: 22, (16c)))
- c. *(No) llamaste por teléfono siquiera. (not) call-2SG:PST by phone even 'You did not even call by phone. (You did nothing.)' (Bosque (1980: 22, (18d)))
- d. *(No) he podido **pegar** (un) oio. (not) have-1SG could close-INF an eve 'I have not been able to sleep at all.' (Bosque (1980: 23, (21a)))
- e. *(**No**) has movido un dedo por él. (not) have-2SG moved a finger for him. 'You have not lifted a finger for him (You have done nothing.)' (Bosque (1980: 23, (21c)))

It is predicted that, as pure NPIs, they cannot occur in the pre-verbal position, which is assumed to be outside the Neg-domain. As observed below, they indeed cannot, which is pointed out in NGLE (2009: 48.7d-g). They cannot be NCIs either, since they cannot occupy the Spec position of the NegP for Negative Concord.

- (61) a. **No** movió un dedo por él. (not) move-3SG:PST a finger 'He/She did not lift a finger for him.'
 - b. *Un dedo movió por él. move-3SG:PST a finger for him (NGLE: 48.7d-g)
- (62)a. *El más mínimo error se permite. the least CLI permit-3SG error
 - b. *Siquiera llamaste por teléfono. call-2SG:PST by phone even
 - c. *Un ojo he podido pegar. have-1SG could close-INF an eve

The expression alguno 'some' is a quantifier with existential force, and occupies the pre-nominal position.

(63) Hay algunos libros en la mesa. there:are some books on the table.'

When it occurs in the post-nominal position, it requires Neg and gives rise to universal negation. Though it is not clear whether it induces a scale resulting in scale-based universal negation, it should be treated an NPI like *any*- in English. It must be c-commanded by Neg and cannot be in the pre-verbal position without negative marker *no*, which means it is not an NCI.

- (64) a. El enfermo *(no) mostraba alivio alguno.
 the patient not show-3SG:PST recovery any
 'The patient was not recovering at all.'
 - b. *Alivio alguno mostraba el enfermo. (NGLE: 48.3y)

3.4.2 Items without scale-based universal negation: Focus of negation

The expressions in (65) are regarded as NSEs since they require Neg. They do not induce a scale or universal negation, but they must be directly negated as each of the interpretations indicates.

- (65) a. *(No) vale gran cosa.
 (not) have:value big thing
 'It is not a great thing.'
 (Bosque (1980: 22, (14a)))
 - b. *(No) hace más que lo que quiere.

 (not) does more than the what like-3SG

 'He does not do more than what he likes.'

 (Bosque (1980: 22, (18c)))
 - c. *(No) he visto cosa igual.

 (not) have-1SG seen thing same
 'I have never seen such things.'

 (Bosque (1980: 23, (20a)))

d. *(No) lo creo tan malo. (not) him think-1SG:PRS so bad 'I don't think him to be so bad.' (Bosque (1980: 23, (20d)))

They cannot be regarded as pure NPIs since they do not induce a scale reading. If they must be interpreted as the focus of negation like rokuna-N 'good N' in Japanese, they must be in the Neg-domain, since, in order for an NP to be the focus of negation, it must be in the Neg-domain.

If they must be c-commanded by Neg to be the focus of negation, it is predicted that they cannot occur in the pre-verbal position. As predicted, they cannot, as was pointed out in NGLE (2009: 48.7g).

(66) a. *Gran cosa vale.

> big thing have:value

b. *Cosa igual he visto.

thing same have-1SG seen

The observation shows that they are not NCIs either, since they cannot induce negation by themselves in the pre-verbal position.

We have thus given an account for the distributions illustrated in 3.2 above by considering the two factors of Neg-c-command and scale-based universal negation. Spanish also has pure NPIs, but not all NSEs must be c-commanded by Neg, and not all NSEs induce scale-based universal negation. Spanish NSEs should be distinguished by these two factors, with each structural position being as indicated in (68).

(67) NSEs in Spanish

- (i) NSEs which require Neg-c-command at LF.
 - a. with scale-based universal negation (pure NPIs)
 - → la menor idea 'the least idea', mover un dedo 'lift a finger'
 - b. without scale-based universal negation (focus of negation)
 - → (ser)gran cosa 'be a great thing'
- (ii) NSEs which do not require Neg-c-command at LF.
 - a. with universal negation, but without scale (NCI)
 - → nadie 'nobody', en la vida 'in the life'
 - b. without universal negation or scale
 - → hasta 'until', aún 'yet'

(iii)		scale-based UN -Yes	scale-based UN - No
	Neg-c-command -Yes	pure NPI	focus of negation
		(la menor idea,	((ser)gran cosa)
		mover un dedo)	
	Neg-c-command -No		NCI ¹³ , (hasta, aún)

UN: universal negation

- (68) a. NPI: [[$_{NegP}$ no [$_{Neg'}$ [$_{Neg}$ +NEG] [$_{IP}$... α ...]]]] \rightarrow in the Neg-domain
 - b. Neg-focus: $[[NegP no [Neg' Neg + NEG] [Neg + NEG]]] \rightarrow in the Neg-domain$
 - c. NCI: $[[NegP \alpha [Neg' Neg' + NEG] [P \dots]]]] \rightarrow Spec-head relation with Neg$
 - d. Items outside the Neg-domain: [α [NegP no [Neg' [Neg +NEG] [IP]]]]

4 Concluding remarks: Consequences and further consideration/issues

We have shown that there exist in Spanish, as well as in Japanese, some NSEs that are outside the Neg-domain, and that these NSEs have a semantic role other than to induce scale-based universal negation, which is the semantic role of NPIs as originally identified by Fauconnier (1975) and Ladusaw (1979). As already argued in Kataoka (2006a, 2006b, 2007, 2010), not all NSEs must be in the Neg-domain at LF and not all NSEs have the property of negative polarity in the terms of Fauconnier (1975) and Ladusaw (1979). Only those that induce scale-based universal negation are to be regarded as *pure* NPIs. The *pure* NPIs must be c-commanded by Neg at LF so that the scale-based universal negation can be induced.

It should be admitted that more predictions should be made and checked, especially for Spanish, to test the validity of the syntactic conditions on NSEs and investigate their structural properties. It nonetheless should be possible for us to capture the negation phenomena under universal principles which reflect the properties

¹³ In terms of Neg-c-command and scale-based universal negation, NCIs are classified in the same group as *wh-mo* in Japanese. However NCIs in Spanish and *wh-mo* in Japanese should be regarded as different items since NCIs have a negative force by themselves through the syntactic process of Negative Concord so that induce universal negation by themselves, while *wh-mo* cannot; they only have universal force and always require Neg to give rise to universal negation. For the relevant discussion, please refer to Watanabe (2004), which analyses *wh-mo* as NCI, Giannakidou (1998) and also Kataoka (2007).

of Universal Grammar, combined with language-specific properties, insofar as the necessary syntactic conditions on NSEs are stated in terms of c-command.

I would like to add some comments regarding interesting observations for further considerations. We have discussed the syntactic differences of Spanish NSEs making reference to their distributions in the pre-verbal position. As seen below, they also show different behavior in some other contexts.

As discussed in Ladusaw (1979) based on the English materials, there are some elements, other than sentential negative marker, that provide a downward entailing environment, and NPIs can be felicitous in that environment without a negative marker. Spanish NPIs can occur, too, with those expressions which induce a downward entailing context. Some of them are modal expressions like the followings.

- (69) **Solo** él movería un dedo por ti. only he would:move:3SG a finger for you (NGLE: 48.6k)
- (70) **Si** hubiera posibilidad alguna, there: would: be possibility any, ... (NGLE: 48.6e)
- (71) **Si** tuvieras una pizca de vergüenza, would:have-2SG a piece of shame (NGLE: 48.6e)
- (72) Ella **prefería** que se muriera a mover un dedo por ayudarlo. she prefer:3SG-PST that CLI would:die to lift a finger to help him (NGLE: 48.6r)
- movido un dedo por ella. (73) **Me sorprende** mucho que haya I:am:surprised much that would:have-3SG lifted a finger for her (NGLE: 48.9f)

Solo 'only', si 'if' and the emotional expressions above are regarded as an element which induces downward entailing environment. NPIs can be felicitous in all the examples. On the other hand, n-words, which are NCIs, cannot occur in the same context, nor can the NSEs that are outside the Neg-domain, as seen below.

(74) ***Solo** él haría nada por ti. only he would:do-3SG nothing for you (NGLE: 48.6k)

- (75) *Si dijera nada,

 if would:say-3SG nothing
 (NGLE: 48.6e)
- (76) *Demasiado pronto para que llegue todavía. too:much early for that arrive-SG-SBJV yet (NGLE: 48.8ñ)

Pure NPIs can occur if a downward entailing environment is provided by some element even without a negative marker, but NCIs and NSEs that are outside the Neg-domain are not felicitous in that environment.

It should be noted that Japanese NSEs in general require a negative predicate with a negative marker; even *pure* NPIs cannot occur in such negative environment involving downward entailment.¹⁴

- (77) a. **Tarô-dake-ga* vubi ippon ugo-kasu. Taro-only-NOM finger one-CLF move b. **Tarô-dake-ga* rokuna-koto-o suru. Taro-only-NOM good-thing-ACC do c. *Tarô-**dake**-ga nani-mo suru. Taro-only-NOM wh-mo do d. *Tarô-**dake**-ga ringo-sika teberu. Taro-only-NOM apples-all:but eat
- *Mosi Tarô-ga (78)yubi ippon ugokasu-nara, . . . if Taro- NOM finger one-CLF move-COND b. *Mosi Tarô-ga rokuna-koto-o suru-nara, . . . if Taro- NOM good-thing-ACC do-COND *Mosi Tarô-ga nani-mo suru-nara, . . . if Taro- NOM wh-mo do-COND d. *Mosi Tarô-ga ringo-sika teberu-nara, . . . if Taro- NOM apples-all:but eat-COND

¹⁴ Yoshimura (2000) and Watanabe (2004) provide discussions about downward entailing expressions in Japanese other than negative marker *-nai* and point out similar observations.

(79)	a.	*Tarô-ga	yubi ippon	ugokasu -nante	odoroki-da.
		Taro- NOM	finger one-CLF	move-COMP	surprise-COP
	b.	*Tarô-ga	rokuna-koto -o	suru- nante	odoroki-da.
		Taro- NOM	good-thing-ACC	do-COMP	surprise-COP
	C	*Tarô-ga	nani-mo	suru- nante	odoroki-da.
	C.	Turo-ga	nani-mo	sur u-nance	ouoroki-uu.
	C.	Taro- NOM	wh-mo	do-COMP	surprise-COP
		_			
		Taro- NOM * <i>Tarô-ga</i>	wh-mo	do-COMP	surprise-COP

As we discussed in 2.2, the expressions wh-mo/one-cl-mo and XP-sika do not need to be in the Neg-domain (Neg-scope) but require a negative predicate as its scope. It is thus predicted that they cannot be felicitous in such environments. It is also reasonable that the item rokuna-N cannot occur in the environments (77)–(79), since it is not a pure NPI. However, it is problematic that even a pure NPI N+one-cl like yubi ip-pon cannot occur in those environments. It may be possible that the properties of Neg and its scope as well as the properties of pure NPI may be different in the two languages.

Though we need further research, we would like to suggest that, as discussed in Kataoka (2016), Spanish is a Neg-scope language, where Neg is a functional category and the Neg-domain (Neg-scope) plays an important role in its Neg-related phenomena, such as Negative Concord, for instance. It can be said that most of the NSEs are sensitive to being in Neg-scope, and that the Neg-scope can be established not only based on the Neg-domain but also by downward entailing contexts. On the other hand, Japanese can be said to be a negative-predicate language, where the negative marker -nai is not a functional category Neg, but, as a kind of suffix, part of predicate. As mentioned in Footnote 9, the predicate itself can form Predication with a Subject (Subject-Predicate) in Japanese. There are thus NSEs that, as Subjects, need to take Neg-predicate as their domain (i.e., as their sister) rather than being in the Neg-domain; wh-mo in Japanese requires negative predicate as its scope (as its sister), but not feature agreement, while NCIs (n-words) in Spanish require feature agreement in the Spec of NegP so that the downward-entailing context like (74) and (75) are not sufficient for them, though both wh-mo and NCIs are outside the Neg-domain to induce universal negation.

Though there are many interesting phenomena involving negation and many problems to be solved, we leave those issues open for future research.

References

- Aranovich, Raul. 2007. Negative polarity and scalar semantics in Spanish. Lingvisticae Investigationes 30. 181-216.
- Bosque, Ignacio. 1980. Sobre la Negación. Madrid: Ediciones Cátedra, S. A.
- Chung, Daeho & Hong-Keun Park. 1998. NPIs outside of negation scope. In Ho-min Sohn and John Haig (eds.), Japanese/Korean Linguistics 6, 415–435, Stanford: CSLI Publications.
- de Swart, Henriëtte. 2010. Expression and Interpretation of Negation: An OT Typology. Dordrecht/ Heidelberg/London, New York: Springer.
- Giannakidou, Anastasia. 1998. Polarity Sensitivity as (Non)Veridical Dependency. Amsterdam: John Benjamins.
- Giannakidou, Anastasia. 2011. Positive polarity items and negative polarity items: Variation, licensing, and compositionality. In Claudia Maienborn, Klaus von Heusinger, & Paul Portner (eds.), Semantics: An International Handbook of Natural Language Meaning (second edition), 1660–1712. Berlin/Boston: De Gruyter Mouton.
- Fauconnier, Gilles. 1975. Pragmatic scales and logical structure. Linguistic Inquiry 6(3). 353–375.
- Fukui, Naoki. 1986. A theory of category projection and its applications. Cambridge, MA: Massachusetts Institute of Technology dissertation.
- Haegeman, Liliane & Rafaela Zanuttini. 1996. Negative concord in West Flemish. In Adriana Belletti & Luigi Rizzi (eds.), Parameters and Functional Heads, 117-179. New York/Oxford: Oxford University
- Kataoka, Kiyoko. 2006a. 'Neq-sensitive' elements, Neq-c-command, and scrambling in Japanese. Japanese/Korean Linguistics 14. 221–233.
- Kataoka, Kiyoko. 2006b. Nihongo Hiteibun-no Koozoo: Kakimaze-bun-to Hitei Ko'oo Hyoogen [The syntactic structure of Japanese negative sentences: Scrambling construction and negationsensitive elements]. Tokyo: Kurosio Publishers.
- Kataoka, Kiyoko. 2007. Neg-o c-toogyo-suru huteigo+mo [Wh-mo outside the Neg-c-command domain]. Gengo Kenkyu 131. 77-113.
- Kataoka, Kiyoko. 2009. N-hitori-to N-ga-hitori-mo [N-one-classifier and N-cm(case-marker)-one-classifier-mo]. In KLS 29, Proceedings of the Thirty-third Annual Meeting (June 7–8, 2008), 12–22.
- Kataoka, Kiyoko. 2010. Hitei kyokusei-to toogoteki jooken [Negative polarity and its syntactic condition]. In Yasuhiko Kato, Akiko Yoshimura & Ikumi Imani (eds.), Hitei-to Gengoriron [Negation and linguistic theory], 118-140. Tokyo: Kaitakusha.
- Kataoka, Kiyoko. 2016. Hitei-kanren genshoo-kara mita gengo-kan hen'i hitei sayooiki-to hitei jutsubu [Language variation based on the negation-related phenomena: Neg-scope and Neg-predicate]. In Kiyoko Kataoka & Hiroki Kato (eds.), Gengo-no Imironteki Nigensei-to Toojiron [Syntax and the duality of semantics], 75–110. Tokyo: Hituzi Syobo.
- Kataoka, Kiyoko. 2019. Kyokusei-to hitei kyokusei-to toogoteki jooken: nihongo-to supeingo-no hitei genshoo-kara – [Polarity, negative polarity and their syntactic conditions: Negation-related expressions in Japanese and Spanish]. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kyokusei Hyoogen-no Koozoo, Imi, Kinoo [Polarity-sensitive expressions: their forms, meanings and functions], 80-102. Tokyo: Kaitakusha.
- Kato, Yasuhiko. 1985. Negative Sentences in Japanese. Sophia Linguistica. Working Papers in Linguistics 19. Tokyo: Sophia University.
- Kitagawa, Yoshihisa. 1986. Subjects in Japanese & English. Amherst: University of Massachusetts, Amherst dissertation.

- Klima, Edward S. 1964. Negation in English. In Jerry A. Fodor & Jerrold J. Katz (eds.), The Structure of Language, 246-323. Englewood Cliffs: Prentice-Hall.
- Kuno, Susumu. 1980. The scope of the question and negation in some Verb-final languages. CLS 16. 155-169.
- Ladusaw, William A. 1979. Polarity sensitivity as inherent scope relations. Austin: University of Texas at Austin dissertation. Published in 1980. New York/London: Garland Publishing.
- Laka, Itziar, 1990. Negation in syntax: On the nature of functional categories and projections. Cambridge, MA: Massachusetts Institute of Technology dissertation.
- Pollock, Jean-Yves. 1989. Verb movement, Universal Grammar, and the structure of IP. Linquistic Inquiry 20(3). 365-424.
- Real Academia Española y Asociación de Academias de la Lengua Española. 2009. La negación. In Nueva Gramática de la Lengua Española (NGLE), 3631–3715. Madrid: Espasa Calpe.
- Reinhart, Tanya. 1976. The Syntactic domain of anaphora. Cambridge, MA: Massachusetts Institute of Technology dissertation.
- Reinhart, Tanya. 1983. Anaphora and Semantic Interpretation. Chicago: The University of Chicago Press.
- Saito, Mamoru. 2003. A derivational approach to the interpretation of scrambling chains. Lingua 113(4-6). 481-518.
- Sawada, Osamu. 2007. From classifier construction to scalar construction: The case of the Japanese N hitotu V nai and N 1-classifier V nai constructions. Japanese/Korean Linguistics 15. 161–172.
- Schmerling, Susan. 1971. A note on negative polarity. Papers in Linguistics 4(1). 200-206.
- Sells, Peter. 2001a. Negative polarity licensing and interpretation. In *Proceedings of ICKL* 11, 115–147. Seoul: International Circle of Korean Linguists.
- Sells, Peter. 2001b. Three aspects of negation in Korean. Journal of Linquistic Studies 6. 1–15. Jeju Linguistics Circle.
- Sells, Peter. 2006. Interactions of negative polarity items in Korean. Harvard Studies in Korean Linguistics 11. 724-737.
- Sells, Peter & Shin-Sook Kim. 2006. Korean NPIs scope over negation. Language Research 42(2). 275-297.
- Shimoyama, Junko. 2011. Japanese indeterminate negative polarity items and their scope. Journal of Semantics 28(4). 413-450.
- Takubo, Yukinori. 1985. On the scope of negation and question in Japanese. Papers in Japanese *Linguistics* 10. 87–115.
- Ueyama, Ayumi. 1998. Two types of dependency. Los Angeles: University of Southern California dissertation.
- Watanabe, Akira. 2004. The genesis of negative concord: Syntax and morphology of negative doubling. Linguistic Inquiry 35(4). 559-612.
- Yoshimura, Akiko. 2000. Nihongo-no hitei kankyoo [Negative environments in Japanese]. In Fujii Haruhiko Sensei Taikan Kinen Ronbunshuu [A festschrift for Professor Haruhiko Fujii on the occasion of his retirement], 961–972. Tokyo: Eihosha.
- Zagona, Karen. 2002. The Syntax of Spanish. Cambridge: Cambridge University Press.

Part II: Syntax/semantics of polarity-sensitive expressions

Akira Watanabe

Chapter 4 Degree quantification, minimum quantity predicates, and polarity in Japanese

1 Introduction

Universal degree quantification in Japanese exhibits the kind of polarity sensitivity uncovered originally by Fauconnier (1975) with respect to superlatives in English, which is affected by the antonymy of adjectives involved. Coppock and Engdahl (2016) have pointed out that the Fauconnier type polarity sensitivity is found with elative superlatives in Swedish, offering a revision of Fauconnier's analysis recast in terms of propositional strength. Watanabe (2019) argues that Coppock and Engdahl's analysis can explain the polarity sensitivity of universal degree quantification in Japanese as well.

In discussing the polarity behavior of superlatives, Fauconnier identified a class of predicates in English indicating minimum quantity such as *faint* and *slight*, noting that there are cases where the superlative form based on them does not follow the pattern displayed by superlatives of ordinary gradable predicates. He advanced the claim that in such cases, nonexistence of objects is suggested by negation. Though Fauconnier's work has been highly influential in the development of theoretical understanding of polarity sensitivity, the class of minimum quantity predicates does not occupy a prominent place in current research.

Against this background, this study demonstrates that minimum quantity predicates in Japanese, which can independently be identified by degree modifiers such as hon-no 'really', are polarity-sensitive when placed in the universal degree quantification structure defined by the indeterminate degree modifier donna-ni 'how' and the quantificational particle mo, confirming the results of Watanabe's previous work. At the same time, it is shown that the Japanese structure differs from the English superlative in blocking the suggestion of nonexistence under negation, which indicates that it is not the inherent nature of minimum quantity predicates itself that accounts for the non-existence suggestion. Watanabe's proposal provides a basic analysis of universal degree quantification for gradable predicates in general, which will be used in this work to shed light on the behavior of minimum

Acknowledgments: I would like to thank two anonymous reviewers for useful comments. The work reported here is supported by Grant-in-Aid for Scientific Research (C) 20K00660 from the Japan Society for the Promotion of Science.

quantity predicates. A difference between elative superlatives and universal degree quantification is shown to play a crucial role. The key is the notion of comparison classes.

This chapter is organized as follows. The next section reviews the polarity sensitivity of universal degree quantification. Section 3 presents data involving minimum quantity predicates and puts forth an analysis. Section 4 concludes.

2 Universal degree modification and polarity

As the background of the whole discussion, let us introduce the polarity phenomenon that concerns us. The paradigm refers to antonym pairs that modify a noun as well as to polarity reversals. In Japanese, the characteristic pattern appears together with universal degree quantification, illustrated below.

(1) Japanese

- toku a. Hanako-wa donna-ni kantanna mondai-mo Hanako-TOP any-NI simple problem-MO solve koto-ga deki-nai. COMPL-NOM can-not
- 'Hanako cannot solve any problem, however simple.' b. #Hanako-wa donna-ni kantanna mondai-mo toku

Hanako-TOP any-NI simple problem-MO solve koto-ga dekiru.

COMPL-NOM can

'Hanako can solve any problem, however simple.'

(2) Japanese

#Hanako-wa donna-ni muzukasii mondai-(de)mo toku Hanako-TOP any-NI difficult problem-(DE)MO solve deki-nai. koto-ga COMPL-NOM can-not

'Hanako cannot solve any problem, however difficult.'

b. Hanako-wa donna-ni muzukasii mondai-(de)mo toku Hanako-TOP difficult problem-(DE)MO solve any-NI dekiru. koto-ga COMPL-NOM can

'Hanako can solve any problem, however difficult.'

The negative sentence in (1a) is an unproblematic negative sentence, but if it is turned into an affirmative one as in (1b), it sounds funny. The opposite pattern arises when the attributive modifier is switched to the antonym, as in (2). Initially, one might dispute the exact status of (1b) and (2a). Once an account is given, though, their status will be fixed. I will use # to indicate the infelicity.

As noted by Watanabe (2019), the pattern is identical to the one originally pointed out by Fauconnier (1975), who took up the distribution of what he calls quantifying superlatives, which is sensitive to antonym pairs and polarity reversals, as illustrated below.

- (3) a. Max cannot solve the simplest problem.
 - b. +Max can solve the simplest problem.
- (4) a. +Max cannot solve the most difficult problem.
 - b. Max can solve the most difficult problem.

The + mark indicates that (3b) and (4a) do not allow the quantifying superlative reading, under which the superlative almost acts as a universal quantifier. According to Fauconnier's characterization, (3a), for example, can mean that for every problem, Max cannot solve it. (4a) lacks that reading, on the other hand. It only allows a plain superlative interpretation.

Coppock and Engdahl (2016) have pointed out that the distribution of Fauconnier's quantifying superlatives is replicated by elative superlatives in Swedish, as shown below.

(5) Swedish

- a. Eva är nöid med den slätaste bulle. satisfied with the plainest bun 'Eva is satisfied with the plainest bun.'
- b. [#]Eva är inte nöjd med den slätaste bulle. Eva is not satisfied with the plainest bun 'Eva is not satisfied with the plainest bun.'

¹ Fauconnier also used the paraphrase with any. (3a) is regarded as equivalent to Max cannot solve any problem. At least since Carlson (1980) and Ladusaw (1979), however, the negative polarity use of any has been treated as existential.

(6) Swedish

- a. *Eva är nöjd med den godaste bulle.

 Eva is satisfied with the most delicious bun.'
- b. Eva är inte nöjd med den godaste bulle.

 Eva is not satisfied with the most.delicious bun

 'Eva is not satisfied with the most delicious bun.'

In contrast to ordinary superlatives, elative superlatives denote the maximal degree without taking into account the class of individuals related to a degree. (5b) and (6a) are simply deviant. Coppock and Engdahl (2016: 1215) suggest that with the help of the definite article, elative superlatives refer to the unique maximal degree in the context, as characterized by (7).

(7) $\iota d \ [\forall d' \ [[d \in \mathbb{C} \land d' \neq d] \rightarrow d > d']]]$, where \mathbb{C} is the comparison class

Morphosyntactically, elative superlatives lack the definiteness marker on the head noun, unlike ordinary superlatives. The two types are compared in (8).

(8) Swedish

a. Stjärnan kunde inte iakttas ens med det starkaste star.DEF could not be.observed even with the strongest teleskop-et.

telescope-DEF

'The star couldn't be observed even with *the strongest telescope*-DEF (among the relevant telescopes).'

b. Stjärnan kunde inte iakttas ens med det starkaste star.DEF could not be.observed even with the strongest teleskop.

telescope

'The star couldn't be observed even with *the strongest telescope*.' (I.e. a telescope of maximum strength)

Coppock and Engdahl state that (8a) is an instance of ordinary superlatives, comparing relevant individuals in the context and picking out the one that exceeds the rest on the scale provided by the attributive adjective, while (8b) only cares about degrees. Notice that the head noun in (8b) does not have a suffixal definiteness marker that is used in (8a). In other words, elative superlatives are characterized by the absence of so-called double definiteness (Julien 2005 and Santelmann 1993,

among many others). In Swedish, definite expressions with a prenominal modifier employ the definite article and the suffixal definiteness marker, as in (9).

(9)Swedish

- a. **det** Nya hus-**et** the New house-DEF 'the new house'
- b. den Nya bil-en the New car-DEF 'the new car' (Holmes and Hinchliffe 2008 [1997]: 62)

In the singular, the definite article and the suffixal definiteness marker change shape in accordance with the gender distinction (neuter vs. non-neuter). Crucially, double definiteness is absent in the examples in (5) and (6), which only have a prenominal definite determiner.

English does not formally distinguish between two types of superlatives with a definite article, but it is reasonable to assume that Fauconnier's quantifying superlatives are indeed elative superlatives.

Watanabe (2019) observes that Japanese does not have a productive strategy of forming elative superlatives, pointing to (10a). (10b) is added here to make sure that polarity is not the source of the problem.

(10)Japanese

- a. *Hanako-wa itiban/mottomo wazukana hyoozyoo-no Hanako-TOP most slight expression-GEN ugoki-o minogasa-nai. movement-ACC fail.to.notice-not 'Hanako does not fail to notice the slightest change in expression.'
- b. *Hanako-wa itiban/mottomo wazukana hyoozyoo-no Hanako-TOP expression-GEN most slight ugoki-o minogasu. movement-ACC fail.to.notice 'Hanako fails to notice the slightest change in expression.'

Even though the Japanese superlative marked by itiban/mottomo is quite similar to the English counterpart in many respects (Aihara 2009; Shimoyama 2014), itiban/ mottomo does not allow the elative reading. The point of the examples is that it is essentially impossible to individuate changes in facial expression. Ordinary superlatives, which involve comparison of individuals along a scale, cannot deal with the individual that corresponds to the smallest change in expression, hence the strangeness of (10a) and (10b). If itiban/mottomo were able to function as the marker of elative superlatives, at least (10a) should be felicitous, since elative superlatives refer only to degrees and do not compare individuals.² It follows that we cannot use Japanese to examine the behavior of elative superlatives in relation to polarity reversals and antonym pairs. Let me also mention that (10a) is modeled after Fauconnier's (1975: 366) example in (11).

(11) Nelson didn't notice the slightest emotion on Richard's face.

This example as well as (10) features a minimum quantity predicate, the major topic of this article. We will turn to it in the next section.

The polarity behavior common to elative superlatives and universal degree quantification can receive a uniform treatment. Let us review Coppock and Engdahl's (2016) account of Swedish elative superlatives first, since Watanabe (2019) claims that it can be adapted for universal degree quantification in Japanese.

The key element in Coppock and Engdahl's proposal is the Emphatic Assertion Principle, stated in (12).

(12) Emphatic Assertion Principle (Coppock and Engdahl 2016: 1199) It is felicitous to assert ϕ emphatically in context c only if it is stronger than all of its expression-alternatives in c.

The strength mentioned in (12) is defined as follows:

(13) Strength (Coppock and Engdahl 2016: 1200) A is stronger than B if A is more surprising than B.

Crucially, the elative superlative is inherently marked as emphatic and is subject to the Emphatic Assertion Principle. To illustrate with (6b), repeated below as (14a), its expression-alternatives take the form in (14b).

² A reviewer points out that (10a) becomes acceptable if the accusative case particle is replaced with mo. One should not, however, jump from this observation at the conclusion that Japanese has elative superlatives. Though the reviewer does not comment on the reading of the acceptable version with mo, the available interpretation in that situation presupposes a set of changes in facial expression recorded, say, in the form of video clips, which is forced by the function of mo as a scalar focus particle that compares individuals. Once such a set of individual changes is brought in, we are dealing with plain superlatives, not elatives.

- (14) a. Eva är inte nöjd med den godaste bulle.

 Eva is not satisfied with the most delicious bun.'
 - b. Eva is not satisfied with a *d*-delicious bun.

The elative superlative version is stronger than any other alternative, because it is surprising to find someone not satisfied with a bun possessing the maximal deliciousness. The affirmative version of (14a), which is (6a), violates the Emphatic Assertion Principle, on the other hand, incurring infelicity, for the reason that there are other expression-alternatives that are stronger. When the antonym is used as an attributive modifier, the opposite pattern is produced.

Turning to universal degree quantification, an important ingredient of Watanabe's analysis is that universal degree quantification takes the form of restricted quantification. The domain of quantification is restricted to degrees above the standard value. Thus, to take (1a), repeated as (15a) below, for example, its interpretation is something like (15b), where d_S is the standard value for the relevant scale and acts as the restrictor for quantification.

- (15) a. Hanako-wa donna-ni kantanna mondai-mo toku
 Hanako-TOP any-NI simple problem-MO solve
 koto-ga deki-nai.
 COMPL-NOM can-not
 'Hanako cannot solve any problem, however simple.'
 - b. $\forall d [d > d_S \rightarrow \text{Hanako cannot solve a } d\text{-simple problem}]$

This is analogous to cases of ordinary universal quantification for nominals such as (16a), with a first-order rendition of the interpretation in (16b).

- (16) a. Every professor laughed.
 - b. $\forall x [x \text{ is a professor} \rightarrow x \text{ laughed}]$

Notice that the domain restriction is important in differentiating antonym pairs, because they share the same scale, with degrees ordered in opposite directions. If no domain restriction were imposed, universal degree quantification would yield identical results for antonym pairs, which is a wrong result given the acceptability contrast created by such pairs, as shown in (1) and (2).

At this point, it may be worth stressing that recognition of degree quantification straightforwardly refutes Beck et al.'s (2009) classification of Japanese as a language that lacks degree variable binding. Their typology concerning gradable predicates does not take into account constructions of the type just reviewed. A

recent overview of the issue by Hohaus and Bochnak (2020) does not mention them, nor does Hallman's (2020) introduction to a recent volume on degree and quantification. It is therefore highly interesting to explore properties of universal degree quantification in Japanese.

Now, once the significance of restricted degree quantification is recognized, we can extend Coppock and Engdahl's account to Japanese. Of course, the step to take is to assume that the degree modifier donna-ni is subject to the Emphatic Assertion Principle. Consider again the contrast in (1), repeated below with a more precise semantic interpretation.

- (17) a. Hanako-wa donna-ni kantanna mondai-mo toku Hanako-TOP any-NI simple problem-MO solve koto-ga deki-nai. COMPL-NOM can-not '∀d [$d > d_S$ → Hanako cannot solve a d-simple problem]' b. #Hanako-wa donna-ni kantanna mondai-mo toku Hanako-TOP any-NI simple problem-MO solve
 - dekiru. koto-ga COMPL-NOM can '∀d [$d > d_S$ → Hanako can solve a d-simple problem]'

The expression-alternatives for (17a), given in English for simplicity's sake, are as follows:

(18) Max cannot solve the simplest problem. Max cannot solve a d_1 -simple problem. Max cannot solve a d_2 -simple problem. Max cannot solve a d_s -simple problem.

Max cannot solve the least simple problem. least surprising

Since Japanese lacks elative superlatives, the top sentence in (18) is an example of ordinary superlatives. Notice that referring to all the degrees above the standard, (17a) is a stronger assertion than any one of these. Crucially, the scale of propositional strength is reversed with polarity switch. (17b), therefore, is not stronger than its expression-alternatives, given in (19).

(19) Max can solve the simplest problem. Max can solve a d_1 -simple problem. Max can solve a d_2 -simple problem. Max can solve a d_s -simple problem.

Max can solve the least simple problem.

most surprising

(17b), thus, violates the Emphatic Assertion Principle. Note that the scale of propositional strength is also reversed when the antonym is used, as in (2). The acceptability pattern changes accordingly.

As a final point in the review, let us take a brief look at the morphosyntax of universal degree quantification. The degree modifier is an indeterminate element donna-ni, with the quantificational force provided by the particle mo attached to the head noun.³ Watanabe (2019) argues that this particle is a D^o head that is also found with other indeterminate expressions. The indeterminate degree modifier contains a morpheme do that is shared with some of the wh-expressions, listed below.

(20) Japanese

- a. **do**ko 'where'
- b. donna 'what kind'
- 'which (without a head noun)' c. **do**re

As is well known, this morpheme is a wh-version of the demonstrative series consisting of three items ko- 'this', so- 'that', and a- 'that'. See Ido, Kubota and Kubota (this volume) for the discussion of *sonna-ni*, the degree modifier of the *so-series*. Watanabe (2019) points out that unlike other indeterminate expressions, donna-ni is incompatible with the interrogative interpretation, as indicated by the unacceptability of (21a).

(21) Japanese

a. *Ano toki-wa donna-ni kowakatta no? time-TOP any-NI that was.scared O 'How scared were you at that time?'

³ Examples like (2b), which have a free-choice flavor, require demo instead of mo. I will gloss over this detail in this chapter, since the crucial negative sentences to be discussed below all use the particle mo.

- h. Ano toki-wa donna-ni kowakatta koto-ka! that time-TOP anv-NI was.scared COMPL-O 'How scared I was at that time!'
- c. *Ano toki-wa donna kowakatta koto-ka! time-TOP any that was.scared COMPL-Q 'How scared I was at that time!'

Instead, it allows the exclamative reading, as in (21b). Obviously, these examples are not accompanied by the particle mo. The impossibility of the interrogative interpretation is attributable to the degree modifier itself. Watanabe suggests that there is a covert element hidden in donna-ni, which triggers the application of the Emphatic Assertion Principle, blocking interrogatives. The exclamative reading, on the other hand, is possible. In particular, since exclamative sentences are often associated with a feeling of surprise (d'Avis 2016, Zanuttini and Portner 2003, and the references cited there), they are consonant with the Emphatic Assertion Principle.

It should also be pointed out that donna-ni contains an adnominal modifier donna, given above as (20b), which is glossed as 'any' rather than as the more literal translation 'what kind' in degree modification examples to save space. Its syntactic status needs to be sharply distinguished from that of the degree modifier, as can be seen from the unacceptability of (21c).

3 Minimum quantity predicates

We are now ready to take up minimum quantity predicates. One of the goals of our discussion is to establish the class of minimum quantity predicates as the one that is probably defined by UG. Its presence is not limited to English and related languages (such as Swedish) but is found in completely distinct types of languages such as Japanese.

3.1 Minimum quantity predicates and superlatives in English

The point of departure is Fauconnier's (1975) discussion in relation to superlatives. Given the polarity switch sensitive to antonym pairs, it is very strange that both of the examples in (22) have a quantifying reading.

- (22)a. Martha didn't hear the loudest noise.
 - b. Martha didn't hear the faintest noise.

More specifically, (22b) behaves in a way not expected from the pattern. (22a) can roughly be paraphrased as:

- (23) a. For every noise x, Martha didn't hear x.
 - b. There is no noise x such that Martha heard x.

(23a) is essentially the rendition used by Fauconnier to characterize quantifying superlatives. It is logically equivalent to (23b). Under Coppock and Engdahl's (2016) analysis, which we adopt here, (22a) is stronger than all of its expression-alternatives. (22b), on the other hand, is not stronger than alternatives, because it is not surprising that the faintest noise is inaudible. Furthermore, Fauconnier also pointed out that (22b) implies that there was no noise for Martha to hear, unlike (22a), naming it the negation-of-existence phenomenon. It should be stressed here that the negation-of-existence reading is distinct from (23b), which leaves room for the possibility that there are noises that Martha did not hear. In the case of negation of existence, there was no noise to be heard in the first place. (22b) thus is not an instance of ordinary elative superlatives. Adjectives that induce this phenomenon include remote, slight, small, tiny, and little, in addition to faint.4 Fauconnier observed that these predicates share a concept of minimum quantity, producing the negation-of-existence reading when their superlative occurs in negative sentences.

Another peculiarity of minimum quantity predicates is found in relation to the there-construction. Fauconnier noted that superlatives with a quantifying reading diverge with respect to whether they can enter into the there construction, as the contrast between (24) and (25) indicates.

- (24) a. He can't stand the faintest noise.
 - b. There isn't the faintest noise that he can stand.
- a. Tommy wouldn't eat the most delicious food. (25)
 - b. *There isn't the most delicious food that Tommy would eat.

Only minimum quantity predicates allow the corresponding *there* construction. The nominal modified by the superlative is behaving as an indefinite in (24).

An additional phenomenon mentioned by Fauconnier that differentiates minimum quantity predicates from others is at all, as in (26).

⁴ Fauconnier mentioned *least* instead of *little*, but of course, *least* is the superlative form of *little*. It should also be noted that tiny is among the class of extreme adjectives listed by Morzycki (2012).

- (26) a. I don't have the slightest reason at all to believe you.
 - b. *Tommy wouldn't eat the most delicious food at all.

The *there* construction and the modification by *at all*, however, behave differently when it comes to the free choice like use of the superlative of minimum quantity predicates, as shown in (27).

- (27) a. The faintest noise (at all) bothers him.
 - b. *There is the faintest noise that bothers him.

Fauconnier noted the same contrast between the *at all* modification and the *there* construction for the two uses of *any*.

- (28) a. Any noise at all bothers him.
 - b. Tommy wouldn't eat any food at all.
- (29) a. *There is any noise that bothers him.
 - b. There isn't any food that Tommy would eat.

For a recent discussion of at all, see Collins and Postal (2014).

In the research history of negative polarity, Fauconnier's work led to Ladusaw's (1979) downward entailment proposal for *any* and other negative polarity items, but the analysis of minimum quantity predicates has not been much discussed. Israel (2011: 174–175) provides a rare study of *the slightest*, which suggests that its written corpus distribution is fairly close to that of *any*. Coppock and Engdhal (2016: 1191, 1197) provide Swedish examples of the elative superlative form of minimum quantity adjectives such as (30a, b), observing that they can occur in the Swedish counterpart of the *there* construction, as in (30b). The contrast in (30c) illustrates the indefiniteness effect of the *det* construction.

(30) Swedish

- a. Levern har inte visat det minsta tecken på avstötning. liver-DEF has not shown the slightest sign on rejection 'The liver hasn't shown the slightest sign of rejection.'
- b. Det finns inte den minsta anledning at vara orolig. that is.found not the slightest reason to be worried 'There isn't the slightest reason to be worried.'
- c. Det sitter {en princess/*princessan} i torn-et.
 that sits a princess/princess-DEF in tower-DEF
 'There sits {a princess/*the princess} in the tower.'

The crucial elative superlative form here is *minsta*, glossed in their text as 'smallest/least/slightest'. They do not go into details about the properties of minimum quantity predicates, however, simply noting that nominals modified by the elative superlative of a minimum quantity predicate are analogous to minimizers, a point already made by Fauconnier.5

Below, I will approach the class of minimum quantity predicates from the perspective of Japanese. Fauconnier's original discussion strongly suggests that minimum quantity adjectives constitute a special class of predicates. If its special status stems from UG, we expect the same class to be found in languages unrelated to English or Swedish. And that is indeed the case, as the following sections set out to demonstrate.

3.2 Minimum quantity predicates in Japanese

It is now well known that various subclasses of gradable predicates are defined by what degree modifiers they can take. Kennedy and McNally (2005) observe that open-scale and closed-scale adjectives differ in the types of modifiers compatible with them. See also Rotstein and Winter (2004) for a relevant discussion. Morzycki (2012) starts his analysis of extreme adjectives such as gigantic and fantastic with observations about the characteristic modifiers that can co-occur only with them. The class of minimum quantity predicates in Japanese can also be identified by the pattern of degree modification. In fact, there are two subclasses.

The modifiers in question are honno 'really' and goku 'extremely'. They cannot modify plain dimensional adjectives such as nagai 'long' or evaluative adjectives such as *kirei* 'beautiful', as illustrated below.⁶

⁵ Minimizers and the negative polarity use of any differ somewhat in distribution, as pointed out by Hoeksema (2013). Superlatives license any, but not minimizers. Crucially, according to the corpus data given by Israel (2011: 175), the slightest fails to be licensed by superlatives, patterning with minimizers in this respect.

It should also be pointed out in this connection that Hoeksema (2012: 23) observes that superlatives of minimum quantity predicates differ from superlatives of other types of gradable predicates in terms of the ability to license some polarity items, noting the need for further investigation. 6 I mostly gloss over the distinction between keeyoo-doosi, which takes the na ending in NP modification, and keeyoosi, which does not. See Nishiyama (1999) and Watanabe (2017a) for discussion. They are both referred to as adjectives in the text. I will not give a gloss to the final suffix na in the examples below, though it is segmented.

(31) Japanese

- a. *Zoo-no hana-wa honno/goku nagai. elephant-GEN trunk-TOP really/extremely long 'The trunk of an elephant is really/extremely long.'
- b. *Kare-no zi-wa honno/goku kirei-da. he-GEN letter-TOP really/extremely beautiful-COP 'His hand-writing is really/extremely beautiful.'

(32)Japanese

- a. *honno/*goku nagai ude really/extremely long arm 'really/extremely long arm(s)'
- b. *honno/*goku kirei-na zyoyuu really/extremely beautiful actress 'really/extremely beautiful actress(s)'

Minimum quantity adjectives such as wazuka 'slight' and sasai 'tiny', however, can take honno and goku both in predication and in NP modification, as shown in (33).7

(33) Japanese

- a. Nokotteiru syokuryoo-wa honno/goku wazuka-da. food-TOP really/extremely slight-COP remaining 'The remaining food is really/extremely small in quantity.'
- wazuka-na sukima b. honno/goku really/extremely slight gap 'really/extremely small gap(s)'
- Honno/Goku sasai-na hutyuui-ga ziko-ni tunagaru. really/extremely tiny carelessness-NOM accident-to lead 'A really/extremely tiny bit of carelessness leads to an accident.'

There is a distinct class of minimum quantity predicates incompatible with goku, as illustrated in (34) and (35).

(34) Japanese

a. Nokotteiru syokuryoo-wa honno/*goku sukosi-da. remaining food-TOP really/extremely little-COP 'The remaining food is really/extremely little.'

⁷ The predicative use is impossible for sasai.

b. Nokotteiru syokuryoo-wa honno/*goku tyotto-da. remaining food-TOP really/extremely little-COP 'The remaining food is really/extremely little.'

(35) Japanese

- a. Honno/*Goku sukosi-no tyuui-de ziko-wa husegeru. really/extremely little-LINK care-with accident-TOP can.prevent 'One can prevent accidents with a(n) really/extremely small amount of care.'
- b. Honno/*Goku tyotto-no suki-ni kaban-o really/extremely little-LINK moment.of.inattention-LOC bag-ACC nusumareta.
 was.stolen
 - 'I got my bag stolen in a(n) really/extremely short period of inattention.'
- c. Honno/*Goku tyotto-sita hutyuui-ga ziko-ni tunagaru. really/extremely little-did carelessness-NOM accident-to lead 'A really/extremely little bit of carelessness leads to an accident.'

These are not adjectives, as can be seen from the form of adnominal modification in (35). The particle *no* is used in (35a, b) as the linker, while the past tense form *sita* of the lighgt verb *suru* 'do' is added to *tyotto* in (35c). For the linker, see Watanabe (2010). The status of *sita* needs to be elucidated. It cannot be added to *sukosi*.

It should be noted that there are other items that *honno* and/or *goku* can modify. The part noun *itibu* accepts both, whereas approximate numerals representing a small quantity are compatible only with *honno*, as demonstrated below.

(36) Japanese

- a. Sankasya-no honno/goku itibu-ga hantaisita.
 participants-GEN really/extremely part-NOM objected
 'A really small number of the participants objected.'
- b. Sankasya-no uti-no honno/*goku san-yo-nin-ga participants-GEN out.of-LINK really/extremely 3-4-CL-NOM hantaisita.
 objected
 - 'Only three or four of the participants objected.'
- c. *Sankasya-no uti-no honno/goku san-nin-ga participants-GEN out.of-LINK really/extremely 3-CL-NOM hantaisita.
 objected 'Only/*Extremely three of the participants objected.'

Interestingly, a plain numeral does not accept either one of them, as shown by the unacceptability of (36c).

There are a host of questions that arise here. The most pressing one is whether it is appropriate to treat *honno* and *goku* as degree modifiers, since the part noun and approximate numerals are apparently not gradable predicates.8 I have no definite answer, but note that both the part noun and approximate numerals leave room for the exact quantity at stake, in contrast to plain exact numerals like san 'three'. Perhaps vagueness of this sort is the common denominator that licenses the use of honno, in addition to the notion of minimum quantity. I am inclined to think that goku is a genuine degree modifier, in which case it would be necessary to posit a covert gradable predicate modifying the part noun itibu. The idea may be on the right track, given the existence of a related Sino-Japanese compound dai-bubun, whose literal meaning is 'big part'. It consists of the size modifier dai 'big' and the part noun bu-bun 'part', which shares the Sino-Japanese morpheme bu with iti-bu. The incompatibility of goku and (approximate) numerals can now be accounted for because there is no room for gradable modifiers in the case of numerals, whether approximate or not.

Note also that there are also gradable adjectives that can be modified by goku, but not by honno.

(37)Japanese

- a. Kore-wa goku/*honno kantan-na mondai-da. this-TOP extremely/really simple problem-COP 'This is a(n) extremely/really simple problem.'
- b. Kore-wa goku/??honno mizikai ronbun-da. this-TOP extremely/really short paper-COP 'This is a(n) extremely/really short paper.'

Kantan does not denote minimum quantity. Mizikai is semantically close, but should not be classed together with minium quantity predicates, given the highly marginal status of honno. A notion wider than minimum quantity is probably needed to capture the distribution of goku, but its status as a degree modifier seems secure.

Another question is what rules out *goku* in (35), while allowing *honno* there. The answer again seems to be that as a degree modifier, goku cannot modify items

⁸ The part noun itibu takes a whole as its complement. To obtain the word order in (36a), it is necessary to raise sankasya from the original complement position to the left of honno/goku, which modifies itibu. For relevant syntactic details, see Watanabe (2017b).

that syntactically act as quantifiers, which include sukosi and tyotto. Quantifiers can float as in (38), for example, in contrast to adjectives.9

(38) Japanese

Taro-wa sono kooka-na wain-o sukosi/tyotto/*wazuka(-ni) Taro-TOP that expensive wine-ACC little/little/slight(-ly) nonde-mita. drink-tried 'Taro tried that expensive wine a little.'

The structural analysis of modification by honno and goku is another obvious question to be tackled. I have to postpone detailed exploration of these and other questions to future research, but I hope to have made it clear that phenomena surrounding minimum quantity predicates constitute a very rich research area. In the rest of the chapter, I will focus on gradable predicates that can take both honno and goku. The modifiers honno and goku deserve an in-depth study of their own, but that is also a topic for another article. I am using modification by honno and goku here as a diagnostic test that delimits the scope of investigation.

3.3 Universal degree quantification and minimum quantity predicates

Let us return to the polarity sensitivity of universal degree quantification. In the case of minimum quantity predicates, too, the now familiar paradigm is found, as can be seen from (39).

(39)Japanese

a. #Hanako-wa donna-ni wazuka-na monooto-mo Hanako-TOP any-NI slight noise-MO kininara-nak-atta. be.bothered.by-not-was 'For every degree d well above the standard, a d-slight noise didn't bother Hanako.'

⁹ The adverbial use of *keeyoo-doosi* usually requires the particle -ni. It does not help improve (38) to drop the particle. Interestingly, honno wazuka sounds better here.

b. Hanako-wa donna-ni wazuka-na monooto-mo

Hanako-TOP any-NI slight noise-MO

kininat-ta.

be.bothered.by-PAST

'For every degree d well above the standard, a d-slight noise bothered Hanako.'

Hanako-wa donna-ni urusai monooto-mo

Hanako-TOP any-NI loud noise-MO

kininara-nak-atta.

be.bothered.by-not-was

'For every degree d well above the standard, a d-loud noise didn't bother Hanako.'

d. #Hanako-wa donna-ni urusai monooto-mo kininat-ta.

Hanako-TOP anv-NI loud noise-MO be.bothered.bv-PAST For every degree d well above the standard, a d-loud noise bothered Hanako.'

Antonym pairs trigger contrastive judgments, and negation reverses the acceptability pattern. There is nothing new.

But a different picture emerges if other verb-object combinations are used. Consider the examples below.

(40) Japanese

??Hanako-wa donna-ni wazuka-na suki-mo

Hanako-TOP any-NI moment.of.inattention-MO slight mise-nak-atta.

show-not-was

'For every degree d well above the standard, Hanako didn't allow herself a d-slight moment of inattention.'

#Hanako-wa donna-ni wazuka-na suki-mo

moment.of.inattention-MO Hanako-TOP any-NI slight mise-ta.

showed

'For every degree d well above the standard, Hanako allowed herself a d-slight moment of inattention.'

Hanako-wa honno wazuka-na suki-sae

Hanako-TOP really slight moment.of.inattention-even

mise-nak-atta.

show-not-was

'Hanako didn't allow herself even a really slight moment of inattention.'

The contrast between the affirmative and negative sentences is there, but universal degree quantification in (40a) is not as straightforwardly acceptable as the version with honno in (40c). The point of the exercise is to see whether the negation-of-existence phenomenon uncovered by Fauconnier for superlatives of minimum quantity predicates can be replicated in relation to universal degree quantification in Japanese. The perfect acceptability of (40c) comes with the implication that there were no moments of inattention to talk about, which suggests that an appropriate verb-object combination is chosen for the negation-of-existence reading. Note also that the negation-of-existence reading remains available when honno is removed. To the extent that (40a) is acceptable, however, the existence of a pre-specified set of moments of inattention, classified perhaps according to types, must be presupposed in order for (40a) to be interpretable. The degree of deviance felt for (40a) seems to be correlated with the ease with which such a presupposed set of moments of inattention can be associated with negation of the proposition that contains the verb-object combination in question.

The same pattern is found with other minimum quantity predicates, as shown below.

(41)**Japanese**

- ??Hanako-wa donna-ni sasai-na hinto-mo Hanako-TOP any-NI tiny hinto-MO ataetekure-nak-atta. give-not-was
 - 'For every degree d well above the standard, Hanako didn't give me a d-tiny hint.'
- b. #Hanako-wa donna-ni sasai-na hinto-mo ataetekure-ta. Hanako-TOP any-NI tiny hinto-MO give-PAST 'For every degree d well above the standard, Hanako gave me a d-tiny hint.'
- c. Hanako-wa honno sasai-na hinto-sae Hanako-TOP really tiny hint-even ataetekure-nak-atta. give-not-was 'Hanako didn't give me even a really tiny hint.'

(42)**Japanese**

a. ??Hanako-wa donna-ni tiisa-na kikkake-mo tukame-nak-atta. Hanako-TOP any-NI small chance-MO can.seize-not-was 'For every degree d well above the standard, Hanako wasn't able to seize a d-small chance for success.'

- b. #Hanako-wa donna-ni tiisa-na kikkake-mo tukame-ta. Hanako-TOP any-NI small chance-MO can.seize-PAST 'For every degree d well above the standard, Hanako was able to seize a d-small chance for success.'
- Hanako-wa honno tiisa-na kikkake-sae tukame-nak-atta. small Hanako-TOP really chance-even can.seize-not-was 'Hanako wasn't able to seize even a really small chance for success.'

(43) Japanese

^{??}Hanako-wa donna-ni kasuka-na iwakan-mo Hanako-TOP anv-NI faint sense of uneasiness-MO kanzi-nak-atta.

feel-not-was

'For every degree d well above the standard, Hanako didn't feel a d-faint sense of uneasiness.'

#Hanako-wa donna-ni kasuka-na iwakan-mo Hanako-TOP anv-NI faint sense of uneasiness-MO kanzi-ta. feel-PAST

'For every degree d well above the standard, Hanako felt a d-faint sense of uneasiness.'

Hanako-wa honno kasuka-na iwakan-sae ense.of.uneasiness-even Hanako-TOP really faint kanzi-nak-atta. feel-not-was 'Hanako didn't feel even a really faint sense of uneasiness.'

The challenge that faces us is to figure out why universal degree quantification blocks the plain negation-of-existence reading, which is possible in other structures that feature minimum quantity predicates.

3.4 The standard value and the comparison class

I would like to suggest that the special status of the (a) sentences in (40)–(43) is ultimately due to the standard value that must be taken into account in the semantics of universal degree quantification. This idea will be elaborated in this section.

The standard value plays an important role in the interpretation of bare adjectives. In fixing the standard of comparison for positive-form adjectives, it is necessary to refer to a comparison class. See Bale (2011), Higginbotham (1985), Kennedy (2007), Klein (1980), Ludlow (1989), and Solt (2015), among many others. In attributive structure, the head noun can provide it. Higginbotham notes that even though big butterflies are not big creatures, (44a) is true if the intended object is big for a butterfly. Kennedy illustrates the point with the observation that (44b) is not contradictory.

- (44) a. That is a big butterfly.
 - b. Jumbo is a small elephant, but he is not small.

Furthermore, the comparison class is subject to partitioning that makes at least one member of the class count as A and another as not A for the adjective A in question, as Klein (1980) suggests. This requirement is responsible for the infelicity of (45) when it is uttered in a situation that only contains a 100-page book and a 99-page book, as pointed out by Kennedy (2007).

(45)This book is long compared to that book.

In (45), the comparison class is narrowed down to a set that consists of just two books, due to the function of *compared to*. Since the positive form is true only when the individual in question exceeds the standard to a significant degree, the partitioning requirement is not met in situations where the difference in degree is minuscule, leading to infelicity of the utterance.

Now, let us return to universal degree quantification. Recall that its interpretation involves the standard value, as can be seen from (17a), repeated below.

(17) a. Hanako-wa donna-ni kantanna mondai-mo toku Hanako-TOP any-NI problem-MO solve simple koto-ga deki-nai. COMPL-NOM can-not ' $\forall d [d > d_S \rightarrow \text{Hanako cannot solve a } d\text{-simple problem}$ '

The same is true of the examples in (40)–(43). One of the crucial examples, (40a), is repeated below.

(40) a. ^{??}Hanako-wa donna-ni wazuka-na suki-mo moment.of.inattention-MO Hanako-TOP any-NI slight mise-nak-atta. show-not-was 'For every degree d well above the standard, Hanako didn't allow herself a d-slight moment of inattention.'

Here again, it has to be the case that the standard value is defined in view of the comparison class provided by the head noun suki 'moment of inattention'. This means that members of the comparison class exist, ruling out the negation-of-existence reading.

An interesting question arises at this point. When universal degree quantification is not used, the relevant object-verb combination allows the negation-of-existence reading, as in the (c) examples of (40)-(43). This also holds true for the bare adjective versions of the (c) examples, such as (46).

(46) Hanako-wa wazuka-na suki-sae Hanako-TOP slight moment.of.inattention-even mise-nak-atta. show-not-was 'Hanako didn't allow herself even a slight moment of inattention.'

Crucially, bare gradable adjectives must be accompanied with pos, a phonologically empty degree modifier that refers to the standard value.¹⁰ If so, why is the negation-of-existence reading possible in examples like (46) in contrast to cases of universal degree quantification, which also refers to the standard value in relation to the comparison class?

I would like to suggest that the answer lies in scope relations of degree quantifiers. Rett (2008) observes that the existential degree quantifier introduced by pos takes scope below negation in examples like (47).11

(47) a. John isn't tall. b. $\neg \exists d [d > d_S \land John is d-tall]$

Likewise, the semantic interpretation of (46) would be something like (48).¹²

(48) $\neg \exists d \exists x [d > d_S \land x \text{ is a } d\text{-slight moment of inattention } \land \text{ Hanako allowed}$ herself x

¹⁰ The same point also holds when the attributive modifier donna is used instead of the degree modifier donna-ni in the (a) examples of (40)-(43). Once the overt degree modifier is gone, the minimum quantity predicates there must be accompanied by pos. The account to be given shortly will apply there as well, predicting correctly that the negation-of-existence reading becomes possible when donna-ni is replaced by donna in the (a) examples of (40)–(43).

¹¹ Under Rett's proposal, the existential quantifier is introduced by existential closure.

¹² The scalar implicature due to sae 'even' is put aside here.

Notice that in order for (48) to be true, the comparison class does not have to exist. In the case of minimum quantity predicates, the uppermost degree is zero, which is greater than an arbitrary standard allowed on the minimum quantity scale. But the zero quantity of moments of inattention amounts to their absence, making (48) true. In other words, the negation of (48) is false in that situation, since there is a degree that exceeds the standard but there is no moment of inattention. Thus, the standard degree does not have to be a fixed value, which means that (48) can be true without a comparison class. This is how the negation-of-existence reading arises. The same can be said about the (c) examples of (40)–(43), on the assumption that the degree modifier honno does not differ from pos in essential respects. In cases of universal degree quantification like (17a) and (40a), on the other hand, the existence of a non-arbitrary standard value d_s is needed to make the sentence nontrivially true, for universal quantification has to do with all the degrees that lie above the standard. Compare the semantic interpretation of (40a), given below, with (48).

(49) $\forall d [d > d_S \rightarrow \neg \exists x [x \text{ is a } d\text{-slight moment of inattention} \land \text{Hanako allowed}]$ herself xll

The existence of the standard value, in turn, presupposes the existence of the comparison class that helps determine it. In (49), the comparison class is a set of moments of inattention.

Notice incidentally that the universal degree quantifier takes scope over negation in (17a) and (49), unlike pos. Watanabe (2019) suggests that the universal degree quantifier has the status of a positive polarity item. 13 Even though pos and the universal degree quantifier share the restrictor part of quantification, they are different creatures as far as the scope property is concerned.

One might object that it is hard to perceive the role of a comparison class for nouns like suki, 'moment of inattention'. The difference in degree that depends on the comparison class, however, is quite obvious when we consider concrete material. Compare (50a) and (50b), for example.

(50) Japanese

a. wazuka-na syokuryoo slight food 'a small amount of food'

¹³ The positive-polarity nature of universal degree quantification may be due to the general property of indeterminate-based universal quantification. See Hasegawa (1991) in this connection.

b. wazuka-na hiso slight arsenic 'a small amount of arsenic'

There is a huge quantitative difference between a small amount of food and a small quantity of arsenic compounds when they are measured in absolute terms. This fact stems from a difference in the standard value of the quantity scale that is sensitive to the comparison class.

Note also that concrete material may help bring out the contrast between pos and universal degree quantification more clearly. (51a) and (51b) seem to contrast more sharply in acceptability than (40a) and (46) above.

(51) Japanese

- ?*Donna-ni wazuka-na syokuryoo-mo nokottei-nak-atta. slight food-MO remain-not-was 'For every degree d well above the standard, there didn't remain a d-small amount of food.'
- b. Wazuka-na syokuryoo-sae nokottei-nak-atta. food-even remain-not-was slight 'There didn't remain even a small amount of food.'

Food is not easily amenable to classification into subtypes according to quantity in the immediate context of utterance. Universal degree quantification, however, requires multiple quantities of food exceeding the standard to scope under negation. ¹⁴ Hence the clearer difficulty in assigning a reasonable interpretation to (51a). Multiplicity of degrees in universal quantification can be seen from the infelicity of (52a) in situations where all the boxes are of the same weight. At least two degrees of weight that exceed the standard and the corresponding two (or more) boxes must exist for (52a) to be appropriate and true.

(52) Japanese

a. *Taro-wa* donna-ni omotai hako-mo karugaruto motiageta. effortlessly lifted.up Taro-TOP any-NI heavy box-MO 'For every degree d that exceeds the standard, Taro lifted up a d-heavy box effortlessly.'

¹⁴ We should not forget that we are discussing minimum quantity predicates. Exceeding the standard means a small quantity.

b. Taro-wa dono hako-mo karugaruto motiageta.
 Taro-TOP which box-MO effortlessly lifted.up
 'Taro lifted up every box effortlessly.'

The situation is essentially the same as in the case of universal quantification over ordinary individuals such as (52b), which requires multiple boxes to be lifted up.

The existential quantification due to *pos*, on the other hand, does not involve such multiplicity. Thus, it is possible to use the bare form in negative sentences as in (46) as well as in affirmative sentences as in (53).

(53) Japanese

Wareware-wa wazuka-na syokuryoo-de mikka-kan
we-TOP slight food-with three.days-duration
kuitunai-da.
keep.feeding.oneself-PAST
'With a small quantity of food, we kept feeding ourselves for three days.'

Note that the definition of the standard value needs a comparison class that can be partitioned into two subsets, but not multiple distinct subclasses above the standard quantity. In the case of (53), comparison is between the food actually brought and the food that can be brought, for example, with the standard value lying in-between.

3.5 Elative superlatives of minimum quantity predicates

Before closing, let us take a brief look at elative superlatives of minimum quantity predicates in relation to the comparison class. We need to examine whether the negation-of-existence reading identified by Fauconnier is compatible with the semantics of elative superlatives.

Recall that the elative superlative denotes the maximal degree for a gradable predicate, which is given in (7), repeated below.

(7) $\iota d \ [\forall d' \ [[d \in \mathbb{C} \land d' \neq d] \rightarrow d > d']]]$, where \mathbb{C} is the comparison class

Coppock and Engdahl (2016: 1213) are quite explicit about the comparison class here being a set of degrees, not a set of individuals. Adopting the standard assumption that gradable adjectives are relations between individuals and degrees and repre-

senting the greatest degree denoted by (7) as MAX(C) à la Coppock and Engdahl, the superlative form of an adjective G denotes a one-place predicate in (54).

(54) $\lambda x.G(x, MAX(C))$

The head noun modified by an elative superlative is combined with (54) by means of conjunction.

Now recall from section 3.1 that the possibility of appearing in the there construction in negative sentences indicates that superlatives of minimum quantity predicates allow the whole nominal phrase to function as an indefinite in English, dspite the presence of the definite article. A major point of the article by Coppock and Engdahl is that elative superlatives in Swedish act semantically as indefinites. The elative superlative analysis of the negation-of-existence reading in (22b), repeated as (55a), then, comes down to (55b).

- (55) a. Martha didn't hear the faintest noise.
 - b. $\neg \exists x [FAINT(x, MAX(C)) \land NOISE(x) \land HEARD(Martha, x)]$

Even though some additional factor must be brought in to force the negation-of-existence reading, (55b) is not incompatible with it.

4 Conclusion

This chapter has presented an analysis of universal degree quantification in Japanese according to which the standard value of the gradable predicate involved helps define the restrictor of the quantificational domain. In this respect, universal degree quantification is similar to ordinary quantification over individuals, which also takes the form of restricted quantification in the theory of Barwise and Cooper (1981). The standard value in turn is based on the comparison class provided by the head noun in the attributive structure, which is required in order for the quantificational particle mo to function as D°. The need for a comparison class serves to rule out the negation-of-existence reading that can in principle be induced by minimum quantity predicates. This blocking does not occur in the case of pos, however. The difference is due to the existential quantifier introduced by *pos* taking scope below negation.

Though this chapter is only a first attempt to delineate the empirical picture that surrounds minimum quantity predicates, I hope to have shown that they constitute a very intriguing subclass of gradable predicates. In addition to inducing the negation-of-existence reading exhibited in relation to superlatives in English and pos in Japanese, they are associated with characteristic modifiers honno and goku in Japanese, inviting us to explore the exact nature of these modifiers, which are not necessarily restricted to minimum quantity predicates.

Finally, let me stress that universal degree quantification makes use of the indeterminate system. As the title of Shimoyama's (2008) handbook chapter indicates, research on indeterminate expressions has concentrated on nominals since Kuroda's (1965) seminal work. The indeterminate system of Japanese, however, includes several degree modifiers. This chapter has picked up only one of them. Others await detailed investigation. Though Watanabe (2019) provides a brief comparison between donna-ni and ikura 'how much', which cannot modify attributive adjectives, that account does not exhaustively deal with curious properties of ikura. Considering other items, we have to conclude that there is a lot of work to be done. We have just set out on a long adventurous journey.

References

Aihara, Masahiko. 2009. The scope of -est: Evidence from Japanese. Natural Language Semantics 17. 341-367.

Bale, Alan Clinton. 2011. Scales and comparison classes. Natural Language Semantics 19. 169–190.

Barwise, Jon & Robin Cooper. 1981. Generalized quantifiers and natural language. Linguistics and Philosophy 4. 159-219.

Beck, Sigrid, Sveta Krasikova, Daniel Fleischer, Remus Gergel, Stefan Hofstetter, Christiane Savelsberg, John Vanderelst & Elisabeth Villalta. 2009. Crosslinguistic variation in comparison constructions. Linguistic Variation Yearbook 9.1-66.

Carlson, Greg N. 1980. Polarity any is existential. Linguistic Inquiry 11. 799–804.

Collins, Chris & Paul M. Postal. 2014. Classical NEG Raising: An Essay on the Syntax of Negation. Cambridge, MA: MIT Press.

Coppock, Elizabeth & Elisabet Engdahl. 2016. Quasi-definites in Swedish: Elative superlatives and emphatic assertion. Natural Language & Linguistic Theory 34. 1181–1243.

d'Avis, Franz. 2016. Different languages – different sentence types? On exclamative sentences. Language and Linguistics Compass 10. 159-175.

Fauconnier, Gilles. 1975. Pragmatic scales and logical structure. Linguistic Inquiry 6. 353–375.

Hallman, Peter. 2020. Introduction. In Peter Hallman (ed.), Interactions of Degree and Quantification, 1-43. Leiden: Brill.

Hasegawa, Nobuko. 1991. Affirmative polarity items and negation in Japanese. In Carol Georgopoulos & Roberta Ishihara (eds.), Interdisciplinary Approaches to Language: Essays in Honor of S.-Y. Kuroda, 271-285. Dordrecht: Kluwer.

Higginbotham, James. 1985. On semantics. Linguistic Inquiry 16. 547–593.

Hoeksema, Jack. 2012. On the natural history of negative polarity items. Linguistic Analysis 38. 3–33.

Hoeksema, Jack. 2013. Polarity items in Strawsonian contexts. In Eva Csipak, Regine Eckardt, Mingya Liu & Manfred Sailer (eds.), Beyond 'Any' and 'Ever': New Explorations in Negative Polarity Sensitivity, 47-77. Berlin: De Gruyter Mouton.

- Hohaus, Vera & M. Ryan Bochnak. 2020. The grammar of degree: Gradability across languages. Annual Review of Linauistics 6, 235-259.
- Holmes, Philip & Ian Hinchliffe. 2008 [1997]. Swedish: An Essential Grammar, 2nd edn. London: Routledge.
- Israel, Michael. 2011. The Grammar of Polarity: Pragmatics, Sensitivity, and the Logic of Scales. Cambridge: Cambridge University Press.
- Julien, Marit. 2005. Nominal Phrases from a Scandinavian Perspective. Amsterdam: John Benjamins.
- Kennedy, Christopher. 2007. Vagueness and grammar: The semantics of relative and absolute gradable adjectives. Linguistics and Philosophy 30, 1-45.
- Kennedy, Christopher & Louise McNally. 2005. Scale structure, degree modification, and the semantics of gradable predicates. Language 81. 345-381.
- Klein, Ewan. 1980. For positive and comparative adjectives. Linguistics and Philosophy 4. 1-45.
- Kuroda, Sige-Yuki. 1965. Generative grammatical studies in the Japanese language. Cambridge, MA: MIT dissertation. Published in 1979 by Garland, New York.
- Ladusaw, William. 1979. Polarity sensitivity as inherent scope relations. Austin: University of Texas at Austin dissertation. Published in 1980 by Garland, New York.
- Ludlow, Peter. 1989. Implicit comparison classes. Linguistics and Philosophy 12. 519–533.
- Morzycki, Marcin. 2012. Adjectival extremeness: Degree modification and contextually restricted scales. Natural Language & Linguistic Theory 30. 567-609.
- Nishiyama, Kunio. 1999. Adjectives and the copulas in Japanese. Journal of East Asian Linguistics 8. 183–222.
- Rett, Jessica. 2008. Degree modification in natural language. New Brunswick: Rutgers University dissertation.
- Rotstein, Carmen & Yoad Winter. 2004. Partial adjectives vs. total adjectives: Scale structure and higher-order modification. Natural Language Semantics 12. 259–288.
- Santelmann, Lynn. 1993. The distribution of double determiners in Swedish: Den support in D°. Studia Linguistica 47. 154-176.
- Shimoyama, Junko. 2008. Indeterminate pronouns. In Shigeru Miyagawa & Mamoru Saito (eds.), The Oxford Handbook of Japanese Linguistics, 272–293. Oxford: Oxford University Press.
- Shimoyama, Junko. 2014. The size of noun modifiers and degree quantifier movement. Journal of East Asian Linauistics 23, 307-331.
- Solt, Stephanie. 2015. Vagueness and imprecision: Empirical foundations. Annual Review of Linquistics
- Watanabe, Akira. 2010. Notes on nominal ellipsis and the nature of no and classifiers in Japanese. *Journal of East Asian Linguistics* 19. 61–74.
- Watanabe, Akira. 2017a. Attributive modification. In Masayoshi Shibatani, Shigeru Miyagawa & Hisashi Noda (eds.), *Handbook of Japanese Syntax*, 783–806. Berlin: De Gruyter Mouton.
- Watanabe, Akira. 2017b. The mass/count distinction in Japanese from the perspective of partitivity. Glossa: a journal of general linguistics 2(1). https://doi.org/10.5334/gjgl.116
- Watanabe, Akira. 2019. Teido-shuushoku-to kyokusei-ga koosa-suru tokoro [Where degree modification and polarity sensitivity meet]. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kyokusei Hyoogen-no Kouzoo Imi Kinoo [Polarity-sensitive expressions: their forms, meanings and functions], 128-152. Tokyo: Kaitakusha.
- Zanuttini, Raffaella & Paul Portner. 2003. Exclamative clauses: At the syntax-semantics interface. Language 79. 39-81.

Ikumi Imani

Chapter 5 Polarity sensitivity of existential sentences with numerals in Japanese

1 Introduction

In this chapter we will propose a situation-based approach to the polarity sensitivity of existential sentences with numerals in Japanese. The relationship between existential sentences and determiners has been extensively studied (Williams 1984; Lumsden 1988; Freeze 1992; Abbot 1993, 1997; Ward & Birner 1995; Zucchi 1995; McNally 1997, 1998; Comorovski & Heusinger (eds.) 2007; Partee & Borschev 2007; Francez 2010 among many others), and the distinction between strong determiners (e.g., *most, every, the N, each N*) and weak determiners (e.g., *many, some, a/an, no*) proposed by Milsark (1974, 1977) has been a landmark in the study of existential sentences. He proposes that NPs with weak determiners (i.e., weak NPs) can be in a postverbal position in *there*-sentences in English, while NPs with strong determiners (i.e., strong NPs) cannot. However, he did not treat negative *there*-sentences, and negative *there*-sentences with weak NPs are often infelicitous, as shown in (1b) (McNally 1997; Szekely 2015):

- (1) a. There are two students who are sleeping in the classroom.
 - b. #There are not two students who are sleeping in the classroom.

(1b) is infelicitous, unless there is a contrastive emphasis on *two* (cf. *There are not two, but three students who are sleeping in the classroom*). The phenomena that

Acknowledgments: I would like to thank two anonymous reviewers for their useful comments. I would also like to thank Christopher Tancredi, Kenta Mizutani, Itaru Takarajima and Phillip Morrow for their valuable comments. This chapter is partly supported by Grant-in-Aid for Scientific Research (C) 20K00586 from the Japan Society for the Promotion of Science.

existential sentences with numerals have positive polarity as in (1) can be seen in Japanese too, as shown in (2) and (3):^{1,2}

- (2) a. Kyoositu-ni nemutteiru gakusei-ga hutari iru. classroom-LOC sleeping student-NOM two exist 'There are two students who are sleeping in the classroom.'
 - b. #Kyoositu-ni nemutteiru gakusei-ga hutari i-nai. student-NOM two classroom-LOC sleeping exist-NEG "There are not two students who are sleeping in the classroom."
- (3) a. Taro-ni-wa kodomo-ga hutari iru. Taro.to-TOP child-NOM two exist 'Taro has two children.'
 - b. #Taro-ni-wa kodomo-ga hutari i-nai. Taro.to-TOP child-NOM two exist-NEG "Taro does not have two children."

However, unlike there-sentences in English, there are cases in which existential sentences with numerals have no polarity in Japanese, as exemplified in (4):

- (4) Gesuto-ga kono-heva-ni hutari iru. guest-NOM this. room-LOC two exist 'Two guests are in this room.'
 - b. Gesuto-ga kono-heya-ni hutari i-nai. guest-NOM this. room-LOC two exist-NEG 'Two guests are not in this room.'

To avoid unnecessary confusion, we will use *exist* as the English counterpart of *iru* in glosses.

^{1 (3)} is paraphrased to have-sentences in English. For the similarities and differences between there-sentences and have-sentences, see Keenan (1987) and Bassaganyas-Bars and McNally (2019). 2 Iru can be interpreted as be, exist or have in English, depending on context. On the other hand, the copula be is translated as not only the verb iru but also the copula da (or de) in Japanese, as shown in (i):

Kono mondai-o (i) toita hutari de-wa-nai. по-жа be-TOP-NEG this.puzzle-ACC solved COMP-TOP two 'It is not two persons who solved this puzzle.'

The question to be addressed at this point is under what conditions existential sentences with numerals in Japanese have positive polarity. In this chapter, we will propose that there are three types of domain-restrictions that are relevant to polarity of existential sentences with numerals, and will show that the polarity sensitivity of existential sentences such as (2) and (3) is rooted in how the domains of quantification are restricted. We will also discuss why (4) does not have polarity.

We will propose that there are three types of domain-restrictions in Section 2. In Section 3, we will provide a brief overview of the syntax and semantics of existential sentences in Japanese. In Section 4, we will claim that the three types of domain-restrictions play a significant role regarding the polarity sensitivity of existential sentences with numerals in Japanese.³ We will discuss some remaining issues in Section 5. Section 6 is a conclusion.

2 Three types of domain-restrictions: *Observation*, subtraction and trivial-setting

The main proposal in this chapter is that three types of restrictions on the domains of quantification are relevant to the polarity sensitivity of sentences with numerals in Japanese. In what follows, we will restrict ourselves to sentences in which a numeral has a wider scope than negation. As for cases in which negation has a wider scope than a numeral, see Solt and Waldon (2019) and Notes 7 and 9 in this chapter.

Our approach based on the three types of domain-restrictions is situation-based. To understand polarity phenomena related to numerals, we claim that we need to take into consideration in what situation a sentence is uttered. To see this, let us consider (5), in which the domain of Q - P includes (at least) two birds, in which Q and P represent the sets denoted by A and B in Det (A, B), respectively:⁴

(5) (#) Two birds are not flying in the sky.

³ As far as we have been able to determine, there has been little research on the relationship between existential sentences and numerals in Japanese (for discussion on existential sentences with numerals in Japanese see Iida 2002). As for general studies on existential sentences in Japanese, see Nishiyama (2003, 2004), Kinsui (2006) and Masuoka (2008).

⁴ Note that we consider the cases in which negation has narrower scope than the numeral two in (5).

When two birds rest on a perch and other birds are flying in the sky, (5) is felicitous. On the other hand, when no bird is in the scene, (5) is true but only trivially. This indicates that we cannot determine whether a sentence with a numeral is felicitous or not without knowing in what situation it is uttered.

We propose that when we count the number of individuals that do not satisfy a property P, three kinds of domain-restrictions become relevant to the felicity of the sentences. They are illustrated in Figures 1-3.

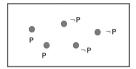


Figure 1: Observation



Figure 2: Subtraction

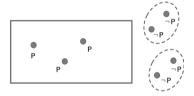


Figure 3: Trivial-setting

Let us begin with Figure 1. It represents (6):

(6) Three students are not listening to my lecture. They are sleeping.

Suppose that in (6) the speaker sees three students not listening to her lecture. What is important in this scenario is that she can count the number of the students who are not listening to the lecture, because they are present in the scene of the utterance. We can illustrate the situation in (6) as in Figure 1, in which the box represents the domain of the individuals that are quantified over. Let P represent the property "listening to the speaker's lecture". In Figure 1, the students satisfying P and those not satisfying P are both in the scene of the utterance, and they together compose the domain of individuals that are quantified over. Let us call this type of domain-restriction "observation". Observation, because the speaker is in a situation in which she can observe that some individuals are satisfying P and the others are not.

The crucial point of observation is that individuals satisfying P and those not satisfying P are situated in the same box in Figure 1. (6) is a typical sentence in this sense because the speaker directly observes that all the students in question are in the same room. There are cases in which the speaker indirectly or someone else directly observes that individuals quantified over are all in the same box in Figure 1. (7) and (8) are such cases:

- (7) Two students have not submitted their reports.
- (8) The police saw three men not playing cards in the room.

In (7), the speaker might be checking her students' reports at home and find that two students have not yet submitted them. In this situation, she does not directly observe her students. However, as far as the submission of the reports is concerned, we can regard her students as being in the same box, in which they are divided into two groups, depending on whether they submitted reports or not. Similar reasoning can be applied to (8). The default inference of (8) is that three or more than three men were in the room, and that the three men were not playing cards and the others (or no one) were. We include cases such as (7) and (8) in the group of observation-type sentences.

In what follows, we will use the term "the scene of the utterance", as specified in (9):

"The scene of the utterance" (i.e., the box) is a domain that has as its (9) members at least the individuals that satisfy the property P denoted by VP.

In the case of observation, the scene of the utterance contains individuals satisfying P and those not satisfying P. However, as we will see in what follows, individuals not satisfying P are outside the scene of the utterance (i.e., outside the box) in the other two types of domain-restrictions (i.e., subtraction and trivial-setting).

Let us move to the second type of domain-restrictions, subtraction. In sentences of this type, individuals not satisfying P are outside the scene of the utterance, as indicated in (10) and (11):

- (10) Three guests are not in the guest room.
- (11) Three guests have not arrived yet.

The situations that (10) and (11) describe are both represented in Figure 2. Unlike the box in Figure 1, the box in Figure 2 is *spatially* divided into two. Suppose that the speaker looks in the guest room and sees two guests sitting there. Suppose further that when she utters (10), she knows that five guests were in the guest room. Seeing that only two guests are there now, she subtracts the number "two" from the number "five". A parallel supposition can be made for (11). When she utters (11) in the same situation, she knows the total number of the guests (for instance, five) who are expected to come. Seeing that only two guests are in the guest room, she infers that the other three guests have not arrived yet, and thus subtracts the number "two" from the number "five". In these cases, the three guests are spatially outside the scene of the utterance. We will call this type of domain-restriction "subtraction", because the speaker uses subtraction to obtain the number of individuals not satisfying the property *P*.

Figures 1 and 2 share the same characteristics that individuals satisfying a property P and those not satisfying P together make a non-arbitrary set. In the case of the observation-type, it is the set that includes individuals satisfying P and those not satisfying P; the individuals in the set are all situated in the scene of the utterance. In the case of the subtraction-type, on the other hand, only the individuals satisfying P are in the scene of the utterance. In both cases, the domains of quantification are constrained to make non-arbitrary sets, and this makes a clear contrast with the third type of domain-restrictions.

When a sentence has the third type of domain-restrictions, individuals that do not satisfy a property *P* are non-specific entities or do not exist. We will call this type of domain-restriction "trivial-setting". Trivial-setting can be depicted in Figure 3. To see what kind of situation Figure 3 illustrates, let us consider (12) and (13):

- (12) #John does not own two dogs.
- (13) a. Mary was not in the room for two hours.
 - b. #Mary did not stay in Kyoto for two days.

Suppose that it is common knowledge that John owns three dogs. Then, if (12) is uttered out of the blue, it is infelicitous as a way of indicating that there are two dogs that John does not own. The reason (12) is infelicitous can be explained as follows. Let P represent "be owned by John". In this situation, dogs not owned by John are outside the box in Figure 3. Unlike the guests in Figure 2, dogs outside the box are non-specific. What is crucial about this is that the existence of any set of two dogs not owned by John makes (12) true. To be more exact, (12) is trivially true.⁵ Trivial truth does not necessarily make a sentence infelicitous, but it is totally uninformative to mention that any pair of dogs except John's three dogs is not owned by John. We suspect that this is the reason (12) is infelicitous under the intended scope interpretation (i.e., two > NEG). The same reason can be applied to (13b). When it is uttered without an appropriate context specifying a specific stretch of time, it is infelicitous. It is because Mary's not staying in Kyoto for two days is considered to have occurred uncountably many times in the past, and any such days make (13b) trivially true. Note that if we are given a context in which Mary was, for example, participating in a conference held in Kyoto for five days and stayed in Osaka for two days during the conference to see her old friend, (13b) becomes felicitous. It is because the domain of quantification is non-trivially restricted by the setting of the conference being held for the five days. (13a) is semantically close to (13b), but it is felicitous. 6 (13a) is an example of subtraction. A default situation of (13a) is that Mary stayed in the room for more than two (but limited) hours, and that she

⁵ Let us define "X is trivially true" as follows: X is trivially true iff the existence or absence of any relevant set of appropriate size outside the box makes X true.

⁶ For some people, it is easy to accommodate a suitable background so that a stretch of time is explicitly restricted to rescue the reading of (13b) (pc. Christopher Tancredi).

left it for two hours. In this situation, the domain of quantification is non-trivially restricted.7,8

There are cases in which there is no individual outside the box, as in Figure 4. To see this, let us consider (14):

- (14) a. The hen laid five eggs this week.
 - b. #The hen did not lay five eggs this week.

On a scale, a range r is convex if when two points are in r, so too are all points between them, (Solt and Waldon 2019)

According to them, (ii) is infelicitous, because it fails to be convex:

(ii) #She doesn't have 40 sheep.

The method to explain the infelicity of (ii) by convexity is elegant, but Japanese data related to negated numerals are more complicated than English data. Compare (iii) to its Japanese counterpart (iv):

- (iii) She doesn't have more than 40 sheep. (Solt and Waldon 2019)
- (iv) ??Kanojo-wa hituji-o 40-piki-ijoo kattei-nai. she-TOP sheep-ACC 40-CL-more own-NEG 'She does not have more than 40 sheep.'
- (iv) is convex, but it is not perfectly natural. The same is true of (v):
- (v) ??Taro-wa hituji-o 40-piki-ika kattei-nai. Taro-TOP sheep-ACC 40-CL-less own-NEG 'Taro does not have less than 40 sheep'

When the contrastive marker wa follows 40-piki-ijoo (more than 40), (iv) becomes felicitous. But when wa follows 40-piki-ika (less than 40), the infelicity of (v) does not change.

- 8 The fact that (12) and (13b) are infelicitous has a theoretical connection to the so-called negative island problem (see Schwarz & Shimoyama (2009, 2011) for negative island phenomena in Japanese). In our approach, (i) can be analyzed as follows:
- #How many children does John not have? (i)
- (i) describes a situation that Figure 4 represents. Any relevant set outside the box can be an answer to (i), and thus (i) is uninformative and infelicitous. This is partly due to the lack of an upper limit in terms of the number of individuals outside the scene of the utterance (i.e., the box) (see Szabolcsi & Zwart 1993; Rullmann 1995; Fox and Hackl 2006; Abrusán 2014 for related approaches).

⁷ As we have mentioned in Section 1, we do not treat cases in which negation has a wider scope than a numeral in this chapter. For those cases, see Solt and Waldon (2019), in which they claim that negated numerals are related to convexity:

Suppose that the hen laid three eggs this week. In this situation, (14a) is false, but felicitous. (14b) is, on the other hand, infelicitous. 9 Eggs do not exist until a hen lays them. Therefore, the set of "eggs that were not laid by the hen this week", whose members are outside the box, is empty. 10 This empty set makes (14b) trivially true and makes it uninformative. This is the reason (14b) is infelicitous.



Figure 4: Trivial-setting

There is a crucial difference between observation or trivial-setting type sentences and subtraction type sentences in the case of Japanese. When the former are converted to existential sentences, they have positive polarity, as shown in (15) and (16). On the other hand, when the latter are converted to existential sentences, they do not have polarity, as shown in (17):11

(15) a. Watasi-no jugyo-o kiitei-nai gakusei-ga I-GEN lecture-ACC listening-NEG student-NOM hutari iru. two exist

'There are two students who are not listening to my lecture.' b. #Watasi-no jugyo-o kiitei-nai gakusei-ga

lecture-ACC listening-NEG student-NOM I-GEN hutari i-nai.

two exist-NEG

'#There are not two students who are not listening to my lecture.'

⁹ When negation has a wider scope than the numeral, (14b) is felicitous. In this case, (14b) means that the number of eggs the hen laid was not five. This reading is possible, for example, in a situation in which the hen usually lays five eggs a week and it laid only three eggs this week (Imani 2010; Solt & Waldon 2019).

¹⁰ We take a non-modal framework here for simplicity, and thus there is only one empty set outside the box in Figure 4: all empty sets are eventually the same set because of indiscernibility.

