THE SYNTAX AND SEMANTICS OF NON-STANDARD WH-CONSTRUCTIONS IN

KOREAN

by

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A Dissertation Submitted in

Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

in Linguistics

at

The University of Wisconsin–Milwaukee

May 2022

ABSTRACT

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The University of Wisconsin–Milwaukee, 2022
Under the Supervision of Professor Nicholas Fleisher

The following is an investigation of the syntax and semantics of two types of non-standard
wh-construction in Korean: one concerns so-called *why*-like *what*-interrogatives, where *what*-
questions are construed as *why*-questions asking for cause/reason/purpose, and the other
concerns *what*-exclamatives, which are used to express a speaker's emotive attitude toward
a certain state of affairs or degree. Both of these *wh*-constructions are viewed as non-
standard in the sense that they behave differently from standard *what*-questions. In this
dissertation, I aim to provide a syntactically and semantically precise characterization of the
two non-standard *wh*-constructions in Korean.

Korean *why*-like *what*-interrogatives, namely *mwe-l*-interrogatives, raise many theoretical
questions of their own. Of particular interest and importance, of course, is the question of
how *what*-questions can be interpreted as causal/reason/purpose questions without the help
of a *wh*-adjunct like *why*. As the first attempt to address the challenging question within
a compositional semantic framework, I propose to analyze Korean *why*-like *what*-questions
as 'ordinary *what*'-questions including a CAUSE-operator that denotes a function taking two
propositions (construed as sets of events) and returning true iff an event of propositional type
p (introduced by *what*) is the CAUSE of the definite event of propositional type q (introduced

by the rest of the clause). On such a view, Korean *why*-like *what*-questions are interpreted as asking about what proposition p is such that an event of propositional type p is the CAUSE of the salient event in question. The proposed analysis enables us to account for both regular and idiosyncratic properties of Korean *why*-like *what*-questions without the assumption that *what* behaves like a *wh*-adjunct corresponding to *why*.

Another major contribution of this dissertation is to demonstrate, to my knowledge for the first time, the existence of *what*-exclamatives in Korean and to provide a thorough description and analysis of them. I argue that the descriptive content of Korean *what*-exclamatives, namely *mwe-l-{ku/i}lehkey*-exclamatives, denotes a maximal degree (d) derived via a maximality operator *{ku/i}lehkey* 'so', a function from a set of degrees to a unique maximal degree in the set. In terms of illocutionary speech acts, I propose that Korean *what*-exclamatives are interpreted as assertions rather than expressives. To capture this assertive speech act, I argue that the maximal degree contributed by the *wh*-clause is fed to an assertive force operator, EXCL-Op, which is a function of the form $d \geqslant s$, where s refers to a contextually provided standard established by the speaker's expectation; this assertive proposition entails a violation of the speaker's expectation, which in turn naturally gives rise to a sense of surprise or other relevant emotions of the speaker. Given that the speaker evaluates the assertive proposition (i.e., $d \geqslant s$) as positive or negative depending on the context, the assertive content is assumed to be used as input to an evaluative operator EVAL-Op, a function from propositions to evaluative attitudes on the part of the speaker. This study allows us to improve our understanding of cross-linguistic variation in *wh*-exclamatives and to fill in a gap in the description of Korean exclamatives.

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LIST OF ABBREVIATIONS

The following is a list of abbreviations used in glossing examples.

ACC	Accusative
ASP	Aspect
CL	Classifier
COP	Copular
COMP/C	Complementizer
CONN	Connective
DAT	Dative
DECL	Declarative
EXCL	Exclamative
EXH	Exhortative
GEN	Genetive
IMV	Imperative
INF	Infinitive
LOC	Locative
MASC	Masculine
MOD	Modifier
NEG	Negation
NOM	Nominative

PART	Particle
PASS	Passive
PFV	Perfective
PL	Plural
PRES	Present
PROG	Progressive
PST	Past
QUE	Question
SBJ	Subject
SFP	Sentence-Ending Particle
SG	Singular
TOP	Topic
VOC	Vocative

ACKNOWLEDGEMENTS

It is a pleasure to thank everybody who made this dissertation possible.

First and foremost, I would like to express my sincere gratitude to my PhD advisor, Dr. Nicholas Fleisher. It has been a great honor to work under his supervision and benefit from his insightful advice, comments, and criticism. Finishing this dissertation would not have been possible without him. He has always been available for answering my endless questions patiently throughout the progress of my research. Last but not least, I would like to thank him for all the corrections and revisions made to text that is about to be read.

My deep thanks also go to the other committee members, Dr. Hamid Ouali, Dr. Garry Davis, and Dr. Peter van Elswyk, who provided me insightful comments and feedback that helped to improve the quality of this dissertation.

I would also like to thank the other faculty members who supported me during my PhD studies at UWM: Dr. Hanyong Park, Dr. Jae Yung Song, Dr. Anne Pycha, Dr. Sandra Pucci, Dr. Fred Eckman, and Dr. Edith Moravcsik. My thanks also go to my TA supervisor, Dr. Kelsie Pattillo, who made my TA job enjoyable. I would also like to thank Sharon Geibel for her administrative and technical support.

I would like to express my sincere appreciation to my MA advisor, Dr. Jong-Bok Kim, who initially taught me how to do linguistic research and encouraged me every time I had a hard time during my graduate studies. I am also grateful to Dr. Seikyung Cho, Dr. Taeho Kim, Dr. James Hye-Suk Yoon, and Dr. Sanghoun Song for supporting me during my PhD application period.

CHAPTER 1

Introduction

1.1 Motivation and objectives

The following is a study of two types of non-standard *wh*-construction in Korean. One concerns so-called *why*-like *what* interrogatives, where *what*-questions are interpreted as causal/reason/purpose questions. The other concerns *what*-exclamatives, which are used to express a speaker's emotion/attitude towards a certain state of affairs or degree. Their typical examples are shown in (1).

(1) <u>Korean *why*-like *what*-interrogatives:</u>

 a. mwe-l tto milwekhi-ey ka-ss-ni?

   what-ACC again Milwaukee-LOC go-PST-QUE

   'Why (the hell) did you go to Milwaukee again?'

   <u>Korean *what*-exclamatives:</u>

 b. mwe-l kulehkey maywun kochwu-lul mek-ess-e!

   what-ACC so   spicy pepper-ACC eat-PST-EXCL

   'What spicy peppers you ate!'

As to Korean *why*-like *what*-interrogatives, there are only a few studies on them (Park & Kang 2020; Kim 2021), while those in other languages have been widely discussed both from a syntactic and semantic perspective (Holler 2009; Munaro & Obenauer 1999, 2002; Nakao 2009; Ochi 2004, 2015; Pan 2014; a.o.). In particular, I am aware of no previous work that investigates the syntax-semantics interface of Korean *why*-like *what*-interrogatives. As an attempt to fill this research gap in the literature, I aim to provide a syntactically and semantically precise characterization of Korean *why*-like *what*-interrogatives, especially from a cross-linguistic perspective, and offer an accurate analysis of them.

It has been traditionally assumed that Korean is a *wh*-in situ language that does not employ *what*-exclamatives. Until now, to the best of my knowledge, there have been no attempts to prove the existence of Korean *what*-exclamatives. The present research, there-fore, aims to close this gap in the description of Korean exclamatives by demonstrating that *mwe-l–{ku/i}lehkey*-clauses like (1b) are recognized as *what*-exclamatives, based on an ex-tensive literature review on *wh*-exclamatives. In doing so, this study allows us to develop our understanding of cross-linguistic variation in *wh*-exclamatives.[1]

1.2   Research questions

As we will see in the remainder of the dissertation, the two non-standard *wh*-expressions— exclamative *what* and *why*-like *what*—are syntactically unique in many respects, as compared to their standard counterpart, i.e., argumental *what*. For example, unlike standard *what*,

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[1]It also needs to be addressed in future research whether Korean uses true *how*-exclamatives or not. Though I leave it unsettled here, I hope the present research will be of help to those who try to resolve the issue in the future.

the non-standard *wh*-expressions are not allowed to occur before the subject, as illustrated in (2).

(2)   Korean *why*-like *what*-interrogatives:

a. *mwe-l   Mimi-nun tto   milwekhi-ey   ka-ss-ni?

what-ACC Mimi-TOP again Milwaukee-LOC go-PST-QUE

'Why (the hell) did Mimi go to Milwaukee again?'

Korean *what*-exclamatives:

b. *mwe-l   Mimi-nun kulehkey maywun kochwu-lul   mek-ess-e!

what-ACC Mimi-TOP so   spicy   pepper-ACC eat-PST-EXCL

'What spicy peppers Mimi ate!'

Korean ordinary *what*-interrogatives:

c. mwe-l   Mimi-nun mek-ess-ni?

what-ACC Mimi-TOP eat-PST-QUE

'What did Mimi eat?'

While the non-standard *wh*-phrase *mwe-l* in each construction fails to appear before the subject *Mimi-nun*, as in (2a) and (2b), the standard counterpart can, as in (2c).

A close investigation of the two types of non-standard *what* reveals that they also exhibit distinct semantic properties. An apparent semantic feature that distinguishes them from their standard counterpart is that they do not serve as a semantic argument of a lexical head. In the *why*-like *what* interrogative in (1a), the *wh*-phrase in question occurs with the intransitive verb *ka* 'go', which is unable to take it as its semantic argument (aside from its subject). In the *wh*-exclamative in (1b), it is not the exclamative *mwe-l* but the NP *kulehkey maywun kochwu-lul* 'spicy peppers' that constitutes the argument of the strict transitive verb

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mek 'eat'. Meanwhile, as shown in (2c), the standard *wh*-phrase *mwe-l* functions as the direct object in the interrogative sentence.

The above facts, and others that we will discuss later, prompt us to consider the following simple but fundamental question:

- RQ1: What is the syntactic and semantic contribution/status of non-standard *what* in each construction?

The remainder of this dissertation constitutes an attempt to answer the question from a cross-linguistic perspective.

It is known that in languages such as English, information-seeking *wh*-interrogatives have different syntactic and morphological properties from *wh*-exclamatives. This is why they are regarded as different clause types. Let me illustrate this with the examples in (3).

(3)   English *wh*-interrogatives:
    a. How expensive is the car?

        English *wh*-exclamatives:
    b. How very expensive the car is!

While the *how*-interrogative in (3a), asking about what the degree of expensiveness of the car in question is, involves Subject-Auxiliary Inversion (SAI), the *how*-exclamative in (3b) does not occur with SAI; if it does, it becomes ungrammatical, as in *How very expensive is the car!* The two clause types also display different morphological features: while the exclamative *wh*-phrase can contain an expression like *very*, the interrogative *wh*-phrase cannot, as in *How very expensive is the car?*

Notice that not all languages distinguish between *wh*-interrogatives and *wh*-exclamatives in the way English does. In languages such as Italian, *wh*-interrogatives and *wh*-exclamatives are morpho-syntactically ambiguous. Consider the Italian examples in (4).

(4)   Italian *wh*-interrogatives:

a. Quanti   romanzi ha scritto la   tua   amica?

How many novels   has written the your friend

'How many novels did your friend write?'

Italian *wh*-exclamatives:

b. Quanti   romanzi ha scritto la   tua   amica!

How many novels   has written the your friend

'How many novels your friend wrote!'   (Kellert et al. 2018: 166)

The same sentence containing the *wh*-phrase of the form 'Quanti+N' can be construed either as a *wh*-interrogative or a *wh*-exclamative. Different from English, there are no morpho-syntactic cues at the surface level that we can use to distinguish between the two clause types. In this case, as Kellert et al. (2018) argue, listeners can have access to phonetic cues (e.g., intonation contour) for clause-type identification (see Kellert et al. 2018 for detailed discussion).

As briefly shown above, 'non-standard *wh*'-exclamatives have been compared with 'standard *wh*'-interrogatives in the literature. On the other hand, to my knowledge, there have been no attempts to compare *wh*-exclamatives with 'non-standard *wh*'-interrogatives to identify similarities and differences between the clause types in terms of syntax and semantics. In this dissertation, such an attempt is made with Korean *what*-exclamatives and *why*-like *what*-interrogatives.

In Korean, *what*-exclamatives and *why*-like *what*-interrogatives can be ambiguous when they occur with a sentence ending particle *e*, one that is used to informally mark declaratives, interrogatives, exclamatives, imperatives, and exhortatives (see Mun 2003 and references therein). Consider the pair of examples in (5).

(5)   <u>Korean *why*-like *what*-interrogatives</u>:

    a. mwe-l   kulehkey pissan   sikyey-lul   sa-ss-e?

       what-ACC so   expensive wristwatch-ACC buy-PST-QUE

       'Why (the hell) did you buy such an expensive wristwatch?'

       <u>Korean *what*-exclamatives</u>:

    b. mwe-l   kulehkey pissan   sikyey-lul   sa-ss-e!

       what-ACC so   expensive wristwatch-ACC buy-PST-EXCL

       'What an expensive wristwatch you bought!'

As in Italian cases like (4), the same *wh*-clause can be interpreted either as an information-seeking question or an exclamative. Recognition of this fact poses the following important questions (setting aside phonetic issues):

- RQ2: Do *what*-exclamatives and *why*-like *what* interrogatives in Korean involve the same syntactic structure?

  – If they have the same structure, how are their different meanings/illocutionary force obtained from the same structure?

  – If they have different structures, how are their different meanings/illocutionary force connected to their different syntactic structures?

These are additional research questions that I shall seek to answer throughout this dissertation.

1.3 Chapter previews

The majority of the dissertation is devoted to a detailed syntactic and semantic analysis of *why*-like *what*-interrogatives and *what*-exclamatives in Korean.

In chapter 2, I investigate *why*-like *what*-interrogatives. In doing so, I first elucidate the syntactic and semantic properties of *why*-like *what*-questions from a cross-linguistic point of view. Based on them, then, I provide an analysis of Korean *why*-like *what*-questions, according to which they are treated as 'ordinary *what*'-questions involving a CAUSE-operator that expresses a causal relation between two events. Specifically, I argue that the nominal *wh*-adjunct WHAT (*mwe-l* in (5a)) forms a complex *wh*-phrase with a CAUSE-operator, a function that takes as its arguments two propositions (construed as sets of events of type $\langle s,t \rangle$) and returns true iff an event of propositional type p is the CAUSE of the salient event of propositional type q. The nominal *wh*-adjunct WHAT serves as the first propositional argument of the CAUSE-operator and the rest of the clause as its second propositional argument. Under a Hamblin/Karttunen-style question semantics, a WHAT-question is interpreted as yielding a set of propositions of the form 'An event of propositional type p is the CAUSE of the event of propositional type q'. On this semantic view, for example, the WHAT-question in (5a) can be paraphrased as 'What proposition p is such that an event of propositional type p is the CAUSE of the event of the addressee's buying such an expensive wristwatch'.

In chapter 3, I demonstrate the existence of *what*-exclamatives in Korean and provide

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a syntactic and semantic analysis of them. There is an ongoing debate in the literature about whether *wh*-exclamatives denote sets of propositions, like *wh*-interrogatives, or degree properties, like other degree constructions. Here I present fresh insights into the issue by analyzing the descriptive content of Korean *what*-exclamatives as a maximal degree (d) derived via a maximality operator *{ku/i}lehkey* 'so', a function from a set of degrees to a unique maximal degree in the set. On this view, for example, the *what*-exclamative in (5b) is interpreted as denoting a maximal degree d such that the addressee bought a d-expensive wristwatch. In terms of illocutionary speech acts, it is controversial in the literature whether *wh*-exclamatives count as expressives or assertions. Regarding this issue, I propose that Korean *what*-exclamatives are interpreted as assertions given that their content can be denied/rejected and that they can be used as responses to information-seeking questions. To capture this assertive speech act, I argue that the maximal degree (contributed by the *mwel*-clause) serves as input to an assertive force operator in Force^0 that denotes a function of the form $d \geqslant s$, where s refers to a contextually provided standard established by the speaker's expectation. On this view, the utterance of (5b) results in an assertion that the maximal degree d such that the addressee bought a d-expensive wristwatch exceeds a contextually provided standard established by the speaker's expectation. This assertive proposition entails speaker unexpectedness, which naturally gives rise to a sense of surprise or other relevant emotions/attitudes of the speaker. Last but not least, Korean *what*-exclamatives are intriguing in that the speaker evaluates the assertive content (i.e., $d \geqslant s$) as positive/good or negative/bad depending on contexts. To capture this pragmatic aspect, I argue that the assertive content serves as input to an evaluative operator, EVAL-Op, a function that maps the assertive proposition onto the speaker's evaluative attitude towards it.

In chapter 4, based on the results of chapter 2 and 3, I address the research questions set forth in chapter 1.

CHAPTER 2

The structure of *why*-like

what-interrogatives in Korean

2.1 Introduction

It has been cross-linguistically observed that *what*-questions can be interpreted as *why (the hell)*-questions in a context in which the speaker is emotionally affected (e.g., being surprised) (see Holler 2009; Munaro & Obenauer 1999, 2002; Nakao 2009; Ochi 2004, 2015; a.o.). As (1) illustrates, such *why*-like *what*-questions (henceforth, WHAT-questions) have been observed in English, German, Hungarian, Serbo-Croatian, Czech, French, Russian, Modern Greek, Hebrew, Bulgarian, Japanese, Chinese, Turkish, and so on.

