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**UNIFORMITY AND VARIATION IN COMPARISON:
COMPARATIVES AND SUPERLATIVES IN JAPANESE FROM A
CROSS-LINGUISTIC PERSPECTIVE**

A dissertation submitted in partial satisfaction
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

LINGUISTICS

by

Jun Tamura

March 2026

The Dissertation of Jun Tamura
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Peter Biehl
Vice Provost and Dean of Graduate Studies

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Contents

Abstract	viii
Acknowledgments	x
1 Introduction	1
1.1 Research Questions and Theoretical Proposals	1
1.2 Background	7
1.3 Roadmap	9
2 Hidden Clausal Structures in Japanese Phrasal Comparatives	11
2.1 Introduction	11
2.2 Accounts of Phrasal and Clausal Comparatives	17
2.2.1 Two Types of <i>-er</i> : A 2-Place <i>-er</i> and a 3-Place <i>-er</i>	17
2.2.2 Bhatt and Takahashi (2007, 2011)	20
2.2.2.1 Pronominal Obviation	21
2.2.2.2 Scope Interactions	22
2.2.2.3 Linear Precedence Constraints	27
2.2.2.4 Summary	29

2.2.3	Problems for the Direct Analysis of Phrasal Comparatives . . .	30
2.2.3.1	Two Types of Readings of Phrasal Comparatives in Japanese	30
2.2.3.2	Internal Structure of <i>Yori</i> -Phrases	34
2.3	Structural Ambiguity in Adjectival Modification	40
2.3.1	Evidence for the Availability of DM Structure from Superlatives	41
2.3.2	DM and IM Structures in Comparatives	43
2.4	Analysis of Phrasal Comparatives	46
2.4.1	Small-Clause Analysis	46
2.4.2	Narrow and Wide Readings	52
2.4.2.1	Narrow Reading	53
2.4.2.2	Low Wide Reading	56
2.4.2.3	High Wide Reading	59
2.4.3	Comparing the SC Analysis and the 3-Place <i>-er</i> Analysis	64
2.4.4	Domain of Ellipsis	70
2.5	The SC Account for Syntactic Phenomena	75
2.5.1	Reanalyzing the Evidence for the 3-Place <i>-er</i> Analysis	76
2.5.1.1	Analysis of Pronominal Obviation	76
2.5.1.2	Analysis of Scope Interactions of <i>-er</i>	77
2.5.1.3	Analysis of Precedence Restriction	80
2.5.1.4	Summary	81
2.5.2	Evidence for Internal Structures of <i>Yori</i> -Phrases	81
2.5.3	The Nominal Source Analysis Revisited	85

2.6	Revisiting the Degree Abstraction Parameter	91
2.6.1	Lack of Subcomparatives	93
2.6.2	Lack of a Negative Island Effect	97
2.6.3	Lack of Measure Phrases Modifying Gradable Predicates	98
2.6.4	Lack of Degree Questions	100
2.6.5	Lack of Minimum Requirement Interpretations	101
2.7	Conclusion	103

3	Comparatives to Superlatives: A Single Source Analysis of <i>Ichiban</i> Superlatives	106
3.1	Introduction	106
3.2	Scope Theory-Based Analysis of Superlatives	111
3.2.1	Background	111
3.2.2	A Scope Theory-Based Account of Japanese Superlatives	114
3.3	Three Properties of <i>Ichiban</i> Superlatives	117
3.3.1	Lexical Meaning of <i>Ichiban</i>	117
3.3.2	The Syntactic Distribution of <i>Ichiban</i> and <i>Yori</i> -Phrases	124
3.3.2.1	The Sentence-Initial <i>Ichiban</i> and <i>Yori</i> -Phrases	124
3.3.2.2	Structural Ambiguity of Adjectival Modification . . .	128
3.3.3	Anti-Topic Marking Effect	134
3.3.4	Summary	137
3.4	Analysis of <i>Ichiban</i> Superlatives	138
3.4.1	<i>Ichiban</i> as Part of MAX	139
3.4.2	ER in Comparatives and Superlatives	144

3.4.3	Syntax and Derivation	148
3.4.4	Analysis of the Absolute Reading	156
3.4.5	Analysis of the Relative Readings	163
3.4.5.1	Low Relative Reading	164
3.4.5.2	High Relative Reading	167
3.4.6	Summary	171
3.5	Evidence Against the 2-place <i>-est</i> Analysis	173
3.5.1	Focus in Superlatives	174
3.5.1.1	Focus and Exhaustivity in Japanese Superlatives . . .	174
3.5.1.2	Role of Focus in Superlatives	183
3.5.2	DP-Internal Relative Readings	187
3.5.2.1	Bulgarian and Polish vs. English	188
3.5.2.2	Japanese	193
3.5.3	Summary	198
3.6	Conclusion	198
4	The Architecture of Superlative Formation	202
4.1	Introduction	202
4.2	<i>Mottomo</i> Superlatives	204
4.2.1	Syntactic Distribution of <i>Mottomo</i> Superlatives	205
4.2.2	Decomposition of <i>Mottomo</i>	206
4.2.3	Analysis of <i>Mottomo</i> Superlatives	212
4.3	Sino-Japanese Superlative Morpheme <i>Sai-</i>	218
4.3.1	Basic Properties of <i>Sai-</i>	218

4.3.2	Semantic Composition of <i>Sai</i> -	222
4.3.3	Analysis of <i>Sai</i> - Superlatives	225
4.4	English Superlatives	228
4.4.1	Semantics of <i>-Est</i>	229
4.4.2	Analysis of English Superlatives	233
4.4.3	Negative Superlatives	240
4.4.4	Summary	242
4.5	Three Factors of Superlative Formation	242
4.5.1	Cross-Linguistic Typology of Superlative Morphemes	243
4.5.2	Logical Source and Comparison Class	250
4.5.3	Summary	252
4.6	Conclusion	254
5	Conclusion	258
5.1	Summary	258
5.2	Theoretical Implications	260
	Bibliography	263

Abstract

Uniformity and Variation in Comparison:

Comparatives and Superlatives in Japanese from a Cross-Linguistic Perspective

by

Jun Tamura

This dissertation investigates comparatives and superlatives in Japanese from a cross-linguistic perspective. The central question concerns how natural languages encode comparison. Drawing on new empirical evidence from Japanese, this dissertation argues that the variation observed in comparatives and superlatives can be derived from a unified semantic core. Specifically, comparison in natural language is built on a single primitive ordering relation, ER, which constitutes the core meaning of both comparatives and superlatives. Apparent variation across these constructions arises from two independent sources: (i) the elements with which ER combines, and (ii) differences in syntactic derivation.

Within comparatives, this dissertation shows that the surface differences between phrasal and clausal comparatives arise from distinct syntax, while both constructions are based on the same primitive ER. Phrasal comparatives are argued to involve ellipsis within the standard phrase, although the size of the elided constituent differs from that in clausal comparatives. Superlatives are derived from the same underlying syntax as phrasal comparatives, but they differ crucially in that, in Japanese, ER combines with an additional superlative element, *ichiban*, which yields a maximality operator (MAX). The decomposition of MAX explains lexical variation in superlative morphology both

within Japanese and across languages. This analysis contrasts with much of the existing literature, where the meanings of comparatives and superlatives are largely encoded in the comparative or superlative morphemes themselves.

Japanese plays a central role in motivating this analysis. Unlike languages such as English, Japanese overtly reflects the scope of degree expressions in syntax. In comparatives, the scope of ER is reflected by the position of the standard phrase (i.e., *yor*-phrase, corresponding to the English *than*-phrase), while in superlatives, the surface positions of superlative morphemes, *ichiban* and *mottomo*, indicate their scope positions. Contrary to the view that Japanese lacks direct comparison of degrees on a scale, the evidence presented here shows that Japanese provides particularly clear evidence for the scope of degree expressions.

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First and foremost, I owe my deepest gratitude to Roumyana Pancheva. Her guidance has been central to the development of this dissertation. I have to stress that I was really lucky that I entered UCSC in 2021, and that two years later, Roumi came to UCSC. After taking her first seminar at UCSC on degree semantics, I became interested in the field and eventually chose it as my second QP topic and the topic of my dissertation. Though it was a sudden change that I decided on in my third year, I asked her to become my thesis advisor, and she kindly accepted. As a result, I became the first Ph.D. student at UCSC to complete a dissertation under her supervision, which I feel very honored to have achieved. One of her earliest insights—that the Japanese superlative marker *ichiban* is not equivalent to English *-est* because it says ‘number one’ (she told me this more than 10 times, I think)—became a core idea that shaped my analysis. The analysis then changed its form from *ichiban* as a floating quantifier to *ichiban* as an ordinal, and finally reached the current analysis, where *ichiban* is part of MAX. Many times, I was tempted to analyze *ichiban* as ‘-est’, and every time, she pointed out that *ichiban* means ‘number one’ and this kept me from giving in to that analysis. Throughout the process, she was always patient in listening to my ideas and asked many questions about Japanese and offered insightful suggestions based on her broad knowledge. At the same time, she encouraged me to move forward at the right time. In particular, in my fourth year,

she advised me to step back from superlatives and consider comparatives, which was especially important in helping me make progress. I am also especially grateful for her support during the final stages of this dissertation, when she made every effort to help me complete it within a limited timeframe because of my job starting in April. Although she had many responsibilities apart from my dissertation, Roumi managed to check and revise it many times. Without her help, I would not have been able to complete my dissertation.

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Chapter 1

Introduction

1.1 Research Questions and Theoretical Proposals

This dissertation investigates how natural languages encode comparison, drawing on new empirical evidence from Japanese. As a mathematical notion, comparison between two numbers, e.g., $2 > 1$, is straightforward. However, natural languages express comparative meaning with more complexity. For example, comparatives can express the same meaning in two distinct forms in many languages, including Japanese. The standard of comparison (i.e., the phrase introduced by *yorī* ‘than’) may be realized either as clausal or phrasal (Bhatt and Takahashi 2007, 2011).¹

¹Glosses follow the Leipzig Glossing Rules.

(1) a. Clausal comparative

Taro-wa [CP Jiro-ga atta]-yori ookuno hito-ni atta.
Taro-TOP Jiro-NOM met -than many people-DAT met
'Taro met more people than Jiro met.'

b. Phrasal comparative

Taro-wa [DP Jiro]-yori ookuno hito-ni atta.
Taro-TOP Jiro -than many people-DAT met
'Taro met more people than Jiro.'

Whereas comparatives allow the same meaning to be expressed by two distinct sentence types, superlatives typically involve a single sentence that gives rise to two distinct interpretations. Furthermore, in Japanese, there are two superlative morphemes *ichiban* and *mottomo*, in contrast to languages like English that have a single superlative morpheme *-est* (Aihara 2007, 2009).

(2) *ichiban* and *mottomo* superlatives

Taro-ga { *ichiban* / *mottomo* } takai yama-ni nobotta.
Taro-NOM ICHIBAN / MOTTOMO high mountain-DAT climbed
'Taro climbed a higher mountain than any other mountain.' (ABS)

'Taro climbed a higher mountain than anyone else.' (REL)

Under the absolute reading, the sentence means that Taro climbed the highest mountain within the contextually relevant set of mountains, without reference to other climbers. By contrast, under the relative reading, it means that Taro climbed a mountain higher than any mountain climbed by other contextually relevant climbers.

This dissertation investigates comparatives and superlatives in Japanese, with the goal of providing a uniform analysis of the two. To this end, it draws on empirical evidence from Japanese comparatives and superlatives concerning the scope and interpretation

of degree expressions. Unlike languages such as English, in which the scope of degree heads such as *-er* and *-est* is not overtly reflected, Japanese makes scope relations visible through the distribution of overt elements. In comparatives, the scope of a null comparative quantifier is reflected by the position of the *yor*i-phrase, while in superlatives, the surface positions of superlative morphemes, *ichiban* and *mottomo*, indicate their scope positions. As a result, Japanese exhibits clear and systematic patterns that remain covert in English.

The key empirical motivation for the proposed analysis comes from a systematic correlation between phrasal comparatives and superlatives in Japanese. In particular, Japanese phrasal comparatives display a well-known ambiguity between narrow and wide readings (cf. Lerner and Pinkal 1995; Shimoyama 2014).

(3) Ambiguity resolution pattern of phrasal comparatives

- a. Taro-ga [Jiro-yori] ookii robotto-o motteiru.
Taro-NOM Jiro-than big robot-ACC have
‘Taro has a robot that is bigger than Jiro.’ (NAR)
‘Taro has a bigger robot than Jiro does.’ (WIDE)
- b. Taro-ga [Jiro-yori] ooki-kat-ta robotto-o motteiru.
Taro-NOM Jiro-than big-COP-PAST robot-ACC have
‘Taro has a robot that was bigger than Jiro.’ (NAR)
- c. [Jiro-yori] Taro-ga ookii robotto-o motteiru.
Jiro-than Taro-NOM big robot-ACC have
‘Taro has a bigger robot than Jiro does.’ (WIDE)

Building on Shimoyama (2014), this dissertation identifies a previously unnoticed parallel between the narrow–wide ambiguity in phrasal comparatives and the absolute–relative ambiguity in superlatives.

(4) Ambiguity resolution pattern of *ichiban* and *mottomo* superlatives

- a. Taro-ga { *ichiban* / *mottomo* } *ookii robotto-o motteiru*.
Taro-NOM ICHIBAN / MOTTOMO big robot-ACC have
'Taro has a robot that is bigger than any other robot.' (ABS)
'Taro has a bigger robot than anyone else does.' (REL)
- b. Taro-ga { *ichiban* / *mottomo* } *ooki-kat-ta robotto-o motteiru*.
Taro-NOM ICHIBAN / MOTTOMO big-COP-PAST robot-ACC have
'Taro has a robot that was bigger than any other robot.' (ABS)
- c. { *Ichiban* / *Mottomo* }₁ Taro-ga t₁ *ookii robotto-o motteiru*.
ICHIBAN / MOTTOMO Taro-NOM big robot-ACC have
'Taro has a bigger robot than anyone else does.' (REL)

The parallel ambiguity resolution patterns suggest that phrasal comparatives and superlatives share underlying derivational mechanisms. In this sense, the Japanese facts provide direct evidence for where degree heads are interpreted in the syntactic structure. Furthermore, the two superlative morphemes *ichiban* and *mottomo* show the same syntactic distribution. The lexical meanings of these elements are 'number one' and 'more-all', respectively, so these superlative morphemes have different contributions to superlative meanings.

With this empirical focus, this dissertation asks the following questions:

(5) Central questions

- a. What is the shared semantic core underlying comparatives and superlatives?
- b. How do languages derive the variation in expressions of comparison from this shared core?

This dissertation argues that comparatives and superlatives are built from a single primitive ordering relation over degrees, as in mathematical comparisons such as $2 > 1$,

and that the apparent diversity of comparative constructions arises from differences in syntax. Formally, I propose that both constructions are derived from a single comparative head denoting this ordering relation (Heim 2006), defined in (6). Throughout this dissertation, I refer to this primitive degree-ordering operator as ER.

$$(6) \llbracket \text{ER} \rrbracket = \lambda d. \lambda d'. [d' > d]$$

(7) Main Proposals

- a. A primitive ER is the core meaning of comparison in natural languages.
- b. Variation in comparative expressions follows from:
 - (i) the elements with which ER combines
 - (ii) differences in syntactic derivation

On this view, syntax creates variation through different derivations built from the same semantic core. As for the variation in the different types of comparatives, surface differences between phrasal and clausal forms reflect distinct syntactic derivations, in which phrasal comparatives also involve ellipsis inside the *yor*i-phrase, though the elided constituent differs from that in clausal comparatives.

(8) a. Clausal comparative

Taro-wa	[_{CP}	Jiro-ga	Δ	atta	]-yori	ookuno	hito-ni	atta.
Taro-TOP		Jiro-NOM		met	-than	many	people-DAT	met

b. Phrasal comparative

Taro-wa	[_{SC}	Jiro	Δ	]-yori	ookuno	hito-ni	atta.
Taro-TOP		Jiro		-than	many	people-DAT	met

Furthermore, the connection between comparatives and superlatives is explained by the combination of ER and different elements: in comparatives, ER combines with the

standard marker *yor*i, whereas in *ichiban* superlatives, the same ER combines with *ichiban* to form a maximality operator (MAX).

(9) ER in comparatives

- a. $[[\lambda d. \text{Jiro met } d\text{-many people}]\text{-}yori\text{-}ER] [\lambda d. \text{Taro met } d\text{-many people}]$
- b. $MAX(\lambda d. \text{Taro met } d\text{-many people}) > MAX(\lambda d. \text{Jiro met } d\text{-many people})$

(10) ER in *ichiban* superlatives

- a. $[[\lambda d. \exists x \text{ } x \text{ met } d\text{-many people}] \textit{ichiban}\text{-}ER] [\lambda d. \text{Taro met } d\text{-many people}]$
- b. $MAX(\lambda d. \exists x [x \text{ met } d\text{-many people}])(\lambda d. \text{Taro met } d\text{-many people})$

Finally, the proposed analysis of superlatives accounts for the cross-linguistic diversity of superlative morphology. This follows from the decomposition of MAX into three primitive components: THE encodes definiteness over degrees, SUP introduces universal quantification over degrees, and ER contributes the ordering relation among degrees (Coppock and Engdahl 2016; Loccioni 2018). Languages vary in how these elements are morphologically realized, with different superlative morphemes encoding different subsets of the three components. This decomposition provides a principled explanation for why Japanese has two superlative morphemes *ichiban* ‘number one’ and *mottomo* ‘more-all’, which correspond to THE–SUP and SUP–ER, respectively. This also provides an explanation for the attested variation in superlative morphemes such as Romance-type languages, where an overt definite article and comparative morpheme correspond to THE and ER (Loccioni 2018).

1.2 Background

Gradable adjectives are standardly analyzed as involving degrees, which provide a scale along which individuals are ordered (e.g., Cresswell 1976; von Stechow 1984; Kennedy 1999; Heim 1999, 2000), and this degree-based view has been widely adopted in the semantics of comparison. While alternative approaches to gradability have been proposed (e.g., Klein 1980), this dissertation adopts a degree-based semantics. Formally, gradable adjectives are assumed to denote a relation between an individual and a degree. For example, the denotation of the gradable adjective *high* can be formally represented as a function from degrees to $\langle e, t \rangle$ -type functions.

(11) For any degree d and individual x ,

$$\llbracket high \rrbracket(d)(x) = 1 \text{ iff } x \text{ is high to degree } d \text{ (i.e. iff } x\text{'s maximal height includes } d\text{)}.$$

Gradable adjectives are assumed to exhibit downward monotonicity. For example, if John is exactly two meters tall, this entails that he is also 1.9 meters tall, 1.8 meters tall, 1.7 meters tall, and so on—but not 2.1 or 2.2 meters tall. This property can be formally represented as follows (Heim 1999).

(12) A relation R between individuals and degrees is downward monotonic iff:

$$\forall x, d, d' [R(x, d) \wedge d > d' \rightarrow R(x, d')]$$

Within degree semantics, there are two broad approaches to the interpretation of comparative and superlative morphemes. One approach treats *-er* and *-est* as quantificational elements, involving degree abstraction triggered by movement of *-er* and *-est* (e.g., Heim 1985, 1999, 2000; Szabolcsi 1986; Bhatt and Takahashi 2007, 2011). An alternative approach derives comparative and superlative meanings in situ, without treating *-er*

and *-est* as quantifiers and without invoking degree abstraction in the syntax (e.g., Beck et al. 2004, 2009; Kennedy 2009). This dissertation is developed within the former, quantificational approach. I assume that comparative meaning involves quantification over degrees and I provide new empirical evidence from Japanese in support of this approach.

Even within the quantificational approach, previous work has posited multiple lexical variants of comparative and superlative morphemes, including 2-place and 3-place versions of *-er* and *-est* (i.e., versions where the quantificational heads have two arguments or three arguments) as well as entries that are formulated in terms of comparison of maximal degrees or in terms of existential quantification over degrees (Heim 1985, 1999, 2000; Bhatt and Takahashi 2007, 2011). One goal of this dissertation is to show that the postulation of multiple lexical entries is unnecessary. Instead, I argue that a single primitive ER suffices, and that the observed variation arises from syntactic derivation rather than from multiple lexical entries.

In addition to semantic variation, languages differ in the morphological realization of comparatives and superlatives. For comparatives, languages such as English employ an overt comparative morpheme *-er*, whereas Japanese lacks an overt comparative morpheme, but is assumed to have a null *-er*. Superlatives likewise show cross-linguistic morphological diversity (Bobaljik 2012). English has a dedicated superlative morpheme *-est*, while Romance languages such as Spanish realize superlatives through a combination of a definite article and a comparative morpheme (e.g., *más*). In this respect, Japanese is typologically notable in exhibiting two distinct superlative morphemes, as seen above. These patterns underscore the extent of morphological variation across languages. I argue that this variation can be explained by the combination of the three primitive

building blocks, THE, SUP, and ER.

Another major point of debate concerns whether languages permit degree comparison—direct comparison of degrees on a scale—or whether they are restricted to individual comparison. Beck et al. (2004, 2009) and Kennedy (2009) argue that Japanese permits only individual comparison. Beck et al.’s claim is grounded in the Degree Abstraction Parameter, which regulates whether degree variables may be syntactically bound. Although this characterization of Japanese has been challenged by subsequent work (Bhatt and Takahashi 2007, 2011; Aihara 2007, 2009; Hayashishita 2007, 2009; Shimoyama 2012, 2014; Sudo 2015), the issue remains theoretically significant. This dissertation contributes new evidence to this debate by arguing that Japanese provides clear evidence for degree abstraction. In particular, the surface position of standard phrases in phrasal comparatives and of superlative morphemes in superlatives directly reflects the scope of degree expressions. Japanese therefore provides a useful testing ground for identifying the scope positions of degree expressions, contrary to the claims of Beck et al. and Kennedy.

1.3 Roadmap

This dissertation proceeds as follows. Chapter 2 develops a uniform analysis of Japanese comparatives, arguing that both clausal and phrasal comparatives are derived from a single 2-place *-er* (i.e., an operator with two arguments), in contrast to analyses that posit both 2-place and 3-place *-er*, where the latter takes an additional argument. Focusing on ambiguities between narrow and wide readings in phrasal comparatives, the chapter shows that they systematically correlate with distinct adjectival modification structures

and with the surface position of the *yori*-phrase. This analysis eliminates the need for a 3-place *-er* and demonstrates that Japanese overtly reflects the scope of *-er* in a way that makes the underlying structure of comparatives particularly transparent.

Chapter 3 argues that Japanese superlatives formed with *ichiban* are derived from the same underlying mechanism as phrasal comparatives. By drawing a close parallel between the ambiguity resolution patterns of phrasal comparatives and *ichiban* superlatives, the chapter shows that absolute and relative readings correspond to the same structural distinction observed in comparatives. Furthermore, I argue that superlative interpretations arise from the same ER used in comparatives in conjunction with other elements, which jointly form MAX.

Chapter 4 generalizes the decomposition of superlatives beyond *ichiban*, examining additional Japanese superlative morphemes such as *mottomo* and *sai-*, as well as English *-est*. The chapter argues that cross-linguistic variation in superlative morphology follows from how the semantic components THE, SUP, and ER are lexicalized across languages. I further argue that three key factors—logical source, lexical composition, and the determination of the comparison class—jointly give rise to the variety of superlatives.

Chapter 5 concludes by summarizing the theoretical implications of this unified approach to comparatives and superlatives.

Chapter 2

Hidden Clausal Structures in Japanese Phrasal Comparatives

2.1 Introduction

Comparatives in many languages employ two distinct strategies to convey the same meaning. In Japanese, the standard of comparison is introduced by the standard marker *yor* ‘than’, and the complement of *yor* can be a full CP (clausal comparative), as in (1a), or what appears to be a DP (phrasal comparative), as in (1b).

(1) a. Clausal comparative

Taro-wa [CP Jiro-ga atta]-yor ookuno hito-ni atta.
Taro-TOP Jiro-NOM met -than many people-DAT met
‘Taro met more people than Jiro met.’

b. Phrasal comparative

Taro-wa [DP Jiro]-yor ookuno hito-ni atta.
Taro-TOP Jiro -than many people-DAT met
‘Taro met more people than Jiro.’

As shown, Japanese comparatives lack an overt comparative morpheme like the English *-er* or *more*, yet their interpretation suggests that comparison is encoded in a null counterpart of *-er* or in *yor*i (much of the literature has suggested that Japanese has a null *-er*: Beck et al. 2004; Bhatt and Takahashi 2007, 2011; Shimoyama 2012). The literature on comparatives both in Japanese and cross-linguistically has debated whether phrasal and clausal comparatives share the same underlying syntactic structure. Under a Reduction Analysis, phrasal comparatives are derived from full clausal structures through a reduction process inside the *yor*i-phrase, leaving only the DP pronounced (Lechner 2001, 2004; Merchant 2009; Bhatt and Takahashi 2007, 2011). In contrast, a Direct Analysis treats the standard DP as the actual content of the *yor*i-phrase without assuming an underlying clausal structure (Hankamer 1973; Hoeksema 1983; Pinkal 1990; Kennedy 1999; Merchant 2009; Bhatt and Takahashi 2007, 2011; see Lechner 2020 for a recent overview of this topic).

(2) Two types of approaches for phrasal comparatives

a. Reduction Analysis

[_{CP} Jiro₁ [_{TP} t₁ ~~met many people~~]]-*yor*i

b. Direct Analysis

[_{DP} Jiro]-*yor*i

More recently, building on Beck et al.'s (2004) proposal that Japanese clausal comparatives are derived from a nominal source, Sudo (2015) argues that clausal comparatives always contain a nominal structure headed by a degree nominal, which is targeted by ellipsis in the syntax.

(3) Degree nominal approach

[_{RC} Jiro met people [_{NP} amount]-*yor*i [_{AP} many]]



On this view, clausal comparatives are in fact phrasal comparatives: the overt clauses in *yor*i-phrases function as relative clauses (RCs) modifying the unpronounced degree nominals.

With respect to these different approaches, the choice of degree head (i.e., *-er*) plays a crucial role. A 2-place *-er*—so called because it takes two degree arguments—combines with two degree predicates, requiring the *yor*i-phrase to take a clausal complement. By contrast, a 3-place *-er*—so called because it takes three arguments—combines with an individual argument, a degree relation, and another individual argument (Heim 1985; Bhatt and Takahashi 2007, 2011).

(4) Two types of *-er*

a. 2-place *-er*

$$\llbracket -er_2 \rrbracket = \lambda P_{\langle d,t \rangle} . \lambda Q_{\langle d,t \rangle} . \text{MAX}(Q) > \text{MAX}(P)$$

b. 3-place *-er*

$$\llbracket -er_3 \rrbracket = \lambda x . \lambda D_{\langle d, \langle e,t \rangle \rangle} . \lambda y . \text{MAX}(\lambda d . D(d)(y)) > \text{MAX}(\lambda d . D(d)(x))$$

While there are alternative approaches to the lexical semantics of *-er* (e.g. Kennedy 1999, among others), the 2-place and 3-place *-er* in (4) are formulated within a framework along the lines of Heim (2000) and I adopt them in this chapter. Drawing on cross-linguistic evidence from English, Hindi, and Japanese, Bhatt and Takahashi (2007, 2011) argue that Japanese possesses both types of degree heads, with their distribution determined by the complement of *yor*i: if the *yor*i-phrase contains a full CP, a 2-place *-er* is employed,

whereas if it contains a simple DP, a 3-place *-er* is used. On this view, phrasal comparatives are not reduced forms of clausal comparatives but are independently derived by the 3-place *-er*. Bhatt and Takahashi support this distinction with a range of syntactic and semantic evidence, including the binding behavior of DPs in *yor*i-phrases, the scope interactions between *-er* and other quantifiers, and linear precedence constraints between *-er* and its associate. For English, however, they reach a different conclusion, arguing that apparent phrasal comparatives always involve clausal reduction, based on differences in binding behavior and interactions with other quantifiers.

The main goal of this chapter is to develop a uniform account of Japanese comparatives based on a 2-place *-er*, without positing a 3-place *-er*. The key empirical motivation for this proposal comes from two types of readings—narrow and wide readings—in phrasal comparatives, which have been largely overlooked in the literature on phrasal comparatives, either in Japanese or cross-linguistically (Lerner and Pinkal 1995).

- (5) Taro-ga Jiro-yori ookii robotto-o motteiru.
 Taro-NOM Jiro-than big robot-ACC have
 ‘Taro has a robot that is bigger than Jiro.’ (NAR)
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)

Under the narrow reading, the comparison is made between the size of Jiro and that of a robot owned by Taro, whereas under the wide reading the comparison is made between the two robots owned by Taro and Jiro. I show that these readings reflect two distinct adjectival modification structures in Japanese: an Indirect Modification (IM) structure and a Direct Modification (DM) structure. In the DM structure, the adjective directly modifies the following NP, whereas in the IM structure, the NP is modified by a relative clause that contains the adjective.

(6) Two types of adjectival modification structures

- a. $[_{AP} A] NP$ (DM structure)
- b. $[_{CP} Op_1 [_{TP} [_{vP} t_1 [_{VP} is [_{AP} A]]]] NP$ (IM structure)

Crucially, the scope of *-er* systematically correlates with these two modification structures: when the IM structure is employed, only the narrow scope of *-er* is available, whereas when the DM structure is employed, a wide scope of *-er* is forced.

Based on this observation, I propose that Japanese phrasal comparatives involve a Small Clause (SC) structure, following Pancheva (2006, 2010). Under the SC analysis, the standard *yor*i-phrase contains a standard DP, while its complement is empty in the overt syntax and recovered at LF by copying material from the main clause.

(7) a. Overt syntax

$[_{TP} TarO_2 [_{vP} [_{SC} Jiro \Delta]-yor$ *i-er* $_1 [_{vP} t_2 [_{VP} (be) [_{AP} t_1-big]]]]]$

b. LF: vP is LF-copied to Δ

$[_{TP} Taro \lambda y. [_{vP} [_{SC} \lambda d. Jiro \lambda x. [_{vP} x (be) d-big]]]-yor$ *i-er*
 $\lambda d. [_{vP} y (be) d-big]]]$

The proposed analysis employs ellipsis and thus belongs to the family of Reduction Analyses.

The different readings of phrasal comparatives arise from distinct scope positions of *-er*. When *-er* is interpreted at vP within the relative clause in the IM structure, the narrow reading is derived. By contrast, when *-er* is interpreted at vP in the main clause in the DM structure, a wide reading emerges. Furthermore, I show that *-er* can also be interpreted at CP in the main clause, yielding a second type of wide reading. Crucially, the surface position of the *yor*i-phrase directly reflects the scope of *-er*, in

conformity with the Extraposition–Scope Generalization (Fox and Nissenbaum 1999; Fox 2002; Bhatt and Pancheva 2004). Unlike English, where the movement of *-er* and the *than*-clause is covert, Japanese overtly marks the scope of *-er* via the surface position of the *yor*i-phrase. Japanese therefore provides clear evidence for this generalization.

The proposed SC account also captures a range of syntactic and semantic phenomena that have been argued to support the 3-place *-er* analysis. Additionally, I show that the data argued to support degree-nominal analyses (Sudo 2015) are fully compatible with the present proposal. Finally, I discuss the five diagnostics employed in Beck et al. (2004, 2009), which are taken to show that Japanese lacks degree abstraction in the syntax. Though Beck et al. conclude that degree abstraction is unavailable in Japanese, under the proposed analysis, degree abstraction is independently required. I therefore revisit each diagnostic in turn and show that all five can be reanalyzed in a way that is compatible with degree abstraction.

This chapter is organized as follows. Section 2.2 reviews key properties of clausal and phrasal comparatives discussed by Bhatt and Takahashi (2007, 2011), and identifies two central issues in their analysis. Section 2.3 examines two types of adjectival modification structures in Japanese and explores how they account for the two distinct readings of phrasal comparatives. Section 2.4 proposes that phrasal comparatives are derived from a 2-place *-er* and that *yor*i-phrases contain internal structure, an analysis that captures the different readings observed. Section 2.5 shows that the proposal explains a range of syntactic and semantic facts associated with phrasal comparatives. Section 2.6 examines Beck et al.’s claim that Japanese lacks degree abstraction. Section 2.7 concludes the chapter.

2.2 Accounts of Phrasal and Clausal Comparatives

In this section, I introduce two types of analyses of comparatives using different types of degree heads, a Reduction Analysis employing the 2-place *-er* and a Direct Analysis employing the 3-place *-er*. Then, I review Bhatt and Takahashi's (2007, 2011) argument that Japanese has both types of *-er*. Their proposal is based on syntactic/semantic evidence such as binding facts and scopal interaction between *-er* and other quantifiers. After reviewing their analysis, I will point out two major issues. First, the 3-place *-er* analysis predicts an incorrect interpretation of a narrow reading which has not been discussed in the literature on Japanese comparatives. Second, syntactic evidence suggests that the *yori*-phrases in phrasal comparatives contain some internal structures. I address two such phenomena: a subject/object asymmetry with respect to Condition C and a sloppy reading of a self-anaphor in phrasal comparatives. These pieces of evidence suggest that the *yori*-phrases should contain some internal structures, not simple DPs.

2.2.1 Two Types of *-er*: A 2-Place *-er* and a 3-Place *-er*

To set the stage for discussing Bhatt and Takahashi's (2007, 2011) analysis, it is useful to first survey the literature on Japanese comparatives. Research on Japanese comparatives in the generative tradition dates back to Kikuchi (1987) and Ishii (1991), who focus on clausal comparatives and identify their basic properties in Japanese. Following these early studies, subsequent work on Japanese comparatives has raised a variety of questions concerning their underlying nature. One central issue concerns the status of the comparative head—that is, the lexical element responsible for introducing comparative meaning. One line of analysis posits a phonologically null comparative morpheme in

Japanese that encodes comparative meaning (Beck et al. 2004; Bhatt and Takahashi 2007, 2011; Shimoyama 2012). A contrasting view holds that there is no independent null comparative morpheme, and that the standard marker *yor*i itself introduces comparative meaning (Kennedy 2007; Hayashishita 2009; Sawada 2013).

Another major point of debate concerns whether Japanese permits degree comparison, i.e. direct comparison of degrees on a scale, or is instead restricted to individual comparison, i.e. comparison between individuals. Notably, Beck et al. (2004, 2009) and Kennedy (2009) argue that Japanese allows only individual comparison. In particular, Beck et al.’s claim is grounded in the Degree Abstraction Parameter, which determines whether a language permits degree variables in the syntax (see Section 2.6 for a more detailed discussion). This view makes a clear typological prediction and provides a useful basis for accounting for cross-linguistic differences in comparative-related phenomena. Subsequent work, however, has presented evidence that Japanese does in fact allow degree comparison (Bhatt and Takahashi 2007, 2011; Hayashishita 2007, 2009; Shimoyama 2012; Sudo 2015; see also Aihara 2007, 2009 and Shimoyama 2014 for evidence from superlatives).

With this background, Bhatt and Takahashi (2007, 2011) argue that Japanese employs two types of phonologically null *-er*, both of which require degree comparison. In particular, their 2-place *-er* combines with two degree predicates—corresponding syntactically to two clauses—and compares the maximal degrees associated with each degree predicate (Heim 1985, 2000; Bhatt and Takahashi 2007, 2011).

(8) 2-place *-er*

$$\llbracket -er_2 \rrbracket = \lambda P_{\langle d,t \rangle} . \lambda Q_{\langle d,t \rangle} . \text{MAX}(Q) > \text{MAX}(P)$$

(9) 2-place *-er* analysis

- a. $\llbracket [\text{Op}_1 \text{ Jiro met } t_1\text{-many people}] -er \rrbracket_2 \llbracket [\text{Taro met } t_2\text{-many people}] \rrbracket$
- b. $\text{MAX}(\lambda d . \text{Taro met } d\text{-many people}) > \text{MAX}(\lambda d . \text{Jiro met } d\text{-many people})$

In the 2-place *-er* analysis, a comparative *-er* QRs to the top of the matrix clause and a corresponding null operator movement occurs in the *yor*i-phrase, creating a degree predicate in each clause. The 2-place *-er* combines with two degree predicates, which are interpreted via an operation of *maximalization*: a maximality operator (MAX) applies to each predicate, and *-er* compares the resulting maximal degrees (von Stechow 1984; Rullmann 1995).

(10) MAX operator

$$\llbracket \text{MAX} \rrbracket = \lambda P_{\langle d,t \rangle} . \iota d [P(d) \wedge \forall d' [P(d') \rightarrow d' \leq d]]$$

The derived meaning is, thus, that the maximal degree d such that Taro met d -many people is greater than the maximal degree d such that Jiro met d -many people. Under a Reduction Analysis of phrasal comparatives, the *yor*i-phrase is derived from an underlying clausal structure, in which all material except the overt DP is elided.

On the other hand, a 3-place *-er* first combines with the individual DP complement to *yor*i and subsequently combines with its two remaining arguments: a degree relation and an individual (Heim 1985; Bhatt and Takahashi 2007, 2011).

(11) 3-place *-er*

$$\llbracket -er_3 \rrbracket = \lambda x. \lambda D_{\langle d, \langle e, t \rangle \rangle}. \lambda y. \text{MAX}(\lambda d. D(d)(y)) > \text{MAX}(\lambda d. D(d)(x))$$

(12) 3-place *-er* analysis

a. [Taro₁ [[Jiro]-*yor*i]-*er*₂ [t₁ met t₂-many people]]

b. $\text{MAX}(\lambda d. \text{Taro met } d\text{-many people}) > \text{MAX}(\lambda d. \text{Jiro met } d\text{-many people})$

In this derivation, after the 3-place *-er* combines with the individual DP, it takes scope at a position below the subject in Spec,TP. To be precise, the subject first moves from the Spec,vP to Spec,TP, establishing a binder-variable relation and this is followed by QR of *-er* to a position between the binder and the variable (i.e., parasitic scope; Barker 2007). Here, the *Jiro-yori-er* complex combines next with the other two arguments of *-er*: “ $\lambda d. \lambda x. x \text{ met } d\text{-many people}$ ” (type $\langle d, \langle e, t \rangle \rangle$) and the individual “Taro”. In this case, too, MAX applies to each degree predicate, and *-er* compares the resulting maximal degrees. As a result, the same meaning that is obtained by the 2-place *-er* analysis is derived by the 3-place *-er* analysis. Crucially, no ellipsis is involved in this derivation and the standard DP in the *yor*i-phrase is directly interpreted in the 3-place *-er* analysis. Based on these two types of approaches, I illustrate Bhatt and Takahashi’s (2007, 2011) analysis on Japanese comparatives in the next section.

2.2.2 Bhatt and Takahashi (2007, 2011)

Bhatt and Takahashi (2007, 2011) argue that Japanese has the two types of *-er* introduced in the previous section. Their argument is based on the evidence for both clausal and phrasal properties of the *yor*i-phrase. First, the 2-place *-er* is supported by clausal comparatives.

- (13) Taro-wa [_{CP} Jiro-ga atta]-yori ookuno hito-ni atta.
 Taro-TOP Jiro-NOM met -than many people-DAT met
 ‘Taro met more people than Jiro met.’

The *yori*-phrase contains a full clause and this suggests that a 2-place *-er* takes a full CP (but see Beck et al. 2004 and Sudo 2015 for their analyses where clausal comparatives have a phrasal source).¹ On the other hand, the 3-place *-er* seems to be appropriate when the complement of *yori* is seemingly a DP.

- (14) Taro-wa [_{DP} Jiro]-yori ookuno hito-ni atta.
 Taro-TOP Jiro -than many people-DAT met
 ‘Taro met more people than Jiro.’

Bhatt and Takahashi argue that Japanese phrasal comparatives like (14) are not derived from a clausal source, providing three pieces of key evidence for this claim.

2.2.2.1 Pronominal Obviation

The first evidence for the non-clausal status of the standard of comparison comes from binding. The matrix subject induces pronominal obviation within the *yori*-phrase.²

¹I will address the degree nominal account in Section 2.5.3.

²Bhatt and Takahashi (2007) also address anaphoric binding in phrasal comparatives.

- (i) Daremo₁ [jibun₁]-yori kashikoku-nai.
 anyone self -than smart-NEG
 ‘No one₁ is smarter than himself₁.’

If *jibun* in the *yori*-phrase can be bound by the subject in the main clause, it may suggest that there is no finite clause boundary, given binding Condition A. However, it is known that Japanese *jibun*-anaphor can be bound across a finite clause boundary, so (i) does not prove the lack of a finite clause boundary.

- (15) Daremo₁ [kare₂/*₁]-yori kashikoku-nai.
 anyone him -than smart-NEG
 ‘No one₁ is smarter than him₂/*₁.’

The pronoun *kare* cannot be bound by the matrix subject. This pronominal obviation indicates that there is no finite clause boundary inside the *yori*-phrase. Accordingly, the phrasal comparative cannot be derived from a CP with some reduction, and so a 3-place *-er* must be employed in this case.

2.2.2.2 Scope Interactions

Furthermore, Bhatt and Takahashi provide cross-linguistic evidence on the scope behavior of *-er* in relation to other quantifiers to support the 3-place *-er* analysis for Japanese, though not for English. First, consider an English example in which *-er* interacts with a universal quantifier in the *yori*-phrase (Bhatt and Takahashi 2011: 602). Here, *than*-phrase-internal scope of the universal quantifier refers to readings in which the universal quantifier takes scope inside the standard phrase, whereas *than*-phrase-external scope of the universal quantifier refers to readings in which the universal quantifier takes scope outside the standard phrase. Bhatt and Takahashi argue that (16) involves a 2-place *-er*.

(16) More students read every syntax paper than every semantics paper.

(= More students read every syntax paper than read every semantics paper.)

a. *than*-phrase-internal scope of the universal quantifier: *-er* > *every*

$[-er [\lambda d. [d\text{-many students read every semantics paper}]]]$

$[\lambda d. [d\text{-many students read every syntax paper}]]$

The number of students who read every syntax paper exceeds the number of students who read every semantics paper.

b. *than*-phrase-external scope of the universal quantifier: *every* > *-er* (???)

$[every\ syntax\ paper] \lambda x. [every\ semantics\ paper] \lambda y.$

$[[-er [\lambda d. [d\text{-many students read } y]]]]$

$[\lambda d. [d\text{-many students read } x]]]$

The least read syntax paper was still read by more people than any semantics paper.

(Paraphraseable as: Every syntax paper was read by more students than every semantics paper.)

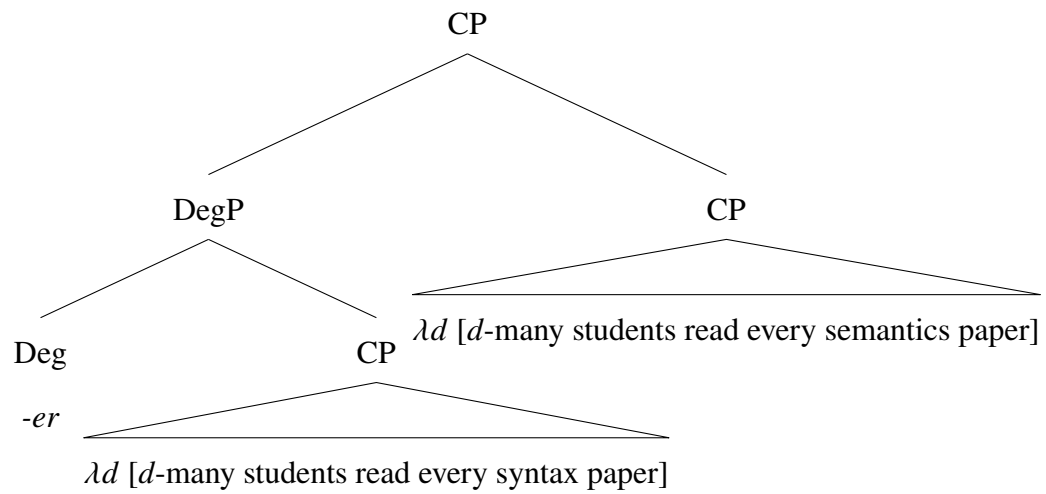
(17) Scenario for the *every* > *-er* reading

Syntax		Semantics	
Paper	Number of readers	Paper	Number of readers
Syn ₁	6	Sem ₁	2
Syn ₂	8	Sem ₂	3
Syn ₃	10	Sem ₃	4

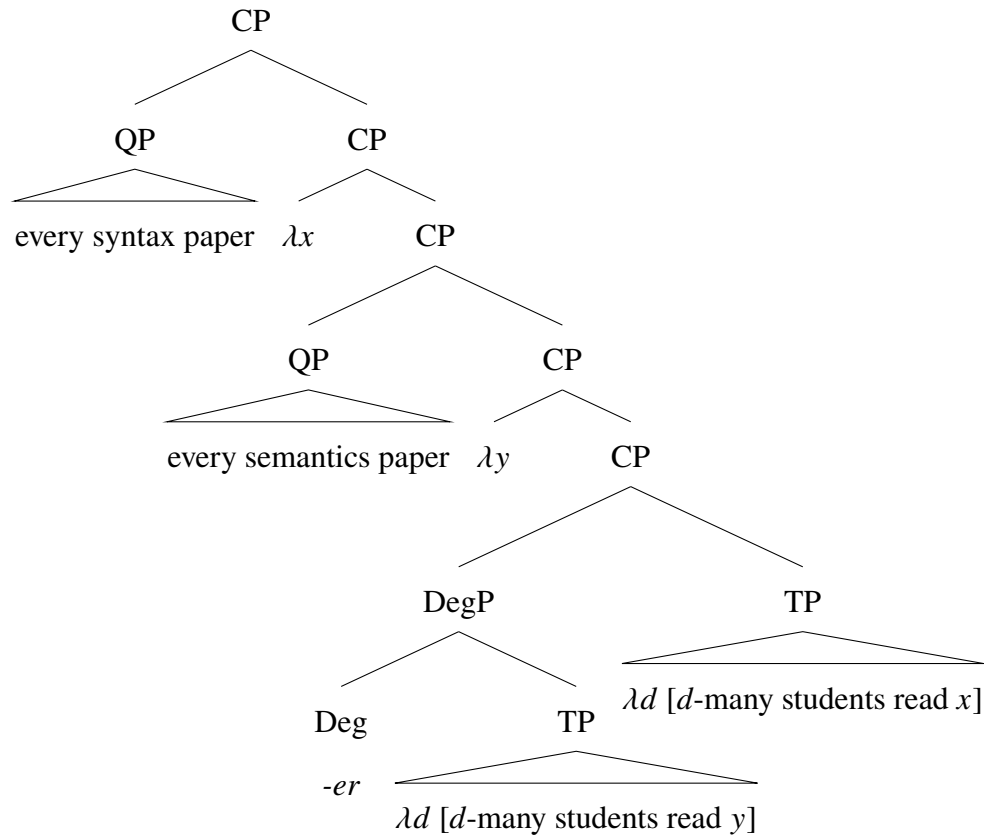
While the former interpretation is relatively straightforward, the latter interpretation is less intuitive. As illustrated in (17), the latter reading can be paraphrased as “for

every $\langle x, y \rangle$, a syntax paper x and a semantics paper y : more people read x than y .” English allows the former reading, but lacks the latter. For reasons of clarity, I provide below schematic LF representations corresponding to the *than*-phrase-internal and *than*-phrase-external scope configurations above.

(18) *than*-phrase-internal scope of the universal quantifier: *-er* > *every*



(19) *than*-phrase-external scope of the universal quantifier: *every* > *-er*



In the reading where *-er* outscopes *every*, the number of students who read every syntax paper exceeds the number of students who read every semantics paper. In contrast, in the reading where *every* outscopes *-er*, the least read syntax paper was still read by more people than any semantics paper. The English phrasal comparative sentence allows *-er* to outscope *every* inside the *than*-phrase, but not the opposite pattern in which *every* outscopes *-er*. This scope relation can be easily handled if English phrasal comparatives are derived from a clausal source: since there is a clause in which a quantifier can take scope, *than*-phrase-internal scope (i.e., *-er* > *every*) is straightforward to derive under a Reduction Analysis. By contrast, under a Direct Analysis, since the 3-place *-er* combines

with individual arguments, quantifiers must scope out, precluding *than*-internal readings. Thus, the fact that the only available reading is *-er* > *every* suggests that English phrasal comparatives are derived from a clausal source.

With this in mind, consider Japanese phrasal comparatives (Bhatt and Takahashi 2011: 613).

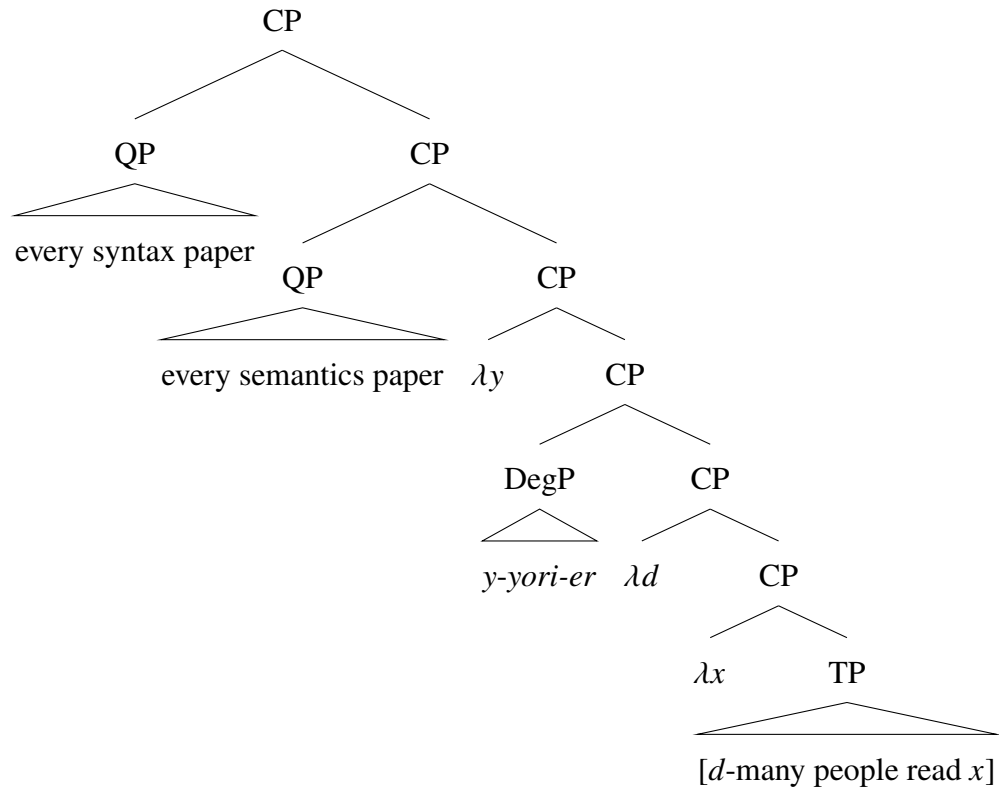
- (20) Dono toogoron-no ronbun-mo [dono imiron-no ronbun-yori-mo] ookuno
 every syntax-GEN paper-MO every semantics-GEN paper-than-MO many
 hito-ga yonda.
 people-NOM read

‘More people read every syntax paper than every semantics paper.’

(**-er* > *every*, *every* > *-er*)

Japanese phrasal comparatives show the opposite scope pattern from English (i.e., *every* > *-er*) and allows the reading “the least read syntax paper was still read by more people than any semantics paper”. Again, under a Direct Analysis, the scope-out effect follows immediately.

(21) 3-place *-er* analysis in Japanese



The 3-place *-er* combines with individual DPs and so, quantificational DPs inside the *than*-phrase must QR to a higher clausal position, *every* outscopes *-er*. Therefore, this suggests that Japanese phrasal comparatives employ the 3-place *-er*, not the 2-place *-er*.

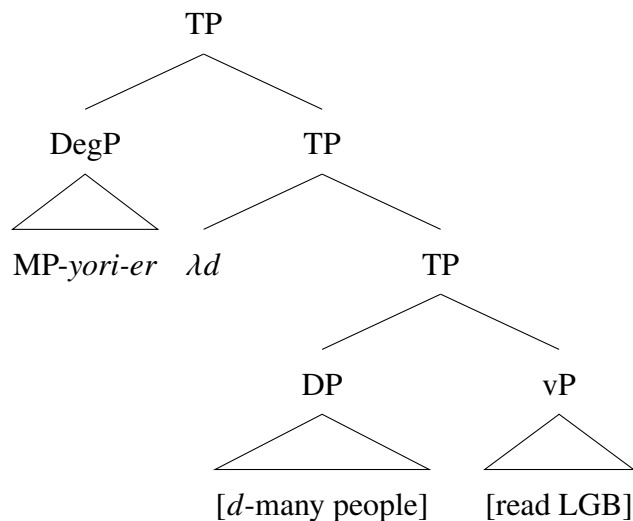
2.2.2.3 Linear Precedence Constraints

Finally, consider a restriction on the linear order between the degree head and its associate in comparatives. Bhatt and Takahashi observe a precedence restriction in Japanese phrasal comparatives (2011: 611).