^{11 (15}b) and (16b) can be interpreted as having the type of subtraction. In that case, they are felicitous.

- (16) a. Taro-ga katteiru inu-ga nihiki iru.

 Taro-NOM own dog-NOM two exist

 'There are two dogs that Taro has.'
 - b. #Taro-ga katteiru inu-ga nihiki i-nai.

 Taro-NOM own dog-NEG two exist-NEG

 '#There are not two dogs that Taro has.'
- (17) a. *Kyaku-ga san-nin heya-ni iru.* guest-NOM three.person room-LOC exist 'Three guests are in the room.'
 - b. Kyaku-ga san-nin heya-ni i-nai.
 guest-NOM three.person room-LOC exist-NEG
 'Three guests are not in the room.'

We will discuss why existential sentences of the observation or trivial-setting type have positive polarity, while those of the subtraction type do not, in Section 4.

To sum up, when negation has a narrower scope than a numeral, the three types of domain-restrictions, that is, observation, subtraction and trivial-setting become relevant to the felicity of sentences. Sentences of the observation type share the same property with sentences of the subtraction type in that they have the non-trivially restricted domains of quantification. In the case of the trivial-setting type, the domain of quantification is also restricted, but only trivially.¹²

3 Existential sentences in Japanese

Existential sentences in Japanese have the syntactic constructions in (18), in which *iru* is a verb, and *i-nai* is the negative form of *iru*. *Iru* and its negative form *i-nai* are used when NP is animate. The verb *aru* and its negative form *nai* are used when NP is inanimate (see Kishimoto (2000) more about *iru* and *aru*). *Ga* is the nominative marker, and *wa* is the topic/contrastive marker. (19) is an example of (18):

¹² We have seen in the beginning of this section that the sentence "Two birds are not flying in the sky" is ambiguous depending on the situation in which it is uttered. It can be analyzed as follows. When it is uttered in a situation in which some birds other than the two are flying in the sky, it is of the observation-type (and is felicitous). When it is uttered in a situation in which the speaker is looking up into the empty sky, it is of the trivial-setting type (and is infelicitous, because it is uninformative).

- a. *NP-ga/NP(-ni)-wa...iru/i-nai* (animate) (18)b. NP-ga/NP(-ni)-wa . . . aru/nai (inanimate)
- (19) a. Taro-ni-wa kodomo-ga iru. Taro.to-TOP child-NOM exist 'Taro has a child/children.'
 - b. Taro-ni-wa kodomo-ga i-nai. Taro.to-TOP child-NOM exist-NEG 'Taro has no children.'

There are two places in which numerals appear in (18). One of them is in the noun phrase, and the other is the position of an adverbial phrase, as shown in (20a) and (20b) respectively:13

- (20) a. [Futari-no gakusei]_{NP}-ga niwa-ni iru two-GEN student-NOM garden-LOC exist 'There are two students in the garden.'
 - b. [Gakusei]_{NP}-ga hutari niwa-ni student-NOM two garden-LOC exist 'There are two students in the garden.'

There is no difference between (20a) and (20b) as far as the number of the students in the garden is concerned: it is two in both sentences. 14 Therefore, we will treat

We will ignore this kind of semantic difference in this chapter because it has no direct effect on our discussion.

¹³ In Japanese, quantificational expressions are accompanied by a genitive marker no when they are inside a noun phrase, while they are not when they are in the position of an adverbial phrase. In the latter, they are sometimes called "floating quantifiers". There has been intense discussion on their syntactic or semantic status (e.g., Nakanishi 2008), which we do not pursue in this chapter.

¹⁴ There are semantic differences between cases in which a numeral is in a noun phrase and cases in which it is in the position of an adverbial phrase. For example, (i) is different from (ii) in terms of specificity. In (i) the speaker is asking for the specific apples (e.g., the five apples in the basket). In (ii), on the other hand, she is asking for five apples and does not care which apples they are:

⁽i) Sono-goko-no ringo-o kudasai. the.five-GEN apple-ACC give-IMP 'Give (me) those five apples.'

⁽ii) Sono-ringo-o goko kudasai. the.apple-ACC five give-IMP 'Give (me) five of those apples.'

only cases in which a numeral is in the position of an adverbial phrase, in what follows.

As Iida (2002) discusses, existential sentences in Japanese can have at least three kinds of readings (see also Kuno 1973; Nishiyama 2003, 2004; Kinsui 2006). One is an ontological reading, as exemplified in (21):15

- (21) a. Kono-yo-ni-wa nemura-nai hito-ga iru this.world-LOC-TOP sleep-NEG person-NOM exist 'In this world, there are people who don't sleep.'
 - b. Kono-yo-ni-wa nemura-nai hito-ga i-nai this.world-LOC-TOP sleep-NEG person-NOM exist-NEG 'In this world, there is no one who doesn't sleep.'
- (21) does not refer to specific persons. It is a general remark on the existence or absence of people who do not sleep.16

The second is a spatial reading, as exemplified in (22). (22a) refers to the spatial existence of the mathematician(s) in the room. (22b), on the other hand, mentions that no mathematician who solved the puzzle is in the room:

(22) a. Sono-mondai-o toita kono-heya-ni suugakusya-ga the.puzzle-ACC solved mathematician-NOM this.room-LOC iru. exist

'(The) mathematician(s) who solved the puzzle are in this room.'

suugakusya-ga b. Sono-mondai-o toita kono-heya-ni the.puzzle-ACC solved mathematician-NOM this.room-LOC i-nai.

exist-NEG

'(The) mathematician(s) who solved the puzzle are not in this room.'

¹⁵ In (21b), the topic marker wa is more suitable than the nominal marker ga. The distinction between the nominative marker ga and the topic marker wa often plays an important role in existential sentences, since ga tends to be used in existential sentences having a spatial reading and wa in those having an ontological reading. But due to limitations of space, we will not discuss this issue in this chapter.

¹⁶ Japanese does not have a term corresponding to no in English. Therefore, there is no syntactic or semantic distinction between (i) and (ii) in Japanese:

[#]There is not a king of France. (Szekely 2015)

⁽ii) There is no king of France. (Szekely 2015)

Note that when a sentence has no locative phrase as in (23), it becomes ambiguous between a spatial reading and an ontological reading:

- (23) a. Sono-mondai-o toita suugakusya-ga iru the.puzzle-ACC solved mathematician-NOM exist 'There is a mathematician(s) who solved the puzzle.'
 - b. Sono-mondai-o toita suugakusya-ga i-nai. the.puzzle-ACC solved mathematician-NOM exist-NEG 'There is no mathematician who solved the puzzle.'

When (23a) has a spatial reading, it describes, for example, a situation in which mathematicians who solved the puzzle are sitting in a room. In (23b), under the same situation, no mathematician who did it is in the room. When (23) has an ontological reading, (23a) refers to the existence of mathematicians who solved the puzzle in the world, while (23b) states that no mathematicians in the world solved the puzzle.

The third is a possessive reading, as shown in (24):

- (24) a. Taro-ni-wa kodomo-ga iru. Taro.to-TOP child-NOM exist 'Taro has a child/children.'
 - b. Taro-ni-wa kodomo-ga i-nai. Taro.to-TOP child-NOM exist-NEG 'Taro has no children.'

Having children is expressed by so-called *have*-sentences in English:

(25) John has two children.

In Japanese, it is expressed by existential sentences, as in (24).¹⁷

¹⁷ There are cases in which the verb *motu* (have) is used to express having children in Japanese, as shown in (i). However, as (ii) indicates, the use of motu to express having children is not always acceptable:

Kodomo-o motu hito-ga (i) sankasita. child-ACC have person-NOM participated 'People who have children participated.'

⁽ii) *Taro-wa hutari-no kodomo-o motte-iru. Taro-TOP two-GEN child-ACC have-STATIVE 'Taro has two children.'

In the next section, we will investigate the polarity sensitivity of existential sentences with numerals, based on the classification of existential sentences in Japanese that we have seen in this section.

4 Polarity sensitivity of existential sentences with numerals in Japanese

In Section 2 we proposed that there are three types of domain-restrictions (observation, subtraction and trivial-setting). In Section 3, following Iida (2002), we classified the three types of readings (spatial, ontological and possessive) that existential sentences in Japanese can have. In this section, we will discuss that our analysis in Section 2 explains why some existential sentences in Japanese show polarity sensitivity, while others do not. (26) is the list of existential sentences that we will treat in this section:

- (26) a. Heya-ni gesuto-ga sannin iru/inai. (= (27))'Three guests {are/are not} in the room.'(26a) has a spatial reading and belongs to the subtraction type.
 - b. Nemutteiru gakusei-ga hutari iru/(#)inai. (= (28))
 'There {are/#are not} two students who are sleeping.' (observation)
 'Two sleeping students are (here)/are missing.' (subtraction)
 (26b) has a spatial reading, and it is ambiguous between the observation and subtraction type.
 - c. Sono mondai-o toita suugakusya-ga sekai-ni hutari iru/#inai. (= (29)) 'There {are/#are not} two mathematicians who solved the puzzle in the world.'
 - (26c) has an ontological reading and belongs to the trivial-setting type.
 - d. Taro-ni-wa kodomo-ga sannin iru/#inai. (= (30))
 'Taro {has/#does not have} three children.'
 (26d) has a possessive reading and belongs to the trivial-setting type.
- (27) is an example of sentences having a spatial reading. The type of domain-restriction is subtraction:
- (27) a. Heya-ni gesuto-ga sannin iru.
 room-LOC guest-NOM three exist
 'Three guests are in the room.'

b. Heya-ni gesuto-ga sannin i-nai. guestroom-LOC student-NOM three exist-NEG 'Three guests are not in the room.'

In Section 2, we have discussed the English counterpart of (27), 'Three guests are/ are not in the room (= (10))'. (27) is different from (10) in that the former is an existential sentence, while the latter is a copular sentence. However, they show no difference in that they both describe a situation illustrated in Figure 2. (27a) is felicitous in a situation in which the speaker sees three guests sitting in the room. (27b) is also felicitous in a situation in which she expects five guests to be in the room and sees only two guests there. In this case, she infers that three guests have not arrived yet, and subtracts the number "two" from the number "five." In other words, the set of individuals that are quantified over is spatially divided into the two (mutually disjoint) subsets and (27b) refers to one of them as shown in Figure 2.

(28) is ambiguous between the observation and subtraction type. Let us consider when (28) is of the observation type:

- (28)a. Nemutteiru gakusei-ga hutari iru. sleeping student-NOM two exist 'There are two students who are sleeping.'
 - b. #Nemutteiru gakusei-ga hutari i-nai. student-NOM two sleeping exist-NEG '#There are not two students who are sleeping.'

(28) describes a situation illustrated in Figure 1. Suppose that several students are sleeping in the classroom. (28a) is felicitous in this situation if the speaker notices at least two sleeping students. On the other hand, (28b) sounds odd in the same situation. This contrast in felicity between (28a) and (28b) can be explained, as follows. When the sentences are of the observation type, individuals satisfying a property P and those not satisfying P are supposed to be in the scene of the utterance (in the box in Figure 1). However, (28b) has the reading that the two sleeping students are not in the scene of the utterance. This contradicts the condition of observation that individuals that are quantified over must be all in the same scene of the utterance. This is the reason (28b) is infelicitous. When (28) is of the subtraction type, on the other hand, (28b) has a reading that sleeping students are outside the scene of the utterance as illustrated in Figure 2. This reading is possible, for example, in a situation in which two sleeping students are missing from a research institute in which researchers are investigating REM sleep.

(29) is an example of sentences having an ontological reading. The type of domain-restriction is trivial-setting:

(29) a. Sono-mondai-o toita suugakusya-ga sekai-ni the.puzzle-ACC solved mathematician-NOM world-LOC hutari iru.
two exist
'There are two mathematicians who solved the puzzle in the world.'

b. #Sono-mondai-o toita suugakusya-ga sekai-ni

the.puzzle-ACC solved mathematician-NOM world-LOC

hutari i-nai.

two exist-NEG

"There are not two mathematicians who solved the puzzle in the world."

(29) describes a situation illustrated in Figure 3. What (29a) conveys is that at least two mathematicians in the world solved the puzzle. (29b), on the other hand, refers to mathematicians outside the box. They are non-specific individuals and did not solve the puzzle. Outside the box, if no mathematician solved it, any pair of them did not solved it. However, this is totally uninformative and is the reason (29b) is infelicitous.

The last example is (3) (reprinted as (30)). (30) has a spatial reading and its type of domain-restriction is trivial-setting.

- (30) a. *Taro-ni-wa kodomo-ga hutari iru.*Taro.to-TOP child-NOM two exist

 'Taro has two children.'
 - b. #Taro-ni-wa kodomo-ga hutari i-nai.
 Taro.to-TOP child-NOM two exist-NEG
 "#Taro does not have two children."

(30) describes a situation illustrated in Figure 4. Like eggs in (14) in Section 2, children do not exist until they are born. Therefore, the set of children who have not been born is empty in (30b). Since any empty set makes (30b) trivially true and makes it uninformative, it is infelicitous.

5 Remaining issues

In this chapter, we have discussed the polarity sensitivity of existential sentences with numerals in Japanese. But they are not the only existential sentences that demonstrate polarity sensitivity. Existential sentences that have other kinds of quantified expressions such as *hotondo* (*most*) and *oozei* (*many*) are also sensitive

to polarity, as exemplified in (31) to (33). 18,19 When (31) has an ontological reading, (31b) is felicitous, while (31a) is infelicitous:

- (31) a. #Sumaho-o motteiru gakusei-wa hotondo iru. cell.phone-ACC have student-TOP most exist '#There are most students who have a cell phone.
 - h Sumaho-o motteiru gakusei-wa hotondo i-nai. cell.phone-ACC have student-TOP most exist-NEG 'There are few students who have a cell phone.'

More complicated cases involve *oozei* (many). When (32) has an ontological reading, (32b) is infelicitous:20

- (32)a. Sumaho-o motteiru gakusei-wa oozei iru. cell.phone-ACC have student-TOP many exist 'There are many students who have a cell phone.'
 - b. #Sumaho-o motteiru gakusei-wa oozei i-nai. student-TOP many exist-NEG cell.phone-ACC have "#Many students who have a cell phone do not exist (in the world)."

¹⁸ Again, we treat only cases in which negation has a narrower scope than a numeral.

¹⁹ When (31a) and (31b) have a spatial reading as in (i), they are both felicitous, regardless of whether they are of the observation or subtraction type:

⁽i) a. Sumaho-o motteiru gakusei-wa kono-heva-ni hotondo iru. cellphone-ACC have student-TOP this.room-LOC most exist 'Most students who have a cell phone are in this room.'

b. Sumaho-o motteiru gakusei-wa kono-heya-ni hotondo i-nai. cell.phone-ACC have student-TOP this.room-LOC most exist-NEG 'Most students who have a cell phone are not in this room.'

²⁰ When (32) is given a spatial reading, and when it is of the subtraction type, the nominal marker ga is more appropriate than the topic marker wa, as exemplified in (i). When (i) is of the observation type, (ib) is unnatural. The addition of the contrastive wa to oozei (i.e., oozei-wa) does not change its unnaturalness.

⁽i) a. Sumaho-o motteiru gakusei-ga iru. oozei cell.phone-ACC have student-NOM many exist 'There are many students who have a cell phone (here).'

Sumaho-o motteiru gakusei-ga oozei i-nai. cell.phone-ACC have student-NOM many exist-NEG 'Many students who have a cell phone are not (here).'

What makes the polarity of (32b) complicated is that when the contrastive marker wa follows oozei, (32b) becomes felicitous, as shown in (33).21

(33) Sumaho-o motteiru gakusei-wa oozei-wa i-nai. cell.phone-ACC have student-TOP many-CONT exist-NEG 'It is not the case that there are many students who have a cell phone.'

There are other determiners that affect polarity sensitivity of existential sentences in Japanese. But to provide a complete account is left for future research.

6 Conclusion

In this chapter, we proposed the situation-based approach to polarity sensitivity that some types of existential sentences with numerals in Japanese have. As we have seen in Section 2, whether a sentence with numerals is felicitous or not depends on a situation in which they are uttered. For example, the sentence 'Two birds are not flying (in the case of two > NEG)' is natural when it is uttered in a situation in which two birds are resting on a perch and other birds are flying in the sky. However, the sentence is unnatural when it is uttered in a situation in which no bird is in the scene, though it is true. What matters here is how a domain of quantification is restricted. In Section 2, we classified domain-restrictions into the three types – observation, subtraction and trivial-setting. When a sentence belongs to the observation type, it is felicitous when individuals satisfying a property P and those not satisfying it (e.g., two birds not flying (but resting on the perch) and other birds flying (in the sky)) are situated in the same scene of the utterance. It is, on the other hand, infectious if individuals not satisfying P are not in the scene of the utterance. When a sentence belongs to the subtraction type (e.g., 'Two guests have not arrived yet'), individuals not satisfying P are outside the scene of the utterance and the sentence shows no polarity-sensitivity. When a sentence belongs to the trivial-setting type, individuals

²¹ The same phenomena that the contrastive *wa* changes the meaning of a sentence are observed in cases in which sukunai (few) is used, as exemplified in (i) and (ii):

⁽i) Sumaho-o motteiru gakusei-wa sukunaku nai. cell.phone-ACC have NEG student-TOP few 'There are not a few students who have a cell phone.'

Sumaho-o (ii) motteiru gakusei-wa sukunaku-wa nai. cell.phone-ACC have student-NOM few-CONT NEG 'It is not the case that few students have a cell phone.'

not satisfying P are outside the scene of the utterance. In this case, they do not exist or they are non-specific. In the case of the trivial-setting type sentences such as "#There are not two mathematicians who solved the puzzle" and "#John does not have two children', they are infelicitous, because any pair of individuals outside the scene of the utterance makes them trivially true, and thus totally uninformative.

As we have discussed in Section 4, polarity sensitivity that existential sentences with numerals in Japanese is also explained by the three types of domain-restrictions. For example, when someone is giving a lecture, it is natural for her to say 'Jugyo-o kiitei-nai gakusei-ga hutari iru ('There are two students who are not listening to my lecture')'. However, it is unnatural for her to say '#Jugyo-o kiitei-nai gakusei-ga hutari i-nai ('#There are not two students who are not listening to my lecture')'. In this situation, all the students are supposed to be in the classroom and thus it is contradictory to claim that the students not listening to the lecture are not in the classroom. This type of contradictory cases is predicted for the observation-type sentences. In Section 5, we have seen two other types of existential sentences in Japanese. Developing a principled explanation to account for such cases remains an important goal for future research.

References

Abbot, Barbara. 1993. A pragmatic account of the definiteness effect in existential sentences. Journal of Pragmatics 19. 39-55.

Abbot, Barbara. 1997. Definiteness and existentials. Language 73. 103–108.

Abrusán, Márta. 2014. Weak Island Semantics. Oxford: Oxford University Press.

Barwise, Jon & Robin Cooper. 1981. Generalized quantifiers and natural language. Linguistics and Philosophy 4. 159-219.

Bassaganyas-Bars, Toni & Louise McNally. 2020. There be- and have-sentences: Different semantics, different definiteness effects. The Linguistic Review 37. 179-208.

Comorovski, Ileana & Klaus von Heusinger (eds.). 2007. Existence: Semantics and Syntax. Dordrecht:

Fox, Danny & Martin Hackl. 2006. The universal density of measurement. Linquistics and Philosophy 29.

Francez, Itamar. 2010. Context dependence and implicit arguments in existentials. Linguistics and Philosophy 33. 11-30.

Freeze, Ray. 1992. Existentials and other locatives. Language 68. 553-595.

Iida, Takashi. 2002. Sonzai-to gengo – sonzaibun-no imiron [Existence and languages – semantics of existential sentences]. In Sumio Nakagawa (ed.), Seiyoo Seishinshi-niokeru Gengokan-no Shosoo [Aspects of linguistic viewpoints in the Western intellectual history], 31–71. Tokyo: Keio University Press.

Imani, Ikumi. 2010. Hitei-no shosoo [Aspects of negation]. In Harumi Sawada (ed.), Go, Bun-to Bunpoo Kategorii-no Imi [Meanings of words, sentences, and grammatical categories], 69–89. Tokyo: Hituzi Syobo.

- Keenan, Edward. 1987. A semantic definition of "indefinite NP". In Eric Reuland & Alice ter Meulen (eds.), The Representation of (In)definiteness, 286-317. Cambridge, MA: MIT Press.
- Keenan, Edward. 2003. The definiteness effect: semantic or pragmatic? Natural Language Semantics 11. 187-216.
- Kinsui, Satoshi. 2006. Nihongo Sonzai Hyoogen-no rRekisi [The history of existential expressions in Japanesel, Tokvo: Hituzi Svobo.
- Kishimoto, Hideki. 2000. Locational verbs, agreement, and object shift in Japanese. The Linguistic Review 17. 53-109.
- Kuno, Susumu, 1973, Nihongo Bunpoo Kenkyuu [Studies on Japanese grammar], Tokyo: Taishukan,
- Lumsden, Michael. 1988. Existential Sentences: Their Structure and Meaning. London: Croom Helm.
- Masuoka, Takashi. 2008. Jojutsu ruikeiron-nimukete [On descriptive typology]. In Takashi Masuoka (ed.), Jojutsu Ruikeiron [Descriptive typology], 3–18. Tokyo: Kurosio Publishers.
- McNally, Louise. 1997. A Semantics for the English Existential Construction. New York: Garland.
- McNally, Louise. 1998. Existential sentences without existential quantification. Linguistics and Philosophy 21. 353-392.
- Milsark, Gary. 1974. Existential sentences in English. Cambridge, MA: MIT dissertation.
- Milsark, Gary. 1977. Toward an explanation of certain peculiarities of the existential construction in English. Linguistic Analysis 3, 1-29.
- Nakanishi, Kimiko. 2008. The syntax and semantics of floating numeral quantifiers. In Shigeru Miyaqawa & Mamoru Saito (eds.), The Oxford Handbook of Japanese Linquistics, 287-319. Oxford: Oxford University Press.
- Nishiyama, Yuji. 2003. Nihongo Meishiku-no Imiron-to Goyooron: Shijiteki Meishiku-to Hi-shijiteki Meishiku [Semantics and pragmatics of noun phrases in Japanese: referential noun phrases and nonreferential noun phrases]. Tokyo: Hituzi Syobo.
- Nishiyama, Yuji. 2004. Zettai sonzaibun-to kizoku sonzaibun-no kaishaku-o megutte [On interpretations of absolute existential sentences and attributive existential sentences]. Journal of the Keio Institute of Cultural and Linguistic Studies 36. 161-178.
- Partee, Barbara & Vladimir Borschev. 2007. Existential sentences, be, and the genitive of negation in Russian. In Ileana Comorovski & Klaus von Heusinger (eds.), Existence: Semantics and Syntax, 147-190. Dordrecht: Springer.
- Rullmann, Hotze. 1995. Maximality in the Semantics of Wh-Constructions. Amherst: University of Massachusetts dissertation.
- Schwarz, Bernhard & Junko Shimoyama. 2009. (Obviating) negative island effects. (Handout presented at the Syntactic Interfaces Research Group (SIRG) meeting).
- Schwarz, Bernhard & Junko Shimoyama. 2011. Negative islands and obviation by 'wa' in Japanese degree questions. In Proceedings of SALT 20, 702-719.
- Solt, Stephanie & Brandon Waldon. 2019. Numerals under negation: Empirical findings. Glossa: a journal of general linguistics 4(1). 113. 1–31. https://doi.org/10.5334/gjgl.736
- Szabolcsi, Anna & Frans Zwart. 1993. Weak islands and an algebraic semantics for scope taking. Natural Language Semantics 1, 235-284.
- Szekely, Rachel. 2015. Truth without Predication: The Role of Placing in the Existential There-sentence. New York: Palgrave Macmillan.
- Ward, Gregory & Betty Birner. 1995. Definiteness and the English existential. Language 71. 722-742. Williams, Edwin. 1984. There-insertion. Linguistic Inquiry 15. 131–153.
- Zucchi, Sandro. 1995. The ingredients of definiteness and the definiteness effect. Natural Language Semantics 3, 33-78.

Eri Tanaka, Kenta Mizutani and Stephanie Solt

Chapter 6 Polarity sensitivity and equative markers in Japanese and German

1 Introduction

Cross-linguistic variation in the semantics of equative constructions has been a topic of considerable recent interest (Crnič and Fox 2019; Penka 2016; Rett 2020; Umbach and Özge 2019). We contribute to this body of research with an investigation of the Japanese equative marker *hodo* and German *dermaßen*.

We show that these items are polarity sensitive in some but not all their uses, a pattern that has not to our knowledge been previously observed. We derive the polarity (in)sensitivity of these items from a weak existential semantics. We also relate the polarity sensitivity to the recent distinction between explicit and implicit equatives (Rett 2020).

2 Data

2.1 Polarity sensitivity of hodo and dermaßen

Hodo differs from equative markers such as English as in that the former is polarity sensitive, as shown in (1)–(2):¹

(1) Taroo is/isn't as tall as Ziroo

Acknowledgments: We would like to express our gratitude to the editors of the volume and two anonymous reviewers for their invaluable comments on the earlier version of the paper. This work has been supported by "On Development of Logical Language and Mathematical Concepts (II)", Osaka University International Joint Research Program (A*), (2021–2023, Principal Investigator; Yoichi Miyamoto).

¹ Japanese descriptive linguistic literature has documented multiple usages of *hodo*, e.g., Izima (2008), Okutsu (1986), Imani (2019) a. o. This paper focuses on usages of *hodo*-phrases as adverbial degree phrases, but they may appear in a prenominal position when appended by genitive marker *no*, as in (i). These cases exhibit an unexpected polarity sensitivity, which deserve a further investigation in future.

- (2) Taroo-wa *takai/takaku-nai a. Ziroo-hodo se-ga Taroo-TOP Ziroo-hodo height-NOM tall/tall-NEG 'Taroo is/isn't as tall as Ziroo.' [Phrasal-hodo]
 - b. Taroo-wa Ziroo-ga nonda-hodo *nonda/noma-nak-atta drank/drink-NEG-PAST Taroo-TOP Ziroo-NOM drank-hodo 'Taroo drank/didn't drink as much as Ziroo did.' [Clausal-hodo]

Hodo-phrases can be licensed by downward entailing (DE) contexts as well as questions:

- (3) a. Mosi Taroo-ga Ziroo-hodo se-ga takake-reha Ziroo-hodo height-NOM if Taroo-NOM tall-COND basuketto-no chiimu-ni haireta-daroo basketball-GEN team-DAT entered-INF 'If Taroo were as tall as Ziroo, he would be a member of a basketball team.'
 - b. Taroo-wa Ziroo-hodo nomu-maeni ie-ni kaetta Taroo-TOP Ziroo-hodo drink-before home-DAT went.back 'Taroo left before he drank as much as Ziroo did.'
 - c. Taroo-ga Ziroo-hodo se-ga takai towa odoroki-da Taroo-NOM Ziroo-hodo height-NOM tall COMP surprise-COP 'That Taroo is as tall as Ziroo is surprising.'
 - Taroo-wa Ziroo-hodo nonda no Taroo-TOP Ziroo-hodo drank 'Did Taroo drink as much as Ziroo?'

From (2)–(3), one might conclude that *hodo*-phrases are weak NPIs in Japanese. *Hodo*, however, is not a negative polarity item in a standard sense, because the clausal com-

⁽i) a. Taroo-wa Ziroo-hodo-no se-no Taroo-TOP Ziroo-hodo-GEN height-GEN takasa-{da/?de-wa-nai} height-{COP/COP-CONTR-NEG} 'Taroo is/isn't as tall as Ziroo.'

b. Taroo-wa Ziroo-hodo-no tensai-{??da/de-wa nai} Taroo-TOP Ziroo-hodo-GEN genius-{COP/COP-CONT-NEG} 'Taroo is/isn't such a genius as Ziroo.'

plement of *hodo* may include negation, in which case the matrix predicate has to be affirmative, as shown in (4).²

(4) Taroo-wa Ziroo-ga nonda-koto-ga-nai-hodo
Taroo-TOP Ziroo-NOM drank-fact-NOM-NEG-hodo
nonda/*noma-nakat-ta
drank/drink-NEG-PAST
(lit.)'Taroo drank as much as Ziroo has never drunk.'
'Taroo drank more than Ziroo has ever drunk.'

In addition, *hodo* can be licensed by negation in a higher clause, which is not allowed with a usual NPI, like *shika* 'only'.

- (5) a. [Taroo-ga Ziroo-hodo se-ga takai] to-iu-koto-wa nai [Taroo-NOM Ziroo-hodo height-NOM tall] COMP-say-fact-TOP NEG 'It's not the case that Taroo is as tall as Ziroo.'
 - b. *[Taroo-ga otya-sika nomu] to-iu koto-wa nai [Taroo-NOM tea-only drink COMP-say fact-TOP NEG 'It is not the case that Taroo drinks only_{NPI} tea.'
- (6) [Taroo-hodo kashikoi hito]-ni atta koto-ga-{*aru/nai} [Taroo-hodo smart person]-DAT met thing-NOM-{be/NEG} 'I have never met a person who is as smart as Taroo.'

We call polarity sensitive *hodo* 'as'-hodo. There is a distinct usage of *hodo*, which corresponds to English 'so . . . that', and this usage does not pattern with 'as'-hodo. The latter use of *hodo* (which we call 'so'-hodo) does not show polarity sensitivity, as shown in (7):

(7) a. *Taroo-wa basukettobooru sensyu-ni nar-eru-hodo*Taroo-TOP basketball player-DAT become-can-hodo

se-ga takai/takaku-nai

height-NOM tall/tall-NEG

'Taroo is/isn't so tall that he can be a basketball player.'

We cannot offer a reasonable justification for this preference at this point.

² Some informants prefer experiential negation to a simple past sentence such as (ii):

⁽ii) ?? Taroo-wa [Ziroo-ga noma-nakat-ta-hodo] nonda
Taroo-TOP Ziroo-NOM drink-NEG-PAST-hodo drank
(lit.) 'Taroo drank as much as Ziroo drank.'

- b. Taroo-wa yopparau-hodo nonda/nondei-nai kanzen-ni Taroo-TOP completely drunk-hodo drank/drank-ASP-NEG 'Taroo drank/didn't drink so much as he got completely drunk.'
- c. Tomato-ga kazoku 4-nin-ni juubun-na-hodo Tomato-NOM family 4-CL-DAT enough-COP-hodo dekita/deki-nakat-ta grew/grow-NEG-PAST

'We harvested/didn't harvest enough tomatoes for our family of four.'

d. Taroo-wa gakko-de itiban-ni naru-hodo Taroo-TOP school-in first-COP hecome-hodo kasikoi/kasikoku-nai smart/smart-NEG 'Taroo is/isn't smart enough to be the best in school.'

Notice that phrasal hodo cannot be a 'so'-hodo. Whether clausal hodo may serve as 'so'-hodo or not depends on what the clause denotes: the hodo clauses in (7) refer to sufficient properties for the main-clause properties to hold.

German dermaßen 'to such an extent' patterns very similarly to Japanese hodo. The construction dermaßen . . . wie 'to such an extent as' is sensitive to polarity. It is unacceptable in positive sentences, per (8a). But with sufficient contextual support it is acceptable (for most speakers we have consulted) in the corresponding negative sentence, per (8b) and (9).

- (8) Hans ist groß... tall . . . Hans is
 - *Er ist (sogar) dermaßen groß wie sein Vater. to.such.an extent tall than his father he (even)
 - b. Er ist (aber) nicht dermaßen groß wie sein Vater. he is to.such.an.extent tall his father (but) not as

Even more acceptable, and frequently found in corpus data, are examples with a negative quantifier in the matrix clause or the wie complement, as in the naturally occurring examples in (9).

(9) a. Nirgends auf der Welt ist die Artenvielfalt dermaßen the biodiversity to.such.an.extent nowhere in the world is gross wie hier. large here as

b. Die Panik ist dermaßen gross wie noch nie zuvor. to.such.an.extent large before the panic as never

Like Japanese *hodo*, *dermaßen* has a second use *dermaßen . . . dass* 'to such an extent that', which is not polarity sensitive:

(10) Hans ist (nicht) dermaßen groß, dass er Basketballspieler Hans is (not) to.such.an.extent large, that he basketball.player sein könnte. be.INF could

'Hans is/isn't so tall that he could be a basketball player.'

2.2 Presuppositional effects

Another hallmark of Japanese *hodo* as well as German *dermaßen* lies in their presuppositional effects.

In 'as'-hodo/dermaßen . . .wie, the standard of comparison and the subject are presupposed to have a high degree on the relevant scale. (11) illustrates this behavior, where a hodo comparison to the 209 cm tall Giant Baba, a famous Japanese wrestler, is felicitous, whereas comparison to the 145 cm tall Ikeno Medaka, a famous Japanese comedian, is odd.

- (11) Taroo-wa Giant Baba/#Ikeno Medaka-hodo se-ga takaku-nai Taroo-TOP Giant Baba/Ikeno Medaka-hodo height-NOM tall-NEG 'Taroo isn't as tall as Giant Baba/Ikeno Medaka.'
- (12) indicates that 'as'-hodo sentences also feature a presupposition on the subject; A's lack of knowledge about B's brother makes 'as'-hodo sound infelicitous, because B's use of hodo indicates that A shares with B the fact that B's brother is tall.
- (12) A: (A has never seen B's brother.) How tall is your brother?

 B: #Ani-wa Giant Baba-hodo se-ga takaku-nai
 brother-TOP Giant Baba-hodo height-NOM tall-NEG
 'My brother is not as tall as Giant Baba.'

German *dermaßen . . . wie* in (8b) sounds felicitous when both Hans and his father are known to be tall.

In 'so'-hodo/dermaßen . . .dass sentences, on the other hand, the standard of comparison must have a high degree on the relevant scale but the subject must have such a degree only in negative sentences. In (13), the common knowledge that jockeys are usually not tall makes a 'so'-hodo sentence sound infelicitous. (14)

shows that the presupposition on the subject is conveyed only if the 'so'-hodo is a negative sentence. The same applies to dermaßen . . .dass in (10).

(13) Taroo-wa basukettobooru sensyu/#jokkii-ni nar-eru-hodo Taroo-TOP basketball player/jockey-DAT become-can-hodo takai se-ga height-NOM tall 'Taroo is so tall that he can be a basketball player/jockey.'

(14) A: (A has never seen B's brother.) How tall is your brother?

B1: Ani-wa basukettobooru sensyu-ni nar-eru-hodo brother-TOP basketball player-DAT beceom-can-hodo se-ga takai height-NOM tall

'My brother is so tall that he can be a basketball player.'

B2: #Ani-wa basukettobooru sensyu-ni nar-eru-hodo brother-TOP basketball player-DAT beceom-can-hodo se-ga takaku-nai height-NOM tall-NEG 'My brother isn't so tall that he can be a basketball player.'

The fact that Japanese hodo and German dermaßen exhibit a similar pattern indi-

cates that the behaviors of Japanese hodo are not derived from some idiosyncratic property of that language, but rather they have some more general source.

3 Proposal

3.1 Equatives and maximality operator

Standard degree-based analyses treat equative markers as degree quantifiers that introduce a maximality operator, which defines the largest degree in a set of degrees (=(16)). The equative sentence in (15a) is thus translated into (15b) (cf. Schwarzschild 2008; Beck 2011).

- (15) a. Taroo is as tall as Ziroo (is).
 - b. $\exists d.HEIGHT(taroo) \ge d \land d = max\{d: HEIGHT(ziroo) \ge d \}$ (Prose: there is at least one degree d on height scale such that d equals Ziroo's maximal height degree and Taroo's height reaches at least that degree.)
- (16) $\max(D) = \iota d \in D. \forall d' \in D. d' \le d.$ (D is a set of degrees.)

Crnič and Fox (2019) argue, however, that maximality is not a mandatory component of the semantics of the equative, based on the data where so-called negative island effects in equative clauses exhibit a cross-linguistic variation. Slovenian equatives in (17b) may or may not be appended by a max(imality)-operator, as in (18), but without it, (17b) only yields a trivial interpretation: granting that fast is downward monotonic in that if John drove d-fast, then he drove d'-fast for any d' ≤ d, (18b) is true whenever John and Mary drive, because there will always be some speed to which his/her driving reaches (cf. Heim 2000). Thus in this language, the max-operator is optional and inserted to avoid the trivial interpretation.

- (17) a. John drove as fast as Mary {did/*didn't}.
 - b. *Janez se* iе peljal tako hitro [kot ie Janez self AUX drive DEM fast Ithan self AUX Marija/ kot įе Mariia nil. se than self AUX Mary NEG.AUX] 'John drove as fast as Mary did/didn't'

[Slovenian]

- a. $\exists d$. John drove d-fast \land d= max{d: Mary drove d-fast} [non-trivial] (18)
 - b. \exists d. John drove d-fast \land Mary drove d-fast [trivial]

Crnič and Fox (2019) propose that the optionality of a max-operator produces the contrast in negative island effects in English and Slovenian. With negation, languages with a mandatory max-operator, such as English, are predicted to exhibit negative island effects, because when the negation is applied to an as-clause, as in (19a), there will be no maximal speed to which Mary does not drive (von Stechow 1984; Rullman 1995, a.o.). Slovenian-type languages, on the other hand, may allow negation in the equative standard clause, where no max-operator is present, as in (19b). The interpretation is not trivial anymore, because it is true only when John's driving speed exceeds Mary's.

- (19) a. ∃d. John drove d-fast ∧ d= max{d: ¬ Mary drove d-fast} [max undefined] b. \exists d. John drove d-fast $\land \neg$ Mary drove d-fast [non-trivial]

We claim that Japanese hodo and German dermaßen are equative markers that resist maximality, and thus always have existential semantics. This turns out to be the key to explaining the polarity sensitivity of these markers described in section 2.

As a first attempt, let us assume that hodo/dermaßen equative sentences on their 'as' usage are always interpreted with existential semantics without maximality, as in (20):

- (20) a. $[Taroo is tall [Ziroo-hodo]] = \exists d^*.HEIGHT(taroo) \ge d^*,$ where $d^* \in \lambda d$.HEIGHT(ziroo) $\geq d$
 - b. $[Taroo is not tall [Ziroo-hodo]] = \exists d^*. \neg (HEIGHT(taroo) \ge d^*),$ where $d^* \in \lambda d$.HEIGHT(ziroo) $\geq d$

(20a) denotes a very weak interpretation, which is true whenever Taroo and Ziroo have some height. This is trivial in the same way as (18b). Since we claim that hodo and dermaßen are equative markers that resist the max-operator, we cannot take a rescuing strategy by inserting it. This is why affirmative hodo/dermaßen sentences are not allowed.

When it comes to negative sentences, the existential semantics in (20b) is not trivial. (20b) is true iff there is some degree of height that Ziroo has that Taroo does not have, that is, if Ziroo is taller than Taroo. Thus the negative hodo/dermaßen sentences induce the same truth condition as a comparative construction (see Figure 1).

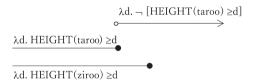


Figure 1: Polarity effects of 'as'-hodo/dermaßen . . . wie.

The unavailability of max-operator in hodo/dermaßen is crucial to explaining their polarity sensitivity in 'as'-varieties. This analysis, however, does not yet incorporate the norm-related presuppositional effects observed for hodo/dermaßen. In the next section, we propose a refinement of the analysis which builds on the insight that hodo/dermaßen-equatives are what Rett (2020) calls implicit equatives; the triviality that is responsible for polarity sensitivity will be reconstrued as triviality in comparison to the unmodified positive form.

3.2 Proposal: Hodo/dermaßen as implicit equatives

Rett (2020) distinguishes implicit and explicit equatives, to parallel implicit and explicit comparatives in Kennedy (2007). Rett (2020) considers *like*-equatives as implicit equatives, which convey that the subject, as well as the standard, has a height that exceeds the relevant contextual norm, as shown in (21b):

(21) a. Jane is as tall as Bill, but in fact she is short. (explicit equative)
b. Jane is tall like Bill, #but in fact she is short. (implicit equative)
(Rett 2020:181)

Another hallmark of "implicitness" of comparison is that such comparison resists what Kennedy (2007) calls crisp judgment contexts. In such a context, only a very slight difference in degrees is at issue, and explicit comparatives and equatives are felicitous in that context while implicit ones are not. Kennedy (2007: 17–18) argues that only (22b) is felicitous in a context where a 100-page book and a 99-page book are compared.

- (22) a. This book is long compared to that book.
 - b. This book is longer than that book.

(Kennedy 2007: 17)

We observe the comparison described by *hodo/dermaßen* is not felicitous in a crisp judgment context, where a 180-cm tall person and a 179.6-cm tall person are compared:

- (23) a. [Context] Both Taroo and Ziroo are tall, but Taroo is just a few millimeters shorter than Ziroo.
 - b. #Taroo-wa Ziroo-hodo se-ga takaku-nai Taroo-TOP Ziroo-hodo height-NOM tall-NEG 'Taroo is not as tall as Ziroo.'

Incorporating this "implicitness" of *hodo/dermaßen*, we propose the semantics of *hodo/dermaßen* as in (24), where it is assimilated to the semantics of positive sentences. We achieve this by positing that *hodo/dermaßen* introduces a possible threshold for the positive form of the gradable expression (cf. Klein 1980), which is subsequently existentially closed. The norm-related presupposition is incorporated as a presupposition on the standard.

 $[[hodo/dermaßen]]^c = \lambda D_{d,t} : \theta \ge \theta_c \land \theta \in D.\lambda P_{d,e} . \lambda x. P(\theta)(x).$ (24) (θ_c) is a contextually determined standard on a relevant scale. θ is existentially bound at the end.)

We assume se-ga takai/groß 'tall' is a two-place predicate that relates an individual and its degrees on the scale of height.

- (25) [se ga takai/groß/tall] = $\lambda d.\lambda x.HEIGHT(x) \ge d$
- (27) shows a compositional process of the phrasal 'as'-hodo sentences in (26a). The first argument of hodo may denote a set of degrees via a contextually supplied function f. as in (26b) (see Hayashishita 2009), or a covert operator movement as in (26c).^{3,4,5} For the sake of presentation, we take the second option here.
- (26) a. *Taroo-wa* Ziroo-hodo se-ga *takai/takaku-nai Taroo-TOP Ziroo-hodo height-NOM tall/tall-NEG 'Taroo is/isn't as tall as Ziroo.' (=(2a))
 - b. $f(Ziro) = \lambda d$.HEIGHT(ziroo) $\geq d$, where f is a function from individuals/ propositions to a set of degrees
 - $[Op_i \text{ Ziroo } t_i \text{ se-ga takai}] = \lambda d.\text{HEIGHT}(\text{ziroo}) \ge d$ c.
- (27)a. $[[Op_i \text{ Ziroo } t_i \text{ tall }] \text{ hodo}]^c = \lambda x.\text{HEIGHT}(x) \ge \theta$,

where HEIGHT(ziroo) $\geq \theta \land \theta \geq \theta_c$

[Taroo is tall [[Op_i Ziroo t_i tall] hodo]] c = HEIGHT(taro) $\geq \theta$,

where HEIGHT(ziroo) $\geq \theta \wedge \theta \geq \theta_c$

[Taroo is not tall $[Op_i \text{ Ziroo } t_i \text{ tall}]$]^c = $\neg \text{HEIGHT}(\text{taroo}) \ge \theta$, where HEIGHT(ziroo) $\geq \theta \wedge \theta \geq \theta_c$

(27b) and (27c) are existentially closed, yielding (28a-c). Note that for the negative hodo-sentence, there may be two semantic representations, depending on the timing of application of existential closure:

³ The second option is not consonant with the claim that Japanese is a language that lacks a degree abstraction (Beck, Oda and Sugisaki 2004).

⁴ As for dermaßen, we assume the second option is taken.

⁵ In (2b), where hodo takes a clausal complement, the second option would be taken:

⁽iii) $[Op_i \text{ Ziroo } d_i - \text{much drank}] = \lambda d. \exists e. \text{drink}(e) \land \text{Agent}(e) = \text{Ziroo } \land \mu(e) \ge d$, where μ is a relevant measure function (i.e.volume, in this case).

(28) a. **[Taroo** is tall [Op_i Ziroo t_i tall]]^c

$$=\exists \theta: \theta \ge \theta_c \land \text{HEIGHT}(\text{ziroo}) \ge \theta.\text{HEIGHT}(\text{taroo}) \ge \theta$$

b. **[Taroo** is not tall $[Op_i \text{ Ziroo } t_i \text{ tall}]]^c$

$$=\exists \theta: \theta \ge \theta_c \land \text{HEIGHT}(\text{ziroo}) \ge \theta. \neg \text{HEIGHT}(\text{taroo}) \ge \theta$$

c. [Taroo is not tall [Op_i Ziroo t_i tall]] c

$$\neg \exists \theta : \theta \ge \theta_c \land \text{HEIGHT}(\text{ziroo}) \ge \theta. \text{ HEIGHT}(\text{taroo}) \ge \theta$$

The denotation in (28a) describes a situation where there is a threshold degree to be counted as 'tall' such that Taroo's height as well as Ziroo's height exceeds it, and that threshold is greater than or equal to a contextually determined threshold. We claim that what goes wrong with this denotation is that it is equivalent to that of a bare positive sentence, such as *Taroo is tall*.

We assume that a gradable adjective in positive sentences is composed with a null morpheme, *pos*, to introduce a contextual standard, as in (29a) (see von Stechow 1984):

(29) a.
$$[pos]^c = \lambda P_{\langle d,et \rangle} . \lambda x. P(x) \ge \theta_c$$

b. **Taroo** is [pos tall] $]^c = \text{HEIGHT}(\text{taroo}) \ge \theta_c$

Crucially, assuming that Ziroo is tall (i.e., that he has height $\geq \theta_c$), the denotation in (28a) is equivalent to that in (29b), regardless of Ziroo's actual height. That is, Ziroo's height is irrelevant for the truth or falsity of the sentence, and the same meaning could be expressed by the simpler *Taroo is tall*. Our claim is that it is triviality in this sense that blocks (28a).

Notice that our claim that *hodo/dermaßen* resist a max-operator is still crucial for our refined version of analysis in (24), in accounting for their polarity sensitivity. If these items were accompanied by a max-operator as in (30), we would predict that the affirmative *hodo*-sentences would be acceptable, since (30) does not compete with a bare positive sentence.

(30)
$$\exists \theta : \theta \ge \theta_c$$
. HEIGHT(taroo) $\ge \theta \land \theta = \max\{\theta' : \text{HEIGHT}(\text{ziroo}) \ge \theta'\}$

As in the preliminary version of our analysis, the situation is different in the case of the negative (28b), which is not trivial in the same sense. Specifically, here it is presupposed that Ziroo has some degree of height greater than the standard for *pos tall* and asserted that Taroo does not have that degree of height; this is not equivalent to the assertion that Taroo is not tall.

(28c), another possible interpretation of the negative *hodo*-sentence, does not serve as a legitimate interpretation of the sentence: with negation wider than the existential quantifier, it now competes with a negated positive sentence. For (28c) to

be true, Taroo must not be tall, irrespective of the height of Ziroo. This makes (28c) compete with a negation of a positive sentence, which leads to the unavailability of this interpretation for the negative *hodo*-sentence.

The present analysis thus predicts the polarity sensitivity of *hodo/dermaßen* from the weak existential semantics these items induce and the competition with positive forms. Before delving into the other data in section 2, we would like to point out that this threshold analysis explains why hodo/dermaßen lack crisp judgments; given that it is not possible to establish a sharp cut-off that divides individuals that are tall from those that are not, it is not possible to establish a precise threshold such that Ziroo's height is above it but Taroo's height (only a few millimeters shorter) is not.

3.3 Negation in equative clauses and higher clauses

We observed in section 2 that 'as'- hodo/dermaßen . . . wie evades so-called negative island effects. Our lexical semantics in (24) predicts that these equative markers allow negation in the complement clauses. (31), repeated from (4), is such a case, and in this case, the matrix clause has to be affirmative:⁶

nonda-koto-ga-nai-hodo (31) Taroo-wa Ziroo-ga Taroo-TOP Ziroo-NOM drank-fact-NOM-NEG-hodo nonda/*noma-nakat-ta drank/drink-NEG-PAST (lit.) Taroo drank as much as Ziroo has never drunk. 'Taroo drank more than Ziroo has ever drunk.'

In (31), the hodo-clause denotes the set of threshold degrees (=amounts) that have never been reached by Ziroo's drinking. This set should be lower-bounded, in the sense that no greatest degree will be defined. (31) is true only if there is a threshold such that the amount of Taroo's drinking is greater than the standard degree, and it reaches

It is acknowledged that contrastive topic wa makes it easier to take a wider scope than other scopal elements, as in (v) (Hara 2006).

⁶ Two reviewers point out that this is not precise enough: if contrastive topic wa is appended to hodo, the sentence becomes acceptable with affirmative and unacceptable with negative:

⁽iv) Taroo-wa Ziroo-ga nonda-kodo-ga-nai-hodo-WA *nonda/noma-nakat-ta Taroo-TOP Ziroo-NOM drank-fact-NOM-NEG-hodo-CT drank/drink-NEG-PAST (lit.) Taroo drank as much as Ziroo has never drunk." 'Taroo drank more than Ziroo has ever drunk.'

the amount of drinking Ziroo has reached. In this interpretation, the matrix negation would lead to a trivial interpretation in that as far as the minimum amount of Taroo's drinking is greater than the standard, the sentence should be fine, irrespective of how much Ziroo drank. This is why the matrix negation is banned in (31).

Notice that this explanation holds because negation reverses the direction of monotonicity. As noted above, degrees are downward monotonic, but if negation is appended, degrees get upward monotonic. Thus the analysis is naturally extended to *hodo/dermaßen*-phrases in other DE contexts (=(3a)–(3c)). We are left with *hodo/dermaßen* in questions, which are non-DE contexts, and hope to elaborate the analysis to include them in future work.

Let us recall that a higher clause negation may license *hodo*, as shown in (5a)–(6) ((5a) is repeated as (32a)).⁷ Since the existential quantification is severed from the lexical semantics of *hodo/dermaßen* in our analysis, we can combine it to the equative clauses after the higher negation is applied:

- (32) a. [Taroo-ga Ziroo-hodo se-ga takai] to-iu-koto-wa nai [Taroo-NOM Ziroo-hodo height-NOM tall] COMP-say-fact-TOP NEG 'It's not the case that Taroo is as tall as Ziroo.'
 - b. [[Taroo is [Ziroo-hodo] tall]
 - = HEIGHT(taroo) $\geq \theta$, where HEIGHT(ziroo) $\geq \theta \wedge \theta \geq \theta_c$
 - c. [It is not the case that Taroo is Ziroo-hodo tall] $= \neg \text{HEIGHT}(\text{taroo}) \ge \theta, \text{ where HEIGHT}(\text{ziroo}) \ge \theta \land \theta \ge \theta_c$
 - d. Existential closure:

 $\exists \theta$: HEIGHT(ziroo) $\geq \theta \land \theta \geq \theta_c$. \neg HEIGHT(taroo) $\geq \theta$

(?Neg > all, all > Neg)

(Neg > all, *all > Neg)

If we assume that contrastive topic wa induces a presupposition that there be a stronger statement than the asserted one, then the unavailability of the narrow scope reading of negation in (vb) follows from the presupposition failure: If all didn't come, then there will be no stronger proposition than that (Hara 2006). In the case at hand, we could say that the degrees that the hodo-clause denote are so high that virtually no one could drink that much. Thus without negation, the hodo-sentence cannot satisfy the presupposition of wa (see Tanaka (2021) for this line of analysis).

7 Satoshi Tomioka (p.c.) suggests that since rhetorical questions allow *hodo*-phrases, as shown in (vii), the licensing by a higher negation could be more than just a matter of compositional procedure:

⁽v) a. Zen'in-ga kita/ko-nakat-ta all-NOM came/come-NEG-PAST 'All came/didn't come.'

b. Zen'in-WA kita/ko-nakat-ta all-CT came/come-NEG-PAST 'All_{cT} came/didn't come.'

In sum, the proposed analysis of 'as'-hodo/dermaßen . . . wie explains the polarity sensitivity in terms of its weak existential semantics, combined with competition with positive forms. In the next section, we claim that this same lexical semantics explains the polarity insensitivity of 'so'- hodo/dermaßen . . . dass.

3.4 Polarity insensitivity and 'so'--hodo/dermaßen . . . dass

The core of our analysis of 'so'-hodo/dermaßen...dass is that in these cases neither of the interpretations induced by affirmative and negative sentences is trivial. Building on the analysis of so . . . that by (Meier 2003), we posit that the clausal complement of 'so'-hodo is (covertly) conditionalized, with the set of degrees derived as the standard of comparison being those degrees that are sufficient for the referenced state of affairs to obtain. (33b), a representation of the hodo-clause in (33a), is interpreted as (33c). This induces a set of degrees such that if Taroo is d-tall at w, then he is eligible to be a basketball player at w.

- (33) a. basukettobooru senshu-ni nar-eru-hodo Taroo-wa Taroo-TOP basketball player-DAT become-can-hodo takai/takaku-nai se-ga height-NOM tall/tall-NEG 'Taroo is/isn't so tall that he can be a basketball player.'
 - b. $[PRO_i \text{ is d-tall in } w \rightarrow PRO_i \text{ can}_{w,h} \text{ become a basketball player in } w]$ (where h is a conversational background for the modal)
 - c. $[can_{wh} (\lambda w.PRO becomes a basketball player in w)(\lambda w'. PRO is d-tall in w')]$ = $\{ (\cup h(w)) \cap \lambda w. g(i) \text{ becomes a basketball player at } w \} \cap$ { w. g(i) is d-tall at w } $\neq \phi$
 - d. λ d. [λ w. Taroo is d-tall and Taroo is a basketball player at w]

Crucially, the set of degrees denoted by (33c) is upward monotonic: If Taroo is 180 cm in height and he is eligible to be a basketball player, then if he is 190 cm tall, he will be eligible to be a basketball player. For a shorthand, we denote this set as " λd . sufficient-become-basketball-player(d)".

⁽vii) Taroo-ga Ziroo-hodo kashikoi-monoka! Taroo-NOM Ziroo-hodo intelligent-RQ 'Is Taro as intelligent as Ziroo ?!(He can't be!)'

If this set of degrees is applied to 'so'-hodo/ dermaßen... dass sentences, we will get the following interpretations for affirmative and negative sentences:

- (34)'so'-hodo/dermaßen...dass:
 - a. Affirmative:

 $\exists \theta: \theta \geq \theta_c \land \text{sufficient.to.be.a.basketball.player}(\theta).\text{HEIGHT}(\text{taroo}) \geq \theta$

b. Negative:

 $\neg \exists \theta: \theta \ge \theta_c \land \text{sufficient.to.be.a.basketball.player}(\theta).\text{HEIGHT}(\text{taroo}) \ge \theta$

(34a) is true if the threshold to which Taroo counts as 'tall' exceeds the lowest threshold for a basketball player, as well as the contextual standard of height. This is not trivial with respect to the competition with a positive form sentence, because being just tall is not enough for the sentence to be true. (34b) is not trivial, either: it does not compete with a negative positive sentence, because for the sentence to be true, Taroo's height has to be tall but does not reach the minimum requirement for a basketball player.

Note that when negation takes a narrower scope, as in (35), the interpretation competes with a negated positive sentence: If Taroo is short, (35) will be true, irrespective of whether his height reaches the denotation of the hodo-clause.

 $\exists \theta: \theta \geq \theta_c \land \text{ sufficient.to.be.a.basketball.player}(\theta). \neg \text{HEIGHT}(\text{taroo}) \geq \theta$

To summarize, both 'as'-hodo/dermaßen and 'so'-hodo/dermaßen are analyzed via the same lexical entry (24). The difference in their polarity sensitivity arises because in the former case, the complement is a downward monotonic set of degrees, resulting in triviality (with respect to the positive form) in affirmative but not negative sentences, whereas in the latter case the complement is an upward monotonic set of degrees, such that its contribution is non-trivial in both affirmative and negative sentences.

3.5 Presuppositional effects

Let us now recall that 'as'-hodo/dermaßen . . . wie and 'so'-hodo/dermaßen. . .dass diverge with respect to whether the norm-related presupposition is observed in the subject or not (see the summary in (36)).

- (36) a. 'as'-hodo and dermaßen... wie: A norm-related presupposition both on the subject and the equative standard
 - b. 'so'-hodo and dermaßen . . . dass: A norm-related presupposition on the equative standard

We claim that this difference in presuppositional effects is captured again in terms of competition with a positive sentence.8 (37a) is a legitimate interpretation of 'as'hodo sentence, its corresponding positive sentence and its interpretation would be the one in (37b):

- (37) a. [Taroo is not tall [Ziroo-hodo]] $\exists \theta$:HEIGHT(ziroo) $\geq \theta \land$ $\theta \ge \theta_c$. ¬HEIGHT(taroo) $\ge \theta$.
 - b. [Taroo is not pos tall] = \neg HEIGHT(taroo) $\ge \theta_c$.

In these truth conditions, if Taroo is not tall, both of (37a) and (37b) are true and synonymous, but (37b) is simpler than (37a): (37a) fails to win in the competition with (37b) in terms of manner. If Taroo is tall, on the other hand, (37b) is false, but (37a) is true, in which case the competition with (37b) is avoided.

In the case of 'so'-hodo/dermaßen . . . dass, the simple fact that the subject is tall does not make an affirmative 'so'-hodo/dermaßen . . .dass true, which leads to no competition with a simpler positive sentence. In the case of a negative version, if the subject is not tall, both of the simpler (37b) and a 'so'-hodo/dermaßen . . . dass sentence are true, which yields the norm-related implication on the subject.

4 Conclusion

This paper has shown that the distributional and interpretative effects characterizing hodo/dermaßen can be explained on the basis of a weak existential semantics, which yields a trivial interpretation in certain configurations, coupled with pragmatic competition with the simpler positive form.

Previous work by Crnič and Fox (2019) has shown that the obligatory versus optional presence of a maximality operator is a dimension along which the semantics of equative constructions may vary cross-linguistically. We have argued that Japanese hodo and German dermaßen instantiate a third possibility: these items never introduce maximality, the consequence being a more restricted and seemingly idiosyncratic distribution relative to better-studied equative markers. Our

⁸ This is very similar to the reasoning (Sawada 2009) utilizes in explaining the implicature produced by implicit comparatives (see (viii)). (Sawada 2009) attributes it to the pragmatic reasoning, where the implicit comparative is more informative than a simple positive sentence only when the standard (=Ziroo's height in (viii)) counts as rather short.

⁽viii) Compared to Ziroo, Taroo is tall. implicates Ziroo is rather short.

findings thus contribute to a fuller picture of variation in the semantics of degree constructions across languages.

The optionality of maximality operator is not necessarily a cross-linguistic parameter: Japanese has another equative marker, gurai, which is very similar to hodo in that it conveys the norm related presupposition (Kubota 2012). This equative marker, however, is perfect with an affirmative matrix predicate, as shown in (38a). This seems to suggest that the maximality operator is available for the interpretation of gurai. The operator should be optional, because gurai, as well as hodo, exhibits no negative island effects (38b). Thus, the optionality of maximality could be incorporated into the lexical semantics of equative markers, rather than as a crosslinguistic parameter.

- (38) a. *Taroo-wa* Ziroo-gurai se-ga takai/??takaku-nai Taroo-TOP Ziroo-gurai height-NOM tall/tall-NEG 'Taroo is/isn't as tall as Ziroo.' (and Ziroo is tall.)
 - b. Taroo-wa nonda-koto-ga-nai-gurai Ziroo-ga Taroo-TOP Ziroo-NOM drank-thing-NOM-NEG-gurai nonda/*noma-nakat-ta drank/drink-NEG-PAST 'Taroo drank as much as Ziroo has never drunk.'

References

Beck, Sigrid. 2011. Comparison constructions. In Claudia Maienborn, Klaus von Heusinger, & Paul Portner (eds.), Semantics: An International Handbook of Natural Language Meaning, Vol. 2, 1341-1389. Berlin/Boston: De Gruyter Mouton.

Beck, Sigrid, Toshiko Oda, & Koji Sugisaki. 2004. Parametric variation in the semantics of comparison: Japanese vs. English. Journal of East Asian Linguistics 13, 289–344.

Crnič, Luka, & Danny Fox. 2019. Equatives and maximality. In Daniel Altshuler & Jessica Rett (eds.), The Semantics of Plurals, Focus, Degrees, and Times, 163–184. Cham: Springer.

Hara, Yurie. 2006. Grammar of knowledge representation: Japanese discourse items at interfaces. Newark: University of Delaware dissertation.

Hayashishita, J. R. 2009. Yori-comparatives: A reply to Beck et al. (2004). Journal of East Asian Linguistics 18.65-100.

Heim, Irene. 2000. Degree operators and scope. In Brendan Jackson & Tanya Matthews (eds.), Proceedings of the 10th Semantics and Linguistic Theory Conference, 40-64.

⁹ Gurai is an allomorph of kurai. Japanese speakers show variability in applying voicing (or rendaku) in the first consonant of the word.

- Imani, Ikumi. 2019. Yori, hodo, kurai-no kyokusei-nituite [On polarity of comparative expressions, yori, hodo and kurgi¹. In Osamu Sawada, Hideki Kisimoto, & Ikumi Imani (eds.), Kvokusei Hvoogen-no Koozoo, Imi, Kinoo [Polarity sensitive expressions: their forms, meanings and functions], 336–355. Tokvo: Kaitakusha.
- Izima, Masahiro. 2008. Kurai, hodo, nado, nanka, nante-no kinoo-to koozoo [On the function and structure of kurai, hodo, nado, nanka, and nantel, Nihonaoaaku Ronsvuu [lapanese linguistics
- Kennedy, Christopher. 2007. Vagueness and grammar: The semantics of relative and absolute gradable adjectives. Linguistics and Philosophy 30, 1-45.
- Klein, Ewan. 1980. A semantics for positive and comparative adjectives. Linguistics and Philosophy 4. 1–45. Kubota, Yusuke. 2012. The Presuppositional nature of izyoo(-ni) and qurai comparatives: A note on Hayashishita (2007). Gengo Kenkyu 141. 33-46.
- Meier, Cecile. 2003. The meaning of too, enough and so. . .that. Natural Language Semantics 11. 69–107. Okutsu, Kei'ichiro. 1986. Keishiki fukusi [Formal Adverbs]. In Kei'ichiro Okutsu, Yoshiko Numata, & Takeshi Suqimoto (eds.), Iwayuru Nihongo Joshi no Kenkyuu [On the study of Japanese particles], 33-104. Osaka: Bonjinsha.
- Penka, Doris. 2016. Degree equatives: The same as comparatives? Paper presented at Workshop Equative Constructions, University of Cologne, 15 December, 2016.
- Rett, Jessica. 2020. Separate but equal: A typology of equative constructions. In Peter Hallman (ed.), Interactions of Degrees and Quantification, 163–204. Leiden: Brill.
- Rullman, Hotze. 1995. Maximality in the semantics of wh-constructions. Amherst, MA: University of Massachusetts dissertation.
- Sawada, Osamu. 2009. Pragmatic aspects of implicit comparison: An economy-based approach. Journal of Pragmatics 41. 1079-1103.
- Schwarzschild, Roger. 2008. The semantics of comparatives and other degree constructions. Language and Linguistic Compass 2. 308-331.
- Tanaka, Eri. 2021. Amazing hodo. In Nicole Gotzner & Uli Sauerland (eds.), Measurements, Numerals and Scales: Essays in Honor of Stephanie Solt, 289–306. Cham: Palgrave Macmillan.
- Umbach, Carla, & Umut Özge. 2019. Scalar and non-scalar comparison across categories: The case of Turkish equatives. Paper presented at the thirteenth international Tbilisi symposium on language, logic and computation, Georgia, September, 2019.
- von Stechow, Arnim. 1984. Comparing semantic theories of comparison. Journal of Semantics 3. 1–77.

Part III: Positive polarity items

Yasushi Yoshimoto

Chapter 7 On the rescuing of positive polarity items in Japanese and English: A hybrid approach

1 Introduction

This chapter investigates the phenomenon known as "rescuing" of positive polarity items (PPIs). PPIs can be divided into two classes: those with limited distribution and those with limited interpretation, to use Giannakidou's (2002) terminology. The present study focuses on the latter type of PPI in Japanese and English, such as *dare-ka* 'someone' and *something*. These words resist being in the immediate scope of negation, which is why they are classified as PPIs. It is well known, however, that these PPIs can be interpreted in the immediate scope of negation in certain contexts. When this happens, PPIs are said to be rescued (Szabolcsi 2004). I examine various kinds of sentences involving PPI rescuing both in Japanese and English and propose explanations for why PPIs are rescued in those sentences. I take a hybrid approach, in that I adopt both Homer's (2021) theory of polarity items as well as Larrivée's (2012) theory of PPI rescuing. For the latter, some revisions are proposed so that it can adequately explain the data I investigate.

The organization of this chapter is as follows. In Section 2, some basic facts about *someone*-type PPIs in Japanese and English are presented. Section 3 introduces Szabolcsi's (2004) generalization on the contexts that rescue PPIs and shows that this generalization captures basic facts about PPI rescuing in Japanese as well. In Section 4, Homer's (2021) theory of polarity items is introduced. Adopting Homer's theory, in Section 5, I examine Japanese negative sentences that contain a negative concord item (NCI) and a clausemate PPI, where PPIs are unexpectedly rescued. I offer a syntactic account of this fact, utilizing both Homer's (2021) theory of polarity items and Watanabe's (2004) theory of NCI licensing. Section 6 considers examples in which PPIs are rescued even though they are not in the environments that license weak negative polarity items. Sections 7–9 are dedicated to explaining why PPIs are

Acknowledgments: I would like to thank the editors of this volume for their patience and encouragement throughout the long process it took to write this article. I benefited greatly from the invaluable and constructive comments by two anonymous reviewers, for whom I extend my deep appreciation. I also thank Chris Davis for his help at many stages of this research. The remaining inadequacies are of course my own. The research reported here was supported in part by JSPS KAKENHI Grant Number 18K00539.

rescued in these examples. My previous attempt to explain them (Yoshimoto 2019) is reviewed briefly in Section 7, where it is shown that the assertion-based theory of PPI rescuing faces some difficulties. In Section 8, I introduce Larrivée's (2012) theory of PPI rescuing, which crucially utilizes the notion of activated propositions. Adopting the essence of Larrivée's theory, Section 9 points out that some clarifications and revisions are necessary for the activated proposition theory of PPI rescuing to be tenable. I propose a couple of specific conditions on PPI rescuing, and the notion of "intentional initiator" (or responsibility relation; Farkas 1988, 1992) is shown to play an important role in distinguishing those clauses that rescue PPIs and those that do not. Section 10 concludes this chapter by showing the overall picture of the hybrid theory that has been proposed.

2 Some basic facts about *someone*-type PPIs in English and Japanese

PPIs in English include expressions like someone, something, already, and would rather. In this study, I concentrate on the someone-type PPIs, including something, somewhere, and sometime. Crudely speaking, PPIs in general are characterized by their resistance to scope below clausemate negation. Thus, example (1) does not have the interpretation on which something takes scope below negation, unless it is understood as a case of metalinguistic negation. (1) is grammatical when the PPI something takes scope over negation.

[OK something > neg, *neg > something] (1) Ken doesn't drink something.

The Japanese words corresponding to someone-type PPIs in English are formed with an "indeterminate pronoun" followed by the particle ka, as shown in (2).² This particle is homophonous with the question-marker ka, which also serves as a disjunction-marker. (See Goro [this volume] for an analysis of the disjunctionmarker ka.)

(2) dare-ka 'someone', nani-ka 'something', doko-ka 'somewhere', itu-ka 'sometime'

¹ These expressions were called "affirmative polarity items" by Baker (1970), but the term "positive polarity items" is widely used in the current literature.

² The term "indeterminate pronoun" is adopted from Kuroda (1965: 91), who also calls phrases such as some men indeterminate noun phrases. For Kuroda (1965: 43), indeterminates are "[n]ouns that behave like a logical variable".

The indeterminate pronouns dare, nani, doko, and itu in (2) all function as wh-words in interrogative sentences, as (3) shows for dare and nani.

- (3) a. **Dare**-ga ki-masi-ta ka? who-NOM come-POLITE-PST 'Who came?'
 - h *Ken-wa* nani-o tabe-masi-ta ka? Ken-TOP what-ACC eat-POLITE-PST Q 'What did Ken eat?'

Similarly, doko and itu mean 'where' and 'when' respectively, when they function as wh-words. For this reason, the words in (2) will be called "wh-ka" hereafter.

The Japanese wh-ka indefinites in (2) are PPIs, just as English someone-type indefinites are. Thus, in simplex negative sentences (4a, b), the only interpretations available are those in which wh-ka has wide scope with respect to negation, mirroring the behavior of English someone-type PPIs. (For convenience, I will hereafter write wh-ka words as if they were monomorphemic: e.g., dare-ka will be written as dareka.)

[OKdareka > neg, *neg > dareka] (4) a. Dareka-ga ko-nakat-ta. someone-NOM come-NEG-PST 'Someone did not come.' [OKsomeone > neg, *neg > someone] b. Ken-wa tabe-nakat-ta. [OKnanika > neg, *neg > nanika] nanika-o Ken-TOP something-ACC eat-NEG-PST

[OKsomething > neg, *neg > something]

One difference between the someone-type English PPIs and corresponding Japanese PPIs is perhaps worth mentioning here. Whereas English PPIs someone and something are arguments, the Japanese PPIs dareka 'someone' and nanika 'something' can function either as an argument or as an adjunct, as noted by Hasegawa (1991: 283). We have already seen examples of wh-ka used as arguments in (4a, b). Their usage as adjuncts is shown in (5). The corresponding English sentences in (6) are ungrammatical.

gakusei-ga (5) a. *Dareka* ki-ta. someone student-NOM come-PST 'Someone who is a student came.'

'Ken did not eat something.'

- b. Gakusei-ga dareka ki-ta. student-NOM someone come-PST 'Someone who is a student came.'
- (6) a. *Someone a student came.
 - *A student **someone** came.

Despite this syntactic difference, Japanese wh-ka and English someone-type PPIs show a remarkable similarity in terms of their interpretation with respect to negation. This fact will be illustrated in the next section.

3 Szabolcsi's (2004) theory of PPI rescuing and its applicability to wh-ka

For English someone-type PPIs, it is well known that the basic constraint that they cannot be interpreted in the scope of clausemate negation is lifted in a variety of contexts. Szabolcsi's (2004) influential work showed that someone-type PPIs can scope below a clausemate anti-additive operator (including negation) when the PPI and its clausemate anti-additive operator together appear in an environment that licenses weak negative polarity items (NPIs) like ever. Her formulation of this generalization is given in (7).

(7) PPIs do not occur in the immediate scope of a clausemate anti-additive operator AA-Op, unless [AA-Op > PPI] itself is in an NPI-licensing context. [p. 419, emphasis in the original]

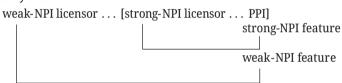
Anti-additive operators in English include negation, negative quantifiers, and without. The examples in (8), taken from Szabolcsi (2004), confirm the validity of (7). In (8), we limit our examples to those that involve negation as an AA-Op.

- (8) a. I don't think that John didn't call someone.
 - b. I am surprised that John didn't call someone.
 - c. I regret that John didn't call someone.
 - d. If we don't call someone, we are doomed.
 - e. Every boy who didn't call someone...
 - f. Only John didn't call someone.
 - g. John didn't say something at every party.

[OKneg > neg > some] [OKsurprise > neg > some] [OKregret > neg > some] [OKif (neg > some)] [OKevery (neg > some)] [OKonly > neg > some] [OKneg > every > some] The PPI someone and its clausemate negation in (8a-f) are all in environments in which weak NPIs like ever can be licensed. Thus, according to (7), someone can occur in the scope of clausemate negation. Example (8g) illustrates the relevance of the notion "immediate scope" employed in (7). Here, although the PPI something and its clausemate negation are not in a weak NPI-licensing context, the PPI is allowed to be in the scope of clausemate negation, because of the presence of the quantifier every that intervenes between not and something.³ According to Szabolcsi (2004), a PPI is "shielded" in (8g), and "rescued" in (8a-f).

To explain why the descriptive generalization (7) holds, Szabolcsi (2004) proposes that the unit [AA-Op > PPI] is a non-lexical NPI. This proposal explains why this unit is licensed in the contexts in which weak NPIs are licensed. Furthermore, Szabolcsi assumes that PPIs have two NPI-features, one of which is a strong-NPI feature, and the other a weak-NPI feature. With these assumptions, Szabolcsi (2004: 429) illustrates the mechanism of PPI rescuing as in (9).

(9) PPIs have two NPI-features. A strong licensor activates both but licenses only one:



What licenses the strong-NPI feature of a PPI is an anti-additive operator without intervention. The presence of this operator activates both the strong-NPI feature and the weak-NPI feature, but licenses only the strong-NPI feature. The weak-NPI feature of a PPI is licensed by a Strawson-decreasing licensor.⁴ In this way, both the strong and weak NPI features of a PPI can be licensed when the [AA-Op > PPI] unit is in a weak-NPI licensing environment. When there is no strong-NPI licensor for a PPI, neither the strong-NPI feature nor the weak-NPI feature of the PPI is activated. In such a situation, these NPI features cancel out, on the assumption that they are interpreted as negation operators. That is why PPIs are licensed in affirmative sentences.

³ That some can scope below negation if it is not in its immediate scope is discussed in Kroch (1979).

⁴ There are theories of NPI licensing that do not rely on (Strawson) decreasingness (=[Strawson] downward entailment). These include Linebarger (1980, 1987), Giannakidou (1998, 2002), and Barker (2018). Horn (2016) argues that it is downward assertion, not downward entailment, that is responsible for NPI licensing.

With this much background on Szabolcsi's theory of PPI rescuing, let us now consider Japanese PPIs. McGloin (1972, 1976) and Hasegawa (1991) point out and discuss the fact that wh-ka in Japanese can co-occur with clausemate negation when they appear in yes-no questions or in the antecedents of conditional sentences. Their concern is co-occurrence of wh-ka (and other PPIs in the case of McGloin) with clausemate negation, and not the scope interpretation of wh-ka with respect to clausemate negation. This is because both McGloin and Hasegawa focus on caseless wh-ka's, which, according to their judgments, cannot occur in simplex negative declarative sentences. For example, according to Hasegawa (1991: note 1), sentence (10a) with a caseless wh-ka is ungrammatical, but sentence (10b) with a case-marked wh-ka is fine, and "allows a 'specific' reading". (McGloin [1972, 1976] also judges (10a) to be ungrammatical.)

- (10) a. *Dareka ko-nakat-ta. someone come-NEG-PST 'Someone did not come.'
 - b. Dareka-ga ko-nakat-ta. someone-NOM come-NEG-PST 'Someone did not come.'

I agree that the caseless wh-ka in (10a) is awkward, but this awkwardness does not apply to all instances of caseless wh-ka. The following example taken from Imani (1993: 217) exemplifies a sentence that sounds natural with a caseless wh-ka.

(11) Mada dareka kiteinaindesu. vet someone has.not.come 'Someone hasn't come yet.'

What is important for our present purposes is that in the grammatical sentences like (10b) and (11), dareka obligatorily takes wide scope with respect to negation.⁵ In this study, I put aside examples like (10a), and focus on examples in which a wh-ka is acceptable with clausemate negation.

⁵ A remark is in order about another Japanese word, nazeka 'for some reason', which contains the particle -ka. Nazeka is different from the wh-ka's in (2) in that it can appear freely in positive and negative simplex sentences, as shown in (i).

⁽i) a. Kyoo-wa i-i. nazeka kibun-ga today-TOP for.some.reason feeling-NOM good-PRS '(I) feel good today for some reason.'

With respect to Szabolcsi's generalization (7), the caseless wh-*ka*'s that co-occur with clausemate negation that McGloin and Hasegawa discussed fall under this generalization: When we consider the interpretation of the wh-*ka*'s, we notice that they scope below negation, and yes-no questions and the antecedents of conditionals are contexts that can license weak NPIs. Given (7), we predict that other weak-NPI licensing contexts also rescue PPIs in Japanese. This prediction is indeed borne out, as (12) shows (Yoshimoto 2014, 2019).

- (12) a. John-ga dareka-ni denwasi-na-katta to-wa omowa-na-i.

 John-NOM someone-DAT call-NEG-PST C-TOP think-NEG-PRS

 [OKneg > neg > dareka]
 - '(I) don't think that John didn't call someone.'
 - b. John-ga dareka-ni denwasi-nakat-ta nante bikkurida. John-NOM someone-DAT call-NEG-PST C be.surprised $[^{OK}surprise > neg > dareka]$
 - '(I) am surprised that John didn't call someone.'
 - c. John-ga dareka-ni denwasi-nakat-ta to-wa zannenda.

 John-NOM someone-DAT call-NEG-PST C-TOP regret

 [OKregret > neg > dareka]
 - '(I) regret that John didn't call someone.'
 - d. Dareka-ni denwasi-na-kereba, wareware-wa owarida. someone-DAT call-NEG-if we-TOP be.doomed $[^{OK}if (neg > dareka)]$
 - 'If (we) don't call someone, we are doomed.'
 - e. Dareka-ni denwasi-nakat-ta syoonen-wa mina, . . .
 someone-DAT call-NEG-PST boy-TOP everyone
 [OKevery (neg > dareka)]

'Every boy who didn't call someone . . .'

Unlike *dareka* in (10a), (ib) is grammatical. Because of this, I noted that *nazeka* is not a PPI in Yoshimoto (2019: 238). This assessment is correct as long as we are talking about limited-distribution PPIs. However, when we consider the scope relation between *nazeka* and negation in (ib), we see that *nazeka* must scope above negation. In this sense, *nazeka* is a limited-interpretation PPI just like the wh-*ka*'s in (2). Note that due to its adjunct status, *nazeka* cannot be case-marked. So we cannot compare the caseless *nazeka* in (i) with case-marked *nazeka*.

b. Kyoo-wa nazeka kibun-ga yoku-na-i today-TOP for.some.reason feeling-NOM good-NEG-PRS '(I) don't feel good today for some reason.'

f. John-dake-ga dareka-ni denwasi-nakat-ta. John-only-NOM someone-DAT call-NEG-PST

 $[^{OK}only > neg > dareka]$

'Only John did not call someone.'

g. John-wa subeteno paatii-de-wa nanika-o iwa-nakat-ta. party-at-TOP⁶ something-ACC say-NEG-PST John-TOP every [OKneg > every > nanika]

'John didn't say something at every party.'

(12a–g) are Japanese sentences that correspond to the English sentences in (8a–g). In all of them, wh-ka is allowed to scope below clausemate negation. All the examples in (12a-f) are Strawson-decreasing contexts for the [neg > wh-ka] units in them. Therefore, the PPIs are rescued. Example (12g) shows that shielding of a PPI from negation is also observed in Japanese, as predicted by (7).

To summarize this section, we have seen that in both English and Japanese, Szabolcsi's (2004) generalization (7) successfully captures the fact that the contexts that license weak NPIs rescue PPIs, and that the "immediate scope" provision is observed in both languages. I have also very briefly introduced Szabolcsi's theory of PPI rescuing. Although her theory is successful in accounting for the data considered in this section, we will see below that there are other data that seem to resist explanation under this theory. To account for some of these data, I will adopt a theory proposed by Homer (2021).⁷ The next section introduces this theory.

4 Homer's (2021) theory of polarity items

Homer (2021) offers an account of the rescuing of PPIs as part of his comprehensive theory of the licensing of both NPIs and PPIs. In this theory, the acceptability of polarity items (PIs) is checked in constituents, referred to as "domains". He follows and substantiates the view that PIs are sensitive to some monotonicity property but emphasizes the importance of the environments in which they appear (Cf. Gajewski 2005). Some definitions employed in Homer's theory that are relevant for our discussion are introduced below. The notion of "domain" is required since not all

⁶ The gloss TOP here should be understood as "contrastive topic", in the sense of Frascarelli and Hinterhölzl (2007). I will use TOP for all the three types of topics that they distinguish.

⁷ By adopting Homer's theory of PIs, I depart from my own proposal in Yoshimoto (2019) in which I suggested that PPI rescuing takes place in non-asserted propositions. The reasons for this departure will be given in Section 7.

constituents are eligible for checking the acceptability of PIs in them. This notion is defined as in (13).

(13) Domain of a Polarity Item:

A constituent γ which contains the Polarity Item π is a domain of π if and only if the acceptability of π can be evaluated in γ .

I will say that π has at least one DE (or UE) domain in sentence S to mean that there is at least one domain of π in S which is DE (UE resp.) w.r.t. the position of π (i.e., in which π is acceptable). [Homer (2021: 8)]

The "DE (or UE) domain" in (13) should be understood as DE domain for NPIs and UE domain for PPIs, where DE stands for downward-entailing, and UE, upward-entailing. In addition to (13), the notion of "minimal domain" is defined as in (14).

(14) Minimal domain of a Polarity Item:

y is the minimal domain of Polarity Item π if and only if in each clause that contains π , only y and superconstituents of y whose head is a clausemate of the head of y are domains of π . [Homer (2021: 9)]

Homer (2021: 17) proposes that the minimal domain of the PPI some is the Polarity Phrase (PolP), which determines the polarity of the clause, positive vs. negative. (15) is the provisional condition Homer proposes for some.

(15) Licensing Condition of some:

Some is licensed in sentence S only if it has a non-DE domain in S.

[Homer (2021: 17)]

Assuming this much, let us see how some PPI facts in English are accounted for by Homer's theory. Consider the sentences in (16) and their schematic structure in (17).

(16) a. John didn't eat something.

[*neg > some]

b. She didn't say that John ate something.

[OKneg > some]

(17) a. $*[TP[\sim 1]]$ John T $[POP[\sim 1]]$ **not** eat something 1]]

b. [TP] She T [POIP[TAT] **not** say [TP] that [TP] John T [POIP[TAT] eat something [TP]

The structures in (17) are meant to be logical forms (LFs).8 The notation XP[\1] indicates that XP is DE with respect to the position of the bearer of index 1: The notation XP[71] indicates that XP is UE with respect to the position of the bearer of index 1. In (17a), the minimal domain of something is PolP, and this domain is DE with respect to the position of something. In this example, TP is also a domain for *something*. But this domain is also DE with respect to the position of *something*. Thus, this example violates the licensing condition of *some* in (15), and the narrow scope reading of some is unavailable for sentence (16a).9 In (17b), the PolP in the embedded clause is a UE environment for something. UE environments are non-DE environments. Therefore, something in (17b) is licensed, according to the licensing condition (15). In (17b), the matrix PolP is a DE environment for something, but (15) requires only that there be some domain in which some is licensed. That is why something is licensed in (17b) even though it is in the scope of the matrix negation.

The phenomenon that Szabolcsi (2004) called "rescuing" is analyzed by Homer as a case of "flip-flop", namely polarity reversal effected by addition of another DE expression in the sentence. For example, sentence (18a) has the LF in (18b).

- (18) a. John is not sure that Mary didn't drink something. [OKneg > neg > some]
 - b. [TP[-1]] John T [PO]P[-1] **not** sure [CP] that [TP] Mary T [PO]P[-1] **not** drink something₁]]]]]

In (18b), something is licensed in the matrix PolP which is UE with respect to the position of something. 10 Therefore, something is licensed in this position, accounting for the fact that in (18a), something can have the narrowest scope with respect to the two negations. With respect to the "shielding" effect observed in sentences like (8g) above, Homer analyzes it as instances of monotonicity disruption by scalar implicatures, adopting the idea that Chierchia (2004) proposed for the intervention effects of NPIs.

Consider a situation where John is sure that Mary didn't drink white wine, but he is not sure that Mary didn't drink red wine. In this situation, (i) is true and (ii) is also true. Hence, (i) entails (ii).

⁸ Homer assumes that object PPIs move to a pre-verbal position in LF. I ignore this movement in my representations of LF as long as the movement does not make any difference to the evaluation of acceptability of PIs.

⁹ For sentences like (16a), Homer does not mention how the wide scope reading of something over negation obtains, but in this case, I assume that something is adjoined to TP by quantifier raising (OR), which gives a UE domain for something.

¹⁰ The UEness of the matrix PolP and TP can be confirmed by the following entailment test.

⁽i) John is not sure that Mary didn't drink red wine. →

⁽ii) John is not sure that Mary didn't drink wine.

Since the PPI rescuing facts in Japanese observed in (12) parallel those in English observed in (8), I assume that Homer's theory of PPI rescuing applies to PPI rescuing in Japanese as well. In particular, I assume that the licensing condition in (15) applies to the wh-ka PPIs in Japanese, too.

5 Unexpected rescuing of wh-ka in simplex negative sentences

This section examines some differences between Japanese and English in terms of the availability of narrow scope reading of some-type PPIs with respect to negation in simplex sentences. Consider (19).

- $[^{OK} neg > nanika]$ (19) a. Dare-mo nanika-o tabe-nakat-ta. who-mo something-ACC eat-NEG-PST 'No one ate anything.'
 - b. No one ate something. [*neg > something]

The Japanese example in (19a) allows the PPI nanika to scope below clausemate negation, whereas the corresponding English example in (19b) does not allow the PPI something to do so. The same contrast is observed in (20) and (21).

- (20) a. Ken-wa [OKneg > dareka] kessite dareka-o hihansi-nakat-ta. someone-ACC criticize-NEG-PST Ken-TOP never 'Ken never criticized anyone.'
 - b. Ken never criticized someone. [*neg > someone]
- mettani dareka-ni [OKneg > dareka] (21) a. Ken-wa denwasi-nakat-ta. Ken-TOP seldom someone-DAT call-NEG-PST 'Ken seldom called anyone.'
 - b. Ken seldom called someone. [*seldom > someone]

The unavailability of the narrow scope reading of some in the English examples in (19)–(21) is predicted by both Szabolcsi's (2004) theory and Homer's (2021) theory of PPI licensing. What is unexpected is the availability of the narrow scope reading of wh-ka in the Japanese examples in (19)–(21).

I suggest that this fact is accounted for by adopting Watanabe's (2004) theory of negative concord items (NCIs) and Homer's (2021) licensing theory of PIs in terms of "domains". Note first that the Japanese example in (19a) contains dare-mo 'who-mo',

which Watanabe (2004) identifies as an NCI. Generally speaking, NCIs must appear with clausemate negation, and they cannot appear in non-negative contexts that license weak NPIs. Japanese words consisting of an indeterminate pronoun and -mo 'even/also' such as dare-mo 'who-mo' and nani-mo 'what-mo' have these properties. In this respect, the adverbs kessite 'never' in (20a) and mettani 'seldom' in (21a) should also be NCIs, since they obligatorily require the presence of clausemate negation, and they cannot appear in non-negative contexts that license weak NPIs. For example, these adverbs cannot occur in affirmative yes-no questions, as the (a) sentences in (22)–(23) show. Nor can they occur in affirmative conditional clauses, as illustrated by the (b) sentences in (22)–(23).