(1) a. Malcom, {**what**/**why**} are you walking like that? (English, Berizzi 2010: 129)

b. **{was/warum}** schläfst du   so lange?

what/why   sleeps   you so long

'Why are you sleeping so long?'   (German, Ochi 2004: 33)

c. **{mit/miert}** ulsz   itt?

what-ACC/why sit-2SG here

'Why are you sitting here?'   (Hungarian, Ochi 2004: 33)

d. **que** ne   partez-vous?

what NEG leave-you

'Why don't you leave?'   (French, Munaro & Obenauer 1999: 208)

e. **{chto/pochemu}** ty   smejoshsja?

what/why   you laugh

'Why do you laugh?'   (Russian, Ochi & Hsin 1999: 315)

f. **{ti/giati}** trehi esti aftos?

what/why runs so   he

'Why is he running like this?'   (Modern Greek, Ochi & Hsin 1999: 315)

g. **{ma/lama}** ata rac?

what/why   you run

'Why are you running?'   (Hebrew, Ochi & Hsin 1999: 317)

h. {**kakvo**/**zašto**} si se umârlusila?

what/why aux self get down

'Why are you so depressed?' (Bulgarian, Ochi & Hsin 1999: 318)

i. Kare-wa {**nani-o**/**naze**} sawai-dei-ru no?

He-TOP what-ACC/why make-noise-PROG-PRES QUE

'Why is he making a noise?' (Japanese, Nakao 2009: 241)

j. John huang **sheme**?

John hurry/panic what

'Why is John hurrying/panicking?' (Chinese, Ochi & Hsin 1999: 317)

k. {**ne**/**neden**} ağlıyorsun?

what/why you are crying

'Why are you crying?' (Turkish, Iida 2013)

Korean is another *wh*-in situ language that employs WHAT-questions, as illustrated in (2) (Kim 2021; Park & Kang 2020).

(2) a. Mimi-nun {**mwe-l**/**way**} kulehkey manhun chayk-ul ilk-ess-ni?

Mimi-TOP what-ACC/why so many book-ACC read-PST-QUE

'Why (the hell) did Mimi read so many books?'

b. ne-nun {**mwe-l**/**way**} kulehkey haymalkkey wus-ko iss-ni?

you-TOP what-ACC/why so brightly smile-CONN be-QUE

'Why (the hell) are you smiling so brightly?'

As we see from the translations, the *wh*-question introduced by the nominal *wh*-word *mwe* 'what' receives the *way* 'why'-interpretation. The nominal *wh*-phrase behaves as a *wh*-adjunct, as evidenced by its occurrence in either a transitive clause with the direct object, as in (2a), or an intransitive clause, as in (2b). WHAT-questions like (2) feature a strong speaker emotion: for example, the utterance of (2a) expresses the speaker's surprise at the unexpected event of Mimi's reading so many papers (Kim 2021).

As we will see below, Korean WHAT-questions provide an unusually rich set of linguistic diagnostics that we can use to investigate cross-linguistic variation in WHAT-questions. However, they have received considerably less attention in the literature. To fill this research gap, this chapter aims to elucidate the syntax and semantics of Korean WHAT-questions by comparing them to their counterparts in other languages (e.g., Japanese, Chinese, German) when relevant.

WHAT-questions raise many theoretical questions of their own. The question of particular interest and significance is how *what*-questions can be construed as *why*-questions. One possible way to address the question is to analyze the nominal *wh*-adjunct WHAT as a reason/causal *wh*-adjunct, as many of the previous studies do (e.g., Kim 2021; Nakao & Obata 2009; Ochi 2004, 2014). Such an analysis at first glance seems to be plausible in Korean contexts, given that the nominal *wh*-adjunct *mwe-l* can be replaced by the regular reason/causal *wh*-adjunct *way* without affecting the intended meaning, as shown in (2). However, as will be discussed in detail below, the treatment of the nominal *wh*-adjunct simply as a *wh*-adjunct corresponding to *way* is inadequate to account for its syntactic and semantic peculiarities. Consider (3) and (4) for instance.

(3) {way/*mwe-l} Mimi-nun kulehkey manhun chayk-ul ilk-ess-ni?

why/what-ACC Mimi-TOP so   many   book-ACC read-PST-QUE

'Why (the hell) did Mimi read so many books?'

(4) A: John-un   tto   hankwuk-ey ka-ss-e.

John-TOP again South.Korea go-PST-DECL

'John went to South Korea again.'

B: way/*mwe-l?

why/what-ACC

'Why?'

The above examples illustrate that unlike the ordinary reason/causal *wh*-adjunct *way*, the nominal *wh*-adjunct *mwe-l* is barred from occurring in a sentence-initial position and standing alone to ask for reason or cause. These apparent asymmetries are hard to explain by assuming that the nominal *wh*-adjunct acts as a reason/causal *wh*-adjunct.

As an attempt to resolve the aforementioned semantic question within a compositional semantic framework, I propose to analyze WHAT-questions as 'ordinary *what*'-questions involving a CAUSE-operator which are assumed to have the following LF structure:

(5)

ForceP
- CP: t
  - NP$_1$: $\langle\langle s,t\rangle,t\rangle$
    - N': $\langle s,t\rangle$
      - mwe-l 'WHAT'
    - CAUSE-Op: $\langle\langle s,t\rangle,\langle s,t\rangle,t\rangle$
  - λ_1
  - C': $\langle s,t\rangle$
    - C': t
      - TP
        - T'
          - vP
            - t$_1$
            - v'
              - ...
          - T
        - C
- Force
  - Q-Op
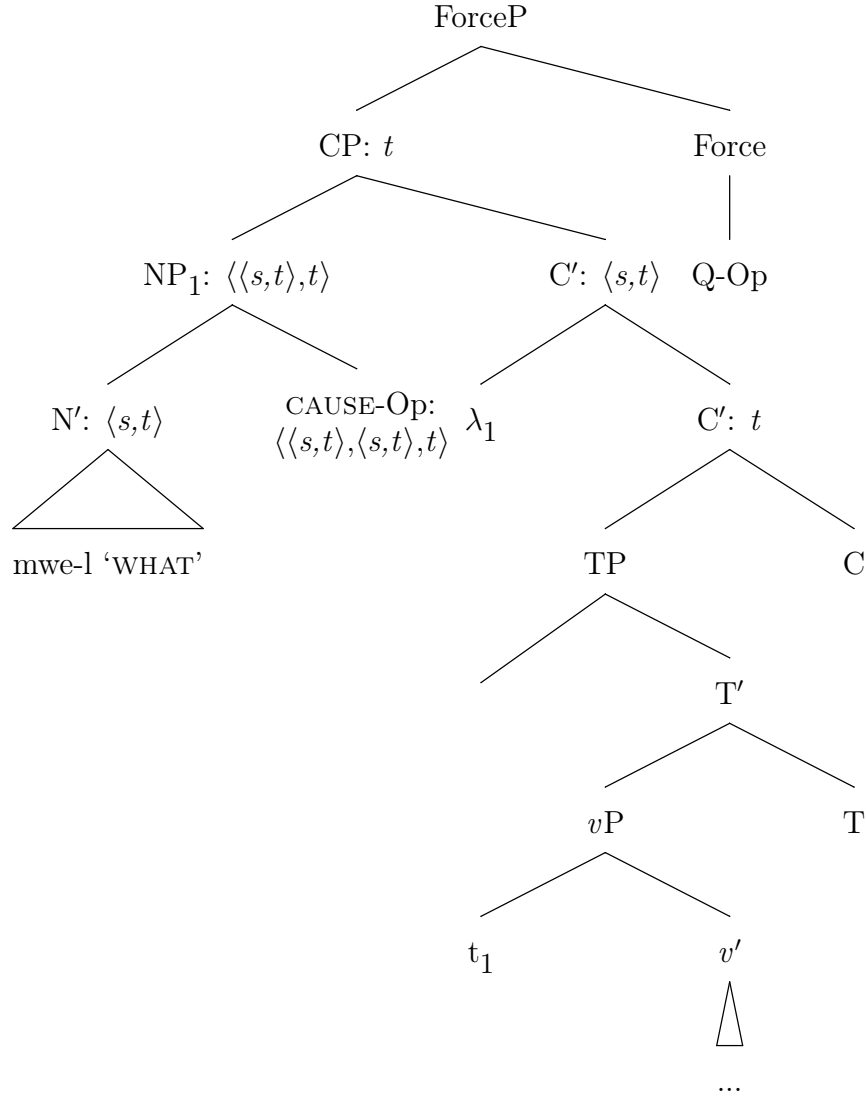
The key ideas of the analysis are as follows. The nominal *wh*-adjunct WHAT forms a complex *wh*-phrase with a CAUSE-operator, a function that takes as its arguments two propositions (construed as sets of events of type $\langle s,t\rangle$) and yields true iff an event of propositional type p is the CAUSE of the definite event of propositional type q. As we see above, the nominal *wh*-adjunct, construed as an ordinary *what* denoting a proposition, serves as the first semantic argument of the CAUSE-operator, and the rest of the clause—i.e., C' constituent—as its second semantic argument. On this analysis, WHAT-questions are interpreted as ordinary *what*-questions asking about what proposition p (introdueced by WHAT) is such that an

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event of propositional type p is the CAUSE of the event of propositional type q. By way of example, the WHAT-question in (2a) is interpreted as 'What proposition p is such that an event of propositional type p is the CAUSE of the event of Mimi's reading so many books?' A possible answer to the *what*-question is "She is currently writing a dissertation"; that is, the event of Mimi's writing a dissertation is the cause of the event of her reading so many papers. As we will see below, the compositional syntactic and semantic analysis I propose here helps us account for various idiosyncratic properties of Korean WHAT-questions, including their inability to be embedded under resolutive verbs, co-occurrence of WHAT with clause-mate *why*, anti-intervention effects of WHAT, and obligatory wide scope readings of WHAT relative to negation.

2.1.1 Content of this chapter

The next section describes key grammatical properties of Korean WHAT-questions. Section 2.3 reviews previous analyses of WHAT-questions in Korean (Kim 2021), Japanese (Miyagawa 2017), and Chinese (Yang 2021), and discusses some empirical and theoretical issues with them. Section 2.4 offers an alternative analysis of Korean WHAT-questions. Section 2.5 concludes.

2.2 Key properties of WHAT-questions

I begin by presenting some key grammatical properties of Korean WHAT-questions, while referring to their counterparts in other languages, when relevant, in order to also explore cross-linguistic patterns of WHAT-questions.

2.2.1 Grammatical status of WHAT

One of the characteristic features of Korean WHAT is that unlike its argumental counterpart, it should surface as a reduced form:

(6) a. Mary-nun {mwues-ul/mwe-l} mek-ess-ni?

Mary-TOP what-ACC/what-ACC eat-PST-QUE

'What did Mary eat?'

b. John-un {*mwues-ul/mwe-l} tto kyelsekha-yss-ni?

John-TOP what-ACC/what-ACC again absent-PST-QUE

'Why (the hell) was John absent again?'

As shown in (6a), both reduced and unreduced forms of argumental *what* are permitted in canonical *wh*-questions. As shown in (6b), on the other hand, only the reduced form *mwe* is licensed as the nominal *wh*-adjunct WHAT. Note that Cantonese WHAT exhibits the same morphological pattern:

(7) a. keoi maai-zo mat(ye) aa?

3SG buy-PFV what SFP

'What did he buy?' (Cheng 2021: (8))

b. mat(*ye) lei haidou haam ge?

what 2SG PROG cry SFP

'Why are you crying?' (ibid.: (9))

(7a) shows that either *matye* or *mat* 'what' can be used as an argumental *wh*-phrase. (7b)

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illustrates that only the reduced form *mat* is able to function as the nominal *wh*-adjunct WHAT.

Such a unique morphological behavior of WHAT is taken to be language-specific, given that Japanese permits a unreduced form of *what*—i.e., *nani*—to be used as WHAT, as shown in (8).[1]

(8) a. kare-wa nani-o   sawai-dei-ru   no?

     he-TOP what-ACC make.noise-PROG-PRES QUE

     'Why is he making noise?'   (Nakao & Obata 2009: (1a))

   b. John-wa   nani-o   hashitteru no?

     John-TOP what-ACC running   QUE

     'Why the hell is John running?'   (Ochi 1999: 170)

Another peculiar property of Korean WHAT concerns the fact that unlike its ordinary counterpart, it cannot be paraphrased:

(9) a. Mimi-nun {mwe-l/etten kes-ul}   tto   mek-ess-ni?

     Mimi-TOP what-ACC/which thing-ACC again eat-PST-QUE

     'What/Which thing did Mimi eat again?'

   b. John-un   {mwe-l/*etten kes-ul}   tto   ilpon-ey   ka-ss-ni?

     John-TOP what-ACC/which thing-ACC again Japan-LOC go-PST-QUE

     'Why (the hell) did John go to Japan again?'

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[1]To my knowledge, it has not been reported in the literature whether the reduced form *nan* 'what' can also be employed in Japanese WHAT-questions.

In the canonical *wh*-question (9a), the argumental *wh*-phrase *mwe-l* can be replaced by the discourse-linked *wh*-expression *etten kes-ul* 'which thing-ACC', but this is not possible in the WHAT-question (9b).

A further striking difference between WHAT and its standard counterpart comes from the fact that unlike the latter, the former can be compatible with various types of verb, just like *way* 'why':

(10) a. John-un {way/mwe-l} tto pissan cha-lul sa-ss-ni?

John-TOP why/what-ACC again expensive car-ACC buy-PST-QUE

'Why (the hell) did John buy an expensive car again?'

b. ne-nun {way/mwe-l} kulehkey ilccik ttena-ss-ni?

you-TOP why/what-ACC so early leave-PST-QUE

'Why (the hell) did you leave so early?'

c. elum-i {way/mwe-l} kulehkey ppalli nok-ass-ni?

ice-NOM why/what-ACC so quickly melt-PST-QUE

'Why (the hell) did the ice melt so quickly?'

d. os-i {way/mwe-l} tto ccic-e cy-ess-ni?

dress-NOM why/what-ACC again tear-CONN PASS-PST-QUE

'Why (the hell) was the dress torn again?'

As observed here, the nominal *wh*-expression WHAT can occur with a transitive verb (with the direct object), as in (10a), an intransitive verb, as in (10b), an unaccusative verb, as in

(10c), or a passive verb, as in (10d). This distributional fact clearly indicates that Korean WHAT behaves like a *wh*-adjunct, not a *wh*-argument.

Note that Japanese WHAT exhibits the same distributional patterns in terms of verb types:

(11) a. kare-wa nani-o   henna uta-o   utat-tei-ru   no?
          he-TOP what-ACC funny song-ACC sing-PROG-PRES QUE
          'Why is he singing a funny song?'   (Nakao & Obata 2009: (2b))

     b. John-wa   nani-o   sawaideiru no?
         John-TOP what-ACC clamoring QUE
         'Why is John clamoring?'

     c. kare-wa nani-o   itsumo okurete toochakusu-ru no?
         he-TOP what-ACC always late   arrive-PRES   QUE
         'Why doe she always arrive late?'   (ibid.: (13b))

     d. kare-wa nani-o   minna-ni   izime-rare-tei-ru   no?
         he-TOP what-ACC everyone-by bully-PASS-PROG-PRES QUE
         'Why is he bullied by everyone?'   (ibid.: (13a))

As illustrated here, the nominal *wh*-adjunct *nani-o* is compatible with a transitive verb (with the direct object), an intransitive verb, an unaccusative verb, or a passive verb.

Note, further, that WHAT in languages like German, Hungarian, and Chinese can also appear in a transitive clause (with the direct object) or an intransitive clause:

(12) a. was   schlägst du   denn schon wieder den Hund?   (German)

what beats   you PART PART again   the dog

'Why are you beating the dog again?'   (Holler 2009: (1))

b. Was   schläfst du   so lange?

what sleeps   you so long

'Why are you sleeping so long?'   (Ochi 2004: (14))

(13) a. mit   fenyegeted   a   gyerekeket?   (Hungarian)

what-ACC threaten-2SG the kids-ACC

'Why are you threatening the kids?'

b. mit   ulsz   itt?

what-ACC sit-2SG here

'Why are you sitting here?'   (Ochi 2004: (15a))

(14) a. mat lei   sik (li-wun) min   gaa?   (Cantonese)

what you eat this-CL noodle SFP

'Why are you eating (this bowl of) noodle?'

b. mat   lei   haidou fan-gaau   gaa?

what you PROG   sleep-sleep SFP

'Why are you sleeping?'   (Cheng 2021: (18))

These cross-linguistic data tell us that the adjunct-like behavior of WHAT may be language-general.

Before concluding this section, it is worth to stress the fact that Korean WHAT can bear accusative Case *-l* even when it occurs with intransitive, unaccusative, and passive verbs, all of which are independently unable to assign accusative Case. Concerning this issue, I follow Ochi (1999), Nakao & Obata (2009), and others in assuming that the nominal *wh*-adjunct WHAT has an 'inherent' Case, rather than a 'structural' Case (see Kim 2016 for Korean Case system).[2]

2.2.2   Word order

A notable feature of Japanese WHAT-questions relates to a fixed word order between WHAT and the direct object. Ochi (2014) observes that Japanese WHAT cannot be preceded by the direct object:

(15)   a.   nani-o   kare-wa he-TOP funny uta-o   utat-teiru no?

what-ACC he-TOP funny song-ACC sing-PROG QUE

'Why is he singing a funny song?'

---

[2]As shown in (i), Korean WHAT can also have nominative Case *-ka*.

(i)   cha-ka   mwe-{l/ka}   ilehkey pissa-ni?
         car-NOM what-ACC/NOM so   expensive-QUE
         'Why (the hell) is the car so expensive?'

However, the distribution of nominative Case is more restricted than that of accusative Case. For example, the nominative Case is unavailable when the subject has a topic marker *-(n)un*, as shown in (ii).

(ii)   a.   Mimi-nun mwe-{*ka/l}   tto   pelkum-ul nay-ss-ni?
             Mimi-TOP what-NOM/ACC again fine-ACC   pay-PST-QUE
             'Why (the hell) did Mimi pay the fine again?'

        b.   ne-nun   mwe-{*ka/l}   kulehkey nulikey kel-ess-ni?
             you-TOP what-NOM/ACC so   slowly walk-PST-QUE
             'Why (the hell) did you walk so slowly?'