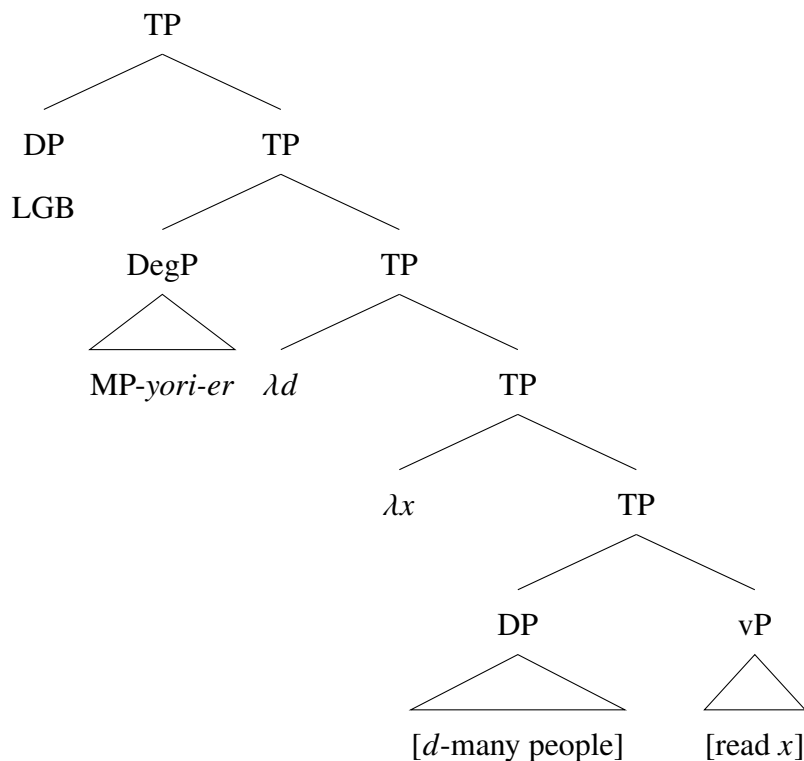
- (22) a. * MP-yori ookuno hito-ga LGB-o yonda.
 MP-than many people-NOM LGB-ACC read
 ‘More people read LGB than the MP.’
- b. LGB-o₁ MP-yori ookuno hito-ga t₁ yonda.
 LGB-ACC MP-than many people-NOM read
 ‘More people read LGB than the MP.’

If the associate *LGB-o* follows the degree head, the sentence is unacceptable. However, if the associate is fronted above the degree head, the sentence improves. This fact naturally follows from the 3-place *-er* analysis. Remember that the 3-place *-er* employs parasitic scope in which an associate first moves and *-er* tucks in below the moved associate. Given this, if the associate does not move, *-er* cannot take parasitic scope, thus resulting in the ungrammaticality; if the associate moves above the degree head, *-er* can take parasitic scope, thus resulting in the grammaticality.

- (23) No parasitic scope with an associate in situ



(24) Parasitic scope with a moved associate



Therefore, the precedence restriction observed for phrasal comparatives support the Direct Analysis employing the 3-place *-er*.

2.2.2.4 Summary

To summarize, I have reviewed Bhatt and Takahashi's claim that Japanese employs both a 2-place *-er* and a 3-place *-er*, whose distribution is conditioned by the syntactic environment. Specifically, the 2-place *-er* is supported by cases with full clauses inside *yori*-phrases. By contrast, the 3-place *-er* is supported by pronominal obviation by subjects, the scope behavior of *-er* with respect to quantifiers in the standard, and the precedence restriction between the degree head and its associate. In the next section, I identify two major issues for this analysis.

2.2.3 Problems for the Direct Analysis of Phrasal Comparatives

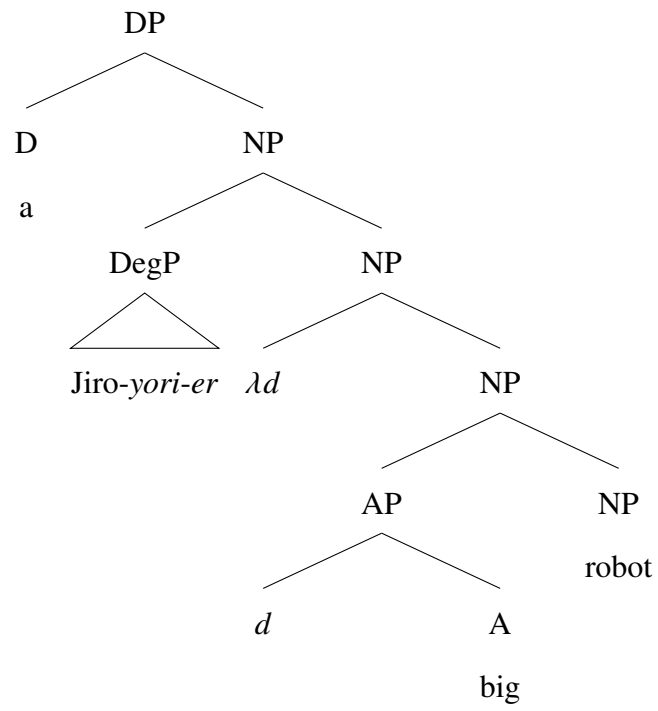
2.2.3.1 Two Types of Readings of Phrasal Comparatives in Japanese

While Bhatt and Takahashi establish new empirical generalizations about phrasal comparatives, their proposal nonetheless raises two important issues. First, their discussion focuses on readings in which the associate is a DP-external element such as a subject and an object — call these ‘wide reading’. However, phrasal comparatives also allow a distinct reading in which the associate is the DP-internal nominal — call these ‘narrow reading’ (see Bresnan 1973 and Lerner and Pinkal 1995 for narrow readings in English).

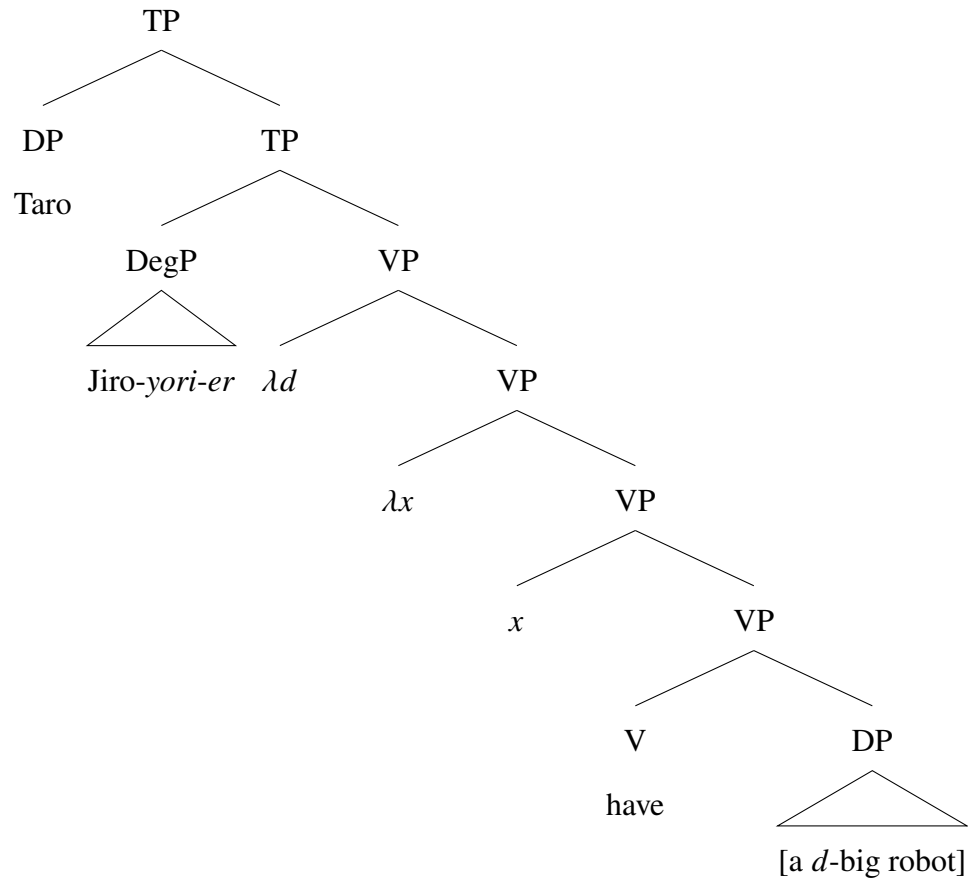
- (25) Taro-ga Jiro-yori ookii robotto-o motteiru.
Taro-NOM Jiro-than big robot-ACC have
‘Taro has a robot that is bigger than Jiro.’ (NAR)
‘Taro has a bigger robot than Jiro does.’ (WIDE)

In contrast to the wide reading, in which the sizes of the two robots owned by Taro and Jiro are compared, the narrow reading compares the size of Jiro with that of a robot owned by Taro. Under the 3-pace *-er* analysis, the wide reading is derived by movement of *-er* below the associate subject where it takes scope over “ $\lambda d.\lambda x. x$ has a d -big robot”. On the other hand, the narrow reading is derived by movement of *-er* inside DP, taking scope over the NP “ $\lambda d. d$ -big robot” (Heim 1985).

(26) DP-internal scope of the 3-place *-er* (narrow reading)



(27) DP-external scope of the 3-place *-er* (wide reading)

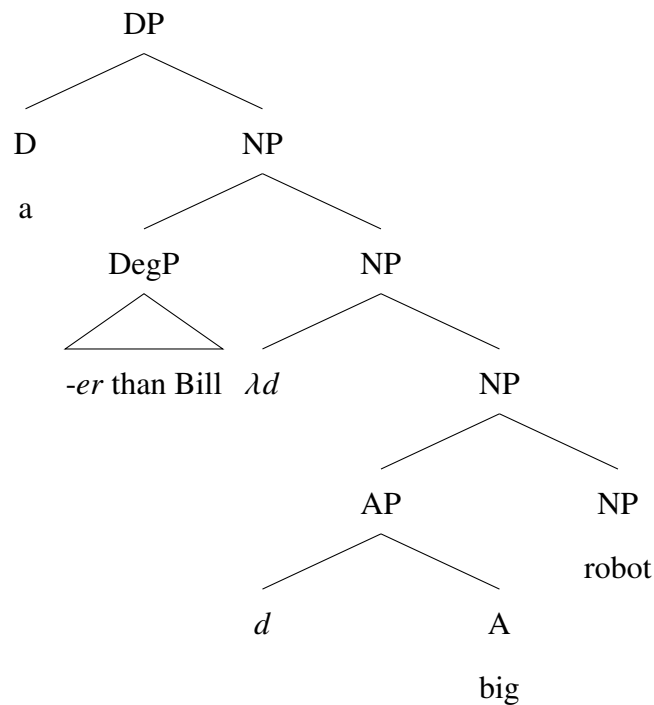


The two types of readings are derived by the same 3-place *-er* analysis by different scope of *-er* without any problems. However, note that the interpretation derived by the 3-place *-er* does not reflect the actual meaning of the narrow reading of Japanese phrasal comparatives. To clarify the narrow reading in Japanese, consider the narrow reading of English phrasal comparatives.

- (28) a. John has a bigger robot than C-3PO.
 b. # John has a bigger robot than Bill.
 c. John has a robot that is bigger than Bill.

Specifically, the missing reading in English is the interpretation in which the comparison is made between the size of Bill and that of a robot owned by John. In the narrow reading, the associate is the NP-internal nominal (i.e., robot) (cf. Bresnan 1973). In English, this reading is unproblematic when the standard of comparison denotes an actual robot in (28a). However, if the standard denotes a human (e.g., Bill), the narrow reading is in principle available in (28b), but it is pragmatically odd, since it gives rise to an interpretation in which Bill is a robot. This contrast can be captured by the 3-place *-er* analysis: if the 3-place *-er* takes scope over the NP ‘*d*-big robot’, it forces the standard DP to have the same property of being ‘*d*-big robot’.³

(29) DP-internal scope of the 3-place *-er* (narrow reading)



³Bhatt and Takahashi argue that English phrasal comparatives are derived via a Reduction Analysis employing a 2-place *-er*. The derivation posited here is presented solely for expository purposes and does not reflect their actual analysis.

In Japanese, however, the narrow reading imposes no such semantic requirement on the standard. Even when the standard denotes a human, the comparison is between the size of Jiro and that of a robot. Crucially, under the narrow reading of (25), there is no implication that Jiro is a robot. Notably, English yields this Japanese-style interpretation only when *-er* is embedded in an RC modifying NP in (28c). This contrast suggests that the adjectival structure involved in Japanese phrasal comparatives differs from the one in English.

2.2.3.2 Internal Structure of *Yori*-Phrases

The second issue for the 3-place *-er* analysis comes from syntactic phenomena that suggest internal structure within *yori*-phrases. Lechner (2004) observes that there is a subject/object asymmetry with respect to Condition C in phrasal comparatives in English and Park (2008) reports the same asymmetry in Korean. Crucially, a parallel subject/object asymmetry with respect to Condition C is also observed in Japanese phrasal comparatives, as illustrated by the following example, which is modeled on Park's (2008: 415) Korean data (the diagnostic originally proposed by Lechner 2004).⁴

- (30) Hanako-wa [kare-yori]₁ [Taro-no hahaoya-o]₂ [t₁ ookuno
 Hanako-TOP he/him-than Taro-GEN mother-ACC many
 hito-ni] t₂ shookaishita.
 people-DAT introduced
 * 'Hanako introduced Taro's₁ mother to more people than he₁ (introduced
 Taro's₁ mother).' (subj)
- 'Hanako introduced Taro's₁ mother to more people than (Hanako introduced
 him₁).' (obj)

⁴I asked 10 native speakers of Japanese to judge the examples involving Condition C and the sloppy reading discussed below, and they agreed with my judgments.

The subject interpretation is felicitous in a context where both Hanako and Taro introduced Taro's mother to people at a party, with Hanako introducing her to ten people and Taro to five, whereas the object interpretation is felicitous in a context where Hanako introduced both Taro and Taro's mother to people, introducing Taro's mother to ten people but Taro to only five. In the example, the object *Taro-no hahaoya-o* is scrambled above the dative *ookuno hito-ni* that contains the trace of the *yor*i-phrase, which is scrambled above the object. Under the condition that the pronoun *kare* in the *yor*i-phrase and the R-expression *Taro* are coindexed, only the interpretation in which the object is an associate is possible, while the interpretation in which the subject is an associate is prohibited.

Now, consider how these readings are derived by the 3-place *-er* analysis. Under the 3-place *-er* analysis, the subject interpretation is derived by the movement of *-er* along with the *yor*i-phrase below the subject *Hanako* to take parasitic scope. On the other hand, the object interpretation is derived by two steps of movement: first, *-er* with the *yor*i-phrase moves below the object *Taro's mother* and then, the *yor*i-phrase further moves above the object.

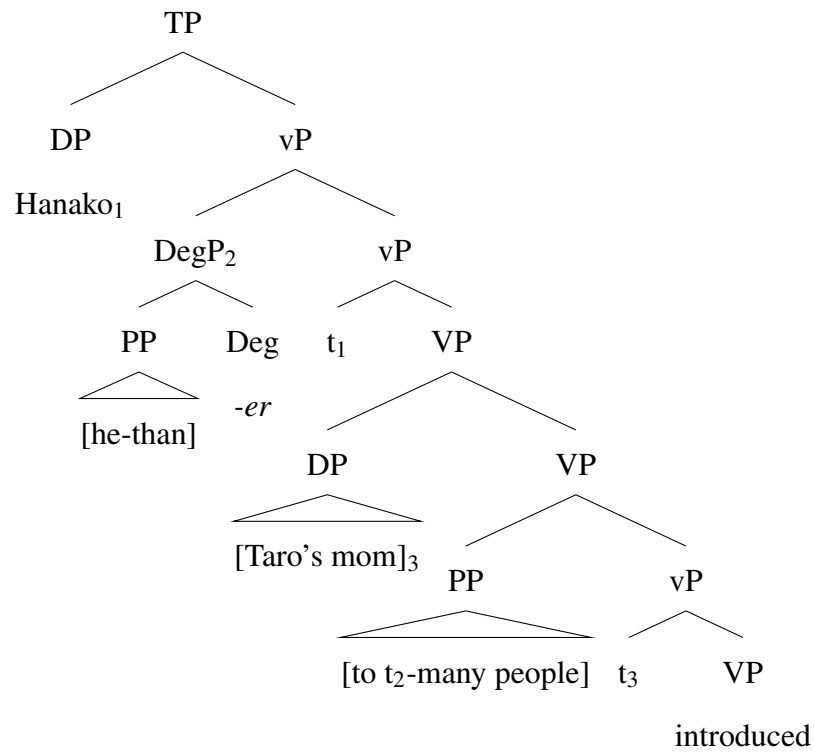
(31) a. Subject interpretation under the 3-place *-er* analysis

[H₁ [[he-than](-er)]₂ t₁ [T's mom]₃ [to t₂ many people] t₃ introduced]

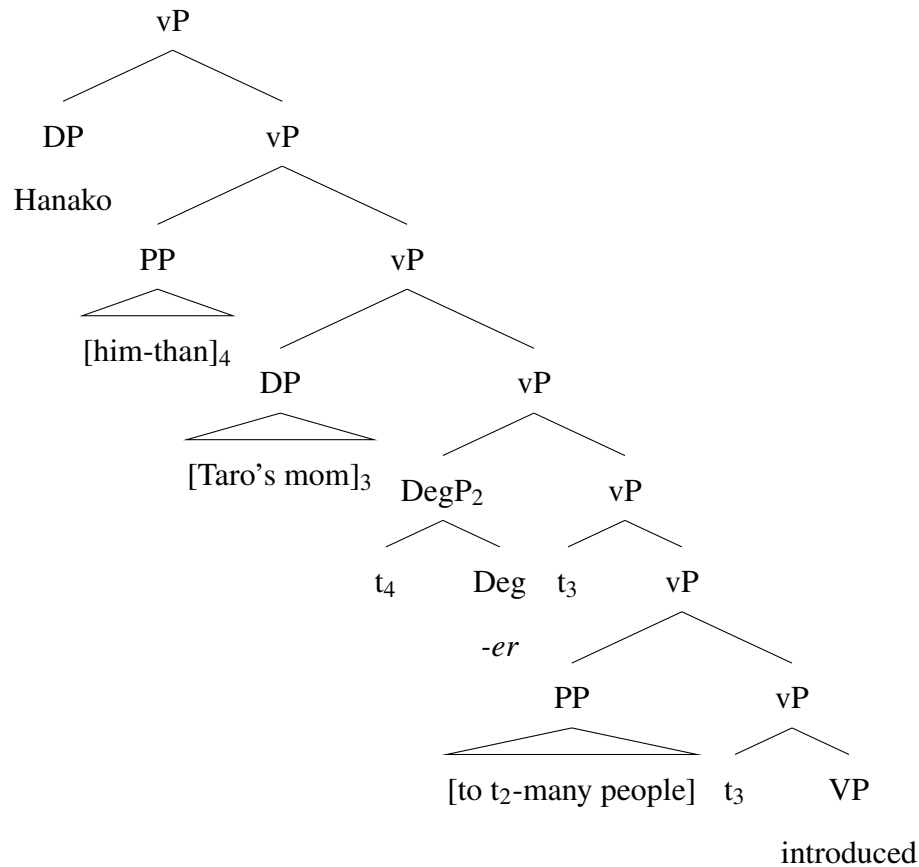
b. Object interpretation under the 3-place *-er* analysis

[H [him-than]₄ [T's mom]₃ [t₄ (-er)]₂ t₃ [to t₂ many people] t₃ introduced]

(32) Subject interpretation under the 3-place *-er* analysis



(33) Object interpretation under the 3-place *-er* analysis



The representations suggest that because the pronoun *kare* in the *yor*i-phrase does not c-command *Taro*, both interpretations should be acceptable under the 3-place analysis, contrary to fact. Notice that if the *yor*i-phrases contain the internal structures in the English translations in (30), the subject/object asymmetry naturally follows. Thus, this indicates that the *yor*i-phrases contain internal structures rather than simple DPs.

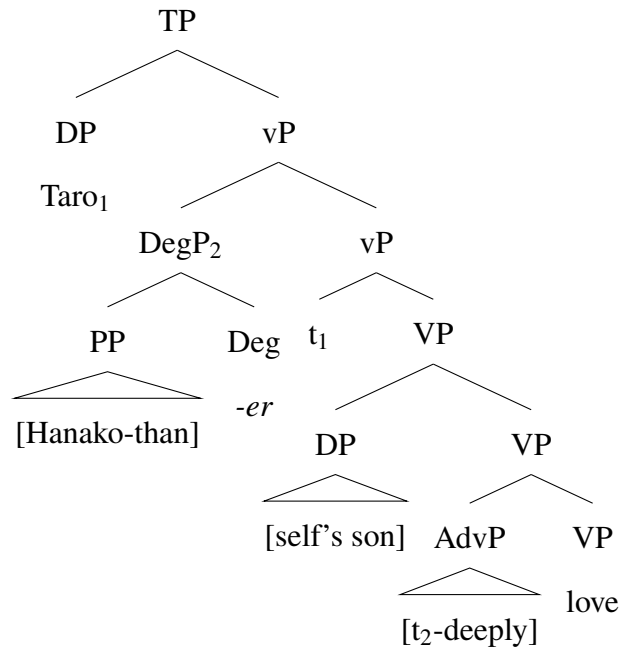
Second, Park (2008) provides another evidence for the internal structure of the standard phrase by employing a self-anaphor. Consider the following example replicated in Japanese based on the Korean data provided by Park (2008: 416).

- (34) Taro-wa Hanako-yori jibun-no musuko-o hukaku aishiteru.
 Taro-TOP Hanako-than self-GEN son-ACC deeply love
 ‘Taro loves his son₁ more deeply than Hanako loves his son₁.’ (strict)
 ‘Taro loves his son₁ more deeply than Hanako loves her son₂.’ (sloppy)

Ignoring the object interpretation in which *jibun-no musuko* ‘self’s son’ is construed as an associate, the subject reading allows both strict and sloppy interpretations. Under the strict reading, the comparison is made between how deeply Taro loves his son and how deeply Hanako loves Taro’s son. Under the sloppy reading, by contrast, the comparison is between how deeply Taro loves his son and how deeply Hanako loves her own son. Under a 3-place *-er* analysis, the strict reading can be derived if the self-anaphor is bound by the matrix subject.

- (35) LF for a strict reading under the 3-place *-er* analysis
 [Taro₁ [Hanako-than-er]₂ t₁ [self’s son] [t₂-deeply] love]

(36) Strict reading under the 3-place *-er* analysis



The sloppy reading, however, is less straightforward to derive, since only a single instance of the self-anaphor is overtly present in the main clause, while the sloppy interpretation requires the relevant anaphoric dependency to be interpreted relative to both the matrix subject and the standard subject. Again, if the *yor*i-phrase contains the internal structure as in the English translation in (34), this sentence can be easily handled.

To summarize, I have discussed two major issues of the 3-place *-er* analysis. It wrongly predicts that the narrow reading of Japanese comparatives has a semantic specification on the standard of comparison, namely, that the standard DP must denote an entity of the same kind as the associate (e.g., a robot when the associate denotes a robot). Additionally, the analysis cannot capture the subject/object asymmetry with respect to the Condition C and requires some additional assumptions to explain the sloppy reading of a self-anaphor. As suggested, the narrow reading in Japanese indicates that the adjectival structure

involved in Japanese phrasal comparatives differs from the English type of structure. Also, the subject/object asymmetry and the sloppy reading of a self-anaphor naturally follow if the *yor*i-phrases contain some internal structures rather than simple DPs. In the next section, I first discuss the adjectival modification structures involved in Japanese comparatives to address the two types of readings.

2.3 Structural Ambiguity in Adjectival Modification

Thus far, I have identified problems for the 3-place *-er* analysis. In this section, I explore syntactic structures involved in Japanese adjectival modifications to address the issue of the narrow reading brought up in the previous section and argue that Japanese adjectival modification structures are ambiguous between an Indirect Modification (IM) structure and a Direct Modification (DM) structure. Then, I argue that two types of readings in phrasal comparatives are derived from different structural sources.

Although Bhatt and Takahashi as well as other literature that analyze Japanese comparatives by the scope of *-er* (Hayashishita 2009; Shimoyama 2012) assume that adjectival modification structures in Japanese are direct modification (DM) structures just like English, this assumption must be carefully considered. In fact, it is standardly assumed in the literature on Japanese adjectival modification, understood here as adjective–noun modification, that Japanese adjectival modification involves an Indirect Modification (IM) structure that contains an RC, in contrast to the DM structure (Kuno 1973; Shibatani 1978; Whitman 1981; Dixon 1982; Miyagawa 1984; Makino and Tsutsui 1986; Urushibara 1993; Nishiyama 1999, 2005; Baker 2003).

(37) Two types of adjectival modification structures

a. [AP A] NP (DM structure)

b. [CP Op₁ [TP [vP t₁ [VP is [AP A]]]] NP (IM structure)

One of the key evidence that supports the IM structure is the fact that the tense morpheme can be overtly realized in the end of the adjective. In (38), the past tense morpheme *-ta* is attached to the stem of the adjective with a copular verb and this is similar to the case where a full RC modifies the following noun (see Shimoyama 2014 for other pieces of evidence of the IM structure).

- (38) a. [ooki-kat-ta] robotto
big-COP-PST robot
'a robot that was big'
- b. [RC Taro-ga tsukut-ta] robotto
Taro-NOM make-PST robot
'a robot that Taro made'

While the evidence from the past tense morpheme supports the view that adjectival modification in Japanese generally involves an IM structure, this cannot be the whole story. In particular, superlatives provide independent evidence for the availability of a DM structure in Japanese, as illustrated in the following section.

2.3.1 Evidence for the Availability of DM Structure from Superlatives

Regarding this traditional view, Shimoyama (2011, 2014) argues that Japanese does not exclude the DM structures and in fact, the DM structure is necessary to explain the

behavior of the degree quantifier *ichiban* ‘-est’.⁵ It has been observed that the superlative morpheme *ichiban* can be floated from the superlative DP (Aihara 2007, 2009) and the position of *ichiban* disambiguates between two readings of superlatives. First, observe that if *ichiban* appears adjacent to the gradable predicate, the superlative sentence is ambiguous between the absolute and relative readings (Shimoyama 2014: 318).

- (39) Taro-ga *ichiban* omoshiroi hito-o shuzaishita.
 Taro-NOM -est funny person-ACC interviewed
 ‘Taro interviewed the funniest person among the funny people.’ (ABS)
 ‘Taro interviewed the funniest person among the interviewers.’ (REL)

In the absolute reading, a comparison class consists of a set of contextually relevant funny people like A, B, C, who are ranked in terms of their humor as in $A > B > C$, and if Taro interviewed A, the absolute reading is felicitous in this context. On the other hand, in the relative reading, a comparison class consists of a set of contextually relevant interviewers who interviewed the funny people. For example, if there are four funny people who are ranked in terms of their humor as in $A > B > C > D$ but only B, C, and D were interviewed by different interviewers and Taro interviewed B, the relative reading is felicitous in this context. Now, notice that if *ichiban* appears sentence-initially, the sentence only allows the relative reading (Shimoyama 2014: 323).

- (40) *Ichiban* Taro-ga omoshiroi hito-o shuzaishita.
 -est Taro-NOM funny person-ACC interviewed
 ‘Taro interviewed the funniest person among the interviewers.’ (REL)

Shimoyama, as well as Aihara, follow Heim and Szabolcsi in analyzing the relative reading as involving QR of the superlative morpheme into the clause. The surface

⁵Aihara (2007, 2009) analyzes *ichiban* along the lines of English *-est* (Heim 1985, 1999; Szabolcsi 1986). I return to a fuller discussion of *ichiban* superlatives in the next chapter.

position of *ichiban* provides support for this view. However, given that RCs constitute islands for movement of *ichiban*, the relative reading should not be derivable if Japanese allows only the IM structure. Contrary to this prediction, as shown in (40), when *ichiban* appears sentence-initially, the relative reading is in fact available.

On this basis, Shimoyama argues that Japanese allows the DM structure, contrary to the standard view, and concludes that Japanese adjectival modification structures are ambiguous between the IM and DM structures.

2.3.2 DM and IM Structures in Comparatives

Building on Shimoyama's insight, I demonstrate that phrasal comparatives also show a parallel behavior to superlatives. Remember that Japanese phrasal comparatives are ambiguous between the narrow and wide readings. However, if the adjective is in the past form, the sentence only allows the narrow reading, excluding the wide reading (although Shimoyama briefly discusses related issues in the context of comparatives, she does not examine the full paradigm illustrated below).

- (41) Taro-ga [Jiro-yori] ookii robotto-o motteiru.
Taro-NOM Jiro-than big robot-ACC have
'Taro has a robot that is bigger than Jiro' (NAR)
'Taro has a bigger robot than Jiro does.' (WIDE)
- (42) Taro-ga [Jiro-yori] ooki-kat-ta robotto-o motteiru.
Taro-NOM Jiro-than big-COP-PST robot-ACC have
'Taro has a robot that was bigger than Jiro.' (NAR)

Furthermore, notice that if the *yori*-phrase in (41) is moved to the sentence-initial position, the sentence forces the wide reading as in (43). However, if the *yori*-phrase in (42)

undergoes the same movement, it gives rise to the degraded sentence in (43b).⁶

- (43) a. [Jiro-yori]₁ Taro-ga t₁ ookii robotto-o motteiru.
 Jiro-than Taro-NOM big robot-ACC have
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)
- b. ?? [Jiro-yori]₁ Taro-ga t₁ ooki-kat-ta robotto-o motteiru.
 Jiro-than Taro-NOM big-COP-PAST robot-ACC have
 ‘Taro has a robot that was bigger than the robot Jiro has.’ (WIDE)

This suggests that if the adjective is in the past tense, the adjectival modification is forced to be the IM structure and so, *-er* along with the *yori*-phrase is trapped inside the RC. Thus, it only allows the wide reading in (43a) and the wide reading is degraded in (43b). This can be schematized as follows.

- (44) Scope possibilities of *-er*
- a. *-er* takes scope inside an RC
- $$^{OK} [_{DP} [_{RC} \text{ Jiro-yori-er}_1 \text{ } t_1 \text{ ooki-kat-ta }] \text{ robotto }]$$

$$\text{Jiro-than-er} \qquad \text{big-COP-PAST} \quad \text{robot}$$
- b. *-er* cannot move out of an RC
- $$* \text{ Jiro-yori-er}_1 \text{ Taro } [_{DP} [_{RC} t_1 \text{ ooki-kat-ta }] \text{ robotto }]$$

$$\text{Jiro-than-er} \text{ Taro} \qquad \text{big-COP-PAST} \quad \text{robot}$$
- c. The DM structure allows *-er* to take clausal scope
- $$^{OK} \text{ Jiro-yori-er}_1 \text{ Taro } [_{DP} [_{AP} t_1 \text{ ookii }] \text{ robotto }]$$

$$\text{Jiro-than-er} \text{ Taro} \qquad \text{big} \quad \text{robot}$$

⁶Some consultants suggest that the sentence-initial *yori*-phrase allows the narrow reading in addition to the wide reading. I will address this issue in Section 2.4.4.

In (44a) and (44b), the narrow reading is available, while the wide reading is excluded. By contrast, in (44c), the wide reading is available and the narrow reading is excluded. The fact that the narrow reading is available with the past tense adjective suggests that the reading is associated with the IM structure. On the other hand, the fact that the wide reading is not available with the past tense adjective suggests that the reading is associated with the DM structure. In other words, *-er* takes scope inside the RC for the narrow reading, while it takes scope in the main clause for the wide reading.

(45) Structural sources of narrow and wide readings

- a. The narrow reading is derived from the IM structure.
- b. The wide reading is derived from the DM structure.

Summing up, I have argued that Japanese adjectival modifications are ambiguous between the IM and the DM structures, and they are associated with different comparative readings. While the narrow reading of phrasal comparatives is derived from the IM structure, the wide reading of phrasal comparatives is derived from the DM structure. This structural ambiguity parallels an observation originally due to Bresnan (1973) for English, concerning the contrast between prenominal adjectives and postnominal adjectives derived from relative clauses. In English, prenominal comparatives such as “John has a bigger robot than Bill” give rise to a reading in which Bill is understood to be a robot under the narrow reading, whereas postnominal comparatives such as “John has a robot bigger than Bill” do not impose this requirement. The Japanese IM/DM contrast can be understood as a structural counterpart of this distinction. In the next section, I propose an analysis of phrasal comparatives based on this structural consideration.

2.4 Analysis of Phrasal Comparatives

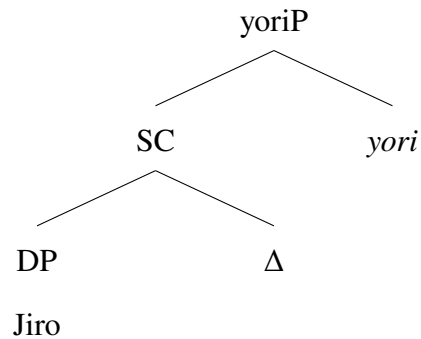
The previous section identified the structural sources of the two readings. Building on these structural considerations, I now propose an analysis that derives the different readings of phrasal comparatives. Recall that in Bhatt and Takahashi's analysis, clausal and phrasal comparatives are derived from distinct comparative degree heads and therefore involve different syntactic derivations. In contrast, I propose that Japanese has only a 2-place *-er*, and that the standard marker *yor*i subcategorizes for two types of complements: (i) a full CP in clausal comparatives and (ii) a Small Clause (SC) in phrasal comparatives, following Pancheva (2006, 2010). On this view, the difference between clausal and phrasal comparatives does not lie in the types of degree heads, but in the size and internal structure of the complement selected by *yor*i. I then develop a derivational algorithm for the SC case that derives the relevant class of phrasal comparatives in Japanese. Under the SC analysis, the narrow and wide readings are straightforwardly derived from the IM and DM structures, respectively. Furthermore, I address a second type of wide reading in which *yor*i-phrase appears sentence-initially and demonstrates that *-er* can be interpreted at two syntactic positions, vP and CP. Finally, I address the issue of what may be elided inside the *yor*i-phrase in light of an economy condition on ellipsis.

2.4.1 Small-Clause Analysis

Pancheva argues that in Slavic languages, the standard marker selects a SC whose subject DP receives Case from the standard marker and that the predicate of the SC is elided. Adopting this analysis, I propose that in Japanese as well, the DP inside a *yor*i-phrase is

licensed by *yor*i in the SC configuration.

(46) The SC structure of the *yor*i-phrase



Although I assume that the standard marker *yor*i licenses Case on the subject DP in the SC, I do not argue that this involves exceptional Case marking (ECM), even though the structural configuration resembles a typical ECM environment. As with other postpositions in Japanese, the DP inside a *yor*i-phrase does not bear any overt Case marker. If the construction involved ECM, the subject DP would be expected to surface with accusative Case in Japanese, as in the ECM sentence below (e.g., Kuno 1976).

(47) Taro-wa Jiro-o kashikoi-to omotteiru.
Taro-TOP Jiro-ACC smart-C think
'Lit. Taro thinks Jiro to be smart.'

However, this prediction is not borne out. Instead, DPs inside *yor*i-phrases systematically resist structural Case assignment, including both nominative and accusative Case (Bhatt and Takahashi 2007, 2011).

- (48) a. Jiro-(*ga)-yori Taro-ga ookuno hito-ni atta.
 Jiro-NOM-than Taro-NOM many people-DAT met
 ‘Taro met more people than Jiro.’
- b. MP-(*o)-yori LGB-o ookuno hito-ga yonda.
 MP-ACC-than LGB-ACC many person-NOM read
 ‘More people read LGB than MP.’

Thus, I argue that the DP in the *yori*-phrase is licensed by *yori* itself, in the same way as DPs selected by other postpositions in Japanese, and is therefore inaccessible to structural Case assignment.

As for the semantics of *yori*, building on Pancheva’s (2006) analysis of comparatives and standard markers in Slavic languages, I analyze Japanese *yori* as a pseudo-partitive preposition: it takes a set of degrees as its argument and returns another set of degrees (see Toquero-Pérez 2024 for Spanish).⁷

$$(49) \llbracket yori \rrbracket = \lambda D_{\langle d,t \rangle} . \lambda d . [\text{MAX}(D) \geq d]$$

Given the above SC structure as well as the syntactic and semantic role of *yori*, I propose that phrasal comparatives are derived from QR of a null *-er* and late merger of

⁷Bhatt and Takahashi (2007, 2011) do not provide a specific semantic analysis of *yori*. However, even if one assumes that *yori* is semantically vacuous, this does not pose a serious problem for the analysis of comparatives in general. Indeed, in much of the comparative literature that does not attribute comparative meaning to the standard marker, it is common to treat the standard marker as semantically vacuous.

Note also that the lexical meaning of *yori* is the source meaning ‘from’, as independently attested in non-comparative environments (Bhatt and Takahashi 2011: 607).

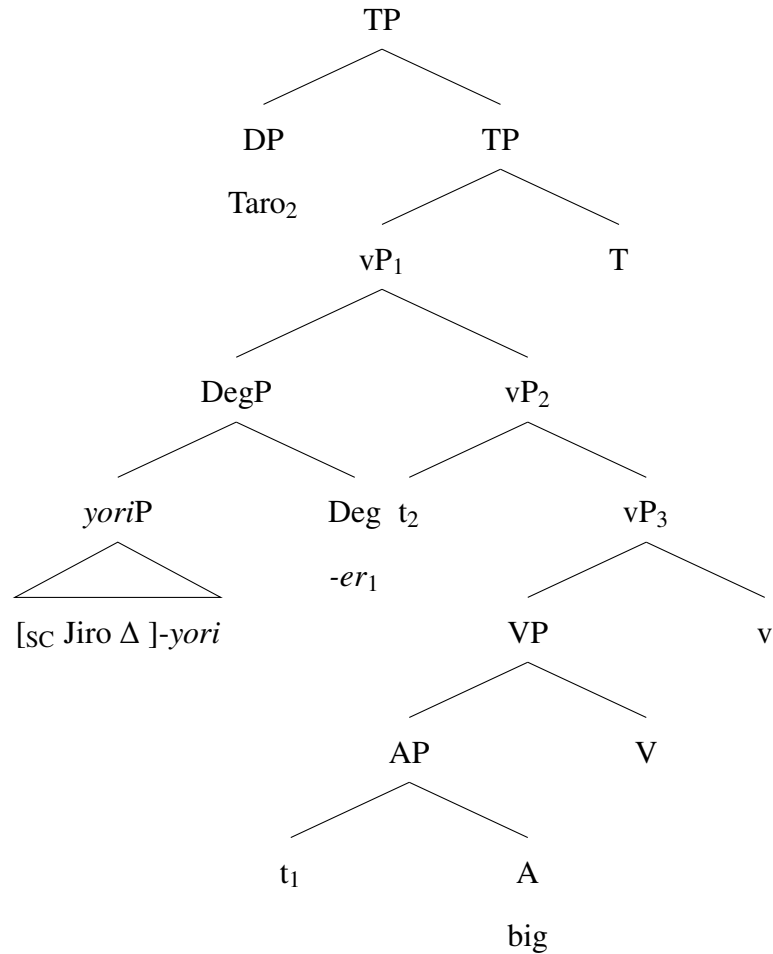
- (i) Watashi-wa Tokyo-yori mairimashita.
 I-TOP Tokyo-from came
 ‘I came from Tokyo.’

Cross-linguistically, Slavic languages also employ prepositions with a source meaning as standard markers in comparatives; crucially, these languages exhibit overt morphological marking of comparatives apart from the standard marker. This provides cross-linguistic evidence for the view that *yori* functions as a standard marker rather than as an overt comparative morpheme.

the *yor*i-phrase that contains DP and an ellipsis site Δ , following Pancheva (2006) (see Bhatt and Pancheva (2004) for their analysis of English comparatives using late-merger of the *yor*i-phrase). A syntactic structure of (50) is illustrated in (51).

- (50) Taro-ga Jiro-yori ookii.
 Taro-NOM Jiro-than big
 ‘Taro is bigger than Jiro.’

- (51) Structure of phrasal comparatives



For concreteness, I outline the steps of the derivation in (52).

(52) Sample derivation of phrasal comparatives

Step 1: Merger of *-er* in AP

[_{AP} *-er* big]

Step 2: QR of *-er* to vP

[_{vP} *-er*₁ [_{vP} Taro [_{vP} (be) [_{AP} t₁-big]]]]

Step 3: Late merger of *yorì*P

[_{vP} [_{SC} Jiro Δ]-*yorì-er*₁ [_{vP} Taro [_{vP} (be) [_{AP} t₁-big]]]]

Step 4: Rest of syntactic derivations

[_{TP} Taro₂ [_{vP} [_{SC} Jiro Δ]-*yorì-er*₁ [_{vP} t₂ [_{vP} (be) [_{AP} t₁-big]]]]]

Step 5: LF-copy of vP to Δ

[_{TP} Taro λ_y. [_{vP} [_{SC} λ_d. Jiro λ_x. [_{vP} x (be) *d*-big]]]-*yorì-er*

λ_d. [_{vP} y (be) *d*-big]]]

Step 6: Resulting LF

[_{TP} Taro λ_y. [_{vP} [_{SC} λ_d. [_{vP} Jiro (be) *d*-big]]]-*yorì-er* λ_d. [_{vP} y (be) *d*-big]]]

At the end of the derivation, the 2-place *-er* takes two degree predicates, one in the *yorì*-phrase and the other in the main clause in Step 6. Note that vP that is LF-copied from the main clause contains two types of traces, an individual trace and a degree trace. Following Pancheva (2006), I assume that if the LF-copied domain contains these traces, they are interpreted as variables that are bound by λ-operators introduced in the *yorì*-phrase (cf. Chung et al. 1995).

One may argue that the syntactic positions where the λ-operators are introduced in the *yorì*-phrase are arbitrary and wonder whether there is any independent evidence for

the current assumption. Note that if the same facts are accounted for by a PF-deletion approach, the analysis would be as follows.

- (53) Main clause: $[_{TP} \text{Taro } \lambda x. [_{VP1} \text{ yori-er } \lambda d. [_{VP2} x [_{VP} (\text{be}) d\text{-big}]]]]$
Yori-clause: $[_{VP1} \text{Op}_{\text{DEG}} \lambda d. [_{VP2} \text{Jiro} [_{VP} (\text{be}) d\text{-big}]]]$

Given a semantic identity condition such as the Parallelism Condition (Takahashi and Fox 2005; Hartman 2011), a 2-place *-er* undergoes QR to the edge of vP in the main clause, while a corresponding null degree operator must QR to a position above the subject inside the *yori*-phrase in order to satisfy the semantic identity requirement. The position of the λ -operator that binds the degree variable must be structurally higher than the subject position within vP. Indeed, Pancheva (2010) herself argues for this line of PF-deletion approach to phrasal comparatives in Slavic languages.

In choosing between LF-copy and PF-deletion approaches, I adopt the former in the present analysis. As is well known, the debate between these two approaches has a long history and has continued until the present day (Ross 1969; Hankamer and Sag 1976; Sag 1976; Williams 1977; Fiengo and May 1994; Lobeck 1995; Chung et al. 1995; Merchant 2001, among others). One of the strongest arguments in favor of the PF-deletion approach comes from the case matching effect, first observed by Ross (1969) and later discussed extensively by Merchant (2001). Merchant observes that the case matching effect is robustly attested in sluicing across languages with overt Case morphology and formulates the generalization that “the sluiced wh-phrase must bear the same Case as its correlate” (Merchant 2001: 91). Under a PF-deletion account, this effect follows straightforwardly if the sluiced wh-phrase is generated in the overt syntax, receives Case in its base position, and subsequently undergoes movement prior to PF deletion. By contrast, under

an LF-copy approach, the case matching effect is not directly predicted because the overt syntactic structure does not exist for the elided part and requires additional assumptions.

In the present analysis of Japanese phrasal comparatives, however, the evidence from the case matching effect for the PF-deletion approach is unavailable. As discussed above, DPs inside *yor*i-phrases do not bear structural Case, and therefore do not exhibit the Case connectivity that has been taken to motivate PF-deletion analyses. While this fact does not in itself rule out a PF-deletion approach, without attempting to settle the broader theoretical debate between LF-copy and PF-deletion, I adopt the LF-copy approach for the purposes of this dissertation.

To summarize, I have argued that the Japanese standard marker *yor*i subcategorizes for two types of complements, namely, a full clause and an SC, and proposed a derivational algorithm for the SC case. In the next section, I demonstrate that this algorithm uniformly explains different readings of Japanese phrasal comparatives given the two types of adjectival modification structures discussed in the previous section.

2.4.2 Narrow and Wide Readings

In this section, I demonstrate that the SC analysis explains the narrow and wide readings given the two types of adjectival modification structures discussed in Section 2.3. I argue that the narrow reading arises from the IM structure, whereas the wide readings are derived from the DM structure. Furthermore, I show that in relative readings, *-er* can be interpreted at two distinct syntactic positions, vP and CP, giving rise to what I call the low and high wide readings, which correlate with the structural height of *-er*.

2.4.2.1 Narrow Reading

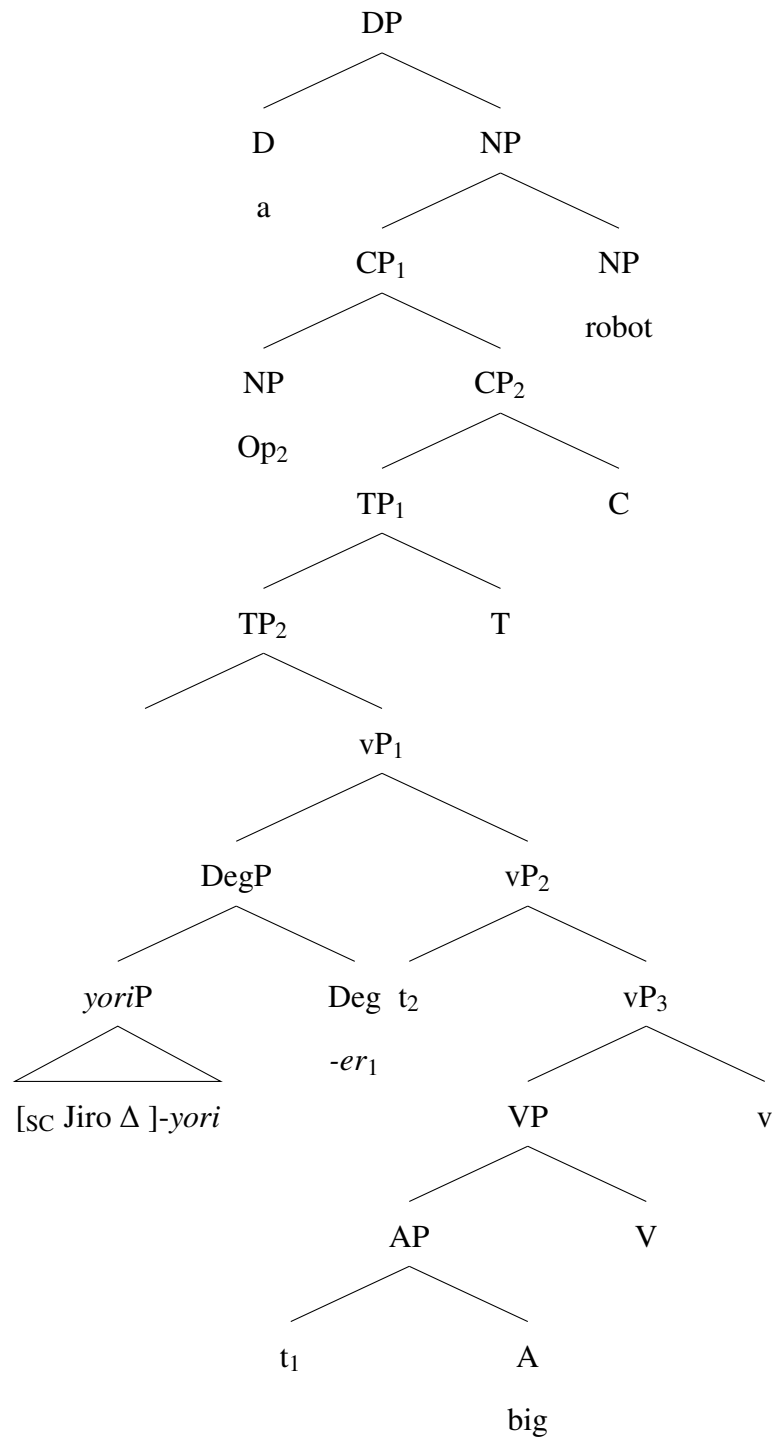
Consider the narrow reading first. As discussed in Section 2.3, the narrow reading is derived from the IM structure containing an RC.

- (54) Taro-ga [[_{RC} Jiro-yori ookii] robotto-o] motteiru.
Taro-NOM Jiro-than big robot-ACC have
'Taro has a robot that is bigger than Jiro.' (NAR)

Here, *-er* takes scope inside the RC. Specifically, I argue that *-er* moves above the subject position at vP, followed by late-merger of the *yor*i-phrase. Then, vP containing the trace of the null relative-clause operator is LF-copied and as a result, *-er* takes two degree predicates.⁸

⁸In the derivation, I omit the trace of the null operator in Spec,TP for expository simplicity. Even if the trace were retained in Spec,TP, no problem would arise, given that each movement introduces a new λ -abstractor (Heim and Kratzer 1998). For a relevant discussion of this issue in English, see Hartman (2011).

(55) DP structure of the narrow reading



(56) Derivation of the RC for the narrow reading

Step 1: Construct vP

$[_{VP} Op [_{VP} (be) [_{AP} -er\ big]]]$

Step 2: QR of *-er* to vP

$[_{VP} -er_1 [_{VP} Op [_{VP} (be) [_{AP} t_1\text{-big}]]]]]$

Step 3: Late merger of the *yor*i-phrase

$[_{VP} [_{SC} Jiro\ \Delta]\text{-}yor\text{-}er_1 [_{VP} Op [_{VP} (be) [_{AP} t_1\text{-big}]]]]]$

Step 4: Rest of syntactic derivation

$[_{CP} Op_2 [_{TP} [_{VP} [_{SC} Jiro\ \Delta]\text{-}yor\text{-}er_1 [_{VP} t_2 [_{VP} (be) [_{AP} t_1\text{-big}]]]]]]]$

Step 5: LF-copy of vP to Δ

$[_{CP} Op\ \lambda y. [_{TP} [_{VP} [_{SC}\ \lambda d. Jiro\ \lambda x. [_{VP}\ x\ (be)\ d\text{-big}]]\text{-}yor\text{-}er\ \lambda d. [_{VP}\ y\ (be)\ d\text{-big}]]]]]$

Step 6: Resulting LF

$[_{CP} Op\ \lambda y. [_{TP} [_{VP} [_{SC}\ \lambda d. [_{VP}\ Jiro\ (be)\ d\text{-big}]]\text{-}yor\text{-}er\ \lambda d. [_{VP}\ y\ (be)\ d\text{-big}]]]]]$

In the resulting LF, the DP containing the RC denotes ‘(a robot) that is bigger than Jiro (is big)’. Crucially, the narrow reading obtained from this derivation does not impose any semantic restriction on the meaning of the standard of comparison: it simply compares the size of Jiro with that of a robot made by Taro. This is because *-er* moves inside the RC and also, the head of the RC is not included in the predicate inside the RP. Thus, the present analysis correctly derives the narrow reading.

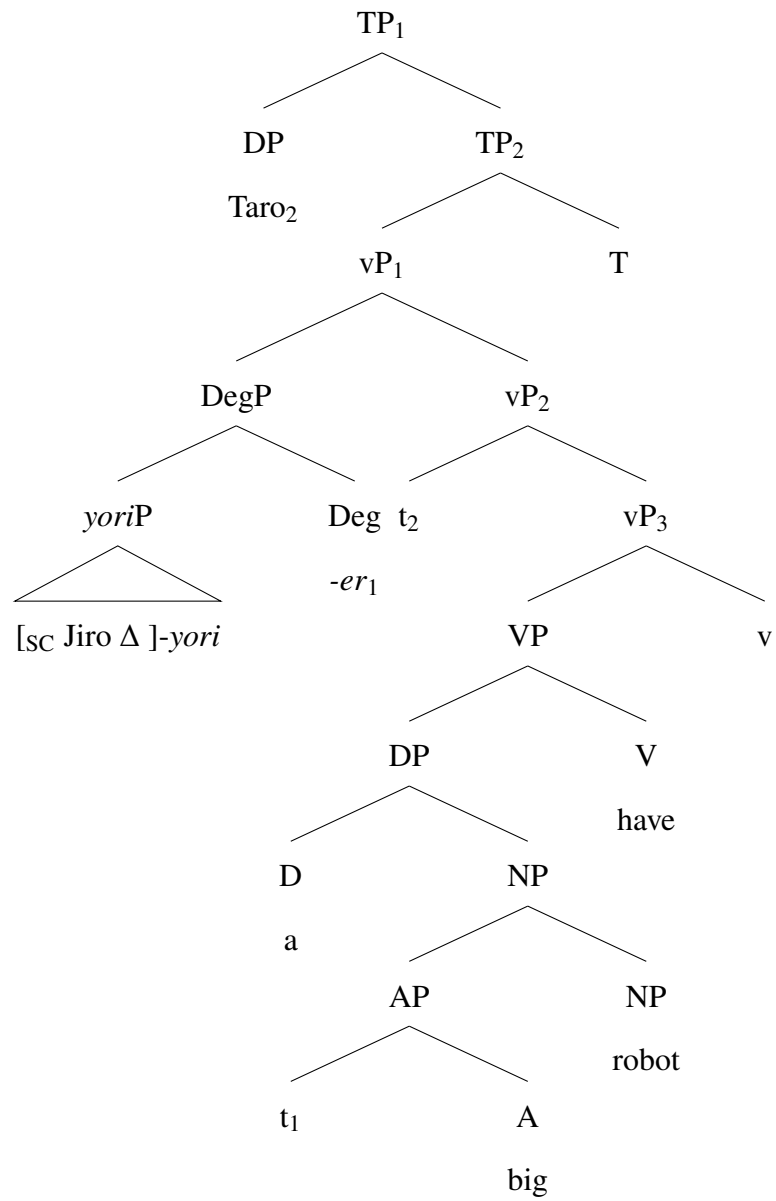
2.4.2.2 Low Wide Reading

Next, consider the wide reading. I have argued that the wide reading is derived from the DM structure, in contrast to the narrow reading, which is derived from the IM structure. This view is supported by the fact that past tense marking on the adjective precludes the wide reading, and that only the DM structure allows *-er* to take clausal scope.