- (22) a. *Ken-wa kessite Naomi-o hihansi-ta no? Ken-TOP never Naomi-ACC criticize-PST 0 'lintended Did Ken never criticize Naomi?'
 - b. *Ken-ga kessite Naomi-o hihansu-ru to komar-u. Naomi-ACC criticize-PRS if be.in.trouble '[intended] If Ken never criticizes Naomi, (we) will be in trouble.'
- (23)a. *Ken-wa mettani Naomi-ni denwasi-ta no? Ken-TOP seldom Naomi-DAT call-PST Q '[intended] Did Ken seldom call Naomi?'
 - b. *Ken-ga mettani Naomi-ni denwasu-ru to komar-u. Ken-NOM seldom Naomi-DAT call-PRS if be.in.trouble '[intended] If Ken seldom calls Naomi, (we) will be in trouble.'

Therefore, I assume that kessite 'never' and mettani 'seldom' are NCIs on a par with dare-mo 'who-mo', nani-mo 'what-mo', etc.11

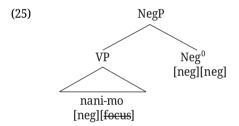
Returning to the sentences in (19)–(21), a notable difference between the Japanese sentences and the corresponding English sentences is that the former contain NCIs, but the latter don't. If this difference is responsible for the difference in interpretation between Japanese and English in (19)–(21), the question becomes: Why does the

¹¹ Watanabe (2004) proposes that the scalar particle -mo in dare-mo and other wh-mo words is the morphophonological realization of the uninterpretable focus feature, which drives checking in negative concord. In the adverbial NCIs kessite and mettani, there seems to be no morphophonological realization of the uninterpretable focus feature. Watanabe notes that the focus morphology in the NCIs is absent in languages like Portuguese and West Flemish, and claims that formal features such as an uninterpretable focus feature can be present without necessarily being realized morphologically. I assume that the Japanese adverbial NCIs belong to the class that do not have morphophonological realization of the uninterpretable focus feature.

presence of an NCI allow a wh-ka to scope below clausemate negation? Watanabe's (2004) theory of NCIs can help us answer this question. Watanabe argues that NCIs are inherently negative. But then there must be some mechanism that accounts for the fact that sentences like (24) are interpreted with only one semantic negation.

(24) Ken-wa nani-mo tahe-nakat-ta. Ken-TOP what-mo eat-NEG-PST 'Ken did not eat anything.'

In (24), if the NCI dare-mo and the sentential negation marker -na(kat) are both semantically negative, then the sentence should have the double negation reading, contrary to fact. Watanabe invokes the feature-copying mechanism proposed by Chomsky (1995, 1998) to account for the fact that sentences like (24) contain only one semantic negation. 12 According to Watanabe (2004: 581), feature copying produces the structure in (25) for sentences like (24).



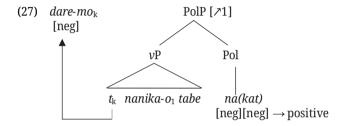
In (25), the NCI nani-mo carries an uninterpretable [focus] feature, which triggers Agree to take place between the interpretable [neg] feature (=probe) in Neg⁰ and the matching interpretable [neg] feature (=goal) in nani-mo. According to the feature-copying hypothesis, the operation Agree copies the feature of the goal to the probe. As a result, Neg⁰ in (25) contains two interpretable [neg] features. These [neg] features cancel each other out, making Neg⁰ affirmative. Hence, semantically, there is only one negative element in (25), namely, nani-mo.

Let us return to (19a), repeated here as (26).

[OKneg > nanika] (26) Dare-mo nanika-o tabe-nakat-ta. who-mo something-ACC eat-NEG-PST 'No one ate anything.'

¹² Watanabe notes that the feature-copying mechanism was later abandoned by Chomsky (2000, 2001).

Given Watanabe's analysis of NCIs, the sentential negation marker -na(kat) in (26) is void of semantic negation, due to the copying of the [neg] feature in the NCI dare-mo. Note, however, that the NCI dare-mo still carries the interpretable [neg] feature, making the entire sentence negative. Thus, the PPI nanika in (26) is still in the immediate scope of negation. Why is it licensed, then? This is where Homer's (2021) theory of PIs can help us provide an answer. Recall from Section 4 that the minimal domain of some is assumed to be PolP by Homer. Let us assume that the same applies to wh-ka. Then, it becomes possible for the PolP containing the negation head to be a UE environment for the PPI in (26). This is illustrated in (27), a partial LF structure of (26).



In (27), it is assumed that the focused NCI dare-mo has moved to some position that accommodates a focus phrase, perhaps the Spec of Focus Phrase (FocP), in the cartographic framework of Rizzi (1997, 2004).¹³ Let us also assume that the [neg] feature of the NCI dare-mo is interpreted in the position of the upper copy. Given these assumptions, it follows that the PolP containing the PPI nanika is a UE environment (as indicated by the notation [₹1]), since the two interpretable [neg] features in the Polarity head make its polarity positive. Of course, the root CP of sentence (26) is DE, due to the presence of dare-mo, which carries the interpretable [neg] feature, as shown in (28).

(28) $[_{CP[\setminus 1]} Dare-mo_i [_{PolP[\nearrow 1]} [_{vP} t_i nanika-o_1 tabe]_{vP}-nakat]_{PolP}-ta].$

However, according to Homer (2021), once a PI is licensed in a domain, it remains licensed in any further cycle of acceptability evaluation. In his words:

(29) **Cyclic Evaluation of PIs**: A PI π that is marked as licensed in a constituent A counts as acceptable in any superconstituent of A. [Homer (2021: 32)]

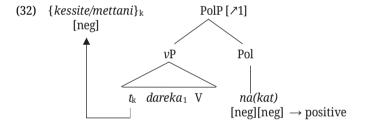
¹³ Watanabe (2004: 571, note 13) also considers it a possibility that NCIs move to [Spec, FocP].

Thus, the acceptability of the PPI nanika in (26) is accounted for.

What about the adverbial NCIs *kessite* 'never' and *mettani* 'seldom' in (20a) and (21a), repeated here as (30) and (31)?

- (30) Ken-wa kessite dareka-o hihansi-nakat-ta. [OKneg > dareka] Ken-TOP never someone-ACC criticize-NEG-PST 'Ken never criticized anyone.'
- (31) Ken-wa mettani dareka-ni denwasi-nakat-ta. [OKneg > dareka] Ken-TOP seldom someone-DAT call-NEG-PST 'Ken seldom called anyone.'

I suggest that their ability to rescue wh-*ka*'s can be accounted for in exactly the same manner as (26). Note that these adverbial NCIs receive focus interpretation. Therefore, it makes sense to assume that they have an uninterpretable focus feature in the framework of Watanabe (2004). Then, they can undergo feature checking with the Pol head with an interpretable [neg] feature, making Pol positive in polarity. In addition, if the adverbial NCIs move out of PolP, the PolP becomes UE, as shown in (32).



The assumption that adverbial NCIs move gains plausibility when we consider the fact that they can occur before the thematic topic element in the sentence, as shown in (33).

- (33) a. Kessite Ken-wa dareka-o hihansi-nakat-ta. [OKneg > dareka] never Ken-TOP someone-ACC criticize-NEG-PST 'Never did Ken criticize anyone.'
 - b. *Mettani Ken-wa dareka-ni denwasi-nakat-ta.* [OKneg > dareka] seldom Ken-TOP someone-DAT call-NEG-PST 'Seldom did Ken call anyone.'

A possible structure associated with the sentences in (33) would be (34), where TopP stands for Topic Phrase.

(34) $[F_{DOP} \{Kessite/Mettani\}_k [T_{DOP} Ken-wa [T_P t_k dareka V-NEG-PST]]]$

For our original sentences (30) and (31), we may assume the structure in (35).

(35) $[_{TopP} Ken-wa [_{FocP} \{kessite/mettani\}_k [_{TP} t_k dareka V-NEG-PST]]]$

The availability of these two types of structure is predicted by Rizzi's (1997, 2004) proposal about the left periphery of the clause, according to which one or more TopPs may appear above or below a FocP.¹⁴ Therefore, I conclude that the partial LF (32) is well-motivated for sentences (30) and (31). It then follows that the PPI rescuing witnessed in (30) and (31) receives the same explanation as (26).

In this section, I have shown that the presence of an NCI in a simplex negative sentence rescues a wh-ka in it. This fact can be understood if we adopt Watanabe's (2004) theory of NCIs and Homer's theory of PIs, with an additional assumption that a focused element moves out of PolP. On the other hand, the English examples (19b), (20b), and (21b) we saw at the beginning of this section do not rescue the PPI some, although they are superficially similar to the Japanese sentences (19a), (20a), and (21a), respectively. These English sentences contain either a negative quantifier or a negative adverb rather than an NCI. As such, no feature checking is involved between Pol and the negative word, which means that copying of a [neg] feature to Pol does not take place. Therefore, PPI some is not rescued in these examples.

6 PPI rescuing in contexts that do not license weak NPIs

Since I adopt Homer's (2021) theory of PIs in this study, I assume that the PPI rescuing facts discussed in Section 3 above can be accounted for by this theory. More specifically, I assume that PPI rescuing that takes place in the contexts in which weak NPIs are licensed can be taken care of by Homer's theory. What I would like to consider in this section are cases of PPI rescuing that seem to take place in contexts that do not license weak NPIs.

Let us consider first what Homer calls "monotonicity disruption by other inferences". Consider the English examples in (36), taken from Homer (2021: 23). 15

¹⁴ See Nakamura (2017) for an analysis of topic and focus in Japanese in the cartographic frame-

¹⁵ Homer mentions that Ladusaw (1979: 10) discusses examples similar to (36), and there is also a predecessor about similar examples in French. See Homer (2021, note 27) for references.

[OK neg > some] (36) a. Make sure John didn't steal something. [OK neg > some] b. We need to make sure that John didn't steal something. c. I hope John didn't steal something. [OK neg > some] [OK neg> some] d. Suppose John hadn't stolen something.

As Homer notes, these examples are remarkable in that none of the embedding expressions involved is downward-entailing. As such, these expressions do not license weak NPIs like *any* in their complements, as can be confirmed, for example, by the ungrammaticality of *I hope John stole anything (Cf. (36c)). Thus, Szabolcsi's (2004) theory cannot explain these examples. Nor can Homer's theory explain them, unless some additional assumption is made. The assumption that Homer makes is that an inference is added to the literal meaning of these sentences. For example, (36c) is proposed to have the inference shown in (37).

(37) I think that it is possible that John did steal something.

Homer provisionally proposes that the addition of the inference in (37) to the literal meaning of (36c) creates an enriched meaning, similarly to the account of NPI licensing proposed by Chierchia (2004) in which an enriched meaning containing an indirect scalar implicature plays an important role. According to Homer, the enriched meaning containing (37) provides a non-monotonic environment for the position of something in (36a-d). For example, the LF of (36c) would be (38).

(38) [TP[=1] I T hope [TP] [TP]

The notation "TP[\times1]" in (38) indicates that TP is non-monotonic with respect to the position of the bearer of index 1, in this case, something. As Homer's discussion concerning sentences (36a-d) makes it clear, the account he proposes for them is a provisional one. In Section 9, I offer an alternative account of examples like (36a-d).

Turning to Japanese, the Japanese translations of (36a-d) also rescue the PPI nanika 'something'. Here, I mention only one example, the Japanese counterpart of (36a):

(39) John-ga nanika-o nusuma-nakat-ta koto-o tasikame-ro. John-NOM something-ACC steal-NEG-PST NMLZ-ACC make.sure-IMP [OKneg > nanika]

'Make sure John didn't steal something.'

In fact, the examples in (36a-c) are similar to some of the Japanese examples that I discussed in Yoshimoto (2019), given in (40).

- (40) a. Kono sakuhin, [dareka-ni mitukara-na-i] Koon-ga this work Cohn-NOM someone-DAT be.found-NEG-PRS [OK neg > dareka] yooni kakureteiru ki-ga simasu. so.that is.hiding feeling-NOM do 'In this work, I feel as though Cohn is hiding so that he won't be found [??neg > someone] by someone.'
 - b. Atarini me-o kubatte, Eriko-wa Idareka-ni around eye-ACC keeping Eriko-TOP someone-DAT miraretei-na-il koto-o tasikameta. [OK neg > dareka] be.watched-NEG-PRS NMLZ-ACC made sure 'Eriko looked around to make sure that she wasn't being watched by someone.' [?neg > someone]
 - c. [Nimotuban-o dareka-ni tanome-na-il zvosei-wa baggage.watching-ACC someone-DAT can.ask-NEG-PRS women-TOP $\int_{0K}^{0K} neg > dareka$ tokuni tyoohoosuru desvoo. especially useful probably 'Probably it will be especially useful for women who cannot ask [OKneg > someone] someone to watch their baggage.'

These are naturally-occurring examples taken from the BCCWJ (Balanced Corpus of Contemporary Written Japanese). Note that all the examples in (40) contain the PPI dareka 'someone' that is rescued. The English translations of (40a-c) also seem to rescue the PPI someone, although the judgment varies from OK to ??, according to my consultant.16

The examples in (40) all contain a dative-marked dareka-ni, but other types of wh-ka with different case markers can also appear in the environments similar to (40), as the constructed examples in (41) show.

(41) a. [Akanboo-ga nanika-o kuti-ni ire-na-il yooni baby-NOM something-ACC mouth-to put-NEG-PRS so.that [OKneg > nanika] miteite ne. watch PRT 'Watch the baby so that she won't put something in her mouth.' [OKneg > something]

¹⁶ My consultant informs me that the [neg > someone] reading of (40a) becomes impeccable if we replace someone with someone he knows.

b. (Hairu maeni) Eriko-wa naka-ni [dareka-ga heya-no enter before Eriko-TOP someone-NOM room-GEC inside-in [OKneg > dareka] i-na-il koto-o tasikameta. be-NEG-PRS NMLZ-ACC made.sure 'Eriko made sure that someone wasn't in the room (before she entered).' [OKneg > someone]

All the examples in (41) allow wh-ka to scope below clausemate negation, just as in (40). The English counterparts of (41a-b), given in the translations, also allow some to scope below negation, according to my consultant.

Importantly, the embedded clauses of (40a-c) and (41a-b) do not license weak NPIs. This can be confirmed by the ungrammaticality of (42a-c), which contain a weak NPI koreizyoo 'any longer / any more'. 17 (42a, b) should be compared with (41a, b) respectively. (42c) should be compared with (40c).

(42) a. *Akanboo-ga [koreizyoo miruku-o nomu] voo-ni baby-NOM any.longer milk-ACC drink miteite ne. watch PRT

lit. 'Watch the baby so that s/he will have milk any longer.'

b. **Eriko-wa* [kaigi-de koreizvoo hanasi-o surul koto-o Eriko-TOP meeting-at any.longer talk-ACC dο C-TOP tasikameta.

made.sure

lit. 'Eriko made sure that she would speak any longer at the meeting.'

c. *[Nimotuban-o koreizvoo tanom-ul zvosei-wa baggage.watching-ACC any.longer ask-PRS women-TOP tokuni tyoohoosuru desyoo. probably especially useful lit. 'Probably it will be especially useful for women who will ask someone to watch their baggage any longer.'

The Japanese sentences in (40a-c) and (41a-b) therefore parallel the English examples (36a-d): They rescue PPIs even though the embedded clauses that contain

¹⁷ Although weak NPIs in Japanese seem to be rare, Kishimoto (2008: 425, 2015: 160) shows that koreizyoo 'any longer' is one such NPI.

them do not license weak NPIs. 18 There is also another similarity: The embedded clauses that contain a PPI in (40a-c), (41a-b), and (36a-d) are not asserted, in the sense that the speaker is not committed to the truth of the proposition expressed by them. Thus, the notion of assertion might be involved in rescuing those PPIs. Indeed, this observation led me to propose an analysis of PPI rescuing based on the notion of assertion in Yoshimoto (2019). The next section briefly introduces this account to show how it was motivated and what kinds of data it can account for. At the same time, some difficulties and problems with the assertion-based account are discussed there.

7 Yoshimoto's (2019) assertion-based theory

The fact that the embedded clauses containing a wh-ka in the Japanese examples in (40a-c) are non-assertions was one of the reasons that I proposed the constraint in (43) on wh-ka PPIs in Yoshimoto (2019). The notion of assertion was defined as in (44).

- (43) When the minimal proposition that contains a wh-ka is asserted, the wh-ka cannot have the interpretation in which the existence of its indefinite referent is denied.
- (44) To assert a proposition is to claim that the proposition is true.

The constraint in (43) is based on the fundamental observation that wh-ka presupposes the existence of its indefinite referent. This property of existential presupposition of wh-ka parallels that of some in English. Thus, Lakoff (1969: 613) observes that *some* is correlated with a "positive presupposition". A similar suggestion is made by Giannakidou, cited by Szabolcsi (2004: 446): "PPI-hood might be derived

¹⁸ A reviewer points out that the expression sukosi-demo 'little-DEMO' seems to be licensed in the embedded clauses of (40a-c) and (41a-b), casting doubt that weak NPIs are not licensed in these environments. The reviewer claims that sukosi-demo is a weak NPI, citing Yoshimura (2000). The reviewer did not give the bibliographic information for this reference, but if what s/he meant by Yoshimura (2000) is the one given in the References of the present work, there is actually no mention of sukosi-demo in her article. What she mentions and analyzes is itteki-demo 'one drop-DEMO' and itido-demo 'once-DEMO', and these expressions are concluded to be bipolar items by Yoshimura (2000: 968). In addition, Igarashi (2011: 46) clearly shows that sukosi-demo is a bipolar item just like itteki-de-mo. Thus, I maintain that (40a-c) and (41a-b) are cases of PPI rescuing in the environments in which weak NPIs cannot be licensed.

from the referentiality of some-phrases, specifically, that they always assert existence in some model". 19 Note that constraint (43) has the effect of forcing a wh-ka in an asserted simplex negative clause to scope above negation so that the existence of its referent is not denied. When a minimal negative clause containing a wh-ka is not asserted, as in Japanese examples (40a-c) and (41a-b), it can scope either below or above clausemate negation. This constraint works for the English examples we considered in the previous section, too. Thus, according to the definition of assertion in (44), the embedded clauses of English examples (36a-d) are not asserted. By extending constraint (43) to cover English someone-type PPIs as well, (36a-d) would be accounted for.

In addition to being able to account for cases of PPI rescuing that involve non-asserted embedded clauses discussed in the previous section, (43) can also explain why PPI rescuing takes place in many of the environments that license weak NPIs. Those environments include sentences containing dake 'only', which can be explained by adopting Horn's (2002, 2016) idea of "assertorically inert" propositions entailed by a sentence. The PPI rescuing in the complement of zannen-ni omottei-ru 'regret' can also be explained, given that Kuroda (2005) independently claims that it is a "non-statement-making context", as opposed to the complement of sittei-ru 'know', which is an "indirect speech context". 20

As the reader may have noticed, the assertion-based account of PPIs conflicts with the analysis presented in Section 5. We have already seen there that sentences like (20a), repeated here as (45), allow a narrow scope reading of wh-ka, due to the presence of the NCI kessite. I proposed a syntactic explanation of this fact, employing Watanabe's (2004) theory of NCI licensing and Homer's (2021) theory of PI licensing.

[OKneg > dareka] (45) *Ken-wa* kessite dareka-o hihansi-nakat-ta. Ken-TOP never someone-ACC criticize-NEG-PST 'Ken never criticized anyone.'

Note that the proposition expressed by (45) is clearly asserted in the sense of (44). We might reconcile this apparent contradiction by assuming that once a wh-ka is licensed syntactically, constraint (43) does not apply.

¹⁹ Szabolcsi questions this idea by Giannakidou on the grounds that this explanation does not naturally extend to all PPIs.

²⁰ See Kuroda (2005: 21). In Yoshimoto (2019), it was mistakenly written that Kuroda classifies the complement clause of *sittiei-ru* as "statement-making context". I sincerely regret the error.

However, this move does not solve the problem raised by another type of counterexample to (43) provided by an anonymous reviewer.²¹ Such examples are given in (46).

- (46) a. Taroo-wa yuusyoku-go, soreizyoo nanika-o Taro-TOP dinner-after more.than.that something-ACC tahe-nakat-ta [OKneg > nanika] eat-NEG-PST 'Taro didn't eat anything after dinner.' [lit. 'After dinner, Taro didn't eat something more (than what he ate for dinner).'l
 - b. Hanako-wa sono hi-no kitaku-go, soreizyoo Hanako-TOP that day-GEN coming.home-after more.than.that [OKneg > dokoka] dokoka-e ika-nakat-ta. somewhere-to go-NEG-PST 'Hanako didn't go anywhere after returning home that day.' [lit. 'After returning home that day, Hanako didn't go somewhere other than where she had gone (before returning home).']

In (46a–b), wh-ka is in a simplex negative proposition that is asserted. Nevertheless, wh-ka is rescued in these examples. It is clear that the presence of the expression soreizyoo 'any more / (lit.) more than that' is crucial here: Once soreizyoo is omitted from these sentences, the narrow scope reading of wh-ka disappears. It is also clear that soreizyoo is not an NCI, although it may well be an NPI on a par with koreizyoo 'any more / (lit.) more than this' that we saw in (42). The fact that soreizyoo is not an NCI can be confirmed by the sentences in (47), where soreizyoo appears in affirmative yes-no questions or affirmative conditional clauses.

- (47) a. Taroo-wa soreizyoo onigiri-o tabe-masi-ta ka? Taro-TOP more.than.that rice.ball-ACC eat-POLITE-PST 'Did Taro eat rice balls more than that?' [Context: We found out that Taro ate one rice ball, which is not very much.1
 - b. Soreizvoo koohii-o nom-u to nemurenai yo. more.than.that coffee-ACC drink-PRS if unable.to.sleep PRT 'If you drink any more coffee, you won't be able to sleep.'

²¹ I thank the reviewer for bringing these sentences to my attention. Consideration of them led me to the discovery that sentences like (20a) (=(45)) also rescue PPIs, as discussed in Section 5.

Hence, the account in terms of the presence of an NCI cannot be employed to explain the examples in (46), unlike (45). This means that the assertion-based account in (43) cannot be maintained as it is.²²

At this point, let us consider why the examples in (46) rescue PPIs. What seems to be crucial about these sentences is that they carry positive presuppositions. For example, (46a) carries the presupposition in (48).²³

(48) Taroo-wa yuusyoku-ni nanika-o tahe-ta. Taro-TOP dinner-for something-ACC eat-PST 'Taro ate something for dinner.'

This presupposition is triggered by the presence of the expression *soreizyoo* 'more than that' in (46a). In Section 6, we saw that Homer (2021) considers that an inference that is added to the literal meaning of a sentence can disrupt monotonicity and may rescue a PPI. One way to account for sentences like (46a-b), then, is to pursue this line of explanation. However, in this study, I would like to pursue another approach which seems to offer a more direct way to account for sentences like (46a-b) as well as other PPI rescue sentences. The approach I have in mind is that of Larrivée (2012). The next section briefly introduces this work.

8 Larrivée's (2012) activated-proposition theory

Larrivée (2012) argues that the phenomenon of PPI rescuing can be explained in terms of "activated propositions" in the sense of Dryer (1996). In Larrivée's (2012: 889) words:

(49) Activation is the property of propositions in which *some* can be found under the scope of clause-mate negation.

What Dryer means by the term "activated" can be grasped from the following passage in Dryer (1996: 480).

²² Nevertheless, we will see in Section 9 that the notion of assertion plays an important role in explaining PPI rescuing observed in certain sentences.

²³ That (48) is a presupposition can be confirmed by the fact that turning (46a) into a yes-no question preserves this presupposition.

(50) . . . of the various things in one's mind or memory, a small number are activated in the sense that they are 'lit up', in the individual's attention, in their consciousness, or what they are thinking about at a given point in time, while most of the things in one's mind or memory are nonactivated, not being attended to, not in one's consciousness, and not being thought about at that point in time. [emphasis mine]

Intuitively speaking, then, an activated proposition is a proposition that is lit up in one's mind. To give a simple example from Dreyer (1996: 485), when someone asks the question Did John see Mary?, the proposition that 'John saw Mary' is activated in the mind of the speaker, and the speaker asks whether the proposition is true or not. In addition, asking the question activates the same proposition in the mind of the hearer (unless it was already activated).

Larrivée's (2012: 885) definition of "activation" is given in (51).

(51) Activation can be defined as information that is accessible to both speaker and hearer. [italics in the original]

According to Larrivée (2012: 885), accessible propositions are found in three types of contexts given in (52).

- (52) a. Explicit mention in the antecedent discourse, as with metalinguistic negation
 - b. Accommodation by relevant constructions, as in complements of factives
 - c. Contextual inferences

I will defer our discussion of context (52a) until the next section since there are reasons to suspect that this context may better be treated differently from the other contexts in (52).

Let us therefore consider (52b) first. The examples in (53) are instances of what Larrivée (2012: 886) calls "accommodated activation".

[OKneg > often > something] (53) a. John doesn't often say something. b. Didn't John say something? [OKneg > something]

The observation that something is rescued in (53a) is explained by Larrivée in the following way: "Focus induces a complementary value and presupposes the underlying proposition: that John sometimes says something, but that he mostly doesn't.

This makes accessible the proposition that John says something in [(53a)]". ²⁴ For the sentence in (53b), Larrivée states: "Negative interrogatives presuppose the underlying proposition rather than merely enquire about it, and that John did say something is activated in [(53b)]".²⁵

Another context in which accessible propositions are found is (52c): contextual inferences. The following sentences are some of the examples offered by Larrivée (2012: 888) that involve contextual inferences.

- (54) a. If John were insensitive, he wouldn't have said something.
 - b. He is a bit lazy, so he didn't do something for Jane.

For (54a), Larrivée notes that "[t]he contextual connection between sensitivity to a situation and a verbal reaction concerning that situation activates the proposition that John said something". Another way to say this, I think, is that from (54a) we infer that John said something, and this inferred proposition is activated in the minds of speaker and hearer. Similarly, from (54b), we infer that if he weren't lazy, he would have done something for Jane. The inferred proposition is activated, and therefore something is found under the scope of clausemate negation, according to (49).

The Japanese examples in (46) can also be explained as cases of rescuing by virtue of contextual inference. I repeat (46a) here as (55), which carries the presupposition in (56) (= (48)).

- Taroo-wa yuusyoku-go, soreizyoo nanika-o tabe-nakat-ta. (55)Taro-TOP dinner-after more.than.that something-ACC eat-NEG-PST [OKneg > nanika] 'Taro didn't eat anything after dinner.' [lit. 'After dinner, Taro didn't eat something more (than what he ate for dinner).']
- (56) Taroo-wa yuusyoku-ni nanika-o tabe-ta. Taro-TOP dinner-for something-ACC eat-PST 'Taro ate something for dinner.'

²⁴ The scopal judgment indicated in (53a) is not unanimous. Thus, Szabolcsi (2004: 428, note 18) notes that "often does not seem to shield PPIs: He has(*n't) often called someone". However, she also mentions that "often blocks NPI-licensing (*He hasn't often called a single person)". Be that as it may, Larrivée's explanation for (53a) carries over to sentences like He didn't *(always) come up with something, in which the PPI is shielded, according to Szabolcsi (2004: 428, example (95)).

²⁵ A more accurate characterization of the negative yes-no questions like (53b) would be the one given by Romero and Han (2004): yes-no questions with preposed negation necessarily carry the implicature that the speaker believed or expected that the positive answer is true.

From (55), we can infer its presupposition (56). This presupposition is activated, and according to (49), the PPI is rescued.

9 A revised activated-proposition theory

In the previous section, I very briefly reviewed Larrivée's (2012) account of PPI rescuing, highlighting its merits. In this section, I will show that some clarification and revisions of Larrivée's theory are required to maintain its validity. A revised theory will also be provided.

According to Larrivée (2012: 885), "Activation can be defined as information that is accessible to both speaker and hearer" (= (51)). Immediately after this sentence, he adds that "It corresponds to the traditional notion of presupposition as redefined by Dryer (1996) to insist on shared information rather than shared beliefs". However, it is not clear what Larrivée's idea is about the relationship between activated proposition and presupposition. For example, consider the examples in (57), which Larrivée considers to be cases of accommodated activation.

- (57) a. The fact that he didn't say something is good.
- [OKneg > something]

b. I regret that he didn't say something.

[OKneg > something]

Larrivée's explanation for the rescuing in these examples is as follows: "Factive presuppositions of the subordinate proposition is [sic] imposed by the fact that and regret, which therefore activate the proposition that John [sic] said something in [(57a) and (57b)]" (p. 886). It is clear that the complement clauses in (57) are presupposed, but what is presupposed is the negative proposition he didn't say something, not the positive one. How the positive proposition he said something is activated in these sentences is not explained by Larrivée.

For the activated-proposition theory of PPI rescuing to be tenable, it should be the case that only positive activated proposition should count for PPI rescuing. We can see this clearly when we consider negative wh-questions like (58), where the only available interpretations are [PPI > neg].

(58) a. Who didn't say something?

[*neg > something]

[*neg > nanika]

b. Dare-ga nanika-o iwa-nakat-ta no? who-NOM something-ACC say-NEG-PST Q 'Who didn't say something?'

Both the English sentence (58a) and the Japanese sentence (58b) presuppose the negative proposition someone didn't say something, and this proposition should be activated, given that Larrivée considers presupposition to correspond to information that is accessible to both speaker and hearer. If any activated proposition can rescue a PPI regardless of the proposition's polarity, it should be the case that (58a-b) rescue the PPIs in it, contrary to fact. Therefore, we must assume that it is only positive activated propositions that rescue PPIs.

Larrivée's idea about the relationship between activation and PPI rescuing in (49), repeated here as (59), is not explicit about the kind of activated propositions that is relevant for PPI rescuing.

(59) Activation is the property of propositions in which *some* can be found under the scope of clause-mate negation.

Unlike what he says about (57a-b), Larrivée claims that a negative proposition is activated to account for the double negation example in (60) (=his (35)).

[OKneg > neg > something] (60) I don't think that he didn't say something.

In Larrivée's words: "Double negation presupposes that the negative subordinate has been entertained or could have been in the discourse environment, and that John hasn't talked is activated in [(60)]" (p. 886). In response to a reviewer's comment, Larrivée acknowledges in a footnote (p. 896, note 31) that it is undesirable to have a negative proposition to be activated to rescue PPIs, and offers (61) as one possible reformulation of his condition on the PPI some.

(61) The PPI some can superficially appear under the scope of a clause-mate negative if it is part of a positive proposition presupposed by the speaker.

Indeed, as we saw above, mentioning "a positive proposition" in (61) is crucial to explain sentences like (58a-b). In addition, we would like to know how the relevant positive proposition becomes accessible in (60) if this sentence is to be accounted for in terms of activated proposition. Note, however, that the fact that the PPI can scope below negation in (60) can be explained by Homer's (2021) theory of PPI licensing, which we have already adopted. Thus, we need not account for (60) in terms of activation. But for sentences like (57a) above, for which Homer's theory does not readily offer an explanation, we do want to know how a positive proposition becomes accessible.

Before considering this question, it is necessary to point out that non-presupposed propositions can also rescue PPIs. In fact, the examples we considered in Section 6 all involve non-presupposed propositions that rescue PPIs. For example, consider (41a) repeated here as (62).

(62) [Akanboo-ga nanika-o kuti-ni ire-na-il yooni baby-NOM something-ACC mouth-to put-NEG-PRS so.that miteite [OKneg > nanika] ne. watch PRT

'Watch the baby so that she won't put something in her mouth.'

[OKneg > something]

In both the Japanese sentence and the English translation of (62), the PPI is rescued. And yet, the proposition expressed by the embedded clause is not presupposed by the speaker. But it is activated in the minds of both speaker and hearer because it is explicitly stated in this sentence. Therefore, activated propositions that are not presupposed should also play a role to account for examples like (62) in terms of the activation theory of PPI rescuing. This means that we should either revise (61) or propose an additional condition to account for sentences like (62). Let us tentatively assume that (63) holds.

(63) **Condition on PPI Rescuing** (initial version)

A someone/wh-ka type PPI can scope below negation in the minimal PolP containing the PPI if a positive atomic proposition p that contains the PPI is activated.

The term "atomic" is added in (63) to exclude cases where a complex positive proposition embeds a negative proposition that contains a PPI.

Note that the embedded clause of (62) contains a negative proposition. Given that this sentence rescues the PPI, the positive proposition the baby will put something in her mouth should be activated. The situation is similar to the English examples in (57a-b) we saw above. Again, the question is: how is this positive proposition activated? I propose (64) as the condition on when a positive proposition is activated.26

²⁶ In formulating this condition, I found it instructive to refer to Godard's (2012: 138) condition on the motivation of the subjunctive mood given in (i).

⁽i) The subjunctive is motivated when the speaker takes into account the fact that there may exist an agent who believes that non-p is possible.

I am grateful to a reviewer for suggesting the relevance of this condition to the issue of PPI rescuing.

(64) Condition on the activation of a polarity-reversed positive proposition When *non-p* is activated but not asserted in sentence S, its polarity-reversed proposition p is also activated if the speaker or the subject of S believes that p is/was possible.

We understand "asserted" in (64) in the following sense: A proposition p is asserted if it is claimed to be true by the speaker, and it satisfies the requirement given in (65a), which is quoted from Abbott (2000). I also follow Abbott (2000) and assume (65b).

- (65)a. [W]hat is asserted is what is presented as the main point of the utterance - what the speaker is going on record as contributing to the discourse. [Abbott (2000: 1431)]
 - b. Grammatical presuppositions are nonassertions.

Assuming the condition in (64), consider why (62) rescues the PPI in it. The embedded negative proposition (non-p) in (62) is not asserted but activated, since it is explicitly mentioned. In addition, the speaker of (62) believes that p (= the baby will put something in her mouth) is possible. Hence, according to (64), this positive proposition is activated, and the fact that the PPI in (62) is rescued is accounted for according to (63). In this way, all the examples of PPI rescuing observed in Section 6 can be accounted for by (63) and (64). Next, consider the English example from (57a): The fact that he didn't say something is good. Again, the embedded negative proposition *non-p* is activated. Since *non-p* is grammatically presupposed, it is not asserted, according to (65b). In addition, it can be inferred that the speaker of this sentence believes that *p* (=*his saying something*) was possible (but didn't take place). Therefore, this positive proposition p is activated according to (64), and the PPI something is rescued, according to (63).

The requirement in (64) that non-p be non-assertions comes from consideration of sentences like (66).

(66) *Ken-wa* nanika-o tabe-ru daroo to omotteita-ga, Ken-TOP something-ACC eat-PRS probably C thought-N0M kare-wa nanika-o tabe-nakat-ta. [*neg > dareka] something-ACC eat-NEG-PST he-TOP 'I thought that Ken would probably eat something, but he didn't eat something.'

In (66), the second clause is asserted. The first clause makes it clear that the speaker believes that Ken's eating something was possible. Thus, if (64) were to apply to asserted *non-p* too, then we incorrectly predict that (66) rescues the PPI.

The reason for the inclusion of the phrase "the subject of S" in (64) comes from sentences like (67), where the PPI something is rescued.

(67) Mary hopes that John didn't steal something.

[OKneg > some]

In (67), the embedded proposition is activated but not asserted, satisfying (64). And it is the subject of the sentence *Mary* who entertains a possibility of p (=*John stole* something), not the speaker. Hence, the inclusion of "the subject of S" in (64).

Let us make sure that condition (64) makes the correct prediction for the negative wh-questions in (58), repeated here as (68). Recall that PPIs are not rescued in these examples.

(68) a. Who didn't say something?

[*neg > something]

[*neg > nanika]

b. Dare-ga nanika-o iwa-nakat-ta no? who-NOM something-ACC say-NEG-PST O 'Who didn't say something?'

Here, the presupposed proposition *non-p* is that *someone didn't say something* and this proposition is activated but not asserted. However, the speakers of (68a–b) do not believe that p (=someone said something) was possible; in fact, the opposite is presupposed. Therefore, the positive proposition p is not activated according to (64), as required.

The PPI rescuing condition in (63) turns out to be inadequate when we extend our data coverage. Consider first (69).

(69) a. [Dareka-ni saki-o kos-arel-taku-na-i karana. ahead-ACC pass-PASS-want-NEG-PRS someone-DAT because

 $[^{OK}$ neg > wh-ka]

'Because we don't want to be beaten by someone.' [lit. 'Because we don't want to be passed by someone.']

 $[^{?*}$ neg > wh-ka] b. [Nanika-o mi]-taku-na-i karana. something-ACC see-want-NEG-PRS because 'Because we don't want to see something.'

(69a) is an example found in the BCCWI corpus. (69b) is constructed on the basis of (69a), changing the embedded clause. In my judgment, while (69a) allows the [neg > wh-ka] reading easily – in fact that is the dominant reading –, (69b) does not seem to allow the [neg > wh-ka] reading, at least without any particular context; the dominant reading seems to be [wh-ka > neg]. Where does this difference come from?

Before attempting to answer the question, some remarks are in order about the syntactic structure involved in (69a-b).²⁷ Recall from Section 5 that we are assuming that a PPI is licensed if the minimal PolP containing it is non-DE. Since (69a-b) involve positive embedded clauses, at first glance, it may appear that the PPIs in them should be licensed, without any rescuing operations. There is evidence, however, that the embedded clause of the desiderative predicate -ta(ku) 'want' is not PolP. Consider (70).

(70) *Boku-wa [PRO dareka-ni awa-na(i)1-ta-i meet-NEG-want-PRS someone-DAT lit. 'I want not to see someone.'

It is simply impossible for the negation morpheme to appear in the complement clause of -ta 'want'. This fact follows if the desiderative predicate -ta c-selects vP. not PolP. Assuming so, in the examples in (69), the minimal PolP containing wh-ka would be the matrix PolP. This PolP is negative, hence DE, with respect to the position of wh-ka. Given this conclusion, the unavailability of [neg > wh-ka] reading in (69b) is expected. What is unexpected is the availability of [neg > wh-ka] reading in (69a).

Let us consider why (69a) rescues the PPI. A reviewer points out that a contrast similar to the one between (69a) and (69b) is also observed in the English sentences (71) that Szabolcsi (2004: 417, note 10) discusses.

[OKneg > someone] (71) a. I don't want [to offend someone / break something]. [??neg > someone] b. I don't want [to call someone / eat something].

Regarding this contrast, Szabolcsi comments that "Voluntary and involuntary actions do not appear to behave alike". The reviewer also informs me of Szabolcsi's (2021) work, in which the notion of "responsibility" is employed to account for obviation effects in subjunctives.²⁸ These comments indeed help us understand why sentences like (69a) and (71a) rescue PPIs, while sentences like (69b) and (71b) do not. Basically, it seems that when the subject of the predicate want is responsible for the event expressed by the complement clause, the PPI is not rescued, as in (69b) and (71b). On the other hand, when the subject is not responsible for the event expressed by the embedded clause, the PPI is rescued, as in (69a) and (71a).

²⁷ See Kishimoto (this volume) for an investigation into Japanese syntactic structure from the viewpoint of NPI licensing.

²⁸ Szabolcsi (2021) cites Farkas (1988, 1992) as the source for the notion of "RESP[onsibility] relation".

Let us incorporate these observations into our rescuing condition. (72) replaces our previous formulation in (63).

(72) **Condition on PPI Rescuing** (second version)

A someone/wh-ka type PPI in sentence S can scope below negation in the minimal PolP containing the PPI if both (i) and (ii) are met.

- (i) A positive atomic proposition p that contains the PPI is activated in S.
- (ii) The subject of S is not the intentional initiator of the eventuality expressed by p.

Given (72), the contrast between (71a) and (71b) can be accounted for in the following way. The embedded positive propositions in these examples are both activated since they are explicitly stated, satisfying (72i). However, example (71b) does not satisfy condition (72ii) since the predicates call and eat require their subjects to be an intentional initiator. Therefore, the PPIs in (71b) are not rescued. In (71a), the subjects of the predicates offend and break are interpreted not to be intentional initiators. Therefore, according to (72), the PPIs in (71a) are rescued. Essentially the same explanation applies to the Japanese examples in (69a-b).

A reviewer points out that (69b) can have a narrow scope reading of nanika when an appropriate context is supplied and the adverb *ukkari* 'carelessly / by accident' is added to the sentence as in (73).

[OKneg > nanika] (73) [Ukkari nanika-o mil-taku-na-i node... by.accident something-ACC see-want-NEG-PRS because 'Because I don't want to see something accidentally . . .'

I agree on the judgment, and the scope fact exhibited by this sentence is exactly what we expect from the rescuing condition (72). The other reviewer also points out that in a dialog like (74), the narrow scope reading of dareka is easy to get.

- byooin-ni itteki-tara? (74) A: Asu tomorrow clinic-to go-why.not 'Why don't you go to the clinic tomorrow?'
 - [OKneg > dareka] B: [Boku-wa dareka-ni ai]-taku-na-i I-TOP someone-DAT meet-want-NEG-PRS 'I don't want to meet someone.'

The context of (74) makes it clear that what B wants to avoid is to meet someone accidentally. Again, under this interpretation, (72) correctly predicts that the PPI can be rescued.

Consider next imperative sentences in (75)–(76).

- (75) a. **Nanika-o* tabe-ru na. something-ACC eat-PRS NEG lit. 'Don't eat something.'
 - b. *Dokoka-e ik-u na. somewhere-to go-PRS NEG lit. 'Don't go somewhere.'
- (76) a. *Don't eat something!
 - b. *Don't go somewhere!

As indicated, these sentences are unacceptable both in Japanese and English, regardless of the scopal relation between the PPI and negation. There seems to be something wrong with the use of PPIs in negative imperatives. Interestingly, however, absence of an intentional initiator can save these sentences, as pointed out by a reviewer. (77) is an example provided by him/her.

 $[^{OK} neg > nanika]$ (77) Ukkari nanika-o taberu na. accidentally something-ACC eat NEG 'Don't eat something accidentally.'

The context for (77) supplied by the reviewer is the following: A Muslim father tells his daughter that he is concerned that she might accidentally eat something before sunset during Ramadan. Then he says (77). In this context, the understood subject of the sentence, his daughter, is not an intentional initiator of the event of eating something before sunset. Hence, (72ii) is met. (72i) is also satisfied, since the positive proposition ukkari nanika-o taberu 'eat something accidentally' is activated, according to (64). On the other hand, (75a) is usually interpreted in such a way that the subject is an intentional initiator of eating, if there is no expression that indicates the subject's unintentionality. A similar remark applies to (75b). Therefore, the PPIs in these examples are not rescued.²⁹

At this point, let us return to our example (55), repeated here as (78), and its presupposition in (79). This example shows that a further modification of (72) is necessary.

²⁹ I leave open the issue of why (75)-(76) also cannot have the interpretation in which the PPI has wide scope over negation.

- (78) Taroo-wa yuusyoku-go, soreizyoo nanika-o tabe-nakat-ta. Taro-TOP dinner-after more.than.that something-ACC eat-NEG-PST [OKneg > nanika] 'Taro didn't eat anything after dinner.' [lit. 'After dinner, Taro didn't eat something more (than what he ate for dinner) 'l
- (79)Taroo-wa yuusyoku-ni nanika-o tahe-ta. Taro-TOP dinner-for something-ACC eat-PST 'Taro ate something for dinner.'

We explained (78) as a case of rescuing by contextual inference, taking presupposition to be a kind of inference. Note that the presupposition in (79) is activated in (78). Therefore, it satisfies the PPI rescuing condition (72i). However, (78) does not satisfy (72ii) since the subject of (78), *Taroo*, is the intentional initiator of the eventuality expressed by p (= (79)). Therefore, (72) would incorrectly predict that the PPI in (78) should not be rescued. When we compare (78) with the examples that motivated the formulation of condition (72), we notice that there is a difference: (78) involves a presupposition, whereas the examples that motivated (72) all involve activated propositions that are not presupposed. Thus, PPI rescuing seems to care whether the proposition in question is presupposed or merely activated without being presupposed. Therefore, let us revise (72) to (80).

Condition on PPI Rescuing (final version) (80)

A someone/wh-ka type PPI in sentence S can scope below negation in the minimal PolP containing the PPI if (A) or (B) is satisfied.

- (A) A positive atomic proposition *p* that contains the PPI is inferred by S.
- (B) S satisfies both (i) and (ii).
 - A positive atomic proposition *p* that contains the PPI is activated in S.
 - (ii) The subject of S is not the intentional initiator of the eventuality expressed by p.

Condition (A) in (80) applies to sentences that come with a positive inference, including a positive presupposition. Inclusion of (A) preserves Larrivée's account of sentences like (54a-b) in Section 8 as well. Condition (B) in (80) applies to sentences that contain activated but non-presupposed positive propositions. Thus, the PPI rescuing fact observed in sentences like (78) is accounted for by (80) as well as all the other examples we considered in this section.

Before we conclude this section, I should make some remarks about examples involving antecedent discourse (i.e., the context (52a) in Section 8), including metalinguistic negation. Consider Larrivée's (2012: 886) examples in (81).

(81)a. John didn't say something, Jane did. (Larrivée's (39))

- b. John said something.
 - Come on, now. He didn't say something.

(Larrivée's (40))

c. John should have said something, and he didn't say something.

(Larrivée's (41))

Larrivée claims that the sentences in (81) "involve beyond any reasonable doubt activated proposition . . . as they suppose the explicit antecedent use of the proposition or accommodate it". The activated propositions in these sentences rescue the PPIs in them, according to Larrivée.

Though Larrivée's account of these sentences is attractive, there are two reasons why I did not discuss this type of PPI rescuing in this study. First, "explicit mention in the antecedent discourse" does not always rescue PPIs. Thus, consider example (82a), provided by one of the reviewers. The English counterpart of (82a) is given in (82b).

- (82) a. Ookuno gakusei-wa kinoo-no ofisuawaa-ni students-TOP yesterday-GEN office.hour-to many dareka-ga kita to omotteiru-ga, Hanako-wa dareka-ga someone-NOM came C think-though Hanako-TOP someone-NOM sittei-ru. second clause: [*neg > dareka] ko-nakat-ta koto-o come-NEG-PST NMLZ-ACC know-PRS
 - b. Many students think that someone came during the office hour yesterday, but Hanako knows that someone didn't come.

second clause: [*neg > someone]

The reviewer correctly points out that the second clause of (82a) does not rescue the PPI in it, even though there is an explicit mention of the proposition dareka-ga kita 'someone came' in the first clause. The same fact is observed in English, as shown in (82b). These observations show that a mere explicit mention in the antecedent discourse is not sufficient to rescue PPIs.

A second comment concerns the status of metalinguistic negation. The examples in (81) cannot be translated into Japanese using a clausemate negation marker -na(kat) 'not'. For example, (81a) cannot be translated into (83).³⁰ The asterisk in (83) is meant to show that this sentence cannot be interpreted as an instance of metalinguistic negation.

(83)*John-wa nanika-o iwa-nakat-ta. Jane-ga it-ta. John-TOP something-ACC say-NEG-PST Jane-NOM say-PST Intended: 'John didn't say something, Jane did.'

One way to translate the first sentence in (81a) is to place the negation marker in a higher clause, as in (84).

(84) [John-ga nanika-o it-tal-no de-wa na-i. John-NOM something-ACC say-PST-NMLZ COP-TOP **NEG-PRS** lit. 'It's not that John said something.'

These observations indicate that we cannot blindly apply Larrivée's explanation for the English sentences in (81) to Japanese sentences. This is somewhat odd when we consider that other examples that exhibit PPI rescuing show remarkable similarity between English and Japanese. Thus, I decided to leave open the question of whether the activated proposition theory should be employed to account for cases that involve metalinguistic negation as in (81a-b) and contrasted clauses as in (81c).

10 Concluding remarks

I presented a hybrid theory of PPI rescuing that adopts both Homer's (2021) theory and a revised version of Larrivée's (2012) theory. The larger picture that emerges from our discussion is the following. Syntax, semantics, and pragmatics are all involved in the phenomenon of PPI rescuing. Homer's (2021) theory mainly focuses on the syntactic and semantic aspects of the phenomenon. Larrivée's (2012) theory mainly focuses on the pragmatic aspects. The following is a list of some of the important conditions and principles in our hybrid theory. (85)–(87) are adopted from Homer (2021), which we assume also apply to Japanese wh-ka PPIs. (88) and (89) are the conditions we proposed in the previous section.

³⁰ See Yoshimura (2013: 42) and references therein for the observation that "simple *nai*" is unacceptable in most cases of Japanese metalinguistic negation. What Yoshimura calls "simple nai" is morphologically a combination of -na 'NEG' and -i 'PRS'.

I. Syntactic and Semantic Licensing

(85) Licensing Condition of some

[=(15)]

Some is licensed in sentence S only if it has a non-DE domain in S.

(86) Minimal Domain of some

The minimal domain of some is PolP

(87) Cyclic Evaluation of PIs

[=(29)]

A PI π that is marked as licensed in a constituent A counts as acceptable in any superconstituent of A.

II. Licensing by Activation

(88) Condition on PPI Rescuing

[(08) =]

A someone/wh-ka type PPI in sentence S can scope below negation in the minimal PolP containing the PPI if (A) or (B) is satisfied.

- (A) A positive atomic proposition p that contains the PPI is inferred by S.
- (B) S satisfies both (i) and (ii).
 - (i) A positive atomic proposition *p* that contains the PPI is activated in S.
 - (ii) The subject of S is not the intentional initiator of the eventuality expressed by p.

(89) Condition on the activation of a polarity-reversed positive proposition [=(64)]

When *non-p* is activated but not asserted in sentence S, its polarity-reversed proposition p is also activated if the speaker or the subject of S believes that p is/was possible.

Recall that an activated negative proposition may trigger activation of a positive proposition. This happens when the condition in (89) is satisfied. The positive proposition that is activated in this way satisfies (88Bi). If the proposition also satisfies (88Bii), then the PPI in it is rescued.

Application of the conditions in (85) and (88) are ordered in the following way. To see whether a PPI is licensed, we first check the syntactic/semantic condition (85). If the PPI is licensed by (85), then we do not have to check (88). If the PPI is not licensed by (85), then we check (88) to see if it can be rescued. Thus, PPI-licensing involves two steps in this hybrid theory.

I would like to emphasize that the proposed conditions (88)–(89) are by no means final answers: they need to be tested against more data to confirm their validity. Nevertheless, I hope that our discussion has illuminated some factors that are involved in the complex phenomenon of PPI rescuing in both Japanese and English.

References

- Abbott, Barbara. 2000. Presupposition as nonassertions. Journal of Pragmatics 32. 1419–1437. Baker, Carl Lee. 1970. Double negatives. Linguistic Inquiry 1. 169–186.
- Barker, Chris. 2018. Negative polarity as scope marking. Linguistics and Philosophy 41, 483–510.
- Chierchia, Gennaro. 2004. Scalar implicatures, polarity phenomena, and the syntax/pragmatics interface. In Adriana Belletti (ed.), Structures and Beyond: The Cartography of Syntactic Structures, vol. 3, 39-103. Oxford: Oxford University Press.
- Chomsky, Noam. 1995. Categories and transformations. In *The Minimalist Program*, 219–394. Cambridge, MA: MIT Press.
- Chomsky, Noam. 1998. Some observations on economy in generative grammar. In Pilar Barbosa, Danny Fox, Paul Hagstrom, Martha McGinnis & David Pesetsky (eds.), Is the Best Good Enough? 115-127. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2000. Minimalist inquiries: The framework. In Roger Martin, David Michaels, & Juan Uriagereka (eds.), Step by Step: Essays on Minimalist Syntax, 89-155. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz (ed.), Ken Hale: A Life in Language, 1-52. Cambridge, MA: MIT Press.
- Dryer, Matthew S. 1996. Focus, pragmatic presupposition, and activated propositions. Journal of Pragmatics 26. 475-523.
- Farkas, Donka. 1988. On obligatory control. Linguistics & Philosophy 11. 27-58.
- Farkas, Donka. 1992. On obviation. In Ivan A. Sag & Anna Szabolcsi (eds.), Lexical Matters, 85–109. Stanford: CSLI.
- Frascarelli, Mara, & Roland Hinterhölzl. 2007. Types of topics in German and Italian. In Kerstin Schwabe & Susanne Winkler (eds.), On Information Structure, Meaning and Form, 87–116. Amsterdam: John Benjamins.
- Gajewski, Jon Robert. 2005. Neg-raising: Polarity and Presupposition. Cambridge, MA: MIT dissertation. Giannakidou, Anastasia. 1998. Polarity Sensitivity as (Non)Veridical Dependency. Amsterdam: John Benjamins.
- Giannakidou, Anastasia. 2002. Licensing and sensitivity in polarity items: From downward entailment to (non)veridicality. In Mary Andronis, Erin Debenport, Anne Pycha & Keiko Yoshimura (eds.), Proceedings from the Panels of the Thirty-Eighth Meeting of the Chicago Linguistic Society, vol. 38-2, 29-53. Chicago: Chicago Linguistic Society.
- Godard, Danièle. 2012. Indicative and subjunctive mood in complement clauses: From formal semantics to grammar writing. In Christopher Piñón (ed.), Empirical Issues in Syntax and Semantics 9, 129-148.
- Hasegawa, Nobuko. 1991. Affirmative polarity items and negation in Japanese. In Georgopoulos Carol & Ishihara Roberta (eds.), Interdisciplinary Approaches to Language: Essays in Honor of S.-Y. Kuroda, 271-285. Dordrecht: Kluwer.
- Homer, Vincent. 2021. Domains of polarity items. Journal of Semantics 38. 1–48.

- Horn, Laurence, 2002. Assertoric inertia and NPI licensing. In Mary Andronis, Erin Debenport, Anne Pycha & Keiko Yoshimura (eds.), Proceedings from the Panels of the Thirty-Eighth Meeting of the Chicago Linguistic Society, vol. 38-2, 55–82. Chicago: Chicago Linguistic Society.
- Horn, Laurence. 2016. Licensing of NPIs: Some negative (and positive) results. In Pierre Larrivée and Chungmin Lee (eds.), Negation and Polarity: Experimental Perspectives, 281–305. Switzerland: Springer.
- Igarashi, Yuta. 2011. Kyokusei koomoku-no ninkajooken-nikansuru ichikoosatsu. [A note on the licensing condition of polarity items]. Iwate Daigaku Jinbunshakaikagaku Kenkyuuka Kiyoo [Bulletin of the graduate school of humanities and social sciences. Iwate University 1, 39–49.
- Imani, Ikumi. 1993. Hitei ryookabun-o zenken-ni motsu jookenbun-nitsuite. [On the conditional sentences that have quantified negative sentences in their antecedents]. In Takashi Masuoka (ed.), Nihongo-no Jooken Hyoogen [Japanese conditional expressions], 203–222. Tokyo: Kurosio Publishers.
- Kishimoto, Hideki. 2008. On the variability of negative scope in Japanese. Journal of Linguistics 44.
- Kishimoto, Hideki. 2015. Bunpoo Genshoo-kara Toraeru Nihongo [Japanese as viewed from grammatical phenomena]. Tokyo: Kaitakusha.
- Kroch, Anthony. 1979. The Semantics of Scope in English. New York: Garland.
- Kuroda, Sige-Yuki. 1965. Generative grammatical studies in the Japanese language. Cambridge, MA: MIT dissertation.
- Kuroda, S.-Y. 2005. Focusing on the matter of topic: A study of wa and qa in Japanese. Journal of East Asian Linguistics 14. 1-58.
- Ladusaw, William. 1979. Polarity sensitivity as inherent scope relations. Austin: University of Texas at Austin dissertation.
- Lakoff, Robin. 1969. Some reasons why there can't be any some-any rule. Language 45. 608-615.
- Larrivée. Pierre. 2012. Positive polarity items, negation, activated propositions. Linguistics 50(4). 869-900.
- Linebarger, Marcia. 1980. The grammar of negative polarity. Cambridge, MA: MIT dissertation.
- Linebarger, Marcia. 1987. Negative polarity and grammatical representation. Linguistics and Philosophy 10. 325-387.
- McGloin, Naomi Hanaoka. 1972. Some aspects of negation in Japanese. Ann Arbor: University of Michigan dissertation.
- McGloin, Naomi Hanaoka. 1976. Negation. In Masayoshi Shibatani (ed.), Japanese Generative Grammar: Syntax and Semantics 5. 371-419. New York: Academic Press.
- Nakamura, Koichiro. 2017. Japanese particle wa with a focal stress provokes exhaustive identificational focus. In Fuzhen Si (ed.), Studies in Syntactic Cartography, 352-370. Beijing: China Social Sciences Press.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In Liliane Haegeman (ed.), Elements of Grammar, 281-337. Dordrecht: Kluwer.
- Rizzi, Luigi. 2004. Locality and left periphery. In Adriana Belletti (ed.), Structures and Beyond: The Cartography of Syntactic Structures, Volume 3, 223–251. Oxford: Oxford University Press.
- Romero, Maribel & Chung-Hye Han. 2004. On negative questions. Linguistics and Philosophy 27. 609-658.
- Szabolcsi, Anna. 2004. Positive polarity negative polarity. Natural Language & Linguistic Theory 22. 409-452
- Szabolcsi, Anna. 2021. Obviation in Hungarian: What is its scope, and is it due to competition?. Glossa: a journal of general linguistics 6(1). 57. 1-28. https://doi.org/10.5334/qjgl.1421

- Watanabe, Akira. 2004. The genesis of negative concord: Syntax and morphology of negative doubling. Linguistic Inquiry 35. 559-612.
- Yoshimoto, Yasushi. 2014. On the rescuing of positive polarity items in Japanese. Ryuukyuu Daigaku Oobeibunka Ronshuu [Ryudai review of Euro-American studies]. 111–133.
- Yoshimoto, Yasushi. 2019. Kootei kyokusei-o mota-nai kootei kyokusei hyoogen: Nihongo-no "wh-ka"-no bunseki [Positive polarity items without positive polarity: an analysis of "wh-ka" in Japanese]. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kyokusei Hyoogen-no Koozoo, Imi, Kinoo [Polarity-sensitive expressions: their forms, meanings and functions], 236–260. Tokvo: Kaitakusha.
- Yoshimura, Akiko. 2000. Nihongo-no hitei kankyoo [Negative environments in Japanese]. In Fujii Haruhiko Sensei Taikan Kinen Ronbunshuu [A festschrift for Professor Haruhiko Fujii on the occasion of his retirement], 961–972. Tokyo: Eihosha.
- Yoshimura, Akiko. 2013. Descriptive/metalinguistic dichotomy?: Toward a new taxonomy of negation. Journal of Pragmatics 57. 39-56.

Takuya Goro

Chapter 8 Cross-linguistic variation in the scope of disjunction: Positive polarity, or anti-reconstruction?

1 Introduction

In this chapter, we explore the scope behavior of disjunction operators in human languages, comparing two competing accounts for a cross-linguistic contrast in relative scope relations between disjunction and negation. We will begin with a comparison of English disjunction or and Japanese disjunction ka. The crucial observation is that while or is interpreted within the scope of local negation, ka resists such narrow-scope interpretations. While Goro (2007) argued that this is because Japanese ka is a Positive Polarity Item (the Positive Polarity Account), Shibata (2015) proposed that transitive objects in Japanese must move over local negation (the Anti-reconstruction Account). Although the two accounts are fundamentally different with respect to the assumptions on the source of the scope constraint, they are hard to tease apart on the basis of data from adult language. They happen to share an important assumption on the mechanism that determines the scope of disjunction, and consequently, make exactly the same predictions on the possible scope of disjunction.

In what follows, we will argue that empirical data from first language acquisition research shed light on the problem. The acquisition of the scope of disjunction has invoked extensive cross-linguistic studies, yielding empirical data from languages like Japanese, English, Russian, Mandarin, Turkish, Italian, French, Hungarian and Catalan, which allow us to obtain a fairly comprehensive understanding about what the acquisition of disjunction in different languages is like. And importantly, the two competing accounts yield different predictions on how young children would learn the scope restriction on the disjunction in the target language. We will review the body of empirical evidence in the first language acquisition to construct a testing ground for the predictions of the two accounts, and argue that the available data favors the Positive Polarity Account over the Anti-reconstruction Account.

2 The scope of Japanese logical connectives

In classical logic, a negation of logical disjunction, $\neg(P \lor Q)$, is equivalent to a conjunction of two negative propositions: $\neg P \land \neg Q$. Sentences in natural language sometimes manifest an inference pattern that highly resembles the logical law of equivalence. For example, the following English sentence in (1) which involves negation and disjunction, allows an conjunctive inference: that is, the truth-condition of the sentence can be recast with two conjoined negative sentences.

- (1) John doesn't speak French or Spanish
 - → John doesn't speak French AND John doesn't speak Spanish

This conjunctive interpretation of disjunction or suggests that English or semantically corresponds to Boolean (inclusive) disjunction, and in (1) it is interpreted under the scope of negation. In normal contexts, native English speakers judge the sentence (1) to be false if John speaks either Spanish or French. In other words, P: John speaks French and Q: John speaks Spanish should both be false in order for the truth-condition of (1) to be satisfied.

This conjunctive interpretation of disjunction is subject to cross-linguistic variation. For example, the Japanese counterpart of (1) yields a somewhat different interpretation. It is most naturally paraphrased by a disjunction of two negated sentences.

- (2) Taro-wa huransugo **ka** supeingo-o hanasa-**nai** Taro-TOP French or Spanish-ACC speak-NEG Lit.1 'Taro doesn't speak French or Spanish
 - → Taro doesn't speak French OR Taro doesn't speak Spanish

Thus, the truth condition of the Japanese sentence (2) does not require both of the disjuncts to be false, and (2) is judged to be true if, for example, Taro speaks either one of the languages, but not both. This interpretive contrast between English and Japanese has been observed in experimental studies. For example, in Grüter, Lieberman and Gualmini's (2010) L2 study, control groups of adult English and Japanese speakers were presented test sentences with negation and disjunction in their native languages. The crucial condition involved situations in which only one of the disjuncts was true (e.g., the horse ate the carrot, but didn't eat the pepper). While English speakers accepted the test sentences only 8% of the time, Japanese speaker's acceptance rate was 98%.

^{1 &}quot;Lit." means "a literal translation into English." The interpretation of the original example may differ from the interpretation of the literal translation.

One possible way to account for the interpretive contrast, especially the lack of conjunctive interpretation of disjunction ka in Japanese sentences like (2), is to assume that the semantics of Japanese ka is fundamentally different from that of English or, and therefore ka does not interact with negation in the same way as its English counterpart. Such a "semantic account," however, can be immediately rejected on the basis of the observation that ka yields conjunctive interpretation just the same as or if it appears in a subordinate clause embedded under matrix negation. The following examples illustrate that the contrast between ka and or evaporates in embedded contexts (cf. Goro 2007):

- (3) English: verbal complement clause John didn't say that Mary speaks French or Spanish → John didn't say that Mary spoke French AND John didn't say that Mary spoke Spanish
- (4) Japanese: verbal complement clause Yuki-ga Taro-wa huransugo **ka** supeingo-o hanasu-to Taro-TOP Yuki-NOM French Spanish-ACC speak-COMP or iwa-**nakat**-ta say-NEG-PAST → Taro didn't say that Yuki spoke French AND Taro didn't say that Yuki spoke Spanish
- (5) English: relative clause John didn't see a student who speaks French or Spanish → John didn't see a student who speaks Spanish AND John didn't see a student who spoke French
- (6) Japanese: relative clause Taro-wa huransugo ka supeingo-o hanasu gakusei-o mi-**nakat**-ta Taro-TOP French or Spanish-ACC speak student-ACC see-NEG-PAST → Taro didn't see a student who speaks Spanish AND Taro didn't see a student who spoke French

The parallel interpretations of Japanese and English counterparts suggests that the semantics of ka and or is essentially the same. The interpretive contrast in the single-clause examples (1) and (2) is, then, likely to occur because of a difference in relative scope between disjunction and negation. In English (1), or is interpreted within the scope of negation; but in Japanese (2), ka is taking scope over negation. Let us note here that some other Japanese quantified objects may take scope under local negation, resulting in scope ambiguity, as illustrated in (7) and (8).

- (7) Taro-wa zen'in-o sikara-nakat-ta Taro-TOP everyone-ACC scold-NEG-PAST Lit. 'Taro didn't scold everyone'
 - → ∀>>¬: Taro scold nobody
 - $\rightarrow \neg >> \forall$: It is not the case that Taro scold everyone
- (8) Taro-wa hon-o **san**-satu yoma-**nakat**-ta
 Taro-TOP book-ACC three-CL read-NEG-PAST
 Lit. 'Taro didn't read three books'
 - → THREE>>¬: There are three books that Taro didn't read
 - → ¬>>THREE: It is not the case that Taro read three books

In (7), the universal quantifier *zen'in* 'everyone' occupies the object position of the negated main verb, and it can be interpreted under the scope of negation, yielding a "not all" interpretation. Similarly, the numeral *san* 'three' is attached to the direct object in (8), and the narrow-scope interpretation of the quantified object is possible. Therefore, narrow-scope interpretations of quantified objects under clause-mate negation are not uniformly prohibited in Japanese. The scope of *ka* must be subject to some independent constraint that forces it to scope over local negation.

One characteristic property of the scope constraint imposed on ka is that it is clause-bound: although ka resists taking scope under negation in the same clause, it can be interpreted under the scope extraclausal negation, as shown in (4) and (6). Here, it is interesting to observe that Japanese conjunction . . . mo . . mo exhibits exactly the same scope behavior: it cannot take scope under local negation, but narrow-scope interpretations under extraclausal negation are possible (cf. Goro 2007).

- (9) Taro-wa huransugo mo supeingo mo hanasa-nai Taro-TOP French also Spanish also speak-NEG Lit. 'Taro doesn't speak both French and Spanish → ∧>>¬: Taro doesn't speak neither French nor Spanish *¬>>∧: Taro doesn't speak both French and Spanish
- (10) Taro-wa Yuki-ga huransugo **mo** supeingo **mo** hanasu-to
 Taro-TOP Yuki-NOM French also Spanish also speak-COMP
 iwa-**nakat**-ta
 say-NEG-PAST
 - → ¬>>∧: Taro didn't say that Yuki speaks both French and Spanish

(11) *Taro-wa* huransugo supeingo **mo** hanasu gakusei-o mo also Spanish student-ACC Taro-TOP French also speak mi-**nakat-**ta see-NEG-PAST

→ ¬>>∧: Taro didn't see a student who speaks both French and Spanish

Thus, it is reasonable to assume that Japanese logical connectives, ka and ...mo... mo, obey the same constraint(s) on scope. In the next section, we will review two different accounts for the scope behavior of Japanese connectives.

3 The Positive Polarity Account and the **Anti-reconstruction Account**

The first account is what we will call the Positive Polarity Account, proposed by Goro (2007). In a nutshell, Goro (2007) argue that ka and . . .mo. . .mo are Positive Polarity Items (PPIs). The idea that disjunctions some languages are PPIs was originally discussed in Szabolcsi (2002), which argued that Hungarian disjunction vagy is a PPI. Szabolcsi's argument is based on the observation that vagy lacks conjunctive interpretations in single-clause negative sentences, but conjunctive interpretations become available if vagy is embedded under extraclausal negation (cf. Szabolcsi 2002).

- (12) **Nem** csukt-uk ajtó-t ablak-ot be az vagy azclosed-1PL in the door-ACC the window-ACC Lit. 'We didn't close the door or the window' → We didn't close the door OR we didn't close the window
- (13) **Nem** hisz-em hogy becsulkt-uk ajtó-t volna az not think-1SG that in-closed-1PL AUX the door-ACC vagy az ablak-ot the window-ACC Lit, 'I don't think we closed the door or the window'
 - → I don't think we closed the door AND I don't think we closed the window

Goro's analysis of Japanese ka and ...mo ...mo departs from Szabolcsi's (2002, 2004) in that it argues that positive polarity (i.e., obligatory wide-scope over local negation) is a consequence of syntactic movement. Goro argued that PPIs, including ka

and ...mo, have a weak uninterpretable feature in the sense of Chomsky $(1995)^2$ that must be checked in the specifier position of a specific functional projection. The projection is called f P, and assumed to be located right above NegP. Since ka/...mo.. .mo must move to the specifier position of the fP by the end of syntactic derivation, it always ends up in the position that is not c-commanded by local negation.

(14) The movement analysis of positive polarity

[TP Subj [
$$_{fP}$$
 $ka/...mo...mo[_{NegP}$ [$_{\nu P}...t...]$ Neg] f] T] feature-driven movement

In the structure of (14), the raised object has its uninterpretable feature deleted at the specifier position of the local fP, and therefore it does not have to move anymore. It follows, then, that if there is negation in a higher clause, then ka/. . . mo. . . mo is interpreted under the scope of the extraclausal negation. The locality the scope constraint on ka/...mo...mo is thus captured by the syntactic movement analysis: the uninterpretable feature causes the object to move only locally, i.e., within the same clause, and hence it only affects relations of the elements within the domain of movement.

A set of supporting evidence for the syntactic account of positive polarity comes from observations on what Goro (2007) called non-overt negations. Several focus-related expressions in natural language make the sentences that involve them entail negated propositions. For example, sentences containing English focus-operator only, and its Japanese counterpart dake, entails negated propositions that involve alternatives of the focused element (cf. Horn 1969):

- (15) a. Only John speaks French
 - b. John**-dake**-ga huransugo-o hanasu John-only-NOM French-ACC speak
 - → Everyone other than John does not speak French

When Japanese ka or ...mo. ..mo cooccur with such a focus-related element, they yield the "Boolean," narrow-scope interpretation in the entailed negative proposition: conjunctive interpretation for ka, and "not both" disjunctive interpretation for . . .mo. . .mo. Thus, (16a) entails that everyone other than Taro doesn't speak

² In the framework of Chomsky (1995), being a weak feature entails that the movement driven by the feature must occur covertly, without affecting the surface order of elements.

French AND doesn't speak Spanish; (16b) entails that everyone other than Taro doesn't speak French OR doesn't speak Spanish.

- (16) a. Taro-dake-ga huransugo **ka** supeingo-o hanasu Taro-only-NOM French or Spanish-ACC speak → For all x, x≠Taro, x doesn't speak French AND x doesn't speak Spanish
 - b. Taro-dake-ga huransugo mo supeingo mo hanasu Taro-only-NOM French also Spanish also speak → "For all x, x≠Taro, x doesn't speak French OR doesn't speak Spanish"

Thus, the scope restriction on ka/...mo...mo does not apply to non-overt, semantic negations. This is exactly what the syntactic account of positive polarity predicts: the effect of the scope restriction as a consequence of syntactic movement is sensitive only to negations that have corresponding expressions within the relevant syntactic representations.3

This observation extends to cases that involve adverbs like ayauku 'nearly/ almost', and izure 'eventually'. Sentences containing these adverbs entail a negative proposition, as shown in (17):

- (17) a. *Taro-wa* avauku piza-o taberu tokoro-datta Taro-TOP nearly pizza-ACC eat the-moment-COP "Taro nearly ate pizza" → Taro didn't eat pizza
 - b. *Taro-wa* izure piza-o taberu Taro-TOP eventually pizza-ACC "Taro will eventually eat pizza"
 - → Taro has not eaten pizza yet

This seems to be due to a peculiar property of the sika-nai construction: the position of sika-NP, rather than the negation morpheme, marks the scope of negation (See e.g., Kinuhata 2010 for relevant discussion).

³ The following sentences with sika-nai have exactly the same (scope) interpretations as (16a/b), even though those sentences appear to involve overt negation:

Taro-sika Huransugo ka supeingo-o hanasa-nai Taro-sika French Spanish-ACC speak-NEG or → For all x, x≠Taro, x doesn't speak French AND x doesn't speak Spanish

b. Taro-sika huransugo mo supeingo mo Hanasa-nai

Taro-only French also Spanish also speak-NEG → "For all x, x≠Taro, x doesn't speak French OR x doesn't speak Spanish"

In the negative entailments, *ka* and ...mo...mo take scope under negation and yield the Boolean interpretations, just as predicted by the syntactic account of positive polarity (cf. Goro 2007).

- (18) a. *Taro-wa ayauku* piza **ka** pasuta-o taberu tokoro-datta

 Taro-TOP nearly pizza or pasta-ACC eat the-moment-COP

 "Taro nearly ate pizza or pasta"
 - → Taro didn't eat pizza AND Taro didn't eat pasta
 - b. *Taro-wa* **izure** piza **ka** pasta-o taberu
 Taro-TOP eventually pizza or pasta-ACC eat
 "Taro will eventually eat pizza or pasta"
 - → Taro has not eaten pizza AND Taro has not eaten pasta
- (19) a. Taro-wa ayauku piza mo pasuta mo taberu
 Taro-TOP nearly pizza also pasta also eat
 tokoro-datta
 the-moment-COP
 "Taro nearly ate both pizza and pasta"
 - → Taro didn't eat pizza OR Taro didn't eat pasta
 - b. *Taro-wa izure piza mo pasuta-o mo taberu*Taro-TOP eventually pizza also pasta also eat
 "Taro will eventually eat both pizza and pasta"
 - → Taro has not eaten pizza OR Taro has not eaten past

Another set of evidence concerns negative answers to a Yes-No question. In the dialogue illustrated in (20), the question asks whether or not the proposition *Taro speaks French* is true. The answer *Iie* 'No' asserts that the proposition is not true, and therefore, entails that the negation of the proposition.

(20) Taro-wa huransugo-o hanasu-no?
Taro-TOP French-ACC speak-Q
'Does Taro speak French?'

Iie

no
'No'

When disjunction ka or conjunction ...mo...mo appears in the polar question, the negative answer invites the 'Boolean' inferences, in which those connectives are interpreted within the scope of negation. Thus, the negative answer in (21) is interpreted as meaning that Taro speaks neither French nor Spanish.

(21) *Taro-wa* hanasu-no? huransugo **ka** supeingo-o Taro-TOP French or Spanish-ACC speak-O 'Does Taro speak French or Spanish?' Iie no → Taro doesn't speak French AND Taro doesn't speak Spanish

Similarly, ...mo, ..mo yields the "not both" interpretation within the following dialogue:

(22) *Taro-wa* huransugo **mo** supeingo mo hanasu-no? Taro-TOP French also Spanish also speak-Q 'Does Taro speak both French and Spanish?' Iie nο → Taro doesn't speak French OR Taro doesn't speak Spanish

These narrow-scope interpretations of ka/...mo. ..mo become unavailable once

the negative answer is followed by a full sentence with overt negation. Therefore, (23) sounds awkward as an answer for the question in (21), because it can only be interpreted with the wide-scope reading of ka, and therefore, does not provide any

useful information for resolving the polar question.

(23) *Iie, Taro-wa* huransugo **ka** supeingo-o hanasa-nai-yo speak-NEG-SFP Taro-TOP French or Spanish-ACC Lit. 'No, Taro doesn't speak French or Spanish' → Taro doesn't speak French OR Taro doesn't speak Spanish

Likewise, only the wide-scope reading of . . .mo. . .mo is allowed in (24), and therefore it cannot mean the same thing as the one-word answer in (22).

(24) lie. Taro-wa huransugo **mo** supeingo **mo** hanasa-nai-yo Taro-TOP French also Spanish also speak-NEG-SFP Lit. 'No, Taro doesn't speak both French and Spanish'

→ Taro doesn't speak French AND Taro doesn't speak Spanish

Thus, it appears that the scope restriction on ka/...mo. ..mo is uniformly insensitive to non-overt negations. The contrast between overt and non-overt negations follows straightforwardly from the syntactic movement analysis of positive polarity: the scope restriction is simply a consequence of syntactic movement, and thus only affects relations of the syntactically represented elements.

Let us now turn to another set of empirical support for the Positive Polarity Account. Given the proposed syntactic representation in (14), it is predicted that if the local sentential negation is raised to some higher position (e.g., the head of CP), it takes scope over ka/...mo...mo in the specifier of fP. Japanese conditional sentences provide a ground for testing this prediction. It has been observed that negation in the antecedent clause of a conditional sentence take scope over nominative-marked transitive subjects, although nominative-transitive subjects usually take wider scope than negation in an independent clause (cf. Goro 2007). Observe the contrast between (25) and (26):

- (25) Zen'in-ga syukudai-o dasa-nakat-ta everyone-NOM homework-ACC submit-NEG-PAST Lit. 'Everyone didn't turn in the homework' → ∀ >>¬ / *¬>>∀
- (26) Mosi zen'in-ga syukudai-o dasa-nai-to sensei-wa everyone-NOM homework-ACC submit-NEG-COMP teacher-TOP if okoru-yo get-angry-SFP Lit. 'If everyone doesn't turn in the homework, the teacher will get angry' → ∀ >>¬ / ¬>>∀

The sentence in (25) is unambiguous: the nominative-marked universal quantifier zen'in takes scope over negation, and thus the sentence means that nobody turned in the homework. In contrast, the narrow scope interpretation of zen'in is possible in (26), and it can be interpreted as meaning if it is not the case that everyone turns in the homework (i.e., if there is at least one person who fails to turn in the homework), the teacher will get angry. These data suggest that sentential negation in the antecedent of conditional sentences takes wider scope than negation in other kinds of clauses. Let us then assume, following Kato (1997), that in the antecedent of conditionals, negation is syntactically raised to the position from which it c-commands the nominative-marked subject in the specifier of TP. It follows from the assumption that such negation also c-commands anything below TP, including elements in fP in the proposed structure in (14). Therefore, the Positive Polarity Account predicts that *ka/...mo...mo* can be interpreted under the scope of negation in the antecedent of conditionals.

The prediction is borne out, as shown in (27) and (28):

- (27) Mosi huransugo **ka** supeingo-o hanas-e-**nai-**to komaru-yo Ιf French or Spanish-ACC speak-can-NEG-PAST be-in-trouble-SFP Lit. 'If you don't speak French or Spanish, you'll be in trouble' → If you don't speak French AND you don't speak Spanish, you'll be in trouble
- (28) Mosi huransugo supeingo **mo** hanas-e-nai-to mo Ιf French also Spanish also speak-can-NEG-PAST komaru-yo be-in-trouble-SFP

Lit. 'If you don't speak both French and Spanish, you'll be in trouble'

→ If you don't speak French OR you don't speak Spanish, you'll be in trouble

In (27) and (28), *ka* and . . . *mo* . . . *mo* is interpreted under the scope of local negation. In the antecedent of conditionals, negation takes wider scope than in, for example, an independent declarative clause. The observation that ka and ...mo. ..mo are interpreted under the scope of local negation in this environment is neatly captured by the syntactic approach to positive polarity, which we call the Positive Polarity Account.

Thus far, we have reviewed the Positive Polarity Account of Japanese logical connectives, proposed by Goro (2007). The second account that we will turn to is found in Shibata (2015), and we call it the Anti-reconstruction Account. The Anti-reconstruction Account shares an important assumption with the Positive Polarity Account: it assumes that the scope constraint on Japanese logical connectives is a consequence of syntactic movement. In the Anti-reconstruction Account, however, the relevant movement operation applies to objects in general, rather than to specific lexical items that are PPIs (i.e., items that have a specific uninterpretable feature). Shibata (2015) argued that this movement is required to license the accusative case particle on the object. The obligatory movement of the object in negative transitive sentences are schematically illustrated in (29) (cf. Shibata 2015).

(29) Object raising in Japanese

[TP Subj [XP Obj [NegP [
$$\nu$$
P ... t ...] Neg]] T]

Given the object raising in (29), the wide-scope interpretations of quantified objects in negative sentences in Japanese is accounted for. Note here that Japanese quantified objects in general may take scope over local negation (see (7) and (8) above). This is in contrast with languages like English, in which some objects are not allowed to scope over negation. English disjunction or, and universal every, show such restricted scope patterns.

(30) John doesn't speak French or Spanish OK¬>>V:*V>>¬

(31) John didn't buy everything $OK_{\neg >>} \forall : *\forall >> \neg$

Here we will not try to explain why or and every behave this way; for our current purpose, it is important to observe that in English wide-scope interpretations of objects in negative sentences seems to be more restricted than corresponding narrow-scope interpretations, but no such restrictions on wide-scope objects can be found in Japanese. This is neatly captured in the Anti-reconstruction account by the assumption of object raising in (29): since objects in general moves above negation in Japanese, they take scope over negation "as default".

Under the Anti-reconstruction Account, the narrow-scope interpretations of objects under local negation have to be derived via "reconstruction" of the moved object to its base position. Shibata (2015) argued that this reconstruction process cannot be applied to a certain set of lexical items including focus particles (-mo 'also', -dake 'only', etc.) and disjunction, because with these items the crucial operator is inserted acyclically after movement and determines its scope in the position where it is inserted.⁴ Therefore, under the Anti-reconstruction account, the obligatory wide-scope of ka in (2), and . . .mo in (9) is due to the unavailability of reconstruction for these elements.

Summarizing, we have reviewed the two accounts of the scope restriction imposed on Japanese disjunction ka (as well as conjunction . . .mo. . .mo). The Positive Polarity Account, on the one hand, assumes that the scope restriction is due to a property of the lexical item: ka is a PPI, which must move above negation. The

⁴ Shibata (2015) argued that for disjunction, a silent operator O_{ALT} proposed by Chierchia, Fox and Spector (2012) is acyclically inserted, and blocks reconstruction of the disjunctive phrase. However, this account does not really explain why reconstruction of the disjunctive object without O_{ALT} is not possible. The function of OALT is to exclude the alternative proposition associated with conjunction: for example, O_{ALT} (John or Tom) \rightarrow NOT (both John and Tom), and hence, disjunction usually yields the exclusive-OR interpretation. However, this exclusive-OR interpretation does not arise when disjunction is interpreted in the scope of negation, which suggests that OALT is not inserted, or is cancelled, in this case. It is not clear, then, what exactly is a problem in reconstructing the disjunctive object without O_{ALT}, deriving the correct conjunctive interpretation under the scope of negation.

Anti-reconstruction Account, on the other hand, assumes that in Japanese objects in transitive sentences move above negation in the same clause, and a certain set of items such as ka cannot be reconstructed and interpreted within the scope of negation. Although the two approaches differ fundamentally with respect to the assumptions about what moves and why it moves, they are quite hard to tease apart, because they share the assumption that the scope constraint is a consequence of syntactic movement. Thus, the locality effect of the scope constraint, its insensitivity to non-overt negations, and narrow-scope interpretations in the antecedent of conditionals are equally accounted for by either of the accounts, exactly in the same manner: the relevant syntactic movement only affects relations of elements in the syntactic domain of the movement. In fact, the two accounts yield exactly the same predictions with regard to what kind of scope interpretations are possible for items like disjunction ka. As is obvious in (14) and (29), the landing sites of the movement proposed in these accounts are essentially the same position – somewhere between the subject and negation. Since the landing sites of the movement that determines the scope of ka are essentially the same in the two accounts, their predictions about the scope of ka are inevitably the same. Given the difficulty to empirically distinguish the two alternative accounts with the data from adult language, we will look into the realm of first language acquisition studies.

4 Predictions on first language acquisition

Let us first consider a possible acquisition scenario under the Anti-reconstruction Account. In this scenario, children acquiring Japanese need to learn that transitive objects must move above negation. Since Japanese is a verb-final language and negation is suffixed onto the verb, surface word orders provide children little evidence with regard to the relative syntactic hierarchy between the object and negation. Let us then assume that children resort to scope interpretations to determine whether Japanese objects must move above negation: once the child observes a certain amount of cases in adult utterances where the object is obviously taking scope over negation, she concludes that Japanese objects obligatorily move to a position higher than negation. Under this scenario, Japanese children learn that syntactic objects in general take scope over negation, regardless of what kind of lexical item fills the object position. Therefore, it is predicted that children acquire adult-like wide-scope interpretations of various scope-bearing objects (e.g., disjunction, conjunction, universals, , etc.) "at the same time." For example, if a child exhibits adult-like wide-scope interpretation with disjunction ka in the object position of simple negative sentences, then it is predicted that the same child assigns the same wide-scope interpretation to conjunction ...mo, ...mo, and vice versa. In other words, the Anti-reconstruction Account predicts that the developmental timings of the emergence of adult-like wide-scope interpretations of different lexical elements should coincide.

Under the Positive Polarity Account, on the other hand, children learn the property of individual lexical items: whether or not the item is a PPI. Therefore, at a certain developmental stage, it is possible that children have different assumptions for each individual lexical item; for example, a child may go through a stage in which she assumes that . . .mo. . .mo is a PPI, while ka is not. In such a case, she would assign obligatory wide-scope interpretations to ...mo...mo appearing in the object position of simple negative sentences, but she would also allow non-adult narrow-scope interpretations of *ka* in the same context.

This kind of developmental dissociation is not only possible, but also predicted to occur under the Positive Polarity Account combined with certain learnability assumptions (e.g., Goro 2007, 2015; Crain 2012; Pagliarini, Crain and Guasti 2018; Shimada and Goro 2021). First, it is widely assumed that "negative evidence" does not play a crucial role in first language acquisition (e.g., Pinker 1989), and the lack of negative evidence is especially acute within the domain of the acquisition of scope (Goro 2007). Under this assumption, children's hypotheses regarding the target grammar must be constrained so that they can be corrected, if necessary, on the basis of positive evidence alone. Goro (2007), among others, proposed that children's hypotheses are constrained by the Semantic Subset Principle (e.g., Crain, Ni and Conway 1994; Crain and Thornton 1998). The Semantic Subset Principle dictates children to start off from the hypothesis that yields the interpretation which is true in a narrower range of circumstances. Suppose, now, with disjunction ka, the relevant options are: (i) ka is a PPI, and (ii) ka is not a PPI. When ka appears in the object position of simple negative sentence, the former option (i) leads to the widescope, disjunctive interpretation: not P OR not Q. In contrast, the latter option (ii) leads to narrow-scope, conjunctive interpretation of disjunction: not P AND not Q. The latter interpretation is a "semantic subset" of the former interpretation in that it is true in a narrower range of situations. Therefore, given the Semantic Subset Principle, it is predicted that children's initial hypothesis is that ka is not a PPI. With this initial assumption, it is possible for children to discover that ka is actually a PPI on the basis of positive evidence alone: they just need to witness adults use the crucial form (i.e., simple negative sentence with ka in the object position) in a situation where it is clear that only one of the relevant disjuncts is false.

Importantly, this prediction is reversed with the conjunction . . . mo. . . mo. Here, the options are (i) ...mo...mo is a PPI, and (ii) ...mo...mo is not a PPI. In negative contexts, the option (i) leads to wide-scope interpretations of conjunction: not P AND not Q. The option (ii), on the other hand, yields narrow-scope interpretations of conjunction: *not* (*both P and Q*) = *not P OR not Q*. Since the former interpretation is a semantic subset of the latter, the Semantic Subset Principle predicts that this is the initial hypothesis that children adhere to until they encounter falsifying evidence. In other words, for Japanese children, ...mo. ..mo is a PPI from the beginning.