In this study, I confine my attention to accusative WHAT-questions so as to examine a wide range of data. I leave it to future work to investigate distributional variation between accusative and nominative WHAT.

b. kare-wa nani-o   henna uta-o   utat-teiru no?

   he-TOP what-ACC funny song-ACC sing-PROG QUE

   'Why is he singing a funny song?'

c. *kare-wa henna uta-o   nani-o   utat-teiru no?

   he-TOP funny song-ACC what-ACC sing-PROG QUE

   'Why is he singing a funny song?'   (Ochi 2014: (65))

The contrast between (15b) and (15c) shows that the direct object *henna uta-o* can follow,
but not precede the nominal *wh*-adjunct *nani-o*. Meanwhile, as shown in (15a) and (15b),
the relative word order between the nominal *wh*-adjunct and the subject is free.

Ochi further notes that the fixed word order between WHAT and the direct object is also
observed in double object constructions:

(16) a. Kimi-wa {naze/nani-o} hanako-ni   tegami-o   okut-teiru no?

          you-TOP why/what-ACC hanako-DAT letter-ACC send-PROG QUE

          'Why are you sending a letter to Hanako?'

     b. Kimi-wa hanako-ni   {naze/(?)nani-o} tegami-o   okut-teiru no?

          you-TOP hanako-DAT why/what-ACC   letter-ACC send-PROG QUE

          'Why are you sending a letter to Hanako?'

     c. Kimi-wa hanako-ni   tegami-o   {naze/*nani-o} okut-teiru no?

          you-TOP hanako-DAT letter-ACC why/what-ACC send-PROG QUE

          'Why are you sending a letter to Hanako?'   (Ochi 2014: (67))

Example (16c) illustrates that the nominal *wh*-adjunct *nani-o*, but not *naze*, cannot be preceded by the direct object *tegami-o*. (16a) and (16b), by contrast, show that the relative word order between the nominal *wh*-adjunct and the indirect object *hanako-ni* is not rigid.

Note that Japanese WHAT contrasts with Korean counterpart, which can precede or follow the direct object, but cannot precede the subject, unlike *way* 'why':

(17) a. {way/*mwe-l} Mimi-nun kulehkey cacwu   maykcwu-lul masi-ni?

why/what-ACC Mimi-TOP so   frequently beer-ACC   drink-QUE

'Why (the hell) does Mimi drink beer so frequently?'

b. Mimi-nun {way/mwe-l}   kulehkey cacwu   maykcwu-lul masi-ni?

Mimi-TOP why/what-ACC so   frequently beer-ACC   drink-QUE

'Why (the hell) does Mimi drink beer so frequently?'

c. Mimi-nun maykcwu-lul {way/mwe-l}   kulehkey cacwu   masi-ni?

Mimi-TOP beer-ACC   why/what-ACC so   frequently drink-QUE

'Why (the hell) does Mimi drink beer so frequently?'

The nominal *wh*-adjunct *mwe-l* can precede the direct object *maykcwu-lul*, as in (17b), or follow it, as in (17c). However, the nominal *wh*-adjunct cannot precede the subject, as in (17a). The same distributional pattern is observed in double object constructions:

(18) a. {way/*mwe-l} John-un   Mimi-eykey tto   phyenci-lul sse-ss-ni?

why/what-ACC John-TOP Mimi-DAT   again letter-ACC write-PST-QUE

'Why (the hell) did John write a letter to Mimi again?'

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b. John-un   Mimi-eykey {way/mwe-l}   tto   phyenci-lul sse-ss-ni?

John-TOP Mimi-DAT   why/what-ACC again letter-ACC write-PST-QUE

'Why (the hell) did John write a letter to Mimi again?'

c. John-un   phyenci-lul {way/mwe-l}   tto   Mimi-eykey sse-ss-ni?

John-TOP letter-ACC why/what-ACC again Mimi-DAT   write-PST-QUE

'Why (the hell) did John write a letter to Mimi again?'

(18b) and (18c) show that the direct object *phyenci-lul* is allowed to precede or follow the nominal *wh*-adjunct *mwe-l*. (18a) illustrates the inability of *mwe-l* to be followed by the subject. The relative word order between the nominal *wh*-adjunct and the indirect object is free, as in Japanese WHAT-questions.

2.2.3   Embedding possibilities

In Korean, canonical *way* 'why'-questions can be embedded under question verbs like *kwungkumha* 'wonder', as in (19a), or under resolutive verbs like *an* 'know', as in (19b).

(19) a. na-nun [John-i   way tto   tokil-ey   kass-nunci] kwungkumha-ta.

I-TOP   John-NOM why again Germany-LOC went-QUE   wonder-DECL

'I wonder why (the hell) John went to Germany again.'

b. na-nun [John-i   way tto   tokil-ey   kass-nunci] an-ta.

I-TOP   John-NOM why again Germany-LOC went-QUE   know-DECL

'I know why (the hell) John went to Germany again.'

(20), on the other hand, illustrates that questions involving the nominal *wh*-adjunct *mwe-l* can be selected for by questions verbs, but not by resolutive verbs:

(20) a. na-nun [John-i   mwe-l   tto   tokil-ey   kass-nunci]

        I-TOP   John-NOM what-ACC again Germany-LOC went-QUE

        kwungkumha-ta.

        wonder-DECL

        'I wonder why (the hell) John went to Germany again.'

    b. *na-nun [John-i   mwe-l   tto   tokil-ey   kass-nunci] an-ta.

        I-TOP   John-NOM what-ACC again Germany-LOC went-QUE   know-DECL

        'I know why (the hell) John went to Germany again.'

However, *mwe-l*-questions can be compatible with resolutive verbs, just in case those verbs are negated, head an interrogative clause, or form a large structure with directive verbs, as the following examples show:

(21) a. na-nun [John-i   mwe-l   tto   tokil-ey   kass-nunci]

        I-TOP   John-NOM what-ACC again Germany-LOC went-QUE

        molu-keyss-e.

        not.know-PRES-DECL

        'I don't know why (the hell) John went to Germany again.'

    b. ne-nun   [John-i   mwe-l   tto   tokil-ey   kass-nunci] a-ni?

        you-TOP John-NOM what-ACC again Germany-LOC went-QUE   know-QUE

        'Do you know why (the hell) John went to Germany again?'

c. na-nun [John-i   mwe-l   tto   tokil-ey   kass-nunci] al-ko

I-TOP   John-NOM what-ACC again Germany-LOC went-QUE   know-CONN

sip-e.

would.like.to-DECL

'I would like to know why (the hell) John went to Germany again.'

Similar distributions in terms of embedding are found in WHAT-questions in languages like Japanese, German, and Hungarian. Consider the following examples:

(22) a. boku-wa John-ga   nani-o   hashitteiru(no) ka   Tom-ni

I-TOP   John-NOM what-ACC running   QUE Tom-DAT

tazuneta.   (Japanese)

asked

'I asked Tom why John is running.'   (Ochi 1999: 170)

b. ??watashi-wa kare-ga nani-o   sawagu   ka   wakaru.

I-TOP   he-NOM what-ACC make.noise QUE know

'I know why he makes a noise.'   (Nakao 2009: (29))

c. watashi-wa kare-ga nani-o   sawagu   ka   wakaru-nai.

I-TOP   he-NOM what-ACC make.noise QUE know-not

'I don't know why he makes a noise.'   (Nakao 2009: (29))

(23) a. ich frage mich, was Hans so   gestresst ist.   (German)

I   ask   myself what Hans that stressed is

'I wonder why Hans is so stressed.'

b. *ich weiss was   Hans so   gestresst ist.

I   know what Hans that stressed is

'I know why Hans is so stressed.'

c. ich weiss nicht was   Hans so   gestresst ist.

I   know not   what Hans that stressed is

'I don't know why Hans is so stressed.'   (Ochi 2004: 34-35)

(24)   a. *tudtuk   hogy mit   ulsz   itt.   (Hungarian)

knew-1PL that what-ACC sit-2SG here

'We know why you are sitting here.'

b. nem tudtuk   hogy mit   ulsz   itt.

not knew-1PL that what-ACC sit-2SG here

'We don't know why you are sitting here.'   (Ochi 2004: 34-35)

As given in (22a) and (22b), Japanese WHAT-questions can be embedded under the question verb *tazuneta* 'ask', but not the resolutive verb *wakaru* 'know'. However, as shown in (22c), if the resolutive predicate is negated, then the WHAT-question can be selected for by the negated resolutive predicate. German and Hungarian data above exhibit the same pattern with regard to embedding under resolutive predicates.

2.2.4   Multiple *wh*-questions

Let us take a look at the following multiple *wh*-questions with the regular *wh*-adjunct *way* 'why':

(25) a. Mimi-nun mwues-ul way mek-ess-ni?

   Mimi-TOP what-ACC why eat-PST-QUE

   'What did Mimi eat why?'

   b. *Mimi-nun way mwues-ul mek-ess-ni?

   Mimi-TOP why what-ACC eat-PST-QUE

   'What did Mimi eat why?'

As shown here, the *wh*-adjunct *way* is able to occur with another *wh*-phrase in a sentence

only when the former precedes the latter, a phenomenon which is known as anti-superiority

effects (Ko 2006; Saito 1985, 1994; Watanabe 1992).

   The nominal *wh*-adjunct *mwe-l*, on the other hand, is disallowed to occur with another

wh-phrase (except for *way*), as illustrated in (26) and (27).

(26) a. *Mimi-nun mwues-ul mwe-l   tto   mek-ess-ni?

   Mimi-TOP what-ACC what-ACC again eat-PST-QUE

   '(int.) What did Mimi eat why?'

   b. *Mimi-nun mwe-l   tto   mwues-ul mek-ess-ni?

   Mimi-TOP what-ACC again what-ACC eat-PST-QUE

   '(int.) What did Mimi eat why?'

(27) a. *ecey   nwu-ka   mwe-l   pelsse ttena-ss-ni?

   yesterday who-NOM what-ACC already leave-PST-QUE

   '(int.) Who left yesterday why?'

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b. *ecey mwe-l pelsse nwu-ka ttena-ss-ni?

 yesterday what-ACC already who-NOM leave-PST-QUE

 '(int.) Who left yesterday why?'

The nominal *wh*-adjunct *mwe-l* fails to occur with the *wh*-object or the *wh*-subject, irrespective of the relative word order between the two *wh*-expressions.

 Another notable behavior of the nominal *wh*-adjunct in terms of multiple *wh*-questions is that it can co-occur with the regular *wh*-adjunct *way* in the same clause (see Kim 2021):

(28) a. way Mimi-man {mwe-l/*way} tto hankwuk-ey ka-ss-ni?

   why Mimi-only what-ACC/why again South.Korea-LOC go-PST-QUE

   'Why (the hell) did only Mimi go to South Korea again?'

  b. ne-nun way maykcwu-lul {mwe-l/*way} pelsse masi-ko iss-ni?

   you-TOP why beer-ACC what-ACC/why already drink-CONN COP-QUE

   'Why (the hell) are you already drinking beer?'

As observed here, while the co-occurrence of two *way*s in a clause is not permitted, it is possible for the nominal *wh*-adjunct *mwe-l* to occur with clause-mate *way*.

 Ochi (2004) observes that the nominal *wh*-adjunct WHAT in German, Hungarian, and Serbo-Croatian cannot appear in multiple *wh*-questions, while that in Japanese and Chinese can, as shown in the following examples (taken from Ochi 2004).

(29) a. *wer schläft was so lange?   (German)

   who sleeps what so long

   '*Who is sleeping why so long?'

b. *was schläft wer so lange?

what sleeps who so long

'*Who is sleeping why so long?'

(30) *ki   mit   fenyegeti a   gyerekeket?   (Hungarian)

who-NOM what-ACC threatens the kids

'Who is threatening the kids why?'

(31) a. *ko   se šta   pokunjio?   (Serbo-Croatian)

who self what get-depressed

'*Who is depressed why?'

b. *šta   se   ko   pokunjio?

what self who get-depressed

'*Who is depressed why?'

(32) a. dare-ga   nani-o   sawai-deiru   no?   (Japanese)

who-NOM what-NOM clamor-PROG QUE

'Who is clamoring why (the hell)'

b. shei shui shenme?   (Chinese)

who sleep what

'Who is sleeping why (the hell)'

The cross-linguistic data we have observed here show that the inability of WHAT to occur
in multiple wh-constructions is language-specific and cannot fall under the wh-in situ/wh-
fronting dichotomy.

2.2.5 (In)compatibility with negation

It has been noted in the literature that Japanese WHAT is incompatible with negation, as shown below (see Endo 2015; Kurafuji 1997; Miyagawa 2017; Ochi 2014):

(33) a. *Taroo-wa nani-o awatetei-nai no?

Taro-TOP what-ACC panic-not QUE

'Why is Taro not panicking?' (Miyagawa 2017: 135)

b. Kimi-wa nani-o sonnani nai teiru/*nai no?

you-TOP what so.much cry Asp{affirmative/Neg} QUE

'Why are you crying so much?' (Endo 2015: 225)

Likewise, the following examples demonstrate the incompatibility of Italin and Chinese (Mandarin) WHAT with negation:

(34) cosa (*non) ridi? (Italian)

what (*not) (you) laugh

'Why do you (*not) laugh?' (Endo 2015: 225)

(35) a. *ni bu xiao shenme? (Mandarin)

you NEG laugh what

'Why don't you laugh?'

b. *ni mei xiao shenme?

you NEG laugh what

'Why haven't you laughed?' (Pan 2014: (21))

Ochi (2014) takes the incompatibility of Japanese WHAT with negation as one piece of evidence to argue that the nominal *wh*-adjunct is directly merged at V′ (i.e., above the object and the verb), configured lower than negation. Similarly, Endo (2015) assumes that Japanese WHAT originates in ReasonP below negation in the IP domain. Based on this assumption, Endo proposes a syntactic account that attributes the deviance of Japanese WHAT-questions like (33) to a negative island effect induced by covert movement of WHAT from ReasonP to Int(errogative)P for scope taking, crossing the negative operator. However, as noted by Miyagawa (2017), the explanation based on the negative island effect is not enough to capture the exact behavior of Japanese WHAT with regard to negation. Miyagawa points out that the scrambling of WHAT over the intervening negative element does not save the sentence in (33a), as indicated by the ungrammaticality of (36).

(36) *nani-o   Taroo-wa awatetei-nai no?

   what-ACC Taro-TOP panic-NEG   QUE

   'Why is Taro not panicking?'   (Miyagawa 2017: 136)

If the ill-formed sentence in (33a) is attributable to the negative island effect caused by *nani-o* crossing the negative morpheme, the sentence in (36) should be grammatical, contrary to fact, since the scrambling operation makes it possible for the nominal *wh*-adjunct to escape from the negative island.

Note that the incompatibility of WHAT with negation is not cross-linguistically observed. The examples in (37) show that Korean WHAT is able to occur with (long or short) negation.

(37) a. mwe-l   yethay amwukesto mek-ko   iss-ci   anh-ni?

   what-ACC still   anything   eat-CONN be-CONN not-QUE

   'Why (the hell) aren't you still eating anything?'

   b. Mimi-nun mwe-l   tto   hakkyo-ey an ka-ss-ni?

   Mimi-TOP what-ACC again school-LOC not go-PST-QUE

   'Why (the hell) didn't Mimi go to school again?'

As will be seen, scopal behaviors of WHAT with respect to negation serve as a useful criterion

for determining whether the existing analyses of WHAT-questions in Japanese and Chinese

are applicable to those in Korean.

2.2.6   Incompatibility with nonfinite clauses

Unlike *wh*-arguments, the reason/causal *wh*-adjunct *way* 'why' cannot be interpreted within

an embedded infinitival clause selected for by predicates like *sultukha* 'persuade' or *myeng-*

lyengha 'order' (see Ko 2005), as shown in the contrast below.

(38) a. John-un   Mary$_i$-eykey [PRO$_i$ mwe-l   ilku-lako]

   John-TOP Mary-to   what-ACC read-COMP

   {seltukha/myenglyengha}-yss-ni?

   persuade/order-PST-QUE

   'What did John persuade/order Mary to read?'

b. *John-un   Mary$_i$-eykey [PRO$_i$ way ku sosel-ul   ilku-lako]

John-TOP Mary-to   why the novel-ACC read-COMP

{seltukha/myenglyengha}-yss-ni?

persuade/order-PST-QUE

'What is the reason x such that John persuaded/ordered Mary to read the

novel for that reason x? (long-distance reading)'

In the case of (38b), *way* cannot be construed long-distance. However, if *way* is merged in the

matrix clause, as in (39), the sentence becomes felicitous, conveying a matrix (short-distance)

reading (see Ko 2005 for relevant discussion).

(39)   John-un   Mary$_i$-eykey way [PRO$_i$ ku sosel-ul   ilku-lako]

John-TOP Mary-to   why   the novel-ACC read-COMP

{seltukha/myenglyengha}-yss-ni?

persuade/order-PST-QUE

'What is the reason x such that for x John persuaded/ordered Mary to read

the novel? (matrix reading)'

Note in this respect that the nominal *wh*-adjunct *mwe-l* in WHAT-questions behaves the

same as *way*. Consider (40).

(40) a. *John-un   Mary$_i$-eykey [PRO$_i$ mwe-l   tto   ku sosel-ul   ilku-lako]

John-TOP Mary-to   what-ACC again the novel-ACC read-COMP

{seltukha/myenglyengha}-yss-ni?

persuade/order-PST-QUE

'What is the reason x such that John persuaded/ordered Mary to read the novel again for that reason x? (long-distance reading)'

b. John-un   Mary$_i$-eykey mwe-l   tto   [PRO$_i$ ku sosel-ul   ilku-lako]

John-TOP Mary-to   what-ACC again   the novel-ACC read-COMP

{seltukha/myenglyengha}-yss-ni?

persuade/order-PST-QUE

'What is the reason x such that for x John again persuaded/ordered Mary to read the novel? (matrix reading)'

(40a) illustrates that the nominal *wh*-adjunct *mwe-l* cannot be interpreted within the embedded infinitival clause, thereby disallowing the long-distance reading. (40b) shows that the matrix reading is available, with *mwe-l* interpreted in the matrix clause.