- (57) Taro-ga Jiro-yori [[_{AP} ookii] robotto-o] motteiru.
Taro-NOM Jiro-than big robot-ACC have
'Taro has a bigger robot than Jiro does.' (WIDE)

The fact that the *yori*-phrase surfaces below the subject suggests that *-er* takes scope in a position lower than the subject. Given this fact, I propose that *-er* moves above the subject position at vP, followed by late-merger of the *yori*-phrase. Then, the vP containing the trace of the subject is LF-copied, with the result that *-er* takes two degree predicates as its arguments.

(58) Structure of the low wide reading



(59) Derivation of the low wide reading

Step 1: Construct vP

[_{VP} Taro [_{VP} have [_{DP} a *-er* big robot]]]

Step 2: QR of *-er* to vP

[_{VP} *-er*₁ [_{VP} Taro [_{VP} have [_{DP} a t₁-big robot]]]]

Step 3: Late merger of the *yori*-phrase

[_{VP} [_{SC} Jiro Δ]-*yori-er*₁ [_{VP} Taro [_{VP} have [_{DP} a t₁-big robot]]]]

Step 4: Rest of syntactic derivation

[_{TP} Taro₂ [_{VP} [_{SC} Jiro Δ]-*yori-er*₁ [_{VP} t₂ [_{VP} have [_{DP} a t₁-big robot]]]]]

Step 5: LF-copy of vP to Δ

[_{TP} Taro λ_y. [_{VP} [_{SC} λ_d. Jiro λ_x. [_{VP} *x* have a *d*-big robot]]-*yori-er*

λ_d. [_{VP} *y* have a *d*-big robot]]]

Step 6: Resulting LF

[_{TP} Taro λ_y. [_{VP} [_{SC} λ_d. [_{VP} Jiro have a *d*-big robot]]-*yori-er*

λ_d. [_{VP} *y* have a *d*-big robot]]]

Note that this derivation is almost identical to that of the narrow reading, except that *-er* takes scope in the main clause, given the DM structure. In other words, the same derivational algorithm yields the two different readings, depending on which adjectival modification structure is employed. Crucially, the analysis relies on the presence of the subject's trace in vP, a property that parallels parasitic scope that is employed by the 3-place *-er*. In the next section, however, I show that the 2-place *-er* can also be interpreted at CP, in contrast to the 3-place *-er* analysis, giving rise to the high wide reading.

2.4.2.3 High Wide Reading

Thus far, I have argued that the two types of readings in phrasal comparatives are derived from a 2-place *-er* taking scope at vP in the IM and DM structures. Here, I turn to another configuration in which the *yor*i-phrase appears sentence-initially.

- (60) [Jiro-yori]₁ Taro-ga t₁ ookii robotto-o motteiru.
 Jiro-than Taro-NOM big robot-ACC have
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)

As observed, the sentence only allows the wide reading, excluding the narrow reading. Recall that this fact naturally follows from the current analysis: because the *yor*i-phrase appears sentence-initially, the adjectival modification is forced to be the DM to allow the movement of *-er* and so, the narrow reading is not available. Note further that the sentence-initial *yor*i-phrase forces the possible associate in the wide reading. Consider the following example.

- (61) a. [Jiro-yori]₁ Taro-ga Hanako-ni t₁ ookuno hito-o shookaisita.
 Jiro-than Taro-NOM Hanako-DAT many people-ACC introduced
 ‘Taro introduced more people to Hanako than Jiro did.’ (WIDE)
- b. [Jiro-yori]₁ [Hanako-ni]₂ Taro-ga t₂ t₁ ookuno hito-o
 Jiro-than Hanako-DAT Taro-NOM many people-ACC
 shookaisita.
 introduced
 ‘Taro introduced more people to Hanako than to Jiro.’ (WIDE)

The associate is the subject *Taro* in (61a) and the dative *Hanako* in (61b). Thus, the associate is forced to be the elements that follow the sentence-initial *yor*i-phrase. Additionally, the associate following the sentence-initial *yor*i-phrase resists topic-marking, which is contrasted with the base word order that allows both narrow and wide readings.⁹

⁹There is speaker variation in judgments concerning the use of topic-marked correlates in the high

- (62) ?? Jiro-yori₁ Taro-wa t₁ ookii robotto-o motteiru.
 Jiro-than Taro-TOP big robot-ACC have
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)
- (63) Taro-wa [Jiro-yori] ookii robotto-o motteiru.
 Taro-TOP Jiro-than big robot-ACC have
 ‘Taro has a robot that is bigger than Jiro.’ (NAR)
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)

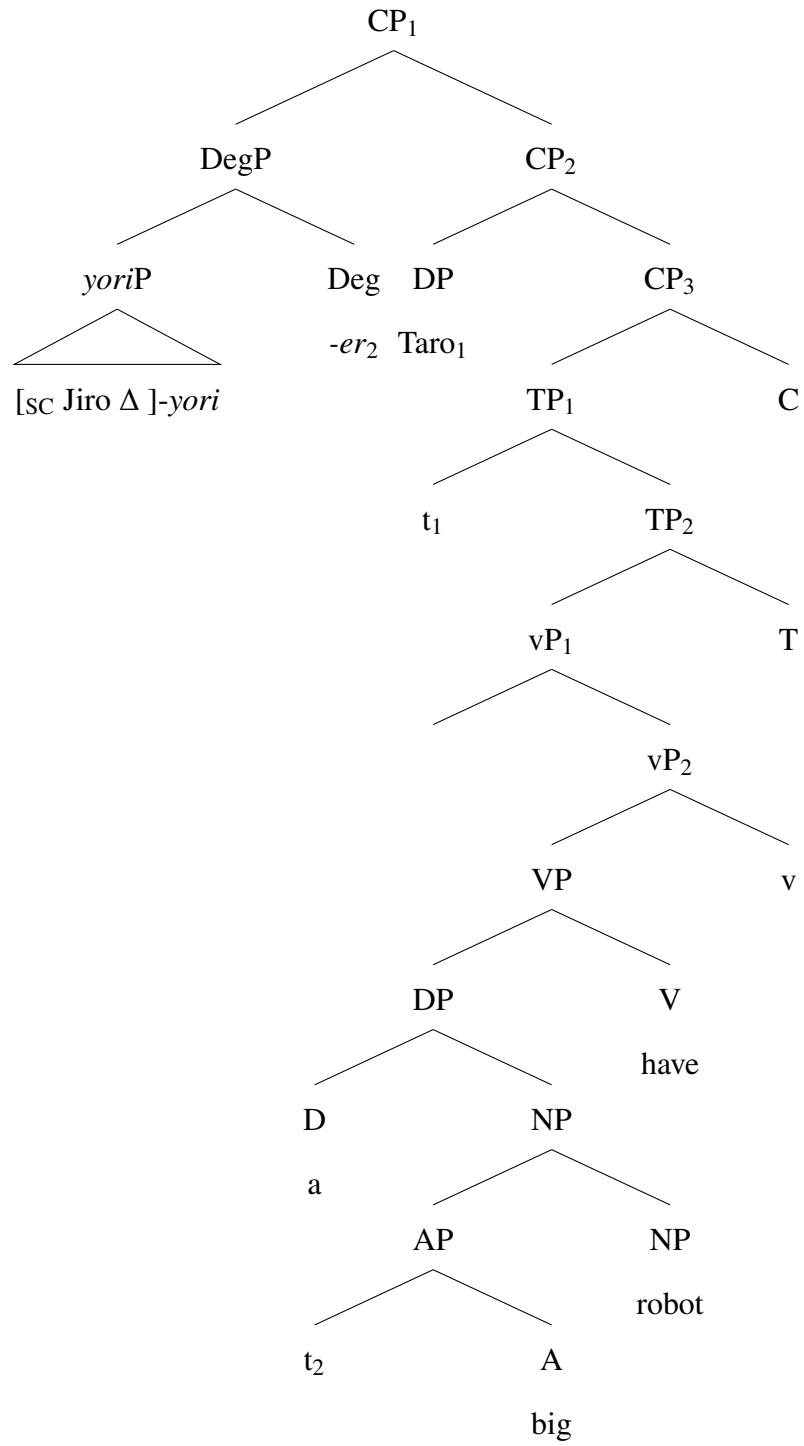
The anti-topic marking effect suggests the associate following the *yor*i-phrase in phrasal comparatives receives focus, which is incompatible with topic marking (see Lyu (2004) and Shimoyama (2014) for related discussion in superlatives). This point is further supported by the fact that sentence-initial *yor*i-phrases that contain a clause do not show the anti-topic marking effect.

- (64) [Jiro-ga motteiru-yori]₁ Taro-wa t₁ ookii robotto-o motteiru.
 Jiro-NOM have-than Taro-TOP big robot-ACC have
 ‘Taro has a bigger robot than Jiro has.’

Based on this fact, I argue that in the high wide reading of phrasal comparatives, the associate *Taro* undergoes focus-driven movement to CP from Spec,TP in the main clause and *-er* QRs above the moved subject *Taro*, followed by late-merger of the *yor*i-phrase.

wide reading. Some speakers allow the high wide reading even when the correlate is marked with the topic particle. In my analysis, correlates in the high wide reading receive focus and undergo focus-driven movement to CP in order to license ellipsis. For speakers who allow topic-marked correlates in the high wide reading, one possibility is that the correlate undergoes movement even without overt focus marking. Another possibility is that such speakers implicitly interpret the topic-marked element as contrastive with the standard, i.e., contrastive topic. The judgment in (62) presupposes an interpretation of the topic marker as an aboutness topic.

(65) Structure of the high wide reading



(66) Derivation of the high wide reading

Step 1: Focus-driven movement of the subject

[_{CP} Taro₁ [_{TP} t₁ [_{VP} [_{VP} have [_{DP} a *-er* big robot]]]]]

Step 2: QR of *-er* to CP

[_{CP} *-er*₂ [_{CP} Taro₁ [_{TP} t₁ [_{VP} [_{VP} have [_{DP} a t₂-big robot]]]]]]]

Step 3: Late merger of the *yor*i-phrase

[_{CP} [_{SC} Jiro Δ]-*yor*i-*er*₂ [_{CP} Taro₁ [_{TP} t₁ [_{VP} [_{VP} have [_{DP} a t₂-big robot]]]]]]]

Step 4: LF-copy of TP to Δ

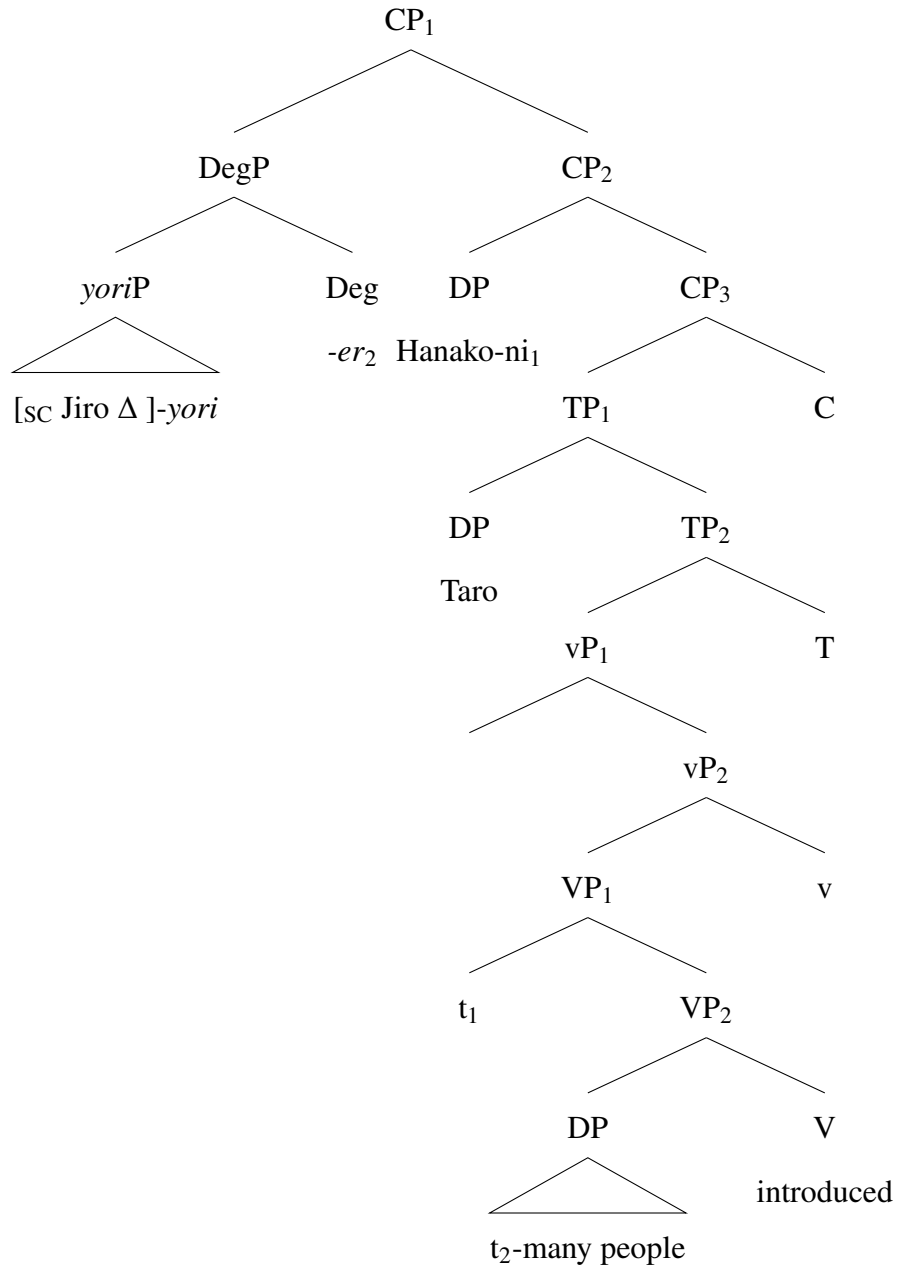
[_{CP} [_{SC} λ*d*. Jiro λ*x*. [_{TP} *x* have a *d*-big robot]]-*yor*i-*er*
λ*d*. [_{CP} Taro λ*y*. [_{TP} *y* [_{VP} [_{VP} have [_{DP} a *d*-big robot]]]]]]]

Step 5: Resulting LF

[_{CP} [_{SC} λ*d*. Jiro λ*x*. [_{TP} *x* have a *d*-big robot]]-*yor*i-*er*
λ*d*. [_{CP} Taro λ*y*. [_{TP} *y* [_{VP} [_{VP} have [_{DP} a *d*-big robot]]]]]]]

In this derivation, TP, which includes the trace of the associate Taro, is LF-copied to Δ in the SC and as a result, *-er* takes two degree predicates in the resulting LF. Note that *-er* is interpreted at CP and this differs from the 3-place *-er* analysis in that the 3-place *-er* is always interpreted below the associate. However, the anti-topic marking effect suggests that the associate receives a focus and the 3-place *-er* analysis cannot explain why the associate receives a focus. However, the current analysis accounts for this on the assumption that LF-copy needs to target a domain containing the trace of the associate. This is confirmed by the behavior of sentence-initial *yor*i-phrases in (61). Specifically, when a dative argument is scrambled below a sentence-initial *yor*i-phrase, the dative argument is obligatorily interpreted as the associate.

(67) Derivation of the dative argument as the associate



(68) LF for the dative argument as the associate

[_{CP} [_{SC} λd . Jiro λx . [_{TP} Taro to d -many people x introduced]]-*yor*-*er*
 λd . [_{CP} Hanako λy . [_{TP} Taro to d -many people y introduced]]]

In this case, the trace of the dative *Hanako* is included in the domain of LF-copy and so the associate is forced to be the dative. Thus, the fact that the associate is forced to be the element that follows the sentence-initial *yor*-phrase naturally follows under the current analysis.

2.4.3 Comparing the SC Analysis and the 3-Place -er Analysis

Thus far, I have argued that the narrow reading is derived from the IM structure, whereas the wide readings are derived from the DM structure. Under the proposed analysis, the 2-place -er can take scope at two distinct syntactic positions, namely vP and CP. Given the interaction between these scope positions and the two types of adjectival modification, there are three possible syntactic positions at which the 2-place -er is interpreted. These possibilities are summarized in (69).

(69) Scope position of the 2-place -er in phrasal comparatives

Adjectival modification	DegP scope	Reading
IM	vP in the RC	Narrow
DM	vP in the main clause	Low wide
DM	CP in the main clause	High wide

The present analysis captures the fact that when the *yor*-phrase appears in sentence-initial position, the associate is forced to be the element that immediately follows the *yor*-phrase. Crucially, under the present analysis, the 2-place -er may be interpreted either at vP or at

CP. By contrast, under the 3-place *-er* analysis, *-er* always takes scope over vP. With respect to this, consider the two approaches for the low wide reading.

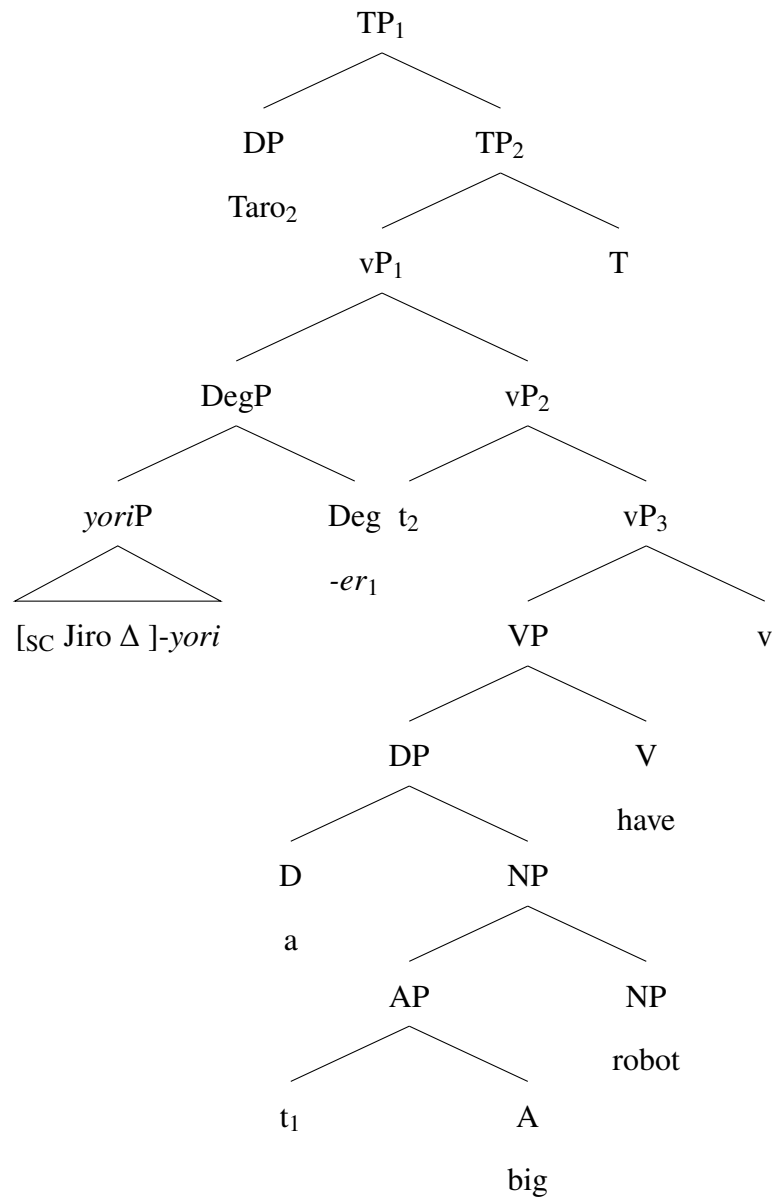
(70) a. SC analysis for the low wide reading

[_{TP} Taro₂ [_{vP} [_{SC} Jiro Δ]-*yor*-*er*₁ [_{vP} t₂ [_{VP} [_{DP} a t₁-big robot] have]]]]

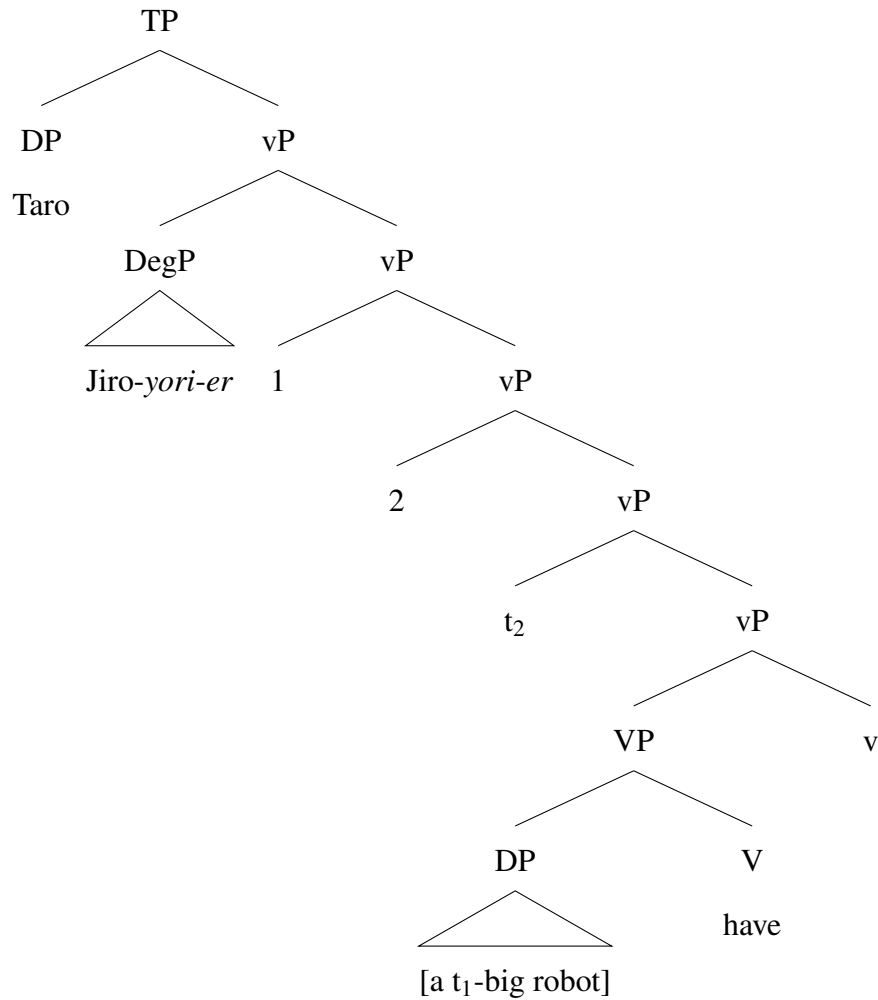
b. 3-place *-er* analysis for the low wide reading

[_{TP} Taro₂ [_{vP} Jiro-*yor*-*er*₁ [_{vP} t₂ [_{VP} [_{DP} t₁-big robot] have]]]]

(71) SC analysis for the low wide reading



(72) 3-place *-er* analysis for the low wide reading



The theoretical evaluation of the two approaches is difficult if we focus only on the low wide reading, since both analyses make use of the trace of the associate subject. By contrast, the high wide reading reveals a clear difference between the two approaches. Under the SC analysis, the requirement that the associate be focused follows naturally: LF-copy must target a domain that contains the trace of the associate, and focus marks the moved associate. Under the 3-place *-er* analysis, however, the necessity of focus on the associate is unexpected.

(73) SC analysis for the high wide reading

[CP [SC Jiro Δ]-*yori-er*₂ [CP [Tarof]₁ [TP t₁ [vP [DP a t₂-big robot] have]]]]

Thus, the behavior of focus in the high wide reading provides empirical support for the SC analysis over the 3-place *-er* analysis.

One may wonder if the surface position of the *yori*-phrases indeed reflects the scope of *-er* since it is a covert element. For instance, this point can be confirmed by the scope interaction with negation in the main clause.

- (74) a. Taro-wa Jiro-yori ookuno hon-o yoma-nakat-ta.
 Taro-TOP Jiro-than many book-ACC read-NEG-PAST
 ‘It is not the case that Taro read more books than Jiro.’ (NEG > *-er*)
- b. ?? Jiro-yori Taro-ga ookuno hon-o yoma-nakat-ta.
 Jiro-than Taro-NOM many book-ACC read-NEG-PAST
 ‘The number of books that Taro didn’t read is greater than the number of books that Jiro didn’t read.’ (*-er* > NEG)

The low wide reading with negation gives rise to a configuration in which negation takes scope over *-er*, yielding a possible interpretation. In contrast, the high wide reading with negation gives rise to a configuration in which *-er* takes scope over negation. Notice that this creates a negative island environment in which the maximal degree in each clause cannot be defined: the maximal degree such that Taro or Jiro did not read that many books is undefined (von Stechow 1984; Rullmann 1995; see also Section 2.6.2).¹⁰

¹⁰As observed in the literature, the negative island effect can be ameliorated by providing an appropriate context (see Szabolcsi (2006) for an overview of this topic). For example, the high wide reading is improved in the following situation. Imagine that Taro and Jiro are playing a survival game in which they are given only 10 liters of water to survive for a week, and the winner is determined by the amount of water remaining. Suppose that Taro drank 6 liters of water, while Jiro drank 8 liters. In this context, the high wide reading with negation becomes acceptable.

(75) Undefined maximal degree

MAX(λd . Taro didn't read d -many books)

Thus, this provides evidence that the covert *-er* is interpreted at the position where the *yor*i-phrase is overtly realized.

In this respect, the present analysis is compatible with the *Extraposition–Scope Generalization* (Bhatt and Pancheva 2004: 21).

(76) The Extraposition–Scope Generalization (for degree expressions)

When a degree clause β is extraposed from a degree head α , the scope of β is exactly as high as the merger site of α .

The Extraposition–Scope Generalization originates in Williams's (1974) observation (cf. Sag 1976) and was later articulated by Fox and Nissenbaum (1999) and Fox (2002) as *Williams's Generalization* for extraposed elements: the scope of a “source DP” α is at least as high as the attachment site of β (the extraposition site)” (Fox 2002: 19). Bhatt and Pancheva further refine it for degree expressions as a generalization that the scope of a degree head is exactly as high as the degree clause. The present analysis obeys this generalization: the 2-place *-er* is interpreted at the same height as the *yor*i-phrase, i.e., the degree clause. By contrast, the 3-place *-er* analysis must posit additional scrambling of the *yor*i-phrase in order to derive the high wide reading, a move that conflicts with the Extraposition–Scope Generalization. Thus, the current analysis is well supported by the

-
- (i) Jiro-yori Taro-ga ookuno mizu-o noma-nakat-ta.
 Jiro-than Taro-NOM many water-ACC drink-NEG-PAST
 ‘The amount of water that Taro didn't drink is greater than the amount of water that Jiro didn't drink.’
 (*-er* > NEG)

Because the maximal degree is bounded by the contextual upper limit (10 liters), the maximal degree becomes defined, and the sentence can receive a coherent interpretation.

generalization observed in the literature. A direct comparison between the two analyses is more difficult in languages such as English, where *-er* undergoes covert QR at LF. Japanese, by contrast, as a scope-rigid language, provides more transparent evidence for the relation between the scope of *-er* and the position of the *yor*i-phrase.

2.4.4 Domain of Ellipsis

I have argued that *-er* can be interpreted at two syntactic positions, vP and CP, and that the elided domain in the *yor*i-phrase varies depending on the position of *-er*. When *-er* QRs to vP, vP is LF-copied; when *-er* QRs to CP, TP is LF-copied. The pattern thus suggests a correspondence between the position of *-er* and the elided domain. Williams (1974) and Sag (1976) observe that there is a correlation between the scope of DegP and the elided domain contained within it. This correlation is often referred to as the *Ellipsis–Scope Generalization* ((77) is adopted from Bhatt and Pancheva 2004: 30).

(77) Ellipsis–Scope Generalization

The scope of a DegP containing elided material must contain the antecedent of the ellipsis.

The Ellipsis–Scope Generalization states that the scope of DegP must contain the antecedent of the ellipsis. In other words, the scope of DegP determines how much material can be elided. The following paradigm illustrates the generalization in English clausal comparatives (Bhatt and Pancheva 2004: 30).

(78) Mary's father tells her to work harder than her boss does.

a. *tell* > *-er*, elided material = *work d-hard*

Mary's father tells Mary: work harder than your boss works.

b. * *tell* > *-er*, elided material = *tell her to work d-hard*

Mary's father tells Mary: work harder than your boss tells you to work.

c. *-er* > *tell*, elided material = *work d-hard*

Mary's father tells Mary: work d_1 -hard; Mary's boss works d_2 -hard;

$d_1 > d_2$.

d. *-er* > *tell*, elided material = *tell her to work d-hard*

Mary's father tells Mary: work d_1 -hard; Mary's boss tells Mary: work

d_2 -hard; $d_1 > d_2$.

Among the four patterns, (78b) is unavailable because the scope of *-er* is contained within the elided domain, which is inconsistent with the Ellipsis–Scope Generalization.

With this in mind, consider the following Japanese phrasal comparatives.

(79) a. Hanako-no chichioya-wa kanojo-ni [kanojo-no jooshi-yori] nesshinni
Hanako-GEN father-TOP her-DAT her-GEN boss-than hard
hataraku-yooni tsutaeta.
work-C told

'Hanako's father told her to work harder than her boss works.' (= (78a))

b. [Hanako-no jooshi-yori] kanojo-no chichioya-ga kanojo-ni nesshinni
Hanako-GEN boss-than her-GEN father-NOM her-DAT hard
hataraku-yooni tsutaeta.
work-C told

'Hanako's father told her to work harder than her boss told her to work.'

(= (78d))

Phrasal comparatives in Japanese exhibit a stricter pattern than clausal comparatives in English, which involve vP-ellipsis. The interpretation suggests that the elided domain must contain the biggest constituent, and therefore (79b) does not allow the reading in (78c), where ‘work d-high’ is elided. To obtain such a reading, the *yor*i-phrase must contain an overt clausal standard.

- (80) [Hanako-no jooshi-ga hataraku-yori(-mo)] kanojo-no chichioya-wa
 Hanako-GEN boss-NOM work-than(-mo) her-GEN father-TOP
 kanojo-ni nesshinni hataraku-yooni tsutaeta.
 her-DAT hard work-C told
 ‘Hanako’s father told her to work harder than her boss works.’ (= (78c))

This raises the question of what causes the difference between Japanese and English. One might ask whether Japanese phrasal comparatives should be analyzed as an instance of deep anaphora, in which the *yor*i-phrase lacks internal syntactic structure and its interpretation is recovered non-syntactically (e.g., semantically or pragmatically), as opposed to surface anaphora, which involves syntactic structure and requires a linguistic antecedent for the recovery of the elided material (Hankamer and Sag 1976).

However, as discussed later in Section 2.5, Japanese phrasal comparatives do exhibit internal structure within the *yor*i-phrase. Therefore, the present issue cannot be reduced to this distinction. Rather, it concerns the size of the elided domain in phrasal comparatives. The literature on ellipsis (e.g., Sag 1976; Merchant 2001, 2008) observes that VP-ellipsis is often disallowed when sluicing is possible in the same clause in English.

- (81) Mary was kissing someone, but I don’t know who (*she was).

Takahashi and Fox (2005) and Hartman (2011) account for this by an economy condition on ellipsis i.e., *Max Elide*, which dictates that the biggest deletable constituent must be

elided. Given this condition, sluicing must apply rather than VP-ellipsis in (81). If this kind of condition holds in Japanese, the above correspondence between the position of *-er* and the elided domain can be explained: if *-er* QRs to CP, vP cannot be the target of ellipsis because of Max Elide.¹¹

As noted earlier, some consultants suggest that the sentence-initial *yor*i-phrase allows the narrow reading in addition to the wide reading.

- (82) [Jiro-yori]₁ Taro-ga t₁ ookii robotto-o motteiru.
 Jiro-than Taro-NOM big robot-ACC have
 ‘Taro has a robot that is bigger than Jiro.’ (NAR)
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)

Those speakers who allow the narrow reading still find the wide reading prominent. To clarify this judgement, the narrow reading becomes more prominent if there is a pause

¹¹One may wonder how the present analysis can be reconciled with the well-known ambiguity of antecedent-contained deletion (ACD).

- (i) Bill wanted to read every book that Mary did.
 ‘Bill wanted to read every book that Mary did <read t>.’
 ‘Bill wanted to read every book that Mary did <want to read t>.’

In English, the ellipsis site in ACD constructions is ambiguous between a lower VP and a higher VP, giving rise to the ambiguity illustrated in (i). By contrast, Japanese does not exhibit this type of ACD ambiguity in the first place.

- (ii) Taro-wa Jiro-ga yonda subete-no hon-o yomi-tagatteita.
 Taro-TOP Jiro-NOM read all-GEN book-ACC read-wanted
 ‘Taro wanted to read every book that Jiro read.’
 (iii) Taro-wa Jiro-ga yomi-tagatteita subete-no hon-o yomi-tagatteita.
 Taro-TOP Jiro-NOM read-wanted all-GEN book-ACC read-wanted
 ‘Taro wanted to read every book that Jiro wanted to read.’

This contrast may reflect the fact that Japanese does not allow VP ellipsis, at least within relative clauses. As a result, the ellipsis-based source of ACD ambiguity found in English is unavailable, and the two interpretations must instead be distinguished by overt verbal morphology. However, see Abe (2019) for arguments that Japanese does permit VP ellipsis in ACD constructions.

after the *yor*i-phrase.

- (83) [Jiro-yori]₁ // Taro-ga t₁ ookii robotto-o motteiru.
 Jiro-than Taro-NOM big robot-ACC have
 ‘Taro has a robot that is bigger than Jiro.’ (NAR)

This suggests that the narrow reading may be derived through a different process from the wide reading. For example, the narrow reading could be derived by LF-copy targeting a smaller domain such as AP (Pancheva 2006).

- (84) [CP [SC λd . Jiro [AP d -big]]-yori-er λd . [TP Taro has a d -big robot]]

In this case, the subject *Taro* does not have to undergo focus-driven movement, which is necessary for the wide reading. Thus, speakers who allow the narrow reading may have this kind of strategy. Still, the small size of ellipsis to derive the narrow reading could be less preferable options for speakers because of some economy condition like Max Elide and so, the wide reading is prominent.

Before concluding this section, let us consider an alternative derivation in relation to the domain of ellipsis. In the proposed analysis, I have argued that LF-copy targets vP and TP. On this view, LF-copy always applies to a domain that contains the trace of the associate: the former contains the trace created by subject movement (i.e., A-movement), whereas the latter contains the trace created by focus movement (i.e., A'-movement). However, this analysis has a potential drawback in that the λ -abstractors appear to be introduced somewhat arbitrarily in the SC. Although I have shown in Section 2.4.1 that the PF-deletion approach with null degree operator movement yields the same LF representation, thereby supporting the analysis, one may still wonder whether some of the stipulative aspects of the current analysis can be avoided. For instance, one might assume that LF-copy applies to the domain that contains the λ -abstractor over degrees.

(85) LF-copy of CP2 to Δ

[CP₁ [SC Jiro Δ]-*yorier* [CP₂ λd . [CP₃ Taro λx . [TP x have a d -big robot]]]]]

Under this analysis, one must assume some replacement operation whereby *Taro* is replaced by the subject of the SC, *Jiro*, although this correctly introduces the λ -abstractors in the structure. However, when we consider the vP case under the current version of the analysis, additional complications arise.

(86) LF-copy of vP2 to Δ

[TP Taro λx . [vP₁ [SC Jiro Δ]-*yorier* [vP₂ λd . [vP₃ x have a d -big robot]]]]]

This time, the unbound variable x must be replaced by the subject of the SC, *Jiro*. Thus, this version of the analysis must clarify the nature of the required replacement operation, although it could eliminate the arbitrary aspect of the proposed analysis.

To summarize, Japanese phrasal comparatives reflect the Ellipsis–Scope Generalization, according to which the scope of DegP must contain the antecedent of ellipsis. However, a comparison with English comparatives suggests that Japanese phrasal comparatives impose a stricter restriction on ellipsis size. I argued that Max Elide operates in Japanese and this explains why the wide reading is generally preferred even for speakers who allow the narrow reading with a sentence-initial *yorier*-phrase.

2.5 The SC Account for Syntactic Phenomena

This section argues that the SC analysis provides a unified account of several syntactic phenomena that have been taken to support the 3-place *-er* analysis of Japanese comparatives. I show that these phenomena can be reanalyzed under a 2-place *-er*

within the SC analysis. In Section 2.5.1, I first show that pronominal obviation, scope interactions, and linear precedence restriction follow naturally from the SC analysis. Then, Section 2.5.2 presents evidence that *yor*i-phrases contain internal structure, focusing on the Condition C asymmetry, and shows that the availability of sloppy readings with self-anaphors is compatible with this analysis. Finally, Section 2.5.3 revisits Sudo's (2015) nominal source analysis and argues that its key insights can be incorporated into the present framework while maintaining the SC approach.

2.5.1 Reanalyzing the Evidence for the 3-Place *-er* Analysis

Thus far, I have provided a uniform account for the different readings of the phrasal comparatives. Here, I demonstrate that the same analysis explains the key data that are argued to support the 3-place *-er* analysis.

2.5.1.1 Analysis of Pronominal Obviation

First, remember that pronominal obviation by subject is observed in the phrasal comparatives.

- (87) Daremo₁ [kare_{2/*1}]-yori kashikoku-nai.
 anyone him -than smart-NEG
 'No one₁ is smarter than him_{2/*1}.'

This could be taken to indicate that there is no finite clausal boundary involved in the *yor*i-phrase, so the 3-place *-er* analysis is supported over the 2-place *-er* analysis that is assumed to contain a full clause. However, under the SC analysis, a finite clause boundary is not involved even with the 2-place *-er*.

(88) [TP anyone₁ [SC kare_{2/*1} [vP (be) smart]]-*yori* [vP (be) smart-not]]

The SC in the *yori*-phrase contains vP, not a full CP, and so the pronominal obviation by subject is expected, just like the 3-place *-er* analysis.

2.5.1.2 Analysis of Scope Interactions of *-er*

Next, consider the scopal behavior of *-er*. Remember that the universal quantifier always outscopes *-er* and this naturally follows from the 3-place *-er* analysis: because the 3-place *-er* combines with DPs, quantificational DPs inside the *than*-phrase must QR to a higher structural position, so *every* outscopes *-er*.

(89) Dono toogoron-no ronbun-mo [dono imiron-no ronbun-yori-mo] ookuno
 every syntax-GEN paper-MO every semantics-GEN paper-than-MO many
 hito-ga yonda.
 people-NOM read
 ‘More people read every syntax paper than every semantics paper.’

(**-er* > *every*; *every* > *-er*)

How could we account for this fact by the SC account? Notably, Bhatt and Takahashi observe that in clausal comparatives, the scopal relation can be altered depending on the position of the degree trace and the QP. (Bhatt and Takahashi 2011: 610).

(90) QP c-commands the degree trace (comparative deletion site).

⇒ QP scopes out of the *yori*-clause

[dono keizaigakusha-ga ____ yonda-yori-mo] dono gengogakusha-mo
 every economist-NOM read-than-MO every linguist-MO
 ooku-no ronbun-o yonda.
 many-GEN paper-ACC read
 ‘Every linguist read more papers than every economist read.’

(**-er* > *every*; *every* > *-er*)

The QP *dono keizaigakusha-ga* c-commands the degree trace (the comparative deletion site), so QP scopes out of the *yor*i-clause in this case. On the other hand, if QP does not c-command the degree trace, QP scopes inside the *yor*i-clause (Bhatt and Takahashi 2011: 610).

(91) QP does not c-command the degree trace (comparative deletion site).

⇒ QP scopes inside the *yor*i-clause

[____ dono imiron-no ronbun-o yonda-yori-mo] ooku-no hito-ga
 every semantics-GEN paper-ACC read-than-MO many-GEN people-NOM
 dono toogoron-no ronbun-mo yonda.
 every syntax-GEN paper-MO read
 ‘More people read every syntax paper than every semantics paper.’

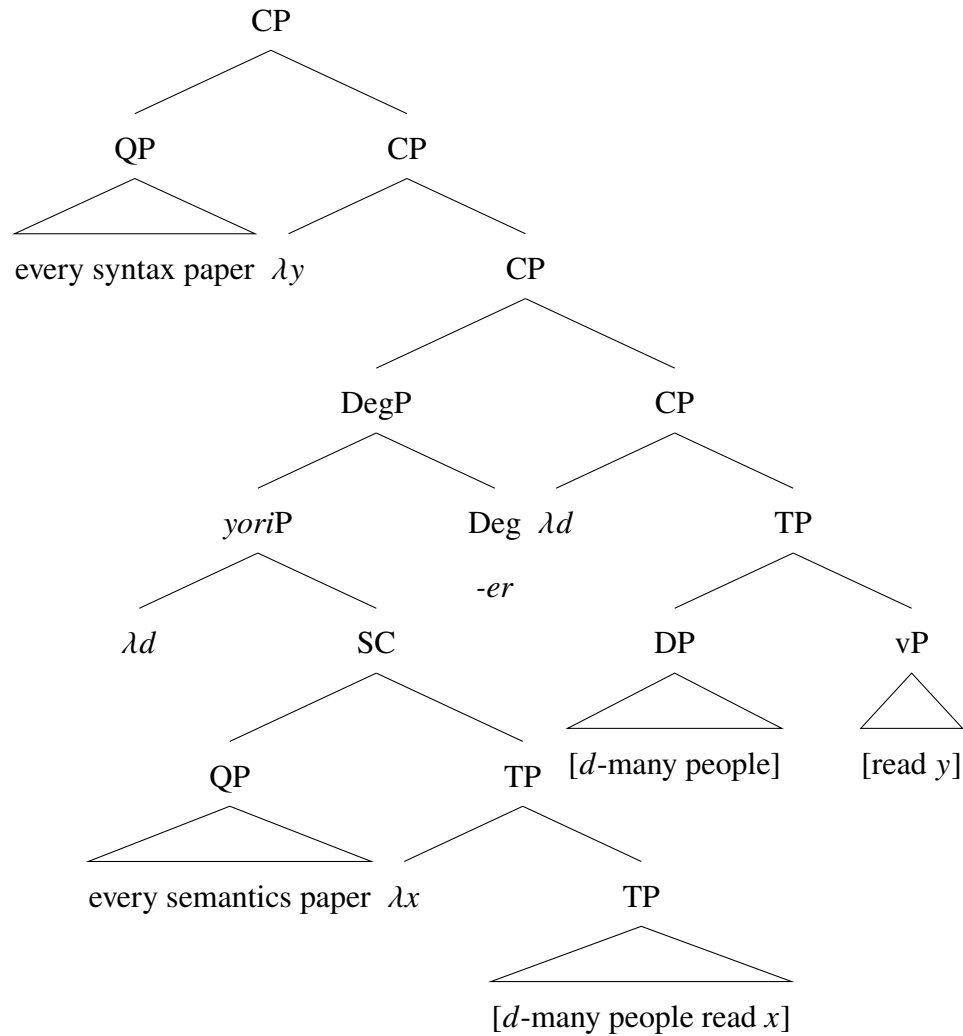
(-er > every; *every > -er)

Thus, the scope interaction between *-er* and QP is affected by their structural relations inside the *yor*i-clause. Given this, consider the scope interaction of *-er* and every in the phrasal comparatives under the SC analysis. Omitting the intermediate steps, the SC analysis derives the following LF representation.

(92) QP c-commands the degree trace in the SC

[_{CP} every syntax paper λy . [_{CP} [_{SC} λd . every semantics paper
 λx . [_{TP} d -many people x read]]-yori-er λd . [_{TP} [_{DP} d -many people] [_{VP} y read]]]]

(93) QP c-commands the degree trace in the SC



The QP in the *yori*-phrase c-commands the degree trace in this representation. Given the above generalization concerning the position of the degree trace and the QP, it follows that QP outscopes *-er* in (92). Thus, the evidence from the scope interaction between *-er* and QP can be explained by the SC analysis that employs the 2-place *-er*.

2.5.1.3 Analysis of Precedence Restriction

Finally, the precedence restriction is also accounted for by the current analysis. Recall that if an associate occurs at a position that is structurally lower than a degree head, the sentence is unacceptable. However, the sentence improves if the associate is scrambled above the degree head.

- (94) a. * MP-yori ookuno hito-ga LGB-o yonda.
 MP-than many people-NOM LGB-ACC read
 ‘More people read LGB than the MP.’
- b. LGB-o₁ MP-yori ookuno hito-ga t₁ yonda.
 LGB-ACC MP-than many people-NOM read
 ‘More people read LGB than the MP.’

This fact was reduced to the property of parasitic scope employed by the 3-place *-er*, i.e., if there is no movement of an associate, a 3-place *-er* cannot employ parasitic scope. How can we explain this fact by the SC analysis? Recall that LF-copy needs to target a domain that contains a trace of the associate as discussed in Section 2.4. Given this, if there is no movement of an associate, the *yori*-phrase ends up containing both the associate LGB and the standard MP.

- (95) * [CP [SC λd . MP [TP d -many people LGB read]]-yori-*er*
 λd . [TP d -many people LGB read]]

This LF representation is infelicitous because there is no argument slot in which MP can be interpreted. By contrast, if an associate moves above the degree head, this gives rise to the felicitous LF representation.

- (96) $[_{CP} \text{LGB } \lambda y. [_{CP} [_{SC} \lambda d. \text{MP } \lambda x. [_{TP} d\text{-many people } x \text{ read}]]]\text{-}yori\text{-}er$
 $\lambda d. [_{TP} d\text{-many people } y \text{ read}]]]$

In this case, LF-copy targets TP containing the trace of the associate and so the *yori*-phrase can be correctly interpreted. Thus, the precedence restriction is reduced to the necessity of a gap in the LF-copied domain under the SC account.

2.5.1.4 Summary

To summarize, I have demonstrated that the three pieces of syntactic evidence that are argued to support the 3-place *-er* can also be explained by the SC analysis. In the next section, I address the subject/object asymmetry with respect to Condition C and the sloppy reading of the self-anaphor, which are problematic for the 3-place *-er* analysis.

2.5.2 Evidence for Internal Structures of *Yori*-Phrases

The previous section discusses how the SC analysis captures the data that are argued to support the 3-place *-er* analysis. Here, I demonstrate that the SC analysis can also explain the subject/object asymmetry with respect to Condition C and the sloppy reading of the self-anaphor, which were problematic for the 3-place *-er* analysis. First, remember that the 3-place *-er* analysis predicts that both subject and object interpretations are available in (97) because the pronoun *kare* does not c-command an R-expression, contrary to fact.

(97) Asymmetry between subject and object interpretations

- Hanako-wa [kare-yori]₁ [Taro-no hahaoya-o]₂ t₁ ookuno hito-ni
 Hanako-TOP he/him-than Taro-GEN mother-ACC many people-DAT
 t₂ shookaishita.
 introduced
- * ‘Hanako introduced Taro’s₁ mother to more people than he₁ (introduced
 Taro’s mother).’ (subj)
- ‘Hanako introduced Taro’s₁ mother to more people than (Hanako introduced)
 him₁.’ (obj)

In the SC analysis, this asymmetry is explained in line with the English translations. As discussed, the *yor*i-phrase contains an internal structure that consists of *kare* and the vP copied from the main clause. Consequently, the subject interpretation is ruled out because of a condition C violation, while the object interpretation does not give rise to the Condition C violation.¹²

(98) a. Condition C violation (subject interpretation)

* [SC [DP he₁] [vP x₁ introduce Taro₁’s mother to *d*-many people]]

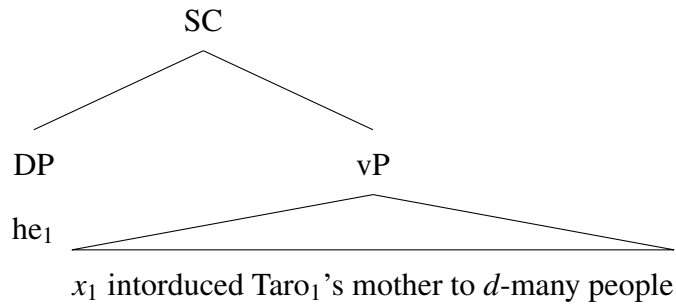
b. No Condition C violation (object interpretation)

[SC [DP him₁] [vP Hanako introduce x₁ to *d*-many people]]

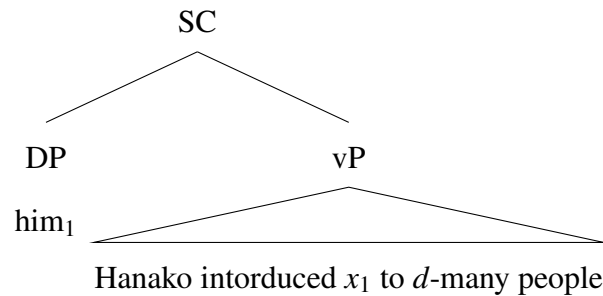
¹²In the subject interpretation, I assume that the scrambled object *Taro’s mother* is reconstructed into in situ.

(99) SC structures of the subject and object interpretations

a. Condition C violation (subject interpretation)



b. No Condition C violation (object interpretation)



The current asymmetry would be difficult to explain for the 3-place *-er* analysis since it predicts the same grammaticality for the two interpretations. Thus, this supports the SC analysis in which the *yor*i-phrases contain internal structures rather than simple DPs.

Furthermore, the sloppy reading of the self-anaphor is also explained by the SC analysis. Remember that the self-anaphor *jibun* allows a sloppy reading in phrasal comparatives.

(100) Ambiguity between strict and sloppy readings

Taro-wa [Hanako-yori] jibun-no musuko-o hukaku aishiteru.

Taro-TOP Hanako-than self-GEN son-ACC deeply love

‘Taro loves his son₁ more deeply than Hanako loves his son₁.’ (strict)

‘Taro loves his son₁ more deeply than Hanako loves her son₂.’ (sloppy)

Here, following Williams (1977) and Otani and Whitman (1991), I assume that the self-anaphor can optionally be turned into a bound variable, and it can be bound by the λ -abstractor that binds the subject variable in the main clause.¹³ On this view, the strict reading is derived if such an optional rule does not apply and LF-copy applies to the vP in the main clause. In the resulting LF representation, vP in the *yor*i-phrase contains “y loves his (= x’s) son *d*-much” in which *his* refers to *Taro*. On the other hand, the sloppy reading is derived if the turning rule applies, converting the anaphor to a variable. In the LF representation, vP in the *yor*i-phrase contains “y loves y’s son *d*-much” in which the variable *y* is bound by *Hanako* in the *yor*i-phrase.

(101) LF of strict and sloppy readings

a. Strict reading

[Taro λx . [Hanako λy . [_{vP} y loves x’s son *d*-much]]]-*yor*i

[_{vP} x loves x’s son *d*-much]]

b. Sloppy reading

[Taro λx . [Hanako λy . [_{vP} y loves y’s son *d*-much]]]-*yor*i

[_{vP} x loves x’s son *d*-much]]

However, it should be noted that a 3-place *-er* analysis can in principle derive the same sloppy reading if the same assumption is adopted. Recall that under a 3-place analysis, *-er* employs parasitic scope. If one assumes that the variable-turning rule applies prior to the movement of *-er*, the second argument of *-er* should be the form “ $\lambda d.\lambda x$. x loves x’s son *d*-much”, which straightforwardly yields a sloppy interpretation.

¹³Various proposals have been advanced to account for sloppy readings of self-anaphors and pronominals in elliptical contexts (e.g., Sag 1976; Williams 1977; Reinhart 1983; Otani and Whitman 1991; Hardt 1993; Fiengo and May 1994; Kim 1998; Oku 1998, among many others). Here, I do not intend to defend the analyses of Williams or Otani and Whitman, among others. The current purpose is to show that the *yor*i-phrases contain internal structures rather than simple DPs in phrasal comparatives and for the ease of discussion, I follow Williams’ analysis that is compatible with my SC analysis.

This observation suggests that the availability of sloppy readings alone does not provide evidence in favor of a 2-place analysis of *-er*. More generally, this issue reflects the fact that both 2-place and 3-place approaches crucially involve different kinds of ellipsis, i.e., syntactic ellipsis for 2-place *-er* and semantic ellipsis for 3-place *-er*. Sloppy readings are widely regarded as a hallmark of syntactic ellipsis (cf. Saito 2007, 2017), but the presence of sloppy readings by itself does not reliably distinguish between 2-place and 3-place analyses of *-er*. Consequently, while sloppy readings are compatible with analyses that posit internal structure for the standard phrase, they must be evaluated with other diagnostics.