Furthermore, under the Positive Polarity Account with the Semantic Subset Principle, the same prediction is extended to the acquisition of disjunction and conjunction in any other language; that is, irrespective of the property of the target language, children should initially treat disjunction as not a PPI, and conjunction as a PPI. Thus, children across different linguistic communities should initially assign narrow-scope interpretation to disjunctive objects, and wide-scope interpretation to conjunctive objects, in simple negative sentences. Therefore, for children acquiring a language like Japanese (both disjunction and conjunction take wider scope than negation), the timings of emergence of the adult-like wide-scope interpretations are predicted to differ for disjunction and conjunction; while conjunction should show adult-like wide-scope from the beginning, wide-scope disjunction should be late-emerging.

Summarizing, the Anti-reconstruction Account and the Positive Polarity Account yield significantly different predictions regarding how the (alleged) adult knowledge is acquired in Japanese. Under the Anti-reconstruction account, children learn a property of language: whether or not syntactic objects move above negation. In contrast, under the Positive Polarity account, what children learn is a property of lexical items: whether or not each item is a PPI. Therefore, the Anti-reconstruction Account predicts that adult-like wide-scope assignments to various scope-bearing objects in negative sentence is acquired "at the same time." On the other hand, the Positive Polarity Account does not predict such a developmental correlation, and when combined with certain learnability assumptions, it predicts that the acquisition of widescope for disjunction should be acquired later than the acquisition of wide-scope for conjunction.

In what follows, we are going to review existing empirical data on the first language acquisition of scope to examine the predictions of the two approaches. Acquisition of scope (especially relative scope between sentential negation and another scope-bearing element) has attracted a lot of attention in first language acquisition research (e.g., Musolino, Crain and Thornton 2000; Lidz and Musolino 2002; Gualmini 2004; Goro and Akiba 2004; Zhou and Crain 2009; Viau, Lidz and Musolino 2010; Han, Lidz and Musolino 2016; Pagliarini, Crain and Guasti 2018; Shimada and Goro 2021, a.o.), and the mounting empirical data in this domain allow us to have a fairly comprehensive cross-linguistic picture of the developmental trajectories of scope interpretations. Our main focus will be on the data from Japanese, because the Anti-reconstruction Account was originally proposed specifically for Japanese, but we will also turn to the data from various different languages, in order to examine the predictions of the Positive Polarity Account.

5 The acquisition of scope in negative sentences

5.1 Japanese children and their lack of bias towards isomorphic scope interpretation

In the early 2000s, much of the first language acquisition studies on children's scope interpretations revolved around the Observation of Isomorphism, first reported by Musolino (1998), and then made widely acknowledged by Musolino, Crain and Thornton (2000). The relevant observation is that young English-speaking children's scope interpretations appear to be restricted to "isomorphic" ones, i.e., ones that correspond to the surface syntactic hierarchies. That is, for example, young children showed non-adult bias towards the narrow scope interpretation of the object QNP in the following test sentence:

(32) The detective didn't find someone/some guys.

In the adult interpretation, the indefinite existential object someone/some guys take wider scope than negation. In fact, when English-speaking adults were presented the sentence as a description of a situation where the detective found some of his friends but missed one (i.e., there is someone that the detective didn't find), they judged the sentence as "true" 100% of the time. Children's acceptance rates of the test sentence in the same situation were much lower, however: 35% for the younger group (age 3;10 to 5;2) and 65% for the older group (age 5;2 to 6;6). Thus, it appeared that children, especially the younger ones, had a strong tendency to interpret the sentence (32) as the detective didn't find anyone, adhering to the "isomorphic", narrow-scope interpretation of the existential indefinite in the object position.

The same kind of bias towards isomorphic interpretation was also observed with universally quantified NPs in the subject position. Musolino, Crain and Thornton reported that children at around age 5 overwhelmingly rejected (acceptance rate = 7.5%) the following test sentence as a description of a situation in which some, but not every horse jumped over the fence:

(33) Every horse didn't jump over the fence.

Children's reluctance to accept the sentence in this situation suggested that they didn't access the narrow-scope, "inverse" interpretation of every (i.e., "Not every horse jumped over the fence"), which are easily available for adult speakers. This pattern of children's response contrasted with the case where every appeared in the object position of a negative sentence, in which they showed no problem in accessing the "not every" interpretation:

(34) The Smurf didn't buy every orange.

When this sentence was presented under the situation where the Smurf bought some, but not every orange, children accepted the sentence 85% of the time. Thus, it looked as though young English-speaking children systematically interpreted the relative scope between negation and quantified NPs on the basis of their position in syntax: the subject scopes over negation, and the object scopes under negation.

Musolino, Crain and Thornton (2000) proposed a grammatical account for the non-adult bias towards isomorphic scope interpretations that English-speaking children show. They argued that children's grammar is essentially like adult grammar of Mandarin Chinese, where non-isomorphic interpretations are not possible:

(35) Mei-pi ma dou mei tiao-guo langan 'Every horse didn't jump over the fence' \forall (x) [horse(x) $\rightarrow \neg$ jump over the fence(x)] (every > not)

But this grammatical account was quickly abandoned, after subsequent experimental studies repeatedly found that manipulations on experimental designs made English-speaking children access non-isomorphic scope readings. For example, Gualmini (2004) demonstrated that children consistently accepted adult-like widescope reading of some in sentences like (32) when the relevant test sentences were used to point out the discrepancy between the expectation built up in the experimental context and the actual outcome. Musolino and Lidz (2002) found that children's performance on inverse scope was greatly improved when the negative test sentence like (33) was preceded by a positive lead-in (e.g., Every horse jumped over the fence, but every horse didn't jump over the barn). Furthermore, Zhou and Crain (2009) showed that children acquiring Mandarin Chinese assigned inverse scope interpretations to sentences like (35), thereby rejecting the idea that the Mandarin-type "isomorphic" grammar is the universal default option that children initially take.

As for the acquisition of Japanese, previous studies generally agreed that children's scope interpretations are not restricted to isomorphic ones. Let us first review Terunuma's (2001) study that examined Japanese children's interpretation of negative sentences containing a universally quantified NP. A sample test sentence is given in (36):

(36) *Tora-wa* ninjin-o **zenbu** tabe-**nakat**-ta yo tiger-TOP carrot-ACC all eat-NEG-PAST SFP Lit. 'The tiger didn't eat all the carrots'

The test sentence was paired with two kinds of experimental stories: in the first version, the tiger didn't eat any of the carrots, corresponding to the wide-scope interpretation of the object; the other story was that the tiger ate some of the carrots, but not all, which corresponds to the narrow-scope, "isomorphic interpretation of the quantified object. The results were that Japanese children accepted the test sentence almost 100% of the time in the first condition, but in the second condition, younger children's (age 3;10 to 4;7) acceptance rate was dropped to 37.5%, and older children (4;8 to 5;1) accepted the narrow-scope interpretation 70.8% of the time. Therefore, if anything, Japanese children showed bias towards non-isomorphic, wide-scope interpretation of the universally quantified object. The reason why they showed such a non-isomorphic bias is not entirely clear, but for our current purpose, it suffices to note that even younger Japanese children successfully accessed adult-like wide-scope interpretations of universally quantified objects in negative sentences.

Turning now to Japanese children's interpretation of negative sentences containing an indefinite existential, relevant data can be found in Goro and Akiba (2004). In their experiment, Goro and Akiba used the following test sentence, in which *nanika* 'something' appears in the object position:

(37) Butasan-wa **nanika** tahe-**nakat**-ta something eat-NEG-PAST pig-TOP Lit. 'The pig didn't eat something'

The test sentence was presented in the situation that matched the wide-scope interpretation of nanika: there were three pieces of food, and the pig only ate two of them; that is, there was something that the pig didn't eat. The result was straightforward: Japanese children at around age 5 accepted the sentence 88.3% of the time. This suggests that the children accessed the adult-like wide-scope interpretation of nanika, because the narrow-scope counterpart (i.e., 'It is not the case that the pig ate something') would have made the sentence false in the situation. Therefore, Terunuma's (2001) observation that Japanese children showed no problem with interpretations in which the object takes scope over negation was replicated, with a different type of quantificational element.

Given the empirical evidence so far, it seems safe to conclude that Japanese children, at least at around age 5, are not restricted to isomorphic scope interpretations, and crucially, are able to interpret the object as taking scope over negation. Under the Anti-reconstruction Account, this would be interpreted as showing that 5-year-olds acquiring Japanese have already mastered the obligatory raising of syntactic objects. Then, it is predicted that children at the same age would also interpret the disjunction ka and the conjunction ...mo...mo in negative sentences

in adult-like manner, assigning them wide-scope interpretations. Let us see if this prediction is borne out.

5.2 Children's scope assignments to ka and . . .mo. . .mo

As we have reviewed, Japanese disjunction ka and conjunction . . .mo. . .mo must take scope over local negation. Therefore, under adult interpretation, the following test sentences from Goro and Akiba's (2004) study are assigned the wide-scope interpretations of the object:

- (38) Butasan-wa ninjin **ka** piiman-o tabe-nakat-ta pig-TOP carrot or pepper-ACC eat-NEG-PAST Lit. 'The pig didn't eat the carrot or the pepper' → The pig didn't eat the carrot OR he didn't eat the pepper
- (39) Butasan-wa ninjin mo piiman **mo** tabe-nakat-ta carrot also pepper also eat-NEG-PAST pig-TOP Lit. 'The pig didn't eat both the carrot and the pepper' → The pig didn't eat the carrot AND he didn't eat the pepper

Goro and Akiba sought to determine whether Japanese-speaking children also assign the same wide-scope interpretation to ka and ...mo. ..mo. In their experiment, the crucial test condition involved a story in which a pig is invited to play an "eating game." In the game, the pig tried to eat two kinds of vegetables, a carrot and a pepper, and he managed to eat the carrot, but didn't eat the pepper. The test sentence (38) or (39) was presented in this situation.⁵ Under adult interpretation, (38) is true, and (39) is false. In fact, adult native speakers of Japanese in the control group accepted (38) 100% of the time, while rejecting (39) 100% of the time.

Thirty Japanese speaking children at age 3;7 to 6;3 (mean: 5;3) participated in the experiment. Children's response pattern with the test sentence (39), namely the one involved the conjunction ...mo...mo, was pretty much the same as adults': they rejected the . . . mo. . . mo sentence 95% of the time. This response pattern strongly suggests that at around age 5, Japanese children are able to assign the adult-like wide-scope interpretation to the conjunction . . . mo. . . mo appearing in the object

⁵ This is a simplified description of the experimental design. For full description and the logic behind it, see Goro and Akiba (2004) and Goro (2017). In a nutshell, the crucial test sentences were presented as the puppet's guess about what had happened in the eating game, in order to satisfy the felicity conditions associated to the use of disjunction and negation.

position of simple negative sentences. In contrast, children's performance with the test sentence (38), the one involved the disjunction ka, diverged from that of adults. Their acceptance rate was only 25%, which is in stark contrast with the 100% acceptance by adults. Among 30 children in the experiment, only 4 were fully adult-like, in that they consistently accepted the relevant test sentences across different trials. The remaining 26 children, in contrast, rejected the crucial test sentences 87% of the time. Most of those children justified their negative judgment by saying either "because the pig did eat one of the vegetables" or "because it is only one of the vegetables that the pig didn't eat." Therefore, for the vast majority of Japanese-speaking children at around age 5, it appeared that sentences like (39) have non-adult, "conjunctive" truth condition: The pig didn't eat the carrot AND he didn't eat the pepper.

One possible explanation for Japanese children's conjunctive interpretation of ka in negative sentences is that, as predicted by the Positive Polarity Account, they interpreted ka under the scope of negation. Although this does not correspond to the adult interpretation of the relevant sentences in Japanese, it has been observed that English-speaking children at around the same age are capable of correctly computing the semantic interaction between disjunction and negation, assigning a conjunctive truth condition to sentences when appropriate (e.g., Crain et al. 2002; Gualmini and Crain 2005). Thus, it should not be surprising that Japanese children who have independently learned the semantics of ka and negation are also capable of computing conjunctive interpretation of ka when it scopes under negation. However, such non-adult, narrow-scope assignment to ka is unexpected under the Anti-reconstruction Account. Remember that Japanese children at around age 5 are able to assign adult-like wide-scope interpretations to universal zenbu, indefinite nanika, and conjunction . . . mo. . . mo appearing in the object position of negative sentences. If those wide-scope interpretations are driven by obligatory raising of syntactic objects, then it remains quite mysterious why only ka is not subject to the movement and resists the wide-scope interpretation at age 5.

Thus, existing empirical evidence does not support the prediction of the Anti-reconstruction Account. Before concluding, however, we must consider one possible alternative interpretation of Japanese children's behavior with the disjunction ka. Suppose that children somehow interpret ka as a conjunction, rather than disjunction. Recently, Singh et al. (2016) proposed that English-speaking 5-year-olds may derive a conjunctive interpretation from disjunction or through the mechanism called strengthening.6 Tieu et al. (2017) followed this position, and argued on the

⁶ Under Singh et al.'s (2016) model, the strengthening mechanism consists of recursive application of the exhaustive operator EXH, which derives so-called free-choice interpretation of disjunction in adult languages. The only difference between children and adults in this model is whether or not

basis of their experimental data that French- and Japanese-speaking children also accessed the strengthened, conjunctive interpretation of disjunction in each respective language. Given the strengthening mechanism, we can come up with an alternative derivation of the conjunctive truth conditions of the crucial test sentences of Goro and Akiba's study in the following steps: (i) applying syntactic movement to the object ka, making it scope above negation, (ii) strengthening the meaning of ka, arriving at a conjunctive interpretation of the lexical item, and (iii) computing the truth condition of the whole sentence as "not P AND not Q." This alternative explanation is perfectly compatible with the Anti-reconstruction Account, because it involves movement of the object over negation. Therefore, it is now necessary to determine the source of Japanese children's conjunctive interpretation of ka in negative sentences, i.e., whether it is because of non-adult narrow-scope assignment, or non-adult strengthening.

Shimada and Goro (2021) recently embarked on the research project to investigate Japanese children's interpretation of ka in the subject and the nominative object of negative sentences. The crucial assumption here is that Japanese nominative subjects and nominative-marked objects are syntactically higher than negation. First, nominative-marked subjects in Japanese generally resist taking scope under negation, as in the following example:

(40) **Zen'in**-ga susi-o tabe-**nakat**-ta everyone-NOM sushi-ACC eat-NEG-PAST Lit. 'Everyone didn't eat sushi' $OK \forall >> \neg : * \neg >> \forall$

Second, in contrast to accusative objects, nominative-marked objects must take scope over negation (e.g., Koizumi 1994, 1995)

tabe-rare-**nai**⁷ susi**-dake**-o (41) a. *Taro-wa* Taro-TOP sushi-only-ACC eat-CAN-NEG $\rightarrow \neg$ >>ONLY: "It is not the case that Taro can eat only sushi (i.e., he needs something else to eat with it

an appropriate lexical alternative for disjunction or is retrieved in on-line processing. See Singh et al. (2016) for more details.

⁷ With a non-stative predicate, Japanese nominative objects are licensed by the potential morpheme -rare- (e.g., Kuno 1973). This morpheme is not required to make the sentence (41a) grammatical, but it is inserted to keep it minimally different from the nominative-object counterpart (41b).

b. Taro-wa susi-**dake**-ga tabe-rare-nai Taro-TOP sushi-only-NOM eat-CAN-NEG → ONLY>>¬: "Sushi is the only thing that Taro cannot eat (i.e., he can eat everything else)

Given these observations, Shimada and Goro assumed that Japanese children would interpret ka outside the scope of sentential negation if it appears in the nominative subject position or in the nominative object position. However, if children's conjunctive interpretations of ka that were observed in Goro and Akiba (2004) are due to strengthening (with the movement of objects above negation), then they are predicted to persist in those environments. In other words, if children move objects above negation and apply strengthening to derive conjunctive interpretation of ka, then they should do the same with ka which are already higher than negation, and access a conjunctive truth condition.

Shimada and Goro carried out three experiment to test the prediction. In Experiment 1, the crucial test sentence involved ka within the accusative-marked object. The purpose of this is to replicate the results of previous studies. In Experiment 2, ka is placed within the nominative subject. The crucial test sentence of Experiment 3 is minimally different from the one in Experiment 1, in which the object is marked by nominative -ga.

- (42) Experiment 1: ka in accusative object piiman **ka** ninjin-o Risusan-wa tabe-re-**nakat**-ta squirrel-TOP pepper Or carrot-ACC eat-CAN-NEG-PAST Lit. "The squirrel couldn't eat the pepper or the carrot"
- (43) Experiment 2: ka in nominative subject Zousan ka butasan-ga ninjin-o tabe-re-**nakat-**ta carrot-ACC eat-CAN-NEG-PAST elephant or pig-NOM Lit. "The elephant or the pig couldn't eat the pepper"
- (44) Experiment 3: ka in nominative object Risusan-wa piiman **ka** ninjin-ga tabe-re-nakat-ta squirrel-TOP pepper or carrot-NOM eat-CAN-NEG-PAST Lit. "The squirrel couldn't eat the pepper or the carrot"

In the experiments, the crucial test sentences were presented in situations that matched the wide-scope, disjunctive interpretation of ka (e.g., the squirrel could eat the pepper, but couldn't eat the carrot). In experiment 1, children at around age 5 accepted the crucial test sentence 46.6% of the time. That is, about half of

the time, Japanese children assigned a conjunctive truth condition to the test sentences, thereby replicating the findings in the previous study by Goro and Akiba. In contrast, children in Experiment 2 and 3 overwhelmingly accepted the test sentences: the acceptance rate was 96.7% in Experiment 2, and 93.3% in Experiment 3. That is, children ceased to assign conjunctive interpretations to *ka* when it appears in a syntactic position that is higher than negation. This in turn means children's conjunctive interpretation of ka in Experiment 1 (and previous studies) cannot be reduced to strengthening, and therefore, the Anti-reconstruction Account cannot be maintained by resorting to the strengthening account of children's conjunctive interpretation of disjunction. Japanese children's interpretation of ka in negative sentences is modulated by syntax, and this suggests that their non-adult conjunctive interpretation of ka is mainly due to non-adult scope assignment.

Summarizing so far, we have reviewed empirical evidence that demonstrates adult-like wide-scope interpretations of various quantificational objects in Japanese are acquired at different developmental timings. At around age 5, Japanese children have acquired the adult-like wide-scope interpretations for the universal zenbu, the existential nanika, and the conjunction . . .mo. . .mo. However, they adhere to narrow-scope interpretation of the disjunction ka appearing in the accusative object position negative sentences, resulting in non-adult conjunctive interpretations of disjunction. Combined together, these data run counter to the prediction of the Anti-reconstruction Account. It appears that Japanese children are not learning to move syntactic objects in general over negation. Rather, they seem to be learning properties of each lexical item, and depending on factors such as whether the default hypothesis that children generate for each item (e.g., whether or not it is a PPI) happens to match the target, or how often the crucial evidence for learning the target appears in the input data, the timings of the emergence of target-like interpretations vary. Given these considerations, we conclude that the acquisition data from Japanese children supports the Positive Polarity Account, and strongly suggests that the scope behavior of Japanese disjunction ka is due to a property of the lexical item, rather than due to a property of the language.

5.3 The acquisition of disjunction: A review of cross-linguistic data

In the previous section, we argued that empirical data regarding Japanese children's scope interpretations favored the Positive Polarity Account over the Anti-reconstruction Account as an explanation for why Japanese logical connectives (i.e., disjunction and conjunction) must take scope over local negation. We now turn to cross-linguistic data, to see if we can find further supports for the Positive Polarity

Account. Remember the Positive Polarity Account (combined with specific learnability assumptions) predicts that children's universal default hypothesis is that disjunction is not a PPI (and conjunction is a PPI⁸). Therefore, even in languages in which disjunction exhibits PPI-properties (e.g., obligatory wide-scope over local negation), young children should initially show non-adult bias towards the narrow-scope, conjunctive interpretation of disjunction appearing in the object position of simple negative sentences. In what follows, we will review data from various experimental studies, focusing on the results from the conditions that meet the following criteria: (i) the crucial test sentences involve sentential negation and a disjunction phrase in the object position, and (ii) the task is to judge if the test sentence matches a "not P OR not Q" situation.

Russian

Verbuk (2006) investigated Russian-speaking children's interpretation of sentences containing negation and disjunction. A sample test sentence is given in (45):

našla klučik **ili** zerkal'ce9 (45) Koška **ne** Cat not find key or mirror Lit. 'The cat did not find the key or the mirror'

The task was picture-matching, and two pictures were presented with the test sentence. Picture One depicted a cat having one box which contained either a key or a mirror. In Picture Two, there was a cat, but with no boxes. The logic behind this design is that if the participant assigns a wide-scope, disjunctive interpretation to the disjunction ili in the test sentence, then she should choose Picture One; conversely, if the participant interprets ili under the scope of negation, computing a conjunctive truth condition, then she should choose Picture Two. The results were as follows. First, Russian adults in the experiment consistently chose Picture One, suggesting that the wide-scope, disjunctive interpretation of ili is the default interpretation in adult Russian. Russian children (Mean age: 5;4), in contrast, chose

⁸ Cross-linguistic data regarding the acquisition of the scope of conjunction are still much smaller than those of disjunction, and we are not going to discuss them independently in this paper. See Crain et al. (2013) for data from Mandarin and English, in which children assigned wide-scope interpretations to conjunction in negative sentences.

⁹ In the actual experiment of Verbuk (2006), this test sentence was embedded within a larger "carrier" sentence, probably in an attempt to make the test sentences sounds as natural as possible.

Picture One only 19.2%¹⁰ of the time. In other words, they strongly preferred Picture Two, which matched the "not P AND not O" interpretation, Thus, Russian children showed a strong non-adult bias towards the narrow-scope, conjunctive interpretation of the disjunction *ili* in the crucial test sentences.

Mandarin Chinese

Jing, Crain and Hsu (2005) carried out a series of Truth-Value Judgment Task with Mandarin-speaking adults and children. Among their experiments, what interests us here is the one that used a negative test sentence with an object disjunction, as in (46)

(46) Tangtaova meivou iu-ai zhouzi **huozhe** dianshiii Donald Duck not-PAST lift-up table TV Lit. 'Donald Duck didn't lift up the table or the TV'

The test sentence was presented after a story in which three characters tried to lift things, with Donald Duck being one of them. At the end of the story, Donald Duck successfully lifted the table up, but could not lift up the TV. According to Jing, Crain and Hsu (2005: 178) the results were as follows: "Whereas the group of adult controls always accepted sentences like this, 20 out of 21 children¹¹ rejected them." Although no concrete numbers of acceptance rates were provided in the paper, it is clear that the responses from Mandarin adults and children were drastically different: while adults always accepted a disjunctive reading of the test sentence, children consistently rejected it. This result was replicated by Crain et al. (2013), with a slightly different experimental settings. In their experiments, Mandarin adults accepted the crucial test sentences with disjunction and negation 95% of the time in the crucial test condition, but children (Mean age: 4;5) did so only 3% of the time. Thus, across different studies, Mandarin-speaking children showed a very strong bias towards non-adult, narrow-scope interpretations of the disjunction *huozhe* in simple negative sentences.

¹⁰ Verbuk (2006) does not explicitly provide this number. We calculated the number using the data given in the tables that report individual response patterns.

¹¹ Those children ranged in age from 4;4 to 5;3 (Mean: 4;10).

Turkish

Geçkin, Crain and Thornton (2016) reported the results from experiments with Turkish speakers. They followed Goro and Akiba's (2004) experimental design, and the test sentences involved two kinds of lexical items that express disjunction in Turkish: *ya. . . ya da* 'either or' and *veya* 'or'

- (47) Bu hayvan-cık **ya** havuc-u **ya da** biber-i ye-**me**-di
 This animal-DIM either carrot-ACC or pepper-ACC eat-NEG-PAST

 'This animal did not eat a certain carrot or a certain pepper'
- (48) Bu hayvan-cık havuc-u veya biber-i ye-me-di
 This animal-DIM carrot-ACC or pepper-ACC eat-NEG-PAST
 'This animal did not eat a certain carrot or a certain pepper'

These test sentences were presented as a description for an animal who ate a carrot or a pepper, but not both. Adults' acceptance rates were 97.2% for test sentences like (47), and 77% for sentences like (48). In contrast, children (Mean age: 4;7) accepted test sentences like (47) only 13.5% of the time, and their acceptance rate went further down to 1.2% with test sentences like (48).¹²

Italian

Experimental data regarding interpretations of Italian disjunction o in negative sentences can be found in Pagliarini, Crain and Guasti (2018). They employed the experimental design of Goro and Akiba (2004), and a sample test sentence is given in (49):

(49) Ill gatto **non** ha managiato la carota **o** il peperone the cat not has eaten the carrot or the pepper Lit. 'The cat didn't eat the carrot or the pepper'

¹² In Turkish, presence of the accusative case-marker on the object affects scope interpretations. In the current case, Geçkin, Crain and Thornton (2016) confirmed that disjunctive test sentences without an accusative marker yielded conjunctive interpretation from both children and adults. We will not discuss the issues around case markings and scope interpretations in Turkish. For our current purpose, it suffices to point out that presence/absence of accusative marker in the test sentences did not affect children's scope interpretations: either way, they consistently accessed narrow-scope, conjunctive interpretation of disjunction.

As in the previous studies, the participants judged whether this sentence was a correct description of a cat who had eaten either the carrot or the pepper, but not both. Pagliarini, Crain and Guasti administrated two slightly different experiments, but the results were essentially the same. In their Experiment 1, adults accepted the test sentence 100% of the time; children (mean age: 4;6) did so 60.5% of the time. In Experiment 2, the acceptance rate from adult participants was 91.1%, and that from children (mean age: 5;2) was 54.2%.

Although the differences in the acceptance rates from adults and children were statistically significant, that is, Italian children did show non-adult narrow-scope interpretations of negated disjunction, the proportion of non-adult responses appears to be smaller than those observed in previous studies. Pagliarini, Crain and Guasti argued that Italian children in fact acquire the adult-like wide-scope interpretation of negated disjunction faster than, for example, Japanese children, and that is because Italian is a negative concord language that uses a specific linguistic form (né...né, 'neither...nor') to express a conjunction of two negated propositions (i.e., not P AND not Q). This account, however, was not supported by a later study that investigated French and Hungarian, which we will turn next.

French and Hungarian

French and Hungarian share some important properties with Italian. First, disjunction in these languages take wider scope than local negation; second, they have a specific linguistic form to express "neither" (ni. . . ni in French; sem. . . sem in Hungarian). If the existence of such a form in the target language helps children to discard their initial hypothesis that disjunction is not a PPI, as Pagliarini, Crain and Thornton (2018) argued, then French and Hungarian-speaking children and Italian children at around the same age should show similar level of performance with negative test sentences involving disjunction. Pagliarini et al. (2022) tested this prediction with a series of experiments with French and Hungarian speakers.

Samples of the relevant French and Hungarian test sentences are given below. As in Pagliarini, Crain and Thornton (2018), the 'silver medal' condition in which the animal ate only one of the vegetables provided the crucial test case.

(50) French test sentence

Le chat n'a pas mangé la carotte ou le poivron The cat CL-has not the pepper eaten the carrot or

(51) Hungarian test sentence

A cica nem etta meg a répát vagv a paprikát The cat not PRT the carrot the pepper ate or

The results are the followings. French-speaking children (mean age: 5;3) accepted the crucial test sentences 34% of the time, and Hungarian children (mean age: 5;2) did so 25% of the time. Adult acceptance rates were 96% for French, and 90% for Hungarian. Thus again, French and Hungarian children showed a bias towards non-adult narrow-scope interpretations of disjunction, and the proportions of adult-like responses were not as high as that from Italian children. This suggests that French and Hungarian children did not benefit from the existence of the forms like ni... ni or sem... sem in their target language, contrary to the prediction of the account proposed by Pagliarini, Crain and Thornton (2018). Therefore, the source of apparent differences in the proportion of adult-like responses from various different studies is still not clear at this moment. We leave this issue open here, simply noting that non-adult, narrow-scope interpretations of disjunction in negative sentences were observed in all the studies reviewed here, with children acquiring different languages.

The empirical data that we have reviewed so far are summarized in Figure 1:13 Several generalizations emerge from the data in Figure 1. First, across those typologically distinct languages, adult's response patterns are extremely consistent and similar: apart from the Turkish veya case, the acceptance rates are all over 90%. These numbers are in stark contrast with the comparable adult data from languages like English (e.g., Grüter, Lieberman and Gualmini 2010), German (Geçkin, Thornton and Crain 2018) and Dutch (Pagliarini et al. (2022): in those languages, adults consistently reject the test sentences with disjunction and negation in a "not P OR not Q" situation. Second, children at around age 5 all show non-adult, narrow-scope conjunctive interpretation of disjunction across all the diverse languages that have been studied so far. Third, although in no studies are children fully adult-like, the proportions of adult-like responses are highly variable among different studies. The source of this heterogeneity is not entirely clear at this point, but this does suggest that the crucial "trigger" that eventually leads children to learn the adult-like interpretation is not abundant in the input, and cannot be inferred from some obvious and easily observable properties of the target language.

¹³ Pagliarini et al. (2021) report yet another set of data from Catalan. We didn't include the Catalan data in Figure 1 because the crucial results were essentially the same as the ones that are reviewed here: adults' acceptance rate was 100%; children's was 43%.

Children Adults

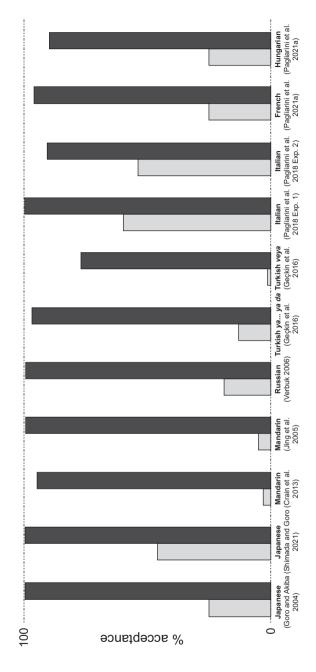


Figure 1: Adults and children's acceptance rates of wide-scope interpretation of object disjunction in negative sentences.

Under the Positive Polarity Account, the crucial trigger that would drive children to the correct adult knowledge of disjunction is an input sentence containing disjunction and negation in the same clause, with disjunction in the position lower than negation. In any language, this kind of input sentences can be extremely sparse, due to the pragmatic felicity conditions associated with disjunction and negation (e.g., Goro 2007; Shimada and Goro 2021). Cross-linguistically, a use of disjunctive expressions usually invokes so-called ignorance implicature: for example, the utterance "John ate sushi or pasta" implies that the speaker is unsure about what exactly John ate. On the other hand, negative sentences are most typically used to point out that the contextual expectation was not fulfilled, which means that a speaker who chooses to use a negative description of a situation is typically aware of what was expected and what actually happened. Thus, the felicity conditions for the use of disjunction and negation are partially contradictory, and only very limited contexts in the real life can satisfy those conditions simultaneously. This would lead to sparseness of the crucial trigger data in the input, which in turn make the acquisition of positive polarity of disjunction difficult and take extended time, with considerable individual variations.14

Given these considerations, we conclude that the available cross-linguistic evidence from children is consistent with the predictions of the Positive Polarity Account. The source of the scope restriction on disjunction is not a property of language, but is a property of specific lexical items: positive polarity. Children's initial hypothesis about polarity sensitivity of disjunction (and conjunction) is determined by the Semantic Subset Principle. The universal default hypothesis is that disjunction is not a PPI, and the available data show that the default hypothesis persists up to the fifth year of first language acquisition.

6 Conclusion

In this chapter, we reviewed cross-linguistic data from first language acquisition in order to compare two competing accounts for the nature of the scope constraint on Japanese disjunction ka. The data from language acquisition are in favor of

¹⁴ A remaining question is how it is possible for all children to encounter the crucial triggering data if the relevant data are so sparse. Adult's performance with disjunction, as summarized in Figure 1, show very little variance, suggesting that virtually everyone in the relevant linguistic communities converge on the same scope interpretations of disjunction. It remains mysterious, then, how this is possible with sparse and thus unreliable triggering data. Right now, we don't have any concrete answer to this question. See Shimada and Goro (2021) for some relevant discussion.

the Positive Polarity account, which assumes that a property of each lexical item determines the scope behavior of the element. Given this result, we would like to stress that empirical data from first language acquisition studies can bring about novel and useful insights to the theories of (adult) language. This should not be surprising, given that a theory of adult linguistic knowledge is supposed to be able to explain how the knowledge is acquired (i.e., explanatory adequacy: e.g., Chomsky 1965, 1981, 1986). In other words, theoretical analyses of adult language and empirical evidence from child language acquisition should both be integral parts of the study of language. Given the development of cross-linguistic studies in the relevant fields, integration of linguistic theories and language acquisition studies will give us even more opportunities to deepen our understandings of the nature of human language.

References

Chierchia, Gennaro, Danny Fox & Benjamin Spector. 2012. Scalar implicature as a grammatical phenomenon. In Claudia Maienborn, Klaus von Heusinger & Paul Portner (eds.), An International Handbook of Natural Language Meaning, vol. 3, 2297–2331. Berlin: Mouton de Gruyter.

Chomsky, Noam. 1965. Aspects in the Theory of Syntax. Cambridge, MA: MIT Press.

Chomsky, Noam. 1981. Lectures on Government and Binding. Dordrecht: Foris Publications.

Chomsky, Noam. 1986. Knowledge of Language: Its Nature, Origin and Use. New York: Praeger Publishers.

Chomsky, Noam. 1995. The Minimalist Program. Cambridge, MA: MIT Press.

Crain, Stephen. 2012. The Emergence of Meaning. Cambridge: Cambridge University Press.

Crain, Stephen, Weijina Ni & Laura Conway. 1994. Learning, parsing, and modularity. In Charles Clifton, Jr., Lyn Frazier & Keith Rayner (eds.), Perspectives on Sentence Processing, 443–466. Amsterdam: Lawrence Erlbaum.

Crain, Stephen & Rosalind Thornton. 1998. Investigations in Universal Grammar: A Guide to Experiments on the Acquisition of Syntax and Semantics. Cambridge, MA: MIT Press.

Crain, Stephen, Amanda Gardner, Andrea Gualmini & Beth Rabbin. 2002. Children's command of negation. In Yukio Otsu (ed.), Proceedings of the Third Tokyo Conference on Psycholinguistics, 71–95. Tokyo: Hituzi Syobo.

Crain, Stephen, Takuya Goro, Anna Notley & Peng Zhou. 2013. A parametric account of scope in child language. In Stavroula Stavrakaki, Martina Lalioti & Polyxeni Konstantinopoulou (eds.), Advances in Language Acquisition, 63-71. Newcastle upon Tyne: Cambridge Scholars Publishing.

Geçkin, Vasfiye, Stephen Crain & Rosalind Thornton. 2016. The interpretation of logical connectives in Turkish. Journal of Child Language 43. 784-810.

Geçkin, Vasfiye, Rosalind Thornton & Stephen Crain. 2018. Children's interpretation of disjunction in negative sentences: A comparison of Turkish and German. Language Acquisition 25(2). 197-212.

Goro, Takuya. 2007. Language-specific constraints on scope interpretation in first language acquisition. College Park: University of Maryland at College Park dissertation.

- Goro, Takuya. 2015. Acquisition of scope. In Mineharu Nakayama (ed.), Handbook of Japanese Psycholinauistics, 149-180. Berlin: Mouton de Gruyter.
- Goro, Takuya. 2017. Negation, uncertainty, and the Truth Value Judgment Task. In Mineharu Nakayama, Yi-ching Su & Aijun Huang (eds.), Studies in Chinese and Japanese Language Acquisition: In honor of Stephen Crain, 41–61. Amsterdam: John Benjamins Publishing Company.
- Goro, Takuya & Sachie Akiba, 2004. The acquisition of disjunction and positive polarity in Japanese. In Vinetta Chand, Ann Kelleher, Angelo J. Rodriguez & Benjamin Schmeiser (eds.), Proceedings of the 23rd West Coast Conference on Formal Linguistics, 251–264. Somerville: Cascadilla Press.
- Grüter, Theres, Moti Lieberman & Andrea Gualmini, 2010, Acquiring the scope of disjunction and negation in L2: A bidirectional study of learners of Japanese and English. Language Acquisition 17. 127-154.
- Gualmini, Andrea. 2004. Some knowledge children don't lack. Linguistics 42. 957–982.
- Gualmini, Andrea & Stephen Crain. 2005. The structure of children's linguistic knowledge. *Linguistic* Inquiry 36. 463-474.
- Han, Chung-hye, Julien Musolino & Jeffrey Lidz. 2016. Endogenous sources of variation in language acquisition. *Proceedings of the National Academy of Sciences* 113. 942–947.
- Horn, Laurence. 1969. A presuppositional approach to only and even. In Robert I. Binnick, Alice Davison, Georgia M. Green & Jerry L. Morgan (eds.), Papers from the Fifth Regional Meeting of the Chicago Linguistic Society, 98-107. Chicago: Chicago Linguistic Society.
- Jing, Chunyuan, Stephen Crain & Ching-fen Hsu. 2005. Interpretation of focus in Chinese: Child and adult language. In Yukio Otsu (ed.), Proceedings of the Sixth Tokyo Conference on Psycholinguistics, 165-190. Tokyo: Hituzi Syobo.
- Kato, Yasuhiko. 1997. Negation, focus, and interface economy. Sophia Linguistica 41. 29–36.
- Kinuhata, Tomohide. 2010. The scope of pronounced and unpronounced negation: A case of Japanese sika-nai and its correlates. Paper presented at Logic and Engineering of Natural Language Semantics 7 (LENLS VII), Tokyo, Japan, 18-19 November, 2010.
- Koizumi, Masatoshi. 1994. Nominative objects: The role of TP in Japanese. In Masatoshi Koizumi & Hiroyuki Ura (eds.), Formal Approaches to Japanese Linguistics 1, 211–230. Cambridge, MA: MIT Working Papers in Linguistics.
- Koizumi, Masatoshi. 1995. Phrase structure in minimalist syntax. Cambridge, MA: MIT Dissertation. Kuno, Susumu. 1973. The Structure of the Japanese language. Cambridge, MA: MIT Press.
- Lidz, Jeffrey & Julien Musolino. 2002. Children's command of quantification. Cognition 84. 113–154.
- Musolino, Julien. 1998. Universal grammar and the acquisition of semantic knowledge: An experimental investigation into the acquisition of quantifier-negation interaction in English. College Park: University of Maryland Dissertation.
- Musolino, Julien, Stephen Crain & Rosalind Thornton. 2000. Navigating negative quantificational space. Linguistics 38(1), 1–32.
- Musolino, Julien & Jeffrey Lidz. 2002. Preschool logic: truth and felicity in the acquisition of quantification. In Barbora Skarabela, Sarah Fish & Anna H.-J. Do (eds.), Proceedings of Boston University Conference on Language Development (BUCLD) 26, 406-416. Somerville: Cascadilla Press.
- Pagliarini, Elena, Stephen Crain & Maria Teresa Guasti. 2018. The compositionality of logical connectives in child Italian. Journal of Psycholinguistic Research 47. 1243–1277.
- Pagliarini, Elena, Marta Andrada Reyes, Maria Teresa Guasti, Stephen Crain & Anna Gavarró. 2021. Negative sentences with disjunction in child Catalan, Language Acquisition 28. 153–165.
- Pagliarini, Elena, Oana Lungu, Angeliek van Hout, Lilla Pintér, Balázs Surányi, Stephen Crain & Maria Teresa Guasti. 2022. How adults and children interpret disjunction under negation in Dutch,

- French, Hungarian and Italian: a cross-linguistic comparison. Language Learning and Development 18. 97-112.
- Pinker, Steven. 1989. Learnability and Cognition, Cambridge, MA: MIT Press.
- Shibata, Yoshiyuki. 2015. Negative structure and object movement in Japanese. Journal of East Asian Linguistics 24. 217-269.
- Shimada, Hirovuki & Takuva, Goro, 2021. On the source of children's conjunctive interpretation of disjunction: Scope, strengthening, or both? Language Acquisition 28. 98-130.
- Singh, Raj, Ken Wexler, Andrea Astle-Rahim, Deepthi Kamawar & Danny Fox. 2016. Children interpret disjunction as conjunction; consequences for theories of implicature and child development. Natural Language Semantics 24. 305-352.
- Szabolcsi, Anna. 2002. Hungarian disjunctions and positive polarity. In István Kenesei & Péter Siptár (eds.), Approaches to Hungarian 8, 217–241. Budapest: Akademiai Kiado.
- Szabolcsi, Anna. 2004. Positive polarity negative polarity. Natural Language & Linguistic Theory 22. 409-452.
- Terunuma, Akiko. 2001. A note on the acquisition of quantifier-neg interaction. In *Linguistic Research*: Working Papers in English Linguistics 18, 97–122. Tokyo: University of Tokyo English Linguistics Association.
- Tieu, Lyn, Kazuko Yatsuhiro, Alexandre Cremers, Jacopo Romoli, Uli Sauerland & Emmanuel Chemla. 2017. On the role of alternatives in the acquisition of simple and complex disjunctions in French and Japanese. Journal of Semantics 34(1). 127-152.
- Viau, Joshua, Jeffrey Lidz & Julien Musolino. 2010. Priming of abstract logical representations in 4-year-olds. Language Acquisition 17. 26-50.
- Verbuk, Anna. 2006. The acquisition of the Russian or. In Erin Brainbridge & Brian Agbayani (eds.), Proceedings of the Thirty-fourth Western Conference on Linguistics, Frenso, CA, 2006, 443–455. Frenso: California State University Department of Linguistics.

Part IV: **Discourse/pragmatic properties of polarity-sensitive items**

David Y. Oshima

Chapter 9

The forms and meanings of negative polar interrogatives in English and Japanese: Epistemic bias, information structure, prosody, and further issues

1 Introduction

It has been widely acknowledged that, in many languages including English and Japanese, some instances of negative polar interrogatives convey an epistemic bias toward a positive answer, while some others convey an epistemic bias toward a negative answer (Ladd 1981, Huddleston and Pullum 2002, Romero and Han 2004, Reese 2007, Oshima 2017, among others).

- (1) (negative interrogative with a positive epistemic bias)
 - A: John is such a philanthropist.
 - B: Yeah, doesn't he even run some sort of charity group?
- (2) (negative interrogative with a negative epistemic bias)
 - A: There is nothing John can help with here.
 - B: Doesn't he even know how to keep accounts?

This work aims to provide a comprehensive description and analysis of the formal/prosodic and semantic/pragmatic features of the varieties of negative polar interrogatives in English and Japanese.

Acknowledgments: Some materials in this article were presented, jointly with Satoshi Ito, at the 15th Annual International Conference of the Japanese Society for Language Sciences and the 23rd Japanese/Korean Linguistics Conference, and appear in Ito and Oshima (2016). I am grateful for Hyun Kyung Hwang for valuable comments and advice. This work was supported by JSPS KAKENHI Grant Number 15K02476.

2 Positively-biased, negatively-biased, and unbiased polar interrogatives in English

The seminal work by Ladd (1981) demonstrates that there are two varieties of negative polar questions in English, which he calls the "outside-NEG" question and the "inside-NEG" question. According to Ladd, with the former, exemplified by (1B) above, the speaker "believes a proposition **P** and wants confirmation", where **P** is the proposition denoted by the sentence radical excluding the negation. The latter, exemplified by (2B), conveys that the speaker previously had assumed the truth of **P** but "has just inferred a proposition \neg **P**". He also points out that the "outside-NEG" type is compatible with positive polarity items (PPIs) such as too but not with negative polarity items (NPIs) such as either and lift a finger, and the opposite pattern holds for the "inside-NEG" type. On this ground, McCawley (1988: 499, 571) characterizes the negation in an outside-NEG interrogative as a "fake" negation, which does "not count as negative for the purposes of syntactic rules that are sensitive to negation".

Romero and Han (2004: 611) state that with an outside-NEG polar interrogative the speaker tries to "confirm or 'double-check' the positive proposition P" (in (3), P = "that Jane is coming"), and with an inside-NEG polar interrogative, the speaker "wants instead to double-check $\neg P$ " in (4), $\neg P$ = "that Jane is not coming").

- (3) H: OK, now that Stephen has come, we are all here. Let's go!
 - Isn't Jane coming too?
- (4) (**Situation**: Pat and Jane are two phonologists who are supposed to be speaking in our workshop on optimality and acquisition.)
 - H: Pat is not coming. So we don't have any phonologists in the program.
 - S: Isn't Jane coming either?

They additionally claim that in both kinds of biased negative interrogatives, the speaker "starts with the positive belief or expectation that P" (in both (3) and (4), this means that the speaker originally believed or expected that Jane would come).

Romero and Han (2004) also make an important remark on negative polar interrogatives without an epistemic bias. Unlike negative polar interrogatives with preposed negation (e.g. Won't he come?), ones with non-preposed negation (e.g. Will he not come?) allow a neutral interpretation where no epistemic bias is conveyed.1 The following example illustrates this point.

- (5) (Situation: The speaker is organizing a party and she is in charge of supplying all the non-alcoholic beverages for teetotalers. The speaker is going through a list of people that are invited. She has no previous belief or expectation about their drinking habits.)
 - H: Jane and Mary do not drink.
 - S: OK. What about John? Does he not drink (either)?
 - S': #OK. What about John? Doesn't he drink (either)?

(Romero and Han 2004: 610)

Unbiased negative polar interrogatives are compatible with an NPI (as shown in (5S)), but not with a PPI. Romero and Han (2004) do not elaborate on the discourse conditions under which epistemically neutral negative polar interrogatives are felicitous; I suggest that they are appropriate only when the meaning of the negated predicate or clause – in the case of (5), "not drink", or something along the lines of $\lambda x[\lambda w[\neg drink(x, w)]]$ – is contextually prominent, e.g. by virtue of being mentioned in the preceding linguistic context; note that (5S) would be unnatural if the preceding utterance were "Jane and Mary drink".

Romero and Han (2004) assume that negative polar interrogatives with either preposed or non-preposed negation may receive the positive-bias or negative-bias interpretation. It appears, however, that there is a tendency such that a negative polar interrogative with preposed negation favors a positive-bias interpretation while one with non-preposed negation favors a negative-bias (or no-bias) interpretation, and that the strength of tendency varies across dialects/idiolects. Table 1 summarizes the points discussed so far.

¹ It should be noted here that negative polar interrogatives on the "neutral" interpretation are to be understood as interrogatives that do not encode epistemic bias, and not ones that encode the lack of epistemic bias. The plain positive polar interrogative "Do you drive a car?" – an instance of unbiased/neutral interrogative - obviously does not imply that the speaker finds it some 50% likely that the hearer drives.

kinds of epistemic bias	positive	negative	no bias
Ladd's label	outside NEG	inside NEG	(inside NEG)
NPI licensing	no	yes	yes
PPI licensing	yes	no	no
preposed negation	OK	(?)OK	*
non-preposed negation	(?)OK	OK	OK

Table 1: Three interpretations of negative polar interrogatives.

I assume that the outside-NEG interrogative and the inside-NEG interrogative on its negative-bias interpretation convey not-at-issue contents² along the lines of (6a) and (6b).3 Here and thereafter, I use "S" and "H" as abbreviations for "the speaker" and "the hearer" respectively.

- a. **positive epistemic bias**: S considers **P** to be likely, where **P** is the proposi-(6) tion denoted by the radical of the negative polar interrogative minus the negation.
 - b. **negative epistemic bias**: S considers **P** to be likely, where **P** is the proposition denoted by the radical of the negative polar interrogative.

To illustrate with specific examples:

- **(7)** For the negative polar interrogative with a positive bias: "Isn't Ken home (too)?"
 - (i) the negative polar interrogative minus the negation: "Is Ken home (too)?"
 - (ii) the radical of (i): "Ken is home (too)."
 - (iii) the approximate denotation of (ii) (= P): λw [home(ken, w)]

² Alternative terms here are "projective contents" (Tonhauser et al. 2013) and "conventional implicatures" (in a broad sense; Oshima 2016).

³ Alternative ideas have been put forth in the literature, according to which such meaning components are derivative of (i) the formal/semantic markedness of negative polar interrogatives and (ii) some general pragmatic processes (such as conversational implicature; van Rooy and Šafářová 2003, Romero and Han 2004, Romero 2005, Reese 2007, Farkas and Roelofsen 2017, Krifka 2017). This work does not aim to refute such "reductionist" theories, although the subtle aspects of the meanings conveyed by different varieties of negative polar interrogatives, to be discussed in what follows, seem to speak for the "conventionalist" approach adopted here. In particular, the semantic contrast between the English outside-NEG type and the Japanese P-type, and that between the English inside-NEG type and the Japanese NN-type, pose considerable challenges for the reductionist approach under the reasonable premise that the core meanings of the interrogative and the negation are constant across the two languages.

- (8) For the negative polar interrogative with a negative bias: "Isn't Ken home (either)?"
 - (i) the negative polar interrogative: "Isn't Ken home (either)?"
 - (ii) the radical of (i): "Ken is not home (either)."
 - (iii) the approximate denotation of (ii) (= P): $\lambda w[\neg home(ken, w)]$

In the following, I will use the term "core proposition", or " P_c ", in the sense of **P** in (6a), and the term "proposition denoted by the radical", or " P_r ", in the sense of **P** in (6b).

The meanings of the outside-NEG and inside-NEG interrogatives involve subtleties that go beyond the positive and negative epistemic biases, to which I will turn in the following two sections.

3 More on the meaning of the outside-NEG interrogative

In addition to conveying a positive epistemic bias, the English outside-NEG interrogative is subject to a pragmatic constraint that does not apply to the unmarked polar interrogative, the inside-NEG interrogative, or the rising tag-interrogative. Oshima (2017: 173–174) illustrates this feature with data like (9)/(10), terming it the "matter of interest" condition.

- (9) (Situation: S needs some postage stamps. He thinks that the nearby convenience store should have them, but he is not completely sure. He goes to the living room and says to his wife.)
 - a. Can you buy postage stamps at convenience stores?
 - b. You can buy postage stamps at convenience stores, can't you?
 - c. #Can't you buy postage stamps at convenience stores?
- (10) (**Situation**: S's wife asks him if he can quickly drive to the post office to buy some postage stamps. He thinks that it will be easier to go to the nearby convenience store, but he is not completely sure if they have postage stamps. So, he asks her.)
 - a. Can you buy postage stamps at convenience stores?
 - b. You can buy postage stamps at convenience stores, can't you?
 - c. Can't you buy postage stamps at convenience stores?

Note that tag-interrogative (9b) conveys a bias in the same direction as, but stronger than, that of (9c) (Section 8); this implies that the existence of the bias alone cannot be responsible for the degraded acceptability of the latter.

To account for such data, I suggest that an outside-NEG interrogative conveys that the speaker assumes that P_{c} (i) is likely to hold true, and furthermore (ii) is such that if it is true, it (a) should have been activated, or (b) is already activated, in the hearer's mind (cf. Oshima 2017: 173). In both (9c) and (10c), the speaker finds it likely that one can buy postage stamps at convenience stores; only in (10c), the speaker considers its being possible to buy postage stamps at convenience stores to be something (that is true and) and that the hearer should have had in mind in the discourse context, before asking him to go to the post office.

The outside-NEG interrogative in a discourse like (11A₂) is licensed by \mathbf{P}_{c} 's being likely to be already active in interlocutor B's mind (P_c = "Ken was at the conference").

(11) (Situation: A and B are roommates. B comes back from a trip to an academic conference. A has previously heard from Ken, their mutual friend, that he was planning to attend the same conference.)

 A_1 : How was the conference?

It was pretty good. My talk went okay, and I got to talk to quite a few people.

A₂: Wasn't Ken there, too?

4 More on the meaning of the inside-NEG interrogative

4.1 The "inference on the spot" condition

As mentioned above, Ladd (1981), as well as Romero and Han (2004), remarks that the inside-NEG interrogative conveys not only that the speaker is negatively biased, but also that he previously had a positive expectation and the negative bias has been formed "on the spot", in the discourse situation. (12S) exemplifies a felicitous utterance that satisfies this "inference on the spot" condition. (13), on the other hand, is infelicitous due to violation of this constraint.

- (12) (= (4); **Situation**: Pat and Jane are two phonologists who are supposed to be speaking in the workshop tomorrow.)
 - H: Pat is not coming. So we don't have any phonologists in the program.
 - S: Isn't Jane coming either?

(adapted from Romero and Han 2004: 611)

- (13) (Situation: S is preparing lunch for Jane. S thinks that Jane is probably not a vegetarian, but wants to make sure. He sees Nancy, Jane's sister, and asks her:)
 - S: #Hey, isn't Jane a vegetarian?
 - S': Hey, Jane is not a vegetarian, is she?

In this sense, the meaning of the inside-NEG can be said to have a flavor of mirativity, which DeLancey (1997, 2001) defines as "linguistic marking of an utterance as conveying information which is new or unexpected to the speaker".

The "inference on the spot" condition leads to the prediction that (14) conveys that S had assumed that Jane was likely to come, rather than having been neutral on the matter. Speakers' judgments on this point could be subtle, but the experimental results presented by Filippo, Romero, and Braun (2017) seem to support it.

(14) (Situation: S and H are going to the movies. S is waiting for H, who went to check if Jane would want to join them. H comes back by himself. S asks:) {Isn't Jane/is Jane not} coming?

4.2 Truth vs. accepted truth

Another characteristic of the inside-NEG interrogative is that it, unlike the outside-NEG interrogative, makes reference to the speaker's assumptions (expectations) about the hearer's beliefs (Oshima 2017: 173-174). Outside-NEG interrogatives can be felicitously used when it is contextually clear that \mathbf{P}_c is not part of the hearer's beliefs, with the intention to suggest that the hearer revise his beliefs. (15S) illustrates this point.

- (15) (**Situation**: H is Jane's brother.)
 - H: Jane really should stop lazing around and get a job.
 - S: Aren't you too harsh on your sister? You know what the current job market is like.

Note that, due to the matter-of-interest condition, (15S) conveys that S considers that if \mathbf{P}_{c} is the case, it should have (been part of H's beliefs and) been activated in his mind.

An inside-NEG interrogative conveys, on the other hand, that the speaker believes not only that P_r is likely to be true, but also that P_r is likely to be part of the hearer's beliefs. This supposition is motivated by the contrast illustrated in the following set of examples. (Notice that P_c for (16S), as well the proposition denoted by the two main clauses in (16S'), is equivalent to P_r for (16S").)

- (16) (Situation: S and H are organizing an academic colloquium. On the day before the colloquium, H shows S the room that he has arranged. S expected H to choose a larger room, and thinks that the arranged room will be too small to accommodate the audience. S says:)
 - *Isn't this room {too small/not large enough}? (outside-NEG)*
 - This room is too small, isn't it? | This room is not large enough, is it? (rising tag)
 - S": #Isn't this room large enough? (inside-NEG)

The infelicity of (16S") cannot be attributed of the violation of the "inference on the spot" condition, as in the provided scenario it is highly plausible that (i) S had previously assumed that the room was large enough and (ii) her assumption that the room is likely not to be large enough (likely to be too small) was formed right before her utterance. The infelicity of (16S") should rather be attributed to the fact that S cannot sensibly expect H to share the belief that the room is likely not to be large enough before her utterance.

4.3 Interim summary

It has been observed that the meanings of the outside-NEG interrogative and the inside-NEG interrogative are not simply mirror images of each other. The not-atissue meanings conveyed by the two constructions can be summarized as follows:

- (17) An outside-NEG interrogative conveys that S believes that P_c is likely to (i) hold true and (ii) be a "matter of interest" for H.
- (18) An inside-NEG interrogative on its negative-bias interpretation conveys that S previously believed that \mathbf{P}_c was likely to be true, and has just come to believe that P_r (= $\neg P_c$) is likely to (i) hold true and (ii) be part of H's beliefs.

5 Positively-biased, negatively-biased, and unbiased negative polar interrogatives in Japanese

Like ones in English, negative polar interrogatives in Japanese may convey a positive or negative epistemic bias, or convey no epistemic bias.

Ito and Oshima (2016) distinguish Japanese negative polar interrogatives into two major types: the P(ositive)-type and the N(egative/)N(eutral)-type. ⁴ The former roughly corresponds to the English outside-NEG interrogative, and the latter roughly corresponds to the English inside-NEG interrogative.

Some prominent characteristics of the two types are summarized (19)/(20) (they will be discussed in fuller detail presently); "negated predicates" refer to main or auxiliary predicates that involve negative suffix (a)na or (a/e)n, and "negative" predicates" include the adjective NAI_(adi) (for a non-sentient entity to) (be) absent, not exist' and the homophonous auxiliary adjective NAI(aux), which follows an infinitival adjective or copula and forms a negative (complex) predicate (e.g. amaku nai 'is not sweet', gakusei zya nai 'is not a student').

I do not consider this construction to be an interrogative, and will not discuss it further.

⁴ Another construction that has been treated by some as a kind of negative polar interrogative is the copular construction of the form: [. . . X ja nai ka] (or a variation thereof), where X could be either a noun or a finite verb/adjective, and ja is a copula in its infinitive form (note that usually a copula does not directly follow a finite verb or adjective). This construction, exemplified below, is accompanied by the non-rising intonation typical for declaratives, rather than the question-rise intonation, and conveys an overtone of blaming or admiration (Tanomura 1988; Adachi 1999; see Note 7 for the list of the abbreviations in glosses).

⁵ With Oshima (2014), I take (a)na to be a suffix that derives an adjective out of a verb, and (e/a)nto be a "negative present indicative" inflectional suffix. The morphs n (as in min '{do(es)/will} not see') and an (as in kakan '{do(es)/will} not write') are stylistically constrained and tend to sound old-fashioned. The morph en (as in mimasen '{do(es)/will} not see (Polite)'), on the other hand, is commonly used as a means to negate polite verbs, which resist suffixation of (a)na.

⁶ Expressions in small capitals refer to lexemes.

- (19) a. A P-type negative polar interrogative is compatible with a PPI but not with an NPI.
 - b. In a P-type negative polar interrogative, the negation is invariably part of information-structural ground (and this often leads to the tonal compression of the negated/negative predicate).
 - c. A P-type negative polar interrogative may involve accent obliteration of the negated/negative predicate.
 - d. A P-type negative polar interrogative often (but not always) conveys a positive epistemic bias.
- (20) a. An NN-type negative polar interrogative is compatible with a NPI but not with an PPI.
 - b. In an NN-type negative polar interrogative, the negation is part of the information-structural focus, except under some marked discourse conditions.
 - c. An NN-type negative polar interrogative may receive the epistemically neutral interpretation when the meaning of the negated/negative predicate is contextually prominent. Otherwise, it conveys a negative epistemic bias.

In what follows, I will illustrate how the two types contrast with each other in terms of information structure and prosody, as well as in some other aspects.

5.1 Positively biased negative polar interrogatives and their prosodic features

The P-type negative polar interrogative exhibits prosodic characteristics not seen in the NN-type. Specifically, the negated/negative predicate in a P-type negative polar interrogative often undergoes (i) tonal compression or (ii) deaccenting (or both).

5.1.1 Post-focal reduction

(21a) exemplifies a positively biased negative polar interrogative, and (21b) a negatively biased polar interrogative.⁷

⁷ The abbreviations used in the glosses are: Acc = accusative, Attr = attributive, BenAux = benefactive auxiliary, Cond = conditional, Cop = copula, Dat = dative, DAux = discourse auxiliary, DP =

- (21) (in reply to: "Suzuki and Takahashi were helpful.")
 - a. Yamada-san mo tetudatte kurenakatta?
 Y.-HonT also help.Ger BenAux.Pst
 'Didn't Yamada give you a hand, as well?'

(positive bias)

b. Yamada-san wa tetudatte kurenakatta?Y.-HonT Th help.Ger BenAux.Pst'Did Yamada not give you a hand?'

(negative bias)

Parts of production tokens of (21a) and (21b) are presented in Figure 1.8

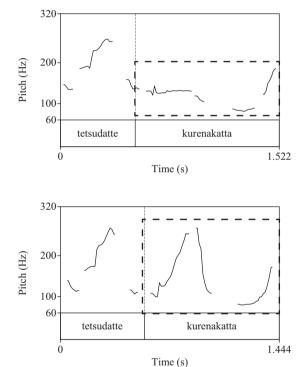


Figure 1: The string "tetudatte kurenakatta" in (21a) (top) and (21b) (bottom).

discourse particle, EvidP = evidential particle, Ger = gerund, HonT = honorific title, Inf = infinitive, Neg = negation, NegAux = negative auxiliary, Nom = nominative, NpfvAux = nonperfective auxiliary, Plt = polite, Pot = potential, Prs = present, Pst = past, Th = thematic *wa* (topic/ground marker), Top = topic.

⁸ These tokens, as well as the others to be presented below, were produced by the author, a male native speaker of Tokyo Japanese in his 40s.

The two tokens exhibit a sharp contrast as to the pitch patterns within the string kurenakatta (/kurenakaQta/9), which (i) is the past-tensed negated form of the benefactive auxiliary KURERU (which follows a verb in its gerund form) and (ii) carries an accent nucleus on /na/. Only in the production of (21a), a (phrase-)initial rise after the first mora (/ku/) and an accent fall after /na/ are clearly observable (see Venditti 2005, Igarashi 2015, Ishihara 2015, and references therein for general discussions of Japanese prosodic phenomena including initial rises and accent falls).

In more general terms, the P-type and the NN-type contrast in the size of pitch excursions within the phrase containing the negation induced by an initial rise and/or an accent fall (but not by an utterance-final intonation, namely a question rise). The pitch excursions are often compressed in P-type negative polar interrogatives (but see below for cases where the compression does not occur); they are invariably retained in a negatively-biased interrogative, and are typically retained in an epistemically neutral negative polar interrogative. 10

To provide further illustration, among (22), (23), and the second part of (24S), all of which are negative polar interrogatives of the form "... amaku nai desu ka?", only in positively biased (22), the accent fall induced by the accent nucleus on /na/ is reduced, as in the production shown at the top of Figure 2. The adjective form amaku has multiple acceptable accent patterns, and the instances here are accented on /ma/. 11 KANARI 'quite' in (22) is a PPI, while AMARI 'much' in (23) is an NPI.

Here, the negative polar interrogatives headed by konakatta are elaborations of a contextually prominent negative content question: "Which of Ken and Mari did not come?". Consequently, the meaning of *konakatta* ($\approx \lambda x[\lambda w[\neg come(x, w)]]$) is part of information-structural ground, triggering the post-focal reduction of the predicate (see below).

11 Some predicate forms (in particular adjective forms) have multiple accepted accent patterns (see e.g. Shioda 2016). For example, the present indicative form (dictionary form) of the lexeme AMAI 'sweet' has a (more conservative) unaccented variety and a (relatively new) accented variety: [amai°] and [ama'i] (an apostrophe indicates the presence/location of an accent nucleus, and a

⁹ In phonemic representations, I assume the system of phonemes and phonemic symbols posited by Vance (2008).

^{10 (}i) illustrates exceptional cases where the negated predicate of an epistemically neutral negative polar interrogative undergoes tonal compression.

⁽i) ("I heard that one of Ken and Mari did not show up . . . ") Ken ga konakatta no? Soretomo Mari ga K. Nom come.Neg.Pst DAux or M. Nom konakatta no? come.Neg.Pst DAux 'Did Ken not come? Or did Mari not come?'

- (22) (Situation: H is eating one of the oranges in a basket. S has eaten another orange from the basket, which he found exceptionally sweet. S asks:) Sore kanari amaku desu nai ka? that quite sweet.Inf NegAux.Prs Cop.Plt.Prs DP 'Isn't that quite sweet?' (positive bias)
- (23) (**Situation**: H eats a piece of orange, and frowns. S asks:) Sore amari amaku nai desu ka? that much sweet.Inf NegAux.Prs Cop.Plt.Prs DP 'Is that not so sweet?' (negative bias)
- (24) (Situation: S and H are organizing a Japanese sake party. Having been asked to take some bottles of sweet sake to the party venue, S comes to the liquor storage room. S has no idea about which bottles are sweet and which are not, so asks H for help.)
 - H: Kore to kore wa amaku nai. this and this Th sweet.Inf NegAux.Prs 'This one and this one are not sweet.'
 - S: Kore wa doo ka? Kore mo desu amaku nai this how Cop.Plt.Prs DP also sweet.Inf NegAux.Prs this desu ka? Cop.Plt.Prs DP 'How about this one? Is this not sweet either?' (epistemically neutral)

In Ito and Oshima (2016), the described tonal characteristic of the P-type negative polar interrogative is attributed to the effect of post-focal reduction, i.e., the process whereby pitch excursions due to initial rises and accent falls are compressed within minor (accentual) phrases following, and belonging to the same major (intonation) phrase as, the minor phrase corresponding to or containing the information-structural focus (Kori 1997, Sugahara 2003, Ishihara 2015). We proposed that the negation is invariably a ground (non-focus) component in the P-type, and in consequence, the predicate containing it often undergoes post-focal reduction. The supposition that the negation in a positively biased polar interrogative is invariably a ground component is resonant with McCawley's (1988: 499, 571) suggestion, mentioned in Section 2, that it is a semantically vacuous, "fake" negation.

superscript circle indicates the unaccentedness). The infinitive form, likewise, can be pronounced as [amaku°], [ama'ku], or less commonly, [a'maku].

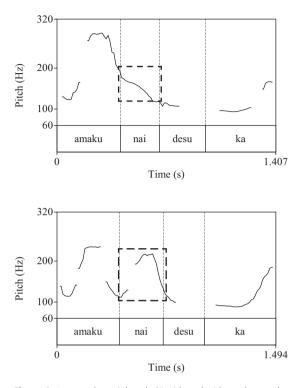


Figure 2: "... amaku nai desu ka?" with and without the tonal compression of *nai*.

It is not always the case that the negated predicate of a P-type polar interrogative undergoes post-focal reduction. Specifically, when the negation occurs as part of the main predicate, rather than an auxiliary predicate, and some other component (most likely, the base) of the (negated main) predicate is part of the focus, the post-focal reduction does not take place. (25), where the semantic component "hide" is part of the focus, illustrates such a case (see also Ito and Oshima 2016: 236–237).

(25) Kimi, ima nanika kakusanakatta?
you now something hide.Neg.Pst
'Didn't you just hide something?' (positive bias; /kakusanakaQta/ is not tonally compressed)

In contrast, in (26) where the semantic component "hide" is non-focal (and "under the sofa" is the focus), the whole predicate undergoes tonal compression (post-focal reduction).

(26) (in reply to: "Ken hid the money under the bed last week, right?")
E? Sohwaa no shita ni kakusanakatta?
huh sofa Gen under Dat hide.Neg.Pst
'Huh? Didn't he hide it under the sofa?' (positive bias; /kakusanakaQta/ is tonally compressed)

5.1.2 Deaccenting

Under certain conditions, the accent of a negative predicate in a positively biased negative polar interrogative may be completely obliterated, rather than merely reduced (Ito and Hwang 2015, Oshima 2018). Figure 3 illustrates a token of positively biased interrogative (27) that involves this phenomenon of deaccenting (deaccentuation), arguably on top of post-focal reduction; note that *nai* (/nai/) is canonically accented on /na/. In (27) and some examples to follow, a phonemic description is presented below the English translation, (i) with an apostrophe indicating accent nucleus and a superscript circle indicating the unaccentedness and (ii) with square brackets indicating boundaries between syntactic units traditionally called *bunsetsu*, which consist of a morphological word potentially followed by one or more particles and by default correspond to minor phrases.

(27) (Situation: as described in (22))

Sore, sugoku amaku nai?

hat very sweet.Inf NegAux.Prs

'Isn't that very sweet?'

[ama'ku] [nai'] (rather than: [ama'ku] [na'i])

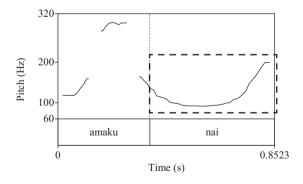


Figure 3: "... amaku nai?" with accent obliteration within /nai/.

Deaccenting is possible only when the negative/negated predicate (which may be either a main or auxiliary predicate) (i) is lexically accented on its penultimate mora, and (ii) occurs at the very end of the sentence, not followed by an(other) auxiliary or a discourse particle. (28), like (27), satisfies these conditions, and thus may undergo deaccenting (the form takasugimasen is canonically accented on /se/).

```
(28) Takasugimasen?
      expensive.excessively.Plt.Neg.Prs
      'Isn't (it) too expensive?'
                                                                     (positive bias)
      [takasugimaseN°] (rather than: [taksugimase'N])
```

Note that the predicate takasugimasen here cannot possibly undergo post-focal reduction, being the sole explicit constituent of the sentence. For both (27) and (28), the deaccented pronunciation is more common and perhaps more natural than the non-deaccented pronunciation. (21) and (22), on the other hand, are cases where deaccenting is impossible; in these cases, post-focal reduction is solely responsible for the disambiguation.

```
(29) (for (21))
```

- a. [tecuda'Qte] [kurena'kaQta]
- *[tecuda'Ote] [kurenakaOta°]

(30) (for (22))

- a. {[ama'ku]/[amaku°]} [na'i] [desu'ka]
- b. * ... [nai°] [desu'ka]
- c. * ... [na'i] [desuka°]
- d. * ... [nai°] [desuka°]

Oshima (2018: 288) suggests that deaccenting, which has been reported in the literature to be a phonological process having developed relatively recently, is motivated by the functional pressure to compensate for the limited reliability of the post-focal reduction as a means to prosodically single out the P-type. Sometimes, the negative/negated predicate in the P-type contains a focus, and thus cannot undergo post-focal reduction, as in (28). Also, as pointed out by Ishihara (2011, 2015), the effect of post-focal reduction could be relatively subtle when the minor phrase in focus is unaccented (i.e., does not carry an accent nucleus; see also Oshima 2018: 286–287).

While the two processes conjunctively make it possible to prosodically differentiate P-type interrogatives and their NN-type counterparts in a large range of cases, there remain configurations where neither can be applied, as in (25).

5.2 Further differences between the P-type and the NN-type

The P-type and NN-type contrast in terms of how the choice of a response particle (such as un 'yes' and iya 'no') is made in its reply, and also in terms of where the discourse auxiliary noun no may occur within them.

When the core proposition of the P-type holds, a positive-polarity response particle is chosen. When the core proposition of the NN-type holds, a negative-polarity response particle is chosen (Kuno 1973: 280, Ito and Oshima 2016: 233–234).

- (31) (in reply to positively biased (22))
 - a. Un. kekkô amai. yes quite sweet.Prs 'Yes, it is quite sweet.'
 - b. Iva, sore hodo amaku nai. that as sweet.Inf NegAux.Prs 'No. it is not that sweet.'
- (32) (in reply to negatively biased (23))
 - a. Iya, kekkô amai. no quite sweet.Prs 'No, it is quite sweet.'
 - b. Un, zenzen amaku nai. ves at.all sweet.Inf NegAux.Prs 'Yes, it is not sweet at all.'

The auxiliary no (often reduced to a moraic syllable-final nasal /N/) precedes the negation in the P-type, but follows it in the NN-type (Kuno 1973: 278, Ito and Oshima 2016: 237-238).

- (33) a. Amai nai desu ka? zya sweet.Prs no Cop.Inf NegAux.Prs PltAux.Prs DP 'Isn't it sweet?' (the P-type) b. Amaku nai desu ka?
 - sweet.Inf NegAux.Prs no Cop.Plt.Prs DP 'Is it not sweet?' (the NN-type)

The negation may be preceded by one instance of *no* and followed by another; in this case, only prosody makes disambiguation possible.

- (34) Amai n zya nai no? sweet.Prs no Cop.Inf NegAux.Prs no
 - (i) 'Isn't it sweet?' (the P-type; /nai(no)/ is tonally compressed)
 - (ii) 'Is it not sweet?' (the NN-type; /nai/ is not tonally compressed)

6 More on the meaning of the P-type negative polar interrogative

As discussed in Sections 3 and 4, the two kinds of English negative polar interrogatives (the outside-NEG and inside-NEG interrogatives) involve semantic complexities that go beyond the positive and negative epistemic biases. The same applies – to a greater extent – to the Japanese P-type and NN-types. In what follows, I elaborate on the meanings of and felicity conditions for them. Specifically, I argue the following points:

- (35) a. The P-type in its typical "positive bias" use, like the English outside-NEG interrogative, conveys not only that S is biased toward the positive answer (= P_c), but also that P_c is a "matter of interest" for H.
 - b. The P-type has two other uses besides the "positive bias" use. First, it can be used to convey that S suspects that $\mathbf{P}_{\rm c}$ might hold based on some information that is possibly unavailable to H. Second, it can be used to make a request or suggestion in a polite manner.
 - c. The NN-type on the "negative bias" interpretation not only conveys that S is biased toward the negative answer (= \mathbf{P}_r), but also conveys that either (i) S was previously biased toward \mathbf{P}_c but came to be biased toward \mathbf{P}_r in the discourse situation, or (ii) that S considers \mathbf{P}_r desirable.
 - d. The epistemic bias induced by the NN-type makes reference to what S expects H to believe, while that induced by the P-type does not.

In this section, I will take a close look on the semantic properties of P-type. In Section 7, I will turn to the NN-type.

6.1 The P-type and the "matter of interest" condition

In Section 3, it was discussed that an outside-NEG interrogative conveys that the speaker assumes that \mathbf{P}_c is likely to hold true, and furthermore is likely to be something that (i) should have been, or (ii) is already activated, in the hearer's mind.

This "matter of interest" condition carries over to the P-type in its positive-bias use. (37a), an unmarked polar interrogative, and (37b), which involves the discourse particle yone and has a meaning comparable to that of (9b)/(10b) (Oshima 2014; "↑↓" stands for the rise-fall intonation), are felicitous in situation (36a) as well as (36b). (37c), on the other hand, is unnatural in situation (36a) but is felicitous in (36b).

- (36) a. S needs some postage stamps. He thinks that the nearby convenience store should have them, but he is not completely sure. He goes to the living room and says to his wife . . . (cf. (9))
 - b. S's wife asks him if he can quickly drive to the post office to buy some postage stamps. He thinks that it will be easier to go to the nearby convenience store, but he is not completely sure if they have postage stamps. So, he asks her . . . (cf. (10))
- (37) a. Kitte tte konbini de mo utte postage.stamp Top convenience.store at also sell.Ger ru? NpfvAux.Prs
 - 'Do they sell postage stamps at convenience stores?'
 - b. Kitte tte konbini de mo utte postage.stamp Top convenience.store also sell.Ger ru yone↑↓ NpfvAux.Prs DP
 - 'They sell postage stamps at convenience stores, don't they?'
 - c. Kitte konbini tte de mo utte postage.stamp Top convenience.store at also sell.Ger nai?

NpfvAux.Neg.Prs

'Don't they sell postage stamps at convenience stores?' (P-type)

Also, P-type interrogative (38) is felicitous when it is situated in the same context as (11A₂).

(repeated; Situation: A and B are roommates. B comes back from a trip to an academic conference. A has previously heard from Ken, their mutual friend, that he was planning to attend the same conference.)

 A_1 : How was the conference?

It was pretty good. My talk went okay, and I got to talk to quite a few people.

A₂: Wasn't Ken there, too?

(38)Ken mo kite nakatta? also come.Ger NpfvAux.Neg.Pst K 'Wasn't Ken there, too?'

It can be shown that, for the felicitous use of the NN-type, the "matter of interest" condition is irrelevant. This is illustrated by the felicity of NN-type interrogative (39), uttered in a context where S cannot reasonably expect P_c or P_r to be something activated in H's mind or something that H should be paying attention to.

(Situation: The speaker checks his mailbox, and finds out that a post card that (39)she has sent to her friend Yamada did not reach him and has been returned. She asks her roommate, who also knows Yamada:)

Yamada-kun tte тô rvô ni sunde any.longer dorm Dat live.Ger hev Y.-HonT Top nai?

NpfvAux.Neg.Prs

'Hey, does Yamada not live in the dorm any longer?'

For further illustration, P-type interrogative (40b) is infelicitous in a similar "outof-blue" context.

- (Situation: The speaker wants to send a postcard to her friend Yamada. She knows that he lived in the dorm before, but is not certain if he still lives there. She asks her roommate, who also knows Yamada.)
 - Yamada-kun tte ima mo ryô ni sunde ru? Y.-HonT Top now also dorm Dat live.Ger NpfvAux.Prs 'Does Yamada still live in the dorm?
 - b. #Yamada-kun tte ima mo ryô ni sunde Y.-HonT Top now also dorm Dat live.Ger nai?

NpfvAux.Neg.Prs

'Doesn't Yamada still live in the dorm?'

6.2 The P-type and information gaps

The following example demonstrates that the P-type could be felicitous when the speaker's expectation of P_c 's holding true is quite low.

(41) (Situation: The speaker is looking for her friend Yamada. She has been informed that Yamada is visiting one of the 10 rooms on the second floor of the dorm, but does not know in which room he actually is. She decides to check the rooms one by one. She first goes to room #201, and asks the resident:)

```
Yamada-kun kite
hev
     Y.-HonT
                  come.Ger NpfvAux.Neg.Prs
'Hey, is Yamada here?'
```

In the described situation, the expected chance of Yamada's being in room #201 is a mere 10%; the speaker will likely be surprised by her good luck if the answer is "yes". Notably, in the same situation, an English negative polar interrogative ("Isn't Yamada here?") would be infelicitous.

- (42) illustrates the same point as (41); the estimated chance of the speaker's shirt being dirty is far below 50%, and yet the P-type interrogative is felicitous. 12
- (Situation: The speaker has 10 pieces of the same white shirt in her wardrobe. She randomly picks one of them and puts it on. Then, she recalls that one of the shirts had a stain on its back. She goes to her father, who is reading a newspaper in the living room, and asks:)

```
senaka, yogorete
Svatu no
                                        nai?
shirt
       Gen back
                     become.dirty.Ger NegAux.Prs
'Is the back of my shirt dirty?'
```

I suggest that the P-type interrogative has a use distinct from the "positive bias" use – the "information gap" use, to name it – on which it conveys that S suspects that \mathbf{P}_c might hold based on some information that is possibly unavailable to H. In (41), S finds it possible that Yamada is in room #201 on the basis of the information that Yamada is in some room on the second floor, and she assumes that this information may or may not be available to H. If Yamada is in room #201, the hearer would of course be aware that he is on the second floor. If not, the hearer would

¹² The NN-type counterpart of (42), string-identical to (42) but without tonal compression within nai, is appropriate too in the same context, because the "desirability" condition, to be discussed in Section 7.2, is met.

likely *not* be aware that he is on the second floor. In (42), the relevant information is that one of the speaker's shirts has a stain on its back and she might have put it on inadvertently. The effect of using the P-type interrogative in such a situation is similar to adding a phrase like: "You may be surprised by my asking this, but (is P_c the case?)" or "I have a reason to suspect that P_c is the case. (Now, is P_c the case?)". It preemptively justifies S's asking a question in a situation where H might think that it is unreasonable for her to even suspect that P_c holds. Indeed, in the contexts of (41)/(42), the corresponding positive (i.e. unmarked) polar interrogatives would sound a little abrupt and less natural.

It must be noted that one cannot dispense with the existence of the "positive bias" use. P-type interrogative (43) does not meet the contextual requirement for the "information gap" interpretation, and thus must be taken to receive the "positive bias" interpretation.

(43) (Situation: The speaker comes into her office, which she shares with her colleagues Yamada and Suzuki. Suzuki is sitting at his desk. Yamada is supposed to take a day off today, but she notices that Yamada's bag is on his chair. The bag is visible from Suzuki, too. She asks Suzuki:)

```
Are, Yamada-kun kite
                  come.Ger NpfvAux.Neg.Prs
οh
     Y.-HonT
'Oh, isn't Yamada here?'
```

It is not clear to me how the P-type interrogative acquired this second use, which the English outside-NEG interrogative lacks. One commonality of the two uses, however, can be pointed out; in both uses, the P-type interrogative indicates that the speaker's expectation of P_c 's holding true is higher than some reference point. In the first use, it indicates that the speaker estimates that the chance is high enough for \mathbf{P}_{c} to be "likely". In the second use, it indicates that the speaker estimates that the chance is above 0% when H might not find it reasonable for her to make such an estimate, and might have a reaction along the lines of: "Wait, why do you think that's even possible?".

6.3 The P-type as a means of making a request or suggestion

The P-type interrogative is commonly used to make a request or suggestion. (44a,b) can both be naturally interpreted as requests, but the negative version is said to sound more polite (Iori et al. 2001: 490; Nihongo Kijutsu Bunpoo Kenkyuukai 2007: 297-298).

(44) a. Tetudatte kureru? help.Ger BenAux.Prs 'Will you give me a hand?'

> b. Tetudatte kurenai? help.Ger BenAux.Neg.Prs 'Would you give me a hand?'

Note that for the "request" interpretation of (44a,b), the presence of the benefactive auxiliary KURERU is crucial. The potential form of another benefactive verb MORAU could instead be used, as in (45) (MORAU affects the linking pattern between syntactic and semantic arguments, mapping the beneficiary to the subject).

(45) a. Tetudatte moraeru? help.Ger BenAux.Pot.Prs 'Will you give me a hand?' [lit. 'Can I have you give me a hand?']

b. Tetudatte moraenai? help.Ger BenAux.Pot.Neg.Prs 'Would you give me a hand?' [lit. 'Can't I have you give me a hand?']

The "suggestion" use is illustrated in (46b). Both (46a,b) can be taken either as an inquiry about the hearer's plan or as a suggestion. However, the interpretation as a suggestion is more plausible with (46b) than with (46a) (Nihongo Kijutsu Bunpoo Kenkyuukai 2007: 296-297).

- (46) a. Kahwe, yotte iku? café stop.bv.Ger go.Prs 'Are you going to stop by the café?' (question) or 'How about stopping by the café?' (suggestion)
 - b. Kahwe, yotte ikanai? café stop.by.Ger go.Neg.Prs 'Aren't you going to stop by the café?' (question) or 'How about stopping by the café?' (suggestion)

When being interpreted as suggestions, (46a) and (46b) do not seem to differ much in terms of the degree of politeness.

The sentences in (47)–(49), which literally inquire about possession, existence, and knowledge, can be regarded as variants of P-type interrogatives as requests.

- (47) a. Zisyo nai? motte dictionary have.Ger NpfvAux.Neg.Prs 'Do you have a dictionary? (If so, please let me use it.)'
 - b. Gamu toka motte nai? gum for.example have.Ger NpfvAux.Neg.Prs 'Do you have a gum or something? (If so, please spare me some.)'
- (48) Kimi no tokoro ni dareka Supein-go ga vou Gen place Dat somebody Spain-language Nom wakaru hito understand.Prs person exist.Neg.Prs 'Is there anybody who understands Spanish in your section? (If so, tell me who it is.)'
- (49) Dareka Supein-go ga wakaru hito Spain-language Nom understand.Prs person somebody siranai? know.Neg.Prs 'Do you know anybody who understands Spanish? (If so, tell me who it is.)'

(47a,b) are likely interpreted as utterances requesting the hearer to let the speaker use or consume an item. In a similar vein, interrogatives like (48)/(49) are usually taken to ask the hearer to do more than just answering with "yes" or "no" (telling the speaker who speaks Spanish, introducing that person to her, etc.). In each case, the corresponding positive polar interrogative could have the same illocutionary effect, but the use of the P-type highlights the "request" interpretation.

It is interesting to note that in English, it is not common to use the (outside-NEG) negative polar interrogative for the purpose of making a request/suggestion, although such usage does exist (e.g., "Won't you have a cup of tea {too/*either}?"; Leech 2014: 155–156). I will leave the questions of (i) how the P-type interrogative acquired its use as a device to make a request/suggestion (and why the English outside-NEG interrogative is not commonly used in this way) and (ii) how this use is related to the other uses, to future research.

7 More on the meaning of the NN-type negative polar interrogative

7.1 The NN-type and the "on the spot" condition

As discussed in Section 4.1, the inside-NEG interrogative on the negative-bias (as opposed to neutral) interpretation conveys not only that the speaker is biased toward P_n but also that she previously had a positive bias (i.e. a bias toward $-P_n$) and the negative bias has been formed in the discourse situation, overriding this positive bias.

The Japanese NN-type interrogative on the negative-bias interpretation may (but does not always; see Section 7.2 below) convey the same information. To illustrate, the NN-type interrogative in (50) is felicitous while the one in (51) is not; note that in the context of (51), the negative bias has been present since prior to the discourse.

(50) (Situation: On most days, a doughnut wagon comes to the park near the office where A and B work. One afternoon, A says to B: "Let's take a break. I'll go get us some doughnuts." A few minutes later, A comes back with a bag of corn chips, instead of doughnuts, in his hand. B asks A:)

Dônatu-ya-san, kite (i)nakatta? doughnut-seller-HonT come.Ger NpfvAux.Neg.Pst 'Wasn't the doughnut vendor there?'

(51) (Situation: A and B work in the same office. On most days, in the lunch break A goes to a hotdog wagon in the nearby park and eats a hotdog on a park bench. B has heard the rumor that the hotdog vendor has been ill. When A comes back to the office after the lunch break, B asks A:)

#Hottodoggu-ya-san, kite (i)nakatta? hotdog-seller-HonT come.Ger NpfvAux.Neg.Pst 'Wasn't the hotdog vendor there?'

The Japanese data shown above leave open the possibility that a negatively-biased NN-type interrogative only conveys that the bias toward P_r is formed on the spot, but does not convey that S was previously biased toward the opposite direction. The contrast between (52b) and (53b), however, shows that the existence of a previous expectation is an indispensable component of the meaning of the NN-type.

- (Situation: A and B are roommates. After having dinner together, they always (52)roll a die to decide who washes the dishes. An odd number means that A does the dishes, and an even number means that B does the dishes. Today, A rolls a die, and he grins. B asks:)
 - a. Gûsû datta? even.number Cop.Pst 'Was it an even number?'
 - b. #Kisû nakatta? zya odd.number Cop.Inf NegAux.Pst 'Was it not an odd number?'

(negative bias)

- (Situation: A and B have made an unfair die that is supposed to always show an odd number. After rolling it to test it, A shows a disappointed look. B asks:)
 - a. Gûsû datta? even.number Cop.Pst 'Was it an even number?'
 - b. Kisû zya nakatta? odd.number Cop.Inf NegAux.Pst 'Was it not an odd number?'