2.2.7   Island sensitivity

With regard to LF island effects in Korean, the *wh*-adjunct *way* 'why' behaves differently from other *wh*-operators in that it is sensitive to Ross's (1967) islands. For an illustration, consider the two pairs of examples in (41) and (42).

(41)   a.   *Complex NP Island*:

John-un   [[mwe-l   ilk-un]   salam]-ul   pinanhayss-ni?

John-TOP what-ACC read-MOD person-ACC criticized-QUE

'John criticized the person who read what?'

36

b. *Adjunct Island*:

John-un [Mimi-ka mwe-l hay-se] hwakanass-ni?

John-TOP Mimi-NOM what-ACC do-because got.upset-QUE

'John got upset because Mimi did what?'

(42) a. *Complex NP Island*:

*John-un [[way ku chayk-ul ilk-un] salam]-ul pinanhayss-ni?

John-TOP why the book-ACC read-MOD person-ACC criticized-QUE

'John criticized the person who read the book why?'

b. *Adjunct Island*:

*John-un [Mimi-ka way ilccik ttena-se] hwakanass-ni?

John-TOP Mimi-NOM why early leave-because got.upset-QUE

'John got upset because Mimi left early why?'

As (41) illustrates, the nominal *wh*-argument *mwe-l* functioning as the direct object can be placed either inside the complex NP island or the adjunct island, in sharp contrast to the reason/causal *wh*-adjunct *way*, as shown in (42).

When it comes to WHAT-questions, the nominal *wh*-adjunct *mwe-l* patterns like *way*, and unlike its ordinary counterpart, in that it is sensitive to the complex NP island, as in (43a), and the adjunct island, as in (43b) (Kim 2021; Kim & Park 2021).

(43) a. *Complex NP Island*:

*John-un [[mwe-l kulehkey manhun chayk-ul ilk-un] salam]-ul

John-TOP what-ACC so many book-ACC read-MOD person-ACC

pinanhayss-ni?

criticized-QUE

'John criticized the person who read so many papers why?'

b. *Adjunct Island*:

    *John-un   [Mimi-ka   mwe-l   kulehkey ilccik ttena-se]

    John-TOP Mimi-NOM what-ACC so   early leave-because

    hwakanass-ni?

    got.upset-QUE

    'John got upset because Mimi left so early why?'

Note that Japanese WHAT-questions are also island-sensitive. Consider the following examples from Nakao & Obata (2009: 154).

(44)   *Complex NP Island*:

a. John-wa [nani-o   si-tei-ru]   hito-tati-o keebetusi-tei-ru   no?

  John-TOP what-ACC do-PROG-PRES people-ACC despise-PROG-PRES QUE

  'What is John despising people [who are doing t]?'

b. *John-wa [{naze/nani-o} sawai-dei-ru]   hito-tati-o

  John-TOP why/what-ACC make.noise-PROG-PRES people-ACC

  keebetusi-tei-ru   no?

  despise-PROG-PRES QUE

  'Why is John despising people [who are making a noise t]?'

(45)   *Adjunct Island*:

a. John-wa [karera-ga nani-o si-ta kara] okot-tei-ru no?

John-TOP they-NOM what-ACC do-PST because be-upset-PROG-PRES QUE

'What is John upset [because they did t]?'

b. *?John-wa [karera-ga {naze/nani-o} sawai-da kara]

John-TOP they-NOM why/what-ACC make.noise-PST because

okot-tei-ru no?

be-upset-PROG-PRES QUE

'Why is John upset [because they made a noise t]?'

The a-examples illustrate that the ordinary *wh*-argument *nani-o* can occur inside the complex NP island and the adjunct island. On the other hand, the b-examples show that the nominal *wh*-adjunct *nani-o* is not possible to occur inside islands, just like *naze* 'why'.

2.2.8 Intervention effects

It is well-known that Korean shows an asymmetry between *way* 'why' and other *wh*-operators in terms of intervention effects: in an interrogative clause, only the former can be preceded by a Scope Bearing Element (SBE) (also known as an intervener) like *man* 'only' (see Beck 2006; Beck & Kim 1997; Choi 2007; Ko 2005; a.o.).[3] To illustrate this, consider (46) and (47).

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[3]SBEs also include *amwuto* 'anyone', *anh* 'not', *pakkey* 'only' (NPI), *to* 'also', *nwukwunka* '(non-specific) someone', and *nwukwuna* 'everyone'. See Ko (2005) for relevant data in Korean, Japanese, and Chinese.

(46) a. *?John-man mwe-l   ilk-ess-ni?

     John-only   what-ACC read-PST-QUE

     'What did only John read?'

   b. mwe-l   John-man ilk-ess-ni?

     what-ACC John-only read-PST-QUE

     'What did only John read?'

(47) a. John-man way manhun nonmwun-ul ilk-ess-ni?

     John-only why many   paper-ACC   read-PST-QUE

     'Why did only John read many papers?'

   b. way John-man manhun nonmwun-ul ilk-ess-ni?

     why John-only many   paper-ACC   read-PST-QUE

     'Why did only John read many papers?'

The example in (46a) is ungrammatical because the argumental *wh*-phrase *mwe-l* is preceded by the subject SBE *John-man* 'John-only', giving rise to the intervention effect. However, as shown in (46b), if the *wh*-phrase undergoes overt scrambling to the left of the subject SBE to avoid the intervention configuration (i.e., being c-commanded by the SBE), the resulting sentence becomes perfectly acceptable. Meanwhile, the reason/causal *wh*-adjunct *way* can freely precede or follow the given SBE, as shown in (47).

   Note that the nominal *wh*-adjunct *mwe-l* in WHAT-questions is not subject to intervention effects, just like *way*, as illustrated in (48) (Kim 2021).

(48) a. John-man mwe-l   kulehkey manhun nonmwun-ul ilk-ess-ni?

John-only what-ACC so   many   paper-ACC   read-PST-QUE

'Why (the hell) did only John read so many papers?'

b. mwe-l   kulehkey manhun nonmwun-ul John-man ilk-ess-ni?

what-ACC so   many   paper-ACC   John-only read-PST-QUE

'Why (the hell) did only John read so many papers?'

In (48a), the nominal *wh*-adjunct *mwe-l* can be c-commanded by the SBE *John-man* without leading to ungrammaticality. As will be shown, the anti-intervention effect of Korean WHAT can be accounted for by its LF raising up to the CP region, which makes it possible to avoid the intervention configuration.

2.2.9   Subject animacy

Nakao & Obata (2009) point out that Japanese WHAT-questions have an animacy restriction on their subject. Consider (49) for instance.

(49) a. ano hito-wa   nani-o   yuka-de korogat-tei-ru   no?

that person-TOP what-ACC floor-on roll-PROG-PRES QUE

'Why is that person rolling on the floor?'

b.#ano booru-wa nani-o   yuka-de korogat-tei-ru   no?

that ball-TOP what-ACC floor-on roll-PROG-PRES QUE

'Why is that ball rolling on the floor?'   (Nakao & Obata 2009: (6))

On their view, (49b) is semantically ill-formed, due to the inanimate subject 'that ball'.

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Such an animacy restriction, however, is not cross-linguistically valid, since WHAT-questions in languages like Korean and Chinese can have inanimate subjects:

(50) a. kong-i   mwe-l   ilehkey ppalli   kwulleka-nya?   (Korean)

ball-NOM what-ACC so   quickly roll-QUE

'Why (the hell) is the ball rolling so quickly?'

b. chayksang-i mwe-l   tto   pwusyecyess-ni?

desk-NOM   what-ACC again be.broken-QUE

'Why (the hell) was the table broken again?'

(51) Tiankong zai   lan   shenme?   (Chinese)

sky   PROG blue what

'Why the hell is the sky is blue?'   (Ochi 2014: (50))

2.2.10   Speaker unexpectedness

As briefly noted at the outset, it is generally accepted, from a cross-linguistic perspective, that WHAT-questions are felicitously uttered only in a context in which the speaker is emotionally affected by some 'unexpected' event (see Cheng 2021; Kim 2021; Nakao & Obata 2009; Ochi 1999, 2004; a.o.). For example, Nakao & Obata (2009) note that the utterance of the Japanese WHAT-question in (52) (repeated from (49a)) can be felicitous only in a context in which the event of that person's rolling on the floor is against the speaker's expectation. This speaker unexpectedness in turn naturally gives rise to a sense of surprise or other relevant emotional feelings on the part of the speaker.

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(52) ano hito-wa   nani-o   yuka-de korogat-tei-ru   no?

that person-TOP what-ACC floor-on roll-PROG-PRES QUE

'Why is that person rolling on the floor?'

Compare (52) with the reason/causal *naze* 'why'-question in (53).

(53) ano hito-wa   naze yuka-de korogat-tei-ru   no?

that person-TOP why floor-on roll-PROG-PRES QUE

'Why is that person rolling on the floor?'

We have the sense that the sentence does not involve the speaker unexpectedness: it can be uttered as a neutral question in a context where the speaker has no expectation of that person's rolling on the floor.

Korean WHAT-questions also necessarily convey counter-expectations on the part of the speaker. Consider (54) for instance.

(54) Mimi-nun mwe-l   kulehkey manhun chayk-ul   ilk-ess-ni?

Mimi-TOP what-ACC so   many   book-ACC read-PST-QUE

'Why (the hell) did Mimi read so many books?'

The *mwe-l*-question can be uttered felicitously only in a context where the event of Mimi's reading so many books has violated the speaker's expectation.

The strong association of Korean WHAT-questions with speaker unexpectedness is empirically supported by the fact that they need to include an expression like *kulehkey* 'so', *tto* 'again', *pelsse* 'already', *yethay* 'still', and a nominal marked with a focus particle *-(i)na*, all of which evoke counter-expectation of some sort in an appropriate context (M. Kim 2015;

Hoepelman & Rohrer 1981; Lewis 2020; Löbner 1989; Michaelis 1993, 1996). Consider the following relevant examples in (55).

(55) a. ne-nun   mwe-l   *(kulehkey) ppalli tally-ess-ni?

          you-TOP what-ACC so   fast   run-PST-QUE

          'Why (the hell) did you run so fast?'

      b. Mimi-nun mwe-l   *(tto) cwungkwuk-ey ka-ss-ni?

          Mimi-TOP what-ACC again China-LOC   go-PST-QUE

          'Why (the hell) did Mimi go to China again?'

      c. John-un   mwe-l   *(pelsse) ttena-ss-ni?

          John-TOP what-ACC already   leave-PST-QUE

          'Why (the hell) did John already leave?'

      d. Mary-nun mwe-l   *(yethay) kongpwuha-ko iss-ni?

          Mary-TOP what-ACC still   study-CONN   COP-QUE

          'Why (the hell) is Mary still studying?'

      e. haympekel-ul   mwe-l   10 kay*(-na) mek-ess-ni?

          hamburger-ACC what-ACC 10 CL-na   eat-PST-QUE

          'Why (the hell) did you eat as many as ten hamburgers?'

As illustrated here, if the lexcial expression evoking counter-expectations is absent, the resulting sentence is rendered ungrammatical. This indicates that WHAT-questions in Korean always need to evoke counter-expectations lexically, i.e., with the help of a lexical element

like *kulehkey*, *tto*, *pelsse yethay*, and NP-*(i)na*. Meanwhile, as the examples in (56) show, *way* 'why'-questions need not contain an expression evoking expectation contravention.

(56) a. ne-nun   way (kulehkey) ppalli tally-ess-ni?

you-TOP why so   fast   run-PST-QUE

'Why (the hell) did you run so fast?'

b. Mimi-nun way (tto) cwungkwuk-ey ka-ss-ni?

Mimi-TOP why again China-LOC   go-PST-QUE

'Why (the hell) did Mimi go to China again?'

c. John-un   way (pelsse) ttena-ss-ni?

John-TOP why already leave-PST-QUE

'Why (the hell) did John already leave?'

d. Mary-nun way (yethay) kongpwuha-ko iss-ni?

Mary-TOP why still   study-CONN   COP-QUE

'Why (the hell) is Mary still studying?'

e. haympekel-ul   way 10 kay(-na) mek-ess-ni?

hamburger-ACC why 10 CL-na   eat-PST-QUE

'Why (the hell) did you eat as many as ten hamburgers?'

In a similar vein, Munaro & Obenauer (1999, 2002) observe that in German, *was* 'WHAT'-questions, unlike *warum* 'why'-questions, can be licensed only when they carry a contextual element like *denn*, *so* 'so/like that', or *(schon) wieder* '(already) again', as illustrated in the following contrasts (taken from Munaro & Obenauer 2002).

(57) a. warum lacht   der (denn)?

   why   laughs he 'denn'

   'Why is he laughing?'

 b. was   lacht   der *(denn)?

   what laughs he 'denn'

   'Why is he laughing?'

(58) a. warum rennst du (so schnell)?

   why   run   you so fast

   'Why are you running so fast?'

 b. was   rennst du *(so schnell)?

   what run   you so   fast

   'Why are you running so fast?'

(59) a. warum schreit der (schon wieder)

   what   shouts he already again

   'Why has he been shouting again?'

 b. was   schreit der *(schon wieder)

   what shouts he already again

   'Why has he been shouting again?'

Notice that the explicit presence of a counter-expectation-carrying expression is not essential in WHAT-questions in other languages. For example, as we have observed in (52) above, Japanese WHAT-questions can be licensed without the help of such an expression.

2.3 Previous analyses and their limits

This section reviews Kim (2021) for Korean WHAT-questions, Miyagawa (2017) for Japanese WHAT-questions, and Yang (2021) for Chinese WHAT-questions. The review of the first paper shows that the treatment of Korean WHAT as a *wh*-adjunct corresponding to *way* 'why' is implausible. The review of Miyagawa's and Yang's papers indicates that their frameworks fail to extend to Korean counterparts.

2.3.1 Kim 2021

To the best of my knowledge, Kim (2021) is the first to offer a syntactic analysis of Korean WHAT-questions. In it, I argued that the nominal *wh*-adjunct *mwe-l* behaves as a reason/causal *wh*-adjunct corresponding to *way* 'why'. Here I show that such a view fails to capture various distinct properties of Korean WHAT-questions.

As we have examined before, one of the major similarities between the nominal *wh*-adjunct *mwe-l* and the *wh*-adjunct *way* 'why' is that the two are not subject to intervention effects. The relevant examples are repeated below as (60).

(60) a. *?John-man mwe-l   ilk-ess-ni?

   John-only   what-ACC read-PST-QUE

   'What did only John read?'

  b. John-man way manhun nonmwun-ul ilk-ess-ni?

   John-only why many   paper-ACC   read-PST-QUE

   'Why did only John read many papers?'

   c. John-man mwe-l   kulehkey manhun nonmwun-ul ilk-ess-ni?

       John-only what-ACC so   many   paper-ACC   read-PST-QUE

       'Why (the hell) did only John read so many papers?'

Unlike the argumental *wh*-phrase, both the nominal *wh*-adjunct *mwe-l* and the *wh*-adjunct *way* can be preceded by the SBE *John-man* 'John-only'. I tried to account for the anti-intervention effect of WHAT by adopting Ko's (2005, 2006) proposals about *wh*-licensing and intervention effects in Korean.

Following Rizzi's (1999) split-CP hypothesis, Ko (2006) argues that the *wh*-adjunct *way* in an interrogative clause is directly merged at its checking/scope position, Spec-$C_{Int(errogative)}P$, as illustrated in (61a), while other *wh*-operators LF-move to Spec-$C_{Foc(us)}P$, configured higher than $C_{Int}P$, for feature checking, as illustrated in (61b) (cf. Rizzi 1999).

(61) a. [$_{CP}$ $C_{Foc[+Q]}$ ... **way** $C_{Int[+Q]}$ [$_{IP}$ ...]]

      b. [$_{CP}$ **wh$_i$** $C_{Foc[+Q]}$ ... $C_{Int[+Q]}$ [$_{IP}$ ... t$_i$ ...]]

In terms of the intervention effect, Ko (2005, 2006) proposes to take it as a LF-constraint on *wh*-movement, where a *wh*-operator cannot undergo movement to its checking/scope position across an SBE, as illustrated in (62) (cf. Beck 2006; Beck & Kim 1997; Kotek 2019).

(62) [... $C_{[+Q]}$ SBE **wh** ...]

With Ko's ideas, I argued that the unacceptability of (60a) is because the LF movement of the *wh*-argument *mwe-l* to Spec-$C_{Foc}P$ is blocked by the SBE *John-man*, as illustrated in (63), and the well-formedness of (60b) is because the *wh*-adjunct *way* is initially licensed in Spec-$C_{Int}P$, thereby not crossing the c-commanding scrambled SBE, as illustrated in (64).

(63)   [$_{CP}$ C$_{Foc[+Q]}$ ...   [$_{IP}$ John-man   **mwe-l**   ...   ]]

(64)   [$_{CP}$ C$_{Foc[+Q]}$ ...   John-man$_i$ **way**   C$_{Int[+Q]}$ [$_{IP}$ ...   t$_i$ ...   ]]

The anti-intervention effect of the nominal *wh*-adjunct *mwe-l*, just like the *wh*-adjunct *way*, would lead us to reasonably assume that the nominal *wh*-adjunct is also externally merged in Spec-C$_{Int}$P. However, I maintained that the assumption is incorrect, by presenting examples such as (65), where the nominal *wh*-adjunct and *way* co-occur in a clause, with a phrasal element intervening between the two *wh*-expressions.