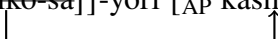
To summarize, the subject/object asymmetry with respect to Condition C provides evidence that *yor*i-phrases contain internal structure rather than being simple DPs. The availability of sloppy readings with self-anaphors is at least compatible with the present approach, although the same pattern can in principle also be derived under a 3-place *-er* analysis. Taken together, the evidence discussed above favors analyses in which *yor*i-phrases are structurally complex, while additional diagnostics beyond Condition C would further strengthen this conclusion.

2.5.3 The Nominal Source Analysis Revisited

Thus far, I have argued that apparent phrasal comparatives are derived from clausal structure where the *yor*i-phrases contain a gap, whose content is recovered at LF by copying from the matrix clause. In this sense, Japanese comparatives are always clausal under the proposed analysis. In contrast to this view, Beck et al. (2004) and Sudo (2015) maintain that Japanese has only phrasal comparatives, and that apparent clausal comparatives are derived from a nominal source. More specifically, Sudo (2015) proposes

that a degree nominal such as *kashikosa* ‘smartness’ – formed from the adjective *kashikoi* ‘smart’ plus the nominalizer *-sa* – occurs in the *yor*i-phrase and the degree-denoting adjective raises to the main clause, while the degree nominal heading an RC in the *yor*i-phrase is deleted in the overt syntax (adapted from Sudo (2015: 8)).

(102) [[[RC] [NP ~~kashiko~~-sa]]-yor*i* [AP kashikoi]]



The diagram shows a bracket under the NP ~~kashiko~~-sa and an arrow pointing from it to the AP kashikoi, indicating movement.

Essentially, the comparative meaning derived under this approach can be paraphrased as “Taro is smarter than the smartness that Ziro has”. Sudo (2015: 10–11) further extends this idea to non-degree nominals, accounting for the contrast in (103) in terms of the underlying structural differences schematized in (104).

(103) Contrast between predicative and attributive comparatives

- a. * John-wa [Mary-ga yatotta]-yor*i* kashikoi.
 John-TOP Mary-NOM hired -than smart
 ‘Lit. John is smarter than Mary hired.’
- b. John-wa [Mary-ga yatotta]-yor*i* kashikoi hito-o mitsuketa.
 John-TOP Mary-NOM hired -than smart person-ACC found
 ‘John found a smarter person than Mary hired.’

(104) Underlying structures in predicative and attributive comparatives

- a. * John-wa [Mary-ga yatotta kashikosa]-yor*i* kashikoi.
 John-TOP Mary-NOM hired smartness -than smart
 ‘Lit. John is smarter than the smartness Mary hired.’
- b. John-wa [Mary-ga yatotta hito]-yor*i* kashikoi hito-o
 John-TOP Mary-NOM hired person -than smart person-ACC
 mitsuketa.
 found
 ‘John found a smarter person than the person Mary hired.’

The predicative comparative in (103a) has the underlying structure in (104a) in which the RC ‘(that) Mary hired’ modifies the degree noun ‘smartness’. This is semantically odd and thus, (103a) is ungrammatical. In contrast, the attributive comparative in (103b) has the underlying structure in (104b) in which the RC ‘(that) Mary hired’ felicitously modifies the non-degree noun ‘person’. Thus, (103b) is grammatical and the contrast between the predicative and attributive comparatives is explained by Sudo’s approach. Sudo’s insight is that the gradable predicate in the main clause plays different roles, a main predicate in the predicative case and a modifier of a noun in the attributive case, and the structural difference in the main clause must be reflected to account for the contrast.

Though I agree with Sudo’s intuition that the structural difference in the main clause is key to explaining the contrast, the current analysis provides a straightforward account in terms of the applicability of ellipsis. For example, if the AP in the *yor*i-clause is elided as in (105a), the elided AP *kashikoi* ‘smart’ fails to match the argument DP needed in the *yor*i-phrase. By contrast, in (105b), the DP in the *yor*i-clause is elided as in (105a), and so the elided DP *kashikoi hito-o* ‘smart person’ in the *yor*i-phrase is properly recovered (cf. Shimoyama 2012).

(105) Possibility of ellipsis in predicative and attributive comparatives

- a. * John-wa [Mary-ga [AP Δ] yatotta]-yor*i* kashikoi.
 John-TOP Mary-NOM hired -than smart
- b. John-wa [Mary-ga [DP Δ] yatotta]-yor*i* kashikoi hito-o
 John-TOP Mary-NOM hired -than smart person-ACC
 mitsuketa.
 found

Thus, the present contrast can be captured without appealing to a nominal source of clausal comparatives.

In light of Sudo's nominal approach, the so-called negative island effect provides a useful testing ground for comparing his proposal with the current analysis, that is, the unacceptability of comparatives in which the standard clause contains negation. Specifically, we can observe a contrast between clausal comparatives, which display the negative island effect, and phrasal comparatives, which do not.¹⁴

(106) Contrast in negative island effects between clausal and phrasal comparatives

- a. * John-wa [dare-mo kawa-naka-tta]-yori takai hon-o katta.
 John-TOP who-MO buy-NEG-PAST -than expensive book-ACC bought
 'John bought a book that is more expensive than nobody bought.'
- b. John-wa [dare-mo kawa-naka-tta hon]-yori takai hon-o
 John-TOP who-MO buy-NEG-PAST book -than expensive book-ACC
 katta.
 bought
 'John bought a book that is more expensive than the book that nobody
 bought.'

Given that the clausal comparative has a nominal source, Sudo's analysis incorrectly predicts that clausal comparatives in (106a) should be as grammatical as phrasal comparatives in (106b), contrary to fact. To address this problem, Sudo (2015: 32) proposes that the deletion of non-degree nominals (i.e., *hon* 'book') is conditioned by the morphology of the predicate in the *yori*-phrase. Specifically, when the predicate is verbal (i.e., *ka-tta* 'buy-PAST'), the deletion of a non-degree nominal is licensed, but when the predicate is not verbal (i.e., *kawa-naka-tta* 'buy-NEG-PAST' where Sudo assumes that

¹⁴There is a separate question as to whether Japanese exhibits the negative island effect in comparatives in the first place. Beck et al. (2004, 2009) argue that Japanese does not show this effect and conclude that Japanese does not have degree abstraction in the syntax. However, as discussed by Shimoyama (2012) and Sudo (2015), Japanese does exhibit the negative island effect in clausal comparatives. I return to this issue in Section 2.6.

negation turns the predicate into an adjective), such deletion is not permitted. However, as Sudo acknowledges, no such rule on ellipsis has been proposed in the literature and this sort of extra assumption introduces unnecessary complexity. By contrast, under the current analysis, the contrast in (106) straightforwardly follows from their distinct syntactic sources: (106a) has a clausal source and thus exhibits the negative island effect, as in English, whereas (106b) has a SC source in which the nominal “the book that nobody bought” is a subject DP appearing in the *yor*i-phrase. The current account therefore explains the presence and absence of the negative island effect without any additional assumptions, unlike Sudo’s approach.

Finally, Sudo presents an example that appears to pose a challenge for the current analysis. He observes that even when all arguments in the *yor*i-phrase are saturated, the sentence can nonetheless yield a comparative interpretation (adapted from Sudo 2015: 42).

(107) No missing argument in the *yor*i-phrase

Hanako-wa [Taro-ga manga-o yonda ryoo]-yori takusanno hon-o
Hanako-TOP Taro-NOM comic-ACC read amount -than many book-ACC
yonda.
read
‘Hanako read more books than the amount that Taro read comics.’

In this example, no element is dropped inside the *yor*i-phrase. The question, then, is why such a gapless comparative is nevertheless licensed. Under Sudo’s approach, this sentence is analyzed as a standard case in which a degree-denoting nominal, *ryoo* ‘amount’, occurs in the *yor*i-phrase. To shed light on this issue, let us turn to cases in which a measure phrase appears as the apparent complement of *yor*i.

(108) Measure phrase in the *yor*i-phrase

Taro-wa 150cm-yor*i* ookii.
Taro-TOP 150cm-than big
'Taro is taller than 150cm.'

The measure phrase *150cm* is ambiguous between denoting a definite degree (type *d*) and denoting a predicate of degrees (type $\langle d, t \rangle$) (Schwarzschild 2002, Schwarzschild 2004). As Pancheva (2006) notes, when the measure phrase is interpreted as a degree predicate, phrasal comparatives need not be derived from the SC source: *yor*i can directly take a measure phrase that denotes a predicate of degrees. Notably, Sudo (2015) suggests the possibility that degree nominals, which also denote predicates of degrees, are modified by relative clauses. More concretely, degree nominals such as *ryoo* 'amount' (type $\langle d, t \rangle$) may combine with a relative clause (type $\langle d, t \rangle$) via (generalized) predicate modification (Heim and Kratzer 1998).

(109) Predicate modification of degree nominals

- a. Taro-ga manga-o yonda ryoo
Taro-NOM comic-ACC read amount
'the amount that Taro read comics'
- b. λd . [Taro read *d*-many comics] [amount]

If so, gapless degree-nominal comparatives can be analyzed in the same way as those involving measure phrases. Since both degree-nominals and measure phrases denote a predicate of degrees, a 2-place *-er* can directly take a degree predicate in the *yor*i-phrase without appealing to the mechanism developed in Section 2.4. This in turn suggests that Japanese does have genuine clausal comparatives with a gap, but gapless degree-nominal comparatives is also available insofar as degree nominals can be interpreted as degree

predicates within the *yor*i-phrase (see Ueyama 2004 for a similar view). The current analysis thus provides a new perspective on the variety of comparatives in Japanese.

To sum up, the proposed analysis accounts for the data discussed by Sudo (2009, 2015) in a principled way. The contrast between predicative and attributive comparatives in clausal environments follows from the applicability of ellipsis. In addition, the present analysis has a theoretical advantage over Sudo's approach in explaining the negative island effect. By assigning distinct structures to clausal comparatives and phrasal comparatives derived from a SC source, the presence versus absence of the negative island effect emerges naturally, without any stipulative assumptions. Finally, apparent counterexamples involving gapless comparatives are also accommodated, provided that degree nominals are interpreted as degree predicates, on a par with measure phrases. In this way, the proposed analysis captures both gapped and gapless comparatives and offers a unified account of Japanese comparatives.

2.6 Revisiting the Degree Abstraction Parameter

Thus far, I have argued that the SC analysis provides a unified account of the different readings as well as the core syntactic and semantic properties of both phrasal and clausal comparatives in Japanese. In this section, I revisit the question of whether Japanese employs degree abstraction in the syntax. Beck et al. (2004, 2009) propose the Degree Abstraction Parameter (DAP), which determines whether a language permits binding of degree variables in the syntax (Beck et al. 2004: 325).¹⁵

¹⁵Beck et al. (2009: 27) further propose two additional parameters, the Degree Semantics Parameter (DSP) and the Degree Phrase Parameter (DegPP), in addition to the DAP.

- (i) Degree Semantics Parameter (DSP)

(110) Degree Abstraction Parameter (DAP)

A language {does/does not} have binding of degree variables in the syntax.

Beck et al. present five diagnostic phenomena in support of the claim that Japanese lacks degree abstraction in syntax as in (111).

(111) Beck et al.'s (2004, 2009) evidence for the lack of degree abstraction in Japanese

- a. Lack of subcomparatives
- b. Lack of negative island effects
- c. Lack of measure phrases modifying gradable predicates
- d. Lack of degree questions
- e. Lack of minimum-requirement interpretations

Based on these diagnostics, Beck et al. conclude that Japanese lacks degree abstraction in the syntax. Under the present analysis, however, degree abstraction is required. I revisit each diagnostic in turn and show that all five can be reanalyzed in a way that is fully compatible with degree abstraction.

A language {does/does not} have gradable predicates of type $\langle d, \langle e, t \rangle \rangle$ (and related types), i.e. lexical items that introduce degree arguments.

(ii) Degree Phrase Parameter (DegPP)

The degree-argument position of a gradable predicate {may/may not} be overtly filled.

Under this view, the fact that Japanese allows differential comparatives with measure phrases indicates that Japanese does have degree predicates—unlike languages such as Motu, which lack difference comparatives altogether. Readers interested in the cross-linguistic typology associated with these parameters are referred to Beck et al. (2009).

2.6.1 Lack of Subcomparatives

It has been widely noted that Japanese lacks subcomparatives in which two different gradable predicates are introduced within the same comparative sentence (Snyder et al. 1995; Beck et al. 2004; Shimoyama 2012).

(112) Lack of subcomparatives in Japanese

- * Ano-tana-wa [kono-doa-ga nagai]-yori habahiroi.
that-shelf-TOP this-door-NOM long -than wide
'That shelf is wider than this door is long.'

(113) Subcomparatives in English

That shelf is wider than this door is long.

Subcomparatives are permitted in English, which raises the question of why they are disallowed in Japanese. Beck et al. claim that the setting of the DAP is set off in Japanese, and therefore subcomparatives that require degree comparison are unavailable. In contrast, the DAP is set on in English, thereby allowing subcomparatives.

However, if the current analysis is on the right track, the lack of subcomparatives cannot be reduced to the lack of degree abstraction. If both Japanese and English allow degree abstraction, then on what basis can we explain the difference between Japanese and English? With respect to this, consider the fact that English permits predicative comparatives in which the adjective is overtly realized in the *than*-phrase in some environment, which is similar to subcomparatives. For example, suppose that speakers are discussing the dimensions of a desk because they need to move it into a new house. ((114) is adapted from Chomsky 1977: 122; cf. Bresnan 1975; Lechner and Corver 2017).

(114) Subcomparatives and predicative comparatives in English

- a. This desk is higher than that one is wide.
- b. No, this desk is higher than that one is HIGH.

(with contrastive stress on HIGH)

Chomsky (1977) observes that when the adjective is overtly realized in the *than*-phrase of a predicative comparative, it must bear stress. Furthermore, prior work has shown that contrastive focus on elements within an elided constituent can prevent ellipsis and allow the overt realization of material that would otherwise be deleted (Takahashi and Fox 2005; Hartman 2011). Given these observations, it follows that English predicative comparatives normally require a comparative deletion site; however, when (contrastive) focus is placed on a gradable predicate, the requirement can be lifted, as in (114b). Subcomparatives involving two distinct adjectives, as in (114a), are likewise exceptionally licensed, presumably due to their contrastive interpretation of the gradable predicates. In Japanese, however, this kind of focus-based strategy is unavailable. One possible way of understanding this contrast is in terms of the types of ellipsis involved in the two languages. English comparatives involve PF-deletion, which allows focus to disrupt ellipsis and thereby license overt realization. Japanese comparatives, by contrast, involve LF-copy rather than PF-deletion, in which case the relevant pronounced structure is never present in overt syntax, and the same focus-based repair strategy would not be available.

In this respect, Japanese allows predicative comparatives using *soo* ‘so’ anaphora instead of an overt gradable predicate in the *yor*i-phrase.

(115) *Soo* anaphora in predicative comparatives

- a. Sono-biru-wa [jissaini soo de-aruru]-yori ookiku mieru.
that-building-TOP actually so COP-PRES -than big look
'That building looks bigger than it actually is big.'
- b. * Sono-biru-wa [jissaini ookii]-yori ookiku mieru.
that-building-TOP actually big -than big look
'That building looks bigger than it actually is big.'

In (115a), the use of the anaphoric expression *soo* in the *yori*-phrase licenses the predicative comparative, in contrast to the overt gradable predicate in the *yori*-phrase in (115b). Intuitively, the two sentences give rise to very similar comparative meanings. Crucially, however, they differ in what the *yori*-phrase contains: the former contains a verbal string headed by the copula, whose gradable content is recovered anaphorically, whereas the latter contains an overt gradable predicate. This contrast suggests that the ungrammaticality of realizing an overt gradable predicate inside the *yori*-phrase in Japanese predicative comparatives reflects a restriction that is independent of degree abstraction.

With the use of the *soo* anaphora, subcomparative-like sentences can in fact be constructed in Japanese. Consider the following context. Suppose that Taro and Jiro are looking for a large table at a furniture shop. Since they want to place many items on the table, they are concerned with different dimensions of its size.¹⁶

¹⁶In Japanese, *tate* 'vertical' is often used to describe the depth (front-back dimension) of an object, while *yoko* 'horizontal' typically refers to its width. These dimensions roughly correspond to English *long* and *wide*, respectively.

(116) Subcomparative-like meaning with *soo*

- a. Taro-wa ano teeburu-ga tate-ni nagai-to omotteiru.
Taro-TOP that table-NOM vertical-LOC long-that think
'Taro thinks that that table is long.'
- b. ? Jiro-wa [ano teeburu-ga soo de-aruru]-yori kono
Jiro-TOP that table-NOM so COP-PRES -than this
teeburu-no-hoo-ga yoko-ni hiroi-to omotteiru.
table-GEN-ONE-NOM side-LOC wide-that think
'Jiro thinks that this table is wider than that table is long.'

(117) Subcomparatives with an overt adjective

- ??? Jiro-wa [ano teeburu-ga tate-ni nagai]-yori kono
Jiro-TOP that table-NOM vertical-LOC long -than this
teeburu-no-hoo-ga yoko-ni hiroi-to omotteiru.
table-GEN-ONE-NOM side-LOC wide-that think
'Jiro thinks that this table is wider than that table is long.'

To my ear, (116b) is much better than (117), though there may be speaker variation. Crucially, in the former, the gradable predicate inside the *yori*-phrase is not overtly realized; instead, it is recovered anaphorically via *soo* 'so'. This contrasts sharply with cases in which an overt gradable predicate appears inside the *yori*-phrase, which are degraded. The acceptability of (116b) therefore reinforces the view that the restriction against subcomparatives in Japanese should be attributed to a syntactic constraint on the realization of gradable predicates within the *yori*-phrase. While the precise nature of this constraint requires further investigation, the present discussion indicates that the absence of subcomparatives cannot be attributed to a lack of degree abstraction.

2.6.2 Lack of a Negative Island Effect

In addition to the absence of subcomparatives, Beck et al. argue that the lack of a negative island effect in Japanese comparatives further supports the view that Japanese lacks degree abstraction, in contrast to English. To see this, note first that English comparatives are unacceptable when the *than*-phrase contains negation (Beck et al. 2009: 11).

(118) Negative island effect in English

*Mary bought a more expensive book than nobody did.

(119) Undefined maximale degree

MAX(λd . nobody bought *d*-expensive books)

According to von Stechow (1984) and Rullmann (1995), a *than*-clause containing negation fails to yield a defined maximal degree, thereby rendering the entire sentence uninterpretable. Regarding this point, Beck et al. point out that Japanese comparatives do not exhibit a negative island effect (Beck et al. 2004: 314).

(120) Lack of negative island effect

Jonn-wa [dare-mo kawa-naka-tta-no]-yori takai hon-o katta.
John-TOP who-MO buy-NEG-PAST-NO -than expensive book-ACC bought
'John bought a book that is more expensive than the one that nobody bought.'

The contrast between English and Japanese comparatives is captured by Beck et al.'s account in terms of the availability of degree abstraction again. Since English comparatives involve degree abstraction, the negative island effect is predicted to arise. By contrast, because Japanese comparatives do not involve degree abstraction, the degree-based negative island effect is expected to be absent.

Although this account explains the lack of negative island effects in Japanese, it is important to note that such effects emerge in Japanese comparatives if the nominalizer *-no* is omitted (Beck et al. 2004: 315).

- (121) * Jonn-wa [dare-mo kawa-naka-tta]-yori takai hon-o katta.
 John-TOP who-MO buy-NEG-PAST -than expensive book-ACC bought
 ‘John bought a book that is more expensive than nobody bought.’

If the present analysis is correct, (121) should be considered a genuine instance of clausal comparatives and it displays the negative island effect, just like English (cf. Shimoyama 2012). But what about (120)? In (120), the nominalizer *-no* turns the clause within the *yori*-phrase into a definite nominal expression. Its interpretation is essentially ‘the one that nobody bought’, comparable to *dare-mo kawa-naka-tta hon* ‘the book that nobody bought’ (cf. Hayashishita 2009). If so, the nominalized clause must be analyzed as a DP within the SC. Moreover, the interpretation indicates that *-er* takes scope within an RC in the IM structure.

- (122) [RC [SC [DP the one that nobody bought] [_{VP} Δ]]-yori-er [_{VP} (be) expensive]]
 ‘(a book) that is more expensive than the one that nobody bought’

The negative island effect is therefore not expected in (120), since the negation is confined to the nominalized clause and is not interpreted in relation to the degree in the SC structure. This explains the observed contrast in Japanese in a straightforward way.

2.6.3 Lack of Measure Phrases Modifying Gradable Predicates

Beck et al. claim that Japanese does not permit direct measure phrases to modify gradable predicates. As shown in (123), the interpretation of a direct measure phrase such as 5

cm differs from English: it yields only a differential comparative meaning, rather than a simple measure modification (Beck et al. 2009: 10).

(123) Lack of measure phrases modifying gradable predicates

Sally-wa 5 cm se-ga takai.
Sally-TOP 5 cm back-NOM tall
'Sally is 5cm taller. / *Sally is 5cm tall.'

Because modification by measure phrases require quantification over degrees, Beck et al. conclude that the absence of direct measure phrases modifying gradable predicates in Japanese implies that the language does not make use of degree abstraction.

On this point, Sawada and Grano (2011: 206) present a set of examples showing that measure phrases in fact function as absolute measurements in Japanese.

(124) Measure phrases denote absolute measurements

a. Kono sao-wa 5-do magat-teiru.
this rod-TOP 5-degree bend-ASP
'This rod is 5 degrees bent.'

Not: 'This rod is 5 degrees more bent.'

b. Kono husuma-wa 3-senchi ai-teiru.
this sliding.door-TOP 3-centimeter open-ASP
'This door is 3 centimeters open.'

Not: 'This door is 3 centimeters more open.'

c. Pisa-no shatoo-wa 3.97-do katamui-teiru.
Pisa-GEN leaning.tower-TOP 3.97-degree incline-ASP
'The Leaning Tower of Pisa is 3.97 degrees inclined.'

Not: 'The Leaning Tower of Pisa is 3.97 degrees more inclined.'

The fact that measure phrases denote absolute measurements in these examples constitutes

a direct counterexample to Beck et al.’s claim (and to any related claims, such as Snyder et al. 1995) that Japanese does not allow measure phrases. Sawada and Grano argue that the interpretation of measure phrases in Japanese is sensitive to the scale structure of gradable predicates. When a measure phrase combines with an adjective with an open scale, such as *takai* ‘tall’, the differential reading arises by coercion, in the sense that a contextual standard is introduced. In contrast, when a measure phrase combines with an adjective with a lower-closed scale, such as *magatteiru* ‘bent’, it receives an absolute measurement interpretation, e.g., 5 cm from the minimal element of the scale (see Sawada and Grano for detailed discussion). Moreover, similar restrictions are found in English: not all gradable adjectives allow measure phrases (e.g. *3 dollars expensive). Such facts are generally attributed to properties of scale structure, not to the absence of degree abstraction, and therefore do not support Beck et al.’s conclusion.

2.6.4 Lack of Degree Questions

Beck et al. argue that Japanese also lacks degree questions (Beck et al. 2009: 10).

(125) Lack of degree questions

John-wa dore-kurai kashikoi-no?
 John-TOP which-degree smart-Q
 ‘To which degree is John smart?’

They argue that Japanese degree questions rely on degree nouns such as *kurai* ‘degree’, and that what is manipulated in such questions is the individual variable associated with the degree noun, rather than the degree variable introduced by a gradable predicate.

With respect to this, Sudo (2015) argues that the presence of degree nouns such as *kurai* ‘degree’ does not necessarily support Beck et al.’s conclusion. Although Beck et al.

claim that only the individual variable associated with the degree noun is manipulated in such questions, Sudo points out that the degree-denoting noun itself can plausibly be analyzed as introducing a degree abstraction (Sudo 2015: 45).

(126) Degree denoting noun in degree questions

- a. John-wa dore-kurai kashikoi-no?
John-TOP which-degree smart-Q
'To which degree is John smart?'
- b. which degree λd . [John is d -smart]

Crucially, if only the individual variable associated with the degree noun is manipulated in degree questions, it is unclear how the meanings of degree questions themselves could be derived. Beck et al.'s analysis does not address this issue, and therefore the evidence from degree questions does not provide strong support for their claim.

2.6.5 Lack of Minimum Requirement Interpretations

Finally, Beck et al. show that Japanese degree phrases cannot take wide scope over a modal verb, so fail to derive so-called minimum requirement interpretations in comparatives. Heim (2000) observes that the English example in (127a) allows a reading in which the comparative *-er* takes scope over the modal *need*: the paper must reach a length that is at least 15 pages in all situations satisfying the requirements—that is, the minimal required length is 15 pages. This minimal-requirement reading is derived from the LF in (127b), where *-er* scopes over the modal. In contrast to English, Beck et al. report that the corresponding reading is unavailable in Japanese (Beck et al. 2009: 11).

(127) Minimum requirement reading

- a. That paper needs to be exactly 5 pages longer than that.
- b. [[exactly 5 pages -er than that] [λd . that paper is required to be d -long]]

(128) Lack of minimum requirement interpretations

Sono ronbun-wa sore-yori(-mo) choodo 5 peeji nagaku nakereba-naranai.
that paper-TOP that-than(-MO) exactly 5 page long be-required
'That paper needs to be exactly 5 pages longer than that.'

The Japanese sentence allows only the reading in which the requirement for the paper is exactly 15 pages—neither longer nor shorter. This indicates that Japanese does not permit the LF representation in (127b), where *-er* scopes over the modal. Beck et al. therefore conclude that Japanese does not employ degree abstraction in this configuration, in contrast to English.

Regarding the alleged absence of minimal readings, Heim (2000) observes that even in English, modal predicates differ systematically with respect to whether they allow the degree phrase to take scope above the modal, thereby yielding a minimal reading. In particular, modal predicates such as *require*, *allow*, *need*, and *be able to* permit minimal readings, whereas predicates such as *might*, *should*, *be supposed to*, and *want* do not. Building on this insight, Sudo (2015) provides the following Japanese example that allows a minimal reading (Sudo 2015: 49).

(129) *hitsuyoo-ga aru* 'lit. there is a need' allows a minimal reading

Sono ronbun-wa sore-yori choodo 5 peeji nagai hitsuyoo-ga aru.
that paper-TOP that-than exactly 5 page long need-NOM exist
'That paper needs to be exactly 5 pages longer than that.'

This sentence does allow the minimal reading, and as Sudo notes, its availability depends

on the choice of modal predicate like English (see also Shimoyama 2012). In the example, the modal predicate *hitsuyoo-ga aru* ‘lit. there is a need’ is used, in contrast to *nakereba-naranai* ‘be required’ in the sentence that lacks the minimal reading. The existence of a minimal reading in (129) presents a challenge for Beck et al.’s view that Japanese lacks degree abstraction. While it remains an open question why some modals permit the minimal reading while others do not, the empirical facts regarding minimal readings do not support Beck et al.’s claim.

To sum up, the five diagnostics discussed by Beck et al. (2004, 2009) do not support the conclusion that Japanese lacks degree abstraction. In particular, the behavior of measure phrases and the availability of minimal readings provide direct counterexamples to their analysis and are difficult to reconcile with their analysis. Note that I am not disputing the DAP itself, but rather the claim that Japanese does not make use of degree abstraction. Whether the DAP is theoretically necessary remains an open question. However, the present discussion in Japanese suggests that the typological generalizations proposed by Beck et al. (2009) may involve inaccuracies in their treatment of individual languages. The diagnostics they rely on must therefore be examined carefully on a language-by-language basis, as the Japanese data indicate that these phenomena may receive different explanations or that the empirical generalizations in their study are not sufficiently precise.

2.7 Conclusion

In this chapter, I have argued that Japanese has only a 2-place *-er*, and that comparatives are derived either from full clausal sources or from SC sources. By examining the two

readings of phrasal comparatives, I showed that these readings arise from different scope positions of *-er*. As summarized in Table (130), the narrow reading is derived from an IM structure, in which *-er* scopes within the relative clause, while the two wide readings arise from DM structures, where *-er* takes scope in the main clause, either at vP or CP. Importantly, these scope possibilities are systematically correlated with the surface position of the *yor*i-phrase.

(130) Scope position of the 2-place *-er* in phrasal comparatives

Adjectival modification	DegP scope	Reading
IM	vP in the RC	Narrow
DM	vP in the main clause	Low wide
DM	CP in the main clause	High wide

Crucially, the surface position of *yor*i indicates the scope of *-er*, in conformity to the Extraposition-Scope Generalization. Unlike English, where the movement of *-er* and *than*-clause is covert, Japanese marks the scope of *-er* through the surface position of *yor*i-phrases. In this sense, Japanese offers transparent evidence for the relationship between the scope of *-er* and the syntactic position of the standard clause.

The SC analysis also captures the apparent phrasal properties of *yor*i-phrases noted in the literature while retaining their internal structure. Under this account, phenomena that have been taken to motivate a 3-place *-er* can be explained equally well with a 2-place *-er*. In addition, the SC analysis naturally derives the Condition C asymmetry that points toward internal structure inside *yor*i-phrases. This analysis can also explain apparent counterexamples involving gapless comparatives once degree nominals are treated as degree predicates, in parallel with measure phrases, allowing both gapped and gapless

comparatives to receive a unified analysis.

Finally, I have shown that the five diagnostics discussed in Beck et al. (2004, 2009) do not provide evidence that Japanese lacks degree abstraction. Patterns with negative island effects, measure phrases, and minimal readings directly contradict their analysis, and the overall empirical picture does not support the conclusion that Japanese lacks degree abstraction. Though this does not challenge the DAP itself, it does challenge its proposed setting for Japanese. More broadly, the Japanese data suggest that the cross-linguistic generalizations in Beck et al. (2009) may be inaccurate and that each diagnostic must be reassessed on a language-specific basis.

Chapter 3

Comparatives to Superlatives: A Single Source Analysis of *Ichiban* Superlatives

3.1 Introduction

This chapter investigates Japanese superlatives formed with the expression *ichiban*, literally ‘number one’. I argue that Japanese superlatives are derived by the same underlying mechanism proposed for phrasal comparatives in Chapter 2, thereby providing a unified analysis of comparatives and superlatives.

Since Ross (1964), it has been widely observed that superlatives in English and other languages permit two distinct interpretations: the absolute and the relative reading (Heim 1985, 1999; Szabolcsi 1986).

(1) John climbed the highest mountain.

a. Absolute reading

John climbed the highest mountain among the contextually relevant mountains.

b. Relative reading

A mountain that John climbed is higher than any of the mountains that the other contextually relevant climbers climbed.

Two main theoretical approaches have been proposed to explain the two available readings of superlatives: the *DP-internal -est theory* and the *Scope Theory*. In the DP-internal *-est* theory (Farkas and Kiss 2000; Sharvit and Stateva 2002; Teodorescu 2009; Coppock and Beaver 2014, 2015), *-est* remains within the DP, and the distinction between absolute and relative interpretations is derived by semantic or purely pragmatic mechanisms.

By comparison, the Scope Theory (Heim 1985, 1999; Szabolcsi 1986; Hackl 2009) attributes the ambiguity to syntactic structure: covert movement of *-est* to different positions, either inside or outside the DP, gives rise to the two readings. More recent work has further strengthened scope-based approaches. Building on sloppy readings of pronouns inside and outside superlative DPs, Bumford (2018) argues that movement of the superlative DP is necessary. He shows that sloppy interpretations of DP-internal pronouns are difficult to derive under approaches in which *-est* remains inside the DP and the ambiguity is determined by pragmatic resolution. He therefore concludes that superlative DPs must undergo movement in order to obtain the correct readings. Thus, the debate between DP-internal and scope-based approaches remains unsettled.

With this theoretical background, Aihara (2007, 2009) argues that Japanese superlatives support the Scope Theory. He points out that *ichiban* can be overtly realized in DP-external

positions, seemingly suggesting the movement of *ichiban* (Aihara 2009: 347).

- (2) a. John-ga [DP *ichiban*₁ t₁ takai yama-ni] nobotta.
 John-NOM -est high mountain-DAT climbed
 ‘John climbed the highest mountain.’ (OKABS/OKREL)
- b. *Ichiban*₁ John-ga [DP t₁ takai yama-ni] nobotta.
 -est John-NOM high mountain-DAT climbed
 ‘John climbed the highest mountain.’ (*ABS/OKREL)

Based on this fact, Aihara proposes that *ichiban* functions as a degree quantifier equivalent to English *-est*, undergoing overt or covert movement either within or outside the DP. The resulting structural ambiguity accounts for both absolute and relative interpretations. Therefore, Aihara argues that the Scope Theory is supported by Japanese superlatives that instantiate the movement of the superlative morpheme.

While the overt realization of DP-external *ichiban* constitutes an important empirical observation that appears to support the Scope Theory, there remains a discrepancy between the word orders predicted by the Scope Theory and the actual surface positions of *ichiban* in Japanese. This issue is especially significant because Japanese is a scope-rigid language, where surface word order reflects the scope of quantifiers. This discrepancy calls for an alternative analysis that better accounts for the observed behavior of *ichiban*.

The solution lies in the observation that superlatives and phrasal comparatives show a parallel ambiguity resolution pattern. As discussed in Chapter 2, phrasal comparatives display ambiguity between narrow and wide readings, and this ambiguity is resolved in two environments: (i) the presence of a past tense marker on the adjective forces the narrow reading, and (ii) sentence-initial placement of the *yori*-phrase forces the wide reading.

(3) Ambiguity resolution pattern of phrasal comparatives

- a. Taro-ga [Jiro-yori] ookii robotto-o motteiru.
 Taro-NOM Jiro-than big robot-ACC have
 ‘Taro has a robot that is bigger than Jiro.’ (NAR)
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)
- b. Taro-ga [Jiro-yori] ooki-kat-ta robotto-o motteiru.
 Taro-NOM Jiro-than big-COP-PAST robot-ACC have
 ‘Taro has a robot that was bigger than Jiro.’ (NAR)
- c. [Jiro-yori] Taro-ga ookii robotto-o motteiru.
 Jiro-than Taro-NOM big robot-ACC have
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)

A similar distribution is observed with superlatives. When the adjective appears with past tense morphology, only the absolute reading is available. By contrast, when *ichiban* occupies a sentence-initial position, only the relative reading is obtained.

(4) Ambiguity resolution pattern of *ichiban* superlatives

- a. Taro-ga ichiban ookii robotto-o motteiru.
 Taro-NOM ICHIBAN big robot-ACC have
 ‘Taro has a robot that is bigger than any other robot.’ (ABS)
 ‘Taro has a bigger robot than anyone else does.’ (REL)
- b. Taro-ga ichiban ooki-kat-ta robotto-o motteiru.
 Taro-NOM ICHIBAN big-COP-PAST robot-ACC have
 ‘Taro has a robot that was bigger than any other robot.’ (ABS)
- c. Ichiban₁ Taro-ga t₁ ookii robotto-o motteiru.
 ICHIBAN Taro-NOM big robot-ACC have
 ‘Taro has a bigger robot than anyone else does.’ (REL)

There is a systematic parallel between the absolute and narrow readings on the one hand,

and the relative and wide readings on the other. To my knowledge, this parallel has not been explicitly noted in prior work, though Shimoyama (2014) partially addresses it. Building on this correspondence, I argue that *ichiban* superlatives are derived by the same underlying mechanism that derives phrasal comparatives.

Several ingredients underlie the proposed analysis. First, *ichiban* has a lexical meaning ‘number one’. I argue that superlatives involve a maximality operator, MAX, which returns the unique maximal degree from a set of degrees (i.e., the comparison class in superlatives). In Heim’s 3-place *-est* analysis, the comparison class is a set of individuals, whereas in the present proposal the comparison class is a set of degrees. Building on Loccioni’s (2018) analysis of superlatives in Romance languages such as Spanish and Italian, and Coppock and Engdahl’s (2016) lexical decomposition of MAX, I argue that *ichiban*, in combination with a covert primitive ER, realizes part of this operator. This operator is clearly related to the MAX used in comparatives in Chapter 2, but differs from it in that the one used in superlatives includes the primitive ER. On this view, MAX is composed of three atomic components: (i) a primitive ER that introduces an ordering between degrees, $2000 > 3000$; (ii) a SUP element that maps an ordered set of degrees to a singleton containing the maximal degree (e.g. $\{1000, 2000, 3000\} \rightarrow \{3000\}$); and (iii) a definite determiner THE that returns the unique maximal degree (e.g. $\{3000\} \rightarrow 3000$).

I propose that *ichiban* lexicalizes both THE and SUP, and in combination with a covert ER, functions as MAX. I further argue that the ambiguity between absolute and relative readings stems from structural ambiguity in adjectival modification. Specifically, the absolute reading arises from the Indirect Modification (IM) structure, where *ichiban*-ER is interpreted within a relative clause, while the relative reading is derived from Direct Modification (DM), following Shimoyama (2014). Moreover, this analysis accounts for

the fact that *ichiban*-ER can be interpreted in two distinct positions in relative readings: within the vP below the correlate subject, or at the CP above the correlate subject. Under this analysis, the parallel distribution between *ichiban* in superlatives and *yor*i-phrases in phrasal comparatives follows naturally from the fact that ER, whether realized alone or in combination with *ichiban*, is interpreted at the same structural height.

This chapter is organized as follows. Section 3.2 reviews Aihara's analysis of Japanese superlatives within the Scope Theory framework. Section 3.3 examines three properties of *ichiban*, focusing on its lexical meaning 'number one' and its syntactic distribution alongside *yor*i-phrases. Section 3.4 proposes that *ichiban*, together with a covert ER, forms part of the meaning of MAX. Section 3.5 provides an argument against Heim's 2-place *-est* analysis of Japanese superlatives, and Section 3.6 concludes the chapter.

3.2 Scope Theory-Based Analysis of Superlatives

This section outlines the basic assumptions regarding the interpretation of superlatives.¹ I then present an overview of Aihara's analysis and identify several issues with his proposal.

3.2.1 Background

Heim (1999) proposes that *-est* is a degree quantifier with a contextually restricted domain argument *C*, which determines the comparison class. The semantics of *-est* is

¹Aihara (2009:343–345) provides a clear overview of the development of research on superlatives and proposes an analysis of Japanese superlatives based on it. In what follows, I adopt the general structure of his discussion for expository purposes and use his notational conventions where appropriate for ease of comparison.

given in (5).²

$$(5) \quad \llbracket -est \rrbracket = \lambda C_{\langle e,t \rangle} . \lambda R_{\langle d,et \rangle} . \lambda x : x \in C \wedge \forall z [z \in C \rightarrow \exists d [R(d)(z) = 1]] \\ \exists d [R(d)(x) = 1 \wedge \forall y [y \neq x \wedge y \in C \rightarrow R(d)(y) = 0]]$$

Under this definition, all members of the comparison set must possess the property R to some degree, and none of them except x may exceed x in degree of R . Because *-est* takes three arguments, it is commonly referred to as the “3-place *-est*”, in contrast to the “2-place *-est*”, which I discuss in Section 3.5.

Given the 3-place *-est*, two major approaches have been proposed to account for the interpretation of superlatives: the *DP-internal -est theory* and the *Scope Theory*. According to the DP-internal theory (Farkas and Kiss 2000; Sharvit and Stateva 2002; Teodorescu 2009; Coppock and Beaver 2014, 2015), *-est* remains within the DP, and the absolute and relative readings are resolved by semantic and/or pragmatic mechanisms. By comparison, the Scope Theory (Heim 1985, 1999; Szabolcsi 1986; Hackl 2009; Bumford 2018) argues that the two readings arise from distinct LF representations created by covert movement of the superlative morpheme.

The Scope Theory assumes that *-est* is merged with the context variable C inside the AP, forming a complex constituent C -*est*, which then undergoes covert movement. This movement leaves behind a degree variable in its original position (Heim 1999).

²The semantics of Heim’s 3-place *-est* can alternatively be represented using MAX notation (Hackl 2009; Beck 2019).

(i) $\llbracket -est \rrbracket = \lambda C_{\langle e,t \rangle} . \lambda D_{\langle d,et \rangle} . \lambda x . \forall y \in C [y \neq x \rightarrow \text{MAX}(\lambda d . D(d)(x)) > \text{MAX}(\lambda d . D(d)(y))]$
 $\llbracket -est \rrbracket(C)(D)(x)$ is defined only if $x \in C \wedge \exists y [y \neq x \wedge y \in C]$

(6) DP-internal *-est* movement

a. Overt syntax

John climbed the highest mountain

b. LF syntax

John climbed [the [*C-est*] λd . [*d*-high mountain]]

c. Interpretation

$\llbracket (6a) \rrbracket =$

1 iff John climbed the unique x such that $\exists d[x \text{ is a } d\text{-high mountain} \wedge$

$\forall y[y \neq x \wedge y \in C \rightarrow y \text{ is not a } d\text{-high mountain}]]$

Comparison class: $\{x : \exists d \text{ s.t. } x \text{ is a } d\text{-high mountain}\}$ (ABS)

Comparison class: $\{x : \exists d \text{ s.t. } x \text{ climbed a } d\text{-high mountain}\}$ (REL)

(7) DP-external *-est* movement

a. Overt syntax

John climbed the highest mountain

b. LF syntax

John₁ [*C-est*] λd . [₁ climbed [the [*d*-high mountain]]]

c. Interpretation

$\llbracket (7a) \rrbracket = 1$ iff $\exists d[\text{John climbed a } d\text{-high mountain} \wedge$

$\forall y[y \neq \text{John} \wedge y \in C \rightarrow y \text{ did not climb a } d\text{-high mountain}]]$

Comparison class: $\{x : \exists d \text{ s.t. } x \text{ climbed a } d\text{-high mountain}\}$ (REL)

When the *C-est* complex undergoes DP-internal movement, both absolute and relative readings can be derived through contextual resolution, in addition to the restrictions encoded as presuppositions of *-est*. In contrast, when *C-est* moves out of the DP, it takes

scope in a DP-external position, yielding only the relative reading. In this configuration, the definite article *the* must be replaced by an indefinite article, since interpreting definiteness in such an LF leads to a contradiction: the comparison class *C* would denote a set of individuals who all climbed the unique mountain, while *-est* would assert that only John did so. To avoid this inconsistency, the DP must therefore be interpreted as indefinite (Szabolcsi 1986; Heim 1985, 1999).

3.2.2 A Scope Theory-Based Account of Japanese Superlatives

The two distinct readings associated with superlatives are also observed in Japanese. Japanese superlatives are formed by combining the superlative morpheme *ichiban*, corresponding to English *-est*, with gradable predicates such as *takai* ‘high’ (Aihara 2007, 2009).³

- (8) John-ga *ichiban takai yama-ni* nobotta.
 John-NOM -est high mountain-DAT climbed
 ‘John climbed the highest mountain.’ (ABS/REL)

As illustrated, *ichiban* superlatives are also ambiguous between absolute and relative readings. To account for this ambiguity, Aihara (2007, 2009) argues that Japanese superlatives can be explained by the Scope Theory. Assuming that *ichiban* is a degree quantifier corresponding to English *-est*, he proposes that the absolute and relative readings are derived through covert movement of *C-ichiban* to different landing sites (adapted from Aihara 2009: 347).

³Although Aihara’s discussion focuses on *ichiban*, he notes that the same analysis can also be applied to another superlative morpheme *mottomo*, which exhibits the same distribution as *ichiban*. However, since the lexical meaning of *ichiban* ‘number one’ plays a central role in my analysis, I set aside discussion of *mottomo* in this chapter and return to it in Chapter 4.

- (9) a. LF syntax for the absolute reading

John-ga [DP C-ichiban₁ t₁ takai yama-ni] nobotta.
 John-NOM -est high mountain-DAT climbed

- b. LF syntax for the relative reading

John-ga C-ichiban₁ [DP t₁ takai yama-ni] nobotta.
 John-NOM -est high mountain-DAT climbed

The DP-internal movement of *C-ichiban* yields both absolute and relative readings depending on contextual resolution, while DP-external movement of *C-ichiban* derives only the relative reading. Thus, the movement-based analysis of superlatives developed for English is argued to be directly applicable to the Japanese counterpart.

However, since *-est* is a bound morpheme that attaches to adjectives (e.g. *high-est*), it cannot undergo visible movement. In contrast, *ichiban*, being a free morpheme, can be displaced from its base-generated position (adapted from Aihara 2009: 347).

- (10) Ichiban₁ John-ga [DP t₁ takai yama-ni] nobotta.
 -est John-NOM high mountain-DAT climbed

‘John climbed the highest mountain.’

(*ABS/^{OK}REL)

Thus, the Scope Theory appears to be supported by the visible movement of the superlative morpheme in Japanese, which contrasts with the absence of such movement in the case of English *-est*. Note, however, that when *ichiban* is displaced, it surfaces in a position above the subject, as seen in (10). This observation challenges the Scope Theory, in which *C-est* takes parasitic scope strictly below the subject position.

To address this discrepancy, Aihara proposes the following derivation (Aihara 2009: 349).

(11) a. Overt syntax

John-ga [VP [DP C-ichiban takai yama-ni] nobotta]
 John-NOM -est high mountain-DAT climbed

b. LF syntax

[IP John-ga [*C-ichiban*] λd . [VP [DP *d*-takai yama-ni] nobotta]]

$\llbracket (11a) \rrbracket = 1$ iff $\exists d$ [John climbed a *d*-high mountain $\wedge$

$\forall y$ [$y \neq \text{John} \wedge y \in C \rightarrow y$ did not climb a *d*-high mountain]]

Comparison class: $\{x : \exists d \text{ s.t. } x \text{ climbed a } d\text{-high mountain}\}$ (REL)

c. PF (for (10))

[IP C-ichiban₁ [IP John-ga [VP [DP t₁-takai yama-ni] nobotta]]]

Crucially, to maintain the central insight of the Scope Theory that *-est* undergoes covert movement at LF, Aihara argues that the apparent overt movement of *ichiban* in (10) does not occur in overt syntax. Instead, the *C-ichiban* complex undergoes LF movement, as in the original Scope Theory. To derive the surface word order, he further assumes that *C-ichiban* moves out of the DP at PF, a process that does not affect semantic interpretation (Sauerland and Elbourne 2002).

Finally, to explain the unavailability of the absolute reading in (10), Aihara (2009: 351) tentatively adopts the following assumption.

(12) Feeding relationship between LF and PF

LF-movement of *C-ichiban* out of a DP/NP feeds its subsequent PF-movement.

According to Aihara, this is analogous to the English case where the definite article blocks long LF-movement of *C-est*, yielding the absolute reading, while the indefinite article permits long LF-movement of *C-est*, yielding the relative reading. In the case of

Japanese, if a DP containing *ichiban* is interpreted as definite, *ichiban* must remain within the DP at LF, which in turn blocks PF movement of *ichiban* out of the DP. By contrast, if the superlative DP is interpreted as indefinite, *ichiban* undergoes LF movement, and this simultaneously licenses PF movement of *ichiban*. Aihara acknowledges that this proposal is stipulative and leaves the issue unresolved.

The core problem with Aihara's proposal is that it posits a direct feeding relationship between LF and PF, which is incompatible with the Y-model of the Minimalist Program, where LF and PF are independent and receive input only from overt syntax (Chomsky 1995). Moreover, even setting this issue aside, the analysis fails to capture the scope-rigid nature of Japanese: if *ichiban* is a degree quantifier, its surface position should determine its scope, yet in Aihara's analysis, its scope remains fixed below the correlate at LF regardless of surface order. This mismatch points to the need for an alternative analysis.

3.3 Three Properties of *Ichiban* Superlatives

Before turning to the analysis of *ichiban* superlatives, this section introduces three key empirical properties of *ichiban*: (i) the lexical meaning 'number one', (ii) its parallel distribution with *yor*-phrases, and (iii) the anti-topic marking effect.

3.3.1 Lexical Meaning of *Ichiban*

Although this point has not played a central role in Aihara's analysis, *ichiban* can be decomposed into two parts: the numeral *ichi* 'one' and the classifier *ban* 'number'.

- (13) a. *ichi-ban*
one-CL
'number one'
- b. *ni-ban*
two-CL
'number two'
- c. *san-ban*
three-CL
'number three'

The numeral *ichi* 'one' can be replaced with other numerals such as *ni* 'two' and *san* 'three', yielding expressions like 'number two' and 'number three'. The classifier *ban* is a Sino-Japanese morpheme (i.e., a morpheme of Chinese origin), and it can also be combined with another Sino-Japanese morpheme such as *goo* 'sign' or 'symbol', producing the compound word *ban-goo* 'number'. The *N-ban* form is used, for instance, to refer to bus numbers with the genitive marker *-no*.

- (14) *san-ban-no basu*
three-CL-GEN bus
'bus number three'

In relation to these nominal numbers, adding the ordinal suffix *-me* derives ordinal expressions.

- (15) a. ichi-ban-me
 one-CL-ORD
 ‘first’
- b. ni-ban-me
 two-CL-ORD
 ‘second’
- c. san-ban-me
 three-CL-ORD
 ‘third’

These ordinal expressions differ from the *N-ban* examples illustrated above. When used to count buses, they imply the existence of other buses that come before the target bus either spatially or temporally.

- (16) san-ban-me-no basu
 three-CL-ORD-GEN bus
 ‘the third bus’

Suppose there are four bus routes numbered 1, 3, 16, and 201, listed vertically in a bus company’s schedule. In this context, the ordinal expression ‘the third bus’ does not refer to the bus labeled number 3. Instead, it refers to the third bus from the top of the list—namely, bus number 16. Thus, the use of the *N-ban-me* form presupposes the presence of other items, specifically, $N - 1$ items, that precede the target in the given order (Yee 2010, 2011; Alstott 2023, 2025; see also Tatsumi 2021 for Japanese *-me* ordinals).

Given this fact, consider the distribution of English *-est* and Japanese *ichiban*. In English, a mountain that is higher than all others except the highest can be described as ‘the second highest mountain’, and a mountain that is higher than all others except the highest and the second highest can be described as ‘the third highest mountain’.

- (17) a. the highest mountain
 b. the second highest mountain
 c. the third highest mountain

Thus, the overt superlative morpheme *-est* is consistently used in superlative expressions, even when preceded by an ordinal modifier such as ‘second’ or ‘third’. Now, consider the Japanese counterparts of ordinal superlatives.

- (18) a. *ichi-ban takai yama*
 one-CL high mountain
 ‘the highest mountain’
 b. *ni-ban-me-ni (*ichi-ban) takai yama*
 two-CL-ORD-DAT one-CL high mountain
 ‘the second highest mountain’
 c. *san-ban-me-ni (*ichi-ban) takai yama*
 three-CL-ORD-DAT one-CL high mountain
 ‘the third highest mountain’

The Japanese counterparts of ‘the second highest mountain’ and ‘the third highest mountain’ cannot include *ichiban*; instead, only the ordinal expressions precede the adjectives in these cases. This is unexpected if *ichiban* is the counterpart of *-est*, because *-est* must always be present in English superlatives. Thus, Japanese *ichiban* is not equivalent to English *-est*.⁴ Notice also that ordinal superlatives in Japanese include the ordinal suffix *-me* as well as the dative case marker *-ni*, as seen in *ni-ban-me-ni*

⁴In the proposed analysis, *ichiban* contributes to the superlative meaning in combination with a primitive ER, forming a MAX operator. This raises the question of how ordinal superlatives such as *ni-ban-me-ni takai yama* ‘the second highest mountain’ derive a superlative interpretation. I speculate that the ordinal expression *ban-me* assigns the *n*-th degree in a ranking ordered from the top, thereby yielding an ordinal superlative interpretation without an overt superlative morpheme, possibly even without ER. For discussion of Japanese ordinal expressions with *-me*, see Tatsumi (2021).

‘second.’ In this respect, *ichiban* cannot take the same morphological markers *-me-ni* in superlatives.

- (19) *?? *ichi-ban-me-ni takai yama*
 one-CL-ORD-DAT high mountain
 ‘the highest mountain’

Although the expression may not be fully ungrammatical, *ichiban takai yama* ‘the highest mountain’ is strongly preferred by Japanese speakers. On the other hand, *ni-ban* ‘number two’ and *san-ban* ‘number three’ cannot be used in the same way as *ichiban* without the suffix *-me-ni*.

- (20) * { *ni-ban* / *san-ban* } *takai yama*
 two-CL / three-CL high mountain
 ‘the second/third highest mountain’

This suggests that *ichiban* is a specialized form for superlatives and has the meaning ‘number one’, but it is not a genuine ordinal like *ichi-ban-me-ni* ‘first’. Thus, the present observation suggests that only *ichiban* and *N-ban-me-ni* can be used in superlatives.

- (21) Distribution of numeral expressions in superlatives

	$N = 1$	$N \geq 2$
<i>N-ban</i>	^{OK} <i>ichi-ban</i>	* <i>N-ban</i>
<i>N-ban-me-ni</i>	^{??} <i>ichi-ban-me-ni</i>	^{OK} <i>N-ban-me-ni</i>

Furthermore, *N-ban-me-ni* ordinals cannot be used DP-externally for superlatives.

- (22) * { ichi-ban-me-ni / ni-ban-me-ni / san-ban-me-ni } Taro-ga [DP
 one-CL-ORD-DAT / two-CL-ORD-DAT / three-CL-ORD-DAT Taro-NOM
 takai yama-ni] nobotta.
 high mountain-DAT climbed
 Intended: ‘Taro climbed the highest / second highest / third highest mountain.’