(negative bias)

7.2 The NN-type and desirability

The "inference on the spot" condition discussed above is not a necessary condition for the felicitous use of an NN-type interrogative on its negative-bias interpretation. The NN-type can also be used when the speaker considers P_r likely and desirable, or in other words, when the speaker is biased toward P_r both epistemically and bouletically. This point is illustrated by (54), where the speaker finds it desirable that it is not raining, and (55), where the speaker finds it desirable that the cookies do not contain peanut.

(**Situation**: A and B have been working all day in a room without a window. They hope that it is not raining. They believe that it is unlikely to be raining now on the basis of what they heard in the morning weather forecast, but still are worried that it might. Around 2 p.m., A goes out to check the weather and comes back. B asks A:)

(i)nakatta? Dô? Hutte how fall.Ger NpfvAux.Neg.Pst

'How was it? Was it raining?' [lit. 'Was it not raining?]

(NN-type)

(55) (Situation: A gives his colleague B a box of cookies as a gift from his trip to Europe. B is allergic to peanut, and believes that the cookies are unlikely to contain peanut. B thanks A, and then asks:)

```
Kore, pînattu haitte
                           (i)nai?
This
       peanut enter.Ger NpfvAux.Prs
'Does this contain peanut?' [lit. 'Does this not contain peanut?]
                                                                 (NN-type)
```

It must be noted that the desirability alone is not a sufficient condition of the felicitous use of the NN-type. In the context of (54), interlocutor A would not use the NN-type interrogative if he thought it was likely to be raining, e.g., having heard in the morning weather forecast that the chance of rain around 2 p.m. was 80%. If this were the case, the speaker would rather use the positive polar interrogative (56), or the P-type interrogative string-identical to (54) but with tonal compression within /(i)nakaQta/.¹³

```
(56) Dô? Hutte
                    (i)ta?
     how fall.Ger NpfvAux.Pst
     'How was it? Was it raining?'
```

It is interesting to ask how, historically, the factor of desirability became part of the (disjunctive) meaning of the NN-type. A plausible functional motivation is language users' general inclination to avoid expressing or describing undesirable situations, especially when such situations are only possible or speculated rather than are known to be true. (For a Yankees fan, it will be more pleasant to say or hear that the Yankees have a 50% chance of winning than that they have a 50% chance of {losing/ not winning}.) Having an option of using a negated clause in situations like (54) and (55) can be seen as an advantage, in that it allows speakers to use a sentence radical expressing a "happier thought" than when using a corresponding unmarked polar interrogative.

In sum, there are three kinds of discourse situations in which the NN-type can be naturally used. First, it can receive the neutral interpretation when the meaning of the negated predicate or clause is contextually prominent (the neutral interpretation). Second, it can convey that the speaker considers \mathbf{P}_r to be likely, and that this

¹³ NN-type interrogative (i), on the other hand, would be inappropriate, because, while S finds P_r likely to be true, neither the "inference on the spot" condition nor the desirability condition is met.

⁽i) Dô? (i)nakatta? how get.sunny.Ger NpfvAux.Neg.Pst 'How was it? Was it not sunny?'

epistemic bias has been formed in the discourse situation, overriding a previous bias toward $\neg P_r$. Third, it can convey that the speaker considers P_r both likely and desirable.

7.3 Truth vs. accepted truth, again

It was discussed in Section 4.2 that the inside-NEG interrogative contrasts with the outside-NEG interrogative (as well as the rising tag-interrogative) in that the bias conveyed by the former makes reference to the speaker's assumptions (expectations) about the hearer's beliefs, while the bias conveyed by the latter does not.

The Japanese P- and NN-types exhibit a parallel difference. (57), a P-type interrogative, is felicitous when it is situated in the same context as the first sentence in (15S).

(57) (in reply to: "My sister really should stop lazing around and get a job.") Onêsan ni kibisisugi zya nai? elder.sister Dat harsh.excessively Cop.Inf NegAux.Prs 'Aren't you too harsh on your elder sister?'

P-type interrogatives (58a,b) are felicitous, but NN-type interrogative (58c) is infelicitous, in the situation described in (16).

- (58) (Situation: S and H are organizing an academic colloquium. On the day before the colloquium, H shows S the room that he has arranged. S expected H to choose a larger room, and thinks that the arranged room will be too small to accommodate the audience. S says:)
 - Kono heya wa semasugi nai? zya small.excessively Cop.Inf NegAux.Prs room Th 'Isn't this room too small?' (P-type; the accent within *nai* may be obliterated)
 - b. Kono heya wa zyûbun hiroku naku nai? sufficiently large.Inf NegAux.Inf NegAux.Prs room Th 'Isn't this not sufficiently large?' (P-type; the accent within *nai* may be obliterated)
 - hiroku c. #Kono heya wa zyûbun nai? this room Th sufficiently large.Inf NegAux.Prs 'Is this room not sufficiently large?' (NN-type; the accent fall within nai is fully retained)

8 Degrees of likelihood

It has been discussed above that English negative polar interrogatives come in two major varieties (outside-NEG and inside-NEG), and so do Japanese ones (P-type and NN-type. All of them may (but do not necessarily) convey an epistemic bias, and that their meanings involve a good deal of additional complexities including the "matter of interest" condition applied to the outside-NEG interrogative and P-type interrogative, and the "inference on the spot" condition relevant to the inside-NEG interrogative and the NN-type interrogative.

A further question that is worth addressing is: How strong are the biases conveyed by them? Lassiter (2017) argues that markers of epistemic modality, including the auxiliaries must and might, indicate that the likelihood (probability) of the semantically embedded proposition's holding true is above some threshold value. More specifically, he proposes that the threshold values associated with *might*, must, possible, likely, and certain are ordered as in (59), and that each marker indicates that the likelihood of the embedded proposition exceeds its threshold value θ .

(59)
$$\theta_{possible} < \theta_{might} < \theta_{likely} < \theta_{must} < \theta_{certain}$$
 (Lassiter 2017: 152)

The relative order between might and likely, for example, can be confirmed by observing the contrast between (60) and (61).

- (**Situation**: The estimated chances of John's being in {his office/the library/ the cafeteria} are {60%/20%/20%} respectively.)
 - a. John might be in his office.
 - b. John is likely to be in his office.
- (**Situation**: The estimated chances of John's being in {his office/the library/ the cafeteria} are {30%/30%/40%} respectively.)
 - a. John might be in his office.
 - b. #John is likely to be in his office.

In a similar vein, it can be confirmed (i) that the outside- and inside-NEG negative polar interrogatives convey a weaker bias than the rising tag-interrogative and (ii) that the the P- and NN-type negative polar interrogatives convey a weaker bias than the biased interrogative formed with discourse particle yone (accompanied by the rise-fall intonation; Section 6.1).

- (62) (Situation: A goes to Ken's office to see if he is back. B estimates the chance of Ken's being there is about 95%. A comes back, and B asks:)
 - Wasn't he back already? (outside-NEG)
 - a' Modotte kite nakatta? return.Ger come.Ger NpfvAux.Neg.Pst 'Hasn't he come back?' (P-type)
 - b. He was back already, wasn't he? (rising tag)
 - h'. Modotte kite ta yone[↑]↓ return.Ger come.Ger NpfvAux.Neg.Pst DP 'He has come back, hasn't he?'
- (63) (Situation: A goes to Ken's office to see if he is back. B estimates the chance of Ken's being there is about 75%. A comes back, and B asks:)
 - Wasn't he back already? (outside-NEG)
 - a'. Modotte kite nakatta? return.Ger come.Ger NpfvAux.Neg.Pst 'Hasn't he come back?' (P-type)
 - #He was back already, wasn't he? (rising tag)
 - b'. #Modotte kite vone↑↓ return.Ger come.Ger NpfvAux.Neg.Pst DP 'He has come back, hasn't he?'
- (64) (Situation: A and B know that Ken eats meat very infrequently at most a couple of times a year. B notices that there is a sandwich on the table, and asks A whose it is. A tells B: "I bought it for Ken, but I was told he cannot come. You can eat it, if you like". B says:)
 - Doesn't this have any meat in it, then? (inside-NEG)
 - a': *Zyâ*, kore, niku wa haitte nai? then this meat Th enter.Ger NpfvAux.Prs 'So, doesn't this have any meat?' (NN-type)
 - b. It doesn't have any meat in it, then, does it? (rising tag)
 - b': *Z*ν*â*. kore, niku wa haitte nai yone↑↓ then this meat Th enter.Ger NpfvAux.Prs DP 'So, it doesn't have any meat, does it?'

- (65) (Situation: A and B know that Ken eats meat sparingly about once or twice a week. B notices that there is a sandwich on the table, and asks A whose it is. A tells B: "I bought it for Ken, but I was told he cannot come. You can eat it, if you like". B says:)
 - Doesn't this have any meat in it, then?

(inside-NEG)

- a'. Zvâ. kore. niku wa haitte nai? then this meat Th enter.Ger NpfvAux.Prs 'So, doesn't this have any meat?' (NN-type)
- #Then it doesn't have any meat in it, does it?

(rising tag)

niku b': #Zyâ, kore. wa haitte vone↑↓ then this meat Th enter.Ger NpfvAux.Prs DP 'So, it doesn't have any meat, does it?'

This suggests that negative polar interrogatives are associated with some threshold value in the "medium-high" zone, perhaps comparable to that for *likely* (θ_{likely}), while the rising tag-interrogative construction and the discourse particle yone accompanied by a rise-fall contour are associated with a higher threshold value, perhaps comparable to that for *must* (θ_{must}). To identify the exact strength(es) of the biases induced by different types of negative polar interrogatives (the outside-NEG/ inside-NEG types and the P/NN-types) in comparison to each other, and to a fuller range of modal expressions and biased interrogatives, is a task that calls for careful and systematic investigations and that I leave to future research.

9 Summary and conclusion

The characteristics of the two major types of negative polar interrogatives in English, the outside-NEG and inside-NEG interrogatives, and those of the two major types of negative polar interrogatives in Japanese, the P- and NN-types, are summarized in Tables 2 and 3.

Table 2: Summary of the contrasting properties of the two types of English negative polar interrogatives.

	outside-NEG	inside-NEG
What is the direction of epistemic bias (when such is conveyed)?	positive	negative
Does an opposite bias have to exist prior to the discourse?	no	yes
Does the core proposition need to be a "matter of interest" for the hearer?	yes	no
Does the bias make reference to what the speaker expects the hearer to believe?	no	yes
PPI licensing possible?	yes	no
NPI licensing possible?	no	yes
other uses	request/suggestion (not common)	neutral question (possible only with a non-preposed negation)

Table 3: Summary of the contrasting properties of the two types of Japanese negative polar
 interrogatives.

	P-type	NN-type
What is the direction of epistemic bias (when such is conveyed)?	positive	negative
Does an opposite bias have to exist prior to the discourse?	no	yes, unless the "desirability" condition is met instead
Does the core proposition need to be "a matter of interest" for the hearer?	yes	no
Does the bias make reference to what the speaker expects the hearer to believe?	no	yes
PPI licensing possible?	yes	no
NPI licensing possible?	no	yes
What is the distributional relation between the negation and the auxiliary no?	<i>No</i> is followed by the negation.	<i>No</i> follows the negation.

			_									
Tal	hl	Δ	2	1	_	^	n	ti	in	111	'n,	١

	P-type	NN-type		
Does it involve accent obliteration?	yes, under certain phonological circumstances	no		
other uses	(i) "information gap" use, (ii) request/ suggestion use	neutral question		
the information-structural status of the negation	ground	focus		

It is interesting to observe that the two languages, despite not being genetically related, share the following features.

- (66) a. A negative polar interrogative may convey a positive or negative epistemic bias, or conveys no epistemic bias.
 - b. Negative polar interrogatives conveying a positive epistemic bias pattern differently from regular negative clauses in terms of licensing of polarity items (PPIs and NPIs).
 - c. The meaning of a positively biased negative polar interrogative involves the "matter of interest" condition.
 - d. The meaning of a negatively biased negative polar interrogative involves the "inference on the spot" condition as well as reference to the hearer's beliefs.

They, on the other hand, exhibit some significant differences including the following.

- (67) a. In Japanese, the positive-bias/negative-bias ambiguity is more systematically resolved by prosody or structure than in English.
 - b. The negative polarity interrogative in Japanese, but not that in English, has an "information gap" use.
 - c. In Japanese, the negative polarity interrogative is more commonly used to make a request or suggestion than in English.
 - d. The meaning of a negatively biased negative polar interrogative in Japanese involves the desirability of the expressed proposition.

These observations contribute to a better understanding of how the ways negative polar interrogatives are used may vary across languages.

It is interesting to ask whether the correlation between (i) the informationstructural status of the negation and (ii) the direction of the bias is observed in negative polar interrogatives in languages other than Japanese. One may hypothesize, for example, that the English outside-NEG and inside-NEG interrogatives have a parallel information-structural contrast, which may be reflected in some suprasegmental phonological features, such as placement of pitch accents (see Reese 2007: 116-117 for some relevant suggestions). I leave it to future research to investigate this matter.

References

- Adachi, Taro. 1999. Nihongo Gimonbun-niokeru Handan-no Shosoo [Aspects of judgments in Japanese interrogatives]. Tokyo: Kurosio Publishers.
- DeLancey, Scott. 1997. Mirativity: The grammatical marking of unexpected information. Linguistic Typology 1. 33-52.
- DeLancey, Scott. 2001. The mirative and evidentiality. Journal of Pragmatics 33. 369–382.
- Farkas, Donka F. & Floris Roelofsen. 2017. Division of labor in the interpretation of declaratives and interrogatives. Journal of Semantics 34(2), 237-289.
- Filippo, Domaneschi, Maribel Romero & Bettina Braun. 2017. Bias in polar questions: Evidence from English and German production experiments. Glossa: a journal of general linguistics 2(1). 26. 1–28. https://doi.org/10.5334/gjgl.27
- Huddleston, Rodney & Geoffrey K. Pullum (eds.). 2002. The Cambridge Grammar of the English Language. Cambridge: Cambridge University Press.
- Igarashi, Yosuke. 2015. Intonation. In Haruo Kubozono (ed.), Handbook of Japanese Phonetics and Phonology, 525–568. Berlin: Walter de Gruyter.
- Iori, Isao, Shino Takanashi, Kumiko Nakanishi & Toshihiro Yamada. 2001. Chuujookyuu-o Oshieru Hito-no-tame-no Nihongo Bunpoo Handobukku [A handbook of the Japanese grammar for teachers of intermediate/advanced classes]. Tokyo: 3A Corporation.
- Ishihara, Shinichiro. 2011. Focus prosody in Tokyo Japanese wh-questions with lexically unaccented wh-phrases. In Wai Sum Lee & Eric Zee (eds.), Proceedings of the 17th International Congress of Phonetic Science (ICPhS XVII): August 17–21, 2011, 946–949. Hong Kong: City University of Hong Kong.
- Ishihara, Shinichiro. 2015. Syntax-phonology interface. In Haruo Kubozono (ed.), Handbook of Japanese Phonetics and Phonology, 569–618. Berlin: Walter de Gruyter.
- Ito, Satoshi & Hyun Kyung Hwang. 2015. Correlation between prosody and epistemic bias of negative polar interrogatives in Japanese. In Nick Campbell, Dafydd Gibbon & Daniel Hirst (eds.), Proceedings of the 7th International Conference on Speech Prosody, 925–928. Dublin: International Speech Communication Association.
- Ito, Satoshi & David Y. Oshima. 2016. On two varieties of negative polar interrogatives in Japanese. In Michael Kenstowicz, Ted Levin & Ryo Masuda (eds.), Japanese/Korean Linguistics, vol. 23, 229-243. Stanford: CSLI Publications.

- Kori, Shiro. 1997. Nihongo-no intoneeshon: Kata-to kinoo [Intonation in Japanese: patterns and functions]. In Tetsuva Kunihiro, Haiime Hirose & Morio Kono (eds.), Akusento, Intoneeshon. Rizumu-to Poozu [Accent, intonation, rhythm, and pause], 169–202. Tokyo: Sanseido.
- Krifka, Manfred. 2017. Negated polarity questions as denegations of assertions. In Chungmin Lee, Ferenc Kiefer & Manfred Krifka (eds.), Contrastiveness in Information Structure, Alternatives and Scalar Implicatures, 359–398. New York: Springer.
- Kuno, Susumu. 1973. The Structure of the Japanese Language. Cambridge, MA: MIT Press.
- Ladd, D. Robert. 1981. A first look at the semantics and pragmatics of negative questions and tag questions. In Roberta A. Hendrick, Carrie S. Masek, Mary Frances Miller (eds.), Papers from the 17th Regional Meeting of the Chicago Linguistic Society, 164–171. Chicago: Chicago Linguistic Society.
- Lassiter, Daniel, 2017, Graded Modality: Qualitative and Quantitative Perspectives, Oxford: Oxford University Press.
- Leech, Geoffrey. 2014. The Pragmatics of Politeness. Oxford: Oxford University Press.
- McCawley, James D. 1988. The Syntactic Phenomena in English, vol. 2. Chicago: University of Chicago
- Nihongo Kijutsu Bunpoo Kenkyuukai (eds.). 2007. Gendai Nihongo Bunpoo [A contemporary Japanese grammar], vol. 3. Tokyo: Kurosio Publishers.
- Oshima, David Y. 2014. On the functional differences between the discourse particles ne and vone in Japanese. In Wirote Aroonmanakun, Prachya Boonkwan & Thepchai Supnithi (eds.), Proceedings of the 28th Pacific Asia Conference on Language, Information and Computation, 442–451. Bangkok: Department of Linguistics, Chulalongkorn University.
- Oshima, David Y. 2016. The meanings of perspectival verbs and their implications on the taxonomy of projective content/conventional implicature. In Mary Moroney, Carol-Rose Little, Jacob Collard & Dan Burgdorf (eds.), Proceedings of Semantics and Linguistic Theory 26, 43-60. Washington, DC: Linguistic Society of America.
- Oshima, David Y. 2017. Remarks on epistemically biased questions. In Rachel Edita Roxas (ed.), Proceedings of the 31st Pacific Asia Conference on Language, Information and Computation, 169–177. Cebu City: National University Philippines.
- Oshima, David Y. 2018. The prosody of positively biased negative polar interrogatives in Japanese: Post-focal reduction or deaccenting? In Daniel Edmiston, Marina Ermolaeva, Emre Hakgüder, Jackie Lai, Kathryn Montemurro, Brandon Rhodes, Amara Sankhagowit & Michael Tabatowski (eds.), Proceedings of the 53rd Annual Meeting of the Chicago Linguistic Society, 275–289. Chicago: Chicago Linguistic Society.
- Reese, Brian J. 2007. Bias in Questions. Austin: University of Texas dissertation.
- Romero, M. 2005. Two approaches to biased yes/no questions. In John Alderete, Chung-hye Han & Alexei Kochetov (eds.), Proceedings of the 24th West Coast Conference on Formal Linguistics, 352-360. Somerville: Cascadilla Press.
- Romero, Maribel & Chunq-hye Han. 2004. On negative "yes/no" questions. Linquistics and Philosophy 27.609-658.
- Shioda, Takehiro. 2016. Dooshi/keiyooshi-no akusento-o meguru genkyoo: susumu ikkeika [The current situation of the accent patterns of verbs and adjectives: the advancement of unification]. The NHK Monthly Report on Broadcast Research 66(8). 82-96.
- Sugahara, Mariko. 2003. Downtrends and Post-Focus Intonation in Tokyo Japanese. Amherst: University of Massachusetts dissertation.
- Tanomura, Tadaharu. 1988. Hitei qimonbun shookoo [On negative questions in modern Japanese]. Kokuqoqaku 152. 109-123.

Tonhauser, Judith, David Beaver, Craige Roberts & Mandy Simons. 2013. Toward a taxonomy of projective content. Language 89(1). 66–109.

van Rooy, Robert & Marie Šafářová. 2003. On polar questions. In Robert B. Young and Yuping Zhou (eds.), Proceedings of Semantics and Linguistic Theory 13, 292–309. Ithaka: Cornell University.

Vance, Timothy J. 2008. The Sounds of Japanese. Cambridge: Cambridge University Press.

Venditti, Jennifer J. 2005. The J_ToBI model of Japanese intonation. In Sun-Ah Jun (ed.), *Prosodic Typology: The Phonology of Intonation and Phrasing*, 172–200. Oxford: Oxford University Press.

Osamu Sawada

Chapter 10 The polarity sensitivity of reactive intensifiers in Japanese and English

1 Introduction

Intensifiers are pervasive in language and play an important role in conveying information about degree. However, there are many different types of intensifiers, and their meanings and polarity sensitivities are complex. Even if they appear to be the same word, they can have different meanings and distributional patterns.

For example, the Japanese intensifiers *totemo* 'very' and *zenzen* 'at all' have intensification meaning and usually (as normal intensifiers) serve as a positive polarity item (PPI) and a negative polarity item (NPI), respectively:

- (1) a. Kono hon-wa totemo {omosiroi /*omosiroku-nai}.

 this book-TOP very interesting / interesting-NEG

 'lit. This book is {very interesting/not very interesting}.'
 - b. Okane-ga zenzen {nai /*aru}.
 money-NOM at all NEG.exist /exist
 'lit. I {don't have/have} money at all.'

Totemo in (1a) is a PPI because the sentence becomes unnatural if there is a negative marker *nai*. In contrast, *zenzen* in (1b) is an NPI because it cannot appear in a positive environment.

Acknowledgements: I am very grateful to Patrick Elliot, Thomas Grano, Harumi Sawada, Jun Sawada, Stephanie Solt, Koji Sugisaki, and the reviewers for their valuable comments and suggestions. This study is based on work supported by the JSPS KAKENHI (Grant numbers JP21K00525, JP22K00554) and NINJAL collaborative research project 'Evidence-based Theoretical and Typological Linguistics'. All remaining errors are of course my own.

¹ In the seminal work in this field, Bolinger (1972) uses the term "intensifier" for any device that scales a quality, whether up or down or somewhere between the two. He then distinguishes four classes of intensifiers according to the region of the scale that they occupy, that is, boosters (upper part of scale; e.g., perfect, terribly), compromisers (middle of the scale; e.g., rather, fairly), diminishers (lower part of the scale; e.g., a little) and minimizers (lower end of the scale; e.g., a bit, an iota). In this paper, I use the term "intensifier" for expressions that indicate that a target has a high degree on a scale.

However, *totemo* and *zenzen* have discourse usages whose distributional patterns are from the opposite of those of *totemo/zenzen* in (1) in terms of polarity. *Totemo* is used in a negative environment, while *zenzen* is used in a positive environment, as shown below:

- (2) A: Asita-made.ni siage-ru koto-wa deki-masu-ka? tomorrow-by finish-Non.PST NMLZ-TOP can-PRED.POLITE-Q 'Can you finish it by tomorrow?'
 - B: Asita-made.ni siage-ru-nado watasi-ni-wa totemo tomorrow-by finish-Non.PST-EVAL I-to-TOP TOTEMO deki-masen.

 can-NEG.POLITE

 'Finishing it by tomorrow is impossible.'
 - (Implication: I am emphasizing the impossibility.)
- (3) A: Kaoiro warui-kedo daijoobu-desu-ka? face.color bad-but OK-PRED.POLITE-Q 'You look pale. Are you OK?'
 - B: Zenzen daijoobu-desu.

 ZENZEN OK-PRED.POLITE
 'I am zenzen OK.'

The crucial point is that totemo in (2) and zenzen in (3) are used in a reactive fashion. Building on the discussions of totemo and zenzen in Sawada (2017, 2019) and related studies, I will argue in Sections 2 and 3 that although both the regular non-reactive uses and reactive uses share the same scalar meaning, their distribution patterns are quite different and we need to posit the discourse sensitivity to explain the distributions. That is, reactive totemo (=2B) intensifies the degree of impossibility of a given proposition p in the context where p is expected; in addition, the reactive zenzen (=3B) appears in a positive environment and intensifies the degree of gradable predicate P in situations where P is not expected to be true with respect to the individual in question.

I will propose that there is a polarity item – a reactive polarity item in natural language – whose meanings and uses are different from ordinary polarity items.

I provide a concise definition by descriptively defining the term reactive polarity item as follows:2,3

(4) Definition of reactive polarity item (descriptive): A reactive polarity item is an item whose meaning refers to the prior discourse or expectations of the interlocutors and whose distribution is thus constrained by the discourse.

Although it may seem that polarity items with reactive characteristics are idiosyncratic phenomena specific to Japanese totemo and zenzen, this paper argues that reactive polarity items also exist in English. In Section 4, I will show that English possibly has both a speaker-oriented adverb (e.g., Ernst 2009) and an intensifier use (Greenbaum 1969), and the former behaves as a regular PPI, while the latter behaves as a reactive NPI:

It has been argued that the intensifier use of can't possibly is an instance of modal concord (e.g., Anand and Brasoveanu 2010; Huitink 2012). Following Grosz (2010), I will argue that modal concord is a phenomenon of degree modification; I will argue that possibly is an expressive NPI intensifier, which intensifies the degree of can't under the situation where the at-issue proposition p (without a negative modal) is expected, similar to the case of the Japanese reactive NPI totemo.

In Section 5, I will also show that the English totally displays a similar phenomenon. There are two uses of totally: the semantic and pragmatic uses (Irwin 2014; Beltrama 2018). The semantic totally is neutral in terms of polarity in that it can appear both in the positive and negative environments, while pragmatic totally is a PPI; when it receives a pitch accent, it is used in a reactive fashion (Irwin 2014; Beltrama 2018):

(6) a. (Semantic *totally*) The glass is (not) totally full.

² I thank Stephanie Solt for the valuable comment regarding the descriptive definition.

³ Sawada (2021) introduces the notion of reactive attitudinal NPIs. He argues that it has the pragmatic function of an objection to a proposition that is salient in discourse or utterance situation. Reactive attitudinal NPIs can be considered a subtype of reactive polarity items.

b. (Pragmatic *totally*)

John: Luke didn't get married at 25.

Kim: No! What are you talking about! He TOTALLY got married at 25.

(Beltrama 2018: 31)

At the end of Section 5, I will compare pragmatic totally (with a pitch accent) with Japanese reactive zenzen and show that although they differ in terms of modification structure and distribution patterns, they are similar in terms of discourse moves.

This paper clarifies that there are discourse-sensitive polarity items whose distribution patterns are not constrained by syntactic or semantic mechanisms (e.g., Ladusaw 1980; Giannakidou 1998) but rather by expression-specific reactive functions.

2 Japanese totemo

In this section, we first investigate the two types of Japanese intensifier totemo: the ordinary semantic totemo and the reactive attitudinal (discourse-oriented) totemo, and clarify their meanings/uses and polarity sensitivity.

2.1 The ordinary intensifier *totemo* (property intensifying use)

The regular semantic totemo can combine with various kinds of gradable predicates to intensify their degrees at the at-issue (semantic level):

- (7) a. Kono kooen-wa totemo hiroi. this park-TOP very large 'This park is very large.'
 - b. Kono syoosetu-wa totemo omosiroi. this novel-TOP interesting very 'This novel is very large.'

The meaning of ordinary totemo is at-issue because a denial can target the meaning triggered by the ordinary semantic totemo:

- (8) A: Anata-no heya totemo hiroi-desu-ne. large-PRED.POLITE-PRT vou-GEN room verv 'Your room is very large, isn't it?'
 - B: Iva totemo hiroi-wake.de.wa.nai-desu. large-it.is.not.the.case.that Nο very 'No, it is not very large.'

Here B is challenging A's idea that the room is very large.

In terms of polarity sensitivity, this kind of totemo serves as a PPI in that it cannot appear in the corresponding negative sentence:

- (9) a. *Kono kooen-wa totemo hiroku-nai. park-TOP very large-NEG 'lit. This park is not very large.'
 - b. *Kono syoosetu-wa totemo omosiroku-nai. this novel-TOP verv interesting-NEG 'lit. This novel is not very interesting.'

It is important to note that regular semantic totemo can appear in a negative sentence if there is a contrastive wa or if the negation is the external negation wake. dewa.nai 'it is not the case that' as given above:

- (10) a. Kono kooen-wa totemo hiroku-wa nai. this park-TOP very large-CONT NEG 'This park is not [very large]_{CT}.'
 - b. Kono svoosetu-wa totemo omosiroku-wa nai. this novel-TOP verv interesting-CONT NEG 'This novel is not [very interesting]_{CT}.'
- (11) a. Kono kooen-wa totemo horoi-wake.dewa.nai. park-TOP very this large-it.is.not.the.case.that 'It is not the case that this park is very large.'
 - syoosetu-wa totemo omosiroi-wake.dewa.nai. b. Kono this novel-TOP interesting-it.is.not.the.case.that verv 'It is not the case that this novel is very interesting.'

This tendency is generally observed among PPIs. As Szabolcsi (2004) observes, some PPI can occur within the immediate scope of clausemate negation if the latter is construed as an emphatic denial:

(12) He found something. Wrong! He DIDn't / DID NOT find something.

 $(\sqrt{not} > some)$ (Szabolcsi 2004: 413)

As Szabolcsi also mentions, emphatic denial in (12) can be analyzed as metalinguistic negation (e.g., Horn 1989) in that the speaker is correcting an (existing) assumption. This is also true for (10) and (11) in Japanese. For example, sentences (10a) and (11a) are natural in a situation where someone says that the park is very large and the speaker is negating/correcting the person's description that it is very large.

Let us now analyze the meaning of semantic totemo formally based on example (7a). I assume that semantic totemo has the following meaning (As for type, e is the type of entity, t is the type of truth value, i is the type of time, s is the type of world, G^a is an abbreviation for type $\langle d^a, \langle e^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle$, and d is a type for degree. The superscript a stands for an at-issue type. This type is used to calculate an at-issue meaning, and as we will see below, it is distinct from the type for conventional implicature):

- (13) (Semantic *totemo*)
 - a. $[totemo_{SEM}]: \langle G^a, \langle e^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle$ = $\lambda G \lambda x \lambda t \lambda w$. $\exists d[d>!!STAND_G \wedge G(d)(x)(t)(w)]$
 - b. The function of *totemo_{SEM}*: emphasis

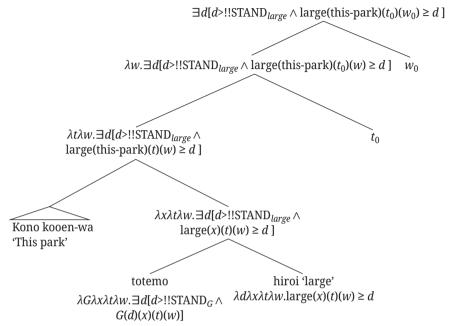
The semantic *totemo* denotes that the degree of target *x*, with respect to the scale associated with G, is much greater than a standard at t in w. ">!!STAND" means "much greater than a standard" (Kennedy and McNally 2005). Note that in this paper, I assume that semantic totemo lexically specifies that it has a function of emphasis. This explains why negation does not appear. If totemo co-occurs with negation, the sentence becomes unemphatic, with mismatch between totemo's function and the entire sentence. This is different from the NPIs amari 'all that' and sonnani 'all that', which have a high scalar meaning (just like semantic totemo), but are used in the negation context and have the pragmatic function of attenuation/ understating in the sense of Israel (1996, 2004).

Compositionally, semantic *totemo* combines with a regular gradable predicate. Regarding the meaning of this gradable predicate, I posit that it represents the relationships between individuals and degrees (e.g., Kennedy and McNally 2005):

```
(14) [hiroi]: \langle d^a, \langle e^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle
                = \lambda d\lambda x \lambda t \lambda w. \text{large}(x)(t)(w) \ge d
```

In this approach, we can analyze the meaning of (7a) as follows:

(15) Logical structure of (7a)



Regarding tense and world, in this paper I will treat them as pronouns on par with individuals (Hacquard 2006; Percus 2000).

2.2 The expressive property of the reactive negative totemo

Let us now focus on reactive negative totemo, which is fundamentally different from the regular intensifier totemo in that it must co-occur with a negative modal:

(16) Sonna koto-wa boku-ni-wa totemo {deki-nai/*deki-ru}. such thing-TOP I-to-TOP TOTEMO can-NEG/ can-Non.PST At-issue: I cannot do that. CI: I am emphasizing the impossibility.

In terms of meaning, Sawada (2019) claims that reactive negative totemo is an expressive that intensifies a degree at the level of conventional implicature (CI).4 In Gricean pragmatics, CIs are considered a part of the meanings of words, but they are independent of "what is said" (e.g., Grice 1975; Potts 2005, 2007; Horn 2007; McCready 2010; Sawada 2010, 2018a; Gutzmann 2011). Furthermore, CI expressions are speaker-oriented by default (Potts 2007). Typical examples of CIs are expressives as in (17):

(17) a. That bastard Kresge is famous. (Expressive/CI: Kresge is bad, in the speaker's opinion.)

b. Arthur has lost the blasted key.

(Cruse 1986)

c. Ouch, I've hit my thumb!

(Kaplan 1999)

d. It's hot, man.

(McCready 2009)

For instance, the expression that bastard in (17a) conveys that the speaker has a negative attitude toward Kresge. This has the property of a CI. This idea is corroborated by the fact that denial cannot target the CI meaning of 'bastard' (see Potts 2005, 2007):

(18) A: That bastard Kresge is famous.

At-issue: Kresge is famous.

CI: Kresge is bad, in the speaker's opinion.

B: No, that's not true!

(18B) is only denying the at-issue part of (18A).

Furthermore, the fact that damn can never be within the scope of logical operators like negation, modal, or conditionals also supports the idea that its meaning is a CI (Potts 2005). For example, the following sentence cannot be read as negating the speaker's disapproval of Sheila's dog:

⁴ Historically, as many dictionaries state, totemo had a concessive meaning such as 'in any case/ however you do it', and the adjective/property modifying totemo emerged later. Some dictionaries state that the negative reactive totemo has a concessive meaning 'in any case/under any circumstance', but Sawada (2018b) claimed that at least in Modern Japanese, negative totemo is also a degree intensifier.

⁵ In the literature, it has been observed that CI expressions can have a non-speaker-oriented interpretation when they are embedded under attitude predicates or intensional operators (see, e.g., Wang et al. 2005; Karttunen and Zaenen 2005; Amaral et al. 2007; Potts 2007; Harris and Potts 2009; Sawada 2018a and references therein).

(19) It's just not true that Sheila's damn dog is on the couch!

(Potts 2005: 159)

This simply negates the at-issue part of the sentence; that is, Sheila's dog is on the couch. We can say that negative totemo also has the property of a CI. There is considerable evidence to support this idea. First, similar to the case of damn, denial cannot target the CI part of totemo.

(20) A: Konnna muzukasii mondai boku-ra-ni-wa totemo difficult problem I-PL-to-TOP such TOTEMO tok-e-nai-vo. solve-can-NEG-PRT

At-issue: We cannot solve such a difficult problem.

CI: I am emphasizing the impossibility.

tok-e-nai-wake.dewa.nai-yo. B: ??Iva totemo No TOTEMO solve-can-NEG-it.is.not.the.case.that 'No, it is not the case that we cannot totemo solve it.'

In this conversation, the speaker of (20B) is challenging the at-issue part of (20A) (i.e., staying up all night is impossible for A), but not the CI part. It would be odd to presume that speaker B is challenging the CI part of (20B) because this would imply that he/she is objecting to A's feeling. In general, we cannot object to a speaker's emotions. It is odd to say "no, that is not true" after someone says "ouch!"

The next bit of evidence for the idea that the emphatic component of the negative totemo is a CI is that negative totemo cannot be placed under the scope of logical operators like modal, negation, or a past tense. Let us consider this based on an example in which the modal negative sentence with totemo is embedded under another modal expression such as *daroo* 'will' which has the meaning of prediction:

(21) Tetuya-o suru-nado totemo deki-nai-daroo. staying.up.all.night-ACC do-EVAL TOTEMO can-NEG-EPI At-issue: Staying up all night will be impossible for him/her. CI: I am emphasizing the degree of impossibility.

Here, the meaning of totemo does not fall within the scope of daroo; that is, the speaker is not saying that there is the possibility of an emphatic emotion toward impossibility. The speaker's emphatic attitude is not within the scope of the epistemic operator daroo 'probably.'

Similarly, negative *totemo* cannot be within the semantic scope of negation:

(22) Tetuya-o suru-nado totemo deki-nai. staying.up.all.night-ACC do-EVAL TOTEMO can-NEG At-issue: Staying up all night is impossible. CI: I am emphasizing the impossibility.

In (22), there is no reading like "it is not the case that I am emphasizing the possibility."

Finally, this may be descriptive evidence, but negative *totemo* and not semantic *totemo* can be paraphrased by the clearly idiomatic expressive *totemo-ja-nai-ga* 'very-NEG-although':

(23) Tetuya-o suru-nado {totemo /totemo janaiga} staying.up.all.night-ACC do-EVAL TOTEMO/TOTEMO.JA.NAI.GA deki-nai. can-NEG At-issue: Staying up all night is impossible.

Although *totemo-jana-ga* contains a negative morpheme and the clause-linker *ga* 'but', they are not interpreted literally. In (23), *totemo-ja-nai-ga* serves to strengthen the impossibility or inability of a given proposition. Note that *totemo-ja-naiga* cannot be used to modify an adjective:

(24) Koko-wa {totemo /*totemo.ja.nai.ga} anzen-desu. here-TOP TOTEMO/TOTEMO.JANAI.GA safe-PRED 'It is very safe here.'

CI: I am emphasizing the impossibility.

Based on these discussions, we can conclude that the emphatic component of negative *totemo* is a CI.

Note that in some cases, *totemo* can be ambiguous between semantic and negative *totemo*.

(25) Totemo takai kuruma-wa ka-e-nai.

TOTEMO/very expensive car-TOP buy-can-NEG
Reading 1 (semantic totemo): I cannot buy a very expensive car.

Reading 2 (expressive totemo): I cannot buy an expensive car.

(CI: I am emphasizing the impossibility.)

In Reading 1 (the semantic reading), *totemo* modifies the adjective *takai*, while in Reading 2 (the negative reading), *totemo* modifies a negative modal phrase *ka-e-nai*.

In the negative reading, there is a mismatch between surface syntax and logical structure in terms of the position of totemo.

2.3 The discourse property of the reactive negative totemo

We now consider the discourse-pragmatic properties of reactive negative totemo in detail. Sensitive to discourse, it is used when the proposition p (without a negative modal) is expected to be true:

(26) A: Kono mondai tok-e-masu-ka? problem solve-can-PRED.POLITE-Q this 'Can you solve this problem?'

B: Iva boku-ni-wa totemo tok-e-masen. No I-to-TOP TOTEMO solve-can-NEG.PRED.POLITE 'No, I can't solve this problem.' (CI: I am emphasizing the inability.)

In this conversation, Speaker A expects Speaker B to solve the problem. Formally, it is an open question, but there is an expectation of a positive answer, and in such a situation, speaker B emphasizes the impossibility of the proposition.⁶ From the viewpoint of information structure, p is activated and discourse-given. This is supported by the fact that it is unusual to use ga in these contexts, which conveys new information:

(27) *Tetuya-{-nado/??-ga}* deki-nai. totemo staying.up.all.night-{EVAL/NOM} TOTEMO can-NEG At-issue: Staying up all night is impossible. CI: I am emphasizing the inability.

⁶ Watanabe (2001) observes that negative totemo is often used in contexts where the speaker thinks that the at-issue proposition/event is preferable or is necessarily the case.

⁷ I define an activated proposition as a proposition that is currently under discussion in the discourse or a proposition (radical) that appears in a previous discourse. In the terminology of Dreyer (1996), it is a proposition that is lit up in one's mind. For example, in (26B) whether the speaker can solve the problem is under discussion and the proposition that "I can solve the problem" is activated. For the notion of activation, see Dryer (1996), Larrivée (2012), Zimmermann (2011), and Yoshimoto (this volume).

The discourse particle *nado* in (27) signals that the speaker negatively construes the discourse's given proposition ("to stay up all night"). Crucially, the above asymmetry disappears if we delete negative totemo:

(28)Tetuya-{nado/-ga} deki-nai. staying.up.all.night-{EVAL/NOM} can-NEG 'Staying up all night is impossible.' CI: I am emphasizing the inability.

Note that it is not always the listener who expects p to be true. As the following example shows, it can be the speaker, not the listener, who expects p:

(29) (Context: The speaker is looking at the score of a trial examination and is thinking about whether she/he can pass the entrance exam of a desired university.)

Kibou-suru daigaku-ni-wa totemo ukari-soo-ni-nai. hope-do university-to-TOP TOTEMO pass-likely-to-NEG

At-issue: It is highly unlikely that I can pass the entrance examination of a desired university.

CI: I am emphasizing the impossibility. (http://www.gmm.co.jp/maeda.html)

2.4 Analysis of reactive negative totemo

Let us now analyze the meaning of reactive negative totemo. Based on the idea in Sawada (2014b, 2019), I assume that, as with regular semantic totemo, reactive negative totemo takes a gradable predicate, which is a negative modal gradable predicate. Compositionally, following Sawada, I assume that reactive negative totemo is "mixed content" (e.g., McCready 2010; Gutzmann 2011; Sawada 2014a), taking a negative modal predicate at both the at-issue and CI dimensions while intensifying the degree only at the CI dimension. (*M* is an abbreviation for type $\langle d^a, \langle P^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle$ and P is an abbreviation for type $\langle i^a, \langle s^a, t^a \rangle \rangle$. The variable G_{MODAL} is a variable for a gradable modal predicate, and p is a variable for a proposition of type $\langle i^a, \langle s^a, t^a \rangle \rangle$:

```
(30) a. [[totemo_{REACT.NEG}]]: \langle M^a, \langle P^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle \times \langle M^a, \langle P^a, i^a, \langle s^a, t^s \rangle \rangle \rangle
                  = \lambda G_{MODAL} \lambda p \lambda t \lambda w. \exists d[d > STAND_{G,MODAL} \wedge G_{MODAL}(d)(p)(t)(w)]
                  \bullet \lambda G_{MODAL} \lambda p \lambda t \lambda w. \exists d'[d'>!!STAND_{G.MODAL} \wedge G_{MODAL}(d')(p)(t)(w)]
                  (where max(G_{MODAL}) = 0, p is activated in discourse and p is expected)
```

b. Function of the reactive totemo: Emphasis

The left side of ♦ is an at-issue domain, and the right side of ♦ is a CI domain. In the CI component, there are also requirements that for the maximum degree of G_{MODAL} = 0, p is activated in discourse and expected.

Let us consider how the meaning of the sentence with negative totemo can be computed based on the following example:

(31) (Watasi-wa) tetuya-o suru-nado totemo deki-nakat-ta. staying.up.all.night-ACC do-EVAL I-TOP TOTEMO can-NEG-PST At-issue: Staying up all night was impossible. CI: I am emphasizing the impossibility.

The important point of this analysis is that a negative modal expression as a whole (i.e., modality plus a negative element) behaves as a single gradable predicate. This is supported by the fact that a measure phrase and degree modifiers can directly modify the negative modal expressions deki-nai and soo-ni nai:

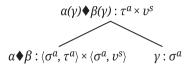
- (32) a. 100% deki-nai. 100% can-NEG 'It is 100% impossible'
 - b. Sonna koto zettai deki-nai. that thing absolutely can-NEG 'lit. That thing is absolutely impossible.'
- (33) Sonna kikai-wa ki-sooni zettai nai. opportunity-TOP absolutely come-likely NEG such 'Such an opportunity is highly unlikely to ever come along.'

Then how can we analyze the meaning of the gradable modal predicate? In this paper, I will analyze the meaning of gradable modal predicate by assuming that these represent relationships between propositions and degrees just like ordinary gradable predicate (e.g., Kennedy and McNally 2005). For example, the denotations of negative modal predicate (G_{MODAL}) such as deki-nai 'impossible' and soo-ni-nai 'unlikely' have the following meanings (cf. Lassiter (2011); Klecha (2012)):

```
(34) a. \lceil \text{deki-nai} \rceil : \langle d^a, \langle P^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle = \lambda d\lambda p \lambda t \lambda w. \text{impossible}_{ABU}(p(t)) d \text{ in } w
               b. [soo-ni-nai]: \langle d^a, \langle P^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle = \lambda d\lambda p\lambda t\lambda w.unlikely(p(t)) \ge d in w
```

Negative totemo is then combined with a negative modal expression using mixed application (McCready 2010; Gutzmann 2011):

(35) Mixed application



(Based on McCready 2010: 20)

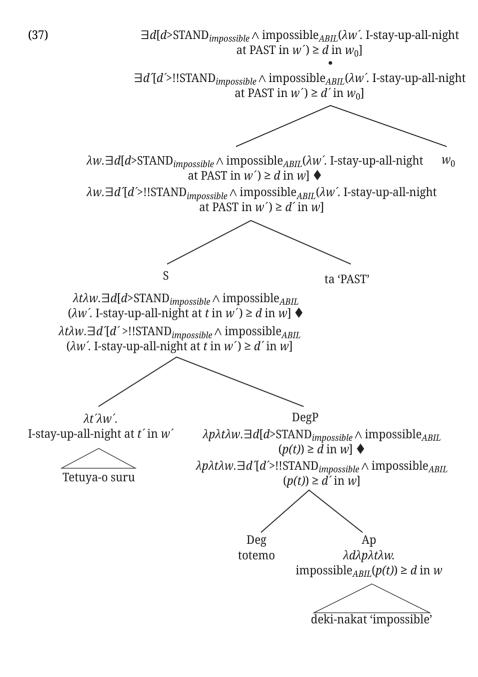
Superscript a stands for an at-issue type, and superscript s stands for a shunting type. Superscript s is used for the semantic interpretation of CI involving an operation of shunting (cf. Potts's (2005) CI application). Following McCready (2010), I will also assume that the following rule applies for the final interpretation of the CI part of mixed content:

(36) Final interpretation rule:

Interpret $\alpha \blacklozenge \beta : \sigma^a \times t^s$ as follows: $\alpha : \sigma^a • \beta : t^s$

(Based on McCready 2010)

The following figure illustrates a part of a semantic derivation of (31). (In the logical structure the topic phrase watasi-wa 'I-TOP' is not represented, but we can understand that the subject of the sentence is watasi 'I' even if there is no topic marking phrase. Also, the negative evaluative particle nado, which has a non-atissue meaning, is omitted in the structure.):



The question is why reactive negative totemo must appear in a negative modal sentence and cannot appear in a positive modal sentence:

- (38) a. *Sonna koto boku-ni-wa totemo deki-ru. such thing I-to-TOP TOTEMO can-Non.PST 'lit. I totemo can do such a thing.'
 - b. *Ame-wa totemo yami-soo-da. rain-TOP TOTEMO stop-seem-PRED 'lit. The rain totemo seems to stop.'

Following Sawada (2017), I assume that G_{MODAL} must be a negative gradable modal predicate because the negative totemo presupposes that the maximum degree of G_{MODAL} is 0 in terms of probability, as represented in the parenthetical part in (39):

(39) $\max(G_{MODAL}) = 0$

If a given G_{MODAL} is a positive modal gradable predicate like arieru 'likely', then its maximal degree will be 1 (i.e., 100 percent). Therefore, the sentence becomes infelicitous. However, if a modal predicate is negative, its maximal degree will be 0 (i.e., 0 percent). Thus, the resulting sentence is well formed (see Sawada (2017) for a detailed discussion on the polarity sensitivity of negative totemo.)

Thus far, we have considered examples with totemo, where there is an explicit negative modal expression. However, totemo can also be combined with pseudo-modal expressions, which are semantically related to modality. The word muri has a negative modal meaning 'impossible'. Literally, mu means 'no/zero' and ri means 'reason', but it is a single word means 'impossible.' This is a single word (adjective) that can be paraphrased as *deki-nai*:

(40)Tetuya-nado totemo {muri-da /deki-nai}. staying.up.all.night-EVAL TOTEMO impossible-PRED /can-NEG At-issue: Staying up all night is impossible. CI: I am emphasizing the impossibility.

Semantically, *muri* has the same meaning as *deki-nai* 'can-not':

(41) $[[muri]]: \langle d^a, \langle p^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle = \lambda d\lambda p \lambda t \lambda w. impossible_{ABIL}(p(t)(w)) = d$

Furthermore, ability-related verbs such as toora-nai 'pass-not', ukara-nai 'past-not' and maniau 'meet' can also be combined with negative totemo (Osaki 2005, Sawada 2019):

(42) *Ima-no* seiseki-de-wa siken-ni-wa Totemo {toora /ukara} grade-PRED-TOP exam-to-TOP TOTEMO now-GEN pass /pass -nai-yo.

NEG-PRT

At-issue: You will not be able to pass the exam with your current grades. CI: I am emphasizing the impossibility.

(43) Subete-no buhin-o tuku-ttei-te.wa nouki-ni-wa totemo all-GEN parts-ACC make-TEIRU-if deadline-to-TOP TOTEMO maniawa-nai.

meet-NEG

At-issue: If we made all the parts, we would not be able to meet the deadline. CI: I am emphasizing the impossibility of meeting the requirements.

Although toora-nai/ukara-nai 'cannot.pass' and maniawa-nai 'cannot.meet' do not combine with a modal element, they inherently have a meaning of 'impossible' as part of their lexical meanings.8

These examples clearly show that the negative totemo does not need to combine with a grammaticalized modal, but can also combine with various expressions that lexically have a modal meaning (although they are not grammaticalized modals.) These data suggest that the dependency between negative totemo and a gradable modal is semantic rather than syntactic.

3 The Japanese zenzen

In the previous section, we focused on the two types of totemo, the regular intensifier totemo and the reactive use of totemo, and showed that they have different polarity sensitivity and licensing conditions. In this section, we focus on zenzen and

⁸ Toora-nai/ukara-nai 'cannot.pass' and maniawa-nai 'cannot.meet' are gradable. This is supported by the fact that they can co-occur with a measure phrase such as 100-paasento '100%':

Kono-mama-de-wa Taro-wa 100% {toora-nai /ukara-nai}. this-still-PRED-TOP Taro-TOP 100% pass-NEG /pass-NEG 'As it is, he cannot pass the test 100%.'

⁽ii) Kono-mama-de-wa Taro-wa 100% maniawa-nai. this-still-PRED-TOP Taro-TOP 100% make.it.on.time-NEG 'As it is, Taro will not be able to make it 100% in time.'

demonstrate that it has both a negative polarity use and a positive polarity use, as shown in the following examples:

(44) (Semantic zenzen)

Kono syoosetu-wa zenzen omosiroku-nai-desu. this novel-TOP ZENZEN interesting-NEG-PRED.POLITE 'This novel is not interesting at all.'

(45) (Reactive positive zenzen)

(Q: I heard that this novel is not interesting. Is it true?)

Iya, zenzen omosiroi-desu-yo.

No ZENZEN interesting-PRED.POLITE-PRT

'It is zenzen interesting.'

I will show that, in terms of the pattern of polarity sensitivity, they are mirror images of *totemo*.

3.1 The meaning of the negative *zenzen*: Comparison with *mattaku* 'completely, at all'

Let us first consider the meaning of the negative *zenzen*, 'at all'. In doing so, it will be helpful to consider its meaning through a comparison with *mattaku* 'at all/completely'. The adverbs *zenzen* and *mattaku* are similar in that they both serve to "strengthen" the force of an expressed negation:

(46) (Watasi-wa) {zenzen | mattaku} okane-ga nai.

I-TOP ZENZEN|MATTAKU money-NOM NEG.exist
'I don't have money at all.'

In Israel's (1996) typology of NPIs, zenzen and mattaku correspond to the "emphatic" NPI. They are different from attenuating NPIs (Israel 1996), such as amari '(all) that':

(47) Taro-wa amari okane-ga nai.

Taro-TOP all that money-NOM NEG.exist

'Taro does not have all that much money.'

Amari is an NPI, but unlike mattaku and zenzen, it has a pragmatic function of "attenuation" (see also Ido, Kubota, and Kubota (this volume)). In (47), the speaker

says that the actual amount of money does not reach a contextually determined standard (or expected degree), but it is not very different from this standard.

Despite these similarities, some differences exist between mattaku and zenzen. As Sawada (2008) observes, 'zenzen not P' implies 'a little P' but 'mattaku not P' entails 'completely not P.' For example, in sentence (48), zenzen is natural in a situation where the speaker has a little money, whereas *mattaku* is unacceptable in that situation:

(48) (Context: Taro had spent too much of his student scholarship money on buying books. He realized that he only had \$50 left in his account.) (Watasi-wa) {zenzen /??mattaku} okane-ga I-TOP ZENZEN /MATTAKU money-NOM NEG.exist 'I don't have money zenzen/mattaku.'

In this context, sentence (48) with zenzen is natural, but not with mattaku.

Several diagnostics can be used to distinguish between the two adverbs. The first has to do with implicit comparisons (Sapir 1944; Kennedy 2007; Sawada 2009). In implicit comparison, the truth-value of the proposition in the main clause is determined relative to the standard of comparison, which is introduced in the adverbial/adjunct clause, implying that the proposition in the main clause is not (necessarily) true if it is evaluated from a contextually determined standard (ordinary norm). In Japanese, *kurabe-tara* pertains to an implicit comparison:

(49) (Context: Taro spent \$500 on shopping and Mary spent \$100.) Taro-ni kurabe-tara Mary-wa okane-o tukawa-naka-tta. Taro-to compare-if Mary-TOP money-ACC use-NEG-PST 'Compared to Taro, Ziro didn't use money.' → Mary spent some money. (implicature)

In (49) the truth-value of the proposition that "Mary didn't use money" is evaluated relative to Taro, and there is a positive implicature that "Mary spent some amount of money."

Crucially, *mattaku* cannot appear in implicit comparison, but *zenzen* can:

(50) (Context: Taro spent \$500 on shopping and Mary spent \$30.) Taro-ni kurabe-tara Mary-wa okane-o {zenzen /??mattaku} Taro-to compare-if Mary-TOP money-ACC ZENZEN/MATTAKU tukawa-nakat-ta. use-NEG-PST 'Compared to Taro, Ziro didn't use money zenzen/mattaku.'

→ Mary spent some money. (implicature from zenen) The second diagnostic has to do with partial negation. A negative sentence with *zenzen* can precede a partial negation with *mattaku*, but not vice versa, as shown in (51):

(51) a. Taro-wa zenzen benkyoo-si-nai.

Taro-TOP ZENZEN study-do-NEG

'Taro does not study zenzen.'

→Taro studies a little.

(implicature)

Mattaku-to iu wake.de.wa.nai-ga.

MATTAKU-as say it.is.not.the.case-although

'Although it is not the case that (he does not study) at all (completely).'

b. Taro-wa mattaku benkyoo-si-nai.

Taro-TOP MATTAKU study-do-NEG

'Taro does not study at all.' (=completely zero).'

Zenzen-to iu-wake.de.wa.nai-ga.

ZENZEN-as say-it.is.not.the.case-though

'Although it is not the case that (he does not study) zenzen.'

In (51a), the flow of discourse is natural. However, if we exchange the order of *zenzen* and *mattaku*, as in (51b), the result is odd. The partial negation '*Zenzen/mattaku to iu wake de-wa nai*' conveys that "Taro studies a little," which conflicts semantically with a negative sentence with *mattaku*, but not with *zenzen*.

What does this mean theoretically? I would argue that Japanese adverbial polarity items are lexicalized into two types: absolute and relative.

- (52) a. *Zenzen* is relative in that 'zenzen not-P' conveys that the given degree is "far removed" from a contextually determined standard (expected degree).
 - b. *Mattaku* is an absolute polarity item in that '*mattaku* not-*P*' conveys that the given degree corresponds to the minimum endpoint of a scale and it is not context sensitive.

Since negative *zenzen* only says that the current degree is far removed from the standard, it is possible that the degree of the target can be non-zero. I assume that the negative sentence that *zenzen* triggers can induce a positive implication that the target has a low degree:

(53) "x is zenzen not P" (P = gradable predicate)
Scalar component: The degree of P with respect to x is "far" removed from the contextually determined standard of P.

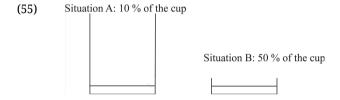
Implication: x has a low degree of P.

In contrast, 'mattaku not P' denotes that the actual degree with respect to P is the minimum endpoint of a scale (zero point). Therefore, 'mattaku not P' does not induce a positive implicature. It entails "completely not P."

Let us consider this problem based on the following example:

(54) Zenzen mizu-ga nai. ZENZEN water-NOM NEG.exist 'There is no water at all.'

Imagine the following two situations. In each situation, there is 100 ml of water in a cup.



Although the amount of water is the same in both situations, sentence (54) is natural for Situation A but odd for Situation B. This is because of the distance component of zenzen. The point is that sentence (54) implies that there is a bit of water. I argue that the positive meaning is a conversational implicature derived from the Maxim of Quantity/Q-Principle, "Say as much as you can." 'Mattaku not P' is stronger than 'Zenzen not P'; thus, by saying 'zenzen (not-P)', it conversationally implies that "it is not the case that mattaku (not-P)."

The idea that the positive implicature is conversational is supported by the fact that it is cancelable:

(56) Cancelability test

a. Kinoo-wa zenzen nemur-e-na-katta. vesterday-TOP ZENZEN sleep-can-NEG-PAST 'I could not sleep zenzen yesterday.'

(Implicature \rightarrow I slept a little.)

b. Toiuka mattaku nemur-e-na-katta. I.mean MATTAKU sleep-can-NEG-PAST 'I mean, I could not sleep at all (completely).'

(= I slept zero minutes.)

Furthermore, the fact that the positive implicature is reinforceable also supports the idea that it is a conversational implicature:

(57) Kinoo-wa zenzen nemur-e-nakat-ta. vesterday-TOP ZENZEN sleep-can-not-PAST 'I could not sleep zenzen.' Mattaku-to iu wake.de.wa.nai-ga. MATTAKU-as say it-is-not-though 'Although it is not the case that I did not sleep at all (completely).'

3.2 Formal analysis of the negative zenzen

Based on the above discussion, let us consider the meaning of negative zenzen in a compositional fashion using the following example:

(58) Kono hon-wa zenzen omosiroku-nai. book-TOP ZENZEN interesting-NEG this 'This book is not interesting at all.'

I propose that the negative zenzen has the following denotation and pragmatic function.

```
(59) a. [[zenzen_{NEG}]] = \lambda G \lambda x \lambda t \lambda w. \exists d[d < !! STAND_{DIMG} \wedge G(d)(x)(t)(w)]
```

b. The function of $zenzen_{NEG}$: emphasis

Negative zenzen denotes that there is some degree that it is far less than a contextually determined standard of the dimension (DIM) posited in G. Note that there are several important assumptions behind this analysis. First, negative zenzen needs to combine with a negative gradable predicate. This is because of the function of the emphasis. If the negative zenzen co-occurs with a positive gradable predicate, then the sentence with the negative zenzen will not trigger an emphatic meaning. If there is no negation, it will only mean "there is a degree such that it is less than a standard by a large amount." Second, in this paper, I will assume that the negative particle *nai* is not a sentential negation but serves as a "local" negation, as in:

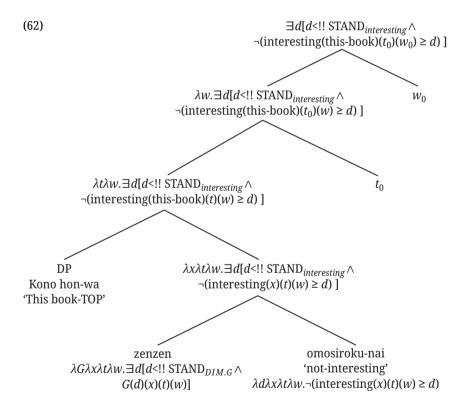
```
(60) a. [omosiroi] = \lambda d\lambda x \lambda t \lambda w. interesting(x)(t)(w) \geq d
              []omosiroku-nai] = \lambda d\lambda x \lambda t \lambda w. \neg (interesting(x)(t)(w) \ge d)
```

Note that the standard posited in the negative *zenzen* is the standard of dimension (DIM) associated with *G*. Namely, in this paper, I assume that *omosiroi* and *omosiro-ku-nai* share the same dimension. Following previous studies on scalarity, I define the scale as follows:

(61) The ontology of scale (D; >; DIM) where D is a set of points, > is a total ordering on D, and DIM is a dimension (e.g., Bartsch and Vennemann 1973; Bierwisch 1989; Kennedy 2007; Kennedy and McNally 2005; Solt 2015).

In this view, the standards of *omosiroi* 'interesting' and *omosiroku-nai* 'not interesting' are the same. Although *omosiroku-nai* 'not interesting' is a negative adjective, the dimension of the adjective is interestingness.

In this approach, we can analyze the meaning of sentence (58) as follows:



Thus, how can we analyze the case (63)?

(63) Mizu-ga zenzen nai. water-NOM ZENZEN NEG.exist 'There is no water at all.' (Implicature: There is a little bit of water.)

Recall that this sentence does not mean that there is zero amount of water, but that the amount of water is far below the standard. I assume that nai behaves as a gradable predicate (e.g., Morita 1989). In other words, nai as a predicate in the existential sentence is different from the affix nai that attaches to a verb stem (e.g., ika-nai 'not go'), in that the former is an independent word whereas the latter is a dependent word. Note that I assume that the gradable adjective *nai* is decomposed into – and the gradable use of aru 'exist.' Interestingly, the antonym of the adjective nai is the verb aru 'exist', which is also a gradable predicate. (64) shows part of the semantic derivation in (63):

- (64) a. $[zenzen_{NEG}] = \lambda G \lambda x \lambda t \lambda w$. $\exists d[d < !! STAND_{DIMG} \wedge G(d)(x)(t)(w)]$
 - b. $[\![nai]\!] = \lambda d\lambda x \lambda t \lambda w. \neg (exist(x)(t)(w) \ge d)$
 - c. $[zenzen_{NEG}]$ ([nai]) = $\lambda x \lambda t \lambda w$. $\exists d[d < !! STAND_{exist} \land \neg (exist(x)(t)(w) \ge d)]$
 - d. $[zenzen_{NEG}] ([nai])([mizu]) = \lambda t \lambda w. \exists d[d < !! STAND_{exist} \land \neg (exist(water))]$ $(t)(w) \ge d$
- 9 The following simple negative sentence is also interpreted as a relative adjectival sentence:
- (i) (Context: the speaker is planning to pay for his/her apartment.) Okane-ga money-NOM NEG.exist 'I don't have money.'

In this context, (i) does not mean 'I have zero amount of money.' Instead, it means that 'the actual amount of money is less than a contextually determined standard'.

The idea that the adjective (predicative) nai 'not.exist' is gradable is supported by the fact that it can be modified by various degree modifiers aside from zenzen 'at all' and mattaku 'at all'. For example, attenuating NPI amari/sonnani 'that much' can also combine with the predicative nai (see (47)).

Regarding the semantics of the simple sentence with the predicative nai, I assume that the unmodified *nai* (which has the same conjugation as a normal adjective) (of type $\langle d, \langle e, t \rangle \rangle$) combines with a 'null degree morpheme' pos whose function is to relate the degree argument of the adjectives to an appropriate standard of comparison (Cresswell 1977; von Stechow 1984; Kennedy and McNally 2005, among others). (ii) shows the semantic derivation for the sentence (i):

- (ii) a. $[nai] = \lambda d\lambda x$. $\neg (exist(x) \ge d)$
 - b. $[pos] = \lambda G \lambda x$. $\exists d[d \ge STAND_{DIM,G} \wedge G(d)(x)]$
 - c. $[pos]([nai]) = \lambda x. \exists d[d \ge STAND_{exist} \land \neg (exist(x) \ge d)]$
 - d. $[pos]([nai])([okane]) = \exists d[d \ge STAND_{exist} \land \neg(exist(money) \ge d)]$

What about the meaning of *mattaku*?

(65) Mizu-ga mattaku nai. water-NOM MATTAKU NEG.exist 'There is no water at all.'

(There is not a drop of water)

I assume that the denotation of mattaku has a universal meaning and the sentence can be analyzed as in (66) (the semantic derivation for tense and world are omitted):

- (66) a. $[\text{mattaku}_{NEG}] = \lambda G \lambda x \lambda t \lambda w. \forall d[d < STAND_{DIM.G} \rightarrow G(d)(x)(t)(w)]$
 - b. Function of *mattaku*: emphasis
- (67) a. $[\text{mattaku}_{\text{NEG}}] = \lambda G \lambda x \lambda t \lambda w. \forall d[d < \text{STAND}_{DIM.G} \rightarrow G(d)(x)(t)(w)]$
 - b. $[nai] = \lambda d\lambda x \lambda t \lambda w$. $\neg (exist(x)(t)(w) \ge d)$
 - c. $[\text{mattaku}_{\text{NEG}}]$ ([nai]) = $\lambda x \lambda t \lambda w . \forall d[d < \text{STAND}_{exist} \rightarrow \neg(\text{exist}(x)(t)(w) \ge d)]$
 - d. $[\text{mattaku}_{\text{NEG}}]$ ([nai])([mizu]) = $\lambda t \lambda w . \forall d[d < \text{STAND}_{exist} \rightarrow \neg(\text{exist}(\text{water})(t))]$ $(w) \ge d$

3.3 The reactive (positive) zenzen

After clarifying the meaning of the negative zenzen, this section investigates the meaning of reactive (positive) zenzen. Although it implies intensification, as the name suggests, it appears in a positive environment and is reactive: It reacts to the previous utterance and conveys that contrary to the previous thought, the target has a high degree:

- (68) A: Kono syoosetu omosiroku-nai-desu-yone? novel interesting-NEG-PRED.POLITE-PRT this 'This novel is not interesting, right?'
 - B: {Zenzen/*mattaku} omosiroi-desu-yo. ZENZEN/MATTAKU interesting-PRED.POLITE-PRT 'It is {zenzen/*mattaku} interesting.'
- (69) A: Kaoiro warui-kedo daijoobu-desu-ka? face.color bad-but OK-PRED.POLITE-O 'You look pale. Are you OK?'
 - B: {Zenzen/*mattaku} daijoobu-desu. ZENZEN/MATTAKU OK-PRED.POLITE 'I am {zenzen/*mattaku} OK.'

- Raamen amari oisiku-nai-to kii-ta-do doo? (70) A: Koko-no all that tasty-NEG-that hear-PST-but how here-GEN ramen I heard that the ramen in this restaurant is not that tasty. What do you think?
 - B: {Zenzen /*mattaku} oisii-desu-yo. ZENZEN /MATTAKU tasty-PRED.POLITE-PRT 'It is {zenzen/*mattaku} tasty.'

In the above examples, the speaker uses positive zenzen to correct or object to the previous utterance made by the addressee (Arimitsu 2002).

Furthermore, positive zenzen can also be used to react to and correct the speaker's own previous beliefs (see also Noda 2000):

raamen oisiku-nai-to (71) Koko-no omo-ttei-ta-kedo tasty-NEG-that think-TEIRU-PST-but here-GEN ramen oisii. zenzen ZENZEN tasty-PRED 'I thought the ramen in this place is not tasty, but it is zenzen tasty.'

Because of the function of overturning negative existing assumptions, the positive zenzen cannot be used in an out-of-the-blue context (Arimitsu 2002; Odani 2007; Sawada 2008):

(72) (Out-of-the-blue context, conversation between a speaker and a hearer) #Kore zenzen oisii-yo. this ZENZEN tasty-PRT 'This is zenzen tasty.'

However, we can use positive zenzen in an out-of-the-blue (without previous discourse) context, if we posit a mirative context where the speaker has just realized that it is tasty, contrary to the speaker's expectations:

(Mirative context: The speaker is eating ramen and is surprised that it is very tasty (contrary to expectations)

Kore zenzen oisii! this ZENZEN tasty 'It is zenzen tasty.'

Because of its reactive nature, positive zenzen is sensitive to the question under discussion. It is not natural as an answer to a neutral question or to a confirmation question that checks the affirmative proposition p (Arimitsu 2002):

- (74) Neutral question (how-question)
 - A: Koko-no doo-desu-ka? raamen here-GEN ramen how-PRED.POLITE-O 'How is the ramen here?
 - B: ??Zenzen oisii-desu. ZENZEN tasty-PRED.POLITE 'It is zenzen tasty.'
- (75) Confirmation question (checking p)
 - A: Koko-no raamen oisii-desho? here-GEN ramen tasty-PRED-Q-confirm 'The ramen here is tasty, right?'
 - B: ??Hai zenzen oisii-desu. ZENZEN tasty-PRED.POLITE Yes 'Yes, It is zenzen tasty.'

Thus, unlike negative zenzen, positive zenzen is used in a situation where p is expected to be not p. In this paper, I define the meaning of the positive zenzen as having both a presupposition and an intensified meaning (the underlined part is a presupposition):

- (76) a. $[zenzen_{REACTPOS}] = \lambda G \lambda x \lambda t \lambda w$: expected($\exists d'[d' \leq STAND_{DIMG} \land d']$ G(d')(x)(t)(w)]). $\exists d[d>!! STAND_{DIM,G} \land G(d)(x)(t)(w)]$
 - b. Function of the positive zenzen: emphasis

Note that the positive zenzen does not simply deny the previous assumption/expectation but also conveys that the given target is far removed from a contextually determined standard. (This component is similar to the scalar component of the negative zenzen, although there is a difference between high and low.) In this sense, it is different from the counter-expectational use of hutuuni. Hutuuni 'normally' can be used reactively and signals that the proposition assumed in the previous utterance/expectation is false (see Imoto 2011; Sato, Imai and Michihata 2021):

(77) (Context: The speaker has assumed that this ramen is not tasty but realized that it is tasty.)

Kono raamen hutuuni oisii. this ramen HUTUUNI tasty

'This ramen is *hutuuni* tasty.' (Presupposition: I thought it would not be tasty.)

However, because the counterexpectational (reactive) futuuni does not have a high scalar meaning, it cannot be used in situations where the given degree is high.

(78) (Context: The speaker thought that the ramen was not good, but found out that it was actually extremely tasty.)

Kono raamen {?hutuuni/zenzen} oisii. this ramen HUTUUNI/ZENZEN tasty 'This noodle is {?hutuuni/zenzen} delicious.' (Expectation: This noodle is not delicious.')

4 English intensifier possibly

In the previous section, we discussed the reactive use of NPI totemo in Japanese. In this section, we will focus on English possibly and show that it also has a reactive NPI usage.

First, possibly has a (non-reactive) usage to express a low probability.

(79) a. Possibly she will come here.

b. Possibly he smokes a pipe. (Greenbaum 1969: 149)

c. Possibly, she can't be reached at home. (Hoye 1997: 146)

This type of *possibly* is a sentential adverb (often called a speaker-oriented adverb (Bellert 1977; Nilsen 2014; Ernst 2009) and has the characteristic of PPI. As the following sentences show, if it is put immediately after negation, the sentences become ill-formed (Nilsen 2014; Ernst 2009):

(80) a. Stanley possibly ate his Wheaties.

b. *Stanley didn't possibly eat his Wheaties. (Nilsen 2014: 823)

(81) *Jospin didn't possibly win. (cf. It is not possible that Jospin won.) (Nilsen 2014: 823) However, when possibly appears after can/could, it functions as an intensifier and behaves as an NPI, as shown below:

- (82) a. I can't possibly do that.
 - b. I can't possibly tell you that! (Oxford Learner's Dictionary)
 - c. I couldn't possibly do my family shopping there. (BNC)
 - d. They can't possibly be happy.
 - e. They can't possibly leave early. (Greenbaum 1969: 148)

Descriptively, possibly emphasizes that something definitely cannot happen or be done, or definitely cannot be true. In the literature, this type of possibly is often analyzed as a phenomenon of modal concord (Anand and Brasoveanu 2010; Huitink 2012). In this section, I will argue that can't possibly is not an instance of a modal concord. Rather, it is a special kind of expressive NPI that reacts to the contextually salient proposition p and intensifies the unlikelihood/impossibility of p at the level of conventional implicature, which is similar to the Japanese negative totemo. 10

However, it should be considered that possibly in (ia) and (ib) are lexically different. That is, possibly in (ia) is a reactive intensifier, while possibly in (ib) is an epistemic modal. The epistemic modal possibly does not have a co-occurrence restriction with can/could, can appear in various syntactic environments, and does not have a reactive property. Furthermore, it is worth noting that the difference between the reactive intensifier possibly and the epistemic possibly arises in the interpretation of the question. When the reactive intensifier possibly appears in an interrogative sentence, it is interpreted as a rhetorical question, while when the normal epistemic possibly appears in an interrogative sentence, it is often interpreted as a request (especially in the form can/could you):

¹⁰ Note that in a surface form it is not easy to identify that the intensifier possibly is an NPI based on positive vs. negative sentences. As the following example shows, possibly can appear in both positive and negative sentences:

⁽i) a. I can't possibly solve the problem.

b. I can possibly solve the problem.

⁽ii) a. How can you possibly spend so much money on a present? (rhetorical question) (Conveyed meaning: You can't possibly spend so much money on a present.) (possibly = reactive intensifier)

b. Can you possibly take care of my dogs for a few days? (request) (possibly = epistemic possibly)

4.1 Previous studies on the intensifier possibly

This section briefly shows previous studies of the intensifier possibly.

4.1.1 Greenbaum (1969)

First, Greenbaum observes the important contrast difference between the ordinary *possibly* and the intensifier *possibly*. In addition, he observes that the intensifier *possibly* is positioned immediately after the negative particle. If we move *possibly* elsewhere in the sentence, *possibly* is not interpreted as an intensifier and corresponds to "it is possible that" (Greenbaum 1969).

- (83) They {can't, couldn't} possibly leave early. (Greenbaum 1969: 148)
- (84) a. Possibly they can't leave early.
 - b. They possibly can't leave early.
 - c. They can possibly not leave early.
 - d. *They can't leave early, possibly.* (Greenbaum 1969: 148)

Greenbaum (1969) also observes that the intensifier may collocate with *can* or *could* and with auxiliaries other than *can* or *could*; *possibly* is normally unacceptable even if they are positioned immediately after the negative particle:

(85) * They won't possibly leave early. (Greenbaum 1969: 148)

Note that negation and *possibly* do not need to be in the same clause (no clause-mate condition):

(86) I didn't think they could possibly leave early. (Greenbaum 1969: 148)

4.1.2 Quirk et al. (1985)

Quirk et al. (1985) also observe different interpretations of *possibly* depending on its location; significantly, they paraphrase intensifier *possibly* with *any* and view the intensifier *possible* as a minimizer:

(87) a. They can't possibly leave now. (minimizer)
= They can't under any circumstances leave now.

- b. They possibly can't leave now.
 - = It is possible that they can't leave now.

(Quirk et al. 1985: 600)

4.1.3 Hoye (1997)

Hoye (1997) focuses on the modification structure of sentences with NPI possibly:

- (88) a. Possibly, she can't be reached at home.
 - b. She can't possibly be reached at home.

(Hoye 1997: 146)

Hoye (1997) paraphrases (88a) as "it is possible that she cannot be reached at home." By contrast, he paraphrases (88b) as "it is impossible to reach her at home." Hoye (1977: 146) claims that possibly in (88a) is an S-adverb (sentence adverb), which expresses the speaker's commitment to the content of the complete utterance and modifies the sentence as a whole, while possibly in (88b) is a VP adverb that serves to reinforce or intensify the negated modal within its scope of modification.

4.1.4 A modal concord view of can't possibly

In recent years, researchers have analyzed the interpretations of *possibly* based on the notion of modal concord. Modal concord is a phenomenon whereby the combination of a modal adverb with a modal auxiliary seems to be interpreted as if only a single modal operator is expressed (Halliday 1970; Geurts and Huitink 2006; Zeijlstra 2007; Anand and Brasoveanu 2010; Huitink 2012; Ernst 2009). Observe the following examples:

- (89) a. You may possibly have read my little monograph upon the subject.
 - b. Power carts must mandatorily be used on cart paths where provided.

(Geurts and Huitink 2006)

According to Geurts and Huitink (2006), the preferred interpretation of (89a) is the concord reading, which says that the speaker considers it possible that you have read his monograph, not the cumulative one, according to which he thinks it is possible that it is possible that you have done so. Similarly, (89b) expresses that there is an obligation to use power carts, not that it is obligatory that there is an obligation to use power carts.

Huitink (2012) claims that when possibly is placed after can't, possibly and can are interpreted as if there is only a single modal operator:11

- (90) a. I can't possibly eat any more. (concord)
 - b. You possibly can't eat any more. (iterative)

(Huitink 2012: 413)

Huitink claims that while (90a) prefers a concord reading, (90b) is naturally read as an estimation of the chance that the addressee is not able to eat anymore. (90b) is an iterative reading in which the can and possibly both contribute a modality. 12

4.2 NPI possibly is a reactive expressive intensifier

Although the previous literature often considers the intensifier possibly as being concerned with modal concord, I will argue that it should not be analyzed as a phenomenon of modal concord. I will argue that the intensifier use of *possibly* is an expressive intensifier (non-at-issue), and that it intensifies the degree of negative modal at the level of CI. In this sense, the intensifier possibly is guite similar to reactive negative totemo in Japanese.

There are several pieces of evidence that the emphatic component of the intensifier *possibly* is a CI. First, the meaning triggered by *possibly* cannot be challenged. Compare (91) and (92):

- (91) A: Can you solve the issue?
 - B: No, I can't possibly solve the issue.
 - C: No, that's not true. There is no reason you can't solve the issue.

¹¹ von Fintel and Heim (2001) do not use the term "modal concord" but make the following comments in the footnote: "We don't include the example (i) *John isn't possibly infected, which is ungrammatical, for unknown reasons. Another mysterious fact is that (ii) John can't possibly be infected actually means "it is not the case that it is possible that . . ." (which is what (i) would be expected to mean), as if it contained only one possibility operator rather than two" (von Fintel and Heim 2001).

¹² Anand and Brasoveanu (2010) consider that the adverb falls in the scope of the negation in (90a) but not in (90b), as the negation on can inverts its force, that is, turns it from a possibility operator into a necessity operator, which makes it incompatible (for concord purposes) with a possibility adverb.

- (92) A: Can you solve the issue?
 - B: No, I can't possibly solve the issue.
 - C: No, that's not true. # There is no reason you can't [possibly] $_{\rm F}$ solve the issue.

Although (91C) is natural, (92C) is unnatural.

Second, the emphatic component of possibly cannot interact with negation:

- (93) a. There is no reason I can't solve the issue.
 - b. #There is no reason I can't possibly solve the issue.

(93b) sounds a bit strange because the speaker is emphasizing the impossibility using *possibly* in the embedded clause, while simultaneously denying it in the main clause using 'there is no reason'. The oddness in (93b) makes sense if we consider that the meaning triggered by possibly is expressive (CI). The speaker's attitude in the main clause and the expressive meaning conveyed by possibly do not match. Note that (93b) may be natural if someone says "you can't possibly solve the issue," and the speaker reacts to it negatively. In that case, the speaker is quoting someone's idea (e.g., "Taro cannot possibly solve the issue"), and possibly is not anchored to the speaker.

4.3 The reactive property of expressive possibly

An important point is that expressive possibly has a reactive property:

(94) Expressive possibly intensifies the degree of impossibility of a proposition which is expected/desired to be true, and p is activated in discourse.

To use the intensifier *possibly*, a previous utterance is required:

- (95) A: Can you stay up all night?
 - B: No, I can't possibly stay up all night.
- (95B) reacts to expectations such as "I stay up all night."

As the following example shows, the intensifier possibly cannot be used in the out-of-the-blue context:

(96) (Out-of-the-blue-context) # I can't possibly stay up all night.

One puzzling point is that the sentence with the intensifier *possibly* can be natural, not just as a reply to the Yes-No question, but also as a reply to a how question:

- (97) A: Can you use javascript?
 - B: No, I can't possibly use javascript.
- (98) A: How likely is it that you can use javascript?
 - B: I can't possibly use javascript.

The fact that (98B) is natural as an answer to the how question may be strange if we consider that possibly is non-at-issue. However, (97B) and (98B) are natural only in the context of requesting (Patrick Elliott, personal communication). In (97), A's question is not a question about B's capacity. Similarly, in (98), A's question is only natural if it is interpreted as asking how likely it is for B to fulfill their request. Thus, (98B) does not answer the how question literally.

Note that this kind of restriction does not arise if we delete possibly:

- (99) A: Can you use javascript?
 - B: I can't use javascript.
 - B': I can't possibly use javascript.

The question in (99A) is ambiguous between a question about ability and a request and (99B) can be compatible with both readings. However, (99B') is only compatible with the request reading (Patrick Elliott, personal communication).

4.4 Analysis of the reactive expressive possibly

Let us analyze the meaning of the reactive expressive *possibly*:

- (100)a. I can't possibly do such a thing.
 - b. Konna koto watasi-ni-wa totemo deki-nai. such thing I-to-TOP TOTEMO can-NEG 'I can't possibly do such a thing.'

Just as Japanese negative totemo emphasizes the degree of deki-nai 'can't', reactive expressive possibly is emphasizing the degree of can't. The underlying assumption here is that modals are semantically similar to gradable adjectives (Grosz 2010; Lassiter 2011; Klecha 2012). It seems that the moral expression "can't" is gradable and semantically equivalent to "impossible."

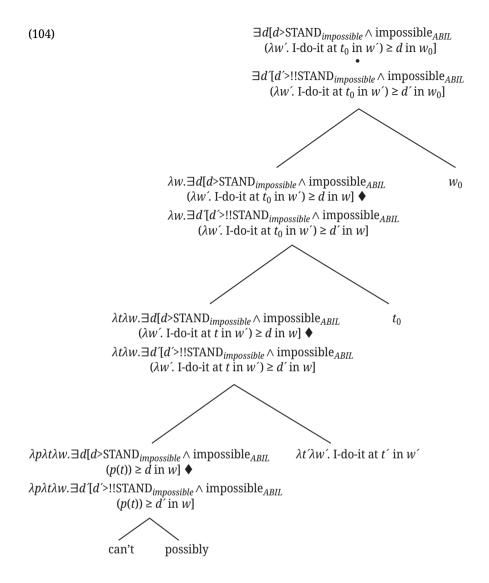
(101) I really can't do that!

Can't has the following denotation and, building on Sawada's analysis of negative totemo, I assume that possibly is "mixed content" (e.g., McCready 2010; Gutzmann 2011; Sawada 2014a), taking a negative modal predicate at both the at-issue and CI dimensions while intensifying the degree only at the CI dimension:

- (102) $[[can't]]: \langle d^a, \langle P^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle =$ $\lambda d\lambda p\lambda t\lambda w.$ impossible_{ABIL} $(p(t)) \ge d$ in w
- (103) a. [possibly_{REACTIVE}]]: $\langle G^a, \langle P^a, \langle t^a, \langle s^a, t^a \rangle \rangle \rangle \times \langle G^a, \langle P^a, \langle t^a, \langle s^a, t^s \rangle \rangle \rangle$ $= \lambda G_{MODAL} \lambda p \lambda t \lambda w. \exists d[d > STAND_{GMODAL} \wedge G_{MODAL}(d)(p)(t)(w)] \spadesuit$ $\lambda G_{MODAL} \lambda p \lambda t \lambda w. \exists d'[d'>!!STAND_{GMODAL} \wedge G_{MODAL}(d')(p)(t)(w)]$ (where $G_{MODAL} = can't/couldn't$, p is activated in discourse and p is expected)
 - b. The function of $possibly_{REACTIVE}$ = emphasis

The left side of \blacklozenge is an at-issue domain, and the right side of \blacklozenge is a CI domain. In the CI component, there are also lexical requirements that G_{MODAL} is either can't or couldn't, p is activated in discourse, and p is expected. Since the intensifier possibly basically can only co-occur with can't or couldn't, we need to stipulate such a constraint in the lexical entry.

The following figure shows the logical structure of the sentence "I can't possibly do it":



We have so far considered the case where the reactive intensifier *possibly* co-occurs with a negative modal predicate. However, the reactive intensifier *possibly* can appear in a question as well, and when it is used in a question it is interpreted as a rhetorical question. Observe the following examples:

(105) (Rhetorical question, reactive expressive)How can you possibly do such a thing?(Implicit meaning: you can't possibly do such a thing.)

(106) (Ordinary *possibly*/hedge expression) Could you possibly lend me the textbook?

(105) is naturally interpreted as a rhetorical question whereas (106) involves a use of possibly that is either ordinary or else a hedge used for politeness.13 The question is how we can analyze the meaning of *possibly* in a rhetorical question. Although this is still a speculation, I would like to consider that possibly in (105) is intensifying the implied negative predicate "can't." (105) is conventionally implying that "you can't possibly do such a thing" and possibly is interacting with "can't" at the implicature level.

5 English totally

As a final case study, in this section we will look at the meanings/uses of English totally. As is the case in totemo, zenzen, and possibly, previous studies have mentioned that totally has both semantic and discourse-pragmatic usages. Building on the discussion in Irwin (2014) and Beltrama (2018), I will show that these two types of totally differ in meaning and distribution, and that discourse pragmatic totally behaves as a reactive PPI when it receives a pitch accent (i.e., TOTALLY). We will also compare reactive TOTALLY and reactive positive zenzen and show that although there is a similarity between them, there are also some differences in terms of meaning and modification structure.

5.1 Totally as a regular degree adverb

Let us first look at the regular semantic totally. As Beltrama (2018) observes, the semantic totally is neutral regarding polarity in that it can appear in both positive and negative environments:

(107) a. The bus is totally full.

b. I totally agree with you.

(Beltrama 2018: 1)

(108) a. The bus is not totally full.

b. I don't totally agree with you.

(Beltrama 2018: 3)

¹³ I thank Thomas Grano for the variable discussion regarding this point.

In this respect it is different from the regular semantic *totemo* 'very', which behaves as a PPI (see Section 2.1).

Regarding the meaning of semantic *totally*, following Kennedy and McNally (2005), I assume that semantic *totally* has the following denotation (*S* stands for a scale):

```
(109) [[totally]] = \lambda G \lambda x. \exists d[d = \max(S_G) \land G(d)(x)] (Based on Kennedy and McNally's (2005: 369) analysis of completely)
```

Regarding pragmatic function, semantic *totally* is unspecified and can be used for both emphasis and attenuation.

5.2 TOTALLY as a reactive intensifier

Let us now turn to the meaning and use of pragmatic *totally*. Unlike semantic *totally*, pragmatic *totally* is a positive polarity item, as noted by Irwin (2014), McCready and Schwager (2009), and Beltrama (2018) (all caps indicate pitch stress):

(110) You {should/*shouldn't} totally clock on that link! Its's awesome.

(Beltrama 2018: 220-221)

- (111) a. I TOTALLY hate Jamie's new boyfriend.
 - b. *I don't TOTALLY hate Jamie's new boyfriend. (OK on manner reading of totally)

(Irwin 2014: 62)

Furthermore, outside of the polarity perspective, it has been observed that pragmatic *totally* can only appear in limited environments. For example, McCready and Schwager (2009) observe that pragmatic *totally* can appear in assertions, advice imperatives, or rhetorical questions, but cannot appear in exclamatives, command imperatives, or wh-exclamatives:

(112) a. Ilaria is totally coming to the party.