(65)   a.   way Mimi-man mwe-l   kulehkey manhun nonmwun-ul ilk-ess-ni?

          why Mimi-only what-ACC so   many   paper-ACC   read-PST-QUE

          'Why did only Mimi read so many papers?'

    b.   way sakwa-lul   mwe-l   kulehkey ppalli   mek-ess-ni?

          why apple-ACC what-ACC so   quickly eat-PST-QUE

          'Why did you eat the apple so quickly?'   (Kim 2021: (26))

If it is true that the nominal *wh*-adjunct *mwe-l* is directly merged into the same licensing position as *way*, i.e., Spec-C$_{Int}$P, no element should be allowed to intervene between the two *wh*-expressions, contrary to fact. Based on this, I concluded that the nominal *wh*-adjunct is not externally merged in Spec-C$_{Int}$P.

Instead, building on Munaro & Obenauer's (2002) argument that French and Pagotto WHAT occupies Spec-Att(itude)P, I proposed that Korean WHAT originates in Spec-C$_{Att}$P as its scope/checking position, configured lower than C$_{Int}$P; this is sketched in (66).

(66) $[_{CP}$ $C_{Foc[+Q]}$ ... **way** $C_{Int[+Q]}$ ... **mwe-l** $C_{Att[+Q]}$ ... $[_{IP}$ ... $]]$

In addition, so as to capture the speaker's emotional attitude (e.g., surprise) evoked by WHAT-questions, I followed Munaro & Obenauer (2002) in assuming that $C_{Att}P$ encodes the speaker's attitude about the propositional content in question.

My previous analysis has the virtue of accounting for the anti-intervention effect of WHAT. See (67), repeated from (60c).
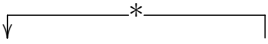
(67) John-man mwe-l   kulehkey manhun nonmwun-ul ilk-ess-ni?

John-only what-ACC so   many   paper-ACC   read-PST-QUE

'Why (the hell) did only John read so many papers?'

The nominal *wh*-adjunct does not exhibit the intervention effect, since it need not cross the SBE at LF, as it is licensed in its base position, Spec-$C_{Att}P$, as illustrated in (68).

(68) $[_{CP}$ $C_{Foc[+Q]}$ ... $C_{Int[+Q]}$ ... $\boxed{John\text{-}man_i}$ **mwe-l** $C_{Att[+Q]}$ ... $[_{IP}$ ... t_i ... $]]$

The present analysis also enables us to account for the co-occurrence of the nominal *wh*-adjunct with the regular *wh*-adjunct *way*, as we have seen in (65), repeated below as (69).

(69) a. way Mimi-man mwe-l   kulehkey manhun nonmwun-ul ilk-ess-ni?

why Mimi-only what-ACC so   many   paper-ACC   read-PST-QUE

'Why did only Mimi read so many papers?'

b. way sakwa-lul mwe-l   kulehkey ppalli   mek-ess-ni?

why apple-ACC what-ACC so   quickly eat-PST-QUE

'Why did you eat the apple so quickly?'

Compare these to (70), where two *way*s cannot occur together in the same clause.

(70) a. *way Mimi-man way kulehkey manhun nonmwun-ul ilk-ess-ni?

       why Mimi-only why so   many   paper-ACC   read-PST-QUE

       'Why did only Mimi read so many papers?'

    b. *way sakwa-lul way kulehkey ppalli   mek-ess-ni?

       why apple-ACC why so   quickly eat-PST-QUE

       'Why did you eat the apple so quickly?'

The examples in (70) are ungrammatical because the two *way*s compete for the same licensing position (i.e., Spec-C_{Int}P), while those in (69) are grammatical, since the nominal *wh*-adjunct *mwe-l* is externally merged at C_{Att}P, configured lower than C_{Int}P in which *way* is externally merged.

As one might notice, my previous analysis only works under the prima facie assumption that the nominal *wh*-adjunct WHAT itself acts as a reason/causal *wh*-adjunct, thereby letting the question including it receive a *why*-like interpretation. Note, though, that the assumption is not valid in many respects. For example, note that unlike the *wh*-adjunct *way*, the nominal *wh*-adjunct *mwe-l* cannot be used alone as a reason/causal *wh*-adjunct, as shown in (71).

(71) A: Mimi-nun pelsse   ttena-ss-e.

      Mimi-TOP already leave-PST-DECL

      'Mimi already left.'

B: way/*mwe-l?

why/what-ACC

'Why?'

If the nominal *wh*-adjunct is a true *wh*-adjunct corresponding to *way*, its inability to stand alone as a reason/causal *wh*-adjunct is puzzling and calls out for explanation.

Another issue with the analysis concerns the fact that unlike *way*, the nominal *wh*-adjunct *mwe-l* cannot occur in a sentence-initial position, as shown by the following examples:

(72) a. Mimi-nun mwe-l   tto   khemphyuthe-lul sa-ss-ni?

Mimi-TOP what-ACC again computer-ACC   buy-PST-QUE

'Why (the hell) did Mimi buy a computer again?'

b. *mwe-l   Mimi-nun tto   khemphyuthe-lul sa-ss-ni?

what-ACC Mimi-TOP again computer-ACC   buy-PST-QUE

'Why (the hell) did Mimi buy a computer again?'

If the nominal *wh*-adjunct *mwe-l* is externally merged at Spec-$C_{Att}P$ in the CP domain, we should expect it to occur sentence-initially; however, this is apparently not the case.

What this brief review shows is that the treatment of Korean WHAT as a reason/causal *wh*-adjunct and as being externally merged in the CP domain is not a plausible approach to Korean WHAT-questions.

2.3.2 Miyagawa 2017

Miyagawa (2017) proposes to analyze Japanese WHAT as part of an analytical causative construction (in the sense of Hale & Keyser 1993). More specifically, he argues that Japanese WHAT-questions involve vP headed by a covert causative verb CAUSE. On this view, by way of example, the WHAT-question in (73) has the LF structure presented in (74).

(73) Taroo-wa nani-o   awatete-iru no?

Taro-TOP what-ACC panick-ing QUE

'Why (in the hell) is Taro panicking?'   (Miyagawa 2017: 135)

(74)

```
                    vP
                   /  \
              nani-o    v′
              what x   /  \
                      vP    v
                     /\     |
                    /  \    |
              Taro panicking  CAUSE x
```
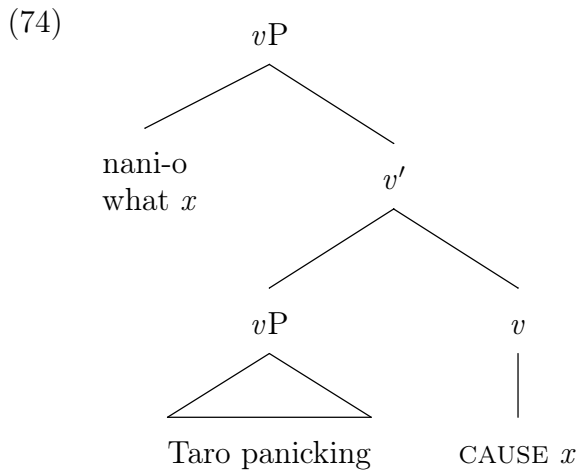
As observed in the LF structure, the causative verb CAUSE takes as its complement the vP, and then takes as its specifier the nominal *wh*-adjunct *nani-o*. Miyagawa argues that the nominal *wh*-adjunct (what x) and the covert causative verb (CAUSE x) form a *wh*-operator-restriction structure. According this view, (73) is interpreted as a causal question meaning "what x, cause x, Taro panicking". The crucial point of this interpretation is that the nominal *wh*-adjunct WHAT semantically behaves like an ordinary *what* that denotes an entity or a proposition.

Like Korean WHAT-questions, Japanese ones imply the speaker's emotional attitude (e.g., surprise and annoyance) towards the salient caused event in question. Miyagawa notes that such an implied emotion content is captured by the presence of the causative head CAUSE.

Miyagawa argues that the *wh*-operator-restriction complex (i.e., *nani-o* and CAUSE) is base-generated below negation. To support this argument, he presents examples such as (75), which show the incompatibility of the nominal *wh*-adjunct WHAT with negation.

(75) *nani-o   Taroo-wa awatetei-nai no?

     what-ACC Taro-TOP panic-NEG   QUE

     'Why is Taro not panicking?'   (Miyagawa 2017: 136)

He explains that (75) is ruled out due to negative intervention effects: as illustrated in (76), the negative morpheme *-nai* intervenes between the *wh*-operator that has moved to Spec-CP for scope and its restriction (CAUSE x) below vP.[4]

(76)   LF: [*$_{\text{CP}}$ nani-o$_1$ [$_{\text{TP}}$ ... -nai [$_{v\text{P}}$ t$_1$ ... CAUSE]]]

Although Miyagawa's analysis is insightful and may be adequate for Japanese WHAT-questions, it cannot be extended to Korean WHAT-questions. As we have seen before, unlike Japanese WHAT, Korean counterpart can be associated with negation:

(77) a. ne-nun   mwe-l   yethay amwukesto mek-ko   iss-ci

         you-TOP what-ACC still   anything   eat-CONN be-CONN

         anh-ni?   (=(36))

         not-QUE

         'Why (the hell) aren't you still eating anything?'

---

[4]Following Beck (1995) and others, he assumes that the nominal *wh*-adjunct cannot be reconstructed to its base position for scope.

b. Mimi-nun mwe-l   tto   hakkyo-ey an ka-ss-ni?

Mimi-TOP what-ACC again school-LOC not go-PST-QUE

'Why (the hell) didn't Mimi go to school again?'

If we adopt Miyagawa's analysis here, the above examples should be ill-formed due to negative intervention effects; however, this is not the case.

Another obvious challenge for employing Miyagawa's framework for Korean WHAT-questions is that they only allow for the wide scope reading of CAUSE over negation, as illustrated (78).[5]

(78)   John-un   mwe-l   tto   moim-ey   an o-ass-ni?

John-TOP what-ACC again meeting-LOC not come-PST-QUE

a. There is some event such that it caused John not to come to the meeting again. Specify the event? (CAUSE > *not*)

b. *There is some event such that it is not the case that that event caused John to come to the meeting again. Specify the event? (CAUSE < *not*)

It is clear that Miyagawa's analysis fails to make the right prediction about this scopal pattern, since it assumes that the covert causative head CAUSE is interpreted under the scope of negation.

---

[5]Tomioka (1991) argues that English *why* is a lexically complex operator that consists of Wh and CAUSE operators. On this view, he notes that in *why*-questions, the CAUSE operator needs to take wide scope over negation:

(i)   Why did't John come to the party?
        a. There was some event such that it caused John not to come to the party. Specify the event.
        b. #There is some event such that it is false that that event caused John to come to the party. Specify the situation. (Tomioka 1991: 325)

(ib) is unavailable, where the CAUSE operator takes narrow scope below negation.

2.3.3 Yang 2021

Yang (2021) discusses Chinese postverbal WHAT-questions with an aggressive, prohibitive force. Their typical examples are illustrated in (79), taken from Yang (2021: 62).[6]

(79) a. (ni) ku/pao shenme?!

  you cry/run what

  'Why (the hell) are you crying/running?' (≈ 'Don't cry/run!')

  b. (ni) xiao/kan   shenme?!

  you laugh/watch what

  'Why (the hell) are you laughing/watching?' (≈ 'Don't laugh/watch!')

In both of these examples, the postverbal *shenme* receives a *why*-like interpretation with the aggressive force against the addressee.

  As Yang points out, the postverbal WHAT-question can be construed as a *why*-question with no aggressive force, when used in appropriate contexts, as shown by the following discourse.

(80) (Scenario: You see a little girl crying on the street. You stop by and ask in a gentle, comforting voice.)

  xiao meimei, ni   ku shenme ya?

  little sister   you cry what   SFP

  a. 'Little sister, why are you crying?

  b. #'You should not cry!' or #'Why the hell are you crying?' (Yang 2021: 64)

---

[6]This is contrary to Cheng's (2021) view that such WHAT-questions are not genuine causal/reason questions. Here I avoid discussing whether Chinese postverbal WHAT-questions are causal/reason questions or not.

Yang argues that the nominal *wh*-adjunct WHAT in Chinese originates within the VP domain. A piece of evidence for the claim comes from negative island effects. Consider (81).

(81) *(ni) bu ku/pao shenme?!

you not cry/run what

'(int.) Why the hell are you crying?'

As seen here, Chinese WHAT is unable to occur with negation (especially when it appears in a postverbal position).[7] Yang explains that the unacceptability of (81) is due to covert movement of *shenme* from the VP domain into the split-CP domain (specifically, IntP), crossing the negative element *bu*, thereby inducing the negative island effect.

Further evidence in favor of the covert movement of WHAT to the split-CP zone is derived from intervention effects. Consider Yang's (2021: (42)) examples below:

(82) a. *zhishao you san-tian ku/pao shenme?!

at.least have three-day cry/run what

'Why (the hell) do you cry/run for at least three days?!'

b. *zongshi ku/pao shenme?!

always cry/run what

'Why (the hell) do you always cry/run?!'

---

[7]Chinese (Cantonese) WHAT can be compatible with negation when it occurs sentence-initially (Cheng 2021):

(i) mat keoi m   haidou fan ge?
     what 3SG NEG PROG   sleep SFP
     'How come s/he is not sleeping?'   (Cheng 2021: 226)

c. *zhiyou jintian ku/pao shenme?!

only today cry/run what

'Why (the hell) do you cry/run only today?!'

In Yang's account, the ungrammaticality of (82) is because the scope bearing element like *zhishao* 'at least', *zongshi* 'always', and *zhiyou* 'only' blocks the covert movement of the nominal *wh*-adjunct *shenme* to the IntP.

As seen in (80), it is possible for postverbal WHAT-questions to have no aggressive force on the part of the speaker, when used in appropriate contexts. Yang takes this fact to argue that the speaker's aggressive force is obtained not by lexical meaning of WHAT itself, but by its covert movement to the Force domain, checking off a relevant feature there. Taken together, Yang argues that postverbal WHAT LF-moves to IntP for interrogativity, and subsequently to ForceP for aggressive force.

To account for how *why*-interpretations are derived from WHAT-questions, Yang follows Tsai (2011) in postulating an implicit light verb FOR for postverbal WHAT-questions. On this view, for example, the postverbal WHAT-question in (83) is assumed to involve the structure presented in (84).

(83) ku/pao shenme?!

cry/run what

'Why (the hell) are you crying/running?'

(84) (adapted from Tsai 2011)

```
              v′
            /    \
          v        VP
          |       /   \
         FOR   WHAT    VP
          ↖             /\
            `          /  \
             `-------'run/cry'
```
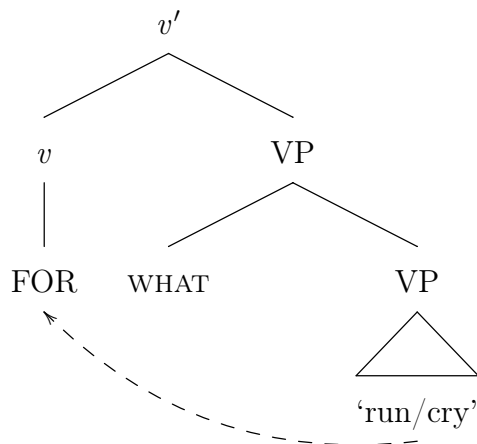
As illustrated here, the nominal *wh*-adjunct WHAT is directly adjoined to the VP. The entire VP is selected for by the null light verb FOR. The main verb raises up to adjoin to the light verb, yielding the *for-what* (*why*) interpretation and word order (See Endo 2015 for a similar point for Japanese WHAT-questions). The postverbal WHAT, as discussed above, undergoes covert movement to ForceP through IntP for interrogativity and aggressive force.

As described above, postverbal WHAT-questions in Chinese are analyzed as having *for-what* interpretations derived via the interaction of WHAT with the null light verb FOR. This view leads us to expect that the meaning of WHAT-questions may correspond to that of English split *what-for* constructions like (85).

(85) a. What are you crying for?

      b. What did you do it for?

In analyzing split *what-for* constructions, Endo (2015) proposes that the *wh*-phrase *what* is base-generated in ReasonP below negation (i.e., below *v*P) and that it undergoes covert movement to IntP for taking scope. This covert movement is verified by the inability of *what* to occur with negation:

(86) *What aren't you coming to the United States for?   (Endo 2015: 223)

The unacceptability of (86) is attributed to the covert movement of *what* out of the negative island, inducing the negative island effect.

Another point in favor of the base-generation of *what* below negation is that a non-*wh* version of split *what-for*, i.e., *for*-NP, is interpreted only under the scope of negation, contrary to an expression *because (of)*, which is able to take scope either over or below negation:

(87) a. John didn't do it for food. (not > for food, *for food > not)

  b. John didn't do it because of food. (not > for food, for food > not)
      (Endo 2015: 223)

With the above discussion in mind, let us return to Yang's analysis of Chinese WHAT-questions. If my understanding is correct, Yang would assume that the implicit light verb FOR occurs below negation (i.e., within *v*P). This means that the null light verb FOR needs to be interpreted below negation, as we have seen from the cases of English split *what-for* constructions. If we apply Yang's analysis to Korean WHAT-questions, then all else being equal we should expect that only the wide scope reading of negation over the implicit light verb FOR is available. However, as we have discussed, such a reading is not permitted in Korean WHAT-questions. See (88).

(88) John-un   mwe-l   tto   swuep-ey an o-ass-ni?

John-TOP what-ACC again class-LOC not come-PST-QUE

a. What is the reason x such that John didn't come to the class again for x?

(REASON $(for\ x) > not$)

b. *What is not the reason x such that John came to the class again for x?

(REASON $(for\ x) < not$)

Yang's analysis of Chinese WHAT-questions, therefore, is insufficient to capture the semantic aspects of Korean WHAT-questions.

2.4   Korean WHAT-interrogatives at the syntax-semantics interface

In this section, I provide an alternative compositional analysis that can account for both the syntactic and semantic characteristics of Korean WHAT-questions that we have observed in section 2.2.