N-ban-me-ni ordinals do not yield superlative readings but instead convey the temporal order of events “Taro climbed a high mountain first/second/third”. In other words, these ordinals only allow interpretations associated with their surface positions, in contrast to *ichiban*. To sum up, we have the following paradigm for numeral expressions in Japanese superlatives.⁵

- (23) Distribution of numeral expressions in superlatives

	$N = 1$		$N \geq 2$	
DP-internal	OK <i>ichi-ban</i>	?? <i>ichi-ban-me-ni</i>	* <i>N-ban</i>	OK <i>N-ban-me-ni</i>
DP-external	OK <i>ichi-ban</i>	* <i>ichi-ban-me-ni</i> (temporal)	* <i>N-ban</i>	* <i>N-ban-me-ni</i> (temporal)

The table shows that for superlative interpretations, only *ichiban* can appear both inside and outside the DP, whereas *N-ban-me-ni* (for $N \geq 2$) can only occur in DP-internal positions. Crucially, *ichiban* is neither equivalent to the English *-est* nor a true ordinal expression in Japanese. Rather, its lexical meaning ‘number one’ contributes to the superlative interpretations.

Finally, note that *ichiban* in superlative contexts differs from *ichiban* used as a nominal number in terms of lexical status. This difference is clearly observed in their lexical pitch

⁵Independently, Tanaka and Mizutani (2023) make a similar generalization about *ichiban* and ordinals. However, they treat *ichiban* as equivalent to English *-est*.

accent (H*L): superlative *ichiban* is unaccented (no H*L is realized), whereas nominal *ichiban* carries a lexical pitch accent.

(24) a. Superlative use

ichiban takai yama
LHHH
'the highest mountain'

b. Nominal number use

ichi'ban-no sensyu
LH*LL
'player number one'

The nominal number expressed by *N-ban* (e.g., ni'-ban 'number two', sa'n-ban 'number three') carries a lexical pitch accent on the numeral, whereas superlative *ichiban* does not realize a pitch accent. This suggests that *ichiban* in the superlative environment differs from *ichiban* as a nominal number. In other words, the unaccented *ichiban* functions as a morpheme used exclusively to express superlatives.

In summary, I have argued that *ichiban* is not a direct counterpart of the English *-est*, as evidenced by its distributional properties. Although its lexical meaning 'number one' and morphological composition are superficially similar to those of ordinal forms, *ichiban* does not behave like a genuine ordinal. In particular, unlike *N-ban-me-ni* ordinals, it is available for DP-external use in superlative interpretations. In the following sections, I will gloss *ichiban* simply as 'ICHIBAN' for convenience, while keeping in mind its lexical meaning 'number one'.

3.3.2 The Syntactic Distribution of *Ichiban* and *Yori*-Phrases

In this section, I turn to the syntactic distribution of *ichiban* and argue that *ichiban* in superlatives and *yori*-phrases in phrasal comparatives share two core syntactic properties. First, both elements typically appear at the beginning of the sentence, preceding their correlate expressions. Second, they show parallel patterns in how interpretive ambiguity is resolved, depending on the type of adjectival modification involved. In Chapter 2, I demonstrated that the two possible readings of phrasal comparatives arise from two distinct adjectival modification structures. I now propose that both phrasal comparatives and superlatives are derived from these same two structures. The interpretive variation observed in each case reflects this underlying structural difference.

3.3.2.1 The Sentence-Initial *Ichiban* and *Yori*-Phrases

According to the predictions of the Scope Theory, *ichiban* should follow the correlate in cases where a relative reading is intended. However, empirical data reveal the opposite pattern: *ichiban* consistently precedes the correlate in contexts that yield a relative reading.

- (25) a. *Ichiban*₁ *Taro-ga Hanako-ni* *t*₁ *ookuno hon-o ageta.*
ICHIBAN Taro-NOM Hanako-DAT many book-ACC gave
'Taro gave more books to Hanako than anyone else did.' (REL)
- b. *Ichiban*₁ *Hanako-ni*₂ *Taro-ga* *t*₂ *t*₁ *ookuno hon-o ageta.*
ICHIBAN Hanako-DAT Taro-NOM many book-ACC gave
'Taro gave more books to Hanako than to anyone else.' (REL)

In these examples, the correlates appear in positions following *ichiban*: in (25a), the correlate is the nominative subject *Taro-ga*, while in (25b), it is the dative argument

Hanako-ni. Crucially, this pattern is not limited to arguments; it extends to adjuncts as well.

- (26) Ichiban₁ kinoo Tokyo-ni t₁ ookuno hito-ga atsumatta.
 ICHIBAN yesterday Tokyo-in many people-NOM gathered
 ‘More people gathered in Tokyo yesterday than on any other day.’ (REL)

Here, the correlate is *kinoo* ‘yesterday’, and the sentence is acceptable only under the interpretation that the number of people who gathered in Tokyo on that day exceeded that of any other day. Finally, *ichiban* cannot appear after a gradable predicate if a superlative reading is intended.

- (27) Taro-ga [DP ookii robotto-o] ichiban motteiru.
 Taro-NOM big robot-ACC ICHIBAN have
 ‘Taro has more big robots than anyone else does.’ (QUANTITY)

The sentence simply means “Taro has more big robots than anyone else does”, with *ichiban* not modifying the adjective within the superlative DP, but instead associating with a covert adverbial element such as *much*. This indicates that *ichiban* cannot be linked to a gradable predicate when it appears after the gradable predicate.

This observation raises an important question: why does *ichiban* exhibit such a restricted distribution? To answer this, it is crucial to note that phrasal comparatives display a syntactic pattern parallel to *ichiban* superlatives. Although Japanese comparatives lack an overt comparative morpheme like English *-er*, I argued in Chapter 2 that a null 2-place *-er* is interpreted at the same syntactic height as the *yor*i-phrase. With this in mind, consider the distribution of *yor*i-phrases in phrasal comparatives, which show a similar distribution to *ichiban*.

- (28) Taro-ga Jiro-yori ookii robotto-o motteiru.
 Taro-NOM Jiro-than big robot-ACC have
 ‘Taro has a robot that is bigger than Jiro.’ (NAR)
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)
- (29) [Jiro-yori]₁ Taro-ga t₁ ookii robotto-o motteiru.
 Jiro-than Taro-NOM big robot-ACC have
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)

Recall that when *yor*i-phrases appear in a post-subject position, the sentence is ambiguous between the narrow and wide readings. In contrast, when the *yor*i-phrase is fronted to the sentence-initial position, only the wide reading is available. This shows that phrasal comparatives not only exhibit ambiguity similar to that of *ichiban* superlatives, but also follow the same pattern of ambiguity resolution depending on syntactic position.

The parallel distribution becomes even clearer when we examine the following paradigm, in which the *yor*i-phrase precedes the correlate associated with the wide reading.

- (30) a. Jiro-yori₁ Taro-ga Hanako-ni t₁ ookuno hon-o ageta.
 Jiro-than Taro-NOM Hanako-DAT many book-ACC gave
 ‘Taro gave more books to Hanako than Jiro did.’ (WIDE)
- b. Jiro-yori₁ Hanako-ni₂ Taro-ga t₂ t₁ ookuno hon-o ageta.
 Jiro-than Hanako-DAT Taro-NOM many book-ACC gave
 ‘Taro gave more books to Hanako than to Jiro.’ (WIDE)

In (30), the *yor*i-phrases appear before the associates in the comparatives, such as *Taro-ga* and *Hanako-ni*. This ordering shows that the correlate associated with the wide reading follows the *yor*i-phrase, suggesting that the syntactic position of the *yor*i-phrase plays a crucial role in determining the available interpretation of the phrasal comparative.

Furthermore, this restriction holds not only for argumental correlates but also for adjuncts.

- (31) a. Kyoo-yori₁ kinoo Tokyo-ni t₁ ookuno hito-ga atsumatta.
 today-than yesterday Tokyo-in many people-NOM gathered
 ‘More people gathered in Tokyo yesterday than today.’ (WIDE)
- b. * Kyoto-yori₁ kinoo Tokyo-ni t₁ ookuno hito-ga atsumatta.
 Kyoto-than yesterday Tokyo-in many people-NOM gathered
 ‘More people gathered in Tokyo yesterday than in Kyoto.’ (WIDE)

Similarly, the *yor*i-phrase must precede the associate adjunct *kinoo* ‘yesterday’, and the distant adjunct *Tokyo-ni* cannot function as the correlate. This mirrors the behavior observed with *ichiban*, where only the element immediately following the fronted *ichiban* can serve as the correlate. Such parallelism indicates that the sentence-initial position of *ichiban* corresponds to that of *yor*i-phrases in phrasal comparatives. This shared syntactic distribution further supports a structural link between *ichiban* superlatives and phrasal comparatives.

Finally, note that when a *yor*i-phrase appears after the adjective within a comparative DP, it can no longer associate with the gradable predicate.

- (32) Taro-ga [DP ookii robotto-o] [Jiro-yori] motteiru.
 Taro-NOM big robot-ACC Jiro-than have
 ‘Taro has more big robots than Jiro does.’ (QUANTITY)

The sentence conveys the meaning “Taro has more big robots than Jiro does”. This pattern indicates that the covert comparative element is not associated with the adjective within the comparative DP but instead with a covert adverbial element such as *much*. As a result, when *yor*i-phrases appear after the gradable predicate, the covert *-er* cannot

associate directly with it. In this respect as well, *ichiban* and *yor*i-phrases exhibit parallel behavior.

To summarize, I have shown that *ichiban* in superlatives and *yor*i-phrases in phrasal comparatives share a parallel syntactic distribution. In both constructions, these elements appear in the sentence-initial position and precede their correlates. This observation is important because the 3-place *-est* analysis of superlatives fails to account for the observed surface position of *ichiban*. Similarly, a 3-place *-er* analysis of comparatives faces the same challenge, although one could argue, as Bhatt and Takahashi (2007, 2011) suggest, that *yor*i-phrases may undergo scrambling from a lower position. However, the current evidence points to a deeper, shared syntactic mechanism underlying both constructions, whereby *ichiban* and *yor*i-phrases are interpreted at the same structural height. In the next section, I will present an even more striking parallel between *ichiban* and *yor*i-phrases, focusing on adjectival modification.

3.3.2.2 Structural Ambiguity of Adjectival Modification

In Chapter 2, I adopted the view that adjectival modification in Japanese is structurally ambiguous, allowing for both Direct Modification (DM) and Indirect Modification (IM). The IM structure differs from the DM structure in that it involves a relative clause (RC), whereas the DM structure does not (Shimoyama 2014: 309–310).

(33) Two types of adjectival modification structures

a. [AP A] NP (DM structure)

b. [CP Op₁ [TP [vP t₁ [vP is [AP A]]]] NP (IM structure)

Building on this structural ambiguity, I argued that the two interpretations of phrasal

comparatives arise from two distinct underlying structures. Returning to Shimoyama's original observation, she notes that the scope of *ichiban* is sensitive to the tense morphology on adjectives, which appears morphologically at the end of the adjective stem, as in *utsukushi-i* 'beautiful.' When the adjective is marked with the past tense morpheme *-ta*, only the absolute reading is available (Shimoyama 2014: 318).

- (34) a. Taro-ga [[ichiban omoshiro-i] hito]-o shuzaishita.
 Taro-NOM ICHIBAN funny-I person-ACC interviewed
 'Taro interviewed the funniest person.' (OK ABS/OK REL)
- b. Taro-ga [[ichiban omoshirok-at-ta] hito]-o shuzaishita.
 Taro-NOM ICHIBAN funny-COP-PAST person-ACC interviewed
 'Taro interviewed the person that was funniest.' (OK ABS/? REL)

When the morpheme *-i* appears on the adjective, the sentence is ambiguous between the absolute and relative readings.⁶ In contrast, when the past tense form (*at*)-*ta* is used, the relative reading becomes unavailable, while the absolute reading remains accessible. This contrast is naturally accounted for if adjectival modification in (34a) is structurally ambiguous between DM and IM, whereas (34b) involves only IM through an RC, which blocks *ichiban* from taking scope outside the clause. This type of scope island effect is also attested in English (cf. Shimoyama 2014: 316).

- (35) a. Taro interviewed the funniest person. (OK ABS/OK REL)
- b. Taro interviewed the person [that was funniest]. (OK ABS/*REL)

When an RC containing a finite clause is used to modify a noun, the scope of *-est* is confined within the RC, yielding only the absolute reading. This indicates that the scope

⁶As noted by Shimoyama (2014: 310), the morphological status of the ending morpheme *-i* remains unclear; it has been analyzed either as a present tense marker or as the present-tense form of the copula in the literature. Following her analysis, I gloss this morpheme as *-i*.

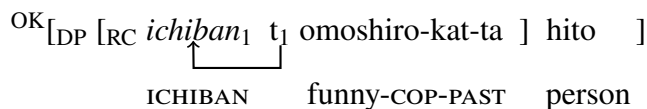
island effect is not unique to Japanese. Additional support for the scope island effect comes from the observation that the relative reading is significantly degraded when the adjective appears in its past tense form (cf. Shimoyama 2014: 323).

- (36) a. Ichiban₁ Taro-ga [[t₁ omoshiro-i] hito]-o shuzaishita.
 ICHIBAN Taro-NOM funny-I person-ACC interviewed
 ‘Taro interviewed the funniest person.’ (*ABS/^{OK}REL)
- b. Ichiban₁ Taro-ga [[t₁ omoshirok-at-ta] hito]-o shuzaishita.
 ICHIBAN Taro-NOM funny-COP-PAST person-ACC interviewed
 ‘Taro interviewed the person who was funniest.’ (*ABS/^{??}REL)
 ‘Taro interviewed the person who was funny more than anyone else did.’

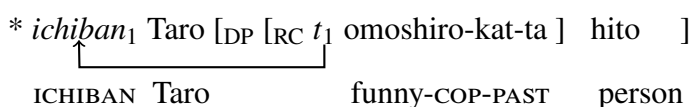
The past tense form (*at*)-*ta* is not compatible with the relative reading, even when *ichiban* appears in a DP-external position. The only available interpretation for (36b) is “Taro interviewed the person who was funny more than anyone else did”, where *ichiban* quantifies not over the degree expressed by the adjective but over a covert adverbial element such as *much*. This indicates that the scope of *ichiban* is blocked by the RC boundary, leading to a scope island effect, which can be schematically represented as follows.

(37) Scope possibilities of *ichiban*

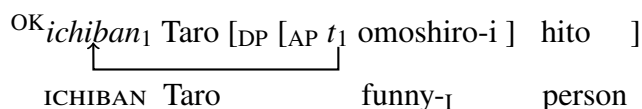
- a. *ichiban* takes scope inside an RC



- b. *ichiban* cannot move out of an RC



- c. The DM structure allows *ichiban* to take clausal scope



When the past tense is overtly marked on the adjective, the IM structure is obligatorily selected, and only the absolute reading is available. In contrast, when no overt tense morphology is present, the sentence permits either an IM or DM interpretation. In such cases, the relative reading arises from the DM structure, which lacks an RC. Therefore, the two readings stem from structurally distinct sources, which can be summarized as follows.

(38) Structural sources of absolute and relative readings

- a. The absolute reading is derived from the IM structure.
- b. The relative reading is derived from the DM structure.

Turning now to phrasal comparatives, recall that in Chapter 2, I argued that the ambiguity resolution pattern of *yori*-phrases in phrasal comparatives parallels that of *ichiban* in superlatives.

- (39) Taro-ga [Jiro-yori] ookii robotto-o motteiru.
 Taro-NOM Jiro-than big robot-ACC have
 ‘Taro has a robot that is bigger than Jiro.’ (NAR)
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)
- (40) Taro-ga [Jiro-yori] ooki-kat-ta robotto-o motteiru.
 Taro-NOM Jiro-than big-COP-PAST robot-ACC have
 ‘Taro has a robot that was bigger than Jiro.’ (NAR)

As shown above, the past tense form of the adjective blocks the wide reading, whereas the present tense form allows both the wide and narrow readings. Furthermore, when *yor*i-phrases are fronted in the same environment, the wide reading becomes unavailable if the adjective appears in the past tense form.

- (41) a. [Jiro-yori]₁ Taro-ga t₁ ookii robotto-o motteiru.
 Jiro-than Taro-NOM big robot-ACC have
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)
- b. ?? [Jiro-yori]₁ Taro-ga t₁ ooki-kat-ta robotto-o motteiru.
 Jiro-than Taro-NOM big-COP-PAST robot-ACC have
 ‘Taro has a robot that was bigger than the robot Jiro has.’ (WIDE)

Thus, *ichiban* and *yor*i-phrases exhibit parallel patterns. The present observation supports the view that the narrow reading of phrasal comparatives is derived via IM of adjectives, in parallel with the absolute reading of *ichiban* superlatives. In contrast, the wide reading of phrasal comparatives arises via DM, just like the relative reading of *ichiban* superlatives. Therefore, the same structural generalization that accounts for the readings of superlatives equally applies to phrasal comparatives.

(42) Scope possibilities of *-er*

- a. *-er* takes scope inside an RC

OK_{[DP [RC Jiro-yori-er₁ t₁ ooki-kat-ta] robotto]}

 Jiro-than-er big-COP-PAST robot

- b. *-er* cannot move out of an RC

* Jiro-yori-*er*₁ Taro [DP [RC *t*₁ ooki-kat-ta] robotto]
 Jiro-than-er Taro big-COP-PAST robot

- c. The DM structure allows *-er* to take clausal scope

OK Jiro-yori-*er*₁ Taro [DP [AP *t*₁ ookii] robotto]
 Jiro-than-er Taro big robot

(43) Structural sources of narrow and wide readings

- The narrow reading is derived from the IM structure.
- The wide reading is derived from the DM structure.

In summary, I have argued that the absolute reading is derived from the IM structure, which involves RCs, whereas the relative reading is derived from the DM structure, which excludes RCs. Furthermore, I have shown that phrasal comparatives exhibit the same structural pattern as *ichiban* superlatives: the narrow and wide readings correspond to derivations from the IM and DM structures, respectively.

(44) Structural sources of different readings in phrasal comparatives and superlatives

Adjectival modification	Comparative reading	Superlative reading
IM	Narrow	Absolute
DM	Wide	Relative

Combined with the discussion in the previous section, this supports the view that *ichiban* and *yor*i-phrases share the same syntactic distribution.

3.3.3 Anti-Topic Marking Effect

Shimoyama (2014: 315, fn. 9) observes that in Japanese superlative sentences, when the correlate bears the topic marker *-wa*, the relative reading is no longer available. Consider the following example, in which the correlate subject is marked with *-wa*.

- (45) Taro-wa ichiban takai yama-ni nobotta.
 Taro-TOP ICHIBAN high mountain-DAT climbed
 ‘Taro climbed the highest mountain.’ (OK ABS/*REL)

The sentence with a topic-marked subject permits only the absolute reading. Prior to Shimoyama, Lyu (2004) made a similar observation in Korean, arguing that the relative reading in Korean superlatives always requires the correlate to bear focus; when the correlate is marked as a topic, it becomes incompatible with focus marking. If Lyu’s suggestion is on the right track, it would follow that Japanese, too, requires focus on the correlate to derive the relative reading (Heim 1985, 1999; Sharvit and Stateva 2002). However, the topic marker is in fact compatible with the relative reading. For example, imagine a context in which Taro, Jiro, and Hanako are researchers, and only Taro received substantial financial aid from the university, which enabled him to publish more papers than the other two.

- (46) San-nin-no-nakade Taro-wa ichiban ookuno robun-o shuppanshita.
 three-CL-GEN-among Taro-TOP ICHIBAN many paper-ACC published
 ‘Taro published the most papers among the three people.’ (REL)

In this context, the relative reading becomes readily available. This indicates that the

relative reading can be obtained even when the correlate bears the topic particle. Crucially, the presence of an overt comparison class—such as *san-nin-no-nakade* ‘among the three people’—plays a central role in licensing the relative reading. Similarly, the sentence in (45), which initially seems to lack a relative reading, also allows it when the comparison class is explicitly provided.

- (47) San-nin-no-nakade Taro-wa ichiban takai yama-ni nobotta.
 three-CL-GEN-among Taro-TOP ICHIBAN high mountain-DAT climbed
 ‘Taro climbed the highest mountain among the three people.’ (REL)

However, when *ichiban* is fronted above the correlate subject, the contrast arises with the previous example. Specifically, when *ichiban* precedes the topic-marked correlate, the sentence becomes ungrammatical, even in the presence of an overt comparison class.

- (48) San-nin-no-nakade ichiban Taro{^{OK} -ga / * -wa } takai yama-ni
 three-CL-GEN-among ICHIBAN Taro -NOM / -TOP high mountain-DAT
 nobotta.
 climbed
 ‘Taro climbed the highest mountain among the three people.’ (REL)

This pattern suggests that the ungrammaticality arises from the topic-marked correlate that follows *ichiban*: when *ichiban* precedes the correlate associated with the relative reading, the correlate must bear focus. However, a subject like *Taro*, if marked as a topic, cannot simultaneously receive focus. Therefore, when *ichiban* appears before the correlate, focus marking on the correlate becomes necessary in order to derive the relative reading.

The focus requirement in superlative constructions can be summarized as follows (I refer to the two relative readings as the “low relative reading” and the “high relative reading”, depending on the surface position of *ichiban* relative to the correlate).

- (49) Focus on correlates in the relative readings of superlatives

	Is focus on correlates obligatory?
Low relative reading	No
High relative reading	Yes

Crucially, phrasal comparatives exhibit the same pattern. When a *yor*i-phrase follows the correlate, the correlate subject may bear the topic marker, and the wide reading remains available. In contrast, when a *yor*i-phrase precedes the correlate subject, topic marking becomes incompatible, suggesting that the correlate must instead be marked for focus.⁷

- (50) Taro-wa Jiro-yori ookii robotto-o motteiru.
 Taro-TOP Jiro-than big robot-ACC have
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)

- (51) Jiro-yori Taro{^{OK} -ga / * -wa } ookii robotto-o motteiru.
 Jiro-than Taro -NOM / -TOP big robot-ACC have
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)

Thus, *yor*i-phrases exhibit the same incompatibility with topic-marked correlates as observed with *ichiban*. This anti-topic marking effect can be summarized as follows.

- (52) Focus on correlates in the wide readings of phrasal comparatives

	Is focus on correlates obligatory?
Low wide reading	No
High wide reading	Yes

⁷There is speaker variation in judgments concerning the use of topic-marked correlates in the high wide reading. Some speakers allow the high wide reading even when the correlate is marked with the topic particle. In Chapter 2, I argued that correlates in the high wide reading receive focus and undergo focus driven movement to CP in order to license ellipsis. For speakers who allow topic-marked correlates in the high wide reading, it may be the case that movement of the correlate is permitted without focus.

Once again, the parallel distribution of *ichiban* and *yor*i-phrases supports the view that *ichiban* superlatives and phrasal comparatives are derived from a shared underlying mechanism.

In summary, I have shown that both *ichiban* superlatives and phrasal comparatives exhibit the same sensitivity to focus. This is summarized as follows.

(53) Necessity of focus on correlates in phrasal comparatives and superlatives

	Is focus on correlates obligatory?
Low wide/relative reading	No
High wide/relative reading	Yes

Crucially, this anti-topic marking effect emerges when *ichiban* and *yor*i-phrases precede their correlate subjects, indicating that these correlates must bear focus in such configurations.

3.3.4 Summary

I have identified three key properties of *ichiban* superlatives. These properties are summarized as follows.

(54) Key properties of *ichiban* superlatives

- a. *Ichiban* has the lexical meaning ‘number one’ and exhibits a different syntactic distribution from ordinals.
- b. The syntactic distribution of *ichiban* parallels that of *yor*i-phrases in phrasal comparatives.
- c. When *ichiban* appears sentence-initially, the following correlate must receive focus.

Building on these observations, the next section develops an analysis of *ichiban* superlatives.

3.4 Analysis of *Ichiban* Superlatives

In this section, I analyze *ichiban* superlatives. I argue that *ichiban* combines with a covert comparative ER to form a maximality operator (MAX), following Loccioni’s (2018) analysis of Romance superlatives. Under this view, absolute and relative readings arise from the scopal position of MAX. When MAX scopes within a relative clause (IM), the absolute reading is obtained; when it scopes in the matrix clause (DM), the relative reading is obtained. I further argue that MAX may scope over vP or CP, corresponding to low and high relative readings, respectively. Finally, I show that *ichiban* superlatives and phrasal comparatives differ only in whether ER appears alone or as part of MAX, and in how the individual argument is saturated in the standard phrase, accounting for their parallel distribution.

3.4.1 *Ichiban* as Part of MAX

In this section, I first focus on the semantic contribution of *ichiban*. As noted earlier, the literal meaning of *ichiban* is ‘number one’, which directly contributes to the interpretation of superlatives. To better understand this, it is instructive to consider superlatives in Romance languages. In languages such as Spanish and French, superlatives are formed by combining a definite article with a comparative morpheme (Bobaljik 2012; Loccioni 2018; Dobrovie-Sorin 2023).

- (55) a. lo más guapa (Spanish)
 the more beautiful
 ‘the most beautiful’
- b. le plus belle (French)
 the more beautiful
 ‘the most beautiful’

Loccioni (2018) argues that, in Romance languages, the overt comparative morpheme and the definite article found in superlatives together give rise to MAX. This operator is responsible for computing maximalization: it selects the maximal degree from an ordered set of degrees (Rullmann 1995; Mendia 2017; Loccioni 2018).

$$(56) \quad \llbracket \text{MAX} \rrbracket = \lambda P_{\langle d, t \rangle} . \iota d [P(d) \wedge \forall d' [P(d') \wedge d \neq d' \rightarrow d > d']]$$

Given this definition of MAX, Loccioni (2018: 91) proposes the following decomposition.

- (57) Decomposition of MAX in Spanish

$$\text{lo} + \emptyset_{\text{SUP}} + \text{más} = \text{MAX}$$

On this view, in Spanish, the definite article *lo* and the comparative morpheme *más* ‘more’ are overtly realized, but SUP is not (the detailed semantics of each component will be provided in (61) and (62)).

Now consider *ichiban* superlatives. As discussed, *ichiban* has the lexical meaning ‘number one’. Moreover, the syntactic distribution of *ichiban* parallels that of *yor*i-phrases in phrasal comparatives. Recall from Chapter 2 that Japanese comparatives do not overtly realize a 2-place *-er*. The parallel distribution between *ichiban* and *yor*i-phrases supports the hypothesis that *ichiban* superlatives involve a covert ER (see the next section for a discussion of the relationship between the 2-place *-er* and ER.). Additionally, describing something as ‘number one’ typically conveys a meaning of uniqueness, in that no other entity occupies the same rank. Based on these observations, I propose that *ichiban* corresponds to the combination of THE and SUP, and that it forms MAX together with a covert ER, contrasting with languages like Spanish.

(58) Superlative markers in Spanish and Japanese

a. Spanish

$lo + \emptyset_{\text{SUP}} + \text{más}$

b. Japanese

$ichiban + \emptyset_{\text{ER}}$

This pattern is also attested cross-linguistically. Both Korean and Chinese form superlative expressions using number-based morphology (the Korean *ce-yil* originates from the Chinese *di-yi*).

(59) Superlative markers in Korean and Chinese

a. Korean ordinal superlative morphology

ce-yil

ordinal prefix-one

‘first’

b. Chinese ordinal superlative morphology

di-yi

ordinal prefix-one

‘first’

Although the superlative markers in Korean and Chinese are derived from ordinal expressions and thus are not entirely parallel to *ichiban* in Japanese, the three East Asian languages nevertheless employ number-based morphology to express superlatives. Given that these superlative morphemes correspond to the combination of THE and SUP—as argued for Japanese *ichiban*—they stand in clear contrast to Romance languages such as Spanish and French, where superlatives are marked by the definite article.

(60) Cross-linguistic variety of MAX

a. Spanish/French/Italian

THE + $\emptyset_{\text{SUP}}$ + ER

b. Japanese/Korean/Chinese

THE–SUP + $\emptyset_{\text{ER}}$

The question arises: why do we observe this asymmetry between the two language groups? With respect to this issue, notice that Romance languages have overt articles, whereas the three East Asian languages lack them. Based on this fact, I hypothesize

that in articleless languages, MAX is expressed through number-based morphology, meaning that THE and SUP are realized as a single morpheme, while languages with overt articles use the definite article to realize THE. I will return to cross-linguistic variation in the lexical decomposition of MAX in the next chapter, where I discuss the Japanese superlative morpheme *mottomo* as well as superlative morphemes in other languages.

I now turn to the detailed semantics of *ichiban*. I assume the following decomposition of MAX, following Coppock and Engdahl (2016: 1212–1215) and Loccioni (2018: 91).

(61) Decomposition of MAX

- a. A comparative morpheme ER establishes an ordering relation R between two degrees.
- b. A SUP takes a relation R between two degrees and a set of degrees P (the comparison class) and maps P to a singleton set containing its maximal degree.
- c. The definite determiner THE applies to a singleton set of degrees and returns the unique degree.

(62) Semantic decomposition of MAX

- a. Primitive ER (Heim 2006)

$$\llbracket \text{ER} \rrbracket = \lambda d. \lambda d'. [d' > d]$$

- b. SUP

$$\llbracket \text{SUP} \rrbracket = \lambda R_{\langle d, dt \rangle}. \lambda P_{\langle d, t \rangle}. \lambda d. [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow R(d', d)]]$$

- c. THE

$$\llbracket \text{THE} \rrbracket = \lambda P_{\langle d, t \rangle}. \iota d [P(d)]$$

Here, the primitive ER takes two degrees and imposes an ordering relation ($>$) between them (Heim 2006). SUP takes a relation R between two degrees (i.e., the primitive ER), applies it to a comparison class P , and returns a singleton set containing the maximal degree. THE then applies to this singleton set and returns the uniquely maximal degree.

Two clarifications are in order. First, Loccioni (2018: 91) does not provide an explicit semantic decomposition, but instead treats MAX as a single syntactic head, while informally describing the contribution of its components. Second, Coppock and Engdahl's (2016) motivation for decomposing MAX is not to account for ordinary superlatives, but rather to explain Swedish elative superlatives—superlative forms that express an extremely high degree associated with a gradable predicate, rather than the greatest degree within a comparison set. They argue that the meaning of ordinary superlatives is based on a comparison among individuals, rather than degrees (Coppock and Engdahl 2016: 1213). This crucially differs from the present proposal, in which superlatives are derived from degree comparison, in parallel with (phrasal) comparatives.

With the decomposition above, I propose that the semantics of *ichiban* corresponds to THE–SUP of MAX. Specifically, *ichiban* takes an ordering relation between two degrees (i.e., ER) as its first argument, then applies to a set of degrees as the comparison class, and returns the unique maximal degree.

(63) Semantics of *ichiban*

$$\llbracket ichiban \rrbracket = \lambda R_{\langle d, dt \rangle} . \lambda P_{\langle d, t \rangle} . \iota d [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow R(d', d)]]$$

Then, semantic composition of MAX incorporating *ichiban* proceeds as follows.

(64) Composition of *ichiban*-ER

a. *ichiban* + ER

$$\llbracket ichiban \rrbracket(\llbracket ER \rrbracket) = \lambda P_{\langle d, t \rangle} . \iota d [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d > d']]$$

b. *ichiban-er* + *P*

$$\llbracket ichiban-er \rrbracket(P) = \iota d [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d > d']]$$

Ichiban first combines with ER, and then further combines with *P*. As a result, it yields the unique maximal degree as its output.

This section argues that *ichiban* corresponds to a bundled THE + SUP element in the decomposition of MAX. Building on the proposals by Loccioni and Coppock and Engdahl, MAX can be decomposed into three components. In Romance languages, both THE and ER are overtly realized, whereas in Japanese, Korean, and Chinese, THE–SUP is expressed through number-based morphology such as *ichiban* ‘number one’, with covert ER. Based on this typological pattern, I proposed that *ichiban* semantically takes a relation between two degrees and a comparison class, which is a set of degrees, and returns the uniquely maximal degree.

3.4.2 ER in Comparatives and Superlatives

One may wonder how the 2-place *-er* introduced in Chapter 2 relates to the primitive ER in *ichiban* superlatives. It should be emphasized that the primitive ER is the source of both comparatives and superlatives. The primitive ER encodes an ordering relation between two degrees, formally represented as $d' > d$ (Heim 2006).

(65) Primitive ER

$$\llbracket ER \rrbracket = \lambda d . \lambda d' . [d' > d]$$

The simplest case expressed by the ordering relation $>$ is a relation such as $2 > 1$ in a mathematical sense. However, when the primitive ER is introduced in the syntax, specifically in DegP, it cannot take two degree arguments directly, unlike $>$ used in mathematical comparisons. Instead, it must undergo movement, which triggers degree abstraction.

(66) Movement of ER triggers degree abstraction

ER λd . [Taro is d -tall]

Since the standard clause also denotes a degree predicate, the arguments of ER are two degree predicates. These are interpreted via MAX, yielding Heim's 2-place *-er*.

(67) Heim's 2-place *-er*

$\llbracket -er_2 \rrbracket = \lambda P_{\langle d,t \rangle} . \lambda Q_{\langle d,t \rangle} . \text{MAX}(Q) > \text{MAX}(P)$

In superlatives, by contrast, ER does not move independently. Instead, it is the argument of *ichiban*, and together they form MAX. The comparative meaning contributed by ER is thus absorbed into MAX.

(68) MAX operator

$\llbracket \text{ichiban-ER} \rrbracket = \llbracket \text{MAX} \rrbracket = \lambda P_{\langle d,t \rangle} . \iota d [P(d) \wedge \forall d' [P(d') \wedge d \neq d' \rightarrow d > d']]$

Thus, the primitive ER is interpreted in two distinct ways.

(69) a. Comparatives

The primitive ER undergoes movement and degree predicates are interpreted via MAX.

b. Superlatives

The primitive ER is the argument of *ichiban*, forming MAX, which applies to a comparison class.

The present analysis links comparatives and superlatives through the primitive meaning of ER. The variation, in turn, follows from basic properties of syntax, including the merger of ER with elements such as the *yor*i-phrase or *ichiban*, movement of ER or *ichiban*-ER, and the size of ellipsis within DegP (for comparatives). These mechanisms give rise to the different surface forms of comparatives and superlatives.

However, a question remains regarding the relationship between the covert MAX operator required in comparatives and the MAX formed compositionally by *ichiban* and ER in superlatives. At first glance, the status of MAX appears puzzling: in comparatives, ER is interpreted with the help of MAX, whereas in superlatives, ER contributes to the formation of MAX itself. Two considerations clarify this issue. First, there appears to be no language that overtly marks MAX independently in both the matrix and standard clause in comparatives. What is overtly realized in comparatives is typically the comparative morpheme and/or the standard marker, not maximality itself (though one could argue that the standard marker denotes MAX). By contrast, in superlatives, maximality—consisting of THE, SUP, and ER—is overtly encoded as part of the syntactic structure (see Chapter 4 for cross-linguistic variation in MAX composition and Bobaljik (2012) for a typology of superlative morphemes). In Japanese, this is realized through the composition of *ichiban* and ER. Thus, the MAX formed in superlatives is a syntactically constructed element,

whereas the MAX used in comparatives is neither overtly realized nor composed in the syntax.

Second, the covert MAX used in comparatives is independently required in other degree constructions. Consider equatives in Japanese.

(70) Ambiguity resolution pattern of equatives

- a. Taro-ga [Jiro-kurai] ookii robotto-o motteiru.
Taro-NOM Jiro-degree big robot-ACC have
‘Taro has a robot that is as big as Jiro.’ (NAR)
‘Taro has as big a robot as Jiro does.’ (WIDE)
- b. Taro-ga [Jiro-kurai] ooki-kat-ta robotto-o motteiru.
Taro-NOM Jiro-degree big-COP-PAST robot-ACC have
‘Taro has a robot that was as big as Jiro.’ (NAR)
- c. [Jiro-kurai] Taro-ga ookii robotto-o motteiru.
Jiro-degree Taro-NOM big robot-ACC have
‘Taro has as big a robot as Jiro does.’ (WIDE)

As in comparatives, equatives display the same narrow–wide ambiguity resolution patterns. If equatives are analyzed parallel to comparatives, they should contain a null equative head denoting equality between degrees.

(71) Primitive AS

$$\llbracket \text{AS} \rrbracket = \lambda d. \lambda d'. [d' = d]$$

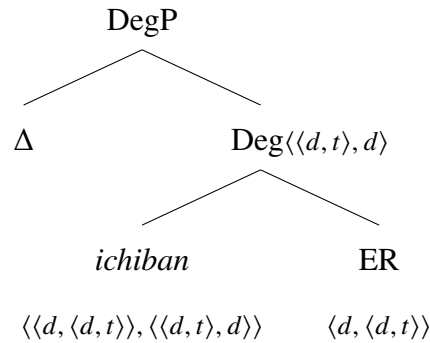
If movement of the equative head triggers degree abstraction, as in comparatives, the resulting degree predicates must again be converted to maximal degrees before the equality relation applies. Thus, a covert MAX is independently required for type-theoretic reasons. In other words, a covert MAX serves as a general semantic type-shifter: it

converts degree predicates into degrees so that relational degree heads (such as “>” or “=”) can take appropriate arguments. By contrast, the MAX in superlatives is a compositionally derived operator that is specific to superlatives. I therefore conclude that the covert MAX used in comparatives and equatives is distinct from the compositional MAX formed in superlatives. The former is a general semantic type-shifter required to derive the relevant interpretations. The latter, by contrast, is a compositional operator constructed from elements such as ER and *ichiban*, each of which is independently listed in the lexicon. In the next section, I illustrate how this analysis derives the superlative meaning in actual syntactic derivation.

3.4.3 Syntax and Derivation

Given the semantics of *ichiban*, I now propose the syntax of DegP for *ichiban* superlatives. Specifically, I argue that *ichiban* first merges with the covert ER, and this complex then combines with an ellipsis site Δ , which feeds a set of degrees after ellipsis resolution.

(72) DegP of *ichiban* superlatives

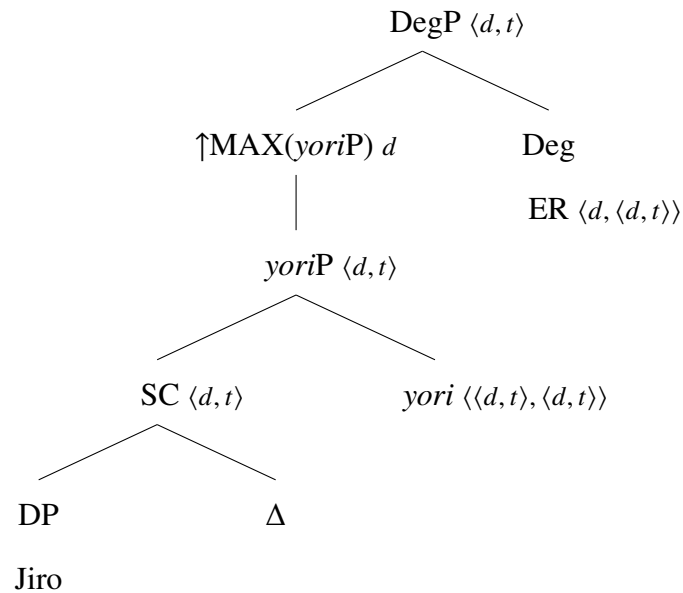


It is important to note that the present structure does not involve a covert contextual variable *C*, as assumed in the Scope Theory. Rather, this contextual role is fulfilled by

the ellipsis site. This proposal is consistent with the structure of phrasal comparatives discussed in Chapter 2, where a comparative deletion site is postulated inside the *yor*i-phrase. Importantly, a similar conclusion has been reached independently by Charnavel (2025), who argues that the comparison class of English superlatives is introduced by the ellipsis site rather than by an overt standard phrase.

The DegP structure proposed here for superlatives is therefore parallel to that of phrasal comparatives, with one crucial difference: in phrasal comparatives, the DegP contains a subject DP of an SC, whereas in superlatives, the corresponding position is realized as an ellipsis site.

(73) SC structure of *yor*i-phrase for phrasal comparatives



In comparatives, ER takes the *yor*i-phrase, which denotes a degree predicate, as its complement. However, ER semantically requires two degrees as its arguments. Therefore, for ER to combine with an appropriate argument, the *yoriP* must first be converted into a degree. This conversion is achieved by a covert MAX operator. In contrast, in

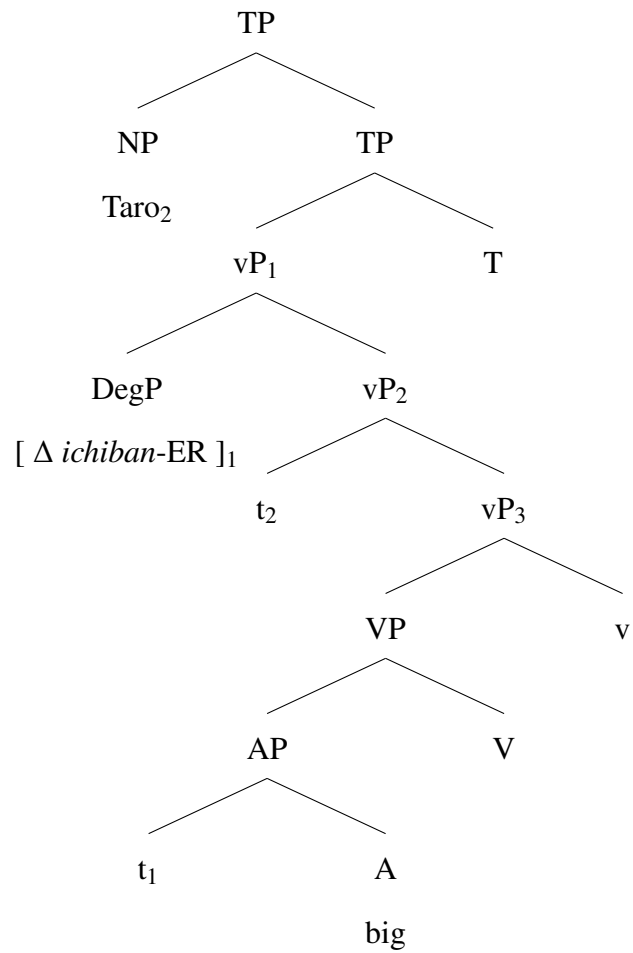
superlatives, the same ER merges with *ichiban*, forming a complex head *ichiban*-ER that subsequently takes a comparison class as its argument. For ease of exposition, I will refer to this complex head as *ichiban*-ER throughout the remainder of the discussion.

With these assumptions in place, consider how the present analysis accounts for a basic superlative sentence.

- (74) Taro-ga ichiban ookii.
Taro-NOM ICHIBAN big
'Taro is the biggest.'

The syntactic structure underlying (74) is represented as follows.

(75) Structure of *ichiban* superlatives



Then, the derivation proceeds in the following steps.

(76) Derivation of *ichiban* superlatives

Step 1: Merger of DegP inside AP

$[_{AP} [_{DEGP} \Delta \textit{ichiban-ER}] \textit{big}]$

Step 2: QR of DegP to vP

$[_{VP} [_{DEGP} \Delta \textit{ichiban-ER}]_1 [_{VP} \textit{Taro} [_{VP} (\textit{be}) [_{AP} t_1\text{-big}]]]]]$

Step 3: Subject movement to TP

$[_{TP} \textit{Taro}_2 [_{VP} [_{DEGP} \Delta \textit{ichiban-ER}]_1 [_{VP} t_2 [_{VP} (\textit{be}) [_{AP} t_1\text{-big}]]]]]]]$

Step 4: LF-copy of vP to Δ

$[_{TP} \textit{Taro} \lambda y. [_{VP} [_{DEGP} \lambda d. \lambda x. [_{VP} x (\textit{be}) d\text{-big}] \textit{ichiban-ER}] \lambda d. [_{VP} y (\textit{be}) d\text{-big}]]]]]$

Step 5: Existential closure of the individual argument in DegP

$[_{TP} \textit{Taro} \lambda y. [_{VP} [_{DEGP} \lambda d. \exists x [_{VP} x (\textit{be}) d\text{-big}] \textit{ichiban-ER}] \lambda d. [_{VP} y (\textit{be}) d\text{-big}]]]]]$

Step 6: Maximalization by *ichiban-ER*

$[_{TP} \textit{Taro} \lambda y. [_{VP} [_{DEGP} \text{MAX}(\lambda d. \exists x [\textit{big}(d)(x)])] \lambda d. [_{VP} y (\textit{be}) d\text{-big}]]]]]$

Result:

$\llbracket \textit{TP} \rrbracket = \textit{big}(\text{MAX}(\lambda d. \exists x \textit{big}(d)(x)))(\textit{Taro})$

The derivation proceeds in the same way as in phrasal comparatives. However, as noted above, unlike phrasal comparatives, superlatives do not contain an overt DP in the standard clause. As a result, the individual argument remains unsaturated and this unsaturated individual argument must be handled in some way. With regard to this, Loccioni (2018: 129–130) addresses this by applying existential closure to the individual argument, and I adopt the same idea here: in Step 5, existential closure applies to the individual argument, so that the DegP denotes a set of degrees such that there exists an x

that is *d*-big. In Step 6, *ichiban*-ER (= MAX) picks out the maximal degree from the set of degrees denoted by the DegP, and this degree saturates the degree argument of the main clause. As a result, the interpretation is that Taro is that big, where that degree is the maximal degree such that no one is bigger than him. Note that the current analysis derives the comparison class through ellipsis resolution, in which the antecedent is the main clause, just as in phrasal comparatives. This does not mean that the comparison class receives no contextual restriction. Rather, it should be restricted pragmatically. For example, if there are three people and a superlative sentence is uttered, the comparison class will naturally be restricted to the heights of those three individuals.

In this respect, the derivation of superlatives is parallel to the analysis of phrasal comparatives developed in Chapter 2, differing only in that the standard phrase in comparatives contains an overt DP.

- (77) Taro-ga Jiro-yori ookii.
 Taro-NOM Jiro-than big
 ‘Taro is bigger than Jiro.’ (NAR)

- (78) Analysis of phrasal comparatives

[_{TP} Taro λy . [_{VP} [_{SC} λd . [_{VP} Jiro (be) *d*-big]]]-yori-ER
 λd . [_{VP} *y* (be) *d*-big]]]

Crucially, in phrasal comparatives, the standard phrase denotes a set of degrees such that a particular DP possesses a gradable property. In contrast, superlatives lack an overt DP to saturate the individual argument. Instead, the individual variable is existentially closed, yielding a comparison class consisting of degrees *d* such that there exists an *x* who is *d*-big. MAX then applies to this set of degrees and returns the uniquely maximal degree, thereby deriving the correct superlative interpretation. Thus, phrasal comparatives and

superlatives differ in (i) whether the degree heads are ER or *ichiban*-ER, where ER is combined with *ichiban*, constituting MAX, and (ii) whether the individual argument is fulfilled by an overt DP or existentially closed. This is summarized as follows (the underline in (79b) highlights no overt DP in *ichiban* superlatives).

(79) a. Phrasal comparatives

[_{SC} $\lambda d.$ **Jiro** $\lambda x.$ [_{VP} $\langle x$ is d -big $\rangle$]]-**yor**-**ER**

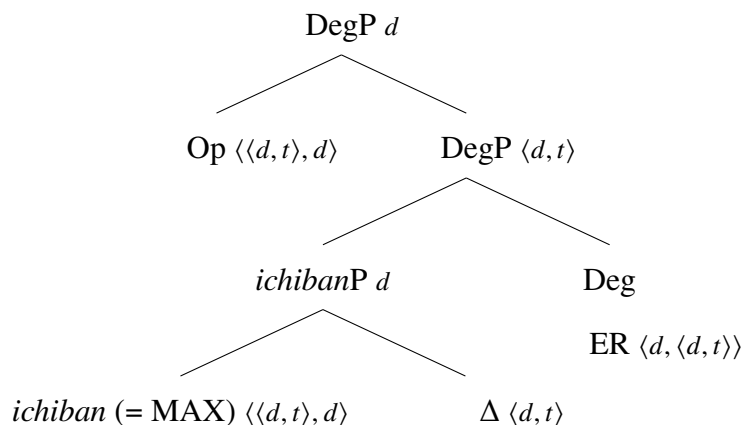
b. *ichiban* superlatives

[_{DEGP} $\lambda d.$ — $\exists x$ [_{VP} $\langle x$ is d -big $\rangle$]] ***ichiban***-**ER** (= **MAX**)

This analysis thus provides a unified account of phrasal comparatives and superlatives in Japanese. In the following sections, I demonstrate that the close connection between the two constructions is further supported by the derivation of the distinct readings associated with the two types of adjectival modification structures.

Before turning to the analysis of the different readings in *ichiban* superlatives, I consider an alternative composition of *ichiban* superlatives. As shown above, phrasal comparatives and superlatives are linked by the primitive ER, which functions either as an ordinary comparative head taking two degree arguments or as part of MAX. In the proposed analysis, therefore, the role of ER differs between comparatives and superlatives. If one wants to maintain the idea that ER uniformly functions as a comparative operator taking two degree arguments in both constructions, another way to implement the analysis is to treat *ichiban* itself as MAX.

(80) Alternative composition of DegP in *ichiban* superlatives



On this view, *ichiban*, functioning as MAX, directly applies to the degree predicate supplied by the ellipsis site in DegP and returns the unique maximal degree. ER, as a comparative head, then takes this degree as its first argument. In addition, a covert operator applies to the DegP and returns the degree that saturates the degree argument in the main clause. Under this composition, ER behaves as a comparative head in both comparatives and superlatives, making the analysis somewhat more parallel (see (73)). However, this approach has a clear drawback. It requires positing an additional covert operator in DegP in order to derive the correct interpretation. As a result, the analysis introduces extra assumptions to explain superlatives.

By contrast, the proposed decomposition treats *ichiban* and ER as jointly forming MAX, allowing the superlative interpretation to be derived without introducing additional elements. Furthermore, as discussed in Section 3.4.1 and further developed in Chapter 4, the typology of superlative morphemes suggests that individual superlative morphemes correspond to specific components of MAX. This supports the present view that *ichiban* realizes THE–SUP, rather than *ichiban* itself as MAX.

3.4.4 Analysis of the Absolute Reading

I now show that the ambiguity between the absolute and relative readings of *ichiban* superlatives arises from the different scopal positions of *ichiban*-ER (i.e., MAX), determined by the structural ambiguity between the IM and DM structures. Let us begin with the absolute reading. As discussed in the previous section, this reading is derived from the IM structure, which involves an RC.

- (81) Taro-ga [[_{RC} ichiban ookii] robotto-o] motteiru.
Taro-NOM ICHIBAN big robot-ACC have
'Taro has a robot that is bigger than any other robot.' (ABS)

Here, *ichiban*-ER takes scope inside the RC. Specifically, I argue that *ichiban*-ER moves above the subject position at vP. Regarding the absolute reading and the structural assumption, one issue must be addressed here. The literature observes that if the superlative morpheme occurs inside the RC in which the copular verb is used, the interpretation is forced to be the absolute reading (Nussbaum 2016; Lee 2019; see Schueler 2006 and Bhatt and Pancheva 2012 for a related issue). However, the RC-internal scope of the superlative morpheme cannot derive the correct absolute reading: if the superlative morpheme is inside the RC, it cannot take scope over the head NP that is outside the RC, and thus the comparison class is not correctly restricted (i.e., a set of big individuals for 'the robot that is biggest').

- (82) *-est* inside the IM structure

[_{RC} Op₁ [_{TP} [_{VP} *-est*₂ [_{VP} t₁ [_{AP} t₂ big]-COP]]-PAST]] [_{NP} robot]]

To address this issue, one may adopt Matushansky's (2008) view that superlative adjectives always occur in attributive positions. Her argument stems from the observation that

many languages require determiners even in predicative superlatives. Since determiners generally combine with NPs, it is puzzling why predicative superlatives, which are assumed to involve only APs excluding NPs, necessitate determiners. Matushansky resolves this by suggesting that superlative adjectives always appear in the attributive position, modifying a null head noun $\emptyset$. Building on this insight, one may propose that the absolute reading arises from structures in which superlative adjectives always appear in the attributive position even in the IM, modifying a phonologically null head noun $\emptyset$ within the DP.

(83) Attributive modification inside the IM structure

[RC Op₁ [TP [vP *-est*₂ [vP t₁ [DP t₂ big $\emptyset_{\text{ROBOT}}$]-COP]]-PAST]] [NP robot]

However, this approach faces a potential drawback: the IM structure under this analysis would contain attributive adjectives. If attributive adjectives were available, the motivation for positing a distinct IM structure in the first place would be weakened. For this reason, it is not desirable to assume that attributive modification is straightforwardly available within the IM structure.

The core insight from Matushansky's proposal is that the head NP of an RC is interpreted inside the RC itself. Lee (2019) suggests a similar possibility for Korean superlatives, although she does not provide a concrete analysis. The central idea here is that the RC head is interpreted within the clause as a lower copy, rather than exclusively at its surface position (see Bhatt 2002 for the related issue). Building on this idea, I argue that the null operator and the head NP undergo movement together within the RC, adopting the copy theory of movement (Chomsky 1993, 1995). Concretely, I adopt a Matching structure that has been developed in the literature (Sauerland 1998, 2004; Fox 2002; Hulsey and Sauerland 2006; Takahashi and Hulsey 2009).