(assertion)

- b. A: Should I go to the party?B: Totally go, dude! (advice imperative)
- c. [Said to a lazy colleague] (rhetorical question)

 Who totally didn't do their work yesterday?

 (McCready and Schwager 2009)

(113) a. *What a big car John totally bought! (exclamatives) b. *Totally get ready for school right now! (command imperative) c. *Who totally went to the party? (information seeking question)

(McCready and Schwager 2009)

Regarding the meaning of pragmatic/expressive totally, McCready and Schwager (2009) propose that it conventionally implicates that the speaker is maximally epistemically committed to their justification for their use of the proposition (the information of tense and world are omitted):14

(114) $[totally-sup]: \langle t^a, t^c \rangle$ = λp . [the speaker is maximally epistemically committed to herjustification for her use of *p*] (McCready and Schwager 2009)

Beltrama (2018) investigates the environment in which pragmatic totally arises from the perspective of discourse structure and claimed that pragmatic totally is used only in discourse moves that allow for the possibility of not adding p to the Common Ground of the conversation - that is, subjective, outlandish, and responsive assertions. He also claims that pragmatic totally signals that the speaker believes that there should be no option other than adding p to the CG.

In the above, we considered the meaning of pragmatic totally and the environment in which it occurs, but it is important to note that when the pragmatic totally receives a pitch accent, it has a reactive function (Irwin 2014; Beltrama 2018):

(115) Dionne: Hello? There was a stop sign. Cher: I TOTALLY paused. (Based on Irwin 2014)

Beltrama (2018) claims that TOTALLY is sensitive to the nature of the previous move in discourse. If the previous utterance is a question or a negative assertion ("not p"), the sentence with TOTALLY is natural, but if the previous utterance is a simple assertion p, TOTALLY is not licensed:

¹⁴ Superscript c stands for a CI type, and Potts (2005) assumes that the expression with this type is interpreted based on a so-called CI application, which takes an at-issue element as its argument and produces a CI. Crucially in this application, the at-issue element is simultaneously passed up to the above node (see Potts (2005) for the detailed type system and interpretation rule).

(116) a. John: *Did Luke get married at 25?* (Question whether *p*) Kim: Yes. he TOTALLY got married at 25.

b. John: Luke didn't get married at 25. (¬p)

Mark: No! What are you talking about! He TOTALLY got married at 25.

c. John: *Luke got married at 25.* (Asserts *p*) Kim: # Yes! He TOTALLY got married at 25. (Beltrama 2018: 249)

Beltrama (2018) uses the idea of Verum Focus to analyze the reactive *TOTALLY*. Verum Focus is a particular kind of focus that emphasizes the polarity of the proposition in contrast to an antecedent with different polarity (Hohle 1992; Romero and Han 2004; Gutzmann and Castroviejo 2011). The point to note here is that the yes—no question does not have polarity exactly opposite to p, but there is a kind of contrast: The yes-no question denotes the set of its answers, that is, $\{p, not p\}$, and "not p" in the set contrasts with p in TOTALLY(p).

5.3 Comparison with reactive zenzen

In the previous section, I showed that English *totally* also has a reactive attitudinal usage. In this section, we briefly compare pragmatic *TOTALLY* and reactive (positive) *zenzen*.

Given that pragmatic *TOTALLY* and reactive *zenzen* are similar in that they signal that there is a contrast in polarity between the at-issue proposition and the proposition assumed in the previous utterance in terms of polarity. However, there are several differences between them. First, reactive *TOTALLY* is a sentential modifier, while reactive (positive) *zenzen* is a degree adverb that combines with a gradable predicate (including gradable adjective, gradable verbs).

Second, unlike reactive *TOTALLY*, positive *zenzen* does not need to receive stress. This suggests that reactive *zenzen* has nothing to do with Verum Focus.

Finally, reactive *TOTALLY* can be used as a reply to a non-biased question, while reactive *zenzen* cannot:

(117) Question (= non-biased)

- A: Koko-no raamen doo? here-GEN ramen how 'How is this ramen?'
- B: ??Zenzen oisii-yo.

 ZENZEN tasty-PRT

 'It is zenzen tasty.'

(118) Question (= biased)

- A: Koko-no raamen amari oisiku-nai-to kii-ta-do doo? here-GEN ramen all that tasty-NEG-that hear-PST-but how 'I heard that the ramen in this restaurant is not that tasty. What do you think?
- B: Zenzen oisii-yo. ZENZEN tasty-PRT 'It is zenzen tasty.'

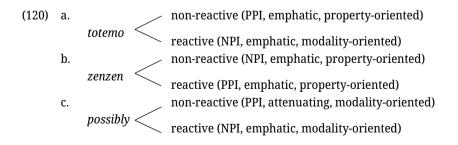
This point contrasts with the pragmatic *TOTALLY*, which can be used as a reply to both unbiased and biased questions (Beltrama 2018):

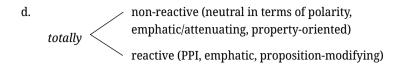
(119) a. Kim: Did Luke get married at 25? (Unbiased) Alex: #He REALLY did! Alex: √*He TOTALLY did!* b. Kim: *Are you sure that Luke got married at 25?* (Epistemically biased) Alex:√*He REALLY did!* Alex:√*He TOTALLY did!* (Beltrama 2018: 253)

Interestingly, REALLY is only natural for epistemically biased questions (See also Romero and Han 2004). In this respect, REALLY is more similar to positive zenzen.

6 Conclusion

In this chapter, I examine the reactive and non-reactive usage of scalar adverbs and intensifiers in Japanese and English, with a particular focus on totemo, zenzen, possibly, and totally, and argue that significant differences exist between the two with respect to meaning and polarity sensitivity (distributional patterns). The differences between the two can be summarized as follows:





Non-reactive polarity items are not sensitive to discourse structure, measuring degree at the semantic level. For example, non-reactive totemo 'very', zenzen 'at all', and totally measure the degree of the attribute of the gradable predicate, while the non-reactive possibly only measures the possibility of the proposition at the semantic level. In this study, I assumed that their licensing environments derive from their lexical meanings and functions. For example, totemo 'very' in non-reactive use denotes a high degree meaning, and has a pragmatic function of emphasis. Thus, it cannot appear in negative sentences (when used in negative sentences, it does not give rise to "emphasis," instead implying attenuation). The NPI zenzen 'at all' also functions to express emphasis, but has the lexical meaning of "less than a standard by a large amount," and can only express the meaning of emphasis when co-occurring with negation. As for the non-reactive possibly, it is a sentential modifier and has a pragmatic function of attenuation; thus, it behaves as a PPI and cannot be in the semantic scope of negation. Semantic totally is neutral with respect to polarity and can express an emphatic meaning in a positive environment, or an attenuating meaning in a negative sentence. Thus, we can say that their polarity sensitivity/distribution is regulated in terms of their lexical meaning/function and their interaction with operators in the sentence.

In contrast, reactive polarity items are sensitive to discourse structure, and their polarity properties are determined by their relation to the proposition in the previous context. Reactive *totemo* and *possibly* behave as NPIs, emphasizing the impossibility of the proposition in a context where it is expected to be true. In contrast, reactive *zenzen* and emphatic *TOTALLY* behave as PPIs, emphasizing the truth of a proposition/degree of a property in a context where they are not expected to be false/expected to be below a standard. Thus, the polarity sensitivity of reactive polarity items comes from the reversal of expectation and the exact direction of reversal is item specific; it can be a reversal of a positive expectation or a reversal of a negative expectation). From the perspective of speech acts, this kind of reversal can be viewed as an objection to an already established assumption and may be related to a kind of metalinguistic objection.

I hope this paper has clarified that polarity-sensitive items exist, whose distribution patterns are not regulated by syntactic or semantic mechanisms such as negation and downward-entailing operators/non-veridical operators such as conditional, questions, and modal (e.g., Ladusaw 1980; Giannakidou 1998), but rather

constrained because of its pragmatic function of objection to a previous utterance/ already established assumption.

Finally, I would like to consider the relationship between non-reactive polarity item and reactive polarity item in terms of scalarity. In this paper I demonstrated that reactive and non-reactive polarity items are different in terms of function. However, in terms of scalarity, they share the same scalar component. For example, the reactive use of totemo and zenzen have the same scalar meaning of "greater than a standard by a large amount" as the non-reactive totemo 'very'/ zenzen 'at all.' Furthermore, the reactive totally and the regular non-reactive totally share the scalar meaning of 'maximum.' This suggests that scalarity is ubiquitous and can be used in a multidimensional fashion (Sawada 2010, 2018).

One puzzling point is the relationship between ordinary possibly and intensifier NPI possibly. In this paper, I considered that the former is a PPI to express low probability and the latter is an NPI to emphasize improbability at the non-at-issue level. Intuitively, they do not seem to share the same pragmatic function, i.e., the former has an attenuating function, while the latter has an emphatic function. Is there any similarity between the two in terms of scalarity? Although no relationship is evident between the two in terms of scale structure, I would like to consider that historically they have had a similarity. Originally, the intensifier NPI possibly may have behaved as a minimizer (Quirk et al. 1985) with a low degree. If interpreted in the scope of negation like the usual minimizer a bit, the sentence created a flavor of emphatic denial. However, since possibly developed as an expressive and could no longer enter the scope of negation, it came to emphasize the degree of can't/couldn't. This is just a speculation and more detailed investigation is necessary for how intensifier *possibly* developed.

In the future, a more detailed discussion of the relationship between reactive and non-reactive polarity is necessary in terms of polarity sensitivity as well. Considering the phenomenon of Japanese and English intensifiers, the polarity sensitivity of secondary reactive intensifier is inversely related to that of the corresponding non-reactive use of the intensifier. ¹⁵ For example, while non-reactive normal totemo 'very' and possibly are PPIs, reactive totemo and possibly are NPIs. As for zenzen, the non-reactive zenzen is an NPI, but the reactive zenzen is a PPI. For possibly, the non-reactive possibly does not have polarity (i.e., it can appear in both positive and negative environments), while the reactive possibly is an NPI. Thus, they seem to divide the labor in terms of polarity sensitivity. It appears that the different polarity sensitivities clarify the functional properties of each, but the phenomenon of reversal of polarity sensitivity and its motivation require further investigation.

¹⁵ I thank Stephanie Solt for the valuable comment regarding this point.

References

- Amaral, Patricia, Craige Roberts & E Allyn Smith. 2007. Review of The Logic of Conventional Implicatures by Chris Potts. Linauistics and Philosophy 30, 707-749.
- Anand, Pranav & Adrian Brasoveanu. 2010. Modal concord as modal modification. In Proceedings of Sinn und Bedeutung 14, 19-36.
- Arimitsu. Nami. 2002. Hiteiteki bunmvaku-to hitei kyokusei koomoku-nikansuru ichi koosatsu: 'not at all' vs. 'zenzen'-o chuushin-ni [Notes on the negative context and negative polarity items: not at all vs. zenzen. Papers in Linauistic Science 8, 63-80.
- Bartsch, Renate & Theo Vennemann. 1973. Semantic Structures: A Study in the Relation between Syntax and Semantics. Frankfurt: Athenäum Verlag.
- Bellert, Irena. 1977. On semantic and distributional properties of sentential adverbs. Linguistic Inquiry
- Beltrama, Andrea. 2018. Totally between discourse and subjectivity: Exploring the pragmatic side of intensification. Journal of Semantics 35(2). 219-261.
- Bierwisch, Manfred. 1989. The semantics of gradation. In Manfred Bierwisch & Ewald Lang (eds.), Dimensional Adjectives, 71–261. Berlin: Springer Verlag.
- Bolinger, Dwight. 1972. Degree Words. Paris: Mouton.
- Cresswell, Max J. 1977. The semantics of degree. In Barbara H. Partee (ed.), Montague Grammar, 261-292. New York: Academic Press.
- Cruse, Allan D. 1986. Lexical Semantics. Cambridge: Cambridge University Press.
- Dryer, Matthew S.1996. Focus, pragmatic presupposition, and activated propositions. Journal of Pragmatics 26. 475-523.
- Ernst, Thomas. 2009. Speaker-oriented adverbs. Natural Language & Linguistic Theory 27, 497-544.
- von Fintel, Kai & Irene Heim. 2001. Lecture note of advanced semantics seminar 2001. Cambridge, MA: MIT.
- Geurts, Bart & Janneke Huitink. 2006. Modal concord. In Paul Dekker & Hedde Zeijlstra (eds.), Concord Phenomena and the Syntax Semantics Interface, 15-20. Malaga: The European Summer School in Logic, Language and Information (ESSLLI).
- Giannakidou, Anastasia. 1998. Polarity Sensitivity as (Non)veridical Dependency. Amsterdam: John Benjamin.
- Greenbaum, Sidney. 1969. Studies in English Adverbial Usage. Coral Gables, Florida: University of Miami Press.
- Grice, Paul H. 1975. Logic and conversation. In Peter Cole & Jerry L. Morgan (eds.), Syntax and Semantics, Vol 3: Speech Acts, 43-58. New York: Academic Press.
- Grosz, Patrick. 2010. Grading modality: A new approach to modal concord and its relatives. In Proceedings of Sinn und Bedeutung 14. 185-201.
- Gutzmann, Danel. 2011. Expressive modifiers and mixed expressives. In Oliver Bonami & Patricia C. Hofherr (eds.), Empirical Issues in Syntax and Semantics 8, 123–141.
- Gutzmann, Daniel & Elena Castroviejo Miró. 2011. The dimensions of verum. In Olivier Bonami & Patricia C. Hofherr (eds.), Empirical Issues in Syntax and Semantics 8, 143–166.
- Hacquard, Valentine. 2006. Aspects of modality. Cambridge, Mass: MIT dissertation.
- Halliday, Michael. 1970. Functional diversity in language as seen from a consideration of mood and modality in English. Foundations of Language 6. 322–361.
- Harris, Jesse A & Christopher Potts. 2009. Perspective-shifting with appositives and expressives. Linguistics and Philosophy 32, 523-552.
- Hohle, Tilman N. 1992. Uber verum-fokus im deutschen. In Joachim Jacobs (ed.), Informations Struktur und Grammatik, 112-141. Wiesbaden: VS Verlag für Sozialwissenschaften.

- Horn, Laurence R. 1989. A Natural History of Negation. Chicago: University of Chicago Press.
- Horn, Laurence R. 2007. Toward a Fregean pragmatics: Voraussetzung, nebengedanke, andeutung. In Istvan Kecskes & Laurence R. Horn (eds.), Explorations in Pragmatics, 39-69. Berlin: Mouton de
- Hoye, Leo. 1997. Adverbs and Modality in English. London/New York: Routledge.
- Huitink, Janneke, 2012, Modal concord: A case study of Dutch, Journal of Semantics 29, 403–437.
- Imoto, Ryo. 2011. "Futsuuni kawaii"-koo [On degree modification of futsuu-ni 'ordinary']. Shoqaku Ronshu 79(3). 59-75.
- Irwin, Patricia, 2014. So [totally] speaker-oriented: An analysis of "drama SO". In Raffaella Zanuttini & Laurence R. Horn (eds.), Microsyntactic Variation in North American English, 29-70. Oxford: Oxford University Press.
- Israel, Michael. 1996. Polarity sensitivity as lexical semantics. Linguistics and Philosophy 19. 619-666.
- Israel, Michael. 2004. The pragmatics of polarity. In Laurence R. Horn & Gregory Ward (eds.), The Handbook of Pragmatics, 701-723. Oxford: Blackwell.
- Kaplan, David. 1999. The meaning of ouch and oops: Explorations in the theory of meaning as use. Ms. University of California, Los Angeles.
- Karttunen, Lauri & Annie Zaenen. 2005. Veridicity. In Graham Katz, James Pustejovsky & Frank Schilder (eds.), Annotating, Extracting and Reasoning about Time and Event. Dagstuhl, Germany: Schloss Dagstuhl, Leibniz-Zentrum für Informatik. https://drops.dagstuhl.de/opus/volltexte/2005/314/
- Kennedy, Christopher. 2007. Modes of comparison. In Osamu Sawada, Eleni Staraki, Malcolm Elliott, James Kirby & Suwon Yoon (eds.), Papers from the 43rd Annual Meeting of the Chicago Linguistic Society, 141–165. Chicago: Chicago Linguistic Society.
- Kennedy, Christopher & Louise McNally. 2005. Scale structure, degree modification, and the semantics of gradable predicates. Language 81. 345-381.
- Klecha, Peter. 2012. Positive and conditional semantics for gradable modals. In Proceedings of Sinn und Bedeutung 16, 363-376.
- Ladusaw, William. A. 1980. Polarity Sensitivity as Inherent Scope Relations. New York/ London: Garland.
- Larrivée, Pierre. 2012. Positive polarity items, negation, activated propositions. Linguistics 50(4). 869-900.
- Lassiter, Daniel. 2011. Measurement and modality: The scalar basis of modal semantics. New York: New York University dissertation.
- McCready, Elin. 2009. What man does. Linguistics and Philosophy 31. 671–724.
- McCready, Elin. 2010. Varieties of conventional implicature. Semantics & Pragmatics 3. 1–57.
- McCready, Elin & Magdalena Schwager. 2009. Intensifiers. Paper presented at the workshop on expressives and other kinds of non-truth-conditional meaning (DGfS 2009), Osnabrück, 4-6 March, 2009.
- Morita, Yoshiyuki. 1989. Kiso Nihongo Jiten [A dictionary of basic Japanese]. Tokyo: Kadokawa Shoten. Nilsen, Øystein. 2004. Domains for adverbs. Lingua 114(6). 809-847.
- Noda, Harumi. 2000. Zenzen-to kooteikei-no kyooki [Co-occurrence of the adverb zenzen with affirmative predicates]. Keiryo Kokugogaku [Mathematical linguistics] 22(5). 169–182.
- Odani, Masanori. 2007. Koobun-no kakuritsu-to goyooron-teki kyooka: Zenzen . . . nai-no rei-o chuushin-ni [The establishment of construction and pragmatic strengthening: The case of Japanese "zenzen. . .nai" construction]. In Proceedings of the 9th Conference of the Pragmatic Society of Japan, 17-24.
- Osaki, Shiho. 2005. Hitei-to ko'oo-suru tootei-to totemo-nitsuite [Co-occurrence restrictions of adverbs tootei and totemo]. Tsukuba Journal of Applied Linguistics 12. 99–111.

- Percus, Orin. 2000. Constraints on some other variables in syntax. Natural Language Semantics 8. 173-229.
- Potts, Christopher. 2005. The Logic of Conventional Implicatures. Oxford: Oxford University Press.
- Potts, Christopher. 2007. The expressive dimension. *Theoretical Linguistics* 33(2), 165–197.
- Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech & Jan Svartvik. 1985. A Comprehensive Grammar of the English Language. London: Longman.
- Romero, Maribel & Chung-Hye Han. 2004. On yes/no questions. Linguistics and Philosophy 27(5), 609-658. Sapir, Edward. 1944. Grading: A study in semantics. *Philosophy of Science* 11. 93–116.
- Sato. Yosuke, Yuka Imai & Moka Michihata, 2021. On the degree semantics of hutsuni and zenzen. Japanese/Korean Linguistics 28, 181-193.
- Sawada, Osamu. 2008. Two types of adverbial polarity items in Japanese: Absolute and relative. In Proceedings of the 10th Conference of the Pragmatics Society of Japan, 263–270.
- Sawada, Osamu. 2009. Pragmatic aspects of implicit comparison: An economy-based approach. Journal of Pragmatics 41(6). 1079-1103.
- Sawada, Osamu. 2010. Pragmatic Aspects of Scalar Modifiers. Chicago: University of Chicago dissertation.
- Sawada, Osamu. 2014a. An utterance situation-based comparison. Linguistics and Philosophy 37(3). 205-248.
- Sawada, Osamu. 2014b. Polarity sensitivity and update refusal: The case of the Japanese negative totemo 'very'. In Proceedings of the 11th International Workshop on Logic and Engineering of Natural Language Semantics (LENLS 11), 313-326.
- Sawada, Osamu. 2017. The Japanese negative totemo 'very': Toward a new typology of negative sensitive items. In Jessica Kantarovich, Tran Truong & Orest Xherija (eds.), In Proceedings of the 52nd Annual Meeting of the Chicago Linguistic Society, 437–451. Chicago: Chicago Linguistic Society.
- Sawada, Osamu. 2018a. Pragmatic Aspects of Scalar Modifiers: The Semantics-Pragmatics Interface. Oxford: Oxford University Press.
- Sawada, Osamu. 2018b. The Japanese negative totemo: From an unconditional expression to an expressive intensifier. In Proceedings of Logic and Engineering of Natural Language Semantics (LENLS) 15. Paper 18, 1-14.
- Sawada, Osamu. 2019. The discourse-pragmatic properties of the Japanese negative intensifier totemo. In Harumi Sawada, Nitta Yoshio & Masa-aki Yamanashi (eds.), Bamen-to Shutaisei Shukansei [Scenes and subjectivity], 593-613. Tokyo: Hituzi Syobo.
- Sawada, Osamu. 2021. The Japanese reactive attitudinal nani-mo: A new class of negative polarity items. Gengo Kenkyu 160. 43-68.
- Solt, Stephanie. 2015. Measurement scales in natural language. Language and Linguistics Compass 9(1).
- von Stechow, Arnim. 1984. Comparing semantic theories of comparison. Journal of Semantics 3. 1–77.
- Szabolcsi, Ana. 2004. Positive polarity negative polarity. Natural Language & Linguistic Theory 22. 409-452.
- Wang, Linton, Brian Reese & Elin McCready. 2005. The projection problem of nominal appositives. Snippets 10. 13-14.
- Watanabe, Minoru. 2001. Sasuga! Nihongo [Sasuga Japanese]. Tokyo: Chikuma Shinsho.
- Zeijlstra, Hedde. 2007. Modal concord. In Proceedings of Semantics and Linguistic Theory XVII, 317–332. Ithaca, NY: Cornell University.
- Zimmermann, Malte. 2011. Discourse particles. In Claudia Maienborn, Klaus von Heusinger & Paul Portner (eds.), Semantics: An International Handbook of Natural Language Meaning Vol. 2, 2011-2038. Berlin: Mouton de Gruyter.

Elizabeth Bogal-Allbritten, Keir Moulton and Junko Shimoyama

Chapter 11 On propositional anaphora: 'Referential' propositions and propositional proforms

1 Introduction

Cross-linguistic research on nominalized vs. non-nominalized clausal complementation has shown that nominalized clauses tend to be associated with factive interpretation more readily than non-nominalized clauses are (Özyıldız 2017; Lee 2019; Bondarenko 2020; Bochnak and Hanink 2022). In the study of Japanese, for instance, *koto*, which can turn a finite clause into a nominal element, has been often described as the factive complementizer, as opposed to another element *to*, which has been described as a non-factive complementizer (*e.g.*, Kuno 1973).¹

In this paper, we present a case study on nominalized clausal complements in non-factive belief reports, involving *-ta-nun-kes* and *(-to-yuu)-no* at the right periphery of such complements in Korean (1) (Shim and Ihsane 2015) and in Japanese (2), respectively.

(1) na-nun [kay-ka swukecey-lul ta ha-yass-ta-nu
I-TOP he-NOM homework-ACC all do-PST-DEC-ADN
kes]-ul mit-e
kes-ACC believe-DEC
'I believe that he finished his homework.'

Acknowledgments: We gratefully thank Chung-hye Han, Kyeong-min Kim, Dorothy Ahn, and Nayoun Kim for sharing their judgments of Korean. We would also like to thank the two anonymous reviewers for very useful comments on an earlier version of our manuscript, McGill Syntax-Semantics Reading Group, the audiences at the Brussels Conference on Generative Linguistics (BCGL) 13: The syntax and semantics of clausal complementation, CRISSP KU Leuven (2020), and at the Workshop on the nouniness of propositional arguments, 43rd Annual Conference of the German Linguistic Society (DGfS), University of Freiburg (2021). We also thank Sabrina Wang for editorial assistance. This research was supported, in part, by SSHRC Insight Grants (#435-2015-0454 and #435-2022-0595) to Junko Shimoyama and Keir Moulton, for which we are grateful.

¹ We can immediately see that this is not quite accurate as *koto* can be used in complements to predicates such as *kitaisuru* 'hope, expect', *negau* 'wish' and *inoru* 'pray'.

(2) Watasi-wa [kare-ga syukudai-o zenbu si-ta(-to-yuu)-no]-o I-TOP he-NOM homework-ACC all do-PST-to-yuu-no-ACC sinzi(-tei)-ru. believe-TE.ASP-NPST 'I believe that he finished his homework.'

The belief reports in (1) and (2) carry a kind of familiarity requirement – one which we explore in detail below – such that the embedded proposition must be anaphoric to a proposition in the discourse. At first, this result may appear to support a proposal by Kastner (2015) that nominalized complements function as anaphoric definites in the style of Heim (1983), which refer to familiar propositions in the discourse. It turns out, however, that in both Korean and Japanese, nominalized complement clauses in belief report contexts exhibit anaphoric behaviour that is much more restricted than expected on the view where such clauses simply 'refer' to familiar propositions in the discourse (Bogal-Allbritten and Moulton 2018). In this paper polarity plays a key role. We examine the anaphoric potential of negated sentences and polar questions. Propositional anaphora (of the pronominal and response particle sort) can take the prejacent of negation and the positive proposition (the "highlighted" proposition) of a polar question as their antecedents. The anaphoric nominalized clauses we look at, however, resist taking such propositions as antecedents.

We offer a sketch of a possible analysis for these observations. We speculate that 'reference' to propositions in the cases we study is actually reference to particular individuals – entity-type 'things' – that bear propositional content. We will see that not just any salient proposition in the discourse evokes such individuals, and we suggest this goes toward explaining the restricted set of propositions that are available for anaphoric reference. Assertions and certain embedded clauses evoke such entities. Crucially, however, we propose that propositions embedded by polarity expressions (negated sentences, polar questions) do not easily evoke such entities. This proposal can be seen as part of a larger program: variables are uniformly individual types (Chierchia 1984; Landman 2006; Poole 2017).

2 Nouny CPs

2.1 'Referential' propositions

From the beginning of research on clausal complementation there have been many proposals for nominal and determiner structure above the CP (Rosenbaum 1967; Kiparsky and Kiparsky 1970; Han 2005; Davies and Dubinsky 2010; Takahashi 2010; Hartman 2012, among others). There have also been proposals that clauses can trade in the semantics associated with DPs as 'referential' propositions (De Cuba 2007, 2017; Haegeman and Ürögdi 2010; Sheehan and Hinzen 2011). An example of this line of research is Kastner (2015), which argues that CPs are nominalized by a meaningful definite determiner (overt in some languages), if they complement presuppositional factives and response stance verbs. This is shown in (3b) and (3c) below.

(3) a. non-stance: We believe/think/said [CP] that they won [CP]

b. factives: We know/remember/regret $[DP \otimes_D [CP]$ that they won]] c. response stance: We confirm/deny/accept/admit/agree $[_{DP} \varnothing_D]_{CP}$ that

they won 11

Kastner's hypothesis is that "This D endows the proposition with referentiality, turning it into a DP along the way" (Kastner 2015: 172).

Response stance complements are an interesting case for probing possible 'referential' properties for propositional expressions since they are not factive but are "familiar" or presupposed (Cattell 1978; Hegarty 1992). According to Honcoop (1998: 167), for example, "response stance verbs presuppose that their complements express assumptions or claims held by someone possibly other than the speaker which are part of the common ground." This can be seen in the infelicity of the continuation in (4).

- (4) Alice agreed/admits/confirmed [that Ron called]...
 - #...but no one had said that Ron called.

2.2 Some open questions

There are some open questions regarding the hypothesis that the addition of a definite determiner to a CP makes the proposition denoted by the CP referential. First, it is not clear what really triggers the presupposition that the content of the CP is part of the common ground (see (4) above). For Kastner (2015), the presupposition comes from the D, which is treated like a Heimian anaphoric definite. Kastner (2015) presents good evidence from extraction for D, but there are also open questions about distribution. The clausal complements of response stance verbs distribute like CPs and not like DPs. For instance, passivized (5a) and nominalized (5b) response stance verbs accept CP internal arguments but not DP ones (5c).

- (5) a. It was agreed/denied/accepted that he lost.
 - His denial/agreement/acceptance that he lost.
 - *It was denied that claim./his denial *(of) that claim.

This casts doubt on the CPs in (5a) and (5b) being DPs in disguise. However English plays out, response stance verbs do not help us 'isolate' the source(s) or the content of the presupposition associated with so-called referential propositional complements.

Second, it is unclear what a 'referential proposition' is in the first place. A good place to look is work on response particles and other propositional anaphora. It has been argued that various 'chunks' of the clause can introduce discourse referents, several of them propositional. (6) shows available propositional discourse referents proposed in Krifka (2013, (4a)), exemplified in (7).

(6) Ede didn't steal the cookie.

$$[A_{ACTP} \text{ ASSERT} \quad [N_{egP} \text{ Ede did-n't} \quad [T_P \text{ } t_{Ede} \text{ } t_{did} \text{ } [v_P \text{ steal the cookie}]]]]$$

$$\Rightarrow d_{speechact} \quad \Rightarrow d'_{prop} \quad \Rightarrow d''_{prop}$$

- (7) a. **That** was a lie. \rightarrow d
 - b. **No** (he didn't) \hookrightarrow d'
 - c. **Yes** (he did) $\hookrightarrow d''$ I think **so** \hookrightarrow d"

An interesting question that arises is whether "referential propositions" refer to these kinds of discourse referents. So far, we are finding the answer is 'no'.

2.3 What we are going to show

In what follows, we will first provide basic descriptions of nominalized clauses in Korean and Japanese of the type we see in (8) and (9) (section 3).

(8) Na-nun [kay-ka swukecey-lul ta ha-yass-ta-nun he-NOM homework-ACC all do-PST-DEC-ADN I-TOP kes1-ul mit-e kes-ACC believe-DEC 'I believe that he finished his homework.'

(9) Watasi-wa [kare-ga syukudai-o zenbu si-ta(-to-yuu)-no-o] I-TOP he-NOM homework-ACC all do-PST-to-yuu-no-ACC sinzi-teiru. believe-ASP 'I believe that he finished his homework.'

We will see in section 4 that in belief report contexts these clauses are anaphoric, and this can be shown to be the case independently of a response stance embedding verb. However, the kinds of propositional antecedents that support such clauses are more limited than the schema from Krifka (2013) in (6) would suggest.

We will then re-appraise some of the facts surrounding propositional anaphora proper (Asher 1993; Snider 2017) in English (section 6). It turns out that once we separate 'true' propositional anaphora (that, it) from elliptical propositional anaphora (so), the data concerning which antecedents are available are, in our opinion, not as clear-cut as reported in the literature. We speculate that even for bona fide propositional anaphora, not just any salient proposition will support anaphora.

We suggest a working hypothesis about which kinds of propositions are available for anaphoric reference by nominalized clauses and propositional proforms. We speculate that reference to proposition is in fact reference to individuals (entity types) that bear propositional content, such as Moltmann's (2020) 'attitudinal objects'. Nominalized clauses, we contend, are anaphoric descriptions of such individuals, and we suggest further that these individuals are evoked by only certain pieces of language, e.g. Speech Acts and certain clausal complements, but not all the propositional chunks of language in (6).

3 Nominalized clauses in Korean and Japanese

3.1 Korean -ta-nun-kes clauses

We focus on two clause embedding strategies in Korean: those introduced by the quotative, complementizer-like element ko (10) and those introduced by the form kes as in (11).

(10) Embedded by ko Na-nun [kay-ka swukecey-lul ha-yass-ta-ko] mit-e. he-NOM homework-ACC all do-PST-DEC-ko believe-DEC I-TOP 'I believe that he finished his homework.'

(11) Nominalized with kes

Na-nun [kay-ka swukecey-lul ta ha-yass-**ta-nun**] **kes**]-ul I-TOP he-NOM homework-ACC all do-PST-DEC-ADN kes-ACC mit-e.

believe-DEC

'I believe that he finished his homework.'

We can see that *kes* nominalizes the clause (Kim 1984; Jo 2003) from the fact that (i) *kes* must take a case marker (*-ul* 'ACC'), unlike *ko*; and (ii) *kes* is preceded by *-(n)un*, an adnominal marker as with nominal modification generally. Although *kes* is not synchronically a full-fledged noun, it is translated often as "thing".²

It should be noted that *kes*-headed clauses have a very flexible use (Kim 2009). They are used, for example, in internally headed relative clause constructions, with *kes* as the 'nominalizing' element as in (12a). *Kes*-headed clauses are also used in perception and factive reports, as in (12b) and (12c).

(12) a. Internally headed relative clause construction:

John-un [totwuk-i tomangka-n-un **kes**]-ul cap-ess-ta.

J.-TOP thief-NOM run.away-IMPF-ADN *kes*-ACC catch-PST-DEC

'John caught the thief that was running away.'

b. Perception construction:

John-un [totwuk-i tomangka-n-un kes]-ul po-ess-ta.

J.-TOP thief-NOM run.away-IMPF-ADN kes-ACC see-PST-DEC 'John saw (the event) of the thief running away.'

c. Factive construction:

John-un [totwuk-i tomangka-n-un kes]-ul al-ess-ta.

J.-TOP thief-NOM run.away-IMPF-ADN kes-ACC know-PST-DEC

'John knew (the fact) that the thief was running away.'

Unlike the internally headed relative, perception, and factive *kes*-constructions, the *kes* construction of interest to us contains the *-ta* declarative (DECL) marker. Example (13), with *-ta*, is interpreted non-factively, while example (14), without *-ta*, is interpreted factively (Kim 2011, Shim and Ihsane 2015). We follow the literature and refer to examples such as (13) as the *ta-nun-kes* construction.

² In the literature, *kes* is variously called a nominalizer (Kim 1984, Jo 2003), pronoun (Chung and Kim 2003, Lee 2006), or complementizer (Jhang 1994). See also Chae (2007).

(13) $ta \Rightarrow \text{non-factive}$ Kibo-nun IDana-ka i chavk-ul ilk-ess-ta-nun kes1-ul K.-TOP D.-NOM this book-ACC read-PST-DEC-ADN NMLZ-ACC kulente sasil-un chavk-ul ilk-ci mit-ess-ta. Dana-nun i believe-PST-DEC but fact-TOP D.-TOP this book-ACC read-CI anh-ass-ta. NEG-PST-DEC 'Kibo believed that Dana read this book, but in fact she didn't read it.'

(14) No $ta \Rightarrow$ factive Kibo-nun [Dana-ka i chayk-ul ilk-un kesl-ul K.-TOP D.-NOM this book-ACC read-ADN NMLZ-ACC mit-ciahn-ess-ta, #kulente sasil-un Dana-nun i chayk-ul believe-NEG-PST-DEC but fact-TOP D.-TOP this book-ACC ilk-ci anh-ass-ta. read-CI NEG-PST-DEC 'Kibo didn't believe (the fact) that Dana read this book, #but in fact she didn't read it.' (Shim and Ihsane 2015: 140)

Ta-nun-kes constructions resemble complex NP constructions headed by nouns like rumour/news/claim, as shown in (15). These also require -ta. However, kes, unlike a bona fide noun like *cwucang* 'claim', cannot be modified by adjectives as shown in (16).

- hwumchi-ess-*(ta)-nun somwun/sosik/cwucang. (15) *Mina-ka* posek-ul Mina-NOM jewelry-ACC steal-PST-DECL-ADN rumour/news/claim 'the rumour/news/claim that Mina stole the jewelry.' (Kim 2011: (4a.b))
- (16)a. pi-ka on-ta-nun calmostoy-n cwucang rain-NOM come-DECL-ADN wrong-ADN claim 'the wrong claim that it is raining'
 - b. pi-ka on-ta-nun (*calmostoy-n) kes rain-NOM come-DECL-ADN wrong-ADN **KES** 'the wrong thing that it is raining.'

This fits the typological observations in Alexiadou (2020) and Iordăchioaia (2020) that nominalizing elements that combine with higher categories in the functional sequence of the clause (e.g. tense phrase (TP) or complementizer phrase (CP)) are nominalizers of the category determiner (Abney 1987) rather than nominalizers of the category noun. In this we follow Kim (2009) in treating *kes* as a determiner (D).

As to the structure below D in the *ta-nun-kes* construction, it has been analyzed as involving a hidden complementizer *ko* and hidden verb of saying *ha* 'say' as in (17) (Lee 2019), although this is not uncontroversial (see Yeom 2018).

(17) [TP]-ta-COMP-SAY-nun-kes

3.2 Japanese (-to-yuu)-no clauses

Japanese has a similar contrast between clauses headed by the element *to*, as in (18), and nominalized clauses headed by *no*, as in (19).

(18) Embedded by to

Watasi-wa [kare-ga syukudai-o zenbu si-ta-to] sinzi-teiru.

I-TOP he-NOM homework-ACC all do-PST-to believe-ASP
'I believe that he finished his homework.'

(19) Nominalized with (-to-yuu)-no

Watasi-wa [kare-ga syukudai-o zenbu si-ta(-to-yuu)-no]-o
I-TOP he-NOM homework-ACC all do-PST-to-yuu-no-ACC sinzi-teiru.
believe-ASP

'I believe that he finished his homework.'

The form to-yuu, (= to + yuu) is a grammaticalized verb of saying, and in combination with no, it is assumed to be analogous to the Korean ta-nun-kes in S.S. Kim (2011). Like ta-nun-kes-clauses in Korean, to-yuu-no-clauses in Japanese can be interpreted non-factively under believe.

³ Nominalized clauses with -no/koto, but without to-yuu, can be interpreted factively. Japanese to-yuu-less forms can also be interpreted non-factively as in (i) with a non-response stance verb kitaisuru 'hope'. In such cases, we often see -no being interchangeable with koto. We would have to deal with this type of -no as separate from the -no we are focusing on. Thanks to a reviewer for a relevant question.

⁽i) [Hanako-ga denwasi-te kuru-{no/koto}]-o Kitaisiteiru. Hanako-NOM call-TE come-NO-ACC hope 'I'm hoping that Hanako will call me.'

Similarly to kes in Korean, no attaches to a full clause and turn it into a nominal constituent. Also similarly to kes, the morpheme no is found elsewhere, such as for internally headed relative clause constructions, perception constructions, and factive constructions

- (20) a. Internally headed relative clause construction: Yoko-wa [neko-ga mado-kara haittekita **no**l-o tukamaeta window-from entered Yoko-WA cat-ACC NO-ACC caught 'Yoko caught a/the cat that came in from the window.'
 - b. Perception construction: Yoko-wa [neko-ga mado-kara haittekita **no**l-o mita. Yoko-WA cat-ACC window-from entered NO-ACC caught 'Yoko saw (the event of) a cat coming in from the window.'
 - c. Factive construction:

Yoko-wa Ineko-ga mado-kara haittekita **no**l-o sit-te Yoko-WA cat-ACC window-from entered NO-ACC know-TE i-ru.

ASP-NPST

'Yoko knows that a cat came in from the window.'

In addition, the following example illustrates that no functions as an N-anaphor (Murasugi 1991).

osara totte. Ato. dore-demo (21) Siroi iikara. akai-**no**-o iti-mai totte. white plate grab and which-DEMO good red-NO-ACC one-CL grab. 'Grab me a/the white plate. Also, it doesn't matter which, grab me a red one (=plate).'

3.3 The anaphoric properties of *ta-nun-kes/(to-yuu)-no* clauses

Korean ta-nun-kes clauses are a good candidate for Kastner (2015)'s hypothesis that nominalized clauses are definite. Such clauses are possible, in fact required, under response stance verbs. As shown in (22b), a ko-clause is simply ungrammatical under such verbs.4

⁴ We note here that the data above speak against Kastner (2015)'s collapsing factives with response-stance. In Korean, factives are not forced to take ta-nun-kes clauses, as observed in (12c) above.

- (22) a. Na-nun [Lee-ka wa-ss-ta-nun kes-ul]
 I-TOP L.-NOM come-PST-DECL-AND kes-ACC incengha/pwuinha-n-ta.
 accept/reject-PRES- DECL
 'I agree/reject that Lee came.'
 - b. *Na-nun [Lee-ka wa-ss-ta-ko] incengha/pwuinha-n-ta.
 I-TOP L.-NOM come-PST-DECL-COMP accept/reject-PRES-DECL
 'I accept/reject that Lee came.'

Importantly, however, we cannot be sure whether the familiarity meaning comes from the embedding verb or from the *ta-nun-kes* complement itself (or both). Our strategy here will be to use a non-response-stance verb (a 'believe' verb) and try both *ko/to* and *ta-nun-kes/to-yuu-no* clauses. That way we can isolate the effects of the complement type.

3.3.1 Korean ta-nun-kes

We begin with Korean and ask whether ta-nun-kes can be felicitously used in contexts where the relevant proposition is given in the discourse. In the discourse in (23), from Bogal-Allbritten and Moulton (2018), both utterances B (ϕ -ta-nun-kes) and B' (ϕ -ta-ko) were judged felicitous.

- (23) **A:** Na-nun swukecey-lul ta ha-yass-e. Pakk-ey naka nola-to
 I-TOP homework-ACC all do-PST-DEC outside-at go play-also
 toy?
 can
 - 'I finished my homework. Can I go outside and play?'
 - B: An toy. A: Na-lul an mit-e?
 not can I-ACC not believe-INT
 'No.' 'Don't you believe me?'
 - **B**: Um. Na-nun [ney-ka swukecey-lul ta ha-yass-ta-nun you-NOM homework-acc all Yes. I-TOP do-PST-DEC-ADN kes1-ul mit-e. Haciman cikum-un cenvek siksa NMLZ-ACC believe-DEC But now-TOP evening meal sikan-i-ya. time-COP-DEC

'Yes, I believe that you finished your homework. But it's dinner time.'

B': Um. Na-nun [ney-ka swukecey-lul ta ha-yass-**ta-ko**] Yes. I-TOP vou-NOM homework-acc all all do-PST-DEC-ko Haciman cikum-un cenvek mit-e. siksa sikan-i-va. believe-DEC but now-TOP evening meal time-COP-DEC 'Yes, I believe that you finished your homework. But it's dinner time.'

The important contrast – which as far as we know is a novel observation first reported in Bogal-Allbritten and Moulton (2018) – arises in the discourse in (24), in which the relevant proposition is not given in the discourse. In this case, only utterance B' using ϕ -ta-ko is felicitous. The nominalized complement with ϕ -ta-nun-kes in utterance B was judged infelicitous.

- (24) A: Cyoni-nun pakk-ey naka nola-to toy? I.-TOP outside-at go play-also can 'Can Johnny go outside and play?'
 - B:# Um. Na-nun [kay-ka swukecey-lul ta ha-yass-**ta**-nun he-NOM homework-ACC all do-PST-DEC-ADN Yes. I-TOP kes-ull mit-e. NMLZ-ACCC believe-DEC #'Yes, I believe that he finished his homework.'
 - B: Um. Na-nun Ikav-ka swukecev-lul ha-vass-ta-kol Yes. I-TOP he-NOM homework-ACC all do-PST-DEC-ko mit-e.

believe-DEC

'Yes, I believe that he finished his homework.'

(25) provides a summary of results so far.

(25) a. ϕ is given in the discourse: believe... √ φ-ta-nun-kes ✓ ø-ta-ko **×**φ-ta-nun-kes b. ϕ is **not** given in the discourse: *believe...* √φ-ta-ko

We take these data to show that the nominalized clause (ta-nun-kes) must be ana**phoric** to a salient proposition given in the discourse.

3.3.2 Japanese (to-yuu)-no

We find a similar effect for (to-yuu)-no clauses in Japanese. The dialogues below in (27) and (28) show the following pattern, which parallels the Korean data above.

- (26) a. ϕ is given in the discourse: believe... $\checkmark \phi$ -(to-yuu)-no $\checkmark \phi$ -to (less natural)
 - h. ϕ is **not** given in the discourse: *believe.* . . ×φ-(to-yuu)-no √φ-to
- (27) **A**: Syukudai zenbu si-ta Soto-ni asobi-ni it-te ii? yo. homework all do-PST PRT outside-DAT play-to go-TE may 'I finished my homework. May I go outside and play?'
 - B: Dame. A: Sinzi-nai no? nο believe-NEG NO No. 'Don't you believe me?'
 - B: [Syukudai zenbu si-ta (to-yuu)-no]-wa sinzi-teru homework all do-PST TO-YUU-NO-WA believe-ASP.NONPAST zikan da-kara vo. Demo ban-gohan-no ne. PRT but evening-meal-GEN time COP-since PRT
 - B': [Svukudai zenbu si-ta-**to**l sinzi-teru Demo vo. homework all do-PST-TO believe-ASP.NONPAST PRT but zikan-da-kara ban-gohan-no ne. evening-meal-GEN time-COP-since PRT 'I believe that you finished your homework. But it's dinner time.'
- (28) A: Johnny soto-ni it-te ason-de ii? Johnny outside-to go-te play-te may 'May Johnny go outside and play?'
 - B:# Un. [svukudai-o zenbu si-ta-(to-yuu)-no]-o Yes, homework-ACC do-PST-TO-YUU-NO-ACC all sinzi-teru kara ne. believe-ASP.NONPAST since PRT #'Yes, as I believe that he finished his homework.'
 - B': Un. Isvukudai-o zenbu si-ta-**to**l sinzi-teru do-PST-TO believe-ASP.NONPAST Yes homework-ACC all kara ne. since PRT 'Yes, as I believe that he finished his homework.'

We can also demonstrate the anaphoric nature of to-yuu-no in the following type of discourse. The discourse in (29) requires the embedded clause to bear main assertion status and to convey new information. But no, being anaphoric, cannot convey new information

- (29) **A**: Syatyoo-no hikooki-wa doko desyoo ka? president-GEN airplane-WA where COP 0 'Where is our company president's airplane?'
 - **B:**# [Sapporo-ni buzini tuiteru(-to-yuu)-no]-o sinzitemasu. Sapporo-in safely has.arrived-TO-YUU-NO-ACC believe 'We believe that it has safely arrived in Sapporo.'
 - tol sinzitemasu. **B**': [Sapporo-ni buzini tuiteru Sapporo-in safely has arrived TO believe 'We believe that it has safely arrived in Sapporo.'

These clauses behave in some respects like definite descriptions, in the sense that under negation they still deliver the implication that there is an antecedent proposition in the discourse. As the editors of this volume point out, whether or not the matrix clause in (30) is negated, the embedded proposition is still felt to be anaphoric.

(30) Watasi-wa kare-ga syukudai-o si-ta-to-yuu-no-o he-NOM homework-ACC do-PST-TO-YUU-NO-ACC I-TOP sinzi-tei{-ru/-nai} believe-ASP{-PRES/-NEG.PRES} 'I {believe/do not believe} that he finished his homework.'

This could tell us that the anaphoric requirement comes with an existence or familiarity presupposition, which projects out of negation.

In summary, we have seen that ta-nun-kes/to-yuu-no constructions are anaphoric to a salient proposition in the discourse, even if the embedding verb is not a response-stance verb. This seems to suggest that the nominalizer is the source or trigger of the requirement that the proposition be given in the discourse situation.

Before moving on, we should note that in all of the examples above, (27), (28) and (29), no can be replaced by koto while still preserving more or less the same judgments reported. We will however focus on no in this paper because, compared to no, koto seems to give rise to a weaker 'anaphoric' interpretation. The nature of the contrast between no and koto needs to be examined carefully in future research. See, for example, Hiraiwa (2010), Poirier (2020), and Yamada and Kubota (2018, 2019).

We should also note that we use (-to-yuu)-no in example sentences when, in a given context, both (i) -no and (ii) -to-yuu-no sound ok to us. This, however, does not mean that these two forms are always interchangeable. Both forms, -no and -to-yuu-no, carry a kind of familiarity requirement, with the latter giving rise to a stronger flavour of the content of the embedded clause being 'said' literally or non-literally. More detailed studies are needed in order to tease apart precise contributions of the individual morphemes, as pointed out by a reviewer.

4 Restricted anaphoricity

We have seen that ta-nun-kes/(to-yuu)-no constructions are anaphoric to propositions that are given in the discourse. In this section we will see that this anaphoric relation is much more restricted than better-studied phenomena of propositional anaphora in languages such as English and German.

Response particles (yes/no) are often treated as a type of propositional anaphora (e.g. Krifka (2013)). Previous studies have shown that their propositional antecedents can typically be sourced from a range of things including the part of a polar question minus the Q-component, which is called the 'partitioning proposition' in Krifka (2013). The partitioning proposition d' in (31) introduces a propositional discourse referent, which can be picked up by the response particle Yes in (32).

(31) Did Ede steal the cookie?

(32) **A:** Did Ede steal the cookie?

B: *Yes.* (anaphoric to d'')

The following example from Snider (2017) illustrates a similar point.⁵

(33) Did Barb go to the party? Because Nancy told me that (and she's unreliable).

that: Did Barb go to the party? / whether. . .

that: Barb went to the party

that: Barb didn't go to the party.

⁵ We will come back to this data point in section 6.2.

Furthermore, Schwabe, Frey, and Meinunger (2016) citing Sudhoff (2003) show that German propositional correlative es. . . dass constructions behave similarly to response particles. Under non-factive verbs es. . . dass constructions are anaphoric. While they cannot be used to answer a question such as (34) (Sudhoff 2003), they can refer back to the partitioning proposition (35).

- (34) **A:** What's new? What happened?
 - **B:** Max behauptet (*es), dass Lea krank ist. Max claims it that Lea ill 'Max claims that Lea is ill.' (Schwabe, Frey, and Meinunger 2016: (3))
- (35) A: Ist Lea krank? Īs Lea ill? 'Is Lea ill?'
 - **B**: Max behauptet es, (dass sie krank ist.) Max claims it that she ill Is 'Max claims that she is ill.' (Schwabe, Frey, and Meinunger 2016: (4))

The prejacent of negation also licenses anaphoric es...dass constructions:

- (36) a. Lea ist nicht krank. Lea is not 111 'Lea is not ill.'
 - b. obwhol Max es behauptet, (dass sie krank ist.) claims she ill is even.though Max it that 'even though Max claims that she is ill.'

Interestingly, anaphoric ta-nun-kes and (to-yuu)-no clauses in Korean and Japanese turn out to work differently from the above picture. For both Korean and Japanese, the partitioning proposition in a polar question does not provide a good antecedent for these nominalized clauses in belief-report contexts. This is shown in (39) for Korean and (40) for Japanese.

(37) polar question(ϕ) is given in the discourse: *believe...* $\star \phi$ -ta-nun-kes (Korean) √φ-ta-ko

⁶ Thanks to Bernhard Schwarz (p.c.) for the data.

- (38) polar question(ϕ) is given in the believe. . . $\star \phi$ (-to-yuu)-no (Japanese) discourse: $\star \phi$ -to
- (39) **A:** Johnny-nun swukcey-lul ta ha-yass-ni?
 J.-TOP homework- ACC all do-PST-Q
 'Has Johnny finished his homework?'
 - B:# Na-nun [Johnny-ka swukcey-lul ta ha-yass-ta-nun I-TOP J.-NOM homework-ACC all do-PST-DEC-ADN kes-ul] mit-e.

 kes-ACC believe-DEC

'I believe that Johnny finished his homework.'

B': Na-nun [Johnny-ka swukcey-lul ta ha-yass-ta-ko]
I-TOP J.-NOM homework-ACC all do-PST-DEC-ko
mit-nun-ta
believe-DEC
(Lhelieve that Johnny finished his homework)

'I believe that Johnny finished his homework.'

- (40) **A:** Honda-san-wa byooki desu ka?

 Honda-san-WA ill COP Q

 'Is Honda-san ill?'
 - B:# Suzuki-san-wa [kanozyo-ga byooki {na/da to-yuu} Suzuki-san-WA she-NOM ill COP.ADN/COP TO-YUU no]-o sinziteru-rasii-yo.

 NO-ACC believe-REP-PRT

 'I hear that Suzuki-san believes that she is ill.'
 - **B':** Suzuki-san-wa [kanozyo-ga byooki da **to**] sinziteru-rasii-yo. Suzuki-san-WA she-NOM ill COP TO believe-REP-PRT 'I hear that Suzuki-san believes that she is ill.'

So even if ϕ is part of a polar question (therefore salient, given, etc.) that is not sufficient to license ta-nun-kes/(to-yuu)-no. This is a point of contrast between Korean/ Japanese ta-nun-kes/(to-yuu)-no clauses and the structures described above as having a familiarity requirement on propositional anaphora. Regardless of how we model such restrictions on propositional anaphora, restrictions on the anaphora we observe in Korean/Japanese are stricter.

Similarly, negated clauses cannot support anaphoric reference to the prejacent proposition by *ta-nun-kes* or *(-to yuu)-no* clauses as shown in (43). *Ta-nun-kes* or *(-to-yuu)-no* clauses cannot find an antecedent that corresponds to the prejacent of negation. This contrasts with the German example we saw above in (36b).

- (41) NEG(ϕ) is given in the discourse: *believe...* (Korean) ×φ-ta-nun-kes √φ-ta-ko
- (42) NEG(ϕ) is given in the discourse: *believe...* $\star \phi$ --(to-vuu)-no (Korean) ✓ φ-to
- (43) A: Kibo has certainly heard in his geography class that Toronto is not the capital of Canada...
 - A: ...#Kulavto Kibo-nun [Toronto-ka Canada-uv swuto-la-nun even so K-TOP T-NOM C-GEN capital-DEC-ADN kes-ull mit-e. NMLZ-ACC believe-DEC 'Even so, Kibo still believes that Toronto is the capital of Canada.'
 - Consultant's comment: "This sounds really odd to me, if Kibo has never heard any-body tell him that Toronto is the capital of Canada."
- (44) **A:** *Kyogo-wa* [Toronto-wa Canada-no syuto-zya nai capital-COP.WA NEG.NPST Kyogo-WA Toronto-WA Canada-GEN tol kii-ta hazu da VΟ TO hear-PST must COP PRT 'Kyogo must have heard that Toronto is not the capital of Canada.'
 - A: ...#sorenanoni Toronto-ga Canada-no syuto {na/da Toronto-NOM Canada-GEN capital even.so COP.ADN/COP yuu} no-o to shinjiteru TO YUU NO-ACC believe 'Even so, Kyogo still believes that Toronto is the capital of Canada.'

In summary, while a number of anaphoric propositional expressions in language (e.g. response particles, German propositional correlative es-constructions) can make reference to the range of propositional antecedents predicted by Krifka (2013), clausal nominalizations in belief reports in Korean and Japanese cannot. In the next section we sketch the outlines of a possible account of these restrictions, one that takes as a starting point the idea that clausal nominalizations are also semantic nominalizations, turning a proposition type to an entity-denoting type in the spirit of Chierchia (1984).

⁷ This sentence may sound better if it is accommodated that there was some claim previously that Toronto was the capital of Canada.

5 Reference to individuals with content

Of the propositional discourse referents that utterances provide according to Krifka (2013)'s schema, our data suggest that *ta-nun-kes/(to-yuu)-no* clauses most naturally refer to those introduced by assertion Speech Acts, and not other propositional discourse referents evoked by clauses.

(45) Johnny finished his homework.

$$\begin{bmatrix} I_{ActP} \text{ ASSERT} & & [_{TP} \text{ Johnny finish-PAST} & & [_{vP} t_{finish} \text{ his homework }]]] \\ \hookrightarrow d'_{speechact} & \hookrightarrow d''_{prop} & \hookrightarrow d''_{event} \\ \end{bmatrix}$$

In Bogal-Allbritten and Moulton (2018) we proposed that Korean *ta-nun-kes* clauses literally referred to assertion events. This view essentially predicts that *ta-nun-kes* clauses refer to claims. This is potentially too strong given (46), as noted by Yeom (2018). Here the actual noun phrase that describes a claim is not interchangeable with a *ta-nun-kes* clause, which would be unexpected if such constructions referred to claims. A similar point can be made for Japanese, with (47).⁸

- (46) Mina-ka ttena-ss-ta-nun {kes/*?cwucang}-i somwun-uy
 Mina-NOM leave-PAST-DECL-ADN KES/claim-NOM rumour-of
 nayyong-i-ta.
 content-be-DECL
 'The {thing/*?assertion} that Mina left is the content of the rumor.'
 (Yeom 2018: (63))
- (47) [Hottositeiru to-yuu{-no/*syutyoo}]-ga ima-no kimoti desu.
 relieved TO-YUU-NO/claim-NOM current-GEN feeling COP
 "The {thing/*assertion} that I'm relieved is (the content of) my current feeling."

⁸ The following example from a reviewer, with slight modification, is another case like (47) in that a nominalized clause shows up in the subject position. If the order of the two constituents before the copula is flipped, the *-to yuu no-*clause feels anaphoric, and the anaphoricity disappears if we replace it with *(-to yuu) koto*. We leave more detailed study of this for later.

⁽i) [Tanom-are-ta sigoto-wa kanarazu hikiukeru-to yuu-no]-ga watasi-no
Ask-PASS-PST job-TOP necessarily accept-TO YUU-NO-NOM I-GEN
ryuugi desu.
principle COP.NPST

^{&#}x27;{To accept/accepting} all jobs that are offered to me is (the content of) my principle.'

We present a revised analysis, whereby kes (and to-yuu-no) constructions denote individual entities which bear propositional content. We first turn to a brief background justifying the existence of such entities in the ontology of natural language, followed by an application to the Korean and Japanese data presented above.

5.1 Background on content individuals

Proto-typical examples of content individuals are things like rumours, ideas, and claims, information repositories like newspaper articles and books, and also particular beliefs or belief states held by individuals (Hacquard 2006; Kratzer 2013). For instance, the claim that Toronto is the capital of Canada refers to an individual with content, and spells out what that content is (that Toronto is the capital of Canada). So, for that matter, does the noun phrase the proposition that Toronto is the capital of Canada. Events of assertion and other speech acts might bear (or at least be associated) with content as well (Hacquard 2006). We should note that content individuals do not have to be associated with propositions that are asserted in any discourse; they can be propositional meanings disembodied from any particular speech act or attitude holder (e.g. Any notion that central banks will pause rate hikes is 'for the birds'). Content-bearing individuals are very close, if not identical, to what Moltmann (2013, 2020) terms attitudinal objects. Moltmann develops a sustained set of arguments for adding these individuals to natural language ontology.

Hacquard (2006) and Kratzer (2013) have argued that content-bearing individuals are used as 'anchors' used to project modal bases (Kratzer 1977) for certain types of modal and attitude expressions. They propose that modal domains – sets of possible worlds – can be projected from content individuals via a content function, defined in (48) following Kratzer 2013: 195 (25).

(48) $CONT(x)(w) = \{w': w' \text{ is compatible with the intentional content determined}\}$ by x in w}

Kratzer (2013) argues that content projection using (48) is at work with the reportative modal sollen in German. In (49), for instance, the particular issue of the newspaper provides, via (48), a set of possible worlds that restrict the modal base of the reportative modal. The statement in (49) is true if in all such possible worlds – i.e. those that are compatible with the content of a particular issue of the newspaper – Clyde got married.

(49) Der Hampshire Gazette nach soll Clyde geheiratet haben. Hampshire Gazette according SOLL Clyde marrie the have 'According to the Hampshire Gazette, Clyde supposedly got married.'

It is also plausible to think that the content function is at work in uses of the verb say in (50), which like (49) expresses the content of a particular content bearing individual.

(50) That issue of the Hampshire Gazette says that Clyde got married.

The content function has also been put to use by Kratzer (2006) and Moulton (2009, 2015) to model the way complement clauses express the propositional content of nouns like rumor. In those works, the content function is part of the functional material that embeds the complement clause; this could be the complementizer itself or some other functional element, which we simply label 'fcont' (see Elliott (2018) for discussion and refinements). This element has the denotation in (51): taking a proposition and returning a property of content individuals with the content of the proposition:

(51) $[fCONT] = \lambda p.\lambda x.\lambda w[cont(x)(w) = p]$

On this view, the complement clause in a content NP like that in (52) includes fcont. The resulting property of individuals (53a) combines with the content noun like idea (53b) via predicate modification resulting in (53c).

- [idea [fCONT [that Clyde got married]]]
- (53)a. [[fCONT [that Clyde got married]]] = $\lambda x.\lambda w$ [CONT(x)(w) = λw '[Fred got married in w']]
 - b. $\| idea \| = \lambda x.\lambda w [idea(x)(w)] \|$
 - c. [(51)]=

 $\lambda x.\lambda w[idea(x)(w) & CONT(x)(w) = \lambda w'[Fred got married in w']]$

Our claim about the Japanese/Korean nominalized clauses under consideration in this chapter is that they refer to individuals with the content expressed by the proposition embedded under the nominalizer. That is, nominalization, in part, performs the semantic function that fcont does in (53a). In essence, nominalization not only changes the syntactic category, but semantically nominalizes the clause turning it into a property of individuals (see also Chierchia (1984) and Potts (2002) for similar treatments of embedded clauses). Moreover, we have seen that the Jap-

anese/Korean nominalized clauses must anaphorically refer to such a thing, hence the propositional content must be given and salient in the discourse. We claim that the restricted anaphoricity we outlined in the previous sections arises from what kinds of linguistic material can establish a content individual in a discourse. We propose that not every piece of linguistic material that introduces a proposition can establish a content individual as a discourse referent.

5.2 Analylsis for nominalized clauses

We give the proposal for Korean, but the idea carries over straightforwardly to Japanese. In particular, we argue that the content function discussed above is part of the nominalization of the clauses we consider here. The idea is that nominalization turns the sentential constituent into a property of individuals. The nominalization here involves content nominalization. 10 Following Kim (2007), we also assume that the nominalizer kes contributes definiteness, in particular, that it is an anaphoric definite. Our denotation for the relevant use of kes does two things then: it introduces a content individual argument and encodes anaphoric definiteness. To implement the latter component, we follow Schwarz (2009)'s analysis of anaphoric definite determiners: kes introduces an additional individual argument y that gets saturated by a free variable whose value is determined by the context via an assignment function g. The uniqueness presupposition is represented by the underlined component of the formula in (54).

(54)
$$[kes] = \lambda p.\lambda x.\lambda w: \exists !x[CONT(x)(w) = p \& x = y].\iota x[CONT(x)(w) = p \& x = y]$$

The upshot is that kes-nominalizations that incorporate the content function will turn a clause (a proposition of type $\langle s,t \rangle$) into an anaphoric definite description of individuals bearing the propositional content of that clause. A concrete example is given in (55) and (56):

⁹ We stress that this cannot be a general property of all nominalizations in the languages, nor even all no/kes- clauses, as pointed out above in sections 3.1 and 3.2, as well as footnotes 3 and 8. There are various types of individuals that kes-nominalization returns, some ordinary individuals as is the case in internally headed relatives clauses. But when a kes-clause meets a content-selecting attitude verb, as in the cases we are looking at in this chapter, content nominalization is an available and successful option.

¹⁰ We will not explore in depth the role of the declarative element -ta in Korean or the toyuu in Japanese. As noted, the presence of these affect the factivity of the clause, but do not impact the observations regarding anaphoricity.

- (55) [Johnny-ka swukcey-lul ha-yass-**ta**-nun **kes**-ul] ta I.-NOM homework-ACC all do-PST-DEC-ADN kes-ACC 'that Johnny finished his homework.'
- (56) $[(55)]^g = \lambda w$: $\exists !x [CONT(x)(w) = p \& x = g(1)] \iota x [(CONT)(x)(w) = p \& x = g(1)]$ where $p = \{w': \text{ Johnny finished homework in } w'\}$

Under the analysis where ta-nun-kes/(to-yuu)-no clauses denote individuals with content, we can describe the contrast between felicitous and infelicitous uses of nominalized clauses in the following way. The crucial piece is what kinds of discourses provide a salient individual with content for the nominalization to be anaphoric to. Our proposal is the following. When speaker A makes an assertion in (57), an individual with propositional content becomes available in the context: the discourse referent associated with the speech act in (57) is (or at least evokes) an individual with content.

The ta-nun-kes/(to-yuu)-no clause in B's utterance presupposes that there is an individual with content that Johnny finished his homework. This presupposition is satisfied in this context.

(57) A: Johnny finished his homework.

$$[A_{CtP} \text{ ASSERT} \quad [TP \text{ Johnny finish-PAST} \quad [VP \text{ } t_{finish} \text{ his homework }]]]$$

$$\hookrightarrow d'_{speechact} \quad \hookrightarrow d''_{prop} \quad \hookrightarrow d''_{event}$$
= individual bearing content

[Johnny-finished-his-homework-*ta-nun-kes/(to-yuu)-no*] believe.

On the other hand, in (58), speaker A's utterance is a polar question, and the fact that B's utterance is infelicitous suggests that the presupposition that there is an individual with content that Johnny finished his homework is not satisfied. This would make sense if the partitioning proposition does not introduce an individual with content.

(58) **A:** Has Johnny finished his homework?

B: #I [Johnny-finished-his-homework-ta-nun-kes/(to-yuu)-no] believe.

So not just any salient proposition evoked in the discourse establishes a content individual. Our working hypothesis is that particulars - things that can be construed as entities, like speech acts - can establish content individuals. But prop-

ositions alone – like the partitioning proposition in a question (d''_{prop} above) – do not. The prejacent of negation is likewise such a proposition. The project then is to look into is what pieces of natural language can and cannot introduce things with content. For instance, certain embedded clauses can introduce a thing with content, as in (59).

- (59) a. Yuna-nun Inho-ka hayngpokha-ta-ko malha-yess-ta... Yuna-TOP Inho-NOM happy-DECL-COPM say-PAST-DECL 'Yuna said Inho was happy.'
 - b. Mina-nin Inho-ka hayngpokha-ta-nun kes-ul Mina-TOP Inho-NOM happy-DECL-ADN kes-ACC mit-ess-ta. believe-PAST-DECL

'Mina believed Inho was happy.'

(Yeom 2018 (41))

The embedding verb plays a role. Yeom (2018) reports that anaphoric reference to think -complements (60) is much worse than say -complements (59):

- (60) a. Yuna-nun Inho-ka hayngpokha-ta-ko sayngkakha-yess-ta... Yuna-TOP Inho-NOM happy-DECL-COPM think-PAST-DECL 'Yuna thought Inho was happy.'
 - b. ??Mina-nun Inho-ka hayngpokha-ta-nun kes-ul Mina-TOP Inho-NOM happy-DECL-ADN kes-ACC mit-ess-ta. believe-PAST-DECL

'Mina believed Inho was happy.' (Yeom 2018 (42))

Media and information repositories (books, etc.) can also introduce referents that support kes clauses.

(61) Context: One day Kibo reads in his geography textbook that Toronto is the capital of Canada. His teacher tells the class that that was an error in the textbook. But Kibo missed geography class that day.

Kulayse acikto Kibo-nun [Toronto-ka Canada-uy swuto**-la**-nun still Kibo-TOP Toronto-NOM Canada-GEN be-DECL-ADN SO kes1-ul mit-e.

kes-ACC believe-PAST

'Even still Kibo believed that Toronto is the capital of Canada.'

Finally, if our story in this subsection turns out to be more or less on the right track, it would have interesting consequences for the study of so-called article-less languages in general (Jenks 2018). In the domain of prototypical nouns (excluding nominalized clauses), neither Korean nor Japanese requires anaphoric definiteness to be overtly marked, unlike in English. Yet, what we have discovered is that these languages do seem to have a way of marking anaphoric definiteness in nominalized clauses. This opens up a new area to be explored in the study of article-less languages.

6 Tip of the iceberg? Other propositional anaphora

In this section, we will explore properties of other, better-known types of propositional anaphora. We will present an initial set of data that show that, somewhat surprisingly, they are subject to similar restrictions as the nominalized clauses in Korean and Japanese.

6.1 Propositional anaphora in Japanese/Korean: Initial observation

syukudai-o

When the antecedent proposition is asserted or presented as a complement of say as in A's utterance in (62), anaphoric reference by forms such as soo 'so', sore 'it/ that', or so-no 'it-GEN' is possible, as shown in B's utterance in (62). These pro-forms are formed from the medial series (so-) in the demonstrative system.

```
(62) A: [Johnny-wa
                                      zenbu yatta tte] minna
         Johnny-TOP homework-ACC all
                                              did
                                                          everyone
                                                     TO
         itteru yo.
                PRT
         say
         'Everyone's saying that Johnny finished his homework.'
     R: Watasi-mo
                      {soo/?sore-o/sore-wa/so-no koto-wa} {sinziteru/omotteru}
                                               koto-TOP believe/think
         I-also
                      so/it-ACC/it-TOP/it-GEN
         yo.
```

'I also {believe/think} {so/that/that thing}.'11

PRT

¹¹ So-no koto-o/-wa with 'think' is good in the unintended interpretation: 'thinking about that thing'.

However, when the target antecedent is merely the partitioning proposition in a polar question, sore 'it/that' or so-no 'it/that-GEN' is not felicitous while soo is.

(63) Polar Question antecedent:

- A: Johnny-wa moo syukudai-o zenbu yatta? Johnny-TOP already homework-ACC all Did 'Has Johnny already done all the homework?'
- B: Watasi-wa {soo/#sore-o/#so-no koto-o} sinziteru/omotteru yo. I-TOP so/it-ACC/that-GEN thing-ACC believe/think PRT 'I {believe/think} {so/#it/ #that thing}.'

Likewise, the prejacent of negation is not an available antecedent for sore while it is for soo.

(64) Negation

Iohnny-wa Canada-no Toronto-wa syuto-zya nai to Johnny-WA Toronto-WA Canada-GEN capital-COP.WA NEG TO kiita mada {?soo/#sore-o/#so-no koto-o} hazu na-no-ni. heard must COP-NO-DAT still so/it-ACC/that-GEN thing-ACC sinziteru-rasii.

believe-REP

'Johnny must have heard that Toronto is not the capital of Canada. Even so, he still believes {so/#it/#that thing}, I hear.'

We also note here that Korean has two relevant propositional anaphors: kukes 'that/ it' and kulehkey 'so'. Our initial data obtained from one native speaker suggests that kukes is constrained like ta-nun-kes clauses, as shown in (65).

- (65) A: Johnny-nun swukcey-lul ha-yass-ni? homework-ACC all do-PST-O I.-TOP 'Has Johnny finished his homework?'
 - emma-nun {kulehkey/#kukes-ul} mit-e **B**: *Johnny-uy* Johnny-GEM mom-TOP so/#that believes 'Johnny's mother believes so.'

6.2 English that vs. so

Similarly to the contrast we just observed above between soo 'so' vs. sore 'it/that' in Japanese and between kulehkey 'so' vs. kukes 'that' in Korean, that/it in English is much less successful at referring to the partitioning proposition than so.

(66) A: Has Johnny finished his homework?

B: I believe so/#that/#it.

This is surprising since the partitioning proposition is a salient enough antecedent to support so, as well as response particles, as we saw earlier in (7), as well as in (32), (33) and (35).

We should note that we are not the first to test this data point. Snider (2017) in fact concludes that propositional anaphor that can refer successfully here. Examples below are provided in Snider (2017: 100 (202–203)) that he argues show that English propositional anaphora can refer to the partitioning proposition of a polar question.

(67) Did Barb go to the party? Because Nancy told me that (and she's unreliable).

#that: Did Barb go to the party?/whether... matrix clause ✓ that: Barb went to the party. partitioning proposition #that: Barb didn't go to the party. complement proposition

(68) Did Barb go to the party? Steve refuses to believe that.

#that: Did Barb go to the party?/whether... matrix clause \checkmark that: Barb went to the party. partitioning proposition #that: Barb didn't go to the party. complement proposition

We suggest these discourses invite an accommodated referent, that there was a claim that Barb went to the party.

This restricted anaphoricity observed with that in English cannot be about anaphoric that in general. Notice that that can refer to an eventuality (not a proposition). For example, that can be used as an argument of happen as in (69).

(69) A: Did Johnny finish his homework?

B: I believe that happened.

That can also be anaphoric to a question (70), or to an assertion (71), either embedded or root (see (6) and (7) above):

- (70) A: Did Johnny finish his homework?
 - B: I asked that (but didn't get an answer).
- (71) A: (Someone said) Johnny finished his homework.
 - B: Ok, yeah, I believe that.

So anaphoric that is similar to ta-nun-kes/to-yuu-no clauses in that it cannot easily refer to just any salient proposition made available in the discourse. This is summarized below:

(72)	$[_{ActP}$ Has-QUESTION	[_{TP} Johnny t _{has}	[$_{vP}$ finished his homework]]]
	$\hookrightarrow d_{speechact}$	$\hookrightarrow d'_{prop}$	$\hookrightarrow d''_{event}$
	=individual	≠individual	
	(with content)	bearing content	
	√that	√so/ × that	

Judgments are slippery and variable but that is expected, as accommodated or inferred referents are always possible. Various features of the context and the sentence can more easily invoke the right referents. (73c) shows some ways in which anaphoric reference by that to the partitioning proposision of a polar question is improved. They suggest that to the extent propositional that is licensed, there is some previous 'claim' in the context.

(73) Is Sam a doctor?

Are they really a doctor?

- a. ?I believed that.
- d. We beLIEVED that.
- b. I believed that when I heard it.
- c. I've always believed/thought that.

What makes these better is that they make it easier to accommodate that the issue of Sam being a doctor has been on the table, and hence such a claim can be accommodated.12

(Krifka 2013, (23))

¹² As for the prejacent of negation, Krifka (2013) and Snider (2017) report that it makes available a discourse referent for that/it. Krifka gives the examples below.

Ede didn't steal the cookie, even though people believed it. that = Ede stole the cookie (Krifka 2013, (24b))

⁽ii) Two plus two isn't five. That would be a contradiction that = Two plus two is five

These propositional proforms Japanese, Korean and English (sore/kukes/that) do not contain silent verbs of saying, suggesting that the patterns with *to-yuu-no*/ ta-nun-kes that we observed in section 4 may run deeper. An emerging picture is that, if response particles are elliptical (Holmberg 2013) and if so is so too, 13 then neither refer. Pronominal anaphora must be recruited then to refer to propositions, but not just any salient proposition in the discourse is available.

A (strong) hypothesis is that there is no anaphoric reference to propositions. English that/it, Japanese sore and Koran kukes do refer, but only to individuals. Not just any salient proposition in the discourse evokes such individuals. This might fit in a larger program: variables are uniformly individual types (Chierchia 1984; Landman 2006; Poole 2017). We include in this eventualities, situations, and individuals with content.

This hypothesis leads to a more general prediction, namely that even deictic reference by propositional proforms should be constrained to individuals with content. Moulton (2020) presents some evidence that this might be the case. Deictic, or exophoric, propositional pronouns correspond to what Hankamer and Sag (1976) call 'deep' anaphors. Since their work it has been accepted that propositional proforms such as this, that and it can be either "surface" or "deep" anaphors. An example of the latter from Snider (2017) is given in (74).

(74) Deep/deictic/exophoric propositional anaphor:

[Mom walks into the living room, and sees her three children standing around the broken remains of a lamp.]

[Mom:] Who broke the lamp?

[Two of the children look at Dewey.]

[Dewey:] That's not true!

(Snider 2017: (89))

We would like to raise the possibility, albeit very tentatively, that these discourses invite the accommodation of a discourse referent corresponding to the claim/assertion of the prejacent proposition – i.e., that someone actually claimed that two plus two is five. In that case, reference would not in fact be to the prejacent. In contexts where this accommodation is less easy, like the all-new presentation in (iii), our initial reaction is the anaphoric reference to the relevant proposition is degraded with that and perfectly fine with so.

(iii) Guess what? Bo came to the party. He wasn't happy to be there, even though everyone thought/ believed so/?#that.

We leave negation for further research.

13 There is ample evidence for this: e.g., so needs a linguistic antecedent (Hankamer and Sag 1976):

(i) Watching you get a hole in one: I don't believe it/*so.

Moulton (2020) argues, however, that the existence of the deep propositional proforms is more constrained than previously thought. In order to see this, differences in complement types – and the selecting verb – need to be controlled for. Verbs like tell, surprise and expect seem to select as complements particulars – typically events and eventualities, and possibly categories like facts or possibilities – what Zucchi 1993 calls 'states of affairs'. These states of affairs can be referred to decitically by propositional proforms (76). (The context in (75) makes those states of affairs contextually salient.)

- (75) Context: I've been inside a windowless lab all day, and do not know that it is snowing. I know that you've been outside recently and know the weather. On exiting the building together, I see the snow and say the following:
- (76) a. I am surprised by **this**.
 - I didn't expect this. h.

this = that it is snowing

- This is crazy. c.
- This was unlikely given the heat yesterday. d.
- %You didn't tell me this.14

In contrast, with the more canonically propositional attitude verbs (believe, say, claim, think), a propositional proform is less felicitous, even though the proposition 'it is snowing' is salient in the context.

- (77) Same context as (75)
 - a. #You didn't say this before.
 - b. #I didn't think this.
 - c. #I believed this alreadv.
 - d. #Had you claimed this before, I'd have thought you were crazy!

These attitude reports are possible with proform complements as long as a linguistic antecedent is available, as in (78).

¹⁴ We have found variation in whether tell requires a preposition, e.g. tell me about this. Concomitant with this, we find variation in whether speakers allow tell to select fact-denoting lexical NP complements, e.g. %tell me a fact that most people don't know about you. Interestingly, other event-denoting lexical NPs require the preposition for all the speakers we consulted: tell me *(about) the incident. We thank an anonymous reviewer for pointing out these subtleties, which deserve further empirical scrutiny.

- (78) You: Look, it's snowing!
 - Me: (i) You didn't say this/that before.
 - (ii) ?I didn't think this/that.
 - (iii) I believed this/that already.
 - (iv) Had you claimed this/that before, I'd 'a thought you were crazy!

Moulton points out that the difference between the possible and impossible decitic reference corresponds quite transparently to the types of DP arguments these different predicates select. The referents of this in (76) appear to be things like eventualities, facts, and possibilities (Zucchi's states of affairs), while the intended referents of this in (77) are propositions. The predicates in (79a) select different DP arguments than those in (79b). Note that (80) is fine in the context in (75).

- (79) Different selectional propertie
 - ✓ Deictic propositional anaphor

tell someone, surprise, expect, be crazy, be unlikely

*Deictic propositional anaphor h believe/say/think/claim

- a. I am surprised by this outcome. (80)
 - b. I didn't expect this loveliness.
 - c. This situation is crazy.
 - d. This possibility was unlikely given the heat yesterday.
 - %You didn't tell me this fact before.
- (81)a. *You didn't say **this fact** before
 - b. *I didn't think this outcome.
 - c. *I believed this possibility already.
 - d. *When you claimed this situation, I thought you were crazy!

We are not in a position to make any specific ontological claims about Zucchi's states of affairs, but it is clear that they are different from propositions proper, as we can see from the ungrammaticality of (82).15

(82) *That fact/situation/possibility/outcome/event is true/false.

¹⁵ A reviewer has suggested that the notion of 'eventuality' alone is the relevant category. We are not in a position yet to make a concrete proposal as to what deictic 'that' refers to with predicates like those in (79a). Our point is that there is an interesting empirical contrast between (79a) and (79b), in whatever way the relevant object is ultimately characterized.

If, as discussed above, reference to propositions (and not facts or possibilities) can in fact be reference to an individual-type discourse referent associated with a speech act, then the fact that the contexts above do not support propositional proforms is explained: there is no discourse referent of that sort. No one has uttered anything. Of course, there are indirect ways for humans to put speech-act like moves into a discourse, and this we think helps to explain Snider's original example in (74) purporting to show that deictic reference to propositions is possible. The gestures made by the two children ('two of the children look at Dewey') are required for successful reference by that. These gestures may not be speech acts per se, but they evoke a claim, an individual with content. (We can even report that "the children's looks say that Dewey did it.").

To summarize, just as anaphoric propositional proforms (and ta-nun-kes/ (to-yuu)-no clauses) must refer to individuals with content so do deictic propositional proforms.

7 Conclusion

We have shown that nominalized complement clauses in Korean and Japanese exhibit anaphoric behaviour that is more restricted than expected in the view in which nominalized clauses refer to familiar propositions in the discourse. We furthermore showed that the restricted anaphoricity in nominalized clauses runs deeper, being observed also in propositional proforms such as English that/it, Korean kukes 'that' and Japanese sore 'that'. We put a speculation on the table: that nominalized clauses are semantically nominal, describing individual-type entities. Those individuals are content-bearing individuals. We further speculated that the restricted anaphoricity we find is a result of the fact that not all propositional pieces of language (e.g. projections of the clause that are of type $\langle s,t \rangle$) introduces content individuals as discourse referents.

Many questions remain. Future work should address questions such as: (i) whether constructions in languages that deploy definite determiners accompanying proposition-denoting clauses (e.g., Greek, Roussou (1991)) exhibit similar anaphoric constraints; (ii) How the German es. . .dass construction behaves; and (iii) What 'chunks' of language evoke content individuals (Speech acts, embedded clauses, or anything else?) and why these.

References

- Abney, Steven. 1987. The English noun phrase in its sentential aspect. Cambridge, MA: MIT dissertation.
- Alexiadou, Artemis, 2020, D vs. n nominalizations within and across languages. In Artemis Alexiadou & Hagit Borer (eds.), Nominalization: 50 Years on from Chomsky's Remarks, 87-110. Oxford: Oxford University Press.
- Asher, Nicholas, 1993, Reference to Abstract Objects in English, Dordrecht; Kluwer,
- Bochnak, M. Ryan & Emily A. Hanink. 2022. Clausal embedding in Washo: Complementation vs. modification. Natural Language & Linguistic Theory 40, 979–1022.
- Bogal-Allbritten, Elizabeth & Keir Moulton. 2018. Nominalized clauses and reference to propositional content. In Proceedings of Sinn und Bedeutung, vol. 21, 215–232.
- Bondarenko, Tatiana. 2020. Factivity from pre-existence: Evidence from Barguzin Buryat. Glossa: a journal of general linguistics 5(1). 109. 1-35. https://doi.org/10.5334/gjgl.1196
- Cattell, Ray. 1978. The source of interrogative adverbs. Language 54. 61–77.
- Chae, Hyon Sook. 2007. On the categorial ambiguity of the morpheme kes in Korean. Language Research 43, 229-264.
- Chierchia, Gennaro. 1984. Topics in the syntax and semantics of infinitives and gerunds. Amherst: University of Massachusetts at Amherst dissertation.
- Chung, Chan & Jong-Bok Kim. 2003. Differences between externally and internally headed relative clause constructions. In Jong-Bok Kim and Stephen Wexler (eds.), Proceedings of the 9th International Conference on HPSG, 43-65. Stanford: Stanford University.
- Davies, William D. & Stanley Dubinsky. 2010. On the existence (and distribution) of sentential subjects. In Hypothesis A/Hypothesis B: Linguistic Explorations in Honor of David M. Perlmutter, 211–228. Cambridge, MA: MIT Press.
- De Cuba, Carlos. 2017. Noun complement clauses as referential modifiers. Glossa: a journal of general linguistics 2(1). https://doi.org/10.5334/gjgl.53
- De Cuba, Carlos. 2007. On (non) factivity, clausal complementation and the CP-field. Stony Brook: State University of New York at Stony Brook dissertation.
- Elliott, Patrick D. 2018. Explaining DPs vs. CPs without syntax. In Jessica Kantarovich, Tran Tuong and Orest Xherija (eds.), Proceedings of the 52nd Annual Meeting of the Chicago Linguistic Society, 52(1). 171-185. Chicago: Chicago Linguistics Society.
- Hacquard, Valentine. 2006. Aspects of modality. Cambridge, MA: MIT dissertation.
- Haegeman, Liliane & Barbara Ürögdi. 2010. Referential CPs and DPs: An operator movement account. Theoretical Linguistics 36. 111-152.
- Han, Hye Jin. 2005. A DP/NP-shell for subject CPs. In Rebecca T. Cover and Yuni Kim (eds.), Proceedings of the Annual Meeting of the 31st Berkeley Linguistics Society, 133–144.
- Hankamer, Jorge & Ivan Sag. 1976. Deep and surface anaphora. Linguistic Inquiry 7. 391–428.
- Hartman, Jeremy. 2012. Varieties of clausal complementation. Cambridge, MA: MIT dissertation.
- Hegarty, Michael. 1992. Adjunct extraction without traces. In Dawn Bates (ed.), The Proceedings of the Tenth West Coast Conference on Formal Linguistics, 209–222. Stanford: CSLI Publications.
- Heim, Irene. 1983. File change semantics and the familiarity theory of definiteness. In Rainer Bäuerle, Christoph Schwarze & Arnim von Stechow (eds.), Meaning, Use and Interpretation of Language. Berlin/New York: Walter de Gruyter.
- Hiraiwa, Ken. 2010. Complement types and the CP/DP parallelism A case of Japanese. Theoretical Linguistics 36. 189-198.

- Holmberg, Anders. 2013. The syntax of answers to polar questions in English and Swedish. *Lingua* 128. 31–50. SI: Polarity emphasis: distribution and locus of licensing.
- Honcoop, Martin. 1998. Dynamic Excursions on Weak Islands. The Haque: Holland Academic Graphics.
- Iordăchioaia, Gianina. 2020. D and N are different nominalizers. Glossa: a journal of general linguistics 5(1). 53. 1-25. https://doi.org/10.5334/gjgl.1111
- lenks. Peter. 2018. Articulated definiteness without articles. Linguistic Inquiry 49, 501–536.
- Ihang, Sea-Eun. 1994. Headed nominalizations in Korean: relative clauses, clefts, and comparatives. Burnaby: Simon Fraser University dissertation.
- lo. Mi-leung, 2003. The correlation between syntactic nominalization and the internally headed relative constructions in Korean. Studies in Generative Grammar 13. 535-564.
- Kastner, Itamar. 2015. Factivity mirrors interpretation: The selectional requirements of presuppositional verbs. Lingua 164. 156-188.
- Kim, Min-Joo. 2007. Formal linking in internally headed relatives. Natural Language Semantics 15. 279-315.
- Kim, Min-Joo. 2009. E-type anaphora and three types of kes-construction in Korean. Natural Language & Linguistic Theory 27. 345-377.
- Kim, Nam-Kil. 1984. The Grammar of Korean Complementation. Honolulu: Center for Korean Studies.
- Kim, Shin-Sook. 2011. Noun complements and clause types in Korean (and Japanese). In William McClure and Marcel den Dikken (eds.), Japanese/Korean Linguistics 18, 278-290. Stanford: CSLI Publications.
- Kiparsky, Paul & Carol Kiparsky. 1970. Fact. InM. Bierwisch and K.E. Heidolph (eds.), Progress in Linguistics, 143–173. The Hague: Mouton.
- Kratzer, Angelika. 1977. What 'must' and 'can' must and can mean. Linguistics and Philosophy 1. 337-355.
- Kratzer, Angelika. 2006. Decomposing attitude verbs. Handout of talk presented at the Hebrew University of Jerusalem, July 4, 2006.
- Kratzer, Angelika. 2013. Modality for the 21st century. In Stephen R. Anderson, Jacques Moeschler & Fabienne Reboul (eds.), L'interface Langage-Cognition/The Language-Cognition Interface: Actes du 19^e Congrès International des Linguistes Genève, 179–199. Librarie Droz.
- Krifka, Manfred. 2013. Response particles as propositional anaphors. In Todd Snider (ed.), Proceedings of the 23rd Semantics and Linquistic Theory (SALT) Conference, 1–18. Linquistic Society of America.
- Kuno, Susumu. 1973. The Structure of the Japanese Language. Cambridge, MA: MIT Press.
- Landman, Meredith. 2006. Variables in natural language. Amherst: University of Massachusetts at Amherst dissertation.
- Lee, Chungmin. 2019. Factivity alternation of attitude 'know' in Korean, Mongolian, Uyghur, Manchu, Azeri, etc. and content clausal nominals. *Journal of Cognitive Science* 20(4). 449–503.
- Lee, leongrae. 2006. The Korean internally-headed relative clause construction: Its morphological, syntactic and semantic aspects. Tucson: University of Arizona dissertation.
- Moltmann, Friederike. 2013. Abstract Objects and the Semantics of Natural Language. Oxford: Oxford University Press.
- Moltmann, Friederike. 2020. Truthmaker semantics for natural language: Attitude verbs, modals, and intensional transitive verbs. Theoretical Linguistics 46(2). 159-200.
- Moulton, Keir. 2009. Natural selection and the syntax of clausal complementation. Amherst: University of Massachusetts at Amherst dissertation.
- Moulton, Keir. 2015. CPs: Copies and compositionality. Linguistic Inquiry 46. 305–342.