2.4.1   The complex *wh*-phrase 'WHAT + CAUSE-Op'

I argue that in Korean WHAT-questions, the nominal *wh*-adjunct WHAT combines with a CAUSE-operator that modifies it, forming a complex nominal *wh*-phrase. This is shown in (89).[8]

---

[8]I will leave open the exact syntactic category of the CAUSE-Op which the N′ constituent combines with, since it is not essential for present purposes, but note that an N-bar constituent in general is able to combine with (or to be modified by) any phrasal constituent (XP).

(89)

```
              NP
             /  \
           N'    CAUSE-Op
           /\
          /  \
        mwe-l
```
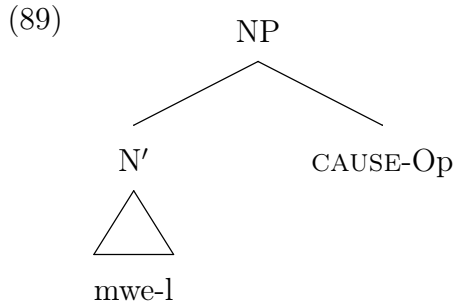
As noted earlier, I assume that the nominal *wh*-adjunct *mwe-l* has inherent accusative Case.

I further argue that the entire nominal *wh*-phrase is directly merged at Spec-*v*P, configured higher than the base position of the subject (under the VP-/*v*P-internal subject hypothesis).[9] On this view, for example, the WHAT-question in (90) is analyzed as involving the surface structure given in (91).

(90) Mary-nun mwe-l   kulehkey pissan   cha-lul   sa-ss-ni?

Mary-TOP what-ACC so   expensive car-ACC buy-PST-QUE

'Why (the hell) did Mary buy such an expensive car?'

---

[9]See, among others, Kitagawa (1986), Koopman & Sportiche (1991), and Kuroda (1988) for detailed discussion of the VP-internal subject hypothesis.

(91)

CP/ForceP
- CP
  - TP
    - Mary-nun$_1$
    - T′
      - vP
        - NP
          - N′
            - mwe-l
          - CAUSE-Op
        - v′
          - t$_1$
          - v′
            - VP
              - kulehkey pissan cha-lul sa
            - v
      - T
        - ss
  - C
    - ni
- C/Force
  - Q-Op
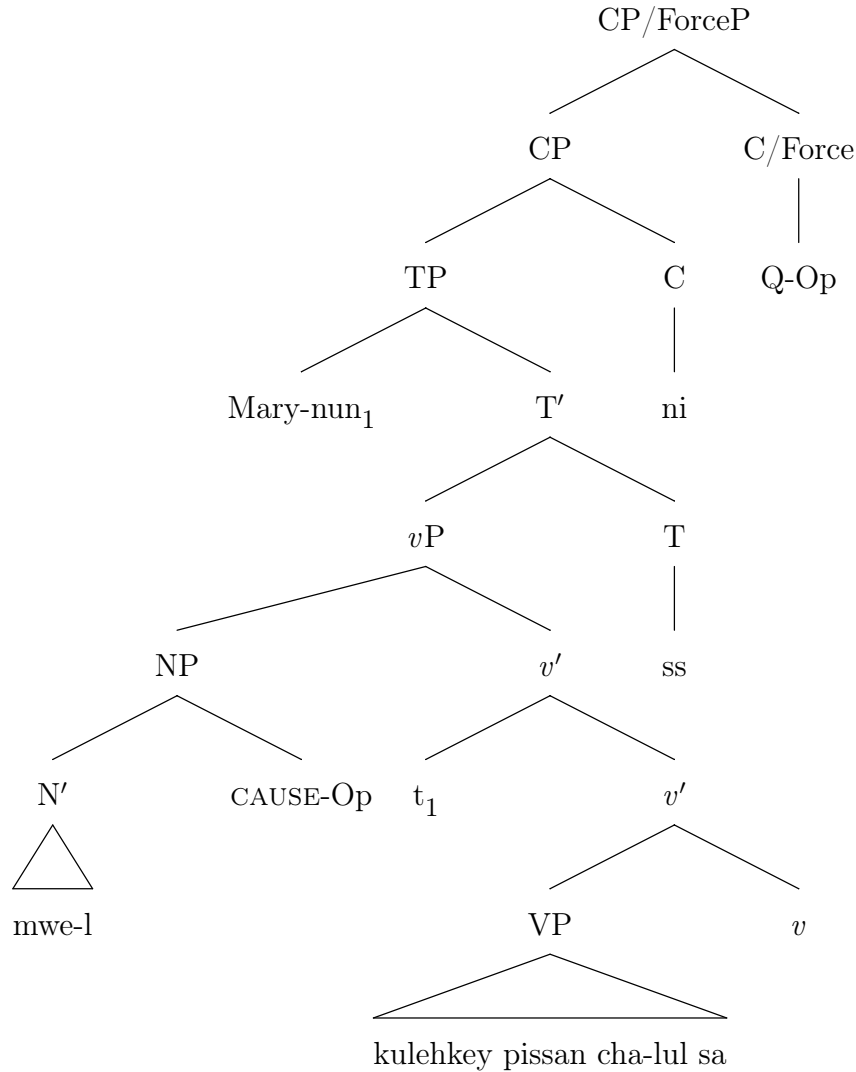
The external merge of WHAT, alongside CAUSE-Op, in the vP domain explains its typical occurrence in a sentence-medial position. As will be seen, the combination of WHAT and a CAUSE-operator plays a key role in accounting for various idiosyncratic properties of Korean WHAT-questions.

2.4.2 Double CP-structure

As the above tree structure in (91) shows, I propose to analyze Korean WHAT-questions as involving double-CP structures in which the higher CP constitutes ForceP headed by

a Q-operator. The primary motivation for postulating such a double-CP structure draws from McCloskey's (2006) discussion on embedded inversion in Irish varieties of English. In his paper, McCloskey sets out to address the question of why embedded inversion occurs felicitously in the complement of question verbs like *wonder* and *ask*, as illustrated in (92), but not in the complement of resolutive verbs like *know* and *remember*, as illustrated in (93).

(92)   a.   I wonder what should we do.   (McCloskey 2006: 89)

     b.   You'd be better off asking why did he marry me.   (ibid.: 87)

(93)   a. *I usually know who might they hire.   (ibid.: 88)

     b. *I remember clearly how many people did they arrest.   (ibid.: 88)

As McCloskey points out, such T-to-C raising in the embedded context is problematic if we follow the generally accepted view that T-to-C raising is licensed if and only if the target C-position is not lexically selected. That is, if we assume that the embedded *wh*-clause in (92a) is selected for by the question predicate *wonder*, then the T-to-C fronting should be blocked, contrary to fact. In order to explain the contrast between question and resolutive predicates in embedded inversion, McCloskey proposes that while resolutive predicates take a single-CP complement, question predicates take a double-CP complement in which the higher C-layer may correspond to ForceP. According to this view, the sentence in (92a) is analyzed as having the surface structure given in (94).

(94)

```
                        VP
                ┌────────┴────────┐
                V             CP/ForceP
                │          ┌───────┴───────┐
             wonder    C/Force            CP
                         │          ┌──────┴──────┐
                         ∅       DP[WH]           C′
                                    │         ┌────┴────┐
                                  what        C        TP
                                              │        △
                                           should    we t do
```
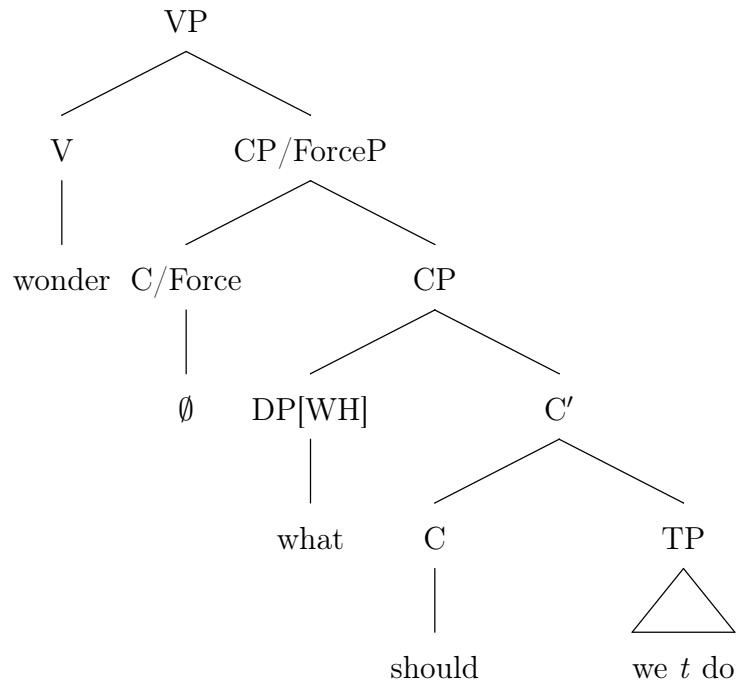
This double-CP analysis offers a way of understanding how T-to-C fronting is allowed in the complement of question predicates: as observed in the tree structure, the target C-position is selected for by the functional head C/Force, not by the lexical head *wonder*. On the contrast, the embedded inversion is not licensed in the complement of resolutive predicates, as seen in (93), since the target C-position is selected for by the given resolutive predicate, as illustrated in (95).

(95)

```
                    VP
           _____/_____
          V                  *CP
          |            _____/_____
        know      DP[WH]             C'
          |        |          _____/_____
                  who        C              TP
                             |             /\
                           might      they t hire
```
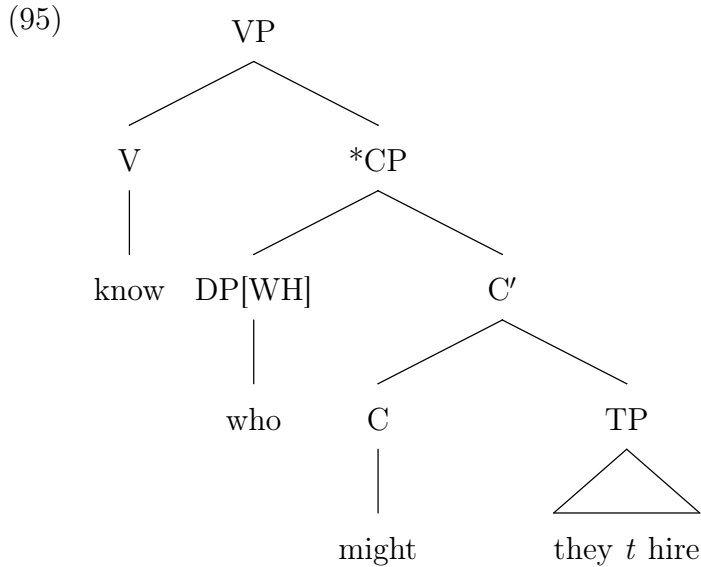
However, McCloskey points out that resolutive predicates can be compatible with embedded inversion if they are questioned, negated, or combined with directive verbs like *want* and *would like*, as shown by the following examples:

(96) a. Do you know will he accept the offer?   (McCloskey 2006: 114)

b. 'Ah, he's a nice young fellow.' 'I don't know is he.'   (ibid.: 99)

c. Everybody wants to know did I succeed in buying chocolate for. (ibid.: 115)

McCloskey attempts to account for the observed distribution of embedded inversion (the higher interrogative type) on the basis of Krifka's (1999) proposals. Krifka argues that the complements to verbs like *wonder/ask/inquire* denote question speech acts, while those to verbs like *know/discover* denote sets of propositions (in the sense of Hamblin 1976 and Karttunen 1977). In addition, by postulating an operator QUEST—a function from sets of propositions to a corresponding question speech act—Krifka suggests that the semantics of the complement to a verb like *wonder* is derived through an extra compositional step at

which the QUEST operator is introduced and applied to the set of propositions represented by the interrogative sentence radical, yielding a question speech act.

Building on Krifka's proposals, McCloskey suggests that the higher CP layer in the complement of questions verbs is where the QUEST operator is introduced and applied to the interrogative sentence radical denoted by the lower CP. Assuming that speech acts are taken to involve a particular type of context change potential,[10] McCloskey further suggests that the complement of question verbs is felicitous only if the issue raised by the embedded question act is unresolved or controversial for the referent of the experiencer argument of the embedding question verb at the present time. On this view, for example, uttering the sentence *I wonder will Trump win the election* is felicitous only in a context where the issue of Trump's electional success is unresolved for the referent of the experiencer argument of *wonder* at the time of speaking.

McCloskey tries to account for the incompatibility of resolutive verbs with embedded inversion on the basis of Ginzburg & Sag's (2000) argument that resolutive verbs convey "a presupposition that the embedded question is resolved (p. 65)". As discussed above, the question act is performed only if the issue it raises is unresolved for the referent of the experiencer argument of the embedding verb at the present time; however, this condition is not satisfied due to the lexical property of resolutive verbs. Meanwhile, as we have observed above, if resolutive verbs are negated, questioned or combined with directive verbs, they become compatible with embedded inversion which is only licensed in a double-CP structure. According to McCloskey's view, this is so because the effect of negating, ques-

---

[10]Building on Gunlogson (2001) and Krifka (2001), McCloskey notes that speech acts "induce transitions from one commitment state to another, where commitments may be shared or not by participants in the conversation and may be private or public (p. 112)".

tioning, combining with directive verbs—devices which create nonveridical contexts (in the sense of Giannakidou 1997)—is to entail that the issue raised by the embedded question is unresolved.[11]

McCloskey does not give us an explanation for 'how' negated and questioned resolutive verbs, unlike their nonnegated and nonquestioned counterparts, can come to accepting the double-CP structure in their complement position. Regarding this, he mentions that "the logic of our analysis implies that embedded inversion is always the surface sign of a complement of the higher interrogative type (a true question), a consequence whose plausibility is enhanced by the observations we are dealing with here (p. 112)".

With McCloskey's discussions on embedded inversion in mind, let us return to WHAT-questions. We have observed that Korean WHAT-questions can be taken by question verbs, but not by resolutive verbs:

(97) a. na-nun [John-i   mwe-l   tto   tokil-ey   kass-nunci]

      I-TOP   John-NOM what-ACC again Germany-to went-QUE

      kwungkumha-ta.   (=(19))

      wonder-DECL

      'I wonder why (the hell) John went to Germany again.'

   b. *na-nun [John-i   mwe-l   tto   tokil-ey   kass-nunci] an-ta.

      I-TOP   John-NOM what-ACC again Germany-to went-QUE   know-DECL

      'I know why (the hell) John went to Germany again.'

---

[11]As McCloskey mentions, the use of an imperative has the same effect:

(i)   Find out does he take sugar in his tea. (McCloskey 2006: (93))

The issue of whether or not he takes sugar in his tea is unresolved at the present time.

However, WHAT-questions can be selected for by resolutive predicates if those predicates are negated, questioned, or form a larger structure with directive verbs, i.e., if they occur in nonveridical contexts:

(98) a. na-nun [John-i   mwe-l   tto   tokil-ey   kass-nunci]
        I-TOP John-NOM what-ACC again Germany-to went-QUE

        molu-keyss-e.   (=(20))
        not.know-PRES-DECL

        'I don't know why (the hell) John went to Germany again.'

    b. ne-nun [John-i   mwe-l   tto   tokil-ey   kass-nunci] a-ni?
        you-TOP John-NOM what-ACC again Germany-to went-QUE   know-QUE

        'Do you know why (the hell) John went to Germany again?'

    c. na-nun [John-i   mwe-l   tto   tokil-ey   kass-nunci] al-ko
        I-TOP John-NOM what-ACC again Germany-to went-QUE   know-CONN

        sip-e.
        would like to-DECL

        'I would like to know why (the hell) John went to Germany again.'