This analysis relies on two key ingredients. First, a mechanism is required to interpret chains of copies. Under the trace theory of movement, a quantified phrase such as *every book* of type $\langle et, t \rangle$ leaves behind a trace of type e , which serves as the argument of a transitive verb. Under the copy theory of movement, however, movement leaves a full copy of the quantified phrase in the original position. As a result, an additional mechanism is required to interpret the chain of copies. Fox (1999, 2002) proposes Trace Conversion as such a mechanism, allowing multiple copies of quantified phrases to receive a coherent semantic interpretation (Fox 2002: 67).

(84) Trace Conversion

a. Variable Insertion:

$(\text{Det}) \text{Pred} \rightarrow (\text{Det}) [\text{Pred } \lambda y(y = x)]$

b. Determiner Replacement:

$(\text{Det}) [\text{Pred } \lambda y(y = x)] \rightarrow \text{the } [\text{Pred } \lambda y(y = x)]$

There are two steps in the procedure. First, Variable Insertion applies, introducing a predicate $\lambda y(y = x)$ that combines with the restrictor via Predicate Modification, thereby establishing a variable-binding relation between the lower copy and the λ -operator created by movement. Second, Determiner Replacement applies, converting the lower copy into a definite description of type e in order to avoid a type mismatch. (adapted from Takahashi and Hulsey 2009, building on Fox 1999, 2002).

(85) Process of Trace Conversion

a. Base structure

John read every book.

b. QR

[[every book] λx . [John read [every book]]]

c. Variable Insertion

[[every book] λx . [John read [every book x]]]

d. Determiner Replacement

[[every book] λx . [John read [the book x]]]

Thus, Trace Conversion, which consists of two steps, renders chains of copies semantically interpretable.

With this mechanism in place, I now illustrate how the Matching structure is derived. I follow the explicit implementation presented in Takahashi and Hulsey (2009), while noting that related arguments in support of the Matching structure are developed in Fox (2002), Sauerland (1998, 2004), and Hulsey and Sauerland (2006). Under the Matching structure analysis, the RC head NP is base-generated externally. Inside the RC, a null operator moves together with an NP that matches the external head (e.g. [OP picture]) to Spec, CP. At PF, the copies of the head noun inside the RC are phonologically deleted under identity with the RC-external head noun. At LF, the higher copy in Spec, CP is deleted, while movement introduces a λ -operator, and the CP combines with the external head noun via Predicate Modification. In addition, the lower copy of the head NP is converted into an interpretable object by Trace Conversion (Takahashi and Hulsey 2009: 406).

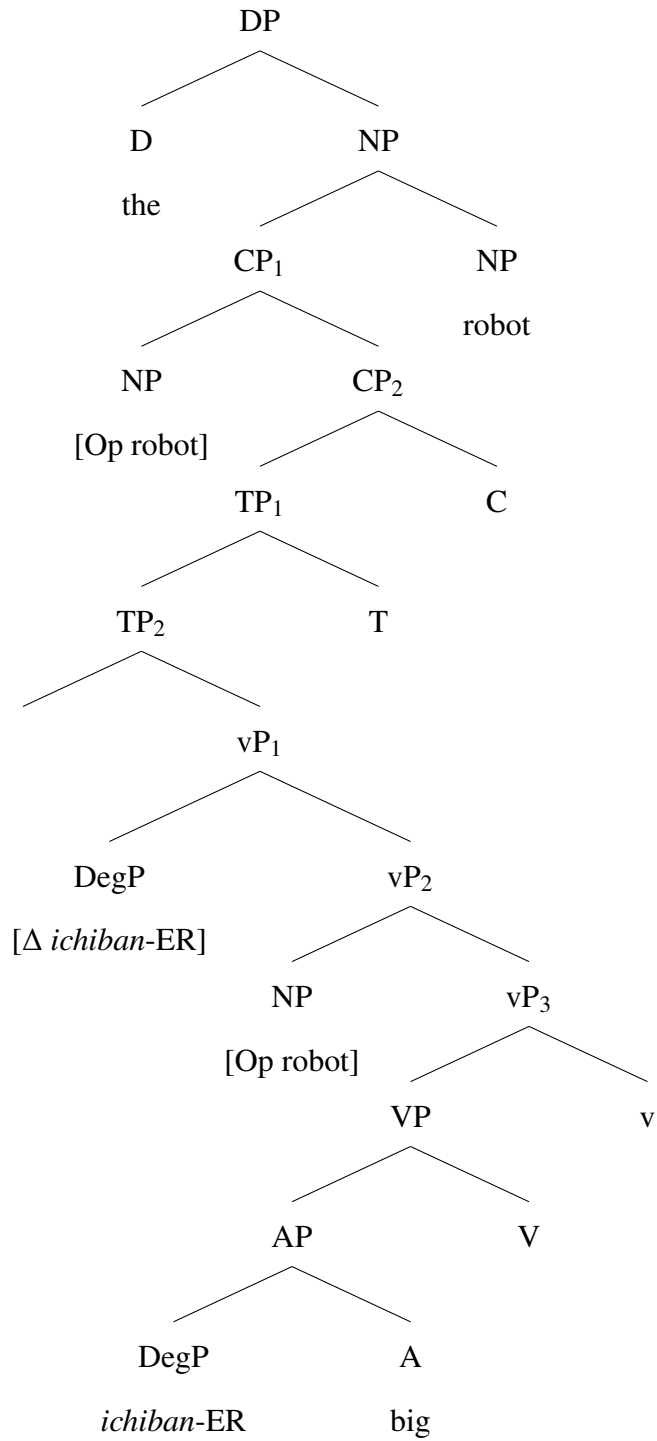
(86) Matching structure

- a. Syntax: [_{DP} the [picture] [_{CP} [_{OP} picture] that [_{TP} John likes [_{OP} picture]]]]
- b. PF: [_{DP} the [picture] [_{CP} [_{OP} picture] that [_{TP} John likes [_{OP} picture]]]]
- c. LF: [_{DP} the [picture] [_{CP} ~~[_{OP} picture]~~ λx . that [_{TP} John likes [the picture x]]]]

Thus, the Matching structure combined with the copy theory of movement allows the RC head noun to be interpreted inside the RC. Although it may be possible to capture the same interpretive effect by alternative mechanisms, I adopt this analysis as an explicit assumption for deriving the absolute reading in the present account.

With the Matching structure in place, the absolute reading is derived as follows.

(87) DP structure of the absolute reading



(88) Derivation of the RC for the absolute reading

Step 1: Merger of *ichiban*-ER in AP

$[_{AP} [_{DEGP} \Delta \textit{ichiban-ER}] \textit{big}]$

Step 2: QR of *ichiban*-ER to vP

$[_{vP} [_{DEGP} \Delta \textit{ichiban-ER}] [_{vP} [_{NP} \textit{Op robot}] [_{vP} (\textit{be})$

$[_{AP} [\textit{ichiban-ER}] \textit{big}]]]]$

Step 3: [Op + NP] movement to Spec, CP

$[_{CP} [_{NP} \textit{Op robot}] \lambda x. [_{TP} [_{vP} [_{DEGP} \Delta \textit{ichiban-ER}]$

$\lambda d. [_{vP} [\textit{Op robot}] (\textit{be}) [\textit{ichiban-ER}]\textit{-big}]]]]$

Step 4: Trace Conversion with the higher copy [Op + NP] deleted

$[_{CP} [_{NP} \textit{Op robot}] \lambda x. [_{TP} [_{vP} [_{DEGP} \Delta \textit{ichiban-ER}]$

$\lambda d. [_{vP} [\textit{the robot } x] (\textit{be}) [\textit{the } d]\textit{-big}]]]]$

Step 5: LF-copy of vP to Δ

$[_{CP} [_{NP} \textit{Op robot}] \lambda x. [_{TP} [_{vP} [_{DEGP} \lambda d. \lambda y. [_{vP} [\textit{the robot } y] (\textit{be})$

$[\textit{the } d]\textit{-big}] \textit{ichiban-ER}] \lambda d. [_{vP} [\textit{the robot } x] (\textit{be}) [\textit{the } d]\textit{-big}]]]]$

Step 6: Existential closure of the individual argument in DegP

$[_{CP} [_{NP} \textit{Op robot}] \lambda x. [_{TP} [_{vP} [_{DEGP} \lambda d. \exists y [_{vP} [\textit{the robot } y] (\textit{be})$

$[\textit{the } d]\textit{-big}] \textit{ichiban-ER}] \lambda d. [_{vP} [\textit{the robot } x] (\textit{be}) [\textit{the } d]\textit{-big}]]]]$

Step 7: Maximalization by *ichiban*-ER

$[_{CP} [_{NP} \textit{Op robot}] \lambda x. [_{TP} [_{vP} [_{DEGP} \textit{MAX}(\lambda d. \exists y [_{vP} [\textit{the robot } y] (\textit{be})$

$[\textit{the } d]\textit{-big}]] \lambda d. [_{vP} [\textit{the robot } x] (\textit{be}) [\textit{the } d]\textit{-big}]]]]$

Result:

$\llbracket \text{DP} \rrbracket = \lambda x [\textit{robot}(x) \wedge \textit{big}(\textit{MAX}(\lambda d. \exists y [\textit{robot}(y) \wedge \textit{big}(d)(y)]))(x)]$

The derived RC then combines with the RC-external NP *robot* by Predicate Modification.⁸ Note that the definite article must be used to derive the absolute reading, where there must be a unique robot that has the maximal degree of height, which is consistent with the Scope Theory (Szabolcsi 1986; Heim 1985, 1999). Overall, the sentence means that Taro has the unique robot that is that big, where that degree is the maximal degree such that any other robot is not bigger than that. Thus, the current analysis correctly derives the absolute reading.⁹

To summarize, I have argued that the absolute reading is derived from the IM structure, in which *ichiban*-ER (MAX) takes scope over vP within an RC. In order to derive the correct interpretation of the absolute reading, I adopt a Matching structure in which a noun matching the head noun is present inside the RC and analyze it within the copy theory of movement. This analysis is particularly important for languages that make use of IM structures, such as Korean, which face essentially the same problem in deriving the absolute reading.

3.4.5 Analysis of the Relative Readings

Turning to the relative readings, I argue that they are derived from the DM structure, in contrast to the absolute reading, which is derived from the IM structure. Furthermore, whereas Aihara's Scope Theory-based analysis assumes that *ichiban* must always be interpreted below the correlate in order to yield the relative reading, I propose that two

⁸Because the present analysis adopts the copy theory of movement, the DegP leaves a copy in its base position, which is interpreted via Trace Conversion. See Bhatt and Pancheva (2004) for related discussion.

⁹Though I have adopted the Matching structure with the copy theory of movement here, what is crucial is that an NP matching the head noun is interpreted inside the RC to derive the correct comparison class. If there is any other way to derive the same effect, the assumption posited here is not necessary. For simplicity, I use indexed traces rather than copies in the following derivations. Nothing in the analysis hinges on this choice.

distinct syntactic positions are available for relative readings. In one configuration, *ichiban*-ER takes scope over vP, deriving the low relative reading. In the other configuration, *ichiban*-ER takes scope over CP, yielding the high relative reading.

3.4.5.1 Low Relative Reading

I have argued that the absolute reading is derived from the IM structure, where *ichiban*-ER takes scope over vP within an RC. In contrast, the relative reading of *ichiban* superlatives is derived from the DM structure, as discussed in Section 3.3.2.2. Recall that the IM structure containing an RC constitutes an island that blocks the movement of *ichiban*, so only the DM structure is available to derive the relative reading.

- (89) Taro-ga ichiban [[_{AP} ookii] robotto-o] motteiru.
 Taro-NOM ICHIBAN big robot-ACC have
 ‘Taro has a bigger robot than anyone else does.’ (REL)

Furthermore, as demonstrated in Section 3.3.3, when *ichiban* appears below the correlate subject of the relative reading, the correlate can be marked with the topic particle, given an appropriate context.

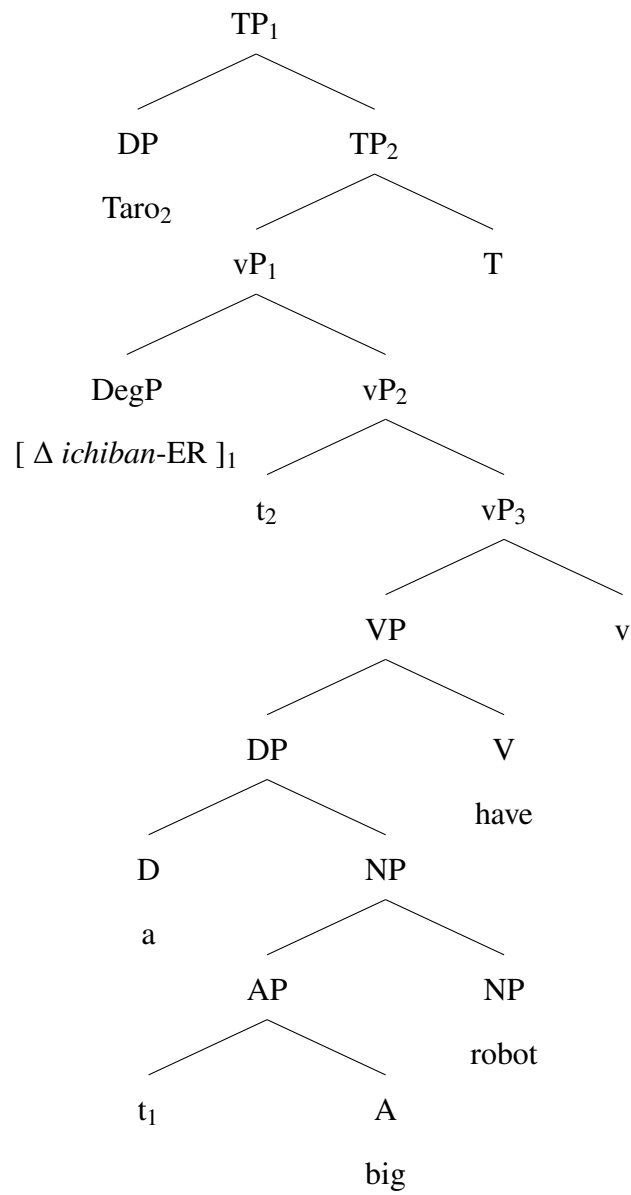
- (90) San-nin-no-nakade Taro-wa ichiban ookii robotto-o motteiru.
 three-CL-GEN-among Taro-TOP ICHIBAN big robot-ACC have
 ‘Taro has the biggest robot among the three people.’ (REL)

Based on this evidence, I have argued that, in the low relative reading, the overt correlate does not receive focus. Furthermore, in the low relative reading, *ichiban* appears below the overt subject. I therefore propose that, in this case, *ichiban*-ER takes scope over vP in the matrix clause. Finally, following Szabolcsi (1986) and Heim (1985, 1999), I assume that while the definite determiner is required in the derivation of the absolute reading,

the relative reading requires an indefinite determiner. I adopt this assumption and posit a covert indefinite article in the structure that yields the relative reading.

With these assumptions in place, I now turn to the derivation of the low relative reading.

(91) Structure of the low relative reading



(92) Derivation of the low relative reading

Step 1: Merger of DegP in AP

$[_{VP} \text{Taro } [_{VP} [_{DP} a [_{NP} [_{AP} [_{DEGP} \Delta \text{ichiban-ER}] \text{big}] \text{robot}]] \text{have}]]]$

Step 2: QR of DegP to vP

$[_{VP} [_{DEGP} \Delta \text{ichiban-ER}]_1 [_{VP} \text{Taro } [_{VP} [_{DP} a \text{t}_1\text{-big robot}] \text{have}]]]]]$

Step 3: Rest of syntactic derivation

$[_{TP} \text{Taro}_2 [_{VP} [_{DEGP} \Delta \text{ichiban-ER}]_1 [_{VP} \text{t}_2 [_{VP} [_{DP} a \text{t}_1\text{-big robot}] \text{have}]]]]]$

Step 4: LF-copy of vP to Δ

$[_{TP} \text{Taro } \lambda y. [_{VP} [_{DEGP} \lambda d. \lambda x. [_{VP} x \text{ a } d\text{-big robot have}] \text{ichiban-ER}] \lambda d. [_{VP} y \text{ a } d\text{-big robot have}]]]]]$

Step 5: Existential closure of the individual argument in DegP

$[_{TP} \text{Taro } \lambda y. [_{VP} [_{DEGP} \lambda d. \exists x [_{VP} x \text{ a } d\text{-big robot have}] \text{ichiban-ER}] \lambda d. [_{VP} y \text{ a } d\text{-big robot have}]]]]]$

Step 6: Maximalization by *ichiban-ER*

$[_{TP} \text{Taro } \lambda y. [_{VP} [_{DEGP} \text{MAX}(\lambda d. \exists x [_{VP} x \text{ a } d\text{-big robot have}])] \lambda d. [_{VP} y \text{ a } d\text{-big robot have}]]]]]$

Result:

$\llbracket \text{TP} \rrbracket = \exists z [\text{robot}(z) \wedge \text{have}(z)(\text{Taro}) \wedge \text{big}(\text{MAX}(\lambda d. \exists y \exists x [\text{robot}(y) \wedge \text{have}(y)(x) \wedge \text{big}(d)(y)]))(z)]$

In contrast to the absolute reading, *ichiban-ER* takes scope in the main clause. As a result of this derivation, the sentence receives the interpretation that Taro has a robot that is that big, where that degree is the maximal degree such that no one has a robot bigger than that. The relative reading is therefore correctly derived under the present analysis.¹⁰

¹⁰A question still remains as to why an overt comparison class is required to license the low relative

To summarize, I have argued that the low relative reading is derived from the DM structure. The derivation parallels that of the absolute reading in that *ichiban*-ER takes scope over vP, although the absolute reading is derived from the IM structure rather than the DM structure. In the next section, I turn to the second type of relative reading.

3.4.5.2 High Relative Reading

Finally, consider the high relative reading. This reading is likewise derived from the DM structure, but it differs from the low relative reading in a crucial respect. When *ichiban* appears in a position structurally higher than the correlate subject, the correlate cannot be marked with the topic particle.

- (93) San-nin-no-nakade ichiban Taro{^{OK}-ga / *-wa} ookii robotto-o motteiru.
 three-CL-GEN-among ICHIBAN Taro -NOM / -TOP big robot-ACC have
 ‘Taro has the biggest robot among the three people.’ (REL)

This contrasts with the low relative reading, in which topic marking on the correlate is permitted. Based on this contrast, I argue that in the high relative reading, focus must be assigned to the overt subject. Recall that the same anti-topic marking effect was independently observed in phrasal comparatives.

- (94) Jiro-yori Taro {^{OK}-ga / *-wa} ookii robotto-o motteiru.
 Jiro-than Taro -NOM / -TOP big robot-ACC have
 ‘Taro has a bigger robot than Jiro does.’ (WIDE)

As discussed in Chapter 2, this is because the correlate subject must undergo focus-driven movement in order to license ellipsis. If the subject remains *in situ*, no appropriate gap

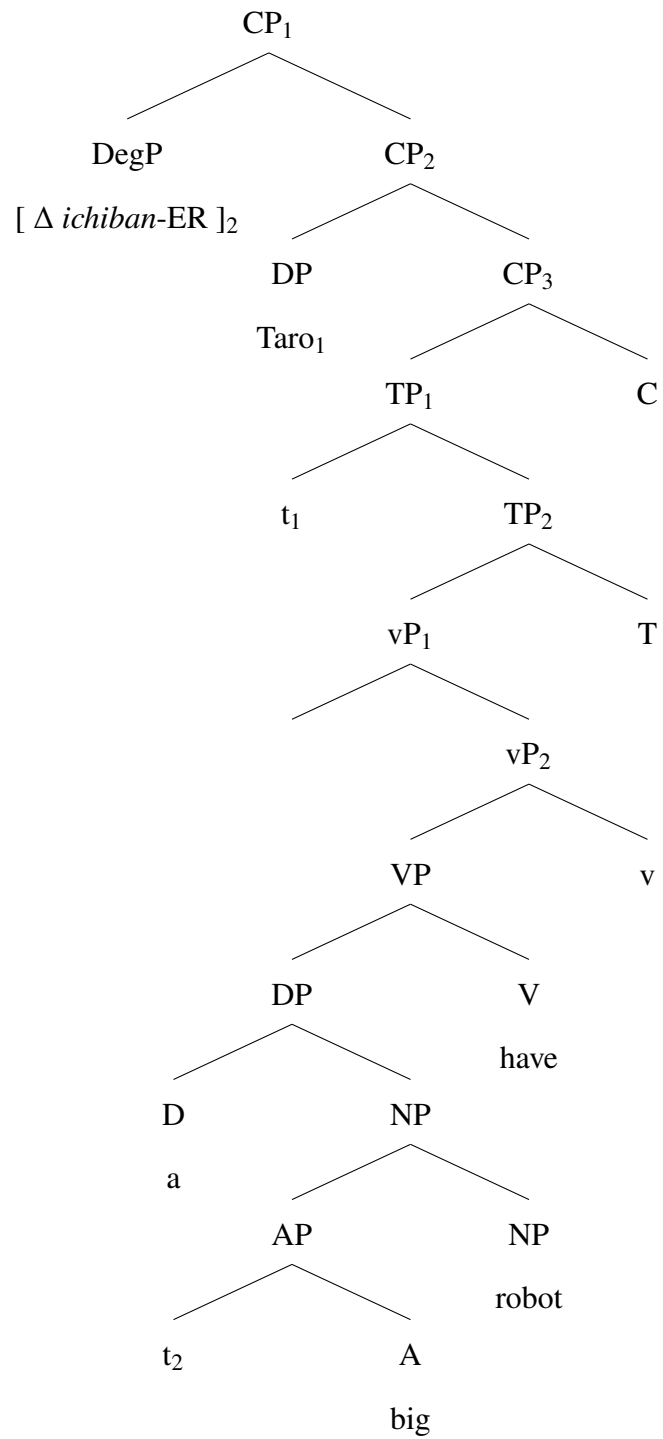
reading when the correlate subject is marked with the topic marker *-wa*. When the correlate is topic-marked, the topic of discourse is the correlate itself, and the sentence does not introduce other individuals in the context. Without the topic marker, speakers may assign implicit focus to the correlate, which facilitates the low relative reading, but this option is not available for the topic-marked subject. Nevertheless, the current issue relates more to pragmatics than to syntax, and I leave it for future research.

is created, and TP ellipsis cannot be licensed. The movement is therefore necessary. I maintain the same reasoning for the superlative derivation, where focus is likewise required to license the ellipsis.

Given this, consider the derivation of the high relative reading.

- (95) Ichiban₁ Taro-ga [[_{AP} t₁ ookii] robotto-o] motteiru.
ICHIBAN Taro-NOM big robot-ACC have
'Taro has a bigger robot than anyone else does' (REL)

(96) Structure of the high relative reading



(97) Derivation of the high relative reading

Step 1: Focus-driven movement of the subject to CP

[_{CP} Taro₁ [_{TP} t₁ [_{VP} [_{VP} [_{DP} a [_{NP} [_{AP} [_{DEGP} Δ *ichiban*-ER] big] robot]]
have]]]]

Step 2: QR of DegP

[_{CP} [_{DEGP} Δ *ichiban*-ER]₂ [_{CP} Taro₁ [_{TP} t₁ [_{VP} a t₂-big robot have]]]]

Step 3: LF-copy of TP to Δ

[_{CP} [_{DEGP} λ*d*.λ*x*. [_{TP} *x* a *d*-big robot have] *ichiban*-ER]
λ*d*. [_{CP} Taro λ*y*. [_{TP} *y* a *d*-big robot have]]]

Step 4: Existential closure of the individual argument in DegP

[_{CP} [_{DEGP} λ*d*.∃*x* [_{TP} *x* a *d*-big robot have] *ichiban*-ER]
λ*d*. [_{CP} Taro λ*y*. [_{TP} *y* a *d*-big robot have]]]

Step 5: Maximalization by *ichiban*-ER

[_{CP} [_{DEGP} MAX(λ*d*.∃*x*[_{TP} *x* a *d*-big robot have])]
λ*d*. [_{CP} Taro λ*y*. [_{TP} *y* a *d*-big robot have]]]

Result:

[[CP]] = ∃*z*[robot(*z*) ∧ have(*z*)(Taro) ∧ big(MAX(λ*d*.∃*y*∃*x*[robot(*y*) ∧
have(*y*)(*x*) ∧ big(*d*)(*y*)))(*z*)]

As a result of this derivation, the sentence receives the interpretation Taro has a robot that is that big, where that degree is the maximal degree such that no one else has a robot that is bigger than that. Thus, the present analysis correctly derives the relative reading.

To summarize, I have argued that in the low relative reading, *ichiban*-ER takes scope over vP, whereas in the high relative reading, *ichiban*-ER takes scope over CP. Crucially, this analysis establishes a transparent mapping between overt syntactic structure and LF.

Ichiban-ER, or MAX, is interpreted at its surface position, without recourse to additional LF movement or PF–LF interactions, in contrast to Aihara’s Scope Theory-based analysis.

3.4.6 Summary

I have argued that *ichiban* in Japanese superlatives is not a counterpart of English *-est*, but instead forms a bundled THE–SUP, yielding MAX through the combination of *ichiban* and ER. The DegP hosting *ichiban*-ER also contains an ellipsis site Δ , which is resolved as syntactic constituents of different sizes depending on the scope position of the DegP. On this view, the ambiguity between the absolute and relative readings follows from the structural ambiguity between IM and DM structures. Absolute readings arise when MAX takes scope inside a relative clause. To ensure that the RC head noun is interpreted within the clause, the analysis adopts a Matching structure combined with the copy theory of movement and Trace Conversion. Relative readings are derived under the DM structure and are further divided into two types. In the low relative reading, MAX takes scope over vP, whereas in the high relative reading, MAX takes scope over CP. The high relative reading requires focus-driven movement of the correlate subject in order to license ellipsis, which in turn accounts for the observed asymmetry in topic marking depending on whether the correlate precedes or follows *ichiban*. The scope positions available to *ichiban*-ER (= MAX) are summarized in the following.

(98) Scope position of *ichiban*-ER (=MAX) in superlatives

Adjectival modification	DegP scope	Reading
IM	vP in the RC	Absolute
DM	vP in the main clause	Low relative
DM	CP in the main clause	High relative

Recall that the scope position of ER in phrasal comparatives shows the same distribution. The narrow reading is derived from the IM structure, in which ER takes scope over vP, while the wide readings are derived from the DM structure, where ER takes scope over vP or CP.

(99) Scope position of ER in phrasal comparatives

Adjectival modification	DegP scope	Reading
IM	vP in the RC	Narrow
DM	vP in the main clause	Low wide
DM	CP in the main clause	High wide

Given the distribution of ER in phrasal comparatives and *ichiban*-ER in superlatives, the scope positions of ER parallel those of *ichiban*-ER. This parallelism is summarized in the following.

(100) Scope position of ER and *ichiban*-ER in phrasal comparatives and superlatives

Adjectival Mod	DegP scope	Comparatives	Superlatives
IM	vP in the RC	Narrow	Absolute
DM	vP in the main clause	Low wide	Low relative
DM	CP in the main clause	High wide	High relative

Thus, ER and *ichiban*-ER can be interpreted at the same syntactic heights in order to derive the different readings in phrasal comparatives and superlatives. This parallelism is not accidental. The two constructions differ in only two respects: first, whether the comparative ER is interpreted alone or in combination with *ichiban* (i.e., MAX) and second, whether the individual argument in the DegP is saturated by an overt DP or existentially closed.

(101) Two differences between phrasal comparatives and *ichiban* superlatives

a. Phrasal comparatives

[_{SC} λd . **Jiro** λx . [_{VP} $< x$ has a d -big robot $>$]]-*yori*-**ER**

b. *ichiban* superlatives

[_{DEGP} λd . — $\exists x$ [_{VP} $< x$ has a d -big robot $>$]] ***ichiban*-ER (= MAX)**

3.5 Evidence Against the 2-place *-est* Analysis

Thus far, I have developed an analysis of Japanese *ichiban* superlatives. Building on the parallel distribution between superlatives and comparatives, I have argued that *ichiban* constitutes part of the MAX operator together with a covert ER. This analysis correctly captures the distribution of *ichiban* and overcomes a theoretical challenge posed by Aihara's Scope Theory-based account incorporating Heim's 3-place *-est*. In this section, I present two independent arguments against an analysis that incorporates an additional possible meaning for the superlative operator, namely Heim's (1999) 2-place *-est*, in Japanese. First, I examine the role of focus in the derivation of superlative interpretations and show that the focus requirement predicted by the 2-place analysis is not borne out in Japanese. In particular, I demonstrate that the high relative reading systematically gives

rise to an exhaustivity effect, whereas the low relative reading does not, a contrast that correlates with the necessity of focus. Second, I turn to so-called “DP-internal relative readings” (Pancheva and Tomaszewicz 2012; Tomaszewicz 2015) and show that Japanese systematically lacks such readings. I argue that this absence is unexpected under the 2-place *-est* analysis, thereby providing further evidence against treating *ichiban* as a 2-place *-est*.

3.5.1 Focus in Superlatives

In this section, I examine the role of focus in Japanese superlatives. As argued in the previous sections, there is an asymmetry between the low and high relative readings: only the high relative reading requires focus on the correlate.

(102) Focus on correlates in the relative readings

	Is focus on correlates obligatory?
Low relative reading	No
High relative reading	Yes

Thus far, I have argued that the asymmetry independently arises from ellipsis licensing. In the high relative reading, the correlate must undergo focus-driven movement in order to license ellipsis targeting TP, as in sluicing. However, this asymmetry raises the question of whether focus contributes to the interpretation of superlatives at all.

3.5.1.1 Focus and Exhaustivity in Japanese Superlatives

The role of focus in superlatives has been widely discussed in the literature (Heim 1985, 1999; Szabolcsi 1986; Tomaszewicz 2015). In particular, Heim’s (1999) 2-place

-est analysis is formulated within Rooth's (1985, 1992, 1996) alternative semantics and crucially relies on focus to generate the appropriate comparison class. In Rooth's alternative semantics, the role of focus is to introduce alternatives into the context. Additionally, it involves a parallel computation of an ordinary semantic value $\llbracket \alpha \rrbracket^o$ and a focus semantic value $\llbracket \alpha \rrbracket^f$, where the latter is the set of alternatives to α of the same semantic type. The F-feature assigned to a constituent generates its focus semantic value, which is interpreted by the squiggle operator ($\sim$) at LF. The squiggle operator takes two arguments: the denotation of its sister node and a covert domain variable C , which is anaphoric in nature. The variable C denotes a subset of $\llbracket \alpha \rrbracket^f$ that contains $\llbracket \alpha \rrbracket^o$ and at least one additional alternative. The squiggle operator may adjoin at LF provided that the anaphoric variable C has an appropriate antecedent. Rooth (1992: 88) formulates this condition as follows: any β such that $\llbracket \beta \rrbracket^o \subseteq \llbracket \alpha \rrbracket^f$, where α is the sister of $\sim$, may serve as the antecedent for C .

(103) Focus Association Condition

$\llbracket \alpha \sim C \rrbracket$ is felicitous only if there exists a β such that $\llbracket \beta \rrbracket^o \subseteq \llbracket \alpha \rrbracket^f$, where α is the sister of $\sim$.

With the alternative semantics, Heim's 2-place *-est* takes a comparison class C , that is, a set of degree predicates, and a degree predicate P as its arguments. Then, the 2-place *-est* asserts that there exists a degree d such that $P(d)$ holds and no alternative predicate in C is true of the same degree.

(104) Heim's 2-place *-est*

$$\llbracket -est \rrbracket = \lambda C_{\langle dt, t \rangle} . \lambda P_{\langle d, t \rangle} . \exists d [P(d) \wedge \forall Q \in C [Q \neq P \rightarrow \neg Q(d)]]$$

(105) 2-place *-est* analysis of the relative readings

a. LF for the relative reading

$$[[[C\text{-}est]_1[[\text{John}]_F \text{ climbed a } t_1\text{-high mountain}] \sim C']$$

b. Alternatives derived from focus

$$[[C]] \subseteq \left\{ \begin{array}{l} \lambda d. \text{ John climbed a } d\text{-high mountain} \\ \lambda d. \text{ Bill climbed a } d\text{-high mountain} \\ \lambda d. \text{ Mary climbed a } d\text{-high mountain} \\ \vdots \end{array} \right\}$$

c. Comparison class

$$C = \{D : \exists x[D = \lambda d. x \text{ climbed a } d\text{-high mountain}]\}$$

Focus on the correlate generates a set of alternative degree predicates, illustrated in (105b) and C is formally defined as the set of degree predicates in (105c). Heim's 2-place *-est* then asserts that there exists a degree d such that John climbed a d -high mountain, and for every alternative predicate in C , that predicate is not true of the same degree. Therefore, this yields the relative reading.

However, the present observation indicates that Japanese superlatives do not require focus on the correlate for the low relative reading. Consequently, Heim's 2-place *-est* analysis does not adequately capture the asymmetry in the focus requirement between the low and high relative readings. Thus, the proposed analysis has a theoretical advantage in accounting for both the necessity and the non-necessity of focus in Japanese superlatives. By contrast, Heim's 3-place *-est* does not require focus on the correlate at all. Therefore, it fails to capture the high wide reading. Moreover, as discussed above, it cannot derive the correct word order in the first place.

However, this raises the question of whether focus affects the interpretation of Japanese superlatives. I demonstrate that focus in the high relative reading indeed affects the interpretation by providing a novel observation concerning the two relative readings. First, the low relative reading allows multiple individuals to satisfy the maximal degree property. Consider the following scenario. Taro, Jiro, Ken, Akira, and Koji competed in a basketball game. Taro and Jiro each scored 20 points, Ken scored 15 points, Akira scored 10 points, and Koji scored 5 points. In this context, the low relative reading is felicitous in describing the tie situation in which Taro and Jiro both scored 20 points, a number of points greater than that scored by any other player.

(106) Context

Taro scored 20 points.

Jiro scored 20 points.

Ken scored 15 points.

Akira scored 10 points.

Koji scored 5 points.

(107) Low relative reading

Jiro-to narande Taro-wa ichiban ookuno ten-o totta.

Jiro-with in.a.tie.with Taro-TOP ICHIBAN many point-ACC took

‘In a tie with Jiro, Taro scored the most points.’

(REL)

In quantity superlatives, the absolute reading is excluded (Szabolcsi 1986; Hackl 2009), and only the relative reading is available in (107). Therefore, the interpretation obtained in the present example is necessarily a relative reading. Furthermore, the ‘in a tie with’ phrase facilitates a tie interpretation under the relative reading. This interpretation is not predicted by Heim’s 2-place or 3-place *-est* entries, which require that the correlate *Taro*

be the unique individual who scored the most points. Consequently, Heim's *-est* entries undergenerate in tie contexts of this sort.

By contrast, consider now the high relative reading in the same context.

(108) High relative reading

Jiro-to narande ichiban Taro-ga ookuno ten-o totta.
 Jiro-with in.a.tie.with ICHIBAN Taro-NOM many point-ACC took
 'In a tie with Jiro, Taro scored the most points.' (REL)

The sentence under the high relative reading is not compatible with the current scenario. Under this reading, the correlate *Taro* must be the only individual who scored the most points. Therefore, the existence of Jiro, who scored the same number of points as Taro, renders the sentence infelicitous. The current observation is summarized as follows.

(109) Does the reading yield an exhaustivity effect?

	Does the reading yield an exhaustivity effect?
Low relative reading	No
High relative reading	Yes

For the high relative reading, Heim's *-est* entries correctly capture the exhaustivity effect. However, as shown above, they undergenerate in the case of the low relative reading. By contrast, the present analysis captures the low relative reading correctly, but it overgenerates for the high relative reading: it incorrectly predicts that the high relative reading should be felicitous in the tie scenario described above. This indicates that the exhaustivity effect must be independently encoded within the present mechanism.

Notice that the high relative reading requires focus, in contrast to the low relative reading, and the presence of focus correlates with the presence of an exhaustivity effect: exhaustivity is observed in the high relative reading, but not in the low relative reading.

(110) Focus and exhaustivity in relative readings

	Focus obligatory?	Exhaustivity effect?
Low relative reading	No	No
High relative reading	Yes	Yes

Based on this observation, I argue that a covert exhaustivity operator (EXH) (Fox 2007; Ippolito 2008; Sharvit 2015) is inserted at the CP level in the high relative reading.

$$(111) \quad \text{EXH}(p) = p \wedge \forall q \in \text{ALT}(p)[q \neq p \rightarrow \neg q]$$

EXH is an operator that strengthens a proposition p by asserting p and negating all distinct alternatives in $\text{ALT}(p)$. When EXH applies at CP, it asserts the prejacent and excludes all alternative propositions. With this in mind consider the high relative reading.

(112) Derivation of the high relative reading

- a. LF for the high relative reading

$$[_{\text{CP}} \text{EXH} [_{\text{CP}} [\text{ichiban-ER}]_1 [_{\text{CP}} [\text{Taro}_F]_2 [_{\text{TP}} t_2 \text{ scored } t_1\text{-many points}]]]]]$$

- b. Alternatives derived from focus

{Taro scored MAX-many points, Jiro scored MAX-many points,
Ken scored MAX-many points...}

- c. Exhaustified meaning

$$\text{EXH}(p) = \text{Taro scored MAX-many points} \wedge \neg \text{Jiro scored MAX-many points} \wedge \neg \text{Ken scored MAX-many points...}$$

Given the set of focus-generated alternatives in (112b), application of EXH at CP asserts the prejacent and negates all the other alternatives derived by the focus on the correlate. As shown in (112c), the resulting interpretation is that Taro scored MAX-many points

and no individual other than Taro did so. Note that the low relative reading lacks focus on the correlate and therefore does not generate the relevant propositional alternative set. Without such an alternative set, EXH cannot apply in the same way, and non-exhaustive, tie-compatible interpretations remain available.

The same low and high absolute readings appear in predicative superlatives. For example, consider the following scenario. The heights of Taro, Jiro, Ken, Akira, and Koji were compared. Taro and Jiro are both 180 cm tall, Ken is 150 cm tall, Akira is 140 cm tall, and Koji is 130 cm tall. In this context, the low absolute reading is compatible with the tie situation in which Taro and Jiro are both 180 cm and taller than any others. In contrast, the sentence corresponding to the high absolute reading is blocked.

(113) Context

Taro is 180 cm.

Jiro is 180 cm.

Ken is 150 cm.

Akira is 140 cm.

Koji is 130 cm.

(114) Low absolute reading

Jiro-to narande Taro-wa ichiban ookii.

Jiro-with in.a.tie.with Taro-NOM ICHIBAN big

‘In a tie with Jiro, Taro is the biggest.’

(115) High absolute reading

Jiro-to narande ichiban Taro-ga ookii.

Jiro-with in.a.tie.with ICHIBAN Taro-NOM big

‘In a tie with Jiro, Taro is the biggest.’

The contrast between the low and high absolute readings suggests that exhaustivity is not specific to relative readings; rather, the structural height of the superlative morpheme is crucial. This contrast can be explained by the same mechanism proposed for the relative readings. If *ichiban*-ER is interpreted at vP in the low absolute reading, no exhaustivity effect arises. If *ichiban*-ER is interpreted at CP in the high absolute reading, focus is placed on the correlate subject, triggering the generation of alternatives.

(116) Derivation of the high absolute reading

- a. LF for the high absolute reading

$[_{CP} EXH [_{CP} [ichiban-ER]_1 [_{CP} [Taro_F]_2 [_{TP} t_2 \text{ is } t_1\text{-big}]]]]]$

- b. Alternatives derived from focus

{Taro is MAX-big, Jiro is MAX-big, Ken is MAX-big...}

- c. Exhaustification

$EXH(p) = \text{Taro is MAX-big} \wedge \neg \text{Jiro is MAX-big} \wedge \neg \text{Ken is MAX-big} \dots$

A covert EXH operator therefore requires the prejacent “Taro is the biggest” to be true while excluding all alternative propositions. As a result, the present analysis correctly captures the contrast between the low and high absolute readings, as well as the contrast between the low and high relative readings.

To summarize, I have argued that focus plays a crucial role in deriving the exhaustivity effect in Japanese superlatives. However, focus is not always required, contrary to the prediction of Heim’s 2-place *-est*, which derives relative readings through focus-generated alternatives. At the same time, exhaustivity is not uniformly present, contrary to the predictions of both the 2-place and 3-place *-est* entries. The predictions of these

approaches are summarized in (117).¹¹

(117) Predictions of different analyses for the low and high readings

	Focus required?		Exhaustivity required?	
	Low	High	Low	High
Heim's 2-place <i>-est</i>	Yes	Yes	Yes	Yes
Heim's 3-place <i>-est</i>	No	No	Yes	Yes
Proposed analysis	No	Yes	No	Yes

Heim's 2-place *-est* predicts that focus on the correlate is necessary in order to generate the relevant alternative set. This prediction is contradicted by the low reading, which is available even in the absence of focus on the correlate. Moreover, both the 2-place and 3-place *-est* entries predict that exhaustivity for both readings. This prediction is likewise falsified by the low reading, which permits non-exhaustive, tie-compatible interpretations. At the same time, the high reading exhibits the opposite pattern: it obligatorily requires focus on the correlate and systematically yields an exhaustivity effect. I have argued that this contrast follows if a covert EXH operator is inserted at CP in the high reading. Focus on the correlate generates a set of propositional alternatives, and EXH excludes all alternatives distinct from the prejacent, thereby deriving the observed exhaustivity. In the low reading, by contrast, the absence of subject focus prevents the formation of the relevant propositional alternative set at CP, and no exhaustivity effect arises. Importantly, this asymmetry is not confined to relative readings. The same contrast emerges in absolute readings, indicating that the effect is tied to structural height rather than to the particular type of superlative interpretation.

¹¹To be precise, Heim's 3-place *-est* does not distinguish between low and high readings, whereas Heim's 2-place *-est* is typically interpreted in a high position in a sentence. Nevertheless, the 3-place *-est* does not require focus, while the 2-place *-est* does in order to derive alternatives.

3.5.1.2 Role of Focus in Superlatives

The preceding discussion shows that focus is not an essential component of Japanese superlatives, unlike Heim's 2-place *-est*. This conclusion is compatible with observations in the literature that focus facilitates superlative interpretations, particularly relative readings, though it is not required for superlatives (Heim 1985, 1999; Szabolcsi 1986). For example, Heim (1999: 6) provides the following example, in which the correlate is not pronounced and the main prosodic stress falls on the object *plant*, though the sentence is easily interpreted as having a relative reading.

(118) Relative reading without focus on a correlate

- a. How does one win this contest?
- b. By putting the tallest *plánt* on the table.

The answer in (118b) is interpreted as “one wins the contest if one puts a taller plant on the table than anyone else does”. Thus, focus is not necessary to derive relative readings.

However, focus can facilitate the relative reading by identifying the correlate. For example, different placements of prosodic stress in the following sentences yield relative readings with different correlates.

(119) Focus on correlates facilitates the relative reading

- a. **Jóhn** gave the most expensive book to Mary.
- b. John gave the most expensive book to **Máry**.

In (119a), the prosodic stress on *John* facilitates the interpretation “John gave a more expensive book to Mary than anyone else did.” In contrast, in (119b), the prosodic stress on *Mary* facilitates the interpretation “John gave a more expensive book to Mary than to

anyone else”. Note, however, that in both sentences the absolute reading is not excluded by the placement of focus. For instance, the interpretation “John gave a more expensive book to Mary than any other book” remains possible. Overall, these observations suggest that focus is not required for superlatives, but it facilitates the relative reading by identifying the correlate.

The proposed MAX-based analysis is compatible with these observations in that focus is not a prerequisite for superlatives. However, an additional question arises concerning the role of focus in superlatives in relation to syntactic structure. The Japanese examples suggest that when *ichiban* precedes the correlate, the correlate receives focus, which indicates that some form of focus movement is associated with the correlate. If focus is not an inherent property of superlatives in Japanese, then what is the nature of this focus? This question is related to the fact that focus on the correlate gives rise to an exhaustivity effect. In this regard, clefts in Japanese and many other languages are known to give rise to an exhaustivity effect. For example, consider the following Japanese cleft sentence (Hiraiwa and Ishihara 2012: 149).

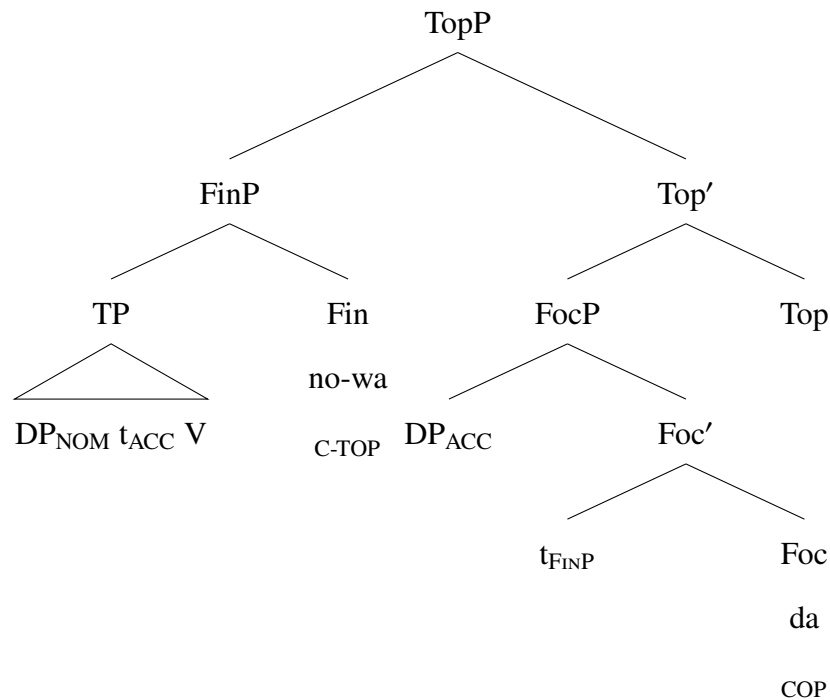
(120) Clefts give rise to an exhaustivity effect

[Naoya-ga t₁ tabeta-no]-wa kono ringo-o₁ da.
 Naoya-NOM ate-C -TOP this apple-ACC COP
 ‘It was this apple that Naoya ate.’

The sentence means that Naoya ate the apple and nothing else. Thus, it is not compatible with a situation in which Naoya ate any other fruits. Hiraiwa and Ishihara (2012: 153–154) argue that Japanese clefts are derived through two steps of movement in the split CP structure (Rizzi 1997). First, the focused phrase *ringo-o* ‘apple-ACC’ moves to FocP, and then the remnant FinP, headed by the complementizer *-no* and marked by the topic

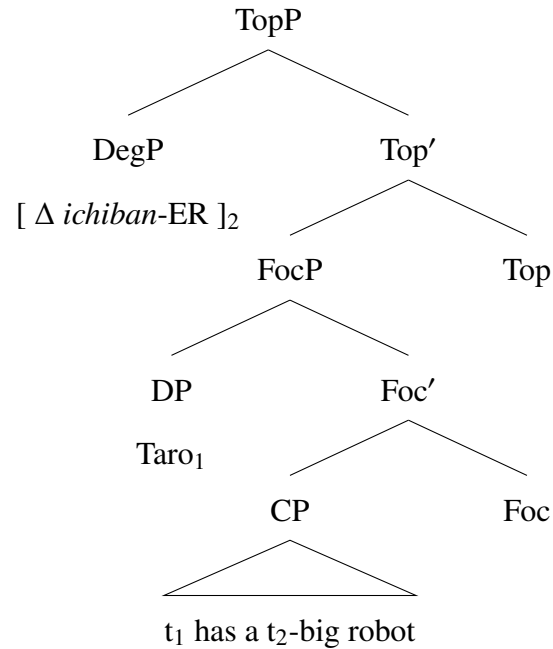
marker *-wa*, moves to TopP above FocP.

(121) Derivation of clefts



Crucially, this derivation of clefts closely resembles the derivation proposed here for the high readings of *ichiban* superlatives. In the proposed analysis of *ichiban* superlatives, the focused correlate moves to the CP domain, and the DegP subsequently moves to a higher position above the correlate. Given Hiraiwa and Ishihara's analysis of clefts, it is therefore natural to assume that DegP and the correlate land in TopP and FocP, respectively.

(122) CP of *ichiban* superlatives



The link between superlatives and clefts supports the view that superlatives themselves do not encode exhaustivity. Rather, when they are derived through movement to the CP field, the sentence gives rise to an exhaustive interpretation.

Notice also that phrasal comparatives are derived through the same underlying derivation. It is therefore expected that the high wide reading gives rise to an exhaustivity effect, in contrast to the low wide reading. This prediction is borne out: for example, the focus particle *sae* ‘even’, which carries a scalar presupposition requiring the presence of alternative individuals, can be used with the low reading but not with the high reading (cf. Horn 1969; Hiraiwa and Ishihara 2012).

(123) Compatibility of *sae* with low and high wide readings in phrasal comparatives

- a. Taro-sae Jiro-yori ookuno hon-o yonda.
Taro-even Jiro-than many book-ACC read
'Even Taro read more books than Jiro.' (LOW WIDE)
- b. * Jiro-yori Taro-sae ookuno hon-o yonda.
Jiro-than Taro-even many book-ACC read
'Even Taro read more books than Jiro.' (HIGH WIDE)

Thus, both phrasal comparatives and superlatives exhibit an exhaustivity effect, further supporting the connection between the two constructions.

Finally, an important question concerns the cross-linguistic pattern of superlatives in relation to focus. For example, if English exhibits the same effect as Japanese, do focused correlates always undergo covert movement at LF to take high scope in the sentence? More generally, we may ask whether cross-linguistic variation exists in this respect. Suppose that in some language DegP cannot take scope in the vP domain to derive the low reading and must instead take high scope in the sentence. In such a language, only superlatives with an exhaustivity effect would be possible, resembling Heim's 2-place *-est*. Whether such cross-linguistic variation exists remains an empirical question that must be evaluated on a language-by-language basis.

3.5.2 DP-Internal Relative Readings

In this section, I discuss DP-internal relative readings, which make a prediction about the structural position of the superlative morpheme. I first illustrate DP-internal relative readings in Polish and Bulgarian and show that QR of the superlative morpheme into the clause is crucial for deriving these readings. I then show that Japanese lacks DP-internal relative readings. I argue that the absence of these readings in Japanese is not due to a lack

of movement of the superlative morpheme itself, but rather follows from an independent syntactic ban on subextraction from DP. Furthermore, I demonstrate that Heim's 2-place *-est* incorrectly predicts that DP-internal relative readings should be available in Japanese.

3.5.2.1 Bulgarian and Polish vs. English

Pancheva and Tomaszewicz (2012) and Tomaszewicz (2015) observe that certain relative readings are available in Slavic languages such as Bulgarian and Polish, but not in English. Under these readings, the correlates are elements inside superlative DPs; they therefore refer to them as "DP-internal relative readings". Note that the discussion so far has focused on "DP-external relative readings", in which the correlate is located outside the superlative DP, as in examples like "John climbed the highest mountain among the climbers", where the correlate is the subject *John*. With this distinction in mind, consider DP-internal relative readings in Bulgarian (adapted from Pancheva and Tomaszewicz 2012: 295).

(124) Bulgarian allows DP-internal relative readings

- a. Ivan ima [_{DP} naj-dobri albumi ot U2].
 Ivan has est-good albums by U2
 'Ivan has better albums by U2 than anyone else does.' (DP-EXTER REL)
 'Ivan has better albums by U2 than by any other band.' (DP-INTER REL)
- b. Ivan ima [_{DP} naj-mnogo albumi ot U2].
 Ivan has est-many albums by U2
 'Ivan has more albums by U2 than anyone else does.' (DP-EXTER REL)
 'Ivan has more albums by U2 than by any other band.' (DP-INTER REL)

Under the DP-internal relative reading in (124a), Ivan owns albums by different bands such as U2, the Beatles, and Queen, and the albums by U2 are better than those by the

other bands. In this case, it is *U2*, which appears inside the superlative DP, that serves as the correlate of the relative reading. Similarly, if Ivan owns more albums by U2 than by the other bands, the DP-internal relative reading in (124b) is obtained. Importantly, these DP-internal relative readings are available in addition to DP-external relative readings in these languages. Furthermore, Pancheva and Tomaszewicz point out that DP-internal relative readings are absent in English (adapted from Pancheva and Tomaszewicz 2012: 294).

(125) English does not allow DP-internal relative readings

a. John has [_{DP} the best albums by U2].

‘John has better albums by U2 than anyone else does.’ (DP-EXTER REL)

‘John has better albums by U2 than by any other band.’ (*DP-INTER REL)

b. John has [_{DP} the most albums by U2].

‘John has more albums by U2 than anyone else does.’ (DP-EXTER REL)

‘John has more albums by U2 than by any other band.’ (*DP-INTER REL)

As shown, English does not allow DP-internal relative readings and only permits DP-external relative readings.

A natural question, then, is why Bulgarian and Polish allow DP-internal relative readings, whereas English does not. Pancheva and Tomaszewicz (2012) and Tomaszewicz (2015) argue that DP-internal relative readings in Bulgarian and Polish are derived by movement of *naj-* ‘-est’ to a DP-external position, building on the Scope Theory. Crucially, the external argument of *-est* serves as the correlate for the relative reading. The correlate undergoes movement to the position in which it is interpreted, and this movement may originate either from a DP-internal or a DP-external position. Thus, the

underlying mechanism for deriving both relative readings would be identical.