- Moulton, Keir. 2020. Remarks on propositional nominalization. In Artemis Alexiadou & Hagit Borer (eds.), Nominalization: 50 Years on from Chomsky's Remarks, 255-276, Oxford: Oxford University Press.
- Murasuqi, Keiko. 1991. Noun phrases in Japanese and English: A study in syntax, Jearnability and acquisition. Storrs: University of Connecticut dissertation.
- Özyıldız, Deniz, 2017. Attitude reports with and without true belief. In Dan Burgdorf, lacob Collard, Sireemas Maspong & Brynhildur Stefánsdóttir (eds.), Proceedings of the 27th Semantics and Linguistic Theory (SALT) Conference, 397–417. Linguistic Society of America.
- Poirier, Paul. 2020. Nominalization in Japanese: the case of koto and no. Forum Paper, University of
- Poole, Ethan. 2017. Movement and the semantic type of traces. Amherst: University of Massachusetts at Amherst dissertation.
- Potts, Christopher. 2002. The Lexical Semantics of Parenthetical-as and Appositive-which. Syntax 5. 55-88.
- Rosenbaum, Peter S. 1967. The Grammar of English Predicate Complement Constructions. Cambridge, MA: MIT Press.
- Roussou, Anna. 1991. Nominalized clauses in the syntax of Modern Greek. UCL Working Papers in Linauistics 3, 77-100.
- Schwabe, Kerstin, Werner Frey & André Meinunger. 2016. Sentential proforms: An overview. In Werner Frey, André Meinunger & Kerstin Schwabe (eds.), Inner-Sentential Propositional Proforms: Syntactic Properties and Interpretative Effects, 1–22. Amsterdam: John Benjamins.
- Schwarz, Florian. 2009. Two types of definites in natural language. Amherst: University of Massachusetts at Amherst dissertation.
- Sheehan, Michelle & Wolfram Hinzen. 2011. Moving towards the edge. Linguistic Analysis 37. 405-458.
- Shim, Ji Young, and Tabea Ihsane. 2015. Facts: The interplay between the matrix predicate and its clausal complement. In Alison Biggs, Ma Li, Aiging Wang, and Cong Zhang (eds.), Newcastle and Northumbria Working Papers in Linguistics 21(1), 130-144. Newcastle, UK: Centre for Research in Linguistics and Language Sciences.
- Snider, Todd. 2017. Anaphoric reference to propositions. Ithaca: Cornell University dissertation.
- Sudhoff, Stefan. 2003. Argumentsätze und es-Korrelate: zur syntaktischen Struktur von Nebensatzeinbettungen im Deutschen. Berlin: Wissenschaftlicher Verlag.
- Takahashi, Shoichi. 2010. The hidden side of clausal complementation. Natural Language and Linguistic Theory 28(2). 343-380.
- Yamada, Akitaka & Yusuke Kubota. 2018. Revisiting the no/koto distinction: Toward a new semantic classification of the embedding verbs. In Proceedings of the 157th Meeting of the Linguistic Society of Japan, 276-281.
- Yamada, Akitaka & Yusuke Kubota. 2019. Toward an analysis of "fuzzy" latent semantic concepts: A statistical approach to the variation between no and koto. In Proceedings of the 159th Meeting of the Linauistic Society of Japan.
- Yeom, Jae-il. 2018. Embedded declaratives in Korean. Language and Information 22. 1–27.

Misato Ido, Ai Kubota and Yusuke Kubota

Chapter 12

Two types of attenuation strategies for polarity-sensitive items: The semantics of degree adverbs *amari* and *sonnani* in Japanese

1 Introduction

Cross-linguistically, degree modifying adverbs often exhibit polarity-sensitivity, and are broadly classified into emphatic (e.g., He isn't clever at all) and understating/ attenuating (e.g., He isn't all that clever) types (Israel 1996, 2011; see Sawada, Kishimoto and Imani (this volume), section 2.9.4, for a brief discussion of Israel's work). Both the degree adverbs amari and sonnani are attenuators whose licensing environments include negation (like English all that), although they demonstrate distributional differences in non-negative environments (Matsui 2013; Nihongo Kijutsu Bunpoo Kenkyuukai 2007 and references therein). A corpus study by Ido (2019) confirmed these observations, and she further notes that, among different types of conditionals, amari (but not sonnani) most frequently appears in the -to conditional, a type of conditional that expresses generalizations and tendencies. Building on these previous studies, we outline the beginnings of an analysis for amari and sonnani in this paper. Our proposal essentially is that amari and sonnani achieve their attenuating effects via different pragmatic strategies: whereas sonnani simply indicates the speaker's (or the attitude holder's) suspension of P(d) (with some contextually posed d) to be common ground (cf. Onea and Sailer 2013 on English all that), amari signals the speaker's (or the attitude holder's) belief about what they presume to be the 'natural/unsurprising consequence' of accepting P(d). While we do not spell out a formal analysis in this paper, our proposal has advantages over a previous proposal by Matsui (2011, 2013) in that it clarifies the underlying conceptual properties of amari and sonnani and at the same time has some empirical advantages over the latter. If the overall conclusion of the present paper is on the right track, it suggests

Acknowledgments: 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".

¹ *Amari* is also known for its peculiar, long distance syntactic licensing by negation (see Kishimoto (this volume); Ido (2019)). We leave it for future study to see whether the semantic analysis we propose in this paper can properly account for this apparently peculiar syntactic property of *amari*.

that there are multiple strategies for achieving attenuation effects in natural language among NPI-like words that superficially have similar meanings.

The structure of this paper is as follows. In Section 2, we review basic data and confirm the empirical issues to be solved. Section 3 provides an overview of three previous accounts that our own proposal most directly builds on, specifically, Matsui's (2011, 2013) semantic analysis of amari, Ido's (2019) corpus study on the distributional differences between amari and sonnani, and Onea and Sailer's (2013) work on English all that. Section 4 discusses the properties of amari and sonnani in more detail, presenting an initial outline of an analysis in informal terms. Section 5 is a summary and conclusion.

2 Basic data

2.1 Similarities between amari and sonnani

In descriptive Japanese studies, it has been pointed out that although amari and sonnani are infelicitous in declarative clauses without negation (cf. [1]), both can appear in non-negative environments such as the antecedent of conditional clauses in (2)-(3). These studies have also noted that, descriptively, both these words express a non-high degree in negative environments and an excessive degree in non-negative environments (Shindo 1983; Morita 1989; Suga 1992; Hattori 1993; Group Jamassy 1998; Nihongo Kijutsu Bunpoo Kenkyuukai 2007, etc.).

- (1) a. Taroo-wa nomikai-ga {amari/sonnani} suki-de-wa-nai. Taro-TOP drinking.party-NOM AMARI/SONNANI like-COP-TOP-NEG 'Taro doesn't like drinking parties a lot.'
 - b. *Taroo-wa nomikai-ga {amari/sonnani} suki-da. Taro-TOP drinking.party-NOM AMARI/SONNANI like-COP intended: 'Taro likes drinking parties a lot.'
- (2) {Amari/Sonnani} tabe-ru-to onaka-o kowas-u-yo. AMARI/SONNANI eat-NPST-COND stomach-ACC ruin-NPST-SFP 'If you eat too much, it'll give you a stomachache.'
- (3) {Amari/Sonnani} atuke-reba, eakon-o tuke-nasai. AMARI/SONNANI hot-COND air.conditioner-ACC turn.on-IMP 'If it's so hot, turn on the air conditioner.'

Note that even in the conditional case, the essential function of amari and sonnani is the same as in declarative sentences like (1); in (2) and (3), both amari and sonnani behave as attenuators; specifically, they function to weaken the overall claim of the sentence.

(4a) shows that *amari* and *sonnani* can appear inside topicalized NPs.

- **(4)** a. [{Amari/Sonnani} ookii sakana]-wa azi-ga oti-ru. AMARI/SONNANI large fish-TOP taste-NOM drop-NPST 'Too large fish is tasteless.'
 - b. {*Amari/Sonnani*} sakana-ga ookii-to azi-ga oti-ru. AMARI/SONNANI fish-NOM large-COND taste-NOM drop-NPST 'If the fish is too large, it would be tasteless.'

As the parallel sentence (4b) shows, the topicalized NPs semantically behave like an antecedent of conditionals (cf. Haiman 1978, Hara 2014), so, the above data can be understood in a way essentially parallel to conditional sentences such as (2) and (3).

Given the licensing pattern of amari and sonnani above, where they are licensed in non-veridical contexts such as negation and conditionals, one might think that the relevant factor is non-veridicality. However, non-veridicality is by itself not a sufficient condition for the licensing of amari and sonnani. This point can be seen particularly clearly from the fact that possibility epistemic modals such as kamosirenai 'may' is not a licensor for either amari or sonnani, as pointed out by Ido (2019: 352) for sonnani:

(5) *Taroo-wa okasi-o {amari/sonnani} tabe-ru-kamosirenai. Taro-TOP snack-ACC AMARI/SONNANI eat-NPST-may 'Taro may eat a lot of snacks.'

2.2 Differences between amari and sonnani

Turning now to the distributional differences between the two, one environment in which amari and sonnani show different distributions is interrogative sentences (Matsui 2011, 2013):

(6) Soto-wa {*amari/sonnani} atui-no? outside-TOP AMARI/SONNANI hot-Q 'Is it so hot outside?'

(Matsui 2013: 319)

Another case is exclamatives. Sonnani (but not amari) can appear in exclamatives with -towa/-nante, without an explicit adversative predicate as the embedding verb.²

(7) {*Amari/Sonnani} atui{-towa/-nante} (odoroi-ta)! AMARI/SONNANI hot-COMP.EXCLAM (be.surprised-PST) 'How hot it is!'

Another similar, but marginally different case is when the utterance expresses the speaker's "discovery," i.e., a fact or situation which the speaker has just found out. The sentence is typically marked with the -noda/-nda ending, and allows sonnani to appear (but not *amari*). This type of sentence is often referred to as the "discovery usage of -noda" (Noda 1997; Ishiguro 2003; Iori 2013; Yukimatsu 2016 and references therein).

(8) Hee, naruhodo, {*amari/sonnani} atui-nda. oh indeed AMARI/SONNANI hot-NODA 'Oh, I see, it's that hot.'

Finally, it has been noted in the literature that *amari* and *sonnani* contrast with each other in their distribution in 'because'-clauses (Hattori 1993; Morita 1989; Suga 1992; Group Jamassy 1998; Matsui 2011, 2013). As shown in (9), amari is natural in 'because'clauses, but replacing it with *sonnani* typically results in an infelicitous sentence.

(9) Heya-ga {amari/*sonnani} atui-kara eakon-o room-NOM AMARI/SONNANI hot-because air.conditioner-ACC tuke-ta.

turn.on-PAST

'Because the room was so hot, I turned on the air conditioner.'

(Matsui 2013: 319, modified)

According to Ido (2019), the examples in (7), which do not suffer from this confound, show that amari cannot, but sonnani can, appear in the complement clause of adversative predicates.

² While Matsui (2013) claims that both amari and sonnani appear in the complement clause of adversative predicates such as odoroku 'be surprised' such as in (i), Ido (2019) points out that such sentences are only acceptable because amari appears in the adverbial -te clause, which in fact should be regarded as a kind of "because"-clause.

⁽i) Heya-ga. a(n)mari atuku-te odoroita. room-NOM a(n)mari hot-and be.surprized 'I was surprised that the room was so hot.' (Matsui 2011: 303)

However, the situation with 'because'-clauses is actually more complex. Although this fact has remained unnoticed in the literature, there are at least two situations in which sonnani can appear felicitously within the 'because'-clause. The first case is when the entire sentence is marked with the -noda/-nda ending as in (10).

(10) Ne-ru-maeni sonnani takusan tahe-ru-kara sleep-NPST-before SONNANI a.lot eat-NPST-because huto-ru-noda. gain.weight-NPST-NODA 'You gain weight because you eat that much before you go to sleep.'

The other case is cleft sentences. As shown in (11), the 'because'-clause which includes sonnani can appear in the pre-copula position of a cleft sentence.

(11) Huto-ru-no-wa ne-ru-maeni sonnani gain.weight-NPST-NMLZ-TOP sleep-NPST-before SONNANI tahe-ru-kara-da. eat-NPST-because-COP 'It's because you eat that much before you go to sleep that you gain weight.'

In both (10) and (11), it is not the 'because'-clause that allows sonnani but rather the fact that the sentence involves a particular information structure. In a sense, these examples are similar to the discovery and surprisal examples in (7) and (8) in that the content of the 'because'-clause is something that the speaker doesn't simply take for granted. We will examine the properties of this type of 'because'-sentences and the factor that is involved in the licensing of sonnani in such examples in more detail in section 4.3

In this section, we have briefly observed the similarities and differences between *amari* and *sonnani*. The main points are summarized as follows.

- Similarities of amari and sonnani:
 - They cannot appear in simple affirmative sentences.
 - They can appear under negation, in the antecedent of conditionals and in topicalized NPs.

³ It has been noted in the literature that the -noda/-nda sentences have various discourse functions in addition to the "discovery"-type meaning, such as "marking the scope of focus/negation," "giving explanation," "supplying background information," and "expressing causal relation" (Noda 1997; Iori 2013; Ishiguro 2003; Yukimatsu 2016 and references therein). Example (10) can thus be considered as one of those cases depending on the discourse context in which the sentence is uttered.

- Differences between amari and sonnani:
 - Sonnani can, but amari cannot, appear in non-negative interrogative clauses.
 - Sonnani can, but amari cannot, appear under adversative predicates and exclamatives.
 - Amari can, but sonnani cannot appear in non-negative 'because'-clauses.

Any principled theory of this type of attenuating adverbs should be able to account for these distributional similarities and differences. In the next section, we consider three proposals in the previous literature addressing this question.

3 Previous studies

In this section, we review three proposals. First, we review Matsui (2011, 2013), whose main focus is on the licensing mechanism of amari. Next, we take a look at Ido's (2019) corpus study on amari and sonanni. Lastly, we review Onea and Sailer's (2013) work on the English attenuator all that.

3.1 Matsui (2011, 2013)

As compared to sonnani, for which the literature unanimously endorses an anaphoric analysis, the literature on amari is somewhat complex, where we can identify two competing views. Some previous studies (Shindo 1983; Morita 1989; Suga 1992; Hattori 1993; Ido 2019) have posited two distinct lexical items for amari, one for negative (expressing "weak," or moderate degrees) and the other for non-negative environments (expressing "excessive" degrees).

Matsui's (2011, 2013) proposal differs from these ambiguity approaches in that it attempts a unified analysis which recognizes a single lexical entry for amari for both negative and non-negative environments. Moreover, this work is important in that it lays the groundwork for a discourse-based analysis we will eventually be advocating in this paper. For this reason, we review Matsui's proposal in some detail in this section. Matsui provides a pragmatic explanation for the distribution of amari along the lines of (12).

Amari denotes "very" semantically, and is licensed in environments in which the original proposition is pragmatically "weak" compared to the alternative proposition.

The point of (12) is that amari has a function to soften the speaker's claim whether it appears in a negative sentence or in any other environment. For example, in (9), the original proposition containing amari is "It is very hot outside, so I turned on the air conditioner". The alternative proposition is "It is hot outside, so I turned on the air conditioner". In general, the situation of turning on the air conditioner is more likely to occur when it is very hot than when it is just hot, which means that the original proposition makes a weaker claim than the alternative proposition. The same is true for negative sentences: the situation "not very hot" is more likely to occur than the situation "not hot," making the overall claim made by the sentence pragmatically weaker. By contrast, in interrogatives, as in (6), the question "Is it very hot?" is a more specific question than "Is it hot?", and is therefore a pragmatically stronger question for the speaker to ask the listener. Therefore, amari is not licensed in interrogative sentences.

Matsui's proposal is attractive in that it offers a uniform analysis of negative and non-negative amari. Moreover, the pragmatic-based proposal that makes reference to the pragmatic strength of the statement is conceptually simple and seems essentially on the right track. However, aside from the obscurity regarding the notion of pragmatic strength (for which Matsui (2013) gives only intuitive explanations based on paraphrases of specific examples), there is a potential problem with Matsui's proposal. Crucially, in her analysis, the licensing of amari, i.e., the checking mechanism that determines whether the condition in (12) has been met or not, relies on the existence of a speech-act operator such as ASSERT or YN.QUEST, following Krifka (1995). Since speech-act operators only appear in the matrix clause by nature, Matsui's proposal predicts that the licensing of amari can be done only at the global level and that it is not affected by embedding the licensor under another licensor. To establish this point, let us consider the example in (13), in which amari appears under two potential licensers, i.e., the negation -nake and the conditional -reba.

(13) *Sono* eiga-ga amari omosiroku-nake-reba betu-no that movie-NOM AMARI interesting-NEG-COND other-GEN eiga-o mi-ru. movie-ACC watch-NPST 'I'll watch another movie if that movie isn't very interesting.'

In this example, the inference pattern goes in the opposite direction than in simple negative or conditional examples:

(14) If the movie is not very interesting, I'll watch another movie. => If the movie is not interesting, I'll watch another movie.

In Matsui's analysis, the strength of the statement (and comparison with alternatives) is calculated at the level where the speech-act operators ASSERT and YN.QUEST apply. But if this is the case, then, since the higher degree results in a stronger statement at the global level in examples such as (13), it systematically makes incorrect predictions for such examples. As mentioned above, speech-act operators by their nature operate only at the global level. Given this, (13) shows that it is not ideal to impose the licensing mechanism on the speech-act operator. What is required instead is a licensing mechanism that calculates the relevant inference in the local environment in which *amari* is embedded.

3.2 Ido's (2019) corpus study with BCCWI

Most of the previous literature, including Matsui's (2011, 2013) proposal that we have just reviewed above, is based on informal introspective judgments. In order to obtain a better understanding of the distributional and semantic differences between amari and sonnani, it is desirable to examine attested data in corpora. Ido (2019) conducted precisely such a study, using the Balanced Corpus of Contemporary Written Japanese (BCCWJ). Table 1, adopted from Ido (2019), shows 300 randomly-selected examples each for amari and sonnani from BCCWI, excluding inappropriate examples. In order to make sure that both sonnani and amari are used in the relevant degree meanings in the retrieved examples, the search was conducted under the condition that an adjective immediately follows amari and sonnani.

This corpus study confirms the general patterns noted in the previous literature:

- Amari does not appear in interrogatives, but sonnani does (amari: 0 sentence, sonnani: 83 sentences).
- Amari appears in 'because'-clauses, but sonnani does not (amari: 26 sentences, sonnani: 0 sentences).

Ido's corpus study also revealed some new findings. The first is the fine-grained pattern found with conditionals. Among various types of conditional clauses in Japanese (-tara, -reba, -nara, -to, and -te[-wa/mo] clauses), amari tends to appear in to-conditionals (to-conditionals: 16 sentences, other conditionals: 2 sentences) more frequently than in other types of conditionals, but there is no such tendency with sonnani. In the Appendix, we list some attested examples of conditional sentences with amari and sonnani from BCCWI cited in Ido (2019). We hasten to note here that care should be taken in interpreting this type of tendency in attested

Table 1: Clause types in which *amari* and *sonnani* appear.

clause type	Form	amari	sonnani
negative clause	Total	251	118
	[[ADV]NPNEG] types	55	75
	[[ADV]SNEG] types	12	10
conditional clause	-tara 'if'	0	3
	-reba 'if'	1	1
	-to 'if'	16	1
	-nara 'if'	0	5
	-te/de-wa 'if'	0	1
	-te/de-mo 'even if'	1	0
	-noni 'even though'	0	1
reason clause	-node 'because'	14	0
	-kara 'because'	2	0
	<i>-te</i> 'and'	7	0
	Other	3	0
temporal adverbial clause	-toki 'when'	2	0
	-aida 'while'	1	0
interrogative clause		0	83
noun-modifying clause		2	2
Total		300	300

data in corpora, since the pattern may be influenced by multiple factors.⁴ Our discussion below is therefore somewhat tentative, but assuming that this pattern is real, it is consistent with the overall profile of amari as opposed to sonnani, as will become clear when we consider the meanings of these words in further detail in Section 4.

In order to make sense of the correlation between amari and -to conditionals (assuming that it reflects some real semantic pattern), we need to review some background on the differences among different types of conditional clauses noted in the literature. Interestingly, it turns out that the -to conditional is a rather peculiar (or non-prototypical) type of conditional sentence. Setting aside the differences among -tara, -reba, and -nara clauses, one of the most significant properties of the

⁴ Note that one cannot immediately reject this possibility merely on the basis of the fact that, as compared with amari, sonnani does occur with other types of conditionals, since, unlike amari, a large portion of the occurrence of sonnani in BCCWJ is likely to consist of conversational style in novels and similar genres in written language.

-to conditional which distinguishes it from the other types is that it cannot be followed by imperatives (-nasai, -te kudasai) and other forms of addressee-directed (direct or indirect) requests, such as -te-mo ii 'is allowed to do/be' and -te hosii 'want X to do/be.'

- (15) a. *Heya-ga* {atukat-tara/atuke-reba/atui-nara} eakon-o room-NOM hot-COND air.conditioner-ACC {tuke-te kudasai/tuke-nasai/tuke-te-mo ii-desu-yo}. turn.on-TE please/turn.on-IMP/turn.on-TE-also allowed-POL-SFP 'If the room is hot, (please/you can) turn on the air conditioner.'
 - b. *Heya-ga atui-to eakon-o {tuke-te room-NOM hot-COND air.conditioner-ACC turn.on-TE kudasai/tuke-nasai/tuke-te-mo ii-desu-vo}. please/turn.on-IMP/turn.on-TE-also allowed-POL-SFP intended: 'If the room is hot, (please/you can) turn on the air conditioner.'

Another characteristic of the -to conditional is that it cannot be used in so-called epistemic conditionals, in which the truth of the antecedent proposition is not yet known to the speaker, but the speaker is making an inference based on the knowledge, observation, hearsay, or information offered by the addressee as in (16). In (16), the truth of the antecedent "the light is on" is not yet known to the speaker, but the speaker is making an inference based on the knowledge that Taro must be at home supposing that the antecedent is true. As shown in (16), all other conditional markers are fine, but using -to in this type of conditional sentence is infelicitous.

denki-ga (16) *Heya-no* tui-te {i-tara/i-reba/i-ru-nara/*i-ru-to} Taro-wa room-GEN light-NOM on-TE be-COND Taro-TOP kaet-te-i-ru-daroo. return-TE-be-NPST-may 'If the light in the room is on, Taro is probably at home (has already come home).'

Masuoka and Takubo (1989) note that the most fundamental property of to-conditionals is to express "general accidental dependencies". Thus, the most typical usage of to-conditionals is a sentence like (17a), which expresses habitual or generic relationship between the two events or situations. Note that replacing -to in (17a) with the other conditional markers makes the sentence less natural, as shown in (17b).

- (17) a. Koko-de-wa hatigatu-ni hai-ru-to minna here-LOC-TOP August-DAT enter-NPST-COND all kiseisi-te simat-te kansanto si-masu. go.to.hometown-TE finish-TE empty do-POL.NPST 'In August, everybody goes home, so, this place becomes very empty.'
 - b. Koko-de-wa hatigatu-ni {?hai-reba/?hait-tara/*haitta-nara} minna here-LOC-TOP August-DAT enter-COND all kiseisi-te simat-te kansanto si-masu. go.to.hometown-TE finish-TE empty do-POL.NPST 'In August, everybody goes home, so, this place becomes very empty.' (Arita 1999)

In view of these considerations and based on the fact that amari tends to appear in -to conditionals rather than in the other types of conditionals, Ido (2019) suggests that amari fundamentally has some kind of genericity or habituality as part of its meaning.

It is important to note that this does not necessarily mean that the distributions of amari and the -to conditional perfectly correspond with each other. In fact, that is not the case. To see this point, note that amari can also appear in conditionals in which -to conditionals cannot appear, i.e., conditionals with imperatives (18) and epistemic conditionals (19).

- {atui-nara/atukat-tara/atuke-reba/*atui-to} (18) *Heya-ga* amari room-NOM AMARI hot-COND eakon-o tuke-te kudasai. air.conditioner-ACC turn.on-TE please 'Please turn on the air conditioner if the room is too hot.'
- (19) Tyuusyazyoo-ni amari takusan kuruma-ga {a-ru-nara/at-tara parking-DAT AMARI many car-NOM be-NPST-COND/be-COND/ /a-reba/*a-ru-to} tennai-wa sootoo be-COND/ be-NPST-COND shop.inside-TOP rather kon-de-i-ru-no-daroo. crowded-TE-be-NPST-NMLZ-may 'If there are so many cars in the parking slot, the shop should be very crowded.'

Thus, it is unlikely that the distributions of amari and -to conditionals are constrained by exactly the same factors. Rather, the correlation between amari and the -to conditional is only a tendency, reflecting the most stereotypical types of contexts in which they are used. The other conditional markers are often compatible with (if not most frequent in) such contexts, and *amari* can appear in environments that are not exactly prototypical, as long as the context in question does not incur a semantic conflict with its lexically encoded meaning.

Another finding of Ido (2019) is that *amari* is, but *sonnani* is not, found in temporal adverbial clauses such as *toki* 'when' clauses (*amari*: 3 sentences, *sonnani*: 0 sentence).⁵

(20) Mata itami-ga amari hagesii toki-wa ansei-ni si-te
also pain-NOM AMARI keen when-TOP calm-DAT do-TE
hiyas-u-to yoi-desyoo.
cool-NPST-COND good-probably.POL
'Also, if the pain is very keen, it is recommended to rest and cool the affected part.' (LBh4_00007: 57800)

According to Ido, the adverbial clause in which *amari* appears, whether it is conditional ('if'-clauses) or temporal ('when'-clauses), expresses a "general condition" that leads to the conclusion expressed by the main clause. Note that this is consistent with the observation we just reviewed above regarding the distribution of *amari* in the *-to* conditional clause. Conversely, *sonnani* does not have such a characteristic.

Based on this corpus study, Ido (2019) describes the distribution of *amari* and *sonnani* as follows:

(21) *Amari* is either used in negative clauses, or in adverbial clauses expressing general conditions leading to the consequences expressed by the main clause.

⁵ Since there were only two instances of *-toki* temporal adverbial clauses in Ido (2019), we conducted an additional search with the entire BCCWJ. Our results are largely consistent with the conclusions of Ido (2019), with 13 instances of *amari* and only one instance of *sonnani* in temporal adverbial clauses. The one case of *sonnani* appearing in a temporal adverbial clause turned out to be a case in which the adverbial clause itself was embedded inside a conditional clause. Since it is the conditional clause and not the temporal adverbial clause that is the licensor in such examples, Ido's (2019) generalization that *sonnani* does not appear in temporal adverbial clauses is maintained. With *amari*, the vast majority of the attested examples (12 out of 13) had the topic marker *wa* immediately following *-toki*, making it equivalent to a conditional clause (see Section 2 for the relationship between topic and conditional clauses). In the one remaining case, the entire clause including the *-toki* clause was embedded in a conditional clause. Thus, in all of the attested data we were able to find, *amari* in temporal adverbial clauses appeared within conditional clauses.

(22) Sonnani is used in clauses that describe situations that the speaker does not recognize as factual.

Importantly, Ido's corpus study supplements previous intuition-based work by descriptively presenting adequate data and observation. However, it remains unclear how we should go about characterizing the distributions of amari and sonnani precisely based on the licensing mechanisms for the two words. In particular, the notion of "general condition" in (21) remains vague. Moreover, Ido treats amari in negative environments and in non-negative environments as distinct lexical items without providing compelling empirical motivation for positing lexical ambiguity here. It would be desirable if we could derive the distribution of amari without invoking lexical ambiguity. Thus, more work needs to be done so as to clarify the meanings and distributions of the two attenuating adverbs amari and sonnani.

3.3 Onea and Sailer (2013) on English all that

As we have seen above, amari and sonnani both have some kind of attenuation effect just as all that in English. In particular, sonnani has a distribution that closely resembles that of all that (Matsui 2013; Onea and Sailer 2013). Essentially, both sonnani and all that are anaphoric degree adverbs, and it is instructive to examine the behavior of all that in order to make sense of sonnani (and amari). Accordingly, we review Onea and Sailer's (2013) study of all that in this section.

Onea and Sailer (2013) conducted a corpus study using COCA and found that all that appears not only with clausemate negation but also with n-constituents, non-clausemate negations, in polar questions, wh-questions and in some other environments. The following examples are from Onea and Sailer (2013; [5]).

- (23) a. It was not all that easy to decide on the Man of the Year for 1991.
 - b. "None of us are going to look all that great with no make-up," I said.
 - c. I laughed heartily even though I didn't think his joke was all that funny.
 - d. I'm curious, is that all that different from what President Bush is saying?
 - "Well, really, what did he do that's all that different from anyone else?"
 - Well, someone must love you a lot to make all that good food you got in there.

They also found examples from COCA in which all that is licensed by so-called weak licensers such as few, hardly, and not every, as shown in (24) from Onea and Sailer (2013; [8]).

- (24) a. But very few scents are all that memorable.
 - b. A wounded and bitter fellow, this fictional hero of mine, but his bilious arguments hardly seem all that dated.
 - c. Not everyone is all that shocked about the lack of prime choices.

In addition, they point out that all that can also appear in the complement clause of a factive adversative predicate such as be surprised.

(25) I am/Robin is surprised that the exam was all that easy.

(Onea and Sailer 2013; [10])

Given that all that can be licensed by weak licensers as in COCA examples in (24) and a constructed one in (25), one might conclude that all that is a weak NPI. However, Onea and Sailer also found that there are some contexts in which all that cannot be licensed even though those contexts are supposed to be licensing environments for strong NPIs (and hence for weak NPIs as well).

- (26) a. *Nobody who is all that happy smiles.
 - b. *Everyone who is all that happy smiles.
 - c. *At most a third of the audience found her performance all that great.
 - d. *Only smiling people are all that happy.

(Onea and Sailer 2013; [11–12])

In order to account for the unique licensing environments of all that, Onea and Sailer (2013) propose a presuppositional account for all that within a DRT-style representation, instead of referring to the classical domain-widening and strengthening approach (e.g., Kadmon and Lamdman 1993) or Krifka's (1995) alternative-based approach. In particular, they propose the lexical meaning of all that along the lines of (27).

- (27) [[all that]] = $\lambda d. \lambda u. \lambda P. \lambda x$.
 - P(d)(x)a. asserted meaning:
 - b. **presupposes:** $\exists d.HIGH(d,s) \& BEL(u, \neg P(d)(x)) \& \exists u'.BEL(u', P(d)(x))$

The asserted meaning simply says that x is P to degree d. In addition, there is a presupposition, which states that there is a salient degree d in the discourse which is high on some scale s, and that the attitude holder u (typically the speaker) believes that x is not P to degree d. Simultaneously, it is also presupposed that there is another attitude holder *u*' different from *u* who believes that *x* is *P* to degree *d*.

This analysis gives a straightforward answer to why all that is unacceptable in simple declarative clauses such as the following:

(28) *Peter is all that happy.

According to Onea and Sailer, this example is unacceptable because it is presupposed that the attitude holder u (the speaker) believes that Peter is not happy to degree d, but at the same time the speaker asserts that Peter is happy to degree d. Thus, there is a contradiction between what is asserted and what is presupposed. In contrast, when all that appears in the scope of negation or conditional, such as the following, there is no such conflict between what is presupposed and what is asserted.

- (29) Peter is not all that happy.
- (30) If Peter is all that happy, he smiles.

These examples are acceptable, since here what is asserted ("Peter is not happy to degree d" and "if Peter is happy to degree d, he smiles," respectively) and what is presupposed ("the speaker doesn't believe that Peter is indeed happy to degree d") are not contradictory. The distribution in other licensing environments can be accounted for similarly. See Onea and Sailer (2013, Section 5) for details.

Onea and Sailer's approach demonstrates how the non-asserted meaning inherent to *all that* (which they technically analyze as a type of presupposition) accounts for the peculiar distributional pattern of all that that differs from the typical NPI licensing pattern. Their analysis also captures the anaphoric aspect of all that to account for the fact that all that "can only be used in a context in which there is someone who previously uttered, or somehow is known to maintain or be committed to the belief that the individual under discussion has some property to a very high degree" (Onea and Sailer 2013: 338).

We believe that Onea and Sailer's analysis of all that is basically on the right track in capturing the anaphoric property of all that and relating it to the speaker's take on whether this high degree is actually satisfied. We will therefore basically adopt their key idea for our analysis of sonnani (but not for amari). However, we believe that there are reasons to believe that the particular implementation of

⁶ However, based on what is proposed in (27), it is not entirely clear how this contradiction comes about. The problem is that nothing guarantees that the d in the assertion (27a) and the d in the presupposition (27b) are identical. Onea and Sailer present an alternative version of their analysis in a DRT-style presentation in the later part of their paper, but the relationship between that analysis and the lexical entry in (27) is left unclear.

this analytic idea by means of presupposition with the belief operator (BEL) along the lines of (27) leaves room for improvement. To see this point, note that at least for sonnani, what's relevant is the speaker's stance on the "issues on the table," rather than their own epistemic state itself. For example, the sonnani sentence in (2), repeated here as in (31), can be uttered in a situation in which the speaker is actually watching the hearer eat a lot in front of him/her.

(31) {*Amari/Sonnani*} tabe-ru-to onaka-o kowas-u-yo. AMARI/SONNANI eat-NPST-COND stomach-ACC ruin-NPST-SFP 'If you eat too much, it'll give you a stomachache.'

In such a case, the speaker *knows* the hearer eats a lot. Thus, if $BEL(u, \neg P(d)(x))$ were presupposed, this sentence should be infelicitous to be uttered in that situation. This suggests that we need a model which can explicitly represent dynamic negotiations among interlocutors in a more nuanced way than is possible with a simple DRT model (in which global presuppositions simply correspond to what is shared knowledge among all interlocutors in the CG).

The following type of example shows perhaps most clearly why applying Onea and Sailer's (2013) approach directly to sonnani does not work:

(32) Kimi-ga sonnani binboona-koto-wa watasi-mo motiron sit-te of.course know-TE you-NOM SONNANI poor-NMLZ-TOP I-also i-ru-ga, . . . IPFV-NPST-but 'I of course know you are so poor, (but even then. . .).'

Here, sonnani is embedded under the verb sit-te i-ru 'know,' with the speaker as the subject, so, if it really presupposed that the speaker does not believe P(d) it should directly contradict what is asserted by the sentence. However, there is no sense of contradiction of this sort, and the use of sonnani can be understood as a rhetorical device to signal to the hearer that the speaker is reluctant to admit the truth of P(d).

In this section, we have reviewed three approaches to the licensing mechanism of attenuating NPIs. Matsui's (2011, 2013) analysis on amari adopts an alternative-based account on NPIs (cf. Krifka 1995) and proposes that the licensing is

⁷ It should be noted that Onea and Sailer (2013: 226, fn 5) themselves are aware of the fact that a more complex model that teases apart beliefs and discourse commitments properly may be more adequate. In this respect, we believe that what we propose in this paper is not at odds with the spirit of Onea and Sailer (2013), but should in fact be seen as a natural refinement of the latter.

checked at the level of speech-act operators. Ido's (2019) corpus study reveals a particular tendency of amari in conditionals, and argues that the notion of "general conditions" is the key component of the meaning of amari, which is not shared by sonnani. Onea and Sailer's (2013) analysis on English all that assumes a presuppositional approach, and argues that all that presupposes the speaker's disbelief in the degree mentioned previously in the discourse.

In the next section, we outline an analysis of amari and sonnani, and explain their similarities and differences discussed in Section 2.

4 Toward an analysis

In Section 2, we have seen that amari and sonnani have overlapping but distinct distributions with respect to different NPI licensing environments (in particular, 'because' clauses and interrogative clauses). The proposals reviewed in Section 3 attempt to offer solutions for these facts. However, as we have noted, there are still several outstanding issues that each of these proposals faces. One thing that seems clear nonetheless is that both amari and sonnani are sensitive to the ways in which speakers and hearers negotiate with each other about how to update shared knowledge in discourse. Note, for example, the anaphoric nature of sonnani (and its counterpart all that in English), which is etymologically a demonstrative. For amari, this point may perhaps be less apparent, but recall Ido's observation from Section 3.2 (based on corpus study) that amari's function at its core is to rely on knowledge about "general tendencies" to justify the particular conclusion drawn in the sentence.

Given these findings, we propose that (i) both amari and sonnani are attenuation markers that are fundamentally discourse-sensitive, and that (ii) the particular ways in which they are discourse sensitive are different for the two. In particular, sonnani is a "suspension" marker that anaphorically refers to a previously introduced degree. By contrast, amari is a context adjustment device that manipulates the degree denoted by the sentence (based on the speaker's knowledge/belief) to induce its attenuation effect. We argue that this difference in the discourse-oriented aspects of meaning is the source of the distributional differences between sonnani and amari. Our proposal is informed by recent developments in dynamic discourse semantics (in particular, formal models of discourse that build on Farkas and Bruce's [2010] so-called "table model"). However, we refrain from complete formalization since the main goal of the present paper is to lay out the empirical groundwork for a more refined analysis in a territory in which formal tools are still being actively developed. We will say more about outstanding issues and future directions in the concluding section.

4.1 Sonnani

As noted in Section 3, our analysis of sonnani follows Onea and Sailer's (2013) analysis of all that in its basic analytic idea. However, we have seen there that implementing the relevant meaning component in terms of the speaker's epistemic state itself via the BEL predicate is problematic. We thus depart from Onea and Sailer (2013) in this respect and propose the following as the semantic contribution of sonnani:8

(33) **sonnani**(*P*)

- a. **presupposition:** there is some contextually salient high degree d
- b. assertion: P(d)
- c. **non-asserted content:** the speaker is reluctant to commit him/herself to the truth of P(d) for the purpose of the conversation

At the level of assertion, sonnani is just a degree modifier designating some high degree salient in the context (note that this "asserted" meaning is not identical to the actual assertion at the top level of the sentence, since [33] can be embedded under the scope of other operators). This part of the analysis is essentially identical to Onea and Sailer's (2013) analysis of all that. The difference is in the non-asserted component of the meaning; unlike Onea and Sailer's (2013) account, (33) does not directly refer to the speaker's epistemic state. Rather, it merely signals the

Takubo and Kinsui (1997) further elaborated Kuroda's characterization and proposed an analysis based on a mental model approach. However, these studies do not present an analysis of sonnani as an attenuator. We leave it for future study to examine the relationship between this prior literature on the general properties of the so-series demonstratives and the specific analysis of the degree adverb sonnani we have proposed in this paper.

⁸ It has been pointed out in the literature that the so-series demonstratives in general can appear in "discovery"-type contexts in which the speaker has not yet come to fully accept the discovery just made (see also Akatsuka's (1985) discussion of the conditional -nara which involves a similar notion). For example, Kuroda (1979/1992) characterizes the function of the so-series demonstratives as follows:

⁽i) so-captures an object as being outside of one's direct experience, conceptual knowledge in the case of anaphoric uses and other people's direct knowledge in the case of deictic uses. (Kuroda 1979/1992 translated and cited in Takubo and Kinsui 1997)

speaker's tentativeness as to whether to accept P(d) (note that similar ideas have been proposed in the literature of the so-series demonstratives; see footnote 8 for some discussion). Note that it is perfectly consistent for the speaker to believe some proposition p while still hesitating to accept the truth of p for the purpose of the conversation. In an extreme case of this, one can act as if one doesn't believe p (for example, when making a false testimony). What (33) is meant to capture is the intuition that it is this latter aspect of discourse that sonnani is sensitive to. This immediately explains the fact that (32) is not contradictory. In this sentence, the speaker is well aware of the fact that the hearer is very poor, but signals his reluctance to accept that fact as given for the purpose of the subsequent discourse moves.

Several consequences follow from this analysis. First, our account explains the infelicity of simple affirmative sentences such as the following in a similar way as Onea and Sailer (2013), but conceptually improving over the latter.

(34)*Kyoo-wa sonnani atui today-TOP SONNANI hot intended: 'It's so hot today.'

Our analysis predicts that (34) is infelicitous, given that the default discourse function associated with declarative sentences is to propose to update the Common Ground with the proposition expressed by the sentence. It is plainly contradictory to propose to (jointly) accept p as true while at the same time signaling reservations for accepting *p* for oneself.

As shown in Section 2.2, sonnani is felicitous in the complement clause of adversative psychological predicates (35) (= [6b]) and in exclamatives (36) (= [7]) as well as the "discovery" type of sentence with the -noda/-nda ending (37) (= [8]).

(35) Sonnani Kondoo-ga warui-no-ni odoroi-ta. SONNANI Kondo-NOM bad-NMLZ-DAT be.surprised-PST 'I was surprised by how bad Kondo's condition was.'

(Ido 2019; [35], modified)

- (36) {*Amari/Sonnani} atui{-towa/-nante} (odoroi-ta)! AMARI/SONNANI hot-COMP.EXCLAM (be.surprised-PST) 'How hot it is!'
- (37) Hee, naruhodo, {*amari/sonnani} atui-nda. oh indeed AMARI/SONNANI hot-NODA 'Oh, I see, it's that hot.'

Here, the speaker did not know that it was so hot but recognizes it right before the utterance, and expresses this discovery by uttering the above sentences. These sentences can be followed up by an expression such as mada shinzi-rare-nai-kedo 'I still can't believe it, though,' showing that the speaker has not yet come to fully accept that discovery.9

The fact that sonnani is felicitous in non-veridical contexts such as interrogative, conditional and negative sentences also follows straightforwardly on this analysis, essentially for the same reason as in Onea and Sailer's (2013) account. For example, in the following conditional sentence, the antecedent clause denotes the proposition "it's (very) hot," but the sentence as a whole doesn't entail it. Thus, what is asserted by the whole sentence (suggestion to turn on the air conditioner on the condition that the temperature is above a certain high degree [= p]) is consistent with the speaker indicating their own skepticism on the truth of p.

(38) Sonnani atuke-reha, eakon-o tuke-tara? SONNANI hot-COND air.conditioner-ACC turn.on-how.about 'If it's so hot, how about turning on the air conditioner?'

As noted in Section 2.2 (repeated below), "because"-clauses by itself does not allow sonnani.

(39) *Sonnani atui-kara. eakon-o tuke-ta-mama ne-ta. SONNANI hot-because air.conditioner-ACC turn.on-NPST-with sleep-PST 'Since it was so hot, I slept with the air conditioner turned on (all night).'

The unacceptability of (39) essentially follows from the fact that 'because'-clauses entail the truth of the antecedent clause. Effectively, in (39), the speaker is using the proposition hot(d) of the 'because'-clause for the purpose of justifying the claim made in the consequent clause. However, the use of sonnani signals to the hearer that the speaker is not fully comfortable in accepting hot(d) to be true. Using a proposition whose truth one doesn't commit to as the justification for some other claim is plainly incoherent. Thus, the infelicity of (39) follows straightforwardly.

Now, recall from Section 2.2 ([10] and [11], repeated below as [40] and [41]) that sonnani can appear in the 'because'-clause under a certain condition.

⁹ On Onea and Sailer's (2013) account, one might attempt to accommodate (37) by making the assumption that the evaluation time of the presupposition can be backshifted in certain contexts such as embedding under an explicit 'surprise' predicate (Onea and Sailer 2013: 347).

- (40) Ne-ru-maeni sonnani takusan taheru-kara sleep-NPST-before SONNANI a.lot eat-because huto-ru-noda. gain.weight-NPST-NODA 'You gain weight because you eat that much before you go to sleep.'
- (41) Huto-ru-no-wa ne-ru-maeni sonnani gain.weight-NPST-NMLZ-TOP sleep-NPST-before SONNANI tabe-ru-kara-da. eat-NPST-because-COP 'It's because you eat that much before you go to sleep that you gain weight.'

As pointed out in Section 2.2, these sentences involve a particular information structure. In particular, it is the 'because'-clause, or the reasoning itself, that is emphasized as some kind of "new information" (or, "focused" information). Generally, as we discussed above, 'because'-clauses entail the truth of the antecedent clause. However, in this particular case, the 'because'-clause is explicitly marked either by -noda/-nda as in (10) or by cleft as in (11) as informationally "focused," typically something that the speaker has just found out right before the utterance. Intuitively speaking, this pragmatic condition rescues sonnani, making it possible to appear in 'because'-clauses.

At this point, we would like to clarify one thing about the pragmatic condition we have utilized above in characterizing the meaning of sonnani. As pointed out by one reviewer, new information is not the only pragmatic condition which licenses sonnani. For example, sonnani is still acceptable in the following type of example (given by the reviewer). In this example, the adverbial clause 'as I always think' clearly suggests that the information that the hearer eats a lot is nothing new to the speaker.

- (42) *Itumo* omou-nda kedo. sonnani tabe-ru kara always think-NODA but SONNANI eat-NPST because huto-ru-nda-yo. gain.weight-NPST-NODA-FIN 'As I always think, you gain weight because you eat that much.'
- (42) can be uttered even when the speaker has had a meal together with the hearer many times and thinks, every time they eat together, that the reason that the hearer gains weight is because s/he eats that much. Why is sonnani felicitous in this type of example? In (33) we have characterized the function of sonnani as signaling that "the speaker is reluctant to commit him/herself to the truth of P(d) for the purpose

of conversation". Right after obtaining new information is one of the most typical situations in which the speaker has not yet fully committed him/herself to the truth of the obtained information (see, for example, Akatsuka's (1985) notion of "epistemic scale" in this connection, in which newly learned information belongs to the realis domain but is closer to the irrealis domain than known facts). However, there are other situations too. For example, the speaker may know that the reason for the hearer's weight increase is the meal size, but the speaker may still be hesitant to accept it as a fact that the hearer eats that much and gains weight (note again that, as emphasized by Akatsuka, [internalized] knowledge and [objective] information are distinct for humans, and human language often reflects this distinction). By saying "reluctant to commit him/herself to the truth of P(d)," we do not mean to restrict the pragmatic condition only to the situation in which the information expressed by the sentence is new to the speaker.

Here is yet another example which illustrates this point.

(43) Hai hai. (anata-ga i-u vooni) watasi-wa sonnani yeah yeah (you-NOM say-NPST as) I-TOP **SONNANI** atama-ga desu-yo. waru-i brain-NOM bad-NPST POL-FIN 'Yeah, yeah, I am that stupid (as you say).'

The above sentence can only be uttered perfunctorily. Essentially, the speaker superficially admits that they are stupid to whatever high degree suggested by their interlocutor just in order to let the conversation flow, but they are not taking it seriously. Thus, the licensing condition of sonnani is fundamentally pragmatic, and is quite complex and nuanced.

Finally, the fact that sonnani does not appear in the scope of epistemic possibility modals such as kamosirenai 'may' is also straightforward in the proposed analysis.

(44) *Taroo-wa okasi-o sonnani takusan tabe-ru-kamosirenai. snack-ACC SONNANI a-lot-of Taro-TOP eat-NPST-may 'Taro may eat a lot of snacks.' (Ido 2019: 352)

For (44) to make sense, the speaker has to believe (or, more precisely, make their publicly expressed belief consistent with the proposition) that there is a possibility that the prejacent proposition is true. But this directly conflicts with what the use of sonnani conveys to the hearer. Thus, the infelicity of sonnani under epistemic modals directly follows in our account.

4.2 Amari

Let us now move on to the analysis of amari. A clear difference between sonnani and amari is that, unlike sonnani, amari is not anaphoric. Rather, in an amari sentence, the speaker relies on what s/he takes to be an uncontroversial pattern of inference to support the particular claim made by the sentence. We believe that the notion of "general conditional inference" that Ido (2019) invokes for non-negative uses of amari essentially gets at the core meaning of amari. However, the relationship (if any) between negative and non-negative uses of amari is left unaccounted for in Ido's proposal. Matsui's (2013) alternative-based approach is instructive in this respect, as it offers a unified analysis. In particular, the idea that the attenuation effect is obtained via a comparison among possible alternative propositions with varying degrees d for P(d) and that the relevant comparison pertains to the strength of the statement seems essentially on the right track. However, we have seen in Section 2 that treating amari as a speech act-level operator makes some incorrect predictions.

Based on these considerations, and in an attempt to unify the insights of previous authors, we propose the following as the core meaning of amari:

(45) $\mathbf{amari}(P)$

- $\exists d.P(d)$, where d is high above the standard degree a. **Assertion**:
- b. Non-asserted content:
 - (i) P(d) potentially leads to some abnormal consequence q (in the normative sense), and
 - (ii) the higher the degree *d*, the more likely it is that *q*.

There are several issues that need to be clarified in this characterization of the meaning of amari. First, although the informal analysis in (45) does not clarify this point, we assume that the consequence q in the non-asserted content is not just any consequence that follows from the asserted meaning of the sentence, but corresponds to the denotation of the consequent clause (where "consequent" – as opposed to "consequence" – is a syntactic notion designating q in the sentence form "if p then q"). The key intuition here is that amari is licensed in contexts that introduce hypothetical assumptions and that manipulating the parameter d affects the ease with which update of information under that hypothetical assumption can be carried out. The case of 'because' clauses and negation can be given a parallel analysis, as we explain below. Here again, we leave it to future research to examine the exact nature of the non-asserted content. We suspect that this is some sort of presumption on the part of the speaker, that is, something that the speaker simply takes for granted (but which may or may not be on the CG, depending on

the accuracy of the speaker's knowledge about what is shared knowledge among his interlocutors).

Given these assumptions, the fact that amari is felicitous in conditional sentences falls out straightforwardly. For example, in (46), the non-asserted content of amari identifies the consequent clause of the conditional sentence as q, and expresses the meaning (47).

- (46) *Amari* atuker-eba, eakon-o tuke-ru-daroo. AMARI hot-if air.conditioner-ACC turn.on-NPST-may 'If it's so hot, I'll turn on the air conditioner.'
- (47) a. **Assertion**: If it's extremely hot, the speaker will turn on the air conditioner.

b. Non-asserted content:

- (i) high temperature potentially leads to an abnormal consequence in which the speaker turns on the air conditioner, and
- (ii) the hotter it is, the more likely it is that the speaker will turn on the air conditioner.

Note that there is no attenuation effect just by the assertion (47a). What gives rise to the attenuation effect is the combination of (47a) and (47b). Given the non-asserted content (47b), the assertion (47a) turns out to be an obvious or justifiable claim. The characterization of the consequent clause as designating an "abnormal" situation (in the normative sense) is meant to capture the fact that amari sentences are associated with certain "negative evaluations". This is especially clear in conditional and 'because' sentences. For example, (46) is typically asserted as an excuse (in advance). We will say more about this at the end of this section.

The case of 'because'-clauses can be explained similarly; (48) has essentially the same speaker presumption supporting the causal inference as (46).

- atui-kara. (48) Amari eakon-o tuke-ta. AMARI hot-because air.conditioner-ACC turn.on-PST 'Since it was so hot, I turned on the air conditioner.'
- (49) a. **Assertion**: Because it was extremely hot, the speaker turned on the air conditioner.

b Non-asserted content:

- (i) high temperature potentially leads to an abnormal consequence in which the speaker turns on the air conditioner, and
- (ii) the hotter it is, the more likely it is that the speaker will turn on the air conditioner.

The difference between (46) and (48) is just that a 'because' sentence entails the truth of both the antecedent ('it was extremely hot') and the consequent clauses ('the speaker turned on the air conditioner'). But this difference does not affect the licensing condition for amari; the non-asserted meaning of amari targets the causal meaning of a 'because' clause, and the attenuation effect is obtained in exactly the same way as in the conditional sentence (46): Given (49b), a high temperature is (at least according to what the speaker believes is taken for granted in the discourse context) a completely unsurprising (or well-justified) reason for turning on the air conditioner. Therefore, the non-asserted content (49b) makes the assertion (49a) less controversial just as in the case of the conditional sentence in (46)–(47).

By contrast, in the case of affirmative declarative sentences such as (50), amari does not appear in an environment that introduces a hypothesis-consequence pair, so that the felicity condition in (45) is not satisfied.

- (50)*Kyoo-wa amari atui. today-TOP AMARI hot intended: 'It's so hot today.'
- (51) a. **Assertion**: It's extremely hot.

b. Non-asserted content:

(i) high temperature potentially leads to an abnormal consequence X, and (ii) the hotter it is, the more likely it is that X

To put it somewhat differently, in this case, manipulating the degree d (and thereby changing the strength of entailment of P(d) does not have any obvious associated consequence about how the next step of discourse update is to be carried out. Note here again that, by assumption, q in (45) is not just any consequence that follows from the main assertion of the sentence, but corresponds to the denotation of the consequent clause that is provided by the syntax/compositional semantics of the sentence.

Conceptually, q is a consequence that obtains only under the *hypothetical* assumption of P(d). Since no such compositionally provided q exists in the case of affirmative sentences, amari is infelicitous in (50). We will see below that things are crucially different when negation is involved by taking into account the dynamic aspect of negation in terms of discourse update.

The infelicity of amari in interrogative sentences such as (52) follows essentially for the same reason as affirmative sentences.

- (52) *Amari atui-no? AMARI hot-Q 'Is it so hot?'
- (53) a. **Issue to be resolved:** {It's extremely hot, It isn't extremely hot}
 - b. Non-asserted content:
 - (i) high temperature potentially leads to an abnormal consequence X, and (ii) the hotter it is, the more likely it is that X

The function of a polar question is to ask the hearer to resolve the issue of whether P(d) or its negation $\neg P(d)$ holds. The issue of whether P(d) is the case remains open (so, P(d) may be taken to be hypothetical), but crucially, the sentence by itself does not explicitly specify the consequence of entertaining the hypothesis P(d). Thus, there is no point in manipulating the degree d. Specifically, adjusting the strength of the statement P(d) by manipulating d does not have any effect on the "immediate next update move" invoked by the hypothesis P(d), since there is simply no such update move to begin with.

Finally, negation needs a somewhat careful attention. Given the characterization of the meaning of amari in (45), it might appear that our account would make an incorrect prediction about examples with negation as the licensor, since unlike conditionals and 'because'-clauses, negation does not seem to have the force of introducing a hypothetical assumption and evaluating some consequence under that hypothesis, at least if one takes negation to correspond to boolean negation in static semantics. We believe that the proper way to understand the licensing property of negation for amari comes from taking a dynamic perspective. In dynamic semantics (see, e.g., Heim 1982), negation is defined as an operator that updates the CG in a particular way that is somewhat similar to how dynamic update takes place for conditionals. Conditionals introduce a hypothetical context consistent with the antecedent p (that is, by temporarily updating the CG with p) and then evaluate whether q holds true in that context. Similarly, the effect of negation can be understood as a sequence of dynamic update along the following lines. Just like conditionals, a hypothetical context is created by updating the CG with p. But unlike conditionals, instead of further updating this hypothetical context with another proposition, the next move is to reject this hypothesis so that we obtain just the

subset of the original CG in which *p* does *not* hold. The following shows the update steps in an informal way.

- (54) Conditional: If p then q
 - 1. Update the current CG with p.
 - 2. Among the worlds obtained in 1, retain only those in which *q* is true.
- (55) Negation: Not p
 - 1. Update the current CG with *p*.
 - 2. Discard all the worlds obtained in 1 (= among the worlds obtained in 1, retain only those in which the contradiction holds).

Consequently, in the case of amari sentences with negation such as (56), we can understand q in (45) to correspond to the contradiction (in the technical sense, that is, the proposition that is false in all possible worlds). Essentially, here, the speaker's presumption has it that increasing *d* has the effect of making it more likely that the contradiction obtains. This is similar to saying that increasing d makes it more likely that P(d) is rejected as a possible state of affairs consistent with the current CG.

- atuku-nai. (56) *Kyoo-wa* amari today-TOP AMARI hot-NEG 'It's not so hot today.'
- (57) a. **Assertion:** It isn't extremely hot.
 - b. Non-asserted content:
 - (i) high temperature potentially leads to a contradiction (which is an abnormal state of affairs)
 - (ii) the greater the degree d is, the more likely it is that a contradiction ensues

Thus, unlike what might initially appear, we believe that the case of negation is fully consistent with the proposal in (45), once we take into account its dynamic property properly. Having said this, we recognize that implementing this idea in an explicit system of compositional dynamic semantics is a nontrivial task, both technically and conceptually – this is an important task that is left for future work.

Finally, note that the case of embedded licensor such as (13), repeated here as (58), is not problematic for our proposal.

(58) Sono eiga-ga amari omosiroku-nake-reba, betu-no movie-NOM AMARI interesting-NEG-COND other-GEN that eiga-o mi-ru. movie-ACC watch-NPST 'I'll watch another movie if that movie isn't very interesting.'

Recall from Section 3.1 that Matsui (2013) makes a wrong prediction for (58) because it takes a global, speech act-level approach. Unlike her proposal, we assume that the effect of *amari* with respect to q is confined to the local context in which q occurs. Though formally modeling this local effect is a non-trivial task, we believe that the underlying intuition is clear: amari targets the update that is under the assumption of its containing clause P(d). Given this assumption, it immediately follows that amari's attenuation effect targets its local negation in (58), so it is correctly predicted that (58) is acceptable for just the same reason that a simple negation sentence such as (56) is.

Before concluding this section, we would like to briefly comment on the modal aspect of the non-asserted content of amari, especially on the admittedly vague expressions "abnormal" and "more likely". When we are only considering cases like how hot it is or whether to turn on the air conditioner according to the temperature, we are simply dealing with the worlds that are ordered in terms of how likely they are based on our commonsense knowledge of some kind. From the perspective of possible worlds semantics on modality (Kratzer 1981), the modal base in that case is the stereotypical conversational background, paraphrased as "in view of the normal course of events". In this connection, it is worth reconsidering the finding by Ido (2019) about the distributional tendency of amari in conditionals. Recall from Section 3.2 that the corpus study revealed that *amari* tends to appear in certain types of conditionals, namely the -to conditional. According to Ido (2019), this tendency suggests that amari fundamentally has some kind of genericity or habituality as part of its meaning. This seems to be closely related to the stereotypical conversational background in the Kratzerian sense.

However, the normative sense corresponding to the characterization of the consequence q as "abnormal" is not (merely) stereotypical. It is interesting to note in this connection that, as pointed out by one of the reviewers, when amari appears in the antecedent of conditionals, there is typically a negative connotation or the speaker's evaluative (negative) perspective to the whole sentence. For example, in the following pairs (given by the reviewer), (59a) and (60a) are perfectly natural, whereas (59b) and (60b) sound odd.

- (59) a. *Amari* huto-ru-yo. tabe-ru-to gain.weight-FIN AMARI eat-NPST-COND 'If you eat too much, you'll get fat.'
 - b. #Amari tabe-ru-to kenkoo-ni na-ru-vo. AMARI eat-NPST-COND healthy-DAT become-NPST-FIN 'If you eat a lot, you'll be healthy.'
- (60) a. Amari benkyoosu-ru-to karada-o kowa-su-yo. AMARI study-NPST-COND health-ACC break-NPST-FIN 'If you study too much, you'll ruin your health.'
 - b. #Amari benkyoosu-ru-to ii-daigaku-ni hair-eru-yo. AMARI study-NPST-COND good-college-ACC enter-can-FIN 'If you study a lot, you'll get into a good college.'

By uttering (59b) or (60b), there is an impression that the speaker has a negative feeling about being healthy or being enrolled in a good college, and that is why the oddness arises. But where does this negative feeling come from?

Based on our proposal, the meaning of (60b) will be as follows.

- (61)a. **Assertion:** If the hearer eats a lot, they will get healthy.
 - b. Non-asserted content:
 - (i) the hearer's eating a lot leads to some abnormal consequence in which the hearer gets healthy, and
 - (ii) the more the hearer eats, the more likely it is that the hearer gets healthy

In the non-asserted content, it is stated that the hearer getting healthy is abnormal. Now, if this is interpreted with a neutral stereotypical conversational background, i.e., "in view of the normal course of events," then abnormality is something rare. This is too weak as the constraint imposed on q via the conventionally-encoded meaning of amari, since this alone will not explain the infelicity of (59b). It thus seems that the modal base that supports the normative judgment characterizing q is something more "evaluative," that is, teleological, deontic, or bouletic conversational backgrounds, according to which abnormality corresponds to goal-defeating, to-be-avoided, or undesirable situations. This is why the contrast in (59) and (60) arises: the speaker's negative (evaluative) feeling comes from the notion of abnormality in the meaning of amari.10

5 Conclusion

This paper raises more issues than it solves, but in a way that we hope is ultimately productive. The main conclusion of the paper is that amari and sonnani achieve their attenuation effects via different pragmatic strategies. Whereas sonnani is an anaphoric degree modifier that signals the speaker's reluctance to accept some degree-related statement salient in the discourse, amari does not have any such anaphoric component in its meaning, and it instead achieves its attenuation effect by supporting the claim made by the sentence with what the speaker takes to be an uncontroversial pattern of inference shared among interlocutors. These main ideas are essentially refinements of proposals of previous authors such as Matsui (2011, 2013) and Ido (2019).

The next obvious step is to develop a more formal analysis that embodies the ideas we have informally spelled out in this paper, and we see two main challenges for this task, one conceptual and the other technical. The conceptual issue is the status of the non-asserted content of sonnani and amari, on which we have (deliberately) said hardly anything in the foregoing discussion. The term "non-asserted content" is reminiscent of the notion of "non-at-issue" in the recent literature on the so-called "projective" meanings (see, e.g., Potts 2005, 2015; Tonhauser et al. 2013; Oshima 2016; Sawada 2018, among others). One might then think that what we have labeled "non-asserted content" is a type of CI in the sense of Potts (2005), or some sort of projective content. Descriptively, the non-asserted meanings of amari and sonnani undoubtedly fit the profile of projective content, since they project over

¹⁰ A question remains as to whether the same type of normative implication arises in the case of negation as the licensor, that is, in examples such as (56). Intuitively, such examples do not seem to involve any kind of negative evaluation that the excessive degree is unfavorable or somehow deviant according to the norm. There is, however, a sense in which the characterization of q in the negation case in our analysis is closely related to the notion of deviation from the norm that is perceived to be vividly present in other cases. Recall from the discussion above that q corresponds to the contradiction in the case of (56). Contradiction is in a sense the ultimate anomaly in the conversational situation, since once it ensues, there is no choice for the interlocutors other than to backtrack and retract the problematic proposition. This being said, we leave it for future research to see whether a completely uniform analysis of amari is feasible or if it would be more appropriate to adjust the modal base in different syntactic/semantic environments explicitly so as to bring the analysis in line with the intuitively available interpretations in the respective cases.

truth-functional operators such as negation and conditional. But just as in other domains in which a CI analysis would seem to be prima facie plausible, there is the question of whether an alternative presuppositional analysis (such as the one proposed by Onea and Sailer [2013] for all that in English) can be safely eliminated. We feel that this (often posed) "presupposition or CI?" question is potentially quite misleading as it foregrounds too much false dichotomy, and that a more productive way of making sense of the underlying factors involved will ultimately come from characterizing the nature of these meanings more precisely. As we have emphasized throughout this paper, the "non-asserted" meanings of amari and sonnani are fundamentally discourse-oriented, where the notion "discourse-oriented" itself needs to be understood in a broader sense than what this term is typically understood to mean. It is interesting to note in this connection that other polarity-sensitive expressions in Japanese that have looser licensing conditions than strictly negative environments often exhibit sensitivity to modality or likelihood/plausibility scales pertaining to presumptions of speakers and hearers (see, e.g., Tanaka, Mizutani and Solt (this volume); Sawada (this volume); Kinuhata (this volume); Sawada (2018); Ido (2017, 2023); Kubota (2021)). Exploring the dynamic interactions between such discourse-oriented factors and the grammatical functions that these polarity expressions serve is a particularly promising direction to pursue in future work.

The conceptual issue noted above relates closely to the technical issue. What seems clear at this point is that we need a model of discourse that takes into account the interactions between interlocutors explicitly. Moreover, the model needs to embody an architecture in which such interactions are sensitive to the sentence-internal compositional semantics involving "truth-functional" operators such as negation, interrogative, and conditional operators. The challenge here is that, so far as we are aware, there is as yet no formal model of discourse that satisfies both these criteria adequately. The most promising line of work is the body of literature starting with the seminal work by Farkas and Bruce (2010). This line of work has so far mainly focused on phenomena directly pertaining to speech act at the main-clause level (see, e.g., Malamud and Stephenson 2015; Bledin and Rawlins 2020; Jeong 2021). However, there have been some promising attempts recently at extending this approach to finer-grained and more complex aspects of discourse update pertaining to sentence-internal compositional semantics with conditional and modal operators (Bledin and Rawlins 2019; Yang 2021). This seems to be a good starting point for a formal theory of dynamic compositional discourse semantics in which we can define the key notions that we have utilized in this paper (such as "reluctant to commit oneself to the truth of p") more precisely. We are not yet there, but we believe that our discussion in this paper can potentially inform a very exciting development in the construction of a formal theory in this empirical domain.

6 Appendix: Amari and sonnani in conditional clauses in attested data in BCCWJ

(62) *amari* in *to-*conditional

Sorezore-no danraku-wa kanketuni su-beki-de, amari do-should-COP AMARI each-GEN paragraph-TOP concise nagai-to vomi-zurai. long-COND read-difficult

'Each paragraph should be concise; if it is too long, it is difficult to read.'

(LBc8 00002: 22750)

- (63) *amari* in other types of conditionals
 - takaku-nat-te-mo a. Amari koma-ru-kedo. AMARI expensive-become-TE-even.if bothered-NPST-but 'If it gets too expensive, I'll be in trouble.'

(LBd9 00039: 81310)

b. Ryoosyuusho-no nai ooke-reba bun-ga amari sore-mo receipts-NOM nothing rate-NOM AMARI a.lot-COND that-also mondai-da-si... problem-COP-SFP

'If the percentage without receipts is too high, there is a problem.' (LBi9 00092: 27290)

(64) *sonanni* in *to*-conditional

bakari i-ru-to sonnani tongat-te syusse SONNANI defiant-TE always be-NPST-COND be.promoted deki-nai-zo can.do-NEG-SFP

'You can't be promoted if you keep being so defiant.' (LBt3 00059: 10680)

(65) *sonanni* in *tara*-conditional

Anata-ga sonnani okorippoi-to sit-te-i-tara vou-NOM SONNANI irascible-COMP know-TE-INPRF-COND tokkuni anokata-wa aitenisi-nakat-ta-noni. a.long.time.ago he.POL-TOP deal.with-NEG-PST-though 'If he had known that you were so irascible, he would have stopped dealing with you a long time ago.' (LBj9 00214: 41970)

(66) *sonanni* in *tara*-conditional

Kono-vononaka-ni sonnani erai hito-ga iru-nara this-world-DAT person-NOM exist-COND SONNANI great itido at-te dekake-ta tokoro... mi-voo-to once meet-TE try-FUT-COMP go.out-PST when 'If there is such a great person in this world, I would definitely want to meet him', I thought, so, I went to meet that guy, and then . . .'

(LBg7 00024: 44400)

(67) *sonnani* in *reba*-conditional

Sonnani hosike-rya ya-ru-yo. SONNANI want-COND give-NPST-SFP

'If you want this so badly, you can have it.' (LBmn 00017: 17120)

References

Akatsuka, Noriko. 1985. Conditionals and the epistemic scale. Language 61. 625-639.

Arita, Setsuko. 1999. Puroto-taipu-kara mi-ta nihongo-no jooken-bun [Japanese conditionals viewed from the prototype theory]. Gengo Kenkyu 115. 77–108.

Bledin, Justin & Kyle Rawlins. 2019. What ifs. Semantics and Pragmatics 12. 1-55.

Bledin, Justin & Kyle Rawlins. 2020. Resistance and resolution: Attentional dynamics in discourse. Journal of Semantics. 43-82.

Farkas, Donka & Kim Bruce. 2010. On reacting to assertions and polar questions. Journal of Semantics 27. 81-118.

Group Jamassy. 1998. Kyooshi-to Nihongo Gakushuusha-no-tame-no Nihongo Bunkei Jiten [A handbook of Japanese grammar patterns for teachers and learners]. Tokyo: Kurosio Publishers.

Haiman, John. 1978. Conditionals are topics. Language 54. 564-589.

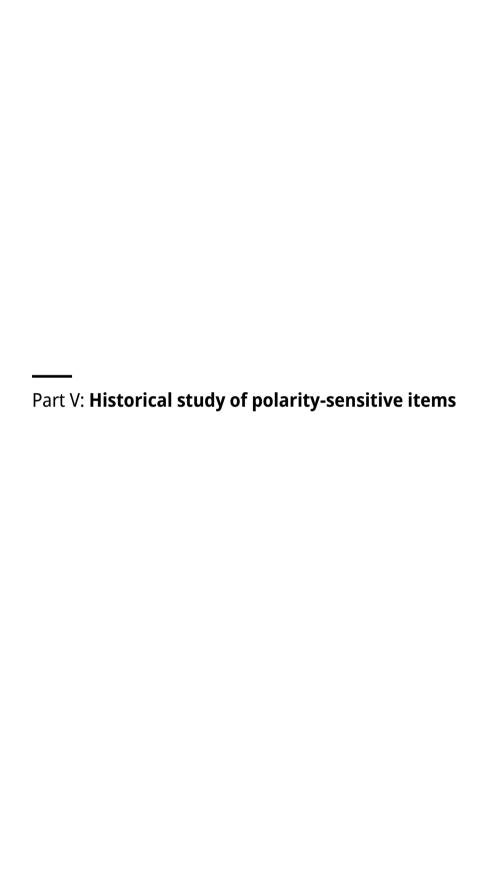
Hara, Yurie. 2014. Topics are conditionals: A case study from exhaustification over questions. In Proceedings of the 28th Pacific Asia Conference on Language, Information and Computing, PACLIC, Phuket, Thailand, 2014, 522–531. Bangkok: Department of Linguistics, Chulalongkorn University.

Hattori, Tadashi. 1993. Fukushi 'amari (anmari)'-nitsuite: Jakuhitei-oyobi kado-o arawasu yoohoo-no bunseki [On the adverb 'amari (anmari)': an analysis of its weak negative and excessive usage]. Doshisha Women's College of Liberal Arts Annual Reports of Studies. 44(4). 451-477.

- Ido, Misato. 2017. Toritate-shi-no toogo-to imi-kara miru nihongo hitei-kyokusei hyoogen-no kenkyuu [A study of Japanese negative polarity expressions from the syntax and meaning of toritate-shi] Tsukuba: University of Tsukuba dissertation.
- Ido, Misato. 2019. Sonnani, amari-no hi-hiteisetsu-niokeru bunpu-to imi [The meaning of sonnani and amari based on their distribution in non-negative clauses]. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kyokusei Hyoogen-no Koozoo, Imi, Kinoo [Polarity sensitive expressions: their forms, meanings and functions], 336-355. Tokyo: Kaitakusha.
- Ido, Misato. 2023. Gendai Nihongo-niokeru Hiteiteki Hyooka-o Arawasu Toritate-shi-no Kenkyuu [A study of the focus particles expressing negative evaluation in Modern Japanese]. Kurosio Publishers.

- Iori, Isao. 2013. 'Noda'-no oshie-kata-nikansuru ichishian [A proposal for how to teach noda to foreigners]. Gengo Bunka [Cultura philologica] 50, 3-15.
- Ishiguro, Kei. 2003. 'Noda'-no chuukakuteki-kinoo-to haseiteki-kinoo [The core function and derivative functions of *noda*]. *Center for Student Exchange Journal* 6. 3–26.
- Israel, Michael. 1996. Polarity sensitivity as lexical semantics. Linguistics and Philosophy 19. 619-666.
- Israel, Michael, 2011. The Grammar of Polarity: Pragmatics, Sensitivity, and the Logic of Scales, Cambridge: Cambridge University Press.
- leong, Sunwoo, 2021, Deriving dual dimensions of bias: Preposed negation guestions with even. Journal of Semantics 38(1), 49-94.
- Kadmon, Nirit & Fred Landman. 1993. Any. Linguistics and Philosophy 16. 353-422.
- Kratzer, Angelika. 1981. The notional category of modality. In Hans-Jurgen Eikmeyer & Hannes Rieser (eds.), Words, Worlds and Contexts, 38-74. Berlin: de Gruyter.
- Krifka, Manfred. 1995. The semantics and pragmatics of polarity items. Linguistic Analysis 25. 209–257.
- Kubota, Ai. 2021. Karato-itte-no shutsugen kankyoo-to sono imiteki-qoyooteki tokuchoo [The semantic and pragmatic characteristics of the use of "karato itte" in Japanese]. In Proceedings of the 163rd Meeting of the Linguistic Society of Japan, 157–163.
- Kuroda, S-Y. 1979/1992. (Ko), so, α-nitsuite [On (ko), so, and α]. In Satoshi Kinsui & Yukinori Takubo (eds.), Shiiishi [Demonstratives], 91-104. Tokvo: Hituzi Svobo.
- Malamud, Sophia A. & Tamina Stephenson. 2015. Three ways to avoid commitments: Declarative force modifiers in the conversational scoreboard. Journal of Semantics 32. 275–311.
- Masuoka, Takashi & Yukinori Takubo. 1989. Kiso Nihongo Bunpoo [Basic Japanese grammar]. Tokyo: Kurosio Publishers.
- Matsui, Ai. 2011. On the licensing of understating NPIs: Manipulating the domain of degrees for Japanese 'anmari' and 'sonnani'. In Neil Ashton, Anca Chereches & David Lutz (eds.), In Proceedings of SALT 21, Rutgers University, New Brunswick, New Jersey, 752–769. Washington, DC: Linguistic Society of America.
- Matsui, Ai. 2013. Revisiting the licensing problem through understating NPIs: The case of Japanese anmari '(not) very'. In Eva Csipak, Regine Eckardt, Mingya Liu & Manfred Sailer (eds.), Beyond 'Any' and 'Ever': New Explorations in Negative Polarity Sensitivity, 299-322. Berlin/Boston: De Gruvter Mouton.
- Morita, Yoshiyuki. 1989. Kiso Nihongo Jiten [Basic Japanese dictionary]. Tokyo: Kadokawa Shoten. Nihongo Kijutsu Bunpoo Kenkyuukai. 2007. Gendai Nihongo Bunpoo [A contemporary Japanese grammar], vol. 3. Tokyo: Kurosio Publishers.
- Noda, Harumi. 1997. 'No(-da)'-no Kinoo [The function of no(-da)]. Tokyo: Kurosio Publishers.
- Onea, Edgar & Manfred Sailer. 2013. Really all that clear? In Eva Csipak, Regine Eckardt, Mingya Liu & Manfred Sailer (eds.), Beyond 'Any' and 'Ever': New Explorations in Negative Polarity Sensitivity, 323-350. Berlin/Boston: De Gruyter Mouton.
- Oshima, David Y. 2016. The meanings of perspectival verbs and their implications on the taxonomy of projective content/conventional implicature. In Mary Moroney, Carol-Rose Little, Jacob Collard & Dan Burgdorf (eds.), In Proceedings of SALT 26, University of Texas at Austin, Texas, 43-60. Washington, DC: Linguistic Society of America.
- Potts, Christopher. 2005. The Logic of Conventional Implicatures. Oxford: Oxford University Press.
- Potts, Christopher. 2015. Presupposition and implicature. In Shalom Lappin & Chris Fox (eds.), The Handbook of Contemporary Semantic Theory, 2nd edn., 168–202. Oxford: Wiley Blackwell.
- Sawada, Osamu. 2018. Pragmatic Aspects of Scalar Modifiers. Oxford: Oxford University Press.
- Shindo, Kazuo. 1983. 'Amari'-no bunpoo [The grammar of 'amari']. Bulletin of Yamagata University (Cultural Science) 10(2). 33-46.

- Suga, Kazuyoshi. 1992. Fukushi 'amari'-no imisuru teido hyooka [The degree to which the adverb 'amari' means]. Bulletin of Yamagata University (Cultural Science) 12(3). 35–45.
- Takubo, Yukinori & Satoshi Kinsui. 1997. Discourse management in terms of mental spaces. Journal of Pragmatics 28. 741-758.
- Tonhauser, Judith, David Beaver, Craige Roberts & Mandy Simons. 2013. Toward a taxonomy of projective content. Language 89(1). 66-109.
- Yang, Muyi. 2021. Sensitivity to future: The discourse dynamics of Japanese nara conditionals. Talk given at Semantics Workshop in Tokai and Kansai, Japan, 18 September, 2021.
- Yukimatsu, Hanae. 2016. "Hakken-no noda"-nitsuite ['Noda' as sentences of discovery]. The Annual Bulletin of the Global Exchange Organization for Research and Education, Gakushuin University 2. Tokyo: Gakushuin University. 89-111. Tokyo: Gakushuin University.



Tomohide Kinuhata

Chapter 13 Scope ambiguity and the loss of NPI feature: Evidence from the history of Japanese scalar particle *dani*

1 Introduction

Two approaches have been taken for accounting for the meaning of *even* used with negation as in (1).

(1) John doesn't read even Syntactic Structures.

One is to consider *even* to take scope over the negation and place the value of *even* in (1), i.e. *Syntactic Structures*, at a *less-likely* point on a "not to be read" scale (Karttunen and Peters 1979; Wilkinson 1996; Guerzoni 2004; Nakanishi 2012). This approach, called the Scope Theory, posits one lexical entry for *even* because it also takes the *less-likely* value in affirmative sentences as in (2).

(2) John read even the Minimalist Program.

The other approach considers *even* in (1) to place its value at a *more-likely* point of the scale, making it fall within the scope of negation as with NPI items (Rooth 1985; von Stechow 1991; Rullmann 1997; Schwarz 2005; Giannakidou 2007; Erlewine 2018). Under this assumption, two different lexical entries must be posited: one for *even* inside the negation, as in (1), and one for a *less-likely* element, as in (2). Thus the latter approach is called the Lexical Ambiguity Theory.

Having two lexical entries for *even* gains support from other languages such as German (von Stechow 1991), Spanish (Herburger 2003), Finnish, Norwegian (thus far, König 1991), Dutch (Hoeksema and Rullmann 2001), Greek, etc.: Giannakidou (2007), for example, argues that *komi ke* 'even' is used in affirmative and *oute* 'even'

Acknowledgments: This work was supported by JSPS KAKENHI Grant Number JP19K00589. I am grateful to the editors for including my historical research in this general linguistic volume. I also thank the two anonymous reviewers for their comments clarifying my argument and Stephen Horn Wright for proofreading the manuscript and giving valuable advice. All remaining errors are, without saying, my own.

in negative sentences in Greek. Old Japanese (OJ henceforth: the 8th century) is one of those languages that has two different encodings for even-like meanings. As has been pointed out by researchers since Kano (1938a), it is generally the case that dani is used with negation whereas sura is used without negation as in (3).1

- (3) a. miti~yuki~bito=mo hitori=dani ni-te=si road~go~people=also one.person=even resemble-GER=EMPH yuk-**an**-eba² go-NEG-CSL
 - "...and since, among the people passing on the road as well, it is not the case that one whom my wife resembled, even one, goes by, . . .' (Man'yō, 207)
 - b. koto top-anu ki=**sura** pana saki word ask-NEG.ADN tree=even flower bloom tir-aku turn.red fall-NMLZ 'The fact that even the trees, who have no words, bloom, turn red and disperse.' (Man'yō, 4161)

OI dani is not attested in affirmative declarative predicates, whereas scalar particle sura 'even' appears to resist contexts of negation. It seems plausible to view these two items as comparable with, respectively, Greek oute and komi ke, with the former (under the scope of negation) taking a more likely element and the latter (outside the scope of negation) taking a *less-likely* element in a relevant scale.

This paper shows, however, that the scope of dani relative to negation is not rigid across the history of Japanese. In Early Middle Japanese (EMJ henceforth: the 9–12th century), the examples of *dani* used completely outside of polarity contexts, such as (4), appeared.

(4) Φakana-ki oon-kudamono=o=**dani** ito monou-ku si a.little-ADN HON-food=ACC=even verv gloomy-ADV do tamai-te HON-GER '(She) feeling even a meager portion of food to be terribly burdensome, . . .' (Genji, Wakana)

¹ Among 29 examples of sura in OJ poetry, there are three examples used with negation, which could be considered as scoping over negation.

² This paper follows Frellesvig (2011) to transcribe examples pre-dating Modern Japanese with slight modifications: $k\bar{o}$ -otsu distinctions in OI are ignored; bilabial fricative $/\Phi/$ is preferred to labiodental fricative /f/; long vowels are written as dipthongs etc.

Since dani in (4) attaches to the value that is less likely to feel burdensome, it is reasonable that its meaning changes from taking a more-likely to taking a less-likely one. If this semantic change occurred also in the meaning of dani with negation, i.e., in EMI examples of dani comparable to (3a), the scope of dani relative to negation should be reversed (see Section 3.1 for the details).

This paper will show that, in the transition of dani from the NPI type to the non-NPI type in EMJ, there was a period where both interpretations were attributed to the single lexical item. This fact requires us to reassess the two theories at the outset, because either theory assumes only one lexical entry for even in negative sentences. On the contrary, this historical change indicates the existence of a period where dani can be interpreted at some times over and at other times under negation in one synchronic grammar. Therefore, proof of the existence of NPI even, for example, does not necessarily entail the non-existence of non-NPI even, which might lead the relevant debate to be unsettled.

In order to show such changes of dani, it is necessary to discuss the syntactic and semantic properties of dani in Old Japanese, the period before the relevant change. As seen in (3), OI dani is an NPI, used in negative but not in affirmative declaratives. But it can also be used in non-negative and non-declarative sentences expressing wishes. This pattern is the key to tracking the change of dani in Middle Japanese, a period covering EMJ through Late Middle Japanese (LMJ). Section 2 is devoted to discussing how the two conditions of negation and wish can license dani in OJ, drawing on some previous studies. Section 3 addresses the historical issue based on the observations in Section 2. Section 4 examines the implications of this study for the above two theories, and Section 5 concludes the paper.

2 Old Japanese dani: wish as an NPI licenser

In this section, I propose a semantics that treats negation and wishes on a par with respect to the licensing of OJ dani. Section 2.1 overviews the examples of dani in Old Japanese and sees that it can be used with negative predicates and wish predicates but not in affirmative declaratives, which indicates the NPI status of OJ dani. Section 2.2 reviews the Kadmon and Landman's (1993) approach to English any, an item which can be licensed not only by negation but also in the complement clause of glad when it has a "settle for less" interpretation. This interpretation is very similar to that of dani used with predicates expressing wishes, but Kadmon and Landman's approach deals with this pattern very differently from any with negation. Section 2.3 develops a theory of wish that strengthens the statement in the sense of Kadmon and Landman (1993). Section 2.4 concludes this section.

2.1 Overview of examples

There are 91 examples of dani in OJ texts that have a more-likely meaning.³ 32 examples out of 91 are with negation. With negation taking scope over the clause with dani, i.e., with negation removed from the proposition in which dani is interpreted, we can consider the phrase with dani to designate a higher scale point on a scale of likelihood. That is, in (3a) from Section 1, the possibility of seeing a passerby whom the poet's wife resembled is more likely than to see his deceased wife herself in the street. The following examples have the same pattern as this. Since dani in OJ can be viewed as an NPI not accepted in affirmative declaratives, I descriptively gloss it with "NPI" throughout this section.

- (5) a. ime=ni=**dani** mi-**zari**-si opoposi-ku monowo, dream=LOC=NPI see-NEG-PST nevertheless melancholy-ADV miyade=mo suru=ka. serving=also do=EXCL 'Although I did not see it even in my dreams, I am also to serve (at the emperor's mortuary).' (*Man'yō*, 175)
 - b. pitasawo=wo mo=ni=pa ori~ki-te, kami=**dani**=mo pure.hemp=ACC skirt=DAT=TOP hair=NPI=also weave~wear-GER kaki=pa kedur-azu. scratch=TOP comb-NEG 'Although she went out wearing plain hemp for a skirt, not even combing her hair, and not even wearing shoes, . . .' (Man'yō, 1807)
 - mi~maturi-te imada toki=dani kapar-an-eba, see~HON-GER yet time=NPI change-NEG-when omopoyuru kimi tosi~tuki=no goto year~month=GEN like feel 2.SG You, who are such that when not yet even a brief time has passed since seeing you, it seems like a month or a year.' (*Man'yō*, 579)

³ Six examples are excluded from the consideration here, following Kinuhata (2019). Two of them are from Azuma Uta [Eastern Poetry], which reflects the eastern dialects of the same period. The remaining four examples seem not to have a more-likely meaning but instead to have a less-likely meaning with no negation. They all have a fossilized form of kaku-dani-mo [in this way] and have been regarded as distorted in meaning from the the usual OI dani. See also Mukai (2012) for details.