As we have seen so far, the distributional patterns of Korean WHAT-questions in embedding contexts are precisely like those of embedded inversion in (Irish) English. The natural move to make at this point is to assume that Korean WHAT-questions involve a double-CP structure, where the higher C-layer constitutes ForceP. On this double-CP analysis, the sentence in (97a) is taken to involve the structure presented in (99)

(99)

```
                                    VP
                         _____
                      ForceP                      V
                   _____                |
                  /           Force′          kwungkumha
                  /          _____
                CP         /           Force
            _____    CP              |
           TP        C                 Q-Op
        _____      |
    John-i₁      T′  nunci
              _____
            vP          T
       _____      |
     NP         v′      ss
    ____      _____
   N′  CAUSE-Op  t₁      v′
   △                  _____
 mwe-l              VP       v
                   ___
              tto tokil-ey ka
```
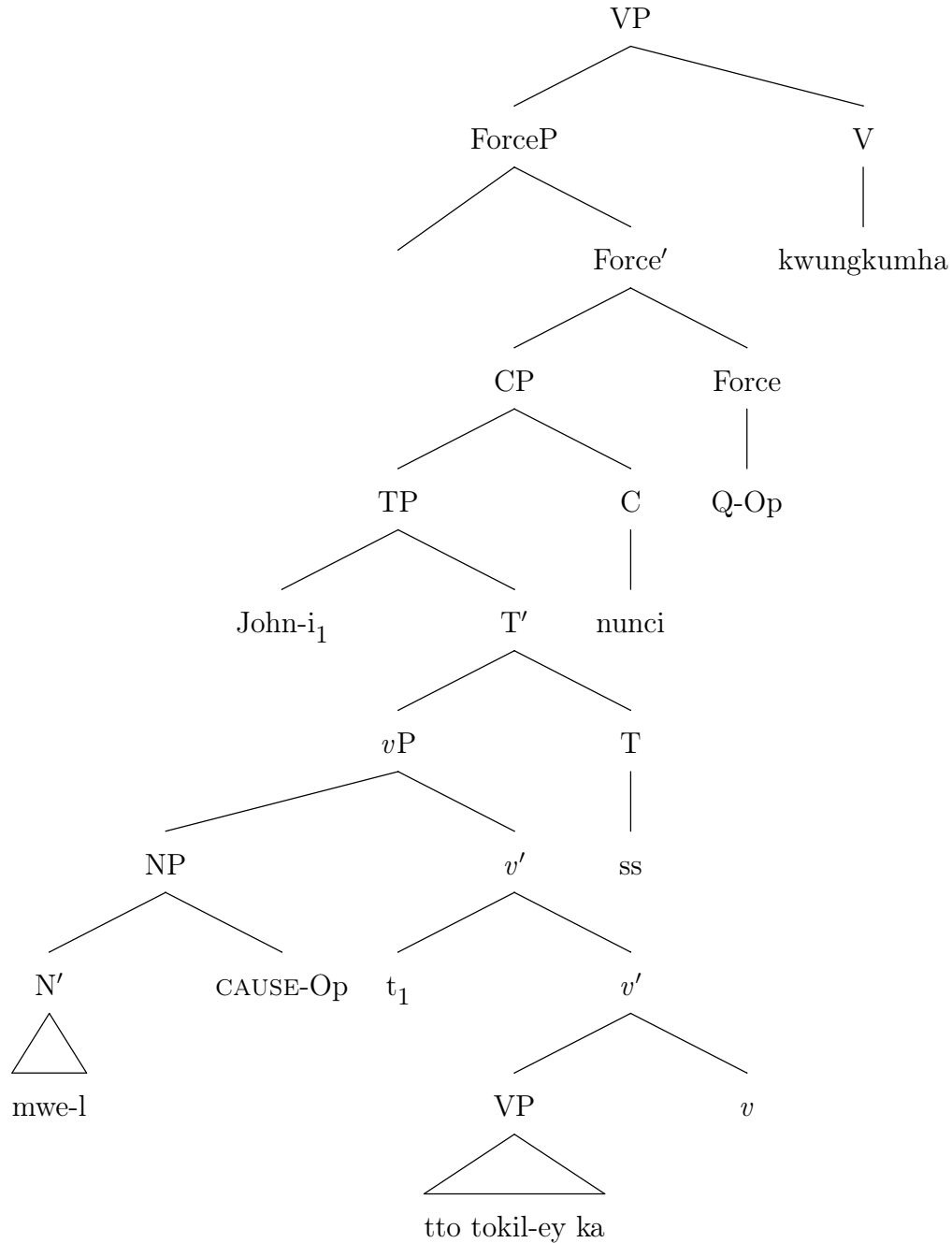
We can see that the embedded *mwe-l*-question has the double-CP structure whose ForceP is locally selected for by the question predicate *kwungkumha* 'wonder'. As will be discussed in detail, I suggest that the head of ForceP is occupied by an ordinary question operator (Q-Op) that yields a Hamblin set of propositions by existentially binding a free propositional variable (introduced by *mwe-l*) in the CP denotation. The double-CP analysis developed

here, as we will see, plays a crucial role in acconting for the incompatibility of WHAT with embedded infinitival clauses and for its inability to be be used as a fragment question.

2.4.3 Covert movement of the complex *wh*-phrase

Under the Probe-Goal system (Chomsky 2000, 2001), I argue that the complex *wh*-phrase (Goal) bears interpretable [*i*WH] and uninterpretable [*u*Q] features, projected from the head WHAT, and that C (Probe) is endowed with a [*u*WH] feature. The complex *wh*-phrase raises to Spec-CP to eliminate the [*u*WH] feature of C. The [*u*Q] feature of the *wh*-phase sitting in Spec-CP is deleted by the Force head with an [*i*Q] feature via Agree. This syntactic process is illustrated in the tree diagram presented in (100).

(100)

ForceP
- CP
  - NP$_{[i\text{WH}, \text{uQ}]}$
    - N′
      - mwe-l
    - CAUSE-Op
  - C′
    - λ$_2$
    - C′
      - TP
        - NP
          - Mary-nun
        - T′
          - λ$_1$
          - T′
            - vP
              - t$_2$
              - v′
                - t$_1$
                - v′
                  - VP
                    - NP
                      - kulehkey pissan cha-lul
                    - V
                      - sa
                  - v
            - T
              - ss
      - C$_{[u\text{WH}]}$
        - ni
- Force$_{[i\text{Q}]}$
  - Q-Op
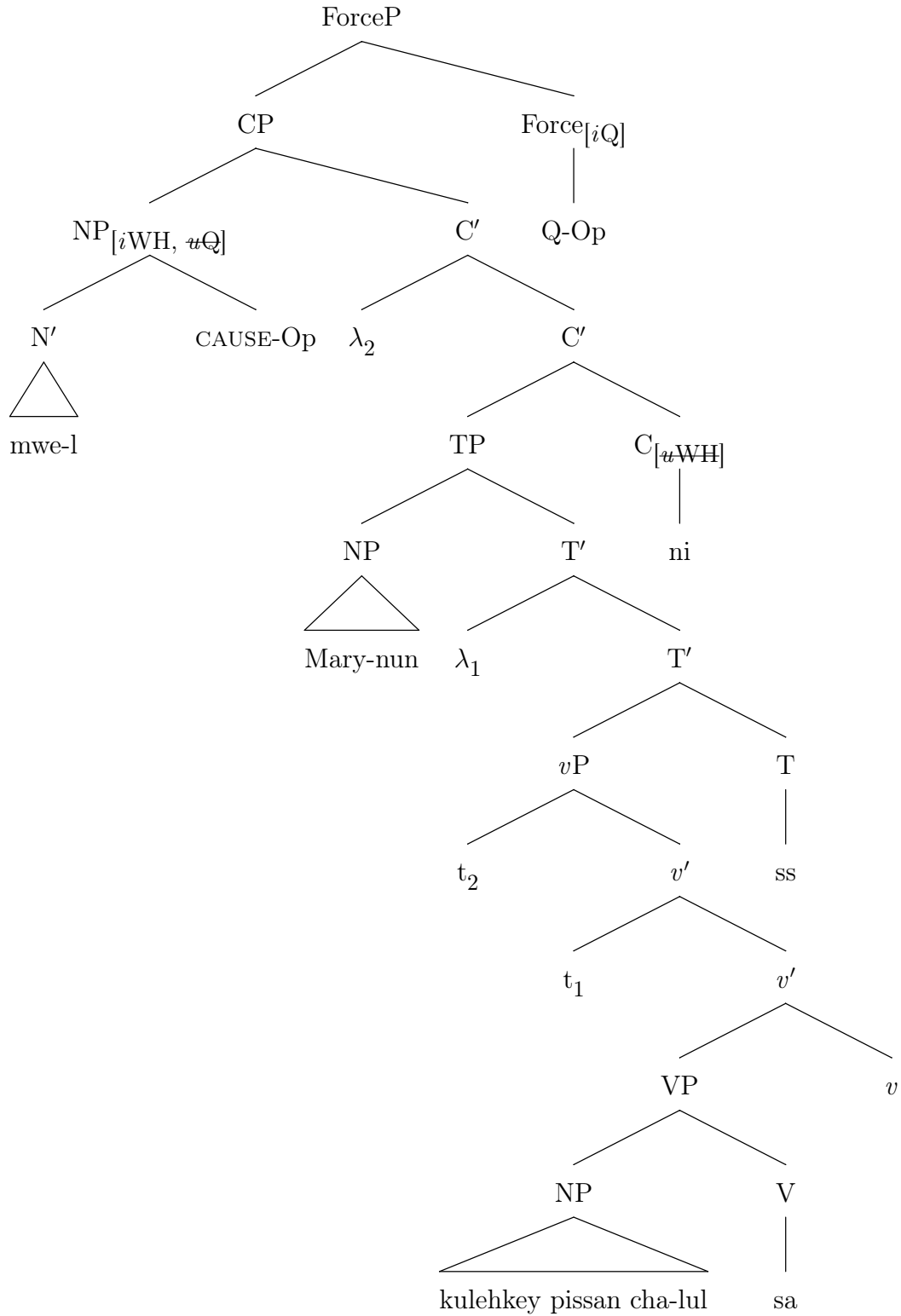
The LF movement of a complex *wh*-phrase into Spec-CP for *wh*-feature checking is regarded as the reason why the nominal *wh*-adjunct WHAT is sensitive to strong islands, as we

have seen in (43), repeated below:

(43) a. *Complex NP Island*:

*John-un [[mwe-l   kulehkey manhun chayk-ul ilk-un]   salam]-ul

John-TOP what-ACC so   many   book-ACC read-MOD person-ACC

pinanhayss-ni?

criticized-QUE

'John criticized the person who read so many paper why?'

b. *Adjunct Island*:

*John-un [Mimi-ka   mwe-l   kulehkey ilccik ttena-se]

John-TOP Mimi-NOM what-ACC so   early leave-because

hwakanass-ni?

got.upset-QUE

'John got upset because Mimi left so early why?'

In both cases, the nominal *wh*-adjunct *mwe-l* buried inside the island must move to the matrix clause at LF to check off [*u*WH] on matrix C. Such movement, however, violates an island constraint, thereby incurring ungrammaticality.

Let us recall the fact that the nominal *wh*-adjunct *mwe-l* cannot occur in a sentence-initial position, as in (101).

(101) *mwe-l   Mary-nun kulehkey pissan   cha-lul sa-ss-ni?

what-ACC Mary-TOP so   expensive car-ACC buy-PST-QUE

'Why (the hell) did Mary buy such an expensive car?'

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In accounting for the ungrammaticality, one might say that it is simply due to a violation of the base word order: since WHAT, alongside CAUSE-Op, is base-generated in Spec-vP, it is unable to surface sentence-initially. However, such a view is apparently inadequate given that Korean is a scrambling language. In what follows, I present an alternative view according to which the unacceptability of examples like (101) is due to overt A′-scrambling of the complex *wh*-phrase to the left of the subject, i.e., Spec-TP. In doing so, let us first consider the assumed LF structure for (101) below:

(102)

ForceP
- CP
  - C′
    - λ_2
    - C′
      - TP
        - NP$_{[i\text{WH}, u\text{Q}]}$
          - N′
            - mwe-l
          - CAUSE-Op
        - TP
          - Mary-nun t_2 kulehkey pissan cha-lul sa-ss
      - C$_{[u\text{WH}]}$
        - ni
  - Force$_{[i\text{Q}]}$
    - Q-Op
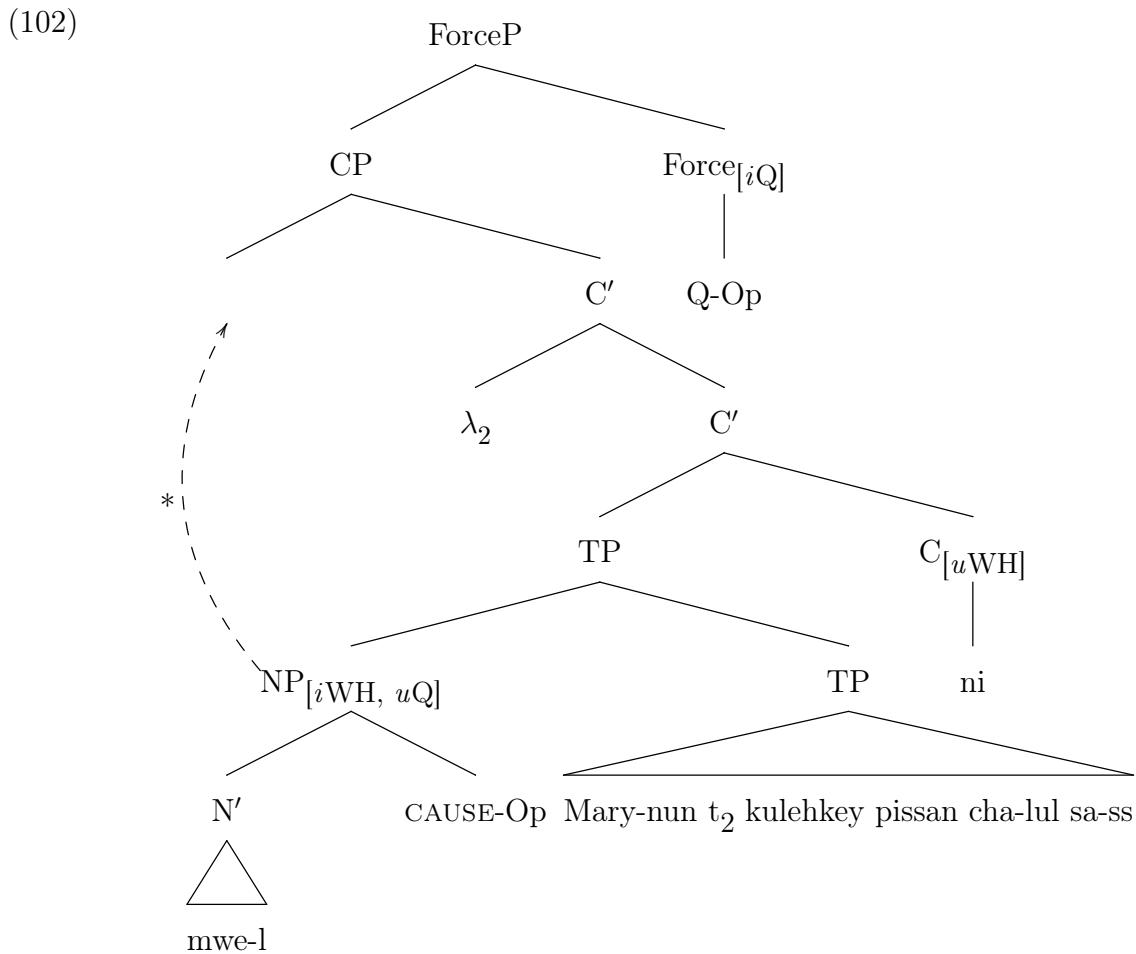
Under the current approach, the scrambled complex *wh*-phrase in the TP region needs to raise to Spec-CP to take scope, but as indicated in the above tree structure, I argue that such a *wh*-movement is impermissible. I propose to account for this in terms of operator freezing

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effects proposed by Bošković (2008), which state that "operators in operator-variable chains cannot undergo further operator movement (p. 250)".[12]

Before going on, let us briefly examine Bošković's discussion on *wh*-scrambling in terms of operator freezing effects. Bošković argues that the impossibility of *wh*-scrambling in German, as shown in the contrast in (103), is because the A-bar *wh*-scrambling has semantic effects (e.g., focalization or topicalization; see Grewendorf 2005), with the result that it is subject to the operator freezing effect. That is, the *wh*-phrase that has undergone A′-scrambling cannot further undergo *wh*-movement for scope taking, leading to ungrammaticality.

(103) a. Ich weiß nicht [$_{CP}$ wem$_j$ [$_{IP}$ der Fritz t$_j$ was gesagt hat]].

   I know not whom$_{DAT}$ ART$_{NOM}$ Fritz what$_{ACC}$ said has

   'I don't know what Fritz said to whom.'

   b. *Ich weiß nicht [$_{CP}$ wem$_j$ [$_{IP}$ was$_i$ [$_{IP}$ der Fritz t$_j$ t$_i$ gesagt

   I know not whom$_{DAT}$ what$_{ACC}$ ART$_{NOM}$ Fritz said

   hat]].

   has

   'I don't know what Fritz said to whom.' (Bošković 2008: (6))

Meanwhile, as shown in (104), Japanese allows for scrambling of *wh*-phrases.

(104) [$_{IP}$ Taro-ga [$_{VP}$ [dono hon-o]$_i$ Hanako-ni$_j$ [$_{CP}$ PRO$_j$ t$_i$ yom-u

   Taro-NOM which book-ACC Hanako-DAT read-nonpast

---

[12]The movement operations creating operator-variable chains include *wh*-movement, focalization, topicalization, quantifier raising, and the NPI-licensing movement. See Bošković (2008) for detailed discussion on them.

yooni] it-ta   no]]?

C   tell-PAST QUE

'Which book did Taro tell Hanako to read?'   (Bošković 2008: (6))

Building on Saito's (1989, 1992) proposal that Japanese *wh*-scrambling is a semantically vacuous A′-movement, i.e., it does not have semantic effects, Bošković explains that Japanese *wh*-scrambling is irrelevant to the operator freezing effect; as a result, the *wh*-scrambling can feed the subsequent *wh*-movement for scope taking.

With the above discussion in mind, let us return to the problem raised by the LF structure in (102). I argue that the scrambling of the complex *wh*-phrase is taken to be a semantically informative A′-movement, since it contains not only the *wh*-operator WHAT, but also the CAUSE-Op, whose movement generates semantic effects: for example, as we have seen above, it scopally interacts with a negative element (see (78)). Hence, the subsequent, post-scrambling movement of the *wh*-phrase for taking scope is blocked by the operator freezing effect. This is why examples like (101) are ruled out. The discussion presented here provides support to the view that the nominal *wh*-adjunct WHAT combines with the CAUSE-Op to form a complex *wh*-phrase.

2.4.4   Semantics of CAUSE-Op

As we have previously seen, the treatment of the nominal *wh*-adjunct *mwe-l* on a par with a *wh*-adjunct corresponding to *way* 'why' is arguably inappropriate (cf. Kim 2021). The question we must answer, then, is how *why*-interpretations can be obtained from WHAT-questions. Here I attempt to answer the question by proposing that the *why*-interpretation

is derived via a CAUSE-operator which expresses a causal relation between two events. Before embarking on this semantic analysis, let us consider a proposal by Tsai (2008) that reason, causal, and purpose questions all involve a 'causal' relation between two events.

Tsai (2008) provides (105) (his (19)) to illustrate Reinhart's (2003) classification of causal relation between two events into three types: Enable, Cause, and Motivate.

(105) a. Enable: One event is a necessary condition for the other.

   (e.g., Pasuya entered the pool, and then he drowned.)

 b. Cause: One event is a sufficient condition for the other.

   (e.g., It just snowed outside, so the snow is white.)

 c. Motivate: One event either enables or causes the other, mediated by a mental state. (e.g., Pasuya wanted to eat, so he started to cook.)