Let us first consider the Bulgarian case. As illustrated above, DP-internal relative readings in these languages are derived by QR of the DP-internal correlate to the clausal domain, followed by QR of *naj-C* to a position below the QRed correlate (adapted from Pancheva and Tomaszewicz 2012: 297).

(126) DP-internal relative reading in Bulgarian

a. LF for the DP-internal relative reading in Bulgarian

[_{TP1} U2 [_{TP2} [*naj-C*] [_{TP3} Ivan has [_{DP} *d*-good albums by *x*]]]]

b. Presupposition of *naj*-

$U2 \in C; \forall y[y \in C \rightarrow \exists d[\text{Ivan has } d\text{-good albums by } y]]$

In this derivation, *naj-C* takes scope over the predicate “ $\lambda d.\lambda x$. Ivan has *d*-good albums by *x*”. Furthermore, the comparison class *C* must satisfy the presupposition of *naj*-, which requires that (i) U2 is an element of *C* and (ii) all elements of *C* are arguments of the second argument of *naj*-. That is, the comparison class must be the set $\{x : \exists d [\text{Ivan has } d\text{-good albums by } x]\}$. As a result, the DP-internal relative reading, namely “Ivan has better albums by U2 than by any other band”, is correctly derived. Thus, QR of *naj-C* into the clause yields the DP-internal relative reading.

In contrast, Pancheva and Tomaszewicz argue that in English, *-est* is always interpreted inside the DP. Under this assumption, *C-est* takes scope over “ λd . *d*-good albums by U2”. Consequently, the presupposition of *-est* requires the comparison class *C* to consist of a set of ‘*d*-good albums by U2’, rather than a set of bands (Pancheva and Tomaszewicz 2012: 298).

(127) DP-internal relative reading in English

- a. LF for the DP-internal relative reading in English

[_{TP1} John has [_{DP} the [_{C-est}] [_{NP} *d*-good albums by U2]]]

- b. Presupposition of *-est*

$C = \{x : \exists d[x \text{ are } d\text{-good albums by U2}]\}$

Here, the comparison class is specified as $\{x : \exists d [x \text{ are } d\text{-good albums by U2}]\}$, which necessarily includes U2. Consequently, even if *C* is further restricted by contextual information, this does not improve the situation. Therefore, a DP-internal relative reading cannot be derived as long as *C-est* remains inside the DP. Although I omit the discussion of other possible derivations, Pancheva and Tomaszewicz (2012: 298–299) show that only movement of *-est* or *naj-* to a DP-external position yields the correct interpretation for DP-internal relative readings. It follows that DP-internal relative readings are available in Bulgarian and Polish because *naj-C* moves outside the DP, whereas the same readings are unavailable in English because *C-est* remains inside the DP.

Finally, one may ask why Bulgarian and Polish permit movement of *naj-* to a DP-external position, while English does not allow the same movement of *-est*. Pancheva and Tomaszewicz argue that the presence of a definite article creates a degree island that blocks QR of *naj-* or *-est*. This claim is supported by the fact that in Bulgarian, DP-internal relative readings are unavailable when a definite article is present, but become available when the definite article is absent (Pancheva and Tomaszewicz 2012: 295–296).

(128) The definite article blocks DP-internal relative readings in Bulgarian

- a. Ivan ima [_{DP} naj-dobri albumi ot U2].
 Ivan has est-good albums by U2
 ‘Ivan has better albums by U2 than anyone else does.’ (DP-EXTER REL)
 ‘Ivan has better albums by U2 than by any other band.’ (DP-INTER REL)
- b. Ivan ima [_{DP} naj-dobri-**te** albumi ot U2].
 Ivan has est-good-the albums by U2
 ‘Ivan has better albums by U2 than anyone else does.’ (DP-EXTER REL)
 ‘Ivan has better albums by U2 than by any other band.’ (*DP-INTER REL)

Furthermore, this is cross-linguistically supported: Swedish shows the same pattern (Tomaszewicz 2015: 52–53).

(129) The definite article blocks DP-internal relative readings in Swedish

- a. Jan drack [_{DP} dyrast rom].
 Jan drank most-expensive rum
 ‘Jan drank more expensive rum than anyone else did.’ (DP-EXTER REL)
 ‘Jan drank more expensive rum than any other drink.’ (DP-INTER REL)
- b. Jan drack [_{DP} **den** dyrast-**e** rom-**en**].
 Jan drank the most-expensive-AGR rum-DEF
 ‘Jan drank more expensive rum than anyone else did.’ (DP-EXTER REL)
 ‘Jan drank more expensive rum than any other drink.’ (*DP-INTER REL)

Unlike Bulgarian and Swedish, Polish, like many other Slavic languages, lacks definite and indefinite articles, so QR of *naj-* to a DP-external position is always available. In contrast, in English the definite article is obligatorily interpreted as definite, which blocks movement of *-est* to a DP-external position.

To sum up, DP-internal relative readings are derived by QR of a superlative morpheme into the clause. With this background in place, I now turn to DP-internal relative readings of *ichiban* superlatives in the next section.

3.5.2.2 Japanese

Now consider the possibility of DP-internal relative readings in Japanese. The crucial observation is that Japanese does not permit DP-internal relative readings, regardless of the surface position of *ichiban*. That is, such readings are unavailable both when *ichiban* is adjacent to the adjective inside the DP and when it appears in a structurally higher, more distanced position.

(130) DP-internal *ichiban* does not allow DP-internal relative readings

- a. Taro-ga *ichiban takai* U2-no arubamu-o motteiru.
Taro-NOM ICHIBAN expensive U2-GEN album-ACC have
‘Taro has a more expensive album of U2 than anyone else does.’
(DP-EXTER REL)

‘Taro has a more expensive album of U2 than any other band.’
(*DP-INTER REL)
- b. Taro-ga *ichiban ookuno* U2-no arubamu-o motteiru.
Taro-NOM ICHIBAN many U2-GEN album-ACC have
‘Taro has more albums of U2 than anyone else does.’ (DP-EXTER REL)

‘Taro has more albums of U2 than any other band.’ (*DP-INTER REL)

(131) DP-external *ichiban* does not allow DP-internal relative readings

a. Ichiban Taro-ga takai U2-no arubamu-o motteiru.

ICHIBAN Taro-NOM expensive U2-GEN album-ACC have

‘Taro has a more expensive album of U2 than anyone else does.’

(DP-EXTER REL)

‘Taro has a more expensive album of U2 than any other band.’

(*DP-INTER REL)

b. Ichiban Taro-ga ookuno U2-no arubamu-o motteiru.

ICHIBAN Taro-NOM many U2-GEN album-ACC have

‘Taro has more albums of U2 than anyone else does.’ (DP-EXTER REL)

‘Taro has more albums of U2 than any other band.’ (*DP-INTER REL)

This contrasts sharply with languages such as Bulgarian and Polish, where DP-internal relative readings are systematically available under QR of the superlative morpheme. The unavailability of DP-internal relative readings in Japanese therefore calls for an explanation that does not appeal to the immobility of the superlative morpheme itself.

Under the current analysis, there are two sources for relative readings, as discussed in Section 3.4. The low relative reading is derived by QR of *ichiban*-ER to vP, whereas the high relative reading is derived by QR of *ichiban*-ER to CP. In the low relative reading, the trace of the subject plays a crucial role in deriving the comparison class, which corresponds to “ $\lambda d. \exists x[x \text{ has a } d\text{-expensive album of U2}]$ ”. Similarly, the high wide reading makes use of the trace of the moved correlate.

(132) LF for DP-external relative readings in Japanese

a. Low relative reading

$[\text{DEGP } \lambda d. \exists x [\text{VP} < x \text{ has a } d\text{-expensive album of } U2 >]] \text{ ichiban-ER}$

b. High relative reading

$[\text{DEGP } \lambda d. \exists x [\text{TP} < x \text{ has a } d\text{-expensive album of } U2 >]] \text{ ichiban-ER}$

Now consider a case in which the correlate is not the subject but the DP-internal element *U2* inside the superlative DP. If *U2* were able to undergo movement to a position above the subject trace at vP in the low relative reading, or above the subject in CP in the high relative reading, then in principle the following LF representation might be expected to be available.

(133) Hypothetical LF for DP-internal relative readings in Japanese

a. Low relative reading

$[\text{DEGP } \lambda d. \exists x [\text{VP} < \text{Taro has a } d\text{-expensive album of } x >]] \text{ ichiban-ER}$

b. High relative reading

$[\text{DEGP } \lambda d. \exists x [\text{TP} < \text{Taro has a } d\text{-expensive album of } x >]] \text{ ichiban-ER}$

However, empirical evidence shows that Japanese does not allow DP-internal relative readings, which means that the LF representation above is in fact unavailable.

This raises the question of what blocks such an LF representation in Japanese. In this regard, Shen (2014: 416) observes that Chinese, like Japanese and Korean, also lacks DP-internal relative readings.

(134) Chinese lacks DP-internal relative readings

Zhangsan jiandaole zui-gao de yuyan xuexi de xuesheng.
 Zhangsan met EST-tall DE linguistics department DE students
 ‘Among the students that Zhangsan met, the tallest ones are from the Linguistics department.’
 (*DP-INTER REL)

Shen suggests that East Asian languages such as Japanese, Korean, and Chinese disallow left-branch extraction. As a result, DP-internal relative readings, which crucially require movement of a DP-internal correlate, cannot be derived in these languages. With respect to Japanese in particular, it has been independently observed that left-branch extraction from nominals is systematically prohibited (Nomura and Hirotsu 2005; Kato 2007).

(135) Left-branch extraction is prohibited in Japanese

- a. Taro-wa [DP Hanako-no hon-o] yonda.
 Taro-TOP Hanako-GEN book-ACC read
 ‘Taro read Hanako’s book.’
- b. * Hanako-no₁ Taro-wa [DP t₁ hon-o] yonda.
 Hanako-GEN Taro-TOP book-ACC read
 ‘Hanako’s, Taro read book.’

The possessive phrase *Hanako-no* ‘Hanako’s’ cannot be extracted from the DP. This independently confirms that left-branch extraction is disallowed in Japanese.¹² Shen’s

¹²Takahashi and Funakoshi (2013: 237) point out that certain PPs can be extracted from within nominals in Japanese. In particular, a PP such as *dare-kara* ‘from who’ may undergo extraction.

- (i) a. Taro-ga [DP dare-kara-no tegami-o] sute-ta-no?
 Taro-NOM who-from-GEN letter-ACC discard-PST-Q
 ‘Taro discarded a letter from who?’
- b. Dare-kara-no₁ Taro-ga [DP t₁ tegami-o] sute-ta-no?
 who-from-GEN Taro-NOM letter-ACC discard-PST-Q
 ‘From who₁, Taro discarded [a letter t₁]?’

At first glance, this fact might appear to undermine the current view that DP-internal relative readings are

argument therefore extends straightforwardly to Japanese on empirical grounds. I thus conclude that Japanese lacks DP-internal relative readings because such readings would require left-branch extraction, which is independently prohibited in the language.

Finally, the absence of DP-internal relative readings in Japanese provides evidence against Heim's 2-place *-est* analysis for Japanese superlatives. As discussed by Tomaszewicz (2016: 225–227), Heim's 2-place *-est* predicts that DP-internal relative readings should be derivable by placing focus on a DP-internal correlate. Crucially, because focus marking does not require overt movement of the DP-internal correlate, syntactic constraints such as the ban on left-branch extraction should be irrelevant under this analysis. If *ichiban* were a 2-place *-est*, Japanese would therefore be expected to allow DP-internal relative readings, contrary to fact. Consequently, Heim's 2-place *-est* analysis must be rejected for Japanese superlatives.

To summarize, this section has examined DP-internal relative readings and argued that Japanese lacks such readings for syntactic reasons. Although the proposed analysis of *ichiban* superlatives is in principle compatible with the derivation of DP-internal relative readings, Japanese independently obeys a ban on left-branch extraction. Because this syntactic restriction blocks the necessary movement of DP-internal correlates, DP-internal relative readings cannot be derived. Moreover, Heim's 2-place *-est* analysis

unavailable in Japanese because of a ban on left-branch extraction, given that at least some DP-internal material can be extracted. However, the type of extraction illustrated by Takahashi and Funakoshi crucially differs from what would be required to derive DP-internal relative readings in superlative DPs. In Takahashi and Funakoshi's cases, extraction targets a PP located at the edge of the nominal domain. By contrast, the DP-internal correlate relevant for superlative interpretations appears in a structurally lower position, following the adjective inside the superlative DP. Deriving a DP-internal relative reading would therefore require extraction of an element from a non-edge, deeply embedded position within the DP. Consequently, even if Japanese permits limited extraction from the periphery of nominals, this does not entail that extraction from internal positions within DP is available. Thus, the availability of PP extraction from nominal edges does not weaken the conclusion that Japanese lacks DP-internal relative readings due to independently motivated constraints on extraction from within DP.

incorrectly predicts the availability of such readings in Japanese, further supporting the conclusion that *ichiban* is not a 2-place *-est*.

3.5.3 Summary

This section has presented two independent arguments against analyzing *ichiban* as a 2-place *-est*. First, I showed that focus on the correlate is not inherently required in Japanese superlatives. While the high readings yield an exhaustivity effect associated with focus and exhaustivity, the low readings do not require focus. This asymmetry is unexpected under both Heim's 2-place and 3-place *-est* analyses, but it follows directly from the current MAX-based analysis. Second, I demonstrated that Japanese systematically lacks DP-internal relative readings. I argued that this absence follows from an independently motivated ban on left-branch extraction. Crucially, the 2-place *-est* analysis incorrectly predicts that such readings should be available in Japanese, since focus-based derivations do not require overt movement. Taken together, these findings provide strong evidence that *ichiban* should not be analyzed as Heim's 2-place *-est*.

3.6 Conclusion

This chapter has argued that Japanese *ichiban* superlatives are derived by a mechanism that is underlyingly identical to that of comparatives, with both constructions exploiting the same primitive ER. In comparatives, ER functions as an independent comparative morpheme that compares two maximal degrees. In superlatives, by contrast, ER is bundled with *ichiban* to form MAX, which selects the unique maximal degree from a comparison class. This unified perspective supports the view that comparatives and

superlatives do not require distinct semantic primitives, but rather differ in how the same primitive notion of comparison is structurally combined. Furthermore, phrasal comparatives and *ichiban* superlatives differ in how the individual argument in the standard phrase is saturated, overtly by a DP in phrasal comparatives and via existential closure in superlatives.

(136) Two differences between phrasal comparatives and *ichiban* superlatives

a. Phrasal comparatives

[_{SC} λd . **Jiro** λx . [_{vP} $< x$ has d -big robot $>$]]-*yor*-**ER**

b. *ichiban* superlatives

[_{DEGP} λd . — $\exists x$ [_{vP} $< x$ has d -big robot $>$]] ***ichiban***-**ER** (= **MAX**)

Because the rest of the derivation is shared, the analysis straightforwardly captures the close parallelism in syntactic distribution between *ichiban* in superlatives and *yor*-phrases in phrasal comparatives.

(137) Structural correlations in comparatives and superlatives

Adjectival Mod	DegP scope	Comparatives	Superlatives
IM	vP in the RC	Narrow	Absolute
DM	vP in the main clause	Low wide	Low relative
DM	CP in the main clause	High wide	High relative

Importantly, the present analysis also explains several empirical asymmetries that pose challenges for existing accounts. In particular, it captures the fact that focus on the correlate is not uniformly required in Japanese superlatives. The contrast between low and high relative readings instead follows from independent requirements on ellipsis

licensing. Furthermore, the high relative reading systematically yields an exhaustivity effect, whereas the low relative reading does not. This pattern is summarized in (138).

(138) Focus and exhaustivity in low and high readings

	Focus obligatory?	Exhaustivity effect?
Low reading	No	No
High reading	Yes	Yes

Building on this contrast, I argued that a covert EXH operator is inserted at CP in the high relative reading. Focus on the correlate generates a set of propositional alternatives, and EXH excludes them, thereby deriving the observed exhaustivity effect. By contrast, the low relative reading lacks focus on the correlate and therefore does not generate the relevant alternative set at CP, allowing non-exhaustive, tie-compatible interpretations. Comparison with alternative theories further highlights the explanatory advantage of the present analysis. As summarized in (139), only the proposed analysis correctly captures the observed empirical pattern. Heim's 2-place and 3-place *-est* analyses both incorrectly predict an exhaustivity effect in the low relative reading and therefore undergenerate the attested non-exhaustive interpretation.

(139) Predictions of different analyses for low and high readings

	Focus required?		Exhaustivity required?	
	Low	High	Low	High
Heim's 2-place <i>-est</i>	Yes	Yes	Yes	Yes
Heim's 3-place <i>-est</i>	No	No	Yes	Yes
Proposed analysis	No	Yes	No	Yes

Finally, I showed that the absence of DP-internal relative readings in Japanese does not reflect the immobility of the superlative morpheme, but instead follows from an independently motivated ban on extraction. Heim's 2-place *-est* analysis incorrectly predicts the availability of such readings, since focus alone should suffice to generate the relevant comparison class. The Japanese facts therefore provide further evidence that *ichiban* is not a 2-place *-est*.

Taken together, the findings of this chapter reinforce the view that Japanese offers particularly transparent evidence for the scope and interpretation of degree expressions. By overtly reflecting the syntactic positions at which ER and *ichiban*-ER are interpreted, Japanese makes visible the close relationship between comparatives and superlatives, while also revealing how structural height, focus, and exhaustification interact to yield interpretive contrasts.

Chapter 4

The Architecture of Superlative Formation

4.1 Introduction

In Chapter 3, I argued that Japanese *ichiban* superlatives are derived by the same underlying mechanism as phrasal comparatives, differing only in whether ER is interpreted alone or with *ichiban* and in whether the individual argument in the DegP is saturated by an overt DP or existentially closed. Building on Loccioni (2018) and Coppock and Engdahl (2016), I proposed that *ichiban* contributes to the interpretation of MAX in combination with a covert ER. Specifically, I argued that the superlative morpheme *ichiban* realizes a bundled THE–SUP, which together with a covert ER constitutes the MAX operator.

(1) Semantic decomposition of MAX

a. Primitive ER

$$\llbracket \text{ER} \rrbracket = \lambda d. \lambda d'. [d' > d]$$

b. SUP

$$\llbracket \text{SUP} \rrbracket = \lambda R_{\langle d, dt \rangle}. \lambda P_{\langle d, t \rangle}. \lambda d. [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow R(d', d)]]$$

c. THE

$$\llbracket \text{THE} \rrbracket = \lambda P_{\langle d, t \rangle}. \iota d [P(d)]$$

Given the semantic decomposition of MAX, this chapter also examines two additional Japanese superlative morphemes, *mottomo* and *sai-*. I propose that these morphemes lexicalize SUP and ER, and that together with a covert definite operator THE they constitute MAX. Therefore, Japanese superlatives instantiate at least two distinct lexical compositions of MAX. In addition, I argue that *sai-* differs from *ichiban* and *mottomo* in how its comparison class is determined. Whereas *ichiban* and *mottomo* determine their comparison classes through syntactic scope (though the resulting comparison class is still subject to pragmatic restriction), *sai-* does not rely on syntactic scope-taking. Instead, the comparison class associated with *sai-* is resolved pragmatically via contextual restriction of the comparison class *C*.

Furthermore, this chapter extends the analysis to English superlatives. I argue that the English *-est* lexicalizes the SUP and ER components of MAX, while definiteness is contributed by the definite article *the*, which may be overt or covert. I further demonstrate that English superlatives are derived by the same movement-and-ellipsis derivation that underlies Japanese superlatives. In both languages, superlative interpretations arise from applying MAX to a comparison class that is introduced syntactically and whose

content is determined by scope. Finally, I extend the analysis to negative superlatives by introducing a minimality operator (MIN). MIN is parallel to MAX but reverses the ordering relation, yielding minimal rather than maximal degrees. This extension allows for a unified treatment of *-est* and *least* in English.

Based on the decomposition of MAX into THE, SUP, and ER, I argue that cross-linguistic variation in superlative morphology reflects differences in how these semantic components are lexicalized. This perspective converges with Bobaljik's (2012) Containment Hypothesis, which states that the superlative properly contains the comparative. Under the present analysis, MAX can only be constructed if ER is embedded within it.

This chapter is organized as follows. Section 4.2 discusses the Japanese superlative morpheme *mottomo*. Section 4.3 addresses the Sino-Japanese superlative morpheme *sai-*. Section 4.4 examines the English superlative morpheme *-est* and the negative superlative morpheme *least*. Section 4.5 explores the general principles that underlie superlative formation cross-linguistically. Section 4.6 concludes the chapter.

4.2 *Mottomo* Superlatives

In this section, I show that *mottomo* has the same syntactic distribution as *ichiban*, but differs in how it contributes to the semantic composition of MAX. I argue that whereas *ichiban* lexicalizes THE–SUP, *mottomo* lexicalizes SUP–ER, and that this difference yields parallel superlative derivations with distinct internal semantic compositions.

4.2.1 Syntactic Distribution of *Mottomo* Superlatives

In this section, I first show that *mottomo* has the same syntactic distribution as *ichiban*. As Aihara (2007, 2009) points out, *ichiban* and *mottomo* are interchangeable and as a result, they exhibit the same ambiguity resolution pattern: if *mottomo* is moved to the sentence-initial position, only the relative reading is available.

- (2) a. Taro-ga mottomo ookii robotto-o motteiru.
Taro-NOM MOTTOMO big robot-ACC have
'Taro has a robot that is bigger than any other robot.' (ABS)
'Taro has a bigger robot than anyone else does.' (REL)
- b. Mottomo Taro-ga ookii robotto-o motteiru.
MOTTOMO Taro-NOM big robot-ACC have
'Taro has a bigger robot than anyone else does.' (REL)

The observation that *ichiban* and *mottomo* share the same syntactic distribution is further supported by their identical disambiguation patterns. Recall that (i) when the adjective bears a past tense marker, only the absolute reading is available; and (ii) when *ichiban* appears in sentence-initial position, only the relative reading is available, but a past tense adjective blocks the relative reading in the same environment. These same disambiguation patterns are replicated with *mottomo* superlatives.

- (3) a. Taro-ga mottomo ookii robotto-o motteiru.
Taro-NOM MOTTOMO big robot-ACC have
'Taro has a robot that is bigger than any other robot.' (ABS)
'Taro has a bigger robot than anyone else does.' (REL)
- b. Taro-ga mottomo ooki-kat-ta robotto-o motteiru.
Taro-NOM MOTTOMO big-COP-PAST robot-ACC have
'Taro has a robot that was bigger than any other robot.' (ABS)

- (4) a. Mottomo₁ Taro-ga t₁ ookii robotto-o motteiru.
 MOTTOMO Taro-NOM big robot-ACC have
 ‘Taro has a bigger robot than anyone else does.’ (REL)
- b. ?? Mottomo₁ Taro-ga t₁ ooki-kat-ta robotto-o motteiru.
 MOTTOMO Taro-NOM big-COP-PAST robot-ACC have
 ‘Taro has a robot that was bigger than any other robot people have.’ (REL)

Thus, the two superlative morphemes *ichiban* and *mottomo* share the same syntactic distribution, suggesting that they share the same underlying derivation. I propose an analysis of *mottomo* superlatives directly based on the one developed for *ichiban* superlatives. However, I argue that *ichiban* and *mottomo* differ in their semantic contribution to MAX, a point to which I turn in the next section.

4.2.2 Decomposition of *Mottomo*

This section argues that the Japanese superlative morpheme *mottomo* reflects SUP-ER of MAX. Although *mottomo* is treated as a single lexical item by Aihara (2007, 2009), its morphological form reveals an internal decomposition into *motto* and *mo*.

- (5) Possible decomposition of *mottomo*

$$mottomo = motto + mo$$

In Modern Japanese, *motto* is often glossed as *more*, while *mo* has a universal meaning (Kuroda 1965; Shimoyama 2006). On this basis, it would be natural to assume that *motto* and *mo* correspond to ER and SUP, respectively, in the present decomposition of MAX. However, some concern arises regarding the lexical meaning of *motto*. Beck et al. (2004) and Sano (1998) argue that *motto* is not a genuine comparative morpheme. Specifically,

motto requires the existence of another individual that bears the same gradable property expressed by the predicate (adapted from Sano 1998: 3).

- (6) a. Jiro-mo se-ga takai-kedo, Taro-wa motto se-ga takai.
 Jiro-ALSO back-NOM tall-though Taro-TOP MOTTO back-NOM tall
 ‘Though Jiro is also tall, Taro is even taller.’
- b. Jiro-wa se-ga hikui-kedo, Taro-wa (* motto) se-ga takai.
 Jiro-TOP back-NOM short-though Taro-TOP MOTTO back-NOM tall
 ‘Though Jiro is short, Taro is tall.’

(6a) states that Jiro is tall, and *motto* is felicitous because its presupposition is satisfied: someone other than Taro is tall. If the first clause is changed to “though Jiro is short” in (6b), the sentence becomes unacceptable because the presupposition of *motto* is not satisfied. Thus, this indicates that *motto* carries an additive presupposition similar to that of English *even*.

However, note that *motto* does not correspond to English *even* itself.

- (7) a. Taro is tall, handsome, and even rich.
- b. Taro-wa se-ga takaku-te, hansamu-de motto kanemochi-da.
 Taro-TOP back-NOM tall-and handsome-and MOTTO rich-COP
 ‘Taro is tall, handsome, and even richer (than someone).’

English *even* permits an interpretation under which Taro is tall and handsome and, furthermore, rich. In Japanese, however, *motto* does not have this use. The sentence can only mean that Taro is tall and handsome and also richer than someone else who is rich. This interpretation indicates that the sentence contains comparative meaning, so *motto* is not a direct counterpart of English *even*; rather, it contributes comparative meaning in addition to an additive presupposition. If *motto* in Modern Japanese were part of *mottomo*, the resulting superlative should be expected to carry an additive presupposition

like ‘even more’. However, *mottomo* superlatives do not exhibit such a presupposition. The superlative meaning derived by *mottomo* is identical to that of *ichiban*, without any additive effect. For example, a sentence with *mottomo* is perfectly felicitous in a context where three mountains are 3000 m, 500 m, and 400 m tall, where the two mountains are considered not so high.

- (8) Mi-ttsu-no-nakade Taro-wa mottomo takai yama-ni nobotta.
 three-CL-GEN-among Taro-TOP MOTTOMO high mountain-DAT climbed
 ‘Taro climbed the highest mountain among the three mountains.’ (ABS)

This indicates that *mottomo* cannot be analyzed as containing *motto* as a lexical subpart. Rather, *motto* and *mottomo* must be treated as separate lexical items in Modern Japanese.

Independent support for this view comes from their lexical accent. The two forms exhibit systematically distinct lexical accent patterns: *motto* bears its accent (H*L) on the first mora, whereas *mottomo* bears its accent on the third mora.

- (9) Lexical accent of *motto* and *mottomo*

a. mo'tto

H*LL

b. motto'mo

LHH*L

Though the particle *mo* has a variety of uses, including universal, NPI, and free-choice uses (Kuroda 1965; Shimoyama 2006), none of these uses shifts the accent of the immediately preceding host. Since the particle *mo* does not shift the lexical accent of its host, the contrast in (9) provides evidence that *motto* and *mottomo* are distinct lexical items in Modern Japanese. Therefore, I conclude that *mottomo* is a lexicalized

form, stored as a single lexical item in the lexicon, although its form reflects its internal composition of *motto* and *mo*.

In the case of *mottomo*, *motto* corresponds to ER, while *mo* corresponds to SUP because it functions as a universal quantifier in modern Japanese. I therefore propose that *mottomo* bundles the two semantic primitives ER and SUP into a single morpheme.

(10) Semantics of *mottomo*

$$\llbracket mottomo \rrbracket = \lambda P_{\langle d, t \rangle} . \lambda d . [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d > d']] \langle \langle d, t \rangle, \langle d, t \rangle \rangle$$

Given the semantics of *mottomo*, the composition of MAX proceeds as follows. *Mottomo* first combines with the comparison class P, which consists of a set of degrees. In contrast to *ichiban*, *mottomo* does not encode definiteness. As a result, *mottomo* must combine with THE after it combines with the comparison class.

(11) Composition of MAX by *mottomo*

a. *mottomo* + P

$$\llbracket mottomo \rrbracket(P) = \lambda d . [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d > d']]$$

b. THE + ($\llbracket mottomo \rrbracket(P)$)

$$\llbracket THE \rrbracket(\llbracket mottomo \rrbracket(P)) = \iota d [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d > d']]$$

In this way, Japanese superlative morphemes lexicalize different subcomponents of MAX.

(12) Two types of superlative morphemes in Japanese

- a. *ichiban* lexicalizes THE–SUP

$$\llbracket ichiban \rrbracket = \lambda R_{\langle d, \langle d, t \rangle \rangle} . \lambda P_{\langle d, t \rangle} . t d [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow R(d', d)]]$$

- b. *mottomo* lexicalizes SUP–ER

$$\llbracket mottomo \rrbracket = \lambda P_{\langle d, t \rangle} . \lambda d . [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d > d']]$$

Although the semantic difference between the two morphemes is subtle, if it is genuine, it should surface in some environments. One such environment concerns plural superlatives. Speakers report that *ichiban* is disfavored in plural superlatives, whereas *mottomo* is fully acceptable.¹ The contrast between *ichiban* and *mottomo* is also reported in Fitzgibbons and Sharvit (2008) and the example (14) is adapted from them.

- (13) a. ?? LA-wa amerika-de ichiban yuumeina toshi-no hito-tsu-da.
 LA-TOP America-in ICHIBAN famous city-GEN one-CL-COP
 ‘LA is one of the most famous cities in the U.S.’
- b. LA-wa amerika-de mottomo yuumeina toshi-no hito-tsu-da.
 LA-TOP America-in MOTTOMO famous city-GEN one-CL-COP
 ‘LA is one of the most famous cities in the U.S.’
- (14) a. ?? Taro-wa ichiban takai yama-yama-o otozureta.
 Taro-TOP ICHIBAN high mountain-mountain-ACC visited
 ‘Taro visited the highest mountains.’
- b. Taro-wa mottomo takai yama-yama-o otozureta.
 Taro-TOP MOTTOMO high mountain-mountain-ACC visited
 ‘Taro visited the highest mountains.’

¹There are also further differences in usage between the two morphemes. For instance, *ichiban* is more frequently used in everyday conversation, whereas *mottomo* is more common in academic writing and newspapers. This contrast seems to reflect a difference in lexical register rather than a difference in semantic composition.

In (13), the superlative DP appears in a partitive construction ‘one of the most famous cities’. In this configuration, *ichiban* sounds degraded, whereas *mottomo* is fully acceptable. In (14), the superlative DP contains the reduplicated noun *yama-yama*, where *yama* ‘mountain’ is reduplicated to yield a plural interpretation. In this case, too, *ichiban* is degraded in contrast to *mottomo*. Although there is some speaker variation regarding the degree of degradation with *ichiban*, the contrast, to the extent that it is real, follows from the proposed difference in semantic composition. Under the present analysis, *ichiban* lexicalizes THE–SUP and thus encodes definiteness at the degree level, returning a unique maximal degree. By contrast, *mottomo* lexicalizes SUP–ER and lacks a definiteness component. Since uniqueness is not built into its lexical semantics, it does not require a unique maximal degree, unlike *ichiban*. Consequently, *mottomo* is compatible with plural superlatives, including partitives and plural nouns. Therefore, this supports the current view that *ichiban* and *mottomo* have different lexical compositions.

Before concluding this section, I consider a potential alternative analysis. One might argue that *mottomo* superlatives are derived from comparatives in which a covert WH-indeterminate associates with *mo* (Kuroda 1965; Shimoyama 2006), yielding a universal interpretation in the standard clause. Under this view, *mottomo* superlatives would be assimilated to WH-*yorimo* comparatives, as illustrated in (15), with the interpretation given in (16).

- (15) Taro-wa dare-yori-mo takai yama-ni nobotta.
 Taro-TOP who-than-MO high mountain-DAT climbed
 ‘Taro climbed a higher mountain than everyone.’

- (16) $\forall x [x \in C \rightarrow \text{MAX}(\lambda d. \text{Taro climbed a } d\text{-high mountain}) >$
 $\text{MAX}(\lambda d. x \text{ climbed a } d\text{-high mountain})]$

Empirically, however, this analysis must be rejected. Differentials modifying a comparative with a standard such as *harukani* ‘much/far’ are compatible with WH-*yorimo*, but are incompatible with *mottomo* like *ichiban*.

- (17) a. Taro-wa dare-yori-mo harukani takai yama-ni nobotta.
 Taro-TOP who-than-MO far high mountain-DAT climbed
 ‘Taro climbed a far higher mountain than everyone.’
- b. * Taro-wa { mottomo / ichiban } harukani takai yama-ni nobotta.
 Taro-TOP MOTTOMO / ICHIBAN far high mountain-DAT climbed
 Lit. ‘Taro climbed a far highest mountain than everyone.’

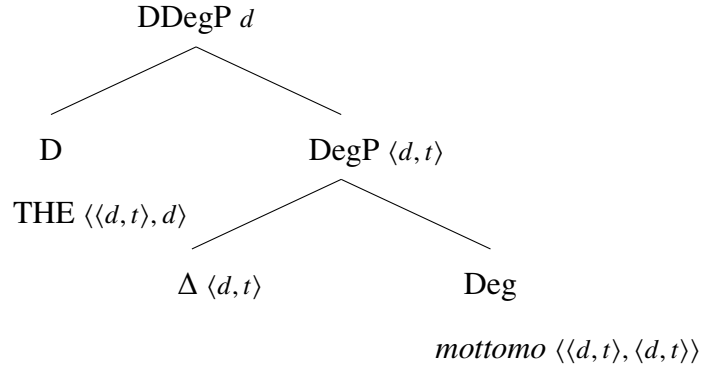
This suggests that *mottomo* superlatives are not derived from comparatives, but are derived as true superlatives (see Section 4.5.2).

In this section, I have proposed a semantic analysis of *mottomo* in comparison with *ichiban*, arguing that the two superlative morphemes lexicalize different subcomponents of MAX. In the next section, based on the semantics of *mottomo*, I show that *mottomo* superlatives are derived in a way that is parallel to *ichiban* superlatives, differing only in how maximalization is computed.

4.2.3 Analysis of *Mottomo* Superlatives

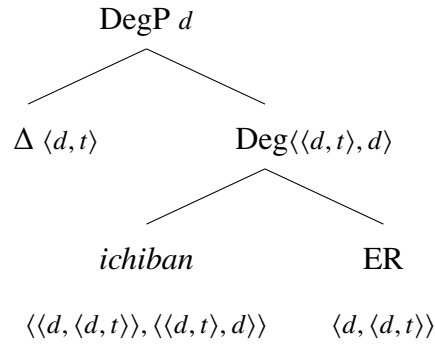
Given the semantics of *mottomo*, I now propose the syntactic structure of DegP in *mottomo* superlatives. I argue that *mottomo* first merges with an ellipsis site Δ , which, after ellipsis resolution, feeds a set of degrees. The resulting DegP then combines with a covert definite article THE, yielding a structure that introduces definiteness at the degree level. I refer to this projection as DDegP.

(18) DDegP for *mottomo* superlatives



Recall that *ichiban* superlatives have a different internal structure: *ichiban* first combines with the comparative ER, and the resulting complex head then combines with the ellipsis site Δ , as discussed in Chapter 3.

(19) DegP of *ichiban* superlatives

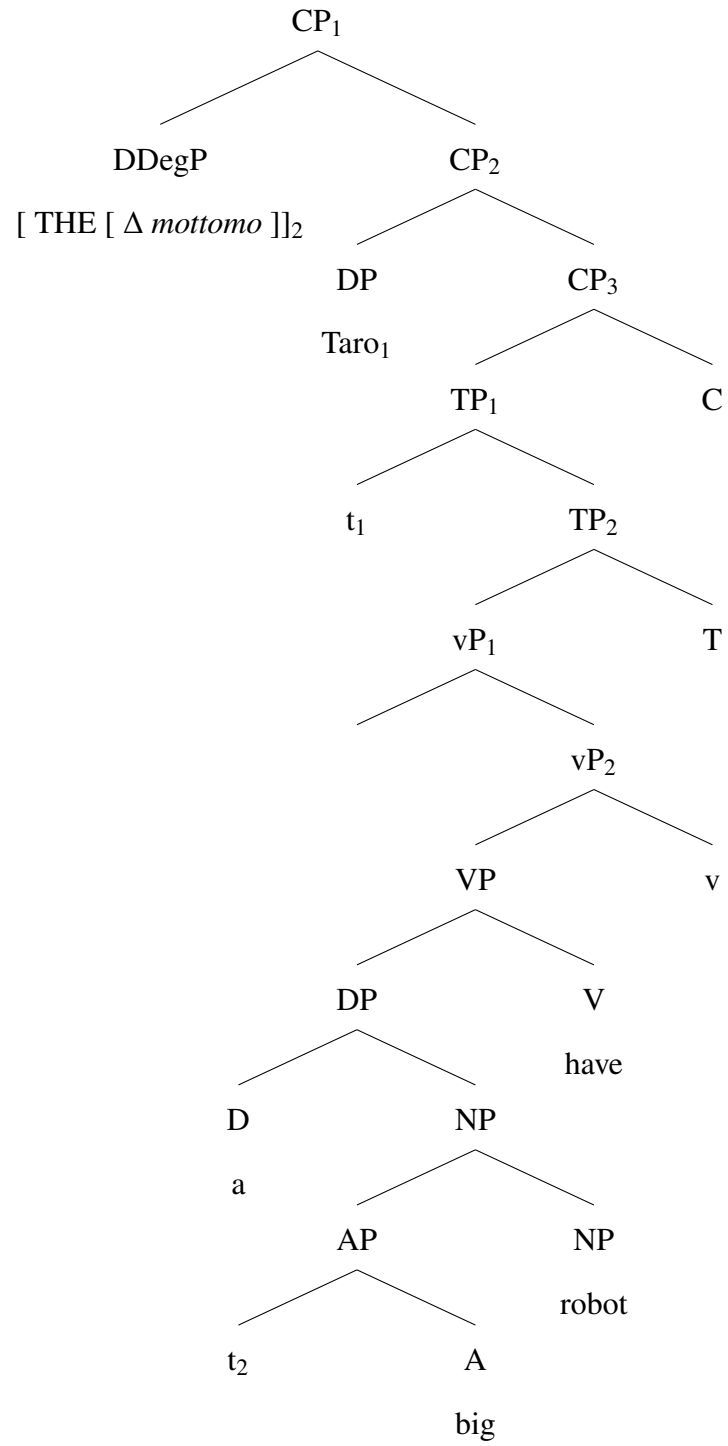


Thus, the distinct semantic compositions of *ichiban* and *mottomo* are reflected in their syntactic structures.

With these syntactic and semantic assumptions in place, for example, the high relative reading of *mottomo* superlatives is derived as follows.

- (20) Mottomo₁ Taro-ga [[AP t₁ ookii] robotto-o] motteiru.
MOTTOMO Taro-NOM big robot-ACC have
'Taro has a bigger robot than anyone else does.' (REL)

(21) Structure of the high relative reading



(22) Derivation of the high relative reading

Step 1: Focus-driven movement of the subject to CP

[CP Taro₁ [TP t₁ [_{VP} [_{VP} [DP a [NP [AP [DDEGP THE [_{DEGP} Δ *mottomo*]] big]
robot]] have]]]]]

Step 2: QR of DDEGP

[CP [DDEGP THE [_{DEGP} Δ *mottomo*]]₂ [CP Taro₁ [TP t₁
[_{VP} a t₂-big robot have]]]]]

Step 3: LF-copy of TP to Δ

[CP [DDEGP THE [_{DEGP} λd.λx. [TP x a d-big robot have] *mottomo*]]
λd. [CP Taro λy. [TP y a d-big robot have]]]

Step 4: Existential closure of the individual argument in DegP

[CP [DDEGP THE [_{DEGP} λd.∃x [TP x a d-big robot have] *mottomo*]]
λd. [CP Taro λy. [TP y a d-big robot have]]]

Step 5: Maximalization by *mottomo* + THE

[CP [DDEGP MAX(λd.∃x [TP x a d-big robot have])]
λd. [CP Taro λy. [TP y a d-big robot have]]]

Result

[[CP]] = ∃z[robot(z) ∧ have(z)(Taro) ∧ big(MAX(λd.∃x∃y[robot(y) ∧
have(y)(x) ∧ big(d)(y)]))(z)]

In this derivation, *mottomo* reduces the set of degrees denoted by the DegP to a singleton set containing a maximal degree and THE applies to the singleton set, returning the maximal degree in Step 5. As a result, the sentence receives the interpretation that Taro has a robot that is that big, where that degree is the maximal degree such that no one else

has a robot that is bigger than that. Thus, the present analysis correctly derives the high relative reading. Though I omit the rest of the derivations of *mottomo* superlatives (see Section 4 in Chapter 3 for the specific derivations of *ichiban* superlatives and Section 5.1 in Chapter 3 for the exhaustivity effect), the only difference between *ichiban* and *mottomo* superlatives is the internal structure of (D)DegP and the way maximalization applies in the derivation.

To sum up, I have argued that *mottomo* superlatives are derived by the same underlying mechanism as *ichiban* superlatives. Under the present analysis, the two superlative morphemes differ in their semantic composition, and this difference is transparently reflected in their syntactic structures and derivations. Specifically, *ichiban* lexicalizes THE–SUP and combines with a covert ER, whereas *mottomo* lexicalizes SUP–ER and combines with a covert definite operator THE. Although the two morphemes exhibit the same syntactic distribution, they differ in their semantic composition.

(23) Two types of superlative morphemes in Japanese

a. *ichiban* lexicalizes THE–SUP

$$\llbracket ichiban \rrbracket = \lambda R_{\langle d, \langle d, t \rangle \rangle} . \lambda P_{\langle d, t \rangle} . t d [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow R(d', d)]]$$

b. *mottomo* lexicalizes SUP–ER

$$\llbracket mottomo \rrbracket = \lambda P_{\langle d, t \rangle} . \lambda d . [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d > d']]$$

The current analysis explains why Japanese has two distinct superlative morphemes, although they show the same syntactic distribution. In the next section, I turn to a third superlative morpheme, which exhibits behavior distinct from both *ichiban* and *mottomo*.

4.3 Sino-Japanese Superlative Morpheme *Sai-*

Thus far, I have argued that the Japanese superlative morphemes *ichiban* and *mottomo* instantiate distinct lexical compositions of MAX. This section explores the Sino-Japanese (i.e., Chinese-origin) morpheme *sai-*, which is another superlative morpheme in Japanese. I argue that *sai-* lexicalizes SUP and ER and that *sai-* superlatives differ crucially from *ichiban* and *mottomo* superlatives in how the comparison class is determined. Whereas *ichiban* and *mottomo* fix the comparison class syntactically via scope and ellipsis, *sai-* cannot move on its own and thus does not determine the comparison class syntactically; instead, it relies on pragmatic resolution. Japanese thus instantiates two distinct strategies for comparison-class determination: a syntactic strategy and a pure pragmatic strategy.

4.3.1 Basic Properties of *Sai-*

Although the literature has not paid much attention to *sai-*, this morpheme is in fact frequently used in Japanese. *Sai-* originates from Chinese and belongs to the Sino-Japanese vocabulary (Chinese employs the same superlative morpheme *zui*). In Japanese, *sai-* attaches to Sino-Japanese adjectival roots and derives superlative expressions. A sample list of such superlative words is provided below.

(24) Sample list of *sai-* superlative words

- a. *sai-* + *dai* ‘big’ = *sai-dai* ‘maximum’
- b. *sai-* + *shoo* ‘small’ = *sai-shoo* ‘minimum’
- c. *sai-* + *koo* ‘high’ = *sai-koo* ‘best’
- d. *sai-* + *tei* ‘low’ = *sai-tei* ‘worst’
- e. *sai-* + *aku* ‘bad’ = *sai-aku* ‘worst’
- f. *sai-* + *soku* ‘fast’ = *sai-soku* ‘fastest’
- g. *sai-* + *shin* ‘new’ = *sai-shin* ‘newest’
- h. *sai-* + *ko* ‘old’ = *sai-ko* ‘oldest’
- i. *sai-* + *ta* ‘many’ = *sai-ta* ‘most’

Adjectival roots such as *dai* ‘big’ and *syoo* ‘small’ are Sino-Japanese morphemes, in contrast to native Japanese adjectives such as *ookii* ‘big’ and *chiisai* ‘small’. When *sai-* attaches to these Sino-Japanese roots, the resulting forms, such as *sai-dai* ‘maximum’ and *sai-syoo* ‘minimum’, express superlative meanings. Furthermore, *sai-* superlatives can appear both predicatively and attributively.

- (25) a. P-wa x-ga 1-no-toki sai-dai dearu.
P-TOP x-NOM 1-GEN-when SAI-big COP
‘P is maximal when x is 1.’ (ABS)
- b. Taro-wa sai-aku-no keiken-o oboeteiru.
Taro-TOP SAI-bad-GEN experience-ACC remember
‘Taro remembers the worst experience.’ (ABS)

Note that *sai-* is a bound morpheme, unlike free morphemes such as *ichiban* and *mottomo*. As a result, *sai-* cannot occur in positions that are syntactically separated from the gradable predicate it modifies, but must attach directly to a Sino-Japanese adjectival root.

- (26) * Sai- Taro-wa aku-no keiken-o oboeteiru.
 SAI- Taro-TOP bad-GEN experience-ACC remember
 ‘Taro remembers the worst experience.’

Now, a question arises of whether *sai-* can undergo covert QR at LF. In English, for example, *-est* undergoes covert QR at LF. If *sai-* undergoes the same sort of movement as English *-est*, we can employ the mechanism developed for *ichiban* and *mottomo*. However, Japanese is considered a scope-rigid language, so there is little motivation to assume covert QR at LF in this regard. Still, we need to see whether this is empirically supported. One sharp contrast between *ichiban/mottomo* and *sai-* is that *sai-* does not easily allow the relative reading in contrast to *ichiban* and *mottomo*. Consider the following scenario. Suppose that the most recent iPhone model currently on the market is the iPhone 17. Taro, Jiro, and Hanako each own an iPhone, and their respective models are the iPhone 16, iPhone 15, and iPhone 14. In this context, the *sai-* superlative sentence only allows the absolute reading, as in (27), while *ichiban* and *mottomo* superlatives allow both absolute and relative readings in (28).

- (27) San-nin-no-naka-de Taro-ga sai-shin-no aifon-o motteiru.
 three-CL-GEN-among Taro-NOM SAI-new-GEN iPhone-ACC have
 ‘Among the three people, Taro has the newest iPhone (= iPhone 17).’ (ABS)
- (28) San-nin-no-naka-de Taro-ga { mottomo / ichiban } atarashii aifon-o
 three-CL-GEN-among Taro-NOM MOTTOMO / ICHIBAN new iPhone-ACC
 motteiru.
 have
 ‘Among the three people, Taro has the newest iPhone (= iPhone 17).’ (ABS)
 ‘Among the three people, Taro has the newest iPhone (= iPhone 16).’ (REL)

This suggests that the relative reading of *sai-* superlatives cannot be derived in the same way as *ichiban* and *mottomo* superlatives. If *sai-* freely undergoes covert QR at LF, the

relative reading should be obtained without any problem, contrary to fact. In order to make the relative reading salient with *sai-*, the comparison class must be marked by the contrastive topic marker *-wa*, which receives prosodic prominence.

- (29) San-nin-no-naka-de-**wa** Taro-ga sai-shin-no aifon-o motteiru.
 three-CL-GEN-among-TOP Taro-NOM SAI-new-GEN iPhone-ACC have
 ‘Among the three people, Taro has the newest iPhone (= iPhone 16).’ (REL)

Here, *-wa* signals that the evaluation is made relative to a contextually delimited set, while contrasting it with relevant alternatives outside that set. The sentence is roughly interpreted as “if we restrict the comparison class to the iPhones owned by the three people we are talking about, Taro has the newest iPhone”. Thus, *sai-* superlatives require a specific contextual restriction to derive the relative reading.

This is further supported by the behavior of *sai-ta* ‘most’. Because quantity superlatives are known not to give rise to absolute readings (Scabocsi 1986; Hackl 2009), *sai-ta*, unlike *sai-shin* ‘newest’, gives rise exclusively to relative readings.

- (30) Taro-wa senkyo-de sai-ta-no tokuhyoo-o eta.
 Taro-TOP election-IN SAI-many-GEN vote-ACC got
 ‘Taro got the most votes in the election.’ (REL)

- (31) Taro-wa senkyo-de { mottomo / ichiban } ookuno tokuhyoo-o eta.
 Taro-TOP election-IN MOTTOMO / ICHIBAN many vote-ACC got
 ‘Taro got the most votes in the election.’ (REL)

Like *ichiban* and *mottomo* superlatives, *sai-* superlatives also allow a relative reading in quantity superlatives. This suggests that the relative reading is not systematically blocked in *sai-* superlatives. At the same time, if the relative reading is derived from covert QR of *sai-*, this cannot explain why (27) cannot give rise to the relative reading. I

therefore conclude that *sai*- superlatives do not employ covert QR at LF to determine the comparison class. In the following sections, I will argue that, unlike *ichiban* and *mottomo*, *sai*- superlatives rely on pragmatic resolution of a contextual variable *C*.

To summarize, this section has introduced the superlative morpheme *sai*-, which has received little attention in the previous literature. Crucially, *sai*- superlatives do not employ QR to determine the comparison class. Based on this, I provide an analysis of *sai*- superlatives based on these observations. Before moving to an analysis of *sai*- superlatives, I turn to the semantic composition of *sai*- superlatives in the next section.

4.3.2 Semantic Composition of *Sai*-

In this section, I argue that *sai*- can be semantically decomposed into SUP and ER. Recall that *ichiban* and *mottomo* differ with respect to plural superlatives: *ichiban* is incompatible with them, whereas *mottomo* permits them. I have argued that this contrast follows from their semantic compositions. Because *ichiban* consists of THE and SUP, it requires a unique maximal degree, which is incompatible with plural superlatives. In contrast, *mottomo*, composed of SUP and ER, does not impose uniqueness on degree and therefore allows plural superlatives. On this basis, *sai*- behaves like *mottomo*, as it is compatible both with partitive constructions and with duplicated nouns yielding plural interpretations.

- (32) LA-wa amerika-de sai-dai-no toshi-no hito-tsu-da.
 LA-TOP America-in SAI-big-GEN city-GEN one-CL-COP
 ‘LA is one of the biggest cities in the U.S.’

- (33) Taro-wa sai-ko-no yama-yama-o otozureta.
 Taro-TOP SAI-old-GEN mountain-mountain-ACC visited
 ‘Taro visited the oldest mountains.’

This suggests that *sai-* patterns with *mottomo* rather than with *ichiban*.

Further evidence that *sai-* does not encode THE comes from its behavior in compound environments. For *sai-* superlatives, compounding is a productive strategy, where the preceding element typically denotes a place or group that provides the comparison class for the superlative (e.g., *sekai-sai-dai* ‘world-biggest’). Importantly, while *sai-* superlatives are fully natural in partitive constructions, the corresponding expressions formed with *sekai-ichi* ‘world’s number one’ are degraded. Here, *ichi* ‘one’ is the same numeral that underlies *ichiban*.

- (34) a. Taro-wa sekai-sai-dai-no toshi-no hito-tsu-o otozureta.
 Taro-TOP world-SAI-big-GEN city-GEN one-CL-ACC visited
 ‘Taro visited one of the world’s largest cities.’
 b. ?? Taro-wa sekai-ichi ookii toshi-no hito-tsu-o otozureta.
 Taro-TOP world-one big city-GEN one-CL-ACC visited
 ‘Taro visited one of the world’s largest cities.’

The contrast in (34) follows if *sai-* does not encode THE and therefore does not require a unique maximal degree, allowing for plural superlatives with partitive constructions. In contrast, *ichi*, like *ichiban*, encodes uniqueness of degree, which conflicts with the partitive environment.

Furthermore, an interesting asymmetry arises with respect to the co-occurrence of *sai-* with *ichiban* and *mottomo*: *ichiban* readily combines with *sai-* superlatives, whereas the corresponding combination with *mottomo* is degraded.

- (35) a. Taro-wa ichiban sai-shin-no joohoo-o nyuusyushita.
 Taro-TOP ICHIBAN SAI-new-GEN information-ACC obtained
 ‘Taro obtained the very latest information.’
- b. ?? Taro-wa mottomo sai-shin-no joohoo-o nyuusyushita.
 Taro-TOP MOTTOMO SAI-new-GEN information-ACC obtained
 ‘Taro obtained the very latest information.’
- (36) a. Taro-ga ichiban { sai-syo / sai-go }-ni kita.
 Taro-NOM ICHIBAN SAI-beginning / SAI-after -DAT came
 ‘Taro came very first / very last.’
- b. ?? Taro-ga mottomo { sai-syo / sai-go }-ni kita.
 Taro-NOM MOTTOMO SAI-beginning / SAI-after -DAT came
 ‘Taro came very first / very last.’