- top-edo ipedi=mo d. ipe ip-azu, na=wo home ask-CONCES address=also say-NEG name=ACC top-edo na=dani=mo nor-azu ask-CONCES name=NPI=also tell-NEG 'Though I ask where he lives, he doesn't state his directions home; though I ask who he is, he doesn't even state his name.' (Man'yō, 3339)
- e. aratape=no nuno~kinu=wo=dani kise-kate-ni coarse=GEN plant.fabric~cloth=ACC=NPI clothe-NEG-ADV kaku=va nagek-amu this.way=FOC.Q lament-CONJEC 'Am I to lament like this, being unable to dress my children even in coarsefiber cloth?' (Man'yō, 901)

The speaker in (5a) did not see serving at the Emperor's mausoleum in his dream. It is more probable to see it in a dream than to face it in reality (in ancient Japanese thinking). Thus, denying the former entails the latter's negation, at least in the speaker's expectation. Therefore, he was astonished by the Emperor's death. Combing one's hair or wearing shoes is more likely to be done than dressing decently in (5b). Because the subject in (5b) does not even comb her hair, she does not wear decent cloth, as explicitly stated in the previous sentence. The likelihoods involved in the interpretations of each example in (5) can be described as in (6): dani attaches to the right-hand event, as marked by boldface, and its negation entails the non-occurrence of the left-hand event.4

However, using a likelihood relation to interpret (ib) still seems plausible if the compared propositions are pragmatically enriched, as partly indicated by the brackets. That is, the president's liking an employee's work is less likely than the vice president's liking an employee's work. If so, the problem is not the interpretation of the scale but that of propositions compared: alternative propositions induced simply by substituting the focal part, a widely accepted assumption, are not enough to make those propositions pragmatically enriched. So, I will not assume that focus induces

⁴ As the interpretations of (3a) and (5) shows, the propositions linked by likelihood relations are only obtained by relying heavily on their contexts. The context-dependency of scales involved in interpreting even has been considered evidence showing that the scale is not merely one of likelihood but sometimes of a more pragmatic nature (Fauconnier 1975; Kay 1990; Rullmann 1997). Kay (1990) argues, citing the following example, that even indicates nothing about the relative likelihood of George and Bill liking Mary's work but compares them to a higher level of success at Consolidated Widget.

⁽i) a. It looks as if Mary is doing well at Consolidated Widget. George [the second vice president] likes her work.

b. That's nothing. Even Bill [the president] likes her work.

- a. to serve at the Emperor's mausoleum in reality < likely to serve at the (6) Emperor's mausoleum in a dream
 - b. to be dressed decently < likely to comb one's hair or to wear shoes
 - c. for a month or a year to pass < likely for a brief time to pass
 - d. to tell one's direction home < likely to tell one's name
 - to dress children decently < likely to dress children in coarse fiber cloth

In the remaining 59 examples dani does not co-occur with negation, but all of them share one characteristic: the speaker's wish to realize the event. 35 of these examples express those wishes in specific morphemes such as volitive, imperative, and desiderative affixes, whereas 24 imply those wishes pragmatically. Examples of the former are given in (7), with specific morphemes marked with boldface. Though English even can be used in this context,⁵ I translate it with "at least" to disambiguate it from non-NPI even.

- (7) a. aki sar-eha kopisi-mi, imo=wo ime=ni=dani autumn come-when desirous-CSL lover=ACC dream=LOC=NPI pisasi-ku mi-**mu**=wo ake-ni-keru=kamo. see-VOL=SFP dawn-PRF-PST=EXCL 'Being when autumn comes, I am desirous (of her), I would see my lover at length at least in my dreams, but in spite of this, the night has dawned.' (Man'yō, 3714)
 - b. koto sige-mi kimi=pa ki~mas-azu, pototogisu words numerous-CSL 2.SG=TOP come~HON-NEG cuckoo nare=dani ki~nak-e. asato pirak-amu come~sing-IMP morning.window open-VOL 2.SG=NPI 'Rumors being rife, you do not come. Cuckoo! You at least come here and sing! I will open my window in the morning.' (Man'yō, 1499)
 - c. miwayama=wo sika=mo kakusu=ka, kumo=**dani**=mo kokoro Mt.Miwa=ACC that=also hide=EXCL cloud=NPI=also heart ar-**anamo**. kakus-apu-besi=ya have-DESI hide-CONT-should=O 'Do the clouds hide Mt. Miwa as much as this? I wish at least clouds would have some consideration. Ought they go on hiding it?' (*Man'yō*, 18)

the alternatives, but the context is solely responsible for them in Section 2.3. See also footnote 7 for the inadequacy of using focus to induce alternatives.

⁵ Giannakidou (2007: 73), for example, gives the following use of even which attaches to the problem most-likely to be solved.

⁽i) (Please) solve even the easiest problem.

In examples that license dani by a wish, there is a "real wish", which is not explicitly expressed in the sentence but easily retrievable from the context. For example, the speaker in (7a) wishes to see his lover for a while in reality, but he will settle for seeing her in a dream because the real wish cannot come true. Let us call the wish explicitly stated in the sentence a "surrogate wish", following the terminology of Kadmon and Landman (1993: 387). Comparing these two wishes makes us realize to obtain a similar likelihood relation to those in (5) between the two wished events: the probability of realizing a "surrogate wish" is higher than that of realizing "real wish". Thus, the speaker wish the former as a surrogate. The relations observed in the examples in (7) are listed in (8), in which dani again attaches to the right-hand event.

- (8) a. to see the lover at length in reality $<_{likely}$ to see the lover at length in a dream
 - b. to have the lover come by < likely to have the cuckoo come by
 - c. for other mountains not to hide Mt. Miwa < likely for the clouds not to hide Mt. Miwa

Another characteristic worth noting here is that even the surrogate wish is hard to have come true in (7). The following sentence in (7a) implies the failure to see the lover even in a dream. It is far from definite that the cuckoo should come and sings at the speaker's place in (7b) because it is not possible, in principle, to demand a cuckoo to do so. In that sense, the imperative morpheme does not express a command by the speaker to the hearer so much as it expresses the speaker's wish, which is the usual usage of imperatives with dani (see Kinuhata (2019) for details). In (7c), the sentence with dani implies the speaker's wish for the clouds not to hide Mt. Miwa as persistently as they do. The speaker wishes so because the clouds are now about to hide it, as seen in the preceding sentence.

Thus, the wishes accompanying the sentence with dani are counterfactual in the sense that there is hardly any chance for those wishes, i.e., the surrogate ones, to come true. This counterfactuality is the characteristic that I will use to characterize the licensing of dani in Section 2.3.

Let us proceed to the examples including no overt morpheme for a wish. Though not marked by volitive, imperative, or desiderative affixes, the example (9a) and (9b) are demarcated by morphemes expressing counterfactuals: masi in (9a) explicitly expresses a subjunctive mood, and the conditional morpheme in (9b) expresses an unrealized state of affairs. Therefore, these share the property above; that is, even the prejacent wish is hard to have come true.

- (9) a. seki na-ku=pa, kaperi=ni=**dani**=mo uti-yuki-te barrier nonexist-ADV=COND return=DAT=NPI=also a.little-go-GER ta~makura maki-te ne-masi=wo imo=ga lover=GEN arm~pillow roll-GER sleep-SBJ=SFP 'If there were no barrier, I would set off at least on my return and sleep in my lover's arms.' (Man'yō, 1036)
 - b. kapiya=ga sita=ni naku kapadu, kowe=dani smudge.fire.hut=GEN under=LOC croak frog voice=NPI kik-**aba** are kopi-me=yamo hear-COND 1.SG yearn-CONJEC=Q Like frog croaking under the smudge fire hut, if I heard at least your voice of you, I would not yearn for you.' (Man'yō, 2265)
 - kaze=wo=**dani** kopuru=pa tomosi kaze=wo=dani wind=ACC=NPI wind=ACC=NPI vearn=TOP envious ko-mu=to=si mat-aba nani=ka nagek-amu come-CONJEC=OUOT=EMPH wait-COND what=FOC.O suspire-CONJEC 'I am envious of you yearning for at least the wind (from your lover). If I were to wait (thinking) that at least the wind would come, what reason would I have to sigh? (None!)' (Man'yō, 489)

On the other hand, the wishes of these examples are inferable from the context. It is obvious that the speaker in (9a), for example, prefers a counterfactual world where he sleeps with his lover to the real world where he doesn't. A similar interpretation is also easily retained in (9b). In (9c), only the context provides both wishing and counterfactual interpretations. Since the speaker in (9c) envies someone yearning for the wind from her lover, it is evident that she also wants to recollect her lover through winds, but she can't, as indicated by the counterfactual conditional following the relevant sentence.

Though the speaker has such wishes, these prejacent wishes are "surrogates" with the real wishes hardly realized. Thus, in each case the likelihood relation between the two wishes is not different from those of (7), as illustrated in (10) for each example in (9).

- (10) a. to sleep with the lover always < likely to sleep with the lover on one's return
 - to live with (or see the face of) the lover < likely to hear the voice of the lover
 - to see the lover < likely to yearn for the wind (from the lover)

In sum, dani in OJ is only used with negative predicates and predicates expressing wishes. Both patterns have in common a likelihood scale in which dani can be interpreted to designate a more-likely point. In the "wish" pattern, even the explicit wish in the sentence, which is surrogate and more likely to occur, does not come true. I will use this property to explain why a "wish" can be the licensing condition for dani in Section 2.3.

2.2 "Settle for less" interpretation of English any (Kadmon and Landman 1993)

Before presenting my proposal, it is appropriate to review the Kadmon and Landman's (1993) analysis on English any, an item which appears not only in usual NPI licensing contexts but also in the complement of glad only when it has a similar interpretation to the sentence with dani marked by wishes. They call such an interpretation "settle for less," illustrated by the following example.

(11) I'm glad ANYBODY likes me!

(11) conveys, according to Kadmon and Landman (1993), that "(1) (w)hat I really want is for somebody who really counts to like me . . . (2) I can't get what I really want...(3) (s)omebody likes me who I wouldn't normally be glad about(, and) (4) I am willing to settle for what I have, and be glad even about that" (p. 385). Thus, the wish explicitly stated is a surrogate one, with the real wish abandoned.

Kadmon and Landman's (1993) theory for licensing any has at least two ingredients. One is the semantic contribution of any called widening, and the other is a constraint on using any, namely a requirement for strengthening. The meaning of any is to widen the quantificational domain of the common noun it modifies; thus, any potatoes may include rotten potatoes in addition to normal cooking potatoes, the former usually being excluded from the denotation of a potato. Then, the semantic constraint requires the NP with any to make the statement it appears in stronger than it would be without the widening. Downward entailing operators (Ladusaw 1979) are one of those contexts that can contribute to such strengthening. The statement I don't have any potatoes, for instance, strengthens I don't have a potato because not having both normal and rotten potatoes entails not having normal potatoes. This context is in sharp contrast to a non-downward entailing context; Since having a normal or rotten potato does not entail having a normal potato, any cannot be licensed in affirmative sentences as illustrated by *I have any potatoes.

One advantage of dividing the licensing condition into the meaning of any and its constraint is extending the analysis to the domain beyond downward entailing contexts. The complement of glad is one of those patterns because glad is usually considered as upward, rather than downward, entailing (Kadmon and Landman 1993, 3.3.1, von Fintel 1999, 3.3, contra. Linebarger 1987, 5.1.1). So Kadmon and Landman's (1993) task is to account for why any is licensed under glad using widening and strengthening when it has a "settle for less" interpretation.

The semantic contribution of any is invariant even when it appears under glad such as in (11): it widens the quantificational domain of anybody. In a context where the widening is from phonologists to linguists, the speaker wanted someone in the domain of phonologists to like him but finding no one, he settles for someone in the domain of linguists liking him as sufficient for being glad. But the strengthening part of licensing any is not straightforward. Kadmon and Landman (1993) argue that the widening interpretation of (11) entails the non-widening interpretation given a particular relation between the two wishes, i.e., the real wish associated with the narrow interpretation and the surrogate wish associated with wide one. They transform the question of whether strengthening is satisfied into that of whether (12a) entails (12b).

- (12) a. I'm glad that a linguist likes me, given that what I really want is that a phonologist like me, but am willing to settle for a linguist.
 - If a phonologist were to like me, then I would be glad that a phonologist liked me, given that what I really want is that a phonologist like me.

(p. 388, underline added by the current author)

I can agree with Kadmon and Landman (1993) that (12a) entails (12b), but I believe that what is responsible for the entailment is not the widening but the underlined part. Then, the entailment from (12a) to (12b) goes through whatever propositions the non-underlined part of (12a) may be: for example, replace "a linguist" with "a semanticist", which does not widen the domain of "a phonologist", but the entailment between (12a) and (12b) still holds. So the purported licensing condition for any is not satisfied here, because it must be the contexts "where the widening that it (i.e., any) induces makes the statement it's in stronger than it would be without the widening" (Kadmon and Landman 1993: 369, emphasis mine): obviously, the above entailment is not elicited by the widening that any induced.

"Widening" is similar to "more-likely" in that both concepts have more elements than the narrow or less-likely domain: elements of the latter would be possible worlds where a relevant proposition holds (see the following section). I also consider "strengthening" via entailment vital because it makes the statement more informative in a discourse, setting aside the question of whether any seman-

ticizes it (Kadmon and Landman 1993, §2.5) or an assertive operator guarantees it (Krifka 1995, §3). The problem here is that the entailment, thus strengthening, is only dependent on the real, and thus narrow, wish expressed by given-that phrases in (12). We must amend the way of inducing strengthening through widening, not through the narrow interpretation itself. The following subsection will try to achieve that by examining the definition of wish, which licenses dani, as we saw in Section 2.1

2.3 Wish as a licensing context

Before discussing the semantics of wish, it is necessary to note how negation licenses the meaning of dani. As is known from the examples in Section 2.1, OJ dani is unsuitable for affirmative declaratives, which excludes the possibility of interpreting OJ dani as non-NPI even. As for negative and wishing predicates, OJ dani used with them can be considered a single lexical item, marking more-likely events. This construal is feasible only with the assumption of the scope of dani taking over that of negation. These assumptions lead to a structure like (13) and the semantics (14) for OJ dani. Even if dani appears within a proposition as in (13a), we assume it can take a proposition as if attaching to a sentence as in (13b).6 Given this structure, the semantics of dani is simplified to take a propositional argument in (14). Note that the proposition here does not include the negation, but rather is out-scoped by it.

```
(13) a. [[.....dani.....] NEG]
      b. [[.....dani] NEG]
(14)
      [dani](p) is defined only if (i) A \not = \phi, and
                                     (ii) \forall q[[q \in A \& q \neq p] \rightarrow likelihood(p) >
                                          likelihood(q)]
      If defined, [dani](p) = p.
```

The semantics given in (14) is more or less equivalent to that of NPI even in English (cf. Rooth 1985: 153): (i) requires the set of alternative propositions A to be non-

⁶ Kuroda's (1979) "attachment transformation" can convert the representations such as (13b) to those like (13a), though it is still not clear how to interpret the relevant structures semantically. Rooth (1985) proposes a cross-categorial semantics of even and only, which enables us to interpret dani attached to a constituent, i.e., NP, VP, etc., as being attached to a sentence.

empty, 7 and p is more likely to occur among those alternatives as defined in (ii). Dani adds this to the presupposition and has no contribution to the assertion.

Besides its semantic contribution, I assume that dani is associated with a semantic constraint similar to English any, namely strengthening. As noted in Kadmon and Landman (1993), it is a characteristic of NPI expressions in general that they contribute to making the statement in which they appear stronger, and thus informative, in a discourse. Dani's version of the strengthening constraint is as follows (here, please be aware that the "statement" is not an argument of dani but corresponds to whole clause in which dani appears).

(15) Strengthening

Dani is licensed only if the scale that it induces creates a stronger statement, i.e., only if the prejacent statement \Rightarrow the alternative statements induced by the scale

If the sentence lacks a negation, the strengthening constraint is not satisfied because the truth of a more-likely proposition (=prejacent statement) does not entail the truth of less-likely propositions. Thus, dani needs to include negation in the statement it appears in as a "licenser" to satisfy the constraint.

To illustrate, let us take the example (5c), repeated here as (16).

The focus of (ib) is the subject corresponding to the wh-word in (ia). Nevertheless, sae is not associated with the focus but with the object, producing alternatives such as 'Mary hit Bill,' 'Mary hit Rob' etc. Moreover, no intonational contour, for example, a de-accenting of the following prosodic word, is required for the interpretion to go through. Therefore, this paper assumes that the context is solely responsible for creating alternatives in interpreting dani, the predecessor of sae, as we will see in Section 3.3.

⁷ Since Rooth (1985), it is widely assumed that focus induces the alternatives for the interpretation of even and only. However, focus is not necessary for interpreting sae and dake, the Japanese counterparts of even and only, as shown by the following example.

⁽i) a. dare=ga Zyon=**sae** tatai-ta=no? who=NOM John=even hit-PST=SFP 'Who hit even John?'

b. $[Mearii]_F = ga$ Zyon=sae tatai-ta=yo. Mary=NOM John=even hit-PST=SFP 'Mary hit even John.'

- (16) mi~maturi-te imada toki=**dani** kapar-**an**-eba, see~HON-GER yet change-NEG-when time=NPI tosi~tuki=no kimi goto omopoyuru vear~month=GEN like 2.SGYou, who are such that when not yet even a brief time has passed since seeing you, it seems like a month or a year.' (Man'yō, 579)
- (16) has a scale indicated in (6c), which is now reformulated as in (17).
- (17) A year passes $<_{likely}$ A month passes $<_{likely}$ A brief time passes

The scale in (17) satisfies the presupposition required by dani, such that there be alternative propositions such as "a month passes", "a year passes", etc., and that the proposition that dani takes is more likely to occur than those propositions. Then, the strengthening constraint requires that the prejacent statement in which dani occurs be stronger than the statements based on those alternatives. If the prejacent statement lacks a negation, this constraint is not satisfied because the more-likely proposition in (17) does not entail the other two but is entailed by them. With negation, in contrast, the prejacent statement entails the falsehood of the other two statements. That is the reason why dani is not licensed in affirmative sentences but is licensed in negative ones.

The strengthening constraint associated with dani might be characterized by entailments, as is the case with English any. This is true of example (16) as discussed. However, it is not always for dani, even within negation, to entail less-likely propositions. The difference between the constraints for any and dani stems from the fact that while the quantificational domain purely defines the widening, pragmatic interpretations sometimes situate the events in the likelihood scale. For example, in uttering a part of sentence (5b), presented here as (18a), the speaker has a likelihood scale in (18b), which reformulates the scale of events in (6b) into a scale of propositions.

- (18)pitasawo=wo mo=ni=pa ori~ki-te. kami=dani=mo pure.hemp=ACC skirt=DAT=TOP weave~wear-GER hair=NPI=also kaki=pa kedur-**azu**, scratch=TOP comb-NEG 'Although she went out wearing plain hemp for a skirt, not even combing her hair, and not even wearing shoes, . . .' (Man'yō, 1807)
 - b. the girl wears a decent dress < likely the girl has her hair combed

While the scale looks reasonable, it is still not impossible that a girl dressed decently with messy hair. Then, the negation of the more-likely event, i.e., the prejacent statement with dani in (18a), does not entail the negation of the less-likely event. Nevertheless, we can exclude this possibility when the speaker utters (18a) with the scale (18b) in mind, and the addressee can pragmatically infer that. In that sense, the relation expressed by \Rightarrow in the strengthening constraint for dani is pragmatic rather than semantic.

Despite the above difference between any and dani, however, the resemblance of how their semantic contributions satisfy the relevant constraints is unmistakable. Both make the statement they are in stronger by extending the quantificational domain or making the proposition more likely to occur. Of course, this paper is not the first to note that similarity. Rooth (1985: Ch. 4, §2) pointed out that both English NPI any and NPI even designate the end of the "pragmatic scale", borrowing the idea of Fauconnier (1975), who observed the similarity of any and even in affirmative contexts. I want to elaborate on the similarity further, not in terms of a scale such as that which Fauconnier (1975) and Rooth (1985) used, but using the quantificational domain metaphorically. Likelihood scales such as (17) and (18b) can be an order of quantificational domains with worlds as their elements. The domain of less-likely propositions is included in that of more-likely propositions because the former has fewer worlds in which that proposition is true than does the latter. The worlds in which the former is true, but the latter is false are excluded from the viewpoint of the speaker, and this is where the pragmatics comes in as discussed immediately above. These considerations give us a diagram in Figure 1, which regards the domain of the more-likely proposition p widened from that of the less-likely one q. It is now easy to see that the morelikely proposition p does not entail the less-likely one q: in w_2 , for example, the girl combs her hair without dressing decently. On the other hand, not combing the hair, for example, as in w_3 , entails not getting dressed decently, thus satisfying the strengthening constraint in (15).

We are now ready to discuss the semantics of wish, which must satisfy the strengthening constraint when dani appears in its scope. Kinuhata (2019) proposed a semantics of wish that modifies the semantics of glad advocated by von Fintel (1999, 122-125). The former differs from the latter on the status of embedded clauses, the former embedding counterfactual clauses and the latter embeding factual clauses. The semantics of wish given in (19) expresses this counterfactuality in (i); that is, the speaker's belief worlds (i.e., DOX(spkr, w)) are included in $\neg p$ -worlds despite the speaker's wish for p.

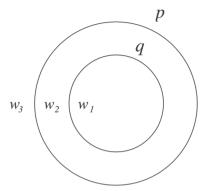


Figure 1: Scales as sets.

- (19) $[wish_i]^{f,g}(p)(spkr)(w)$ is defined only if
 - (i) $DOX(spkr, w) \subseteq \neg p$
 - (ii) $DOX(spkr, w) \subseteq f_i(spkr, w)$
 - (iii) $f_i(spkr, w) \cap p \neq \emptyset$
 - (iv) $f_i(spkr, w) \setminus p \neq \emptyset$

If defined, $\llbracket wish_i \rrbracket^{f,g}(p)(spkr)(w)$ =True iff $f_i(spkr, w) \cap p <_{g_i(spkr,w)} DOX(spkr, w)$

Since the speaker wishes that p is true, he considers the p-worlds to be better than the speaker's belief worlds where p is not true. The last line of (19) defines this with the ordering source g. The ordering source g is a function from pairs of an individual and a world to a set of propositions, and how these propositions make preferences among relevant worlds are defined as in (20).

- (20) a. For any world w', w'': $w' <_{g_i(spkr,w)} w'' \text{ iff } \{p \mid w'' \in p \land p \in g_i(spkr,w)\} \subset \{p \mid w' \in p \land p \in g_i(spkr,w)\}$ b. For any set of worlds W', W'':
 - b. For any set of worlds W', W'': $W' <_{g_i(spkr_iw)} W'' \text{ iff } \forall w' \in W', w'' \in W''. w' <_{g_i(spkr_iw)} w''$

Other parts of the definition in (19) are the same as that of *glad* in von Fintel (1999): (ii) the speaker's belief worlds are included in his modal base induced by a function *f*, and there are *p*-worlds (iii) and non-*p*-worlds (iv) in this modal base.

Given the semantics of wish in (19), we can now understand why dani appearing in a clause marked by wish satisfies the strengthening constraint. The diagram in Figure 2 adds the speaker's belief worlds and the modal base MB to Figure 1. As before, the likelihood relation between p and q is idealized to be an inclusion

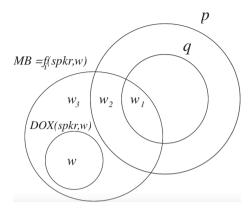


Figure 2: wish in diagram.

relation in set-theoretic terms. Since the ordering source g_i makes a preference for p-worlds, e.g., w_1 , w_2 , over non-p belief worlds, e.g., w, it is entailed that q-worlds, e.g., w_1 , are also preferred over the non-p belief worlds because all q-worlds are p-worlds. Thus, the speaker's wish for a more-likely proposition is a stronger statement than his wish for a less-likely proposition.

To instantiate this, the example (7a), repeated here as (21a), has a likelihood scale as in (21b).

- (21) a. kopisi-mi, ime=ni=dani aki sar-eba imo=wo desirous-CSL lover=ACC autumn come-when dream=LOC=NPI pisasi-ku mi-**mu**=wo ake-ni-keru=kamo. long-ADV see-VOL=SFP dawn-PRF-PST=EXCL 'Being when autumn comes, I am desirous (of her), I would see my lover at length at least in my dreams, but in spite of this, the night has dawned.' (Man'yō, 3714)
 - I see my lover for a long time in reality <_{likely} I see my lover for a long time in a dream

⁸ The proposal here predicts the appearance of *dani* in downward entailing contexts as with English *any*. This prediction does not find straightforward confirmation in OJ materials, except for conditional clauses, as in (9b). I have not found any examples of universal quantifiers taking a restrictive clause in OJ texts, which prevents us from assessing the hypothesis that *dani* can appear in this clause. There are examples of before-clauses in OJ, but this type of clause must include negation as '[[[...V] neg] before],...' So negation may license *dani* even if it appears in before-clauses. Comparatives and adversative predicates often take complement clauses, but I have not found examples of *dani* appearing in those clauses. It is beyond the scope of this paper to consider whether the non-appearance of *dani* in those clauses is due to the semantics of *dani* or to the poverty of materials in Old Japanese.

The speaker evaluates those worlds where he can see his lover in a dream as being better than those belief worlds in which he can't. This preference entails that the speaker considers the worlds where he can see his lover in reality to be better than his belief worlds. Thus, the surrogate wish entails the real wish, as in the pragmatically idealized model given in Figure 2.

Lastly, let us briefly mention that the strengthening constraint blocks the use of dani in modal expressions in general. Modal expressions are taken to express existential or universal quantification over a set of possible worlds induced by an appropriate, e.g., epistemic, deontic, etc., modal base and ordering source in the Kratzer's (1981) system. However, a specific way of quantifying possible worlds by a more-likely proposition does not entail the same way of quantification by a less-likely proposition. Figures 3 and 4 represents such problematic cases respectively for existential and universal quantifications: the more-likely proposition p in Figure 3 existentially quantifies over the modal base, whereas the less-likely q does not. The same holds for universal quantification as in Figure 4. Therefore, the appearance of dani in more-likely propositions with modal contexts does not strengthen its statement and is thus correctly predicted to fail. This fact importantly suggests that the licensing condition for dani should not generalize to non-veridicality (Giannakidou 2002).9

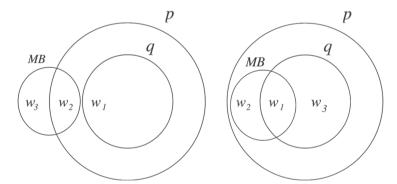


Figure 3: Possibly p, but not q.

Figure 4: Necessarily *p*, but not *q*.

⁹ In this respect, dani is significantly different from the Greek esto, which is licensed by subjunctives, modals, questions, habituals etc. in addition to a downward-entailing universal quantifier (Giannakidou 2002: §4).

2.4 Summary

In Section 2.1, we surveyed examples of OJ dani, an item which appears with negation or with the predicates interpreted as expressing a wish. After critically reviewing the proposal of Kadmon and Landman (1993) in Section 2.2, who paid particular attention to the "settle for less" interpretation of English any licensed under glad, I presented in Section 2.3 a semantics of wish that licenses dani in the same way as negation: wish, as well as negation, makes the more-likely proposition marked by dani strengthen the statement in which it appears. Since my analysis of wish depends on its counterfactual nature when licensing dani, it cannot be straightforwardly extended to the licensing of any in the scope of glad because the latter is a factive predicate. However, my analysis can appropriately account for the distribution of dani, and it indicates the uniformity of the meaning of dani in Old Japanese, i.e., the marking of a more-likely proposition. In the next section, based on the argument in this section, we will see that the uniformity of the meaning of dani will collapse and finally shift to a new meaning in Middle Japanese.

3 Historical change of dani

This section examines the historical change of dani. The scope of dani relative to negation is subject to change, and both NPI and non-NPI even meanings can coexist in one single lexical item even when used with negation. The history of dani will be assessed in three different stages. Section 3.1 focuses on the emergence of a new meaning in dani, triggered by the reinterpretation of the scope of negation concerning dani, as argued in Kinuhata (2005). Section 3.2 observes the shrinkage of the meanings of dani to the new meaning, which suggests the loss of the NPI property discussed in Section 2. Section 3.3 sees the lexical alternation from dani to sae and argues for the scope of sae taking over negation in Contemporary Japanese. Section 3.4 is an interim summary.

3.1 Scope ambiguity triggering the change: Kinuhata (2005)

In Section 2.1, we saw that dani in Old Japanese must be licensed by negation or a wish: among 91 relevant attestations, 32 appear with negation and 59 appear with a predicate expressing a wish. These two patterns are also attested in the texts written in Early Middle Japanese (the 9–12th century). The following examples are those that are licensed by wishes.

- (22) a. Sukenokimi=no оФon-isogi=mo tika-u vice.minister=GEN HON-preparation=also near-ADV nari-ni-tar-amu=wo. sono Φodo=no become-PRF-RES-CONJEC=CONJ DEM time=GEN zaФuyaku=wo=**dani** tukaumatur-**amu**. chore=ACC=NPI do.HON-VOL 'Given that Michitsuna's preparations (for the Aoi Festival) are approaching, I will at least do chores for that occasion.' (Kagerō)
 - b. koko=ni=mo kokoro=ni=mo ara-de kaku 1.SG=LOC=ALSO heart=COP=also COP-NEG.CONJ this.way makaru=ni. nobora-mu=wo=**dani** mi~okuri~tamaΦ-**e**. go.home=CONJ ascend-FUT=ACC=NPI see~send~HON-IMP 'Because I shall leave this way, contrary to my wishes, at least see me off upon my ascening (to the moon).' (Taketori)
 - c. kimi=wa yume=o=**dani** mi-**baya**=to master=TOP dream=ACC=NPI see-DESI=QUOT obosi~wataru=ni think~CONT=CONI 'While Genji continued to wish to see (her) at least in a dream,' (Genji, Yuugao)

The speaker of (22a) wishes to take part in the business of Michitsuna's family because he proposes to a foster daughter there. This wish is the real one associated with the surrogate one, which sentence (22a) explicitly expresses: the speaker wishes to do the family chores. The speaker chooses chores because he considers them more manageable than other businesses. In (22b), the speaker, Princess Kaguya, actually wishes not to part from her foster parents. Since she would prefer to stay on earth rather than to return to the moon, her overtly expressed hope to be with them until she leaves is a surrogate wish. (22c) is a pattern we witnessed in the examples of OJ such as (7a). Because Genji, the hero of this story, cannot see his lover, he wishes to see a dream of her. Thus, the real and surrogate wishes are aligned by a likelihood relation (23) as with OJ examples discussed in Section 2.1. Since dani expresses the surrogate wish, it attaches to a proposition more likely to occur.

- (23) a. to do the singnificant business for Michitsuna's family < ijkoby to do chores for the festival
 - b. to go to the moon with the princess < likely to see the princess off on her ascent to the moon
 - c. to see Yuugao in reality < likely to see Yuugao in a dream

The examples of dani licensed by negation have similar likelihood relations. In (24), I gloss dani as NPI? for the reason discussed below.

- (24) a. issu=wo=**dani** Φanat-**azu** titiΦaΦa=no imizi-ku a.little=ACC=NPI? let.go-NEG parents=NOM extreme-ADV kanasi-ku si~tamaΦu Φito=nar-eba affectionate-ADV do~HON person=COP-CSL 'Since he is a person whom his parents treat extremely affectionately, without setting him free even for a moment, . . .' (Heichū)
 - Φito=ni b. vo=no ni-nu world=GEN person=DAT resemble-NEG.ADN oon-awai=nite kaina-ki yo=no on-relationship=COP.CONJ profitless-ADN world=GEN monogatari=o=**dani** e kikoe~awase~tamaw-azu. talk=ACC=NPI? pot say.HON~exchange~HON-NEG "... their relationship being very different from that of the usual siblings, they cannot exchange even idle smalltalk.' (Genji, Yomogiu)
 - c. Фaru=no no=ni kokoro=wo=dani=mo var-anu spring=GEN field=LOC heart=ACC=NPI?=also send-NEG.ADN ті=Фа wakana=Φa tosi=wo=koso tume tuma-de body=TOP young.green=TOP pick-NEG.CONJ year=ACC=FOC stack 'As one not turning even a thought to the spring fields, I gather years without gathering young greens.' (Gosenshū, 9)

In (24a), since setting their son free for a long time entails setting them for a moment, the latter is more likely to occur. Example (24b) describes siblings who rarely talk to each other. As an extreme case of this relation, the author refers to the situation with dani, where they do not exchange idle smalltalk. Example (24c) is from an anthology of waka poems. The author fails to do even something as simply accomplished as thinking about spring fields. In each of the examples licensed by negation in (24), dani appears in more-likely propositions, just as with those examples licensed by wishes.

- (25) a. to set their son free for a long time < likely to set their son for a moment
 - b. to exchange meaningful conversation $<_{likely}$ to exchange idle smalltalk
 - to turn one's hands to the spring fields < likely to turn one's thoughts to the spring fields

While OJ confines its examples to the above two patterns, examples from EMJ in (26) have neither negation nor a predicate expressing a wish.

- (26) a. *Факапа-кі* oon-kudamono=o=dani ito monou-ku a.little-ADV hon-foods=ACC=even verv gloomv si~tamai-te. okiagaru koto tae-te. do~HON-CONI get.up NMLZ cease-GER '(Murasakinoue) feeling even meager portion of food to be terribly burdensome, and leaving off getting up, . . .' (Genji, Wakana)
 - h aki=ni аФи iro=koso masite wabisikere getting.tired=DAT meet color=FOC more painful sitaba=wo=dani=mo nageki-si=monowo lower.leaf=ACC=even=also deplore-PST=SFP 'it is the color one meets in Autumn (= the feeling when one meets scorn) that is more forlorn because I even lamented the lower leaves (= my decline).' (Kagerō)
 - c. katao=naru=o=**dani** menoto-yau=no omou-beki failure=COP=ACC=even wet.nurse-like=GEN love-should.ADN Φito=wa mao=ni asamasi-u minasu=monoo person=TOP surprising-ADV perfect=DAT consider=SFP People who think in the role of wet nurse will, surprisingly, judge even those who are handicapped to be paragons.' (Genji, Yuugao)
 - d. kono onna=no ie hata yoki-nu this woman=GEN house also detour-NEG.ADN miti=nari-ker-eba, ... tuki=**dani** yadoru sumika=o wav=COP-PST-CSL ... moon=even stay.ADN residence=ACC ori~Φaberi-nu=kasi. sugi-mu=mo sasuga=nite, pass-VOL=also bad=COP.CONI get.off~HON-PRF=SFP 'Since it was a road that did not bypass this woman's house anyway, and it being untoward to pass by a dwelling where even the moon stays, he got off (the carriage).' (Genji, Hahakigi)

In order to be interpreted, dani in (26) must be attached to a proposition that is less likely to occur, contrary to (22) and (24). In (26a), among painful foods for a sick person, a meager portion of food is less likely to cause nausea, and, in (26b), it is less likely that the poet deplores her own decline than that she is disappointed at having her lover get tired of her. In this way, dani surfaces in the less-likely proposition of the following scale.

- (27) a. to feel a meager portion of food to be burdensome < likely to feel a normal meal to be burdensome
 - b. to lamnet one's decline < likely to lamnet meeting scorn

If defined, [dani](p) = p.

- c. to judge a handicapped child to be a paragon < likely to judge a good child to be a paragon
- d. for the moon to stay < likely for a man to stay

Since negation and wish need not license the meaning of dani that targets the lesslikely proposition, let us call the item in this usage non-NPI dani.

Kinuhata (2005) proposes that the reanalysis of the scope of negation triggered the emergence of non-NPI dani. As we saw in Section 2.3, negation scoped over the proposition that included dani in OJ, as in (28a) (=(13)), with dani targeting a morelikely proposition. On the other hand, if the scope of dani is wider than that of negation as indicated by the outer bracket of (28b), dani is taken to mark the less-likely proposition. The semantics of dani associated with the reanalyzed structure (28b) is given in (29), which flips the likelihood scale.¹⁰

```
(28) a. [[.....dani.....] NEG] or [[.....dani] NEG]
      b. [..... dani [..... NEG]] or [[..... NEG] dani]
(29) [dani](p) is defined only if
                                         (i) A|p \neq \emptyset, and
                                         (ii) \forall q[[q \in A \& q \neq p] \rightarrow likelihood(p)]
                                              < likelihood(q)]
```

In structure (28b), since negation is in the proposition that dani takes, the likelihood

relations in (25) are recast as those in (30), with negation affecting the reverse of the scale (Fauconnier 1979; Ladusaw 1979).

- (30) a. **not to set their son for a moment** < likely not to set their son free for a long time
 - b. not to exchange idle smalltalk < likely not to exchange meaningful
 - c. **not to turn one's thoughts to the spring fields** < likely not to turn one's hands to the spring fields

Thus, the dani coexisting with negation can be interpreted as non-NPI dani, with the meaning exhibiting the less-likely proposition.

¹⁰ Note that the new semantics of dani in (29) satisfies the strengthening constraint (15) without licensers such as negation and wish, i.e., the truth of a low likelihood proposition entails the truth of high likelihood propositions (with appropriate pragmatic assistance).

As evidence for this hypothesis, Kinuhata (2005) investigates the texts written in EMJ and shows the following result.¹¹ He divided examples into three patterns: licensed by wish, licensed by negation (negative), and licensed by neither (affirmative).

Table 1: dani of EMJ in Prose.

Table 2: dani of EMJ in Poems.

	OJ	E	MJ
		early	middle
wish	59	23	221
negative	32	27	233
affirmative		7	229

	oj	ЕМЈ			
		early	middle	late	
wish	59	27	39	23	
negative	32	56	44	26	
affirmative		13	35	29	

In OI, there are almost twice as many examples with wish as there are with negative, and none with affirmative, as discussed. Shading is added to the cell with the greatest number of attestation. In the EMJ prose texts in Table 1, the number of the examples classified as *negative* is dominant in its early period, as indicated by the shading, but at the same time, examples of dani in affirmative sentences come to emerge. In the middle period of EMJ, though *negative* still out-numbers the other two, it is evident that the growth rate of affirmative outranks those of the other two patterns: wish increases 9.61-fold, negative 8.63-fold, and affirmative 32.71-fold.

The investigation of poems in Table 2 reveals the same movement pattern as shown in Table 1. In the early period of EMJ, the examples in the *negative* context

Proses in EMI

early: Taketori monogarari (859?), Tosa nikki (935), Ise monogarai (901?), Yamato monogatari (951?), Heichū monogatari (965)

middle: Ochikubo monogatari (973), Kagerō nikki (974), Genji monogarari (1008?)

ii) Collections of Poems EMI

early: Kokinshū (905), Gosenshū (953?) middle: Shūishū (1005-7), Goshūishū (1086)

Kinyōshū (1124), Shiikashū (1150-2), Senzaishū (1188), Shinkokinshū (1210-6) late:

Since the middle period of Proses includes Genji monogatari [Tales of Genji], the number of examples for this period outnumbers those of the other periods. I should also note that I used the number given in Section 2.1 instead of that of Kinuhata (2005) for OJ data.

¹¹ While Kinuhata (2005) gives the titles of each literary work, I added up the number of examples according to the periods in which those literary works are written, i.e., the early, middle, late periods of EMJ. Each sub-period includes the following literature (see Kinuhata (2005) for their literary sources).

grew considerably compared to OJ, accompanied by the appearance of dani with affirmative predicates. Then, in the middle period of EMI, it grew high in number in the affirmative context as compared with the others: wish increased 1.44-fold, negative 0.79-fold, and affirmative 2.69-fold. Though the examples in the late period occurs with approximately the same frequency in each context, the affirmative context exhibits the highest number and growth rate.

Those data suggest that the appearance of *dani* in affirmative contexts stems from its use in negative contexts. Thus, it supports the view of Kinuhata (2005) that non-NPI dani emerged due to reinterpreting the scope of NPI dani for negation.

3.2 Loss of NPI feature

We saw in the previous section that non-NPI dani appeared through the reanalysis of the scope of negation. However, this does not necessarily entail that all examples of dani in EMI take scope over the negation. Given that language change proceeds gradually, it is reasonable to consider dani in EMI to be ambiguous between scoping under or over negation and correspondingly ambiguous between exhibiting a more-likely or a less-likely proposition.

The examples where dani is licensed by wish amply attested in EMJ confirm this hypothesis. In the early period of EMJ, there were more wish examples than affirmative ones in Tables 1 and 2. In the prose texts written in the middle period and the waka anthologies compiled in the middle and late period, no significant difference is found between the three patterns, as shown in Table 3.12

Since the examples of dani in wish and those in affirmative are considered to be NPI-dani and non-NPI-dani, respectively, it is adequate to assume both types of dani in the examples classified in negative.

¹² I used an environment R (R Core Team 2019) throughout this paper for statistical analysis.

	Prose middle		Poem middle		Poem late
wish	221	wish	39	wish	23
negative	233	negative	44	negative	26
affirmative	229	affirmative	35	affirmative	29
<i>df</i> = 2		<i>df</i> = 2		<i>df</i> = 2	
p = 0.8488		p = 0.5963		p = 0.7074	
No significant difference		No significant difference		No significant difference	

Table 3: χ^2 tests for the middle and late periods.

The situation under discussion did not last for a long time, however. I studied the Corpus of Historical Japanese (henceforth, CSJ: NINJAL 2021) to show the transition from NPI to non-NPI dani after the late EMJ.

As the text representing the late period of EMI, I selected literary works written after the middle of the 11th century: Tsutsumi Chūnagon monogatari (1055-), Sarashina nikki (1058-), Sanukinosuke nikki (1109), Ōkagami (1025-1134) and Konjaku monogatarishū (1120?). The first four tales were written in wabun (Japanese style), based on the colloquial of the Heian period, whereas the last one, i.e., Konjaku monogatarishū, used Japanese influenced by Chinese, which is called wa-kan konkōbun (Japanese-Chinese mixed style). I collected examples for the Kamakura period (1185-1333) from the Kamakura Period Series in CSJ (NINJAL 2021), excluding Konjaku monogatarishū. Since the Muromachi Period Series only included pieces of literature completed in the late stages of the Muromachi period, I obtained data from Kakuichi-bon Heike monogatari (written in 1371, early Muromachi) using its full-text index.13 The language in the Kamakura and Muromachi periods is called Late Middle Japanese (LMJ: until around 1603). The classification of dani in those texts according to their contexts is given in Table 4.

Table 4: dani from late EMI to LMI.

	Lat	e-EMJ	LMJ		
	wabun(J)	wa-kan(JC)	Kamakura	Muromachi	
wish	17	40	46	11	
negative	43	55	98	44	
affirmative	43	18	67	39	

¹³ Heike Monogatari <Takano-bon> goi yōrei sōsakuin [The tale of Heike <Takano-bon manuscript>lexicon-example full-index] (Benseisha: Tokyo, 1998). After my completion of the survey, Kakuichi-bon Heike Monogatari was added to CSJ.

While the examples of *dani* in the late EMJ poems were not biased statistically, as on the righthand of Table 3, those of wabun [Japanese style] were at the 1 percent level: df = 2, p = 0.0014. This statistic means that dani is used more in the negative and affirmative contexts than in the wish context, which seems further to imply the decline of NPI dani in this period if we assume that the language of wabun style reflects the colloquial usage of the age, whereas that of poems are more conservative. However, the data of wa-kan konkōbun [Japanese-Chinese mixed style] is quite different from that of wabun, particularly in displaying a small number of examples used in the affirmative context. I suppose this is partly due to the writing style of this material. Since wa-kan konkōbun incorporates the Japanese reading style of Chinese, called kanbun kundoku [literal-reading of Classical Chinese], writers in that style use sora in places where one expects dani. Particle sora is an allomorph of sura in OI (see (3b)) but is scarcely ever used in wabun style in EMJ. The influx of sora into Konjaku monogatarishū is crucial to account for the bias of dani used in the negative context, since, contrary to dani, sora is more used in affirmative contexts than in negative contexts, as the contrast in (31) illustrates.

- (31) a. ware-ra=dani sir-anu=ni ikade kaku 1-PL=even know-NEG=CONCES how this.way siri~tamai-kemu. know~HON-PST.CONJEC 'Although even we did not know (this road), how does he come to know it?' (Konjaku, 25-9)
 - b. sikareba Фati=**sora** mono=no on=wa thing=GEN dept.of.gratitude=TOP then bee=even siri-keri. know-PST 'This means that even bees feel a sense of indebtedness.' (Konjaku, 29–36)

Since there are 21 examples of *sora* with affirmative predicates and 10 with negative predicates in Konjaku monogatarishū, according to an analysis of search results from CSJ, it is reasonable to add these numbers to the data in Table 4 when we compare it with other texts (because few examples of sora appear in them). This procedure allows us to modify the wa-kan (JC) data in Table 4 as 40, 65, and 39. Now, we can find a similar distribution of dani/sora between the data in wa-kan (JC) and those in Kamakura. A comparison of the figures (40, 65, 39 vs. 46, 98, 67) by a 2×3 χ^2 test reveals no significant difference between them, even at the 5 percent level: df = 2, p = 0.3831.

This result is not surprising because, generally speaking, essays, travel writings, and legends written in the Kamakura period adapted to the wa-kan konkōbun (Japanese-Chinese mixed) style (Kasuga 1983, Ch. 6, Sato 2007). However, it is still not accounted for that the works classified as having the wa-kan konkōbun style have more wish examples than do works in wabun (Japanese) literature: the examples of wish decline in the wabun style but do not in the wa-kan konkōbun style in the late EMI. However, if we look closely at what morphemes are employed to express wishes, the decline of dani licensed by wish becomes clear.

Table 5 shows the ratio of conditionals in wish examples in Table 4. Until the middle period of EMI, the frequencies of conditionals were around 20%. Still, the percentage gets higher in the late EMJ, particularly in wa-kan konkōbun (Japanese-Chinese mixed) style, and in the texts of the Kamakura period, and in the Muromachi period we found no examples of wish other than those expressed by conditionals.14

Table 5: Ratio of conditionals in.	

	OJ		ЕМЈ				MJ	
		early	middle	late		Kama-	Muro-	
				wabun(J) wa-kan(JC)		kura	machi	
conditionals	11	4	49	5	26	23	11	
others	48	19	184	12	14	23	0	
ratio	18.6%	17.4%	21%	29.4%	65%	50%	100%	

Figure 5, which draws a logistic curve that best explains the data in Table 5, shows that the percentages of conditionals licensing dani increases over time. The preponderance of conditionals in wish licensing dani implies that the semantic concept wish itself leaves off being a factor in licensing dani, with the environment fixed to conditionals. Such a development is a further indication of the decline of the status of dani as an NPI.

3.3 Lexical alternation and discussion from Contemporary Japanese

As discussed, Kakuichibon Heike monogatari has three environments that can license dani: affirmative and negative predicates and conditionals. Examples of each are given in (32).

¹⁴ Kano (1938b) also found no example of wishing predicates other than conditionals in literature such as Gukanshō (1220), Kokoncho monzhū (1254-), and Shasekishū (1283). See also Suzuki (2005, §3.3.1) for other texts.

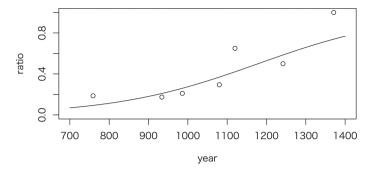


Figure 5: Logistic curve of Table 5.

- musume-domo=dani sama=o (32)wakak-i kauru a. daughter-PL=even young-ADN form=ACC change.ADN yononaka=ni, tosi oi Фажа otoroe-taru world=LOC age get.old decline-RES.ADN mother siraga=o tuke-temo nani=ni=ka=wa se-mu. grav.hair=ACC wear-CONCES what=DAT=O.FOC=TOP do-VOL What is the use of me, an old mother, growing my gray hairs, in a world where even my young daughters become priests?" (Kakuichibon, 1)
 - b. sabakari atu-ki minatuki=ni syauzoku=**dani**=mo
 such hot-ADN June=LOC formal.dress=even=also
 kuturoge-zu, atu-sa=mo taegata-kereba
 loosen-NEG hot-NMLZ=also intolerable-CSL
 'Because he is not relaxing even his formal dresses in the extremely hot
 month of June, and, in addition, the heat was intolerable...'

(Kakuichibon, 2)

c. kore-ra=**dani**=mo mairi-n-**aba** Bandou=ni=wa
this-PL=at.least=also come-PRF-COND Kanto=DAT=TOP
nabik-anu kusaki=mo saurau-mazi.
swey-NEG.ADN plant=also exist.HON-NEG.CONJEC
'If at least those guys had come, there would be no warrior family in the Kanto region that does not submit to the Heike clan.' (Kakuichibon, 5)

The three patterns precisely correspond to the contexts where *sae* appears in Contemporary Japanese. The coincidence of contexts implies that the lexical entries alternate in the history of Japanese, which the translation of *Heike monogatari* partly documents. The following examples are from *Amakusaban Heike monogatari* (1592), a translation of "classical" *Heike monogatari*, one of which is *Kakuichibon*

Heike monogatari. Each example in (33) corresponds to its original in (32). I leave out the translation of (33) because their relationship is evident from the glosses.

(33) a. waka-i musume-domo=**sae**=mo sama=o kayuru young-ADN daughter-PL=even=also form=ACC change.ADN vononaka=ni. tosi yori yowai=no katamui-ta Фаша world=LOC age advance age=NOM decline-RES mother siraga=o tuke-temo nani=ni syou=zo. grav.hair=ACC wear-CONCES what=DAT do.VOL=SFP (Amakusaban, 2-1)

b. sasimo atu-i rokugati=ni syauzoku=o=**sae**=mo kuturoge-zu, hot-ADN June=LOC formal.dress=ACC=even=also loosen-NEG such atu-sa=mo taegatai=nivotte hot-NMLZ=also intorelable=CSL (Amakusaban, 1-9)

c kore-ra=**sae** mait-ta=**naraba** Bandou=ni=wa nabik-anu this-PL=at.least come-PRF-COND Kanto=DAT=TOP swey-NEG.ADN kusaki=mo aru-mai. plant=also exist- NEG.CONJEC (Amakusaban, 2-10)

Although other particles such as mo and made can translate dani in Amakusaban Heike monogatari, it is strong evidence for the alternation between dani and sae that only sae can appear in conditionals having a meaning similar to dani in conditionals. 15 It is also the case in Contemporary Japanese (CJ) that sae is the only candidate to take over the role of dani in conditionals, as seen by the CJ-examples in (34).

- (34)a. waka-i musume={sae/mo/made/sura} syukkesuru yononaka become.priest.ADN world young-ADN girl=even 'A worlds where even young girls become priests.'
 - b. atui=noni kare=wa kooto={sae/mo/made(mo)/sura} nug-anai. hot=CONCES 3.SG=TOP coat=even take.off-NEG 'Despite the heat, he does not even take off his coat.'
 - c. kare-ra={sae/#mo/#made/#sura} ki-tara minna 3-PL=at.least come-COND everyone yorokon-da=daroo. happy-PST=CONJEC 'If at least they had come, everyone would have been happy.'

¹⁵ See also Suzuki (2005) for the decline of dani and its alternation with sae after LMJ.

One may suspect that sae in (34b) is an NPI taking scope under negation, arguing that it has a meaning in common with sae in (34c). There are, however, at least two pieces of evidence against this view. One is that the meaning of sae in (34c) differs from that of dani in OI. If it has the same meaning, it presupposes that the proposition in which *sae* appears realizes more likely than the alternative propositions. However, this is not necessarily the case, as the appropriateness of the following example indicates.

(35) *Taroo=o* yobu=no=wa muzukasii. demo Taroo=**sae** Taro=ACC invite=NMLZ=TOP difficult Taro=at.least but ki-tara. paatii=wa seikoosuru=to отои. come-COND party=TOP succeed=COMP think '(I think) it is difficult to invite Taro. But If at least Taro would came, the party would succeed.'

The example (35) does not imply that it is more probable for Taro to come but rather expresses that the alternative propositions other than the prejacent one are unnecessary for the consequent. Thus, CI sae in conditionals is almost equivalent to dake, a Japanese counterpart of English only.

(36)Taroo={sae/dake} ki-tara, paatii=wa seikoosuru=daroo. come-COND party=TOP succeed=CONJEC Taroo=only 'If only Taro would come, the party would succeed.'

Since dake with negation in such examples as (34b) gives rise to a different truth-conditional meaning from sae, it is untenable to identify sae in (34b) with that in (34c).

The second argument against the view that sae is an NPI is that it cannot be licensed by negation in a higher clause. If sae in (34b) is an NPI and designates a more-likely proposition, it should be interpreted appropriately in examples such as (37). In fact, the English translation including even in (37) has a similar interpretation to (34b). On the other hand, using sae in (37) is weird, given the alternatives such as taking off a shirt, a sweater and so on, in addition to a coat. This oddness indicates that sae is interpreted in the local clause in which it appears, invariably inducing the least-likely interpretation: interpreting sae in the subordinate clause is odd because it is implausible that taking off the coat is least-likely among alternatives. 16

^{16 (37)} can be made appropriate by pre-posing the sae-phrase and inserting an intonation break after it, which restructures the other part of the sentence as a constituent, as shown by the bracket in (i). This restructuring, however, shows that sae is not under the scope of negation.

kooto=**sae** [kare=ga nugu=to=wa omowa-nai].

(37) #[kare=ga kooto=sae nugu]=to=wa omowa-nai.

3.SG=NOM coat=even take.off=COMP=TOP think-NEG (intended) 'I don't think that he even takes off his coat.'

Because *sae* cannot induce a more-likely interpretation, it is adequate to consider *sae* in (34b) to target the less-likely proposition scoping over negation.

3.4 Summary

This section reviewed the historical change of *dani* after Early Middle Japanese: Figure 6 summarizes the change with the white area indicating the presence of examples and the shaded areas indicating their absence.

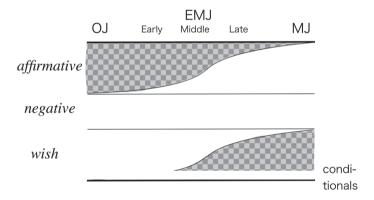


Figure 6: Historical change of dani.

In OJ, no example of *dani* demarcated by affirmative predicates is attested. In the early EMJ, such instances emerged with the rise of frequency of *dani* with negative predicates, which is considered in Kinuhata (2005) to be the result of the reanalysis of the scope of *dani* with respect to negation. The numbers of examples in the three conditions, *affirmative*, *negative*, and *wish*, set out in Figure 6 were approximately even in frequency in middle EMJ, which implies that *dani* in this period is ambiguous between NPI *dani* and non-NPI *dani*, able to take scope either under or over negation. *Dani*, licensed by *wish*, diminished gradually after the late EMJ, with its use in conditionals intact. However, the meaning of *dani* in conditionals in LMJ came to differ from that of *dani* in affirmative and negative predicates, evidenced in the usage of *sae* in CJ, which replaces *dani* during LMJ.

Except for its use in conditionals, dani has come to designate a less-likely proposition, contrary to OJ dani. This meaning can satisfy the strengthening constraint analogous to (15) without negation or taking scope over negation because the truth of a less-likely proposition entails the truth of more-likely propositions. Thus, the semantic transition of dani from OJ through EMJ to LMJ accompanies a loss of NPI features. However, in this transition, there is a period that witnesses ambiguous scopal properties relative to negation in a single lexical item, dani.

4 Theoretical implication for two theories of even

In the previous section, we saw that the scope ambiguities of EMJ dani with respect to negation first triggered the loss of the NPI feature that had been chracteristic of OI dani. The data for dani in the early period of EMJ suggested that it was negation which initiate the change, and, in the middle period of EMJ, dani used with negation was ambiguous between the NPI and non-NPI types. When it is an NPI, it is inside negation and attaches to a more-likely proposition, whereas the non-NPI type out-scopes negation and takes a less-likely proposition. Thus, the former corresponds to NPI even assumed in the Lexical Ambiguity Theory and the latter to the one in the Scope Theory, which we call "Scope even". The fact that dani with negation was ambiguous between NPI and Scope even is significant because the two theories assume a single lexical item for even in NPI environments. While the Scope Theory only posits one lexical entry irrespective of its environment, the Lexical Ambiguity Theory considers NPI and non-NPI even to be complementarily distributed. Thus, the possible coexistence of NPI and Scope even, as suggested by historical data of dani, imposes a challenge to both theories. That is, a theory needs to show, to refute the opponent, the non-existence of even assumed by the other as well as the existence of even advocated by itself.

Though the debate is still far from settled with various pros and cons for both theories, I would like to illustrate a direction of argument by referring to a classic in this area: Rooth (1985). Rooth (1985, Ch. 4), a proponent of the Lexical Ambiguity Theory, discusses two pieces of evidence for it. One is from what he calls "scope fixing" observed in example (38a): in (38a), even the BATHROOM, i.e., even associated with the focused bathroom, cannot take scope over someone, and therefore the sentence only means that there is one single person who promised clean the bathroom in addition to other places.

- (38) a. Someone promised to **even** clean the BATHROOM. (Rooth 1985: (13))
 - b. It is hard for me to believe that Bill can even understand SYNTACTIC STRUCTURES. (Rooth1985: (10))

On the other hand, (38b) has ambiguous scalar interpretations of Syntactic strucutes: it could be easy or hard to understand. If the "easy-to-understand" interpretation arises with even Syntactic structures moved above the semantically negative predicate with the force of Scope even, then it remains mysterious why even the bathroom in (38a) cannot take scope over someone.

The other argument concerns the interpretation of the following pairs in the given context: according to Rooth (1985), (39a) is fine, but (39b) is odd (, but see Rullmann (1997) for an objection to this observation).

- (39) Because they had been stolen from the library, John couldn't read "The Logical Structure of Linguistic Theory" or "Cartesian Linguistics". Because it was always checked out, he didn't read "Current Issues in Linguistic Theory".
 - a. The censorship committee kept John from reading even Syntactic Struc-
 - b. #The censorship committee even kept John from reading SYNTACTIC STRUCTURES. (Rooth 1985: (33)-(35))

Since the Scope Theory predicts the same interpretation for (39a) and (39b) with even out-scoping NPI licensers, i.e., kept . . . from, it cannot account for the contrast in (39).

Each piece of evidence has a different status in the argument against the Scope Theory. The first shows the non-existence of Scope even. if it existed, (38a) could be interpreted ambiguously. The second indicates the existence of NPI even: NPI even can give an interpretation to (39a) different from (39b), where even takes scope over an NPI licenser. Note that the second piece of evidence does not suffice to disprove the Scope Theory given the possibility of the existence of ambiguous evenlike words in a synchronic grammar: even if Scope even cannot account for the reading of (39a), the theory might be able to assume NPI even for it. So, the theory must be armed with the first type of argument.

It is unfortunate from this perspective to find no argument in the Scope Theory, as far as I have noticed, demonstrating the non-existence of NPI even. We can surmise the reason behind this inadequacy. Since the Scope Theory, in positing only one lexical entry, is more concise than the Lexical Ambiguity Theory, it is tempting to consider that the proof of the existence of Scope even entails the uselessness of NPI even. However, the finding of this paper indicates the possibility of even-like expressions being ambiguous even in NPI environments. Therefore, unless there is negative evidence for the existence of NPI even, even in NPI environments might still be ambiguous between the two evens.

Another question that might arise from the current discussion is whether a change similar to that for dani will or did happen for English even: for example, even if the Lexical Ambiguity theorists were to proved the non-existence of Scope even in Contemporary English, would NPI even eventually happen to evolve into Scope even? This question mirrors why Old Japanese dani did change its scopal property relative to negation. Though such a change realized in the future is not necessarily foreseeable, a syntactic difference between English and Japanese, including OJ, might affect the interpretations of their respective even-words. As illustrated by the examples of Section 2.1, negation in Japanese appears in clause-final positions, contrary to that in English. For example, see (40), which repeats part of (5a).

- (40) a. (Ware=pa) yume=ni=**dani** mi]-**zari**-si]. 1SG=TOP dream=LOC=NPI see-NEG-PST b. *I did* **not** [see it **even** in my dream].
- While the English negation not can exhibit its scope with the clause boundary as in (40b), the OJ negation zu cannot because the scope of it expands to the left of both negation and the clause boundary as in (40a). Thus, dani's scope tends to be ambiguously interpreted with respect to negation, whereas the surface position of negation prevents the ambiguous interpretation of even in English. This unambiguous scope-marking in English might have been what prevented the debate between the Scope Theory and the Lexical Ambiguity Theory from having a dynamic perspective, which is more readily supplied by considering a language with a structure like (40a).

5 Conclusion

The purpose of this paper is twofold. One is to give a syntactic and semantic account for the distribution of OJ dani, an NPI even, and the other is to show how dani lost its NPI feature in the history of Japanese.

In OJ, dani is licensed by negation or a predicate expressing a wish. To predict this behavior, I first specified the meaning of dani as adding a presupposition that the proposition in which it appears is more likely to occur than alternatives. With a strengthening constraint, this semantics restricts the environment where dani appears. The idea is similar to the combination of "widening" and "strengthening" proposed by Kadmon and Landman (1993) in explaining the asymmetric nature of negative and affirmative contexts to license an NPI. My analysis differs from theirs, however, in accounting for the occurrence of dani in a predicates expressing wishes. I developed a semantics of wish with counterfactual meanings

using an idea from von Fintel (1999) and revealed how this semantics enables the more-likely proposition to entail the less-likely one, satisfying the strengthening constraint.

The loss of the NPI feature observed in OJ dani was first triggered by the reanalysis of the scope of negation for dani. In OJ, dani was in the scope of negation as an NPI, but it came to be reanalyzed to scope over negation and this gave rise to some instances of dani in affirmative contexts in the early EMI. Evidence of negation as a trigger comes from the increase of dani used with negation in this period (Kinuhata 2005). In the middle period of EMJ, dani is ambiguous between an NPI and a non-NPI, equally distributing over affirmative, negative, and wishing predicates, which also indicates the ambiguous scopal property of dani concerning negation in this period. The ambiguous meanings of dani were dissolved during MJ when it completely lost its NPI feature. Dani withdrew from contexts fromed by wishing predicates except for its archaic use in conditionals, and this distribution is echoed in the use of CJ sae, amounting to a lexical alternation.

The above scope ambiguity in one synchronic grammar has a theoretical implication for the two theories for even in English. While the Scope Theory and the Lexical Ambiguity Theory each assume that only one even occurs in NPI environments, the above argument shows that this is unnecessary. Thus, the case study of dani poses a further challenge to both theories and, in addition, gives a historical perspective, which might consistently be lacking in the data of languages with negation occupying non-final positions of a sentence, e.g., in most European languages.

Texts

(used for examples)

Man'yōshū (SKBZ), <u>Taketori</u> monoqatari (SKBZ), <u>Heichū</u> monoqatari (SKBZ), <u>Kaqerō</u> nikki (SKBZ), <u>Genji</u> monoqatari (SKBZ), <u>Gosenwakashū</u> (SKBT), <u>Konjaku</u> Monoqatarishū (SKBZ), <u>Kakuichibon</u> Heike monoqatari (SKBZ), Amakusaban Heike monoqatari (Amakusaban Heike monoqatari taishōhonmon oyobi sōsakuin. Meijishoin.)

SKBZ. . . *Shinpen Nihon koten bungaku zenshū*, Shogakukan.

SKBT. . . Sjin Nihon koten bungaku taikei, Iwanami Shoten.

Abbreviations

(not listed in the Leipzig Glossing Rules)

adnominal ADN CONCES concessive conjunctive CONJ conjecture CONJEC CONT continuous CSL causal DEST desiderative **EMPH** emphatic EXCL exclamative GER aerundive HON honorific

NPI negative polarity item sentence final particle SFP

volitive VOI

References

Erlewine, Michael Yoshitaka. 2018. Even doesn't move but associates into traces: A reply to Nakanishi 2012. Natural Language Semantics 26, 167-191.

Fauconnier, Gile. 1975. Pragmatic scales and logical structure. Linguistic Inquiry 6. 353-375. Fauconnier, Gile. 1979. Implication reversal in a natural language. In Franz Guenthner & Siegfried

J. Schmidt (eds.), Formal Semantics and Pragmatics for Natural Languages, 289-302. Dordrecht: D. Reidel.

Frellesvig, Bjarke. 2011. A History of the Japanese Language. Cambridge: Cambridge University Press. Giannakidou, Anastasia. 2002. Licensing and sensitivity in polarity items: from downward entailment to (non)veridicality. In Maria Andronis, Erin Debenport, Anne Pycha & Keiko Yoshimura (eds.), Proceedings from the Panels of the 38th Meeting of the Chicago Linguistic Society, 29-53. Chicago: Chicago Linguistic Society.

Giannakidou, Anastasia. 2007. The landscape of EVEN. Natural Language & Linguistic Theory 25. 39-81. Guerzoni, Elena. 2004. Even-NPIs in yes/no questions. Natural Language Semantics 12. 319–343. Herburger, Elena. 2003. A note on Spanish ni siquiera, even, and the analysis of NPIs. Probus:

International Journal of Romance Linguistics 15(2), 237–256.

Hoeksema, Jack & Hotze Rullmann. 2001. Scalarity and polarity: A study of scalar adverbs as polarity items. In Jack Hoeksema, Hotze Rullmann, Víctor Sánchez-Valencia & Ton van der Wouden (eds.), Perspectives on Negation and Polarity Items, 129–171. John Benjamins.

Kadmon, Nirit & Fred Landman. 1993. Any. Linguistics and Philosophy 16. 353-422.

Kano, Kyozaburo. 1938a. Dani sura-no yoohoojoo-no sai-nitsuite [On the difference of the usage of dani and sura]. Kokugo-to Kokubungaku 15(6). 49-64.

- Kano, Kyozaburo. 1938b. Insei Kamakura-ki-niokeru dani, sura, sahe [dani, sura, and sae in the Late Heian and Kamakura period]. Kokugo-to Kokubungaku 15(10). 1413–1430.
- Karttunen, Lauri & Stanley Peters. 1979. Conventional implicature. In Choon-Kyu Oh & David A. Dinneen (eds.), Syntax and Semantics, volume 11: Presupposition, 1–56. New York: Academic Press.
- Kasuga, Masaji. 1983. Kokugo Buntai Hattatsushi Josetsu [Introduction to the Development of the Written Style in Japanese 1. Tokyo: Benseisha.
- Kay, Paul. 1990. Even. Linguistics and Philosophy 13. 59-111.
- Kinuhata, Tomohide. 2005. Fukujoshi dani-no imi-to koozoo-to sono henka: Joodai chuuko-niokeru Focus particle dani: its syntax, semantics, and their evolution from the Nara to the Heian period]. Nihongo Bunpoo 5(1). 158-175.
- Kinuhata, Tomohide. 2019. Joodai-nihongo-no hitei-kyokusei-hyoogen: Fukujoshi dani-no imi saikoo [Negative polarity expression of Old Japanese: reconsidering the meaning of adverbial particle dani]. In Osamu Sawada, Hideki Kishimoto & Ikumi Imani (eds.), Kyokusei Hyoogen-no Koozoo, Imi, Kinoo [Polarity-sensitive Expressions: their forms, meanings and functions], 356–379. Tokyo: Kaitakusha.
- König, Ekkehard. 1991. The Meaning of Focus Particles: A Comparative Perspective. London: Routledge.
- Kratzer, Angelika. 1981. The notional category of modality. In Hans J. Eikmeyer & Hannes Rieser (eds.), Words, Worlds, and Contexts: New Approaches to Word Semantics. Berlin: Walter de Gruyter. (Reprinted in Formal Semantics: The Essential Readings, 289-323. Blackwell. 2002).
- Krifka, Manfred. 1995. The semantics and pragmatics of polarity items. Linguistic Analysis 25, 209–257.
- Kuroda, S.-Y. 1979. Generative Grammatical Studies in the Japanese Language. New York: Garland.
- Ladusaw, William. 1979. Polarity sensitivity as inherent scope relations. Austin: University of Texas at Austin dissertation.
- Linebarger, Marcia C. 1987. Negative polarity and grammatical representation. Linguistics and Philosophy 10. 325-387.
- Mukai, Katsutoshi. 2012. Man'yooshuu-niokeru fukujoshi dani-no imi-henka: Sura-to-no soohotekina kankei-kara [Semantic change of adverbial particle dani in Man'yōshū: from the complementary distribution with sura]. Fukuoka Daigaku Nihongo Nihonbungaku 22. 1–13.
- Nakanishi, Kimiko. 2012. The scope of even and quantifier raising. Natural Language Semantics 20. 115-136.
- NINJAL. 2021. The Corpus of Historical Japanese. Ver. 2021.3 https://ccd.ninjal.ac.jp/chj/
- R Core Team. 2019. R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing Vienna, Austria. https://www.R-project.org/
- Rooth, Mats. 1985. Association with focus. Amherst, MA: University of Massachusetts dissertation.
- Rullmann, Hotze. 1997. Even, polarity, and scope. In Grace Wiebe Martha Gibson & Gary Libben (eds.), Papers in Experimental and Theoretical Linguistics vol. 4, 40–46. Edmonton: Department of Linguistics, University of Alberta.
- Sato, Takeyoshi. 2007. Wa-kan konkoobun [Japanese-Chinese mixed style] In Yoshifumi Hida, Yoshihide Endo, Masanobu Kato, Takeyoshi, Sato, Kiyoto Hachiya & Tomiyoshi Maeda (eds.). Nihongogaku Kenkyuu Jiten [The research encyclopedia of Japanese linguistics], 488-489. Tokyo: Meiji Shoin.
- Schwarz, Bernhard. 2005. Scalar additive particles in negative contexts. Natural Language Semantics 13.
- Suzuki, Hitomi. 2005. Fukujoshi sae(sahe)-no yoohoo-to sono hensen: Dani-to-no kanren-nioite [The usage of the adverbial particle sae and its historical change: with relevance to dani]. Nihongogaku Ronshuu 1. 33-54.

- von Fintel, Kai. 1999. NPI licensing, Strawson entailment, and context dependency. Journal of Semantics 16. 97-148.
- von Stechow, Armin. 1991. Current issues in the theory of focus. In Arnim von Stechow & Dieter Wunderlich (eds.), Semantik: Ein Internationales Handbuch der Zeitgenosssischen Forschung, 804-824. Berlin: Mouton de Gruyter.

Wilkinson, Karina. 1996. The scope of even. Natural Language Semantics 4. 193–215.

Index

acquisition 4, 28, 225, 237-241, 247-248, classifier 12-13, 90 254-255 clause-mate condition 9, 17-18, 27, 59-63, 67, activated proposition 28, 186, 207-208, 210-212, 70, 207, 211, 326 218-220, 266, 307-308, 329, 331 comparison class 27, 118, 120, 136-142 affirmative 7, 65, 104, 123, 141, 167, 175-176. competition 176, 178-180 178-181, 189, 196-197, 206, 323, 381, 401, complementation 343-344 complementizer 63, 66-67, 69-72, 74-75, 343, 415-418, 437-441, 445 all that 25-26, 302, 314, 377-378, 389-391, 347-350, 362 393-394 concord amari 9, 21-22, 29-30, 61-62, 66-67, 73, - modal concord 299, 325, 327-328 272-273, 302, 314, 377-395, 399-409 - negative concord 10, 100-101, 103, 105, 108, anaphora 29, 344, 346-347, 356, 358, 366, 111, 196, 251 368, 370 condition on PPI rescuing 212, 216, 218, 221 - anaphoricity 356, 360, 363, 368, 373 conditional 5-7, 11, 15, 62, 178, 190-191, 196, - propositional anaphora 29, 344, 346-347, 206, 234-235, 237, 304, 338, 377-379, 356, 358, 366, 368 381, 383-388, 391, 393-394, 396, anti-reconstruction 28, 225, 235-239, 242, 399-404, 407-409, 421-422, 441, 244-245, 247 443-446, 449 antonym pair 118-119, 122-123, 126, 134 conjunctive interpretation of any 3, 5-10, 41-43, 47, 52, 55, 60-62, 73, 83, disjunction 226-227, 238, 245, 247-248, 87, 94-95, 101-102, 106, 118, 123-126, 250, 252 128, 133-137, 195, 199, 201, 203, 205-206, content individual 361-364, 373 290-291, 326, 328, 417, 423-424, 427-428 control 27, 39-40, 46, 49, 53-56, 58-59, 63-64, as... as 13, 28, 165-167, 169, 171, 173-174, 67-68, 70, 74-76, 78-79 176-177, 181 conventional implicature (CI) 4, 17, 19-20, 264, assertion 122-126, 186, 204-205, 334-335, 344, 302, 304-310, 325, 328, 331, 406-407 355, 360-361, 364, 368, 394, 399-401 CP projection 40, 59, 63, 67, 70, 72, 74-75, 79 at-issue meaning 20, 299-300, 302-313, 331 - non-at-issue meaning 264, 328, 330, 339, 406 deaccenting 270, 275-276 attenuating NPI 19, 24-26, 29, 314, 320, 392 degree attenuation 26, 29, 302, 314, 334, 338, 378, 389, - degree adverb 29, 336, 377, 389, 394 393, 399-401, 404, 406 - degree quantification 27, 117-118, 122-125, 133, 135-140, 142-143, 170 bare indeterminate 15 depictive 51-52, 56, 58-59 BCCWJ 26, 202, 214, 384-385, 388, 408 dermaßen 28, 165, 168-170, 172-180 bias 4, 19, 21-22, 29, 240-242, 248-249, 252, determiner 262-266, 270-279, 281-282, 285-286, - strong determiner 145 288-289, 291-294, 336-337, 440 - weak determiner 27, 145 - epistemic bias 28-29, 261-265, 269-270, 278, discourse 4, 22-23, 29, 208, 219, 266, 270, 285, 288-289, 292-293 292, 298-300, 307-308, 322, 329, 331, 333, bridge expression 70-73, 79 335, 338, 344, 346, 352-361, 363-364, 368-370, 373, 382, 393, 395, 401-402, c-command 27, 42, 64, 83, 85-89, 91-93, 96, 98, 406-407, 424, 426 100, 104, 106-109, 230, 234 - discourse semantics 393, 407

[⊗] Open Access. © 2024 the author(s), published by De Gruyter. ☐ This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. https://doi.org/10.1515/9783110755121-014

- disjunction 17, 28, 186, 225–227, 229, 232, 236–239, 242–245, 247–254
- conjunctive interpretation of disjunction 226–227, 238, 245, 247–248, 250, 252
- domain-restriction 19, 27, 123, 147–150, 154, 158–160, 162–163
- downward entailing/entailment 5, 40, 84, 109–111, 128, 166, 171, 177, 179, 189, 193, 201, 338, 423–424, 430–431

emphatic NPI 19, 24–25, 29, 314

English 3–4, 6–9, 13, 16–18, 20–24, 26–30, 39–44, 46–48, 52–53, 60, 73, 79, 83, 87, 94, 96, 106, 109, 117, 121, 126, 129, 142, 145–146, 152, 156–157, 159, 165, 167, 171, 185–188, 192–193, 195–196, 200, 203–205, 219–220, 225–227, 230, 236, 252, 261–262, 269, 278, 284, 291–294, 299, 324, 333, 346–347, 356, 368, 370, 377–378, 389, 393, 417, 420, 423, 425–428, 444, 447–449

English someone-type PPI 28, 185–188, 205 entailment 5, 83–84, 193–194, 205, 230–232, 315, 317, 396–397, 401, 417, 419, 423–428, 430–431, 446–447, 449

- downward entailing/entailment 5, 40, 84,
 109–111, 128, 166, 171, 177, 179, 189, 193, 201,
 338, 423–424, 430–431
- upward entailing/entailment 177–179, 193, 424
 epistemic bias 28–29, 261–265, 269–270, 278, 288–289, 292–293
- equative 13–14, 27–28, 165, 170–173, 176–177, 179–181
- implicit equative 165, 172–173
 even 11–13, 15, 30, 415–417, 428, 446–449
 exclamative 126, 334–335, 380, 382, 395
 existential
- existential quantifier 11, 14, 138, 142, 175
- existential sentence 18–19, 27, 145–147,153–154, 156–160, 162–163, 320

expectation 23, 44, 58, 241, 254, 262, 266, 281, 285, 322–324, 329, 338, 419

expressive 299, 304, 306, 325, 328–330, 332, 335, 339

factive

- factive adversative 390

non-factive belief report 29, 343
floating quantifier 51, 55–60, 155
focus 56–58, 65–66, 78, 93, 99, 107–108, 197–200, 230, 236, 273–274, 276, 293, 419–420, 426

German 28, 30, 165, 168–170, 172, 180, 252, 356–359, 361, 373, 415 Greek 10–12, 30, 373, 415–416, 431

have-sentence 146, 157 hodo 9, 13, 28, 165–170, 172–181, 277

implicature

- conventional implicature (CI) 4, 17, 19–20, 264, 302, 304–310, 325, 328, 331, 406–407
- scalar implicature 4, 138, 194, 201 implicit equative 165, 172–173 indeterminate
- bare indeterminate 15
- indeterminate pronoun 14–15, 186–187, 196inference 84, 149, 200–201, 207–209, 218, 226, 232, 266–268, 286–287, 289, 293, 383–384, 386, 399–400, 406

information structure 28, 270, 307, 381, 397

intensifier 23, 29, 297, 299–300, 303–304, 313, 325–326, 328–332, 339 intentional initiator 186, 216–218, 221 interrogative 19, 21, 28–29, 125–126, 187, 209, 261–270, 272–276, 278–289, 291–294, 325,

negative polar interrogative 28, 261–265,
 269–270, 272–273, 275, 278, 281, 284, 289,
 291–294

379, 382-385, 393, 396, 402, 407

isomorphism 240-242

observation of isomorphism 240Italian 10, 225, 250–253

Japanese 3-4, 6-14, 16-23, 25-30, 39-44, 79, 85-87, 93, 110-111, 117-118, 121-126, 129-137, 139-143, 145-147, 154-158, 165-166, 168-170, 185-188, 190-192, 195-196, 201-205, 209, 216, 219-220, 225-230, 234-237, 239-247, 253, 261, 269, 285, 291-294, 297, 299-300, 313, 315-316, 343-344, 347, 350, 354, 357-363, 366, 368, 370, 373, 378, 384, 407, 416, 432, 439-444, 448

- Early Middle Japanese 30, 416, 432, 445
- Late Middle Japanese 30, 417, 439
- Middle Japanese 30, 417, 432
- Old Japanese 7, 13, 30, 416-417, 430, 432, 448 Japanese wh-*ka* PPI 195, 204, 220

Korean 10, 23, 29–30, 343–344, 346–347, 350–352, 354, 357–363, 366–368, 370, 373 *koreizyoo* 6–7, 61–62, 203, 206

lexical ambiguity 389

lexical ambiguity theory 415, 446–449
local NPI 39–40, 59–60, 62–63, 67–71, 74–79
non-local NPI 59, 62, 66–67, 73
locality 9, 230, 237
logical structure 11, 303, 307, 310, 331
long distance licensing 27, 59–60, 69, 73–74, 79

max(imality) operator 170–172, 175, 180–181 minimizer 11–12, 104, 129, 297, 326, 339 minimum quantity predicate 27, 117–118, 122, 126–130, 133, 135–136, 138–143 modal concord 299, 325, 327–328 modality 4–6, 16–17, 289, 309, 312, 328, 337, 404, 407

nani-mo 3, 6, 8–10, 20, 52, 55–56, 62, 110–111, 196–197

negation-of-existence reading 27, 127, 135–136, 138–139, 141–142

negative concord 10, 100–101, 103, 105, 108, 111, 196, 251

negative concord item (NCI) 10, 100–101, 185, 195

negative polar interrogative 28, 261–265, 269–270, 272–273, 275, 278, 281, 284, 289, 291–294

negative polarity 12, 26, 84, 108, 119, 128–129, 277, 314

negative polarity item (NPI) 3, 5, 21, 26, 39–40, 84, 128, 166, 185, 188, 269, 297
negative predicate 29, 84, 92–93, 110–111, 269–270, 275, 333, 417, 423, 440–441, 445, 447

negative sensitive element (NSE) 27 nominalized clause 23, 29, 343–344, 346–347, 350–351, 353, 357, 360, 362–364, 366, 373 non-at-issue meaning 264, 328, 330, 339, 406 non-factive belief report 29, 343 non-local NPI 59, 62, 66–67, 73 non-overt negation 230, 233, 237 non-veridicality 5, 379, 431 NPI (negative polarity item)

- attenuating NPI 19, 24-26, 29, 314, 320, 392
- emphatic NPI 19, 24-25, 29, 314
- local NPI 39-40, 59-60, 62-63, 67-71, 74-79
- non-local NPI 59, 62, 66-67, 73
- NPI feature 30, 189, 415, 438, 446, 448-449
- NPI licensing 7-8, 17, 30, 39-42, 46-47,
 49-50, 52-53, 59, 63, 65, 71-74, 78-79,
 188-189, 191, 201, 209, 215, 264, 292, 391,
 393, 423, 447
- strict NPI 27
- strong NPI 5-6, 60, 73, 189, 390
- weak NPI 28, 166, 189, 191–192, 196, 200–201, 203–205, 390

numeral 17–19, 27, 51–52, 55, 58, 90, 131–132, 145–148, 152–156, 158, 160–163, 228 n-word 10–11, 94–95, 100–101, 103, 109, 111

observation 27, 147–150, 153–154, 158–159, 161–163 observation of isomorphism 240 ontological reading 156–159, 161

polar question 4, 22, 28–29, 232–233, 262, 344, 356–358, 364, 367–369, 389, 402 polarity

- polarity reversal 118-119, 122, 194

ordering source 429-431

- polarity sensitivity 13–15, 17, 19, 23, 27–29,
 117–118, 133, 145, 147, 158, 160, 162–163,
 165, 167, 172, 175–176, 178–179, 254,
 300–301, 312–314, 337–339, 377
- polarity-reversed proposition 213, 221
 politeness 26, 283, 333
 positive polarity 12, 19, 28, 146–147, 153–154, 225, 229–236, 238–239, 244, 247–248, 254–255, 277, 314
- positive polarity item (PPI) 3-4, 21, 28, 139, 185-186, 225, 229, 262, 297, 334
 positive sentence 3, 15-16, 168, 173, 175-176,

possessive reading 157-158

179-180

possibly 23, 29, 299, 324–333, 337–339 post-focal reduction 270, 272–276 PPI (positive polarity item)

- condition on PPI rescuing 212, 216, 218, 221
- English someone-type PPI 28, 185-188, 205
- Japanese wh-ka PPI 195, 204, 220
- PPI licensing in NCI sentence 195–198, 205 pragmatic scale 84, 90, 104, 428

presupposition 28, 30, 57–58, 169–170, 172–173, 177, 179–181, 204, 207, 209–211, 213, 217–218, 323–324, 345–346, 355, 363–364, 390–394, 407, 426–427, 448

pronoun 19, 88, 303, 370

- indeterminate pronoun 14–15, 186–187, 196 proposition/propositional
- proportional quantifier 13
- propositional anaphora 29, 344, 346–347, 356, 358, 366, 368
- propositional proform 29, 347, 370–371, 373prosody 22, 28, 270, 277, 293pseudo-cleft 56–57

quantifier

- existential quantifier 11, 14, 138, 142, 175
- floating quantifier 51, 55-60, 155
- proportional quantifier 13
- universal quantifier 10–11, 14, 19, 119, 228, 234, 430–431

question 4–7, 11, 14, 21–22, 28–29, 71–72, 166, 186, 190–191, 196, 206–210, 214, 232–233, 262, 283, 292–293, 323, 330, 332–338, 344, 356–358, 364–365, 367–369, 383, 389, 402

- polar question 4, 22, 28–29, 232–233, 262, 344, 356–358, 364, 367–369, 389, 402
- wh-question 14, 210, 214, 389 quotative 347

reactive 20, 22–23, 298–300, 303–304, 307–308, 312–314, 321, 323–325, 328–339 rescuing 17–18, 28, 172, 185–186, 189–190, 192,

rescuing 17–18, 28, 172, 185–186, 189–190, 192, 194–195, 200, 204–205, 207, 209–216,

218-222

response particle 29, 277, 344, 346, 356–357, 359, 368, 370

resumption 88–89, 91–92, 399–400, 403, 407 rhetorical 4, 7, 177, 325, 332–334, 392

sae 134–136, 138, 140, 426, 432, 442–445, 449 scalar

- scalar implicature 4, 138, 194, 201
- scalar particle 13, 30, 196, 416
 scale
- pragmatic scale 84, 90, 104, 428
- scale reading 84, 90-92, 103-104, 107
- scale-based universal negation 27, 84–85, 92–93, 103–104, 106–108

scope 3, 8, 10–11, 16–18, 20, 26, 28, 30, 39–47, 49–52, 56, 58–62, 65, 71–72, 84, 86, 88–89, 96, 98–99, 111, 138–140, 147, 154, 179, 185–192, 194–195, 197–198, 203, 205–207, 211–212, 216, 218, 221, 225–255, 304–305, 327, 338–339, 391, 394, 398, 415–418, 425, 432, 436, 438, 444–449

scope theory 415, 446–449
semantic subset principle 238–239, 254
sika 9, 40–41, 43, 45–46, 49–52, 55–56, 58–60, 62–63, 67–71, 73, 75–78, 91–93, 110–111, 167, 231

sonnani 7, 26, 29, 302, 320, 377–382, 384–385, 388–389, 391–399, 406–409

Spanish 11, 26–27, 30, 85, 94, 96, 100, 104, 107–109, 111, 226–229, 231–233, 235–236, 415

spatial reading 156–158, 160–161 speaker-oriented adverb 4, 16–17, 19–20,

299, 324 standard value 27, 123, 136–142 strengthening 11, 19, 244–247, 390, 423–429, 431, 436, 446, 448–449 strict NPI 27

strong

- strong determiner 145
- strong NPI 5-6, 60, 73, 189, 390subject raising 27, 39-40, 46-55, 59, 63, 74-75, 79

subtraction 27, 147–151, 153–154, 158–159, 161–162

superlative 27, 117–124, 126–129, 135, 141–142 sura/sora 416, 440, 443 surrogate wish 421–424, 431, 433 Swedish 30, 117, 119–122, 126, 128–129, 142

totemo 22-23, 25, 29, 297-309, 311-314, 324-325, 328, 330-331, 333-334, 337-339

trivial 14, 28, 139, 148, 151–154, 160, 163, 171–172, 175, 177–180

- trivial-setting 27, 147–150, 153–154, 158–160, 162–163

truth value 249, 302, 315

universal quantifier 10–11, 14, 19, 119, 228, 234, 430–431

upward entailing/entailment 177-179, 193, 424

wabun (Japanese style) 439–441 wa-kan konkōbun (Japanese-Chinese mixed style) 439–441

weak

- weak determiner 27, 145
- weak NPI 28, 166, 189, 191–192, 196, 200–201, 203–205, 390

wh-

- Japanese wh-ka PPI 195, 204, 220
- wh-mo 3, 6-7, 9, 11, 52, 60, 62, 90-93, 108, 110-111, 196
- wh-question 14, 210, 214, 389 widening 19, 390, 423-425, 427, 448

zenzen 22–23, 29, 277, 297–300, 313–324, 333, 336–339