In (35a), *sai-* co-occurs with *ichiban*, and *ichiban* intensifies the superlative meaning, yielding an interpretation such as ‘the very latest’. In contrast, modification by *mottomo* is degraded, as shown in (35b). This contrast can be explained if *sai-* does not itself contain a definiteness component: *ichiban*, which consists of THE and SUP, supplements definiteness over degrees, whereas *mottomo*, composed of SUP and ER, cannot provide the same definiteness. Although *ichiban* contains SUP in addition to THE, thus giving rise to redundancy with *sai-*, the contrast between *ichiban* and *mottomo* indicates that they do not make identical semantic contributions. A parallel contrast is observed in (36), where Japanese *first* and *last*, which also contain *sai-*, exhibit the same asymmetry (notably, English *first* and *last* also contain the *-st* morpheme, which may be analyzed as SUP in English; see Bylinina et al. 2014; Alstoot 2025). Taken together, these facts support the conclusion that *sai-* contains SUP and ER.

In this section, I have argued that *sai-* consists of SUP and ER as part of the decomposition of MAX. In addition to the evidence from plural superlatives, the co-

occurrence patterns with *ichiban* and *mottomo* reveal a systematic contrast, highlighting the semantic composition of these superlative morphemes. In the next section, I provide a formal analysis of *sai*- superlatives.

4.3.3 Analysis of *Sai*- Superlatives

First, as discussed in the previous section, *sai*- contains SUP and ER.

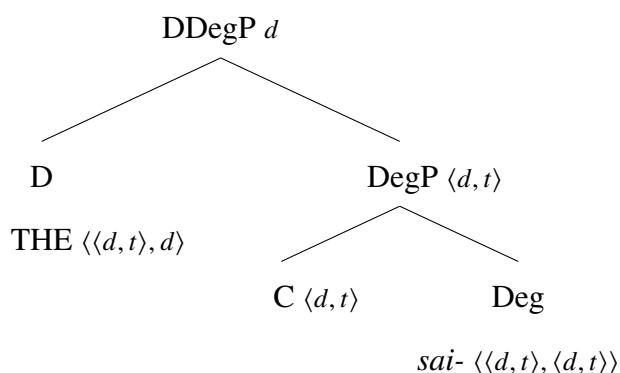
(37) Semantics of *sai*-

$$\llbracket \textit{sai-} \rrbracket = \lambda C_{\langle d, t \rangle} . \lambda d . [C(d) \wedge \forall d' [C(d') \wedge d' \neq d \rightarrow d > d']] \langle \langle d, t \rangle, \langle d, t \rangle \rangle$$

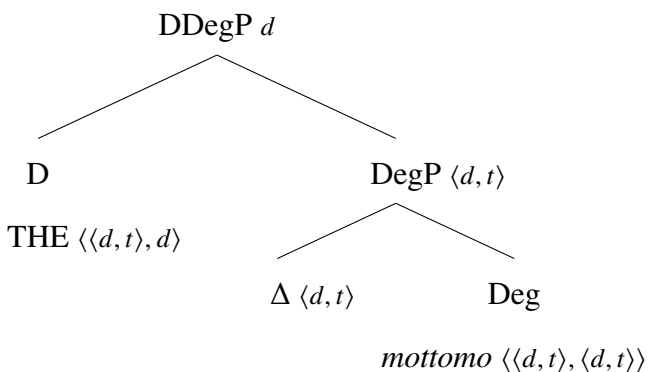
Furthermore, recall that *sai*- cannot be separated from its host gradable predicate and I have concluded that no covert QR at LF is involved with *sai*- unlike English *-est*. This indicates that the comparison class of *sai*- superlatives cannot be derived in the same way as *ichiban* and *mottomo* superlatives. Instead, I propose that *sai*- directly combines with a comparison class *C*, which is resolved pragmatically, following the insight of Teodorescu (2009) and Coppock and Engdahl (2016). I propose the following DegP structure for *sai*- superlatives.

(38) Different sources of comparison class in superlatives

a. DDegP for *sai*-



b. DDegP for *mottomo*



In *mottomo* superlatives, the DDegP must undergo movement in order to determine the comparison class; this movement is required because the DDegP contains an ellipsis site whose resolution depends on its scope position. By contrast, in *sai*- superlatives, the DDegP remains in situ. This is because *sai*- does not introduce an ellipsis site and therefore does not rely on syntactic scope to fix the comparison class. Instead, the comparison class is determined pragmatically.

Given the syntax and semantics of *sai*-, I argue that both absolute and relative readings are derived through pragmatic resolution of *C*. Because *sai*- appears in a DP-internal

position, the two readings arise from different contextual restrictions on *C*. The absolute reading is obtained when *C* is restricted to the set of degrees instantiated by iPhones available on the market, whereas the relative reading is obtained when *C* is restricted to the set of degrees instantiated by iPhones owned by the relevant individuals.

- (39) (San-nin-no-naka-de-wa) Taro-ga sai-shin-no aifon-o motteiru.
 three-CL-GEN-inside-at-TOP Taro-NOM SAI-new-GEN iPhone-ACC have
 ‘Taro has the newest iPhone.’ (ABS)

‘Among the three people, Taro has the newest iPhone.’ (REL)

- (40) DP structure of *sai*- superlatives

[_{DP} THE [_{NP} [_{AP} [_{DDegP} THE [_{DegP} *C-sai*]] *new*] *iPhone*]]

- (41) *C* of the absolute and relative readings in *sai*- superlatives

a. $C = \{d : \exists x [\text{iPhone}(x) \wedge \text{new}(d)(x)]\}$ (ABS)

b. $C = \{d : \exists y \exists x [\text{Person}(y) \wedge \text{have}(x)(y) \wedge \text{iPhone}(x) \wedge \text{new}(d)(x)]\}$ (REL)

The comparison class supplied by *C* is turned into a definite degree by the covert THE and this results in the absolute and relative readings, based on the content of *C*. Therefore, under the present analysis, the two readings of *sai*- superlatives are derived through contextual restriction of *C*. This contrasts sharply with *ichiban* and *mottomo* superlatives, which determine the comparison class syntactically via scope-taking of (D)DegP. Japanese thus instantiates two distinct mechanisms for comparison-class determination.

However, a question remains as to why the relative reading of *sai*- superlatives is not readily available. If contextual restriction freely determines the comparison class, both the absolute and the relative readings should in principle be derivable from context

alone, contrary to fact. This suggests that a purely pragmatic account of comparison class determination is insufficient. It could be the case that certain aspects of comparison-class determination are encoded in the semantics rather than purely pragmatics (cf. Farkas and Kiss 2000; Sharvit and Stateva 2002). I do not offer a full account of this issue here and leave it for future research.

In this section, I have examined the Sino-Japanese superlative morpheme *sai-* and argued that it instantiates SUP-ER.

(42) *sai-* lexicalizes SUP-ER

$$\llbracket \textit{sai-} \rrbracket = \lambda C_{\langle d,t \rangle} . \lambda d . [C(d) \wedge \forall d' [C(d') \wedge d' \neq d \rightarrow d > d']]$$

I have further argued that, unlike *ichiban* and *mottomo*, *sai-* does not determine its comparison class via syntactic scope. Instead, the comparison class associated with *sai-* is resolved pragmatically through contextual restriction of *C*. This contrast reveals that Japanese superlatives employ two distinct strategies for determining comparison classes: syntactic scope, as in *ichiban* and *mottomo* superlatives, and pragmatic domain restriction, as in *sai-* superlatives.

4.4 English Superlatives

This section extends the current analysis to English superlatives. I argue that English *-est* lexicalizes the bundled SUP-ER, while definiteness is contributed by THE, realized either overtly or covertly. This proposal is motivated by the distribution of the definite article in English superlatives. I first develop the semantics of *-est* and the internal structure of DDegP, and then derive absolute and relative readings through movement

and ellipsis, paralleling the analysis of Japanese superlatives. I further extend the analysis to negative superlatives and analyze *least* as part of a minimality operator (MIN).

4.4.1 Semantics of *-Est*

As introduced in Chapter 3, the Scope Theory (Heim 1985, 1999; Szabolcsi 1986) argues that the interpretation of the definite article in superlatives depends on the syntactic position of *-est*. In particular, when *-est* takes DP-external scope in the relative reading, the definite article inside the superlative DP must be converted into an indefinite article in order to avoid contradiction: otherwise, the comparison class *C* would denote a set of individuals who all climbed a unique mountain, while *-est* would simultaneously assert that only John did so. Under this analysis, the definite article does not make an essential semantic contribution to the relative reading.

Building on this line of analysis, Krasikova (2012) proposes that the definite article receives distinct semantic interpretations in the two readings of superlatives: in the absolute reading, it is interpreted over individuals (i.e. definiteness over individuals), whereas in the relative reading, it is interpreted over degrees (i.e. definiteness over degrees). The central insight of Krasikova's analysis is that, contrary to the Scope Theory, the definite article does make a semantic contribution in the relative reading, namely by encoding definiteness of degrees. However, there is independent evidence from English that the definite article is interpreted over both individuals and degrees in the absolute reading. When the superlative *-est* occurs inside an IM structure involving a relative clause, definiteness over individuals and over degrees can be overtly realized at the same time, as shown in (43).

- (43) a. John climbed the mountain that is the highest. (^{OK}ABS/*REL)
 b. # John climbed a mountain that is the highest.

The fact that the definite article in the matrix clause cannot be replaced by an indefinite article indicates that it contributes to the uniqueness of the superlative DP. Moreover, the definite article also appears inside the relative clause. Since such sentences allow only the absolute reading, it remains unclear what semantic contribution the definite article makes within the relative clause under Krasikova's system. The same problem arises for predicative superlatives, where the definite article is optionally realized, as in (44), a pattern that Krasikova explicitly leaves unresolved.

- (44) John is (the) fastest.

Taken together, the data suggest the following generalization: in the absolute reading, the definite article is interpreted over both individuals and degrees, whereas in the relative reading, the definite article is interpreted over degrees and the indefinite article is interpreted over individuals.

- (45) Use of definite and indefinite articles in English superlatives
- a. The definite article is interpreted for both individuals and degrees in the absolute reading.
 - b. The definite article is interpreted for degrees and the indefinite article is interpreted for individuals in the relative reading.

In other words, English superlatives always contain definiteness for degrees, provided by either overt or covert *the*.² Given this generalization, we can now determine the semantic contribution of *-est* under the present decomposition of MAX.

²One may wonder why the two definite articles cannot be overtly expressed in superlatives. I do

(46) a. MAX = THE + SUP + ER

b. *-est* = SUP-ER

Given that the definite article is always interpreted over degrees in English superlatives, the semantic contribution of *-est* can therefore be identified as SUP and ER. *-est* takes a set of degrees and returns a singleton set containing its maximal degree, which is subsequently mapped to the unique maximal degree by the definite determiner THE.³

(47) Semantics of *-est*

$$\llbracket -est \rrbracket = \lambda P_{\langle d, t \rangle} . \lambda d . [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d > d']]$$

not have a full answer to this question, but it is likely that a sequence of two definite articles such as [DP the [DDEGP the . . .]] is morpho-phonologically prohibited in English. I leave a detailed investigation of this issue for future research.

³It is possible to further decompose *-est* into the SUP morpheme *-st* and the comparative ER (see Coppock and Engdahl's 2016 decomposition of English *-est*).

(i) a. Primitive ER

$$\llbracket ER \rrbracket = \lambda d . \lambda d' . [d' > d] \langle d, \langle d, t \rangle \rangle$$

b. SUP

$$\llbracket -st \rrbracket = \lambda R . \lambda P . \lambda d . [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow R(d', d)]] \langle \langle d, \langle d, t \rangle \rangle, \langle \langle d, t \rangle, \langle d, t \rangle \rangle \rangle$$

c. SUP + *-er*

$$\llbracket -est \rrbracket = \llbracket -st \rrbracket (\llbracket -er \rrbracket) = \lambda P . \lambda d . [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d > d']] \langle \langle d, t \rangle, \langle d, t \rangle \rangle$$

The theoretical advantage of this decomposition is that negative superlatives can be derived by the same *-st* morphology.

(ii) a. Primitive *less*

$$\llbracket less \rrbracket = \lambda d . \lambda d' . [d' < d] \langle d, \langle d, t \rangle \rangle$$

b. SUP

$$\llbracket -st \rrbracket = \lambda R . \lambda P . \lambda d . [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow R(d', d)]]$$

c. SUP + *less*

$$\llbracket least \rrbracket = \llbracket -st \rrbracket (\llbracket less \rrbracket) = \lambda P . \lambda d . [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d < d']] \langle \langle d, t \rangle, \langle d, t \rangle \rangle$$

Given that the primitive *less* has the opposite ordering relation from ER, *least* can be derived in exactly the same way as *-est* (see Heim 2007 for a further decomposition of *less* into *little* and ER). Note that *least* with a definite article functions as a MIN operator, in contrast to MAX. Furthermore, *first* and *last* may also contain the *-st* morpheme (Bylinina et al. 2014; Alstoot 2025).

(48) Composition of MAX by *-est*

a. *-est* + P

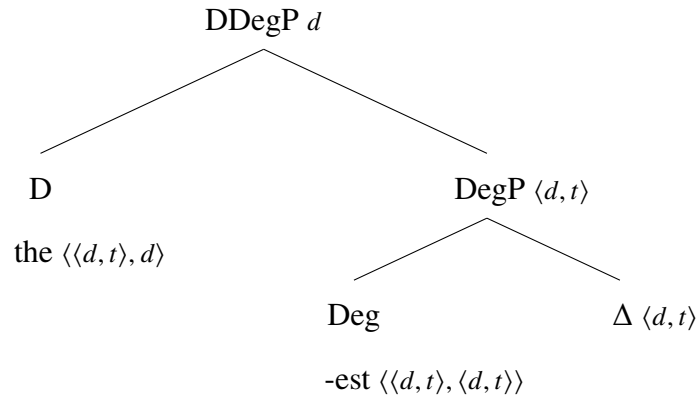
$$\llbracket -est \rrbracket(P) = \lambda d.[P(d) \wedge \forall d'[P(d') \wedge d' \neq d \rightarrow d > d']]$$

b. $\llbracket \text{THE} \rrbracket + (\llbracket -est \rrbracket(P))$

$$\llbracket \text{THE} \rrbracket(\llbracket -est \rrbracket(P)) = \iota d[P(d) \wedge \forall d'[P(d') \wedge d' \neq d \rightarrow d > d']]$$

This decomposition further implies that DegP contains *-est* and a comparison class *P*, derived via ellipsis resolution. Moreover, the definiteness of DegP should be encoded by a D head projected above DegP. I therefore propose the syntactic structure for English superlatives in (49), with representative surface realizations given in (50).

(49) DDegP for English superlatives



(50) a. $[_{DP} \text{ the } [_{DDegP} (\text{the}) [_{DegP} -est \Delta]] \text{ high mountain}]$ (ABS)

b. $[_{DP} (\text{a}) [_{DDegP} \text{ the } [_{DegP} -est \Delta]] \text{ high mountain}]$ (REL)

In DDegP, either an overt or a covert definite article occupies the D head, depending on the reading: in the absolute reading, the covert definite article heads D, whereas in the relative reading, the overt definite article heads D. In the next section, I show how English superlatives are derived on the basis of this proposal.

To sum up, I have shown that English superlatives systematically interpret the definite article over degrees, whether overtly or covertly. Given this generalization, I have argued that *-est* corresponds to SUP-ER, while the definite article supplies definiteness for degrees.

4.4.2 Analysis of English Superlatives

With these assumptions in place, let us turn to the absolute reading of English superlatives. I assume that the DDegP undergoes covert movement to a right-adjoined scope position, following the approach developed in Fox and Nissenbaum (1999) and Bhatt and Pancheva (2004). This allows superlatives to be treated in parallel with comparatives, a move that is further motivated by Charnavel's (2025) recent proposal that the superlative morpheme *-est* takes an overt complement in the same way as the comparative morpheme *-er* (e.g. *John climbed the highest mountain that anyone has ever climbed*). Furthermore, in contrast to Japanese, which employs two distinct adjectival modification structures to derive absolute and relative readings, English exclusively makes use of a direct modification structure. Consequently, both readings are derived from the same underlying configuration, with the observed interpretive differences arising from the scope and ellipsis resolution of DDegP rather than from structural alternations in the nominal domain.

Given the syntax and semantics proposed for English superlatives, the absolute reading is derived as follows.

(51) [DP the [NP [AP [DDegP (the) [DegP -est Δ]] high] mountain]] (ABS)

(52) Derivation of the absolute reading

Step 1: Merger of DDegP in AP

[NP [AP [DDegP the [DegP -est Δ]] high] mountain]

Step 2: QR of DDegP to NP

[NP [NP t₁-high mountain] [DDegP the [DegP -est Δ]]₁]

Step 3: Merger of *the* in DP

[DP the [NP [NP t₁-high mountain] [DDegP the [DegP -est Δ]]₁]]

Step 4: Ellipsis resolution

[DP the [NP λ*d*. [NP *d*-high mountain]

[DDegP the [DegP -est λ*d*. [NP *d*-high mountain]]]]]

Step 5: Existential closure of the individual argument in DegP

[DP the [NP λ*d*. [NP *d*-high mountain]

[DDegP the [DegP -est λ*d*. ∃*x* [NP *x* is a *d*-high mountain]]]]]

Step 6: Maximalization by *-est* and *the*

[DP the [NP λ*d*. [NP *d*-high mountain]

[DDegP MAX(λ*d*. ∃*x* [NP *x* is a *d*-high mountain]]]]]

Result

$\llbracket \text{DP} \rrbracket = \lambda x [\text{mountain}(x) \wedge \text{high}(\text{MAX}(\lambda d. \exists y [\text{mountain}(y) \wedge \text{high}(d)(y)]))(x)]$

In this derivation, the DDegP, composed of *-est* together with the definite article, maps this degree set to its unique maximal degree in Step 6. This maximal degree saturates the degree argument of the matrix predicate. As a result, the DP denotes the unique mountain

whose height corresponds to the maximal degree such that no other mountain exceeds it.

The sentence is therefore correctly interpreted as expressing the absolute reading.

Next, consider the relative reading. In the relative reading, the surface definite article is interpreted over degrees, while a covert indefinite article is interpreted over individuals. Thus, the DP is interpreted as indefinite with respect to individuals but definite with respect to degrees. The derivation of the low relative reading proceeds as follows.

(53) [DP a [NP [AP [D_{DEGP} the [D_{DEGP} -est Δ]] high] mountain]] (REL)

(54) Derivation of the low relative reading

Step 1: Merger of DDegP in AP

[_{DP} a [_{NP} [_{AP} [_{DDegP} the [_{DEGP} -est Δ]] high] mountain]]

Step 2: QR of DDegP to vP

[_{vP} [_{vP} John [_{vP} climb [_{DP} a t₁-high mountain]]]

[_{DDegP} the [_{DEGP} -est Δ]]₁]

Step 3: Rest of syntactic derivation

[_{TP} John₂ [_{vP} [_{vP} t₂ [_{vP} climb [_{DP} a t₁-high mountain]]]

[_{DDegP} the [_{DEGP} -est Δ]]₁]]

Step 4: Ellipsis resolution

[_{TP} John λx. [_{vP} λd. [_{vP} x [_{vP} climb [_{DP} a d-high mountain]]]

[_{DDegP} the [_{DEGP} -est λd.λx. [_{vP} x climbed a d-high mountain]]]]]

Step 5: Existential closure of the individual argument in DegP

[_{TP} John λx. [_{vP} λd. [_{vP} x [_{vP} climb [_{DP} a d-high mountain]]]

[_{DDegP} the [_{DEGP} -est λd.∃x [_{vP} x climbed a d-high mountain]]]]]

Step 6: Maximalization by *-est* and *the*

[_{TP} John λx. [_{vP} λd. [_{vP} x [_{vP} climb [_{DP} a d-high mountain]]]

[_{DDegP} MAX(λd.∃x [_{vP} x climbed a d-high mountain]]]]]

Result

[[TP]] = ∃z[mountain(z) ∧ climbed(z)(John) ∧
high(MAX(λd.∃x∃y[mountain(y) ∧ climbed(y)(x) ∧ high(d)(y)])(z)]

In contrast to the absolute reading, *-est* takes a clausal scope in this derivation for the

relative reading. Then, the resulting TP denotes that John climbed a mountain whose height corresponds to the maximal degree such that no relevant individual climbed a higher mountain, correctly deriving the low relative reading.

Finally, the high relative reading, the derivation proceeds in a way parallel to the low relative reading, with one crucial difference: the subject raises to CP presumably due to focus based on Japanese facts as discussed in Chapter 3 and the DDegP takes scope above the subject position.

(55) Derivation of the high relative reading

Step 1: Focus-driven movement of the subject to CP

[CP John₁ [TP t₁ [_{VP} [_{VP} climb [DP a [_{DDegP} the [_{DegP} -est Δ]]
high mountain]]]]]

Step 2: QR of DDegP to CP

[CP John₁ [TP t₁ [_{VP} [_{VP} climb [DP a t₂-high mountain]]]]]
[_{DDegP} the [_{DegP} -est Δ]]₂]

Step 3: Ellipsis resolution

[CP λd. [CP John λx. [TP x [_{VP} [_{VP} climb [DP a d-high mountain]]]]]
[_{DDegP} the [_{DegP} -est λd.λx. [TP x climbed a d-high mountain]]]]]

Step 4: Existential closure of the individual argument in DegP

[CP λd. [CP John λx. [TP x [_{VP} [_{VP} climb [DP a d-high mountain]]]]]
[_{DDegP} the [_{DegP} -est λd.∃x [TP x climbed a d-high mountain]]]]]

Step 5: Maximalization by *-est* and *the*

[CP λd. [CP John λx. [TP x [_{VP} [_{VP} climb [DP a d-high mountain]]]]]
[_{DDegP} MAX(λd.∃x [TP x climbed a d-high mountain]]]]]

Result

[[CP]] = ∃z[mountain(z) ∧ climbed(z)(John) ∧
high(MAX(λd.∃x∃y[mountain(y) ∧ climbed(y)(x) ∧ high(d)(y)])(z)]

As a result of this derivation, the CP denotes that John climbed a mountain whose height corresponds to the maximal degree such that no relevant individual climbed a higher mountain, yielding the relative reading. The present analysis therefore derives both absolute and relative readings in a uniform way. In addition, parallel to Japanese,

exhaustivity may be encoded in the high relative reading, provided that the relevant syntactic and semantic conditions are met. While these derivations are in principle available under the proposed analysis, whether English superlatives indeed pattern in this way must be empirically attested and is left for future research.

To sum up, English superlatives are derived in the same way as Japanese ones in the present analysis. I have argued that *-est* is composed of SUP and ER, and that an additional definite article contributes to the composition of MAX. On this view, absolute and relative readings differ in how definite and indefinite articles are distributed over DP and DegP.⁴

- (56) a. John climbed [DP the [DDegP (the) [DegP -est Δ]] high mountain] (ABS)
 b. John climbed [DP (a) [DDegP the [DegP -est Δ]] high mountain] (REL)

In the traditional Scope Theory, definite and indefinite articles are assumed to contribute only to individuals. Under the maximality approach developed here, however, the definite article is always interpreted over degrees. In the absolute reading, the overt definite

⁴The current view predicts the case where DDegP is headed by an indefinite article.

- (i) a. John climbed [DP the [DDegP (a) -est Δ] high mountain].
 b. John climbed [DP (a) [DDegP a -est Δ] high mountain].

The question then arises as to whether these quasi-superlatives have any interpretations. These might be cases of so-called *elative superlatives*, which do not express comparison, but rather an intensified or extreme degree of a property (Quirk et al. 1985; Coppock and Engdahl 2016: 1188).

- (ii) a. We had a most pleasant supper.
 ‘= extremely pleasant supper’
 b. We are following the development with the greatest interest.
 ‘= with extremely great interest’

However, Coppock and Engdahl (2016) argue that Swedish elative superlatives are derived from a structure in which MAX takes a covert *C* as its domain argument within DegP, and the value of *C* is determined pragmatically, without any movement. In this respect, the present speculation diverges from Coppock and Engdahl’s analysis, and a more detailed investigation is left for future research.

article is interpreted over individuals, whereas in the relative reading it is interpreted over degrees. This reanalysis also explains why predicative and adverbial superlatives may overtly realize the definite article: in such cases, the article is interpreted over degrees rather than individuals.

4.4.3 Negative Superlatives

In this section, I argue that the present analysis naturally extends to negative superlatives. Under the current proposal, the English superlative morpheme *-est* constitutes part of the maximality operator MAX, together with the definite article, within the structure of DDegP. Building on this insight, I propose that *least* instantiates a minimality operator (MIN), which is minimally distinct from MAX and differs only in the direction of the ordering relation.⁵

(57) Semantics of *least*

$$\llbracket \textit{least} \rrbracket = \lambda P_{\langle d,t \rangle} . \lambda d . [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d < d']]$$

(58) Semantics of *-est*

$$\llbracket \textit{-est} \rrbracket = \lambda P_{\langle d,t \rangle} . \lambda d . [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d > d']]$$

The difference between *least* and *-est* reduces to the direction of the ordering relation

⁵In the current approach, the primitive *less* and the 2-place *less* used in negative comparatives are defined in terms of MAX (Rullmann (1995); see Heim (2000, 2007) and Beck (2019) for discussion of negative comparatives).

- (i) a. Primitive *less*
 $\llbracket \textit{less} \rrbracket = \lambda d . \lambda d' . [d' < d]$
- b. 2-place *less*
 $\llbracket \textit{less} \rrbracket = \lambda P_{\langle d,t \rangle} . \lambda Q_{\langle d,t \rangle} . \text{MAX}(Q) < \text{MAX}(P)$

The 2-place *less* differs from the primitive version in that it takes two degree predicates, parallel to the 2-place comparative *-er*.

between degrees: whereas *-est* involves an ordering of the form $d > d'$, *least* involves the inverse relation $d < d'$. On this view, the composition of MIN proceeds in the same way as that of MAX.

(59) Composition of MIN

a. *least* + *P*

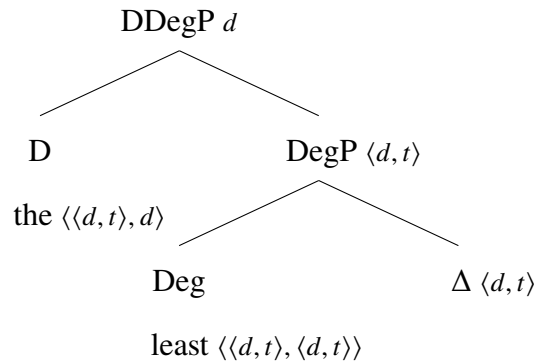
$$\llbracket \textit{least} \rrbracket(P) = \lambda d. [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d < d']]$$

b. THE + ($\llbracket \textit{least} \rrbracket(P)$)

$$\llbracket \textit{THE} \rrbracket(\llbracket \textit{least} \rrbracket(P)) = \lambda d [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow d < d']]$$

Then, the internal structure of DDegP for negative superlatives is identical to that of DDegP for ordinary superlatives.

(60) DDegP for negative superlatives



In this way, the current analysis can capture the negative superlatives in a parallel fashion with ordinary superlatives.⁶ Though I omit the syntactic derivation of negative superlatives, it is derived in the same way as ordinary superlatives except that minimalization

⁶The proposed MIN-based analysis may also bear on the so-called sandwich scenario (Sharvit and Stateva 2002), where Heim-style treatments of *least* based on *-est* have been argued to give rise to incorrect truth conditions and thus require additional assumptions. The current approach seems to offer a way of capturing the correct meaning without such assumptions, though I leave a fuller investigation for future work.

applies to a comparison in negative superlatives, instead of maximalization in ordinary superlatives.

4.4.4 Summary

In this section, I have extended the MAX-based analysis of Japanese superlatives to English. I argued that the English superlative morpheme *-est* lexicalizes the combination SUP-ER, while the definite article supplies definiteness for degrees, together forming the MAX operator. This decomposition derives both absolute and relative readings through systematic interactions between DP-level and DDegP-level definiteness. I further showed that negative superlatives with *least* are derived in full parallel by replacing MAX with MIN, which differs only in the direction of degree ordering. As a result, English superlatives—both positive and negative—are captured within a unified compositional system that directly parallels the Japanese superlatives.

4.5 Three Factors of Superlative Formation

The preceding chapters have developed a unified, degree-based analysis of superlatives, grounded in the composition of MAX. Building on these results, this section explores the principles that govern superlative formation cross-linguistically. I argue that three factors jointly shape superlatives: (i) the lexical composition of MAX, (ii) the logical sources of superlative meaning, and (iii) the modes of comparison-class determination. I first develop a typology of superlative morphology, and then identify the possible logical sources of superlative meaning and show that languages vary in whether comparison classes are resolved syntactically or pragmatically. Together, these factors provide a

principled foundation for understanding both the unity and diversity of superlatives across languages.

4.5.1 Cross-Linguistic Typology of Superlative Morphemes

This section summarizes the cross-linguistic typology of superlative morphology developed in this dissertation. Building on Loccioni’s (2018) and Coppock and Engdahl’s (2016) decomposition of MAX, I argue that superlative meaning arises from the interaction of three primitive components: THE, SUP, and ER.

(61) Semantic decomposition of MAX

a. Primitive ER

$$\llbracket \text{ER} \rrbracket = \lambda d. \lambda d'. [d' > d]$$

b. SUP

$$\llbracket \text{SUP} \rrbracket = \lambda R_{\langle d, dt \rangle}. \lambda P_{\langle d, t \rangle}. \lambda d. [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow R(d', d)]]$$

c. THE

$$\llbracket \text{THE} \rrbracket = \lambda P_{\langle d, t \rangle}. \iota d [P(d)]$$

Japanese shows that these components can be lexicalized in different combinations: *ichiban* realizes THE–SUP like Korean and Chinese number-based superlative morphology, *mottomo* realizes SUP–ER, and the Sino-Japanese morpheme *sai-* also lexicalizes the bundle SUP–ER. I have also shown that English *-est* likewise realizes SUP–ER. These facts show that languages vary in how the components of MAX are distributed across lexical items.

It is worth noting that the morphological patterns THE–SUP–ER and THE–ER are unattested in the typology developed in this dissertation. As for THE–SUP–ER, that is,

to the full lexicalization of MAX, though I have not identified any single element that transparently realizes MAX, certain expressions come close in restricted environments. In particular, when *sai-dai* ‘maximum’ modifies degree-denoting nouns such as *nagasa* ‘length’, its interpretation is similar to that of MAX. Likewise, *sai-shoo* ‘minimum’ can be used in parallel fashion, corresponding to MIN.

- (62) a. *sai-dai-no nagasa*
 SAI-big-GEN length
 ‘the maximum length’
 b. *sai-shoo-no nagasa*
 SAI-small-GEN length
 ‘the minimum length’

In these cases, plural superlative readings are unavailable, and the relevant degree is interpreted as a uniquely maximal or minimal one. At present, it remains unclear whether THE–SUP–ER is systematically blocked as a lexicalization strategy or whether its apparent absence follows from independent constraints (see the following discussion about Bobaljik’s (2012) *Containment Hypothesis*).

Second, as for THE–ER, consider the hypothetical pattern, in which ER and THE are lexically bundled into a single morpheme. In such a case, their semantic composition would necessarily introduce definiteness over the target degree, as illustrated in the imaginary lexical entry in (63). Although THE is defined to combine with predicates of degrees and therefore cannot compose directly with ER, if a lexicalized THE–ER were to exist, it would have to take a form like the one in the following.

- (63) Imaginary lexicalized THE–ER

$$\llbracket \text{THE-ER} \rrbracket = \lambda d. \iota d'. [d' > d]$$

This element would be of type $\langle d, d \rangle$, denoting a function from degrees to uniquely determined degrees, rather than a relation between two degrees. Crucially, however, SUP requires as its argument a relation between two degrees. Therefore, THE-ER fails to provide an appropriate input to SUP, and the composition SUP(THE-ER) is predicted to be ill-typed. This explains why THE-ER is systematically excluded from the inventory of possible superlative morphemes.

Given the discussion so far, the variation in superlative composition can be summarized as follows.

(64) Variation of superlative composition

Label	Composition	Morphological realization	Attested languages
A. Each component in a separate lexical entry	THE + SUP + ER	<i>lo más</i> <i>le plus</i> <i>la più</i> <i>a leg-bb</i>	Spanish French Italian Hungarian
B. Two components in one lexical entry			
(a) Lexical superlative	SUP-ER	<i>mottomo / sai-est</i>	Japanese English
(b) Numeral superlative	THE-SUP	<i>ichiban</i> <i>ceyil</i> <i>diyi</i>	Japanese Korean Chinese
(c) Definite comparative	THE-ER	Semantically excluded	Semantically excluded
C. Three components in one lexical entry	THE-SUP-ER	???	???

Note that the composition does not reflect the overt/covert status of these elements. For example, Romance languages overtly realize THE + ER and SUP is covertly realized. Though a language can be classified into different types according to the table, the overt/covert status of each element is not reflected. For example, it is not surprising that

all the three elements are overtly expressed separately in a language and this is attested in Hungarian (a leg-sze-bb ‘the SUP-beautiful-ER’).⁷

The variation in the table bears directly on Bobaljik’s (2012: 4) *Containment Hypothesis*, which states that “the representation of the superlative properly contains that of the comparative”. Under this hypothesis, superlative structure universally embeds comparative structure, and monomorphemic superlatives are excluded as in (66) (Bobaljik 2012: 4).

(65) The Containment Hypothesis

The representation of the superlative properly contains that of the comparative.

- (66) a. [[[ADJECTIVE] COMPARATIVE] SUPERLATIVE]
b. * [[ADJECTIVE] SUPERLATIVE]

While Bobaljik formulates containment as a morphological universal, the present analysis derives a similar restriction from compositional semantics. Under the current proposal, superlative meaning is expressed by MAX, which is compositionally built from THE, SUP, and ER. Crucially, SUP takes ER as its argument, and THE maps the resulting singleton set of degrees to a unique maximal degree. As a consequence, superlatives cannot be interpreted unless ER is embedded within MAX. I refer to this as the *Maximality Hypothesis*.

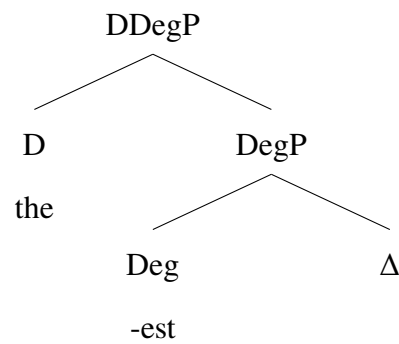
(67) The Maximality Hypothesis

Superlative meaning is compositionally constructed by MAX that embeds the comparative ER.

⁷I thank Donka Farkas for bringing the Hungarian data to my attention.

However, the present system appears to diverge from Bobaljik’s structural formulation of containment. Whereas Bobaljik states containment in terms of overt syntactic embedding, ER and SUP can be morphologically bundled in the present analysis (e.g. *-est*), with THE projected above them in DDegP. This yields surface representations that do not transparently reflect the hierarchical configuration [[[ADJ] ER] SUP].

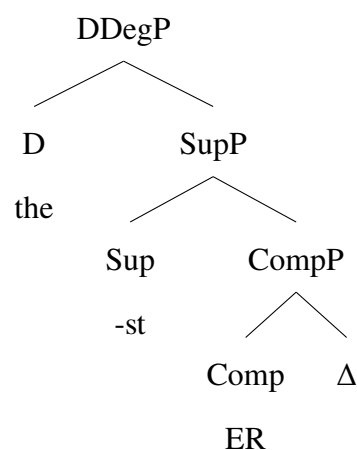
(68) DDegP for English superlatives



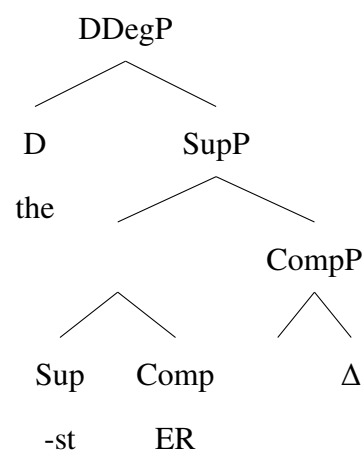
This constitutes an apparent discrepancy between the two approaches. However, the present system can be made compatible with Bobaljik’s structural formulation if English superlatives are syntactically decomposed as follows (cf. Coppock and Engdahl (2016)).

(69) Revised DDegP for English superlatives

a. Underlying structure



b. Head-adjunction of ER to -st



Under this decomposition, *-er* originates as the head of CompP and undergoes head movement to Sup. English superlatives therefore instantiate an underlying containment structure in the syntax, while preserving the compositional semantics of MAX. Consequently, the present analysis and Bobaljik's Containment Hypothesis converge on a closely related generalization from complementary perspectives: morphology imposes a requirement that superlatives structurally contain comparatives, while semantics requires comparative meaning to be embedded in order to construct MAX. In this regard, Bobaljik's Containment Hypothesis may well explain the absence of superlative morphemes that lexicalize THE–SUP–ER in a single exponent. Such a superlative morpheme is unattested in the languages examined in the present study, corresponding to the final gap in the typology developed here. This suggests that morphological and semantic requirements are independent, though they overlap to some extent.

In summary, this section has developed a cross-linguistic typology of superlative morphology grounded in a semantic decomposition of MAX into three primitive

components: ER, SUP, and THE. By examining Japanese, Chinese, Korean, English, and Romance languages, it was shown that languages vary in how these components are distributed across lexical items, yielding a predictive set of morphological patterns. The resulting typology directly bears on Bobaljik’s Containment Hypothesis, but the current analysis suggests a semantic necessity of ER rather than a purely morphological universal. Finally, by syntactically decomposing superlatives, the present analysis reconciles apparent surface discrepancies and shows that superlative morphology and semantics converge on a unified architecture.

4.5.2 Logical Source and Comparison Class

Apart from the morphological composition of MAX, two additional factors play a central role in the formation of superlatives: the logical source of superlative meaning and the mechanism by which the comparison class is determined. This dissertation has primarily focused on superlatives, in which ER (as part of MAX) takes scope over an existentially closed individual argument. Here, consider the relative reading of superlatives.

- (70) a. Taro-ga { ichiban / mottomo } takai yama-ni nobotta.
Taro-NOM ICHIBAN / MOTTOMO high mountain-DAT climbed
‘Taro climbed a higher mountain than anyone else.’ (REL)
- b. Taro climbed the highest mountain (among the climbers).

- (71) $ER > \exists$
 $MAX(\lambda d. \exists x [x \text{ climbed a } d\text{-high mountain}])$

In this configuration, superlative meaning arises by existential closure over individuals and maximization over degrees. Importantly, however, languages also make available a

distinct logical source of superlative interpretation by comparatives, in which a universal quantifier scopes over ER (recall that true superlatives in (70) do not allow differentials, while comparatives in (72) allow them as discussed in Section 4.2.2).

- (72) a. Taro-wa dare-yori-mo takai yama-ni nobotta.
 Taro-TOP who-than-MO high mountain-DAT climbed
 ‘Taro climbed a higher mountain than everyone.’ (REL)
- b. Taro climbed a higher mountain than everyone. (REL)

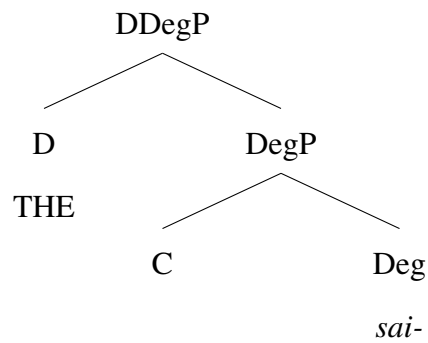
- (73) $\forall > \text{ER}$
 $\forall x[x \in C \rightarrow \text{MAX}(\lambda d. \text{Taro climbed a } d\text{-high mountain}) >$
 $\text{MAX}(\lambda d. x \text{ climbed a } d\text{-high mountain})]$

These two configurations constitute primitive logical sources of superlative meaning, rather than derivational variants of a single underlying structure. While the superlative morphemes investigated in this dissertation instantiate the $\text{ER} > \exists$ configuration, the existence of $\forall > \text{ER}$ superlatives demonstrates that natural language grammar permits two distinct logical sources for constructing superlative interpretations (see Bobaljik 2012: 63–69 for languages that seem to employ $\forall > \text{ER}$ for superlatives). Note that Heim’s 3-place *-est* employs $\forall > \text{ER}$ as its logical source. By contrast, I have shown that $\text{ER} > \exists$ underlies superlatives. The proposed analysis incorporating $\text{ER} > \exists$ correctly captures the variation among superlative morphemes discussed in this chapter, providing a strong support for the analysis.

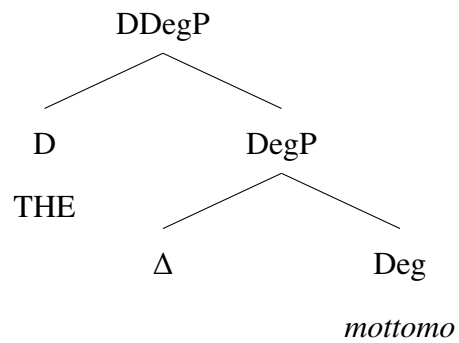
A second independent dimension of variation concerns how the comparison class is determined. In *ichiban* and *mottomo* superlatives, the comparison class is fixed syntactically: (D)DegP undergoes movement, and the comparison class is recovered via ellipsis resolution at the scope position. In contrast, *sai-* superlatives determine

the comparison class pragmatically, through contextual restriction of *C*, without any syntactic movement of DegP.

(74) a. DDegP for *sai*-



b. DDegP for *mottomo*



These two strategies represent structurally distinct ways of fixing the comparison class.

To summarize, this section has argued that, beyond the morphological composition of MAX, superlative formation is structured by two additional dimensions: the logical source of superlative meaning and the determination of the comparison class. First, superlative interpretations can arise from two primitive scope configurations, $ER > \exists$ and $\forall > ER$, where the former is considered true superlatives, while the latter is considered comparatives. Second, languages systematically vary in how the comparison class is determined: *ichiban* and *mottomo* superlatives derive it syntactically via (D)DegP movement and ellipsis resolution, whereas *sai*- superlatives determine it pragmatically through contextual restriction of *C*.

4.5.3 Summary

This section has argued that superlative formation is structured by three independent factors. First, the logical source of superlative meaning depends on the scope of the

comparative ER with respect to quantifiers. While this dissertation has primarily focused on the configuration $ER > \exists$, the alternative configuration $\forall > ER$ is also available in natural language and constitutes a distinct logical source of superlative interpretation. Second, languages vary in how the components of MAX are lexicalized. In Japanese, for example, *ichiban* lexicalizes THE–SUP, *mottomo* lexicalizes SUP–ER, and *sai-* also lexicalizes SUP–ER. Third, languages differ in how the comparison class is determined: syntactically via movement and ellipsis resolution, or pragmatically via contextual restriction.

(75) Three factors of superlative formation

Factors	What varies	Formal parameter
A. Logical source	Scope of ER	$ER > \exists$ or $\forall > ER$
B. Lexical composition	Lexicalization of MAX	THE / SUP / ER
C. Comparison class	Source of comparison class	Syntactic scope (Δ) or Pragmatic resolution (C)

Taken together, superlatives arise from different combinations of these three parameters, and cross-linguistic variation reflects distinct choices along each dimension. Although the present study has examined only a limited set of languages, the proposed typology is expected to extend to a wider range of languages. The selection among these strategies may further interact with independent grammatical properties, such as the availability of degree abstraction (Beck et al. 2004, 2009; see Chapter 2 for the related discussion). A systematic investigation of such interactions, however, is left for future research.

4.6 Conclusion

This chapter has argued that cross-linguistic superlative formation is systematically constrained by three independent grammatical dimensions. First, languages differ in the logical source of superlative meaning, depending on whether the comparative ordering introduced by ER scopes over an existentially closed individual predicate ($ER > \exists$) or is embedded under a universal quantifier ($\forall > ER$). This distinction reveals that superlative meaning does not reduce to a single quantificational configuration, but can arise from distinct logical sources.

(76) Two logical sources of superlative interpretation

a. $ER > \exists$

$MAX(\lambda d. \exists x [x \text{ climbed a } d\text{-high mountain}])$

b. $\forall > ER$

$\forall x [x \in C \rightarrow MAX(\lambda d. \text{Taro climbed a } d\text{-high mountain}) >$

$MAX(\lambda d. x \text{ climbed a } d\text{-high mountain})]$

Second, languages vary in the lexical composition of MAX. While Romance languages distribute THE, SUP, and ER across separate lexical items, other languages bundle these components differently. This decomposition accounts for the observed typological diversity and shows that the resulting typology directly instantiates Bobaljik's Containment Hypothesis, while reinterpreting containment as a semantic necessity rather than a purely morphological universal.

(77) Semantic decomposition of MAX

a. Primitive ER

$$\llbracket \text{ER} \rrbracket = \lambda d. \lambda d'. [d' > d]$$

b. SUP

$$\llbracket \text{SUP} \rrbracket = \lambda R_{\langle d, dt \rangle}. \lambda P_{\langle d, t \rangle}. \lambda d. [P(d) \wedge \forall d' [P(d') \wedge d' \neq d \rightarrow R(d', d)]]$$

c. THE

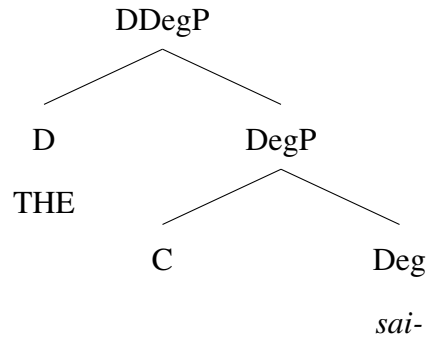
$$\llbracket \text{THE} \rrbracket = \lambda P_{\langle d, t \rangle}. \iota d [P(d)]$$

(78) Variation of superlative composition

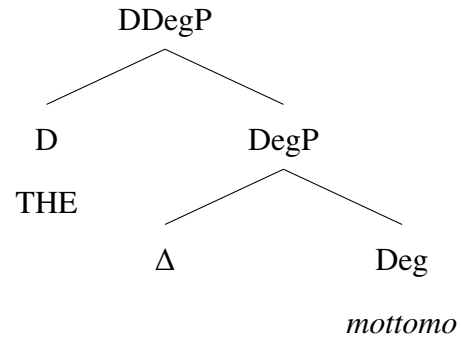
Label	Composition	Morphological realization	Attested languages
A. Each component in a separate lexical entry	THE + SUP + ER	<i>lo más</i> <i>le plus</i> <i>la più</i> <i>a leg-bb</i>	Spanish French Italian Hungarian
B. Two components in one lexical entry			
(a) Lexical superlative	SUP-ER	<i>mottomo / sai-est</i>	Japanese English
(b) Numeral superlative	THE-SUP	<i>ichiban</i> <i>ceyil</i> <i>diyi</i>	Japanese Korean Chinese
(c) Definite comparative	THE-ER	Semantically excluded	Semantically excluded
C. Three components in one lexical entry	THE-SUP-ER	Excluded by Containment	Excluded by Containment

Third, languages differ in how the comparison class is determined. Some languages fix the comparison class syntactically via (D)DegP scope and ellipsis resolution, while others rely on pragmatic restriction of a comparison-class variable *C*.

(79) a. DDegP for *sai-*



b. DDegP for *mottomo*



Together, these three dimensions define a typology that captures both the unity of superlatives—grounded in comparative ordering—and the diversity of their morphological realization and comparison-class determination strategies across languages.

(80) Three factors of superlative formation

Factors	What varies	Formal parameter
A. Logical source	Scope of ER	ER > $\exists$ or $\forall$ > ER
B. Lexical composition	Lexicalization of MAX	THE / SUP / ER
C. Comparison class	Source of comparison class	Syntactic scope (Δ) or Pragmatic resolution (C)

Therefore, this chapter has identified the primitive semantic components and parametric dimensions that define possible superlatives in natural language. By decomposing superlatives into THE, SUP, and ER and by isolating independent variation in logical source and comparison-class determination, this chapter derives both the unity and the diversity of superlatives from a small set of compositional elements.

Chapter 5

Conclusion

5.1 Summary

The analyses developed in this dissertation provide a unified view of comparison in natural language. In both comparatives and superlatives, the core semantic contribution of comparison is uniformly derived by a single primitive ordering relation, ER. Variation in comparatives and superlatives arises from differences in (i) the elements with which ER combines, and (ii) differences in syntactic derivation.

In Chapter 2, I showed that both phrasal and clausal comparatives are derived from clausal sources involving the same 2-place *-er*, where phrasal comparatives differ in that they are derived from an SC source with a larger ellipsis site. Under this analysis, the surface position of the standard phrase marked by *yori* transparently reflects the scope of the 2-place *-er*, yielding narrow and wide readings depending on its scopal position, associated with different adjectival modification structures. This analysis eliminates the need to posit lexical ambiguity in the comparative head, which has been argued to be necessary in the previous literature, and shows that a single 2-place *-er* suffices to derive

both phrasal and clausal comparatives.

In Chapter 3, building on the analysis developed in Chapter 2, I argued that Japanese superlatives reveal a deep structural parallelism between comparatives and superlatives. Superlatives formed with *ichiban* exploit the same primitive ER used in comparatives, differing in that ER is combined with *ichiban* to form a maximality operator, MAX. Because the underlying derivation is shared, with the only difference lying in how the individual argument is saturated in DegP, this approach captures the close parallels in syntactic distribution between *yor*i-phrases in phrasal comparatives and *ichiban* in superlatives. Furthermore, I showed that the proposed analysis correctly derives the correlation between focus sensitivity and exhaustivity effects associated with the structural height at which *ichiban*-ER is interpreted.

In Chapter 4, extending the decomposition of MAX, I argued that the proposed analysis accounts for different superlative morphemes, such as Japanese *mottomo* and *sai*-, as well as English *-est*. By decomposing MAX into three primitive semantic components and allowing these components to be distributed differently across languages, the analysis derives the morphological and interpretive diversity of superlative morphemes. Importantly, this typology predicts which superlative morphemes are possible based on semantic composition, yielding patterns similar to containment effects. I further showed that superlative formation is governed by three independent dimensions: the logical source of superlative meaning, the lexical composition of MAX, and the mechanism by which the comparison class is determined.

Together, these results support a restrictive and unified theory of comparison. Comparison is shown to be built from a single primitive ER, with variation emerging from how this primitive is combined and interpreted in syntactic structure, in particular through

its interaction with a small set of syntactic operations: Merge, Move, and Ellipsis. In superlatives, ER combines with a superlative morpheme to form a maximality operator (MAX), which undergoes movement and is interpreted via ellipsis resolution. In comparatives, by contrast, ER itself undergoes movement and combines with the standard marker, with ellipsis resolution contributing to the interpretation of the standard phrase. Japanese plays a central role in motivating this theory because it makes the scope and interpretation of degree expressions overtly visible in surface syntax, contrary to the view that Japanese lacks degree abstraction. More broadly, the analysis contributes to our understanding of comparison as a general linguistic concept, demonstrating how a wide range of phenomena involving comparatives and superlatives can be derived from a single underlying notion of ordering.

5.2 Theoretical Implications

While this dissertation has primarily focused on degree comparison in the individual domain, comparison in event, temporal, and modal domains has also been noted in the literature (e.g., Romero 2010, 2013; Krasikova 2012; Howard 2014; Loccioni 2018; Tanaka and Mizutani 2025). An important direction for future research is therefore to see whether the same analysis can be extended uniformly to these domains, and how domain-specific factors interact with syntactic derivation and compositional structure.

As an illustration, consider a scenario in which Taro makes three attempts to jump and touch a high point on a wall marked with four heights (3.0m, 2.9m, 2.8m, and 2.7m). Suppose that Taro reaches 2.8m on his first attempt, 2.9m on his second attempt, and 2.7m on his final attempt. In this context, the following sentence is felicitous.

- (1) Taro-wa nikaime-ni ichiban takai ten-o sawatta.
 Taro-TOP second.time-DAT ICHIBAN high point-ACC touched
 ‘Taro touched the highest point the second time.’

This sentence does not mean that Taro touched a point that is higher than any other point on the wall, nor that he touched a higher point than any other individual did. Rather, it means that his second attempt achieved the best result among his attempts. This interpretation is naturally captured as maximalization over a set of degrees in the event domain, as in (2).

- (2) $\text{MAX}(\lambda d. \exists e [\text{Taro touched a } d\text{-high point in } e])$

In this case, the comparison class consists of a set of degrees associated with Taro’s touching events. By contrast, Heim’s 3-place *-est* faces difficulties here and would likely require positing distinct types of degree heads that take event arguments (the same issue arises for a 3-place *-er* in comparatives). Once the individual-based restriction is lifted, however, the same degree comparison naturally extends to event, temporal, and modal domains.

From this perspective, the traditional taxonomy of absolute versus relative readings does not reflect a fundamental grammatical distinction. Instead, both readings can be captured as instances of maximalization over degree sets drawn from different semantic domains, as illustrated in (3).

- (3) Maximality in individual and event domains
- a. $\text{MAX}(\lambda d. \exists x [x \text{ is a } d\text{-high mountain}])$
 - b. $\text{MAX}(\lambda d. \exists e \exists x [x \text{ climbed a } d\text{-high mountain in } e])$

In the former case, corresponding to the absolute reading, the comparison class consists of a set of degrees associated with different mountains. In the latter case, corresponding to the relative reading, the comparison class consists of a set of degrees associated with events in which individuals climbed different mountains. The present approach locates variation in the source domain of degree maximalization, suggesting that comparatives, superlatives, and degree expressions more generally may range over different kinds of semantic entities. This shift in perspective calls for a systematic reexamination of how comparison is encoded across semantic domains and highlights the possibility that degree-based meaning extends more broadly than previously recognized.

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