The first type of causal relation is called Enable, where one event is a necessary condition for the other. In the given example, the event of 'Pasuya entered the pool' is a necessary condition for the event of 'Pasuya drowned'.[13] Tsai proposes that reason/epistemic questions involve this Enable relation. For example, the utterance of *Why did Pasuya drown?* is interpreted as asking the reason question 'What enabled Pasuya's downing?' or 'What made Pasuya's downing possible?'. Adopting the event semantics, Tsai takes the reason question to represent the semantic interpretation given in (106).

(106) $?e\exists e'(\text{drowning}(e') \; \& \; \text{Agent}(e', \text{Pasuya}) \; \& \; \text{ENABLE}(e, \; e'))$

---

[13]Tsai (2008) notes that "the term "necessary condition" is not used in the strict logical sense but based on our understanding of how causality works in the real world (p. 90-91)".

The second type of causal relation is the Cause relation, where one event is a sufficient condition for the other. In the given example for this, the cause event *it just snowed outside* is a sufficient condition for the result event *the snow is white.* Tsai notes that causal and resultative questions involve a Causal relation. For example, the causal question *How come the snow is white?* can be paraphrased as *What event caused the snow's being white?*, as formally described in (107).[14]

(107) $?e\exists s(\text{being-white}(s)$ & $\text{Theme}(s, \text{the snow})$ & $\text{CAUSE}(e, s))$, where s refers to a resultant state

The last one is a Motivate relation, where one event either enables or causes the other, mediated by a mental state. In the given example, Pasuya's wanting to eat motivates his cooking. Tsai considers purpose questions to involve this Motivate relation. On this view, for example, the purpose question *Why did Pasuya cook?* is assumed to yield the interpretation presented in (108).

(108) $?e\exists e'(\text{cooking}(e')$ & $\text{Agent}(e', \text{Pasuya})$ & $\text{MOTIVATE}(e, e'))$, where e either enables or causes e' mediated by a mental state.

Building on Tsai's proposal, I argue that the CAUSE-Op involved in WHAT-questions is modeled as the function given in (109) under the event semantics (cf. Dowty 1979).

(109) $[\![\text{CAUSE-Op}]\!] = \lambda P_{\langle s,t\rangle}\lambda Q_{\langle s,t\rangle} . \exists e_1[P(e_1) \wedge e_1$ is the CAUSE of $\iota e_2[Q(e_2)]]$

The CAUSE-Op (type $\langle\langle s,t\rangle,\langle\langle s,t\rangle,t\rangle\rangle$) takes as its arguments two propositions (construed as sets of events) and returns true iff an event of the first propositional type is the CAUSE of

---

[14]Tsai notes that in *How come the snow is white?*, *the snow* is interpreted only as specific and that there is a change of state from non-whiteness (e.g., gray or brown with dirt) to whiteness.

a unique/definite event of the second propositional type. The causal relation between two events allows us to capture causal/reason/purpose readings of WHAT-questions in the sense of Tsai (2008):

(110) A: ne-un   mwe-l   tto   lenten-ey   ka-ni?

 you-TOP what-ACC again London-LOC go-QUE

 'Why (the hell) are you going to London again?'

 B: anay-ka   imi   pihayngkiphyo-lul sa-se.   (cause)

 wife-NOM already plane.ticket-ACC   buy-because

 'Because my wife already bought plane tickets.'

 B': hakhoy   palphyo-ttaymwuney.   (reason)

 conference presentation-because

 'Because I have a conference presentation.'

 B'': tto   ka-ko   sip-ese.   (purpose)

 again go-CONN would.like-because

 'Because I want to go there again.'

In the causal reading, the past event of the addressee's wife's buying plane tickets is a sufficient condition for the future event of the addressee's going to London (Cause relation). In the reason reading, the event of the addressee's having a conference presentation is a necessary condition for the event in question (Enable relation). In the purpose reading, the addressee's wanting to go to London motivates his/her going there again (Motivate relation).

To illustrate how CAUSE-Op compositionally works to derive the *why*-readings of WHAT-questions, let us consider the LF structure given in (111).

(111)

```
                              ForceP
                         ╱            ╲
                    CP: t               Force
                ╱         ╲               │
       NP: ⟨⟨s,t⟩,t⟩       C': ⟨s,t⟩     Q-Op
        ╱       ╲         ╱        ╲
  N': ⟨s,t⟩   CAUSE-Op:  λ₂       C': t
     ╱╲     ⟨⟨s,t⟩,⟨⟨s,t⟩,t⟩⟩         ╱     ╲
    ╱  ╲                           TP: t      C
   mwe-l                          ╱    ╲      │
                                 ╱      ╲     ni
                    Mary-nun t₂ kulehkey pissan cha-lul sass
```
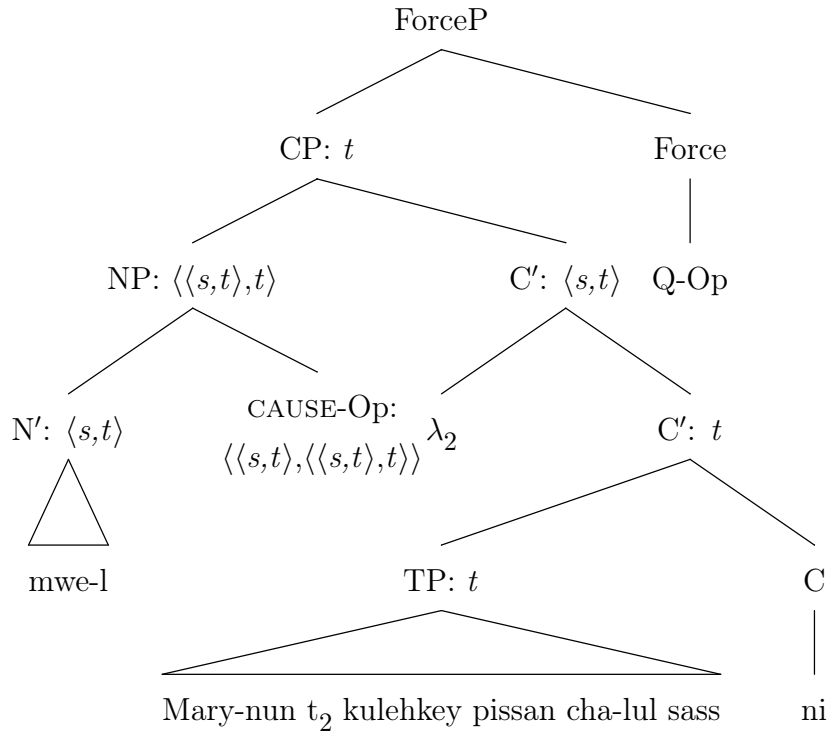
As we can see here, the nominal *wh*-adjunct *mwe-l* denotes a proposition of type $\langle s,t \rangle$, which serves as the first propositional argument of CAUSE-Op, resulting in the complex *wh*-phrase of type $\langle\langle s,t \rangle,t \rangle$. Then, the complex *wh*-phrase composes with the C', which serves as the second propositional argument of CAUSE-Op. Here, the crucial point is that the nominal *wh*-adjunct *mwe-l* is not treated as a *wh*-adjunct like *way* 'why', but as an ordinary *wh*-argument denoting a proposition. In what follows, I present a detailed compositional semantic analysis of WHAT-questions.

2.4.5 'Ordinary *what*'-questions with CAUSE-Op

Under the present analysis, the causal meaning of the WHAT-question in (69), repeated here
as (112), is compositionally derived, as in (113).

(112) Mary-nun mwe-l   kulehkey pissan   cha-lul   sa-ss-ni?

   Mary-TOP what-ACC so   expensive car-ACC buy-PST-QUE

   'Why (the hell) did Mary buy such an expensive car?'

(113)

⑫ForceP
- ①CP: t
  - ⑩NP: $\langle\langle s,t\rangle,t\rangle$
    - ⑧N′: $\langle s,t\rangle$
      - mwe-l
    - ⑨CAUSE-Op: $\langle\langle s,t\rangle,\langle\langle s,t\rangle,t\rangle\rangle$
  - ⑦: $\langle s,t\rangle$
    - λ_2
    - C′: t
      - ⑤TP: t
        - NP: e — Mary-nun
        - ④: $\langle e,t\rangle$
          - λ_1
          - T′: t
            - ③vP: t
              - t$_2$: s
              - ②$v′$: $\langle s,t\rangle$
                - t$_1$: e
                - $v′$: $\langle e,\langle s,t\rangle\rangle$
                  - ①VP: $\langle e,\langle s,t\rangle\rangle$
                    - NP: e — kulehkey pissan cha-lul
                    - V: $\langle e,\langle e,\langle s,t\rangle\rangle\rangle$ — sa
                  - v
            - T — ss
      - ⑥C — ni
- Force — Q-Op
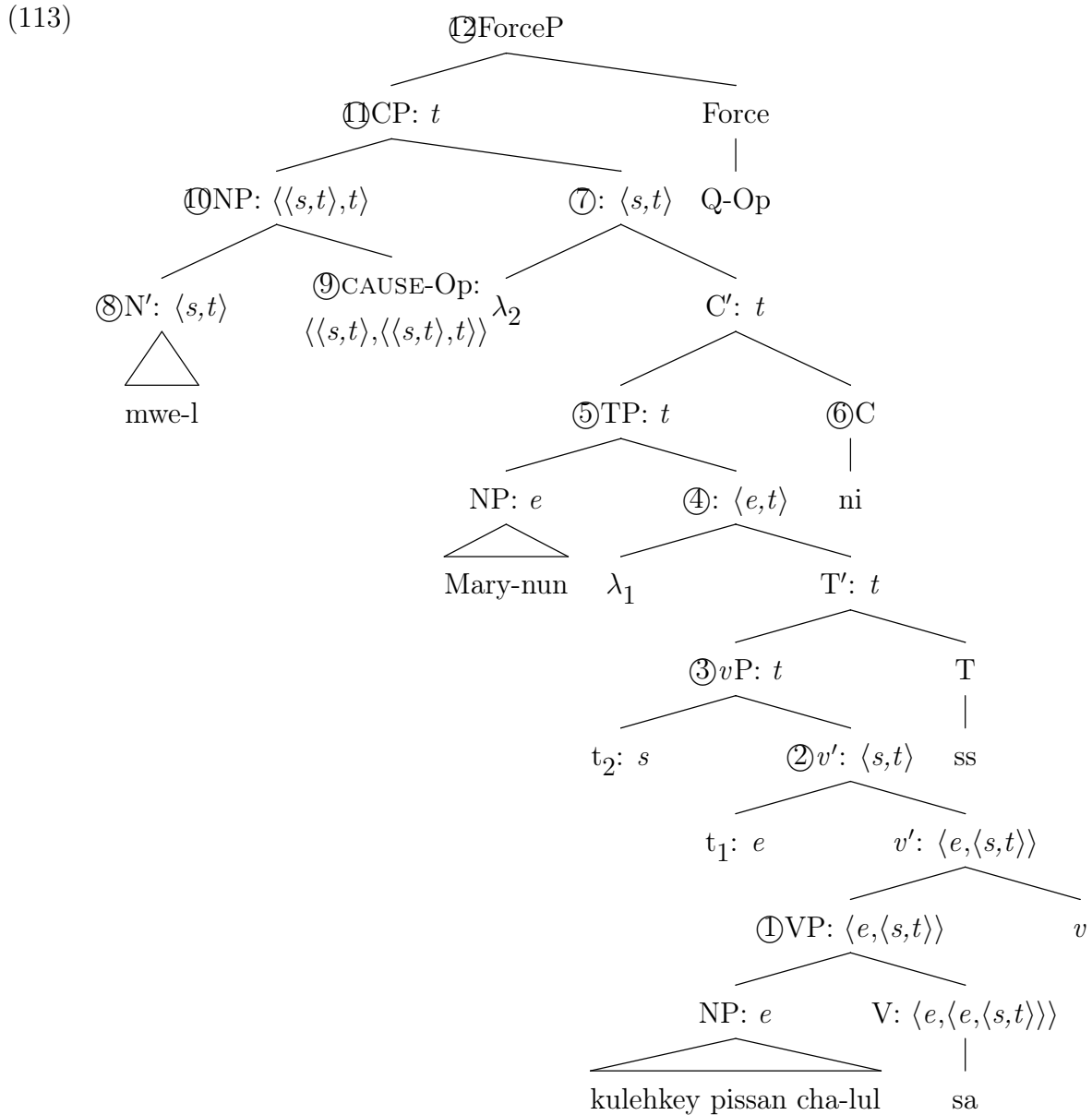
$\llbracket ① \rrbracket = \lambda x \lambda e$. bought(e) & Agent(e, x) & Theme$(e,$ such an expensive car$)$

$\llbracket ② \rrbracket = \lambda e$. bought(e) & Agent(e, x) & Theme$(e,$ such an expensive car$)$

$\llbracket ③ \rrbracket =$ bought(e) & Agent(e, x) & Theme$(e,$ such an expensive car$)$

$\llbracket ④ \rrbracket = \lambda x$. bought(e) & Agent(e, x) & Theme$(e,$ such an expensive car$)$

$\llbracket ⑤ \rrbracket =$ bought(e) & Agent$(e,$ Mary$)$ & Theme$(e,$ such an expensive car$)$

$\llbracket ⑥ \rrbracket = \lambda P$. P

$\llbracket ⑦ \rrbracket = \lambda e$. bought(e) & Agent$(e,$ Mary$)$ & Theme$(e,$ such an expensive car$)$

$\llbracket ⑧ \rrbracket = \lambda e$. $p(e)$

$\llbracket ⑨ \rrbracket = \lambda P_{\langle s,t \rangle} \lambda Q_{\langle s,t \rangle}$. $\exists e_1[P(e_1) \wedge e_1$ is the CAUSE of $\iota e_2[Q(e_2)]]$

$\llbracket ⑩ \rrbracket = \lambda Q_{\langle s,t \rangle}$. $\exists e_1[p(e_1) \wedge e_1$ is the CAUSE of $\iota e_2[Q(e_2)]]$

$\llbracket ⑪ \rrbracket = \exists e_1[p(e_1) \wedge e_1$ is the CAUSE of $\iota e_2[$bought(e_2) & Agent$(e_2,$ Mary$)$ & Theme$(e_2,$ such an expensive car$)]]$

$\llbracket ⑫ \rrbracket = \lambda q$. $\exists p[q = {}^{\wedge}\exists e_1[p(e_1) \wedge e_1$ is the CAUSE of $\iota e_2[$bought(e_2) & Agent$(e_2,$ Mary$)$ & Theme$(e_2,$ such an expensive car$)]]]$

The CAUSE-Op first composes directly with the nominal *wh*-adjunct *mwe-l*, which introduces a propositional variable (p) in the manner of an ordinary *wh*-phrase. Then, the resulting complex *wh*-phrase composes with the C′, which denotes the set of events (see $\llbracket ⑦ \rrbracket$). At the end of the derivation, the *mwe-l*-clause denotes a Hamblin set of propositions of the form 'An event of propositional type p is the CAUSE of the unique/definite event of 'Mary bought such an expensive car', where the free propositional variable introduced by *mwe-l* gets existentially bound syncategorematically by the Q-Op. Consequently, the WHAT-question is construed as an 'ordinary *what*'-question asking about what proposition p is such that an event of propositional type p is the CAUSE of the event of 'Mary bought such an expensive car'.

2.4.6 Welcome consequences

2.4.6.1 WHAT and propositional free relatives

We have observed that the nominal *wh*-adjunct *mwe-l* can occur with the regular *wh*-adjunct *way* 'why' within the same clause, as illustrated in (114).

(114) a. way Mimi-man mwe-l   kulehkey manhun nonmwun-ul ilk-ess-ni?

　　　 why Mimi-only what-ACC so   many   paper-ACC   read-PST-QUE

　　　 'Why did only Mimi read so many papers?'

　　 b. way sakwa-lul mwe-l   kulehkey ppalli   mek-ess-ni?

　　　 why apple-ACC what-ACC so   quickly eat-PST-QUE

　　　 'Why did you eat the apple so quickly?'

The above examples are rather damaging for an analysis that treats a nominal *wh*-adjunct *mwe-l* on a par with *way*, given that Korean disallows two *way*s to occur in the same clause (i.e., to have the same scope), as we have seen in (70), repeated below:[15]

(70)　a. *way Mimi-man way kulehkey manhun nonmwun-ul ilk-ess-ni?

　　　 why Mimi-only why so   many   paper-ACC   read-PST-QUE

　　　 'Why did only Mimi read so many papers?'

---

[15]Following Aoun (1986), Chung (1996) argues that in Korean two or more *wh*-adverbials cannot take the same scope, as in (i), where one *wh*-adverbial occurs in the matrix clause, and the other one in the embedded clause.

(i)　*way John-i   [Mary-ka   way chak-ul   ilk-ess-ta]-ko   malha-ees-ni?
　　 why John-NOM Mary-NOM why book-ACC read-PST-DECL-COMP say-PST-QUE
　　 'Why did John say that Mary read books why?'   (Chung 1996: 60)

b. *way sakwa-lul way kulehkey ppalli   mek-ess-ni?

why apple-ACC why so   quickly eat-PST-QUE

'Why did you eat the apple so quickly?'

The analysis developed here, however, allows us to circumvent the above issue by treating *mwe-l*-questions like (114) not as multiple *wh*-questions like *What did you eat why?*, but as single *wh*-questions corresponding to those given in (115), where a *why*-clause, as a kind of propositional free relative, serves as the argument of the deverbal noun *cause*.

(115) a. What is the cause of why only Mimi read so many papers?

b. What is the cause of why you ate the apple so quickly?

That is, I propose to analyze the *way*-clause in (114) not as an embedded question but as a propositional free relative, whose denotation is taken as the second argument of CAUSE-Op, as represented in (116).

(116)

```
                        ForceP
                       /      \
                     CP        Force
                   /    \      /    \
                 NP      C'   Q-Op
                /  \    /   \
              N'  CAUSE-Op  λ₂    C'
              △                  /  \
                                /____\
            mwe-l               way ...
            'what'              'why-free relative'
```

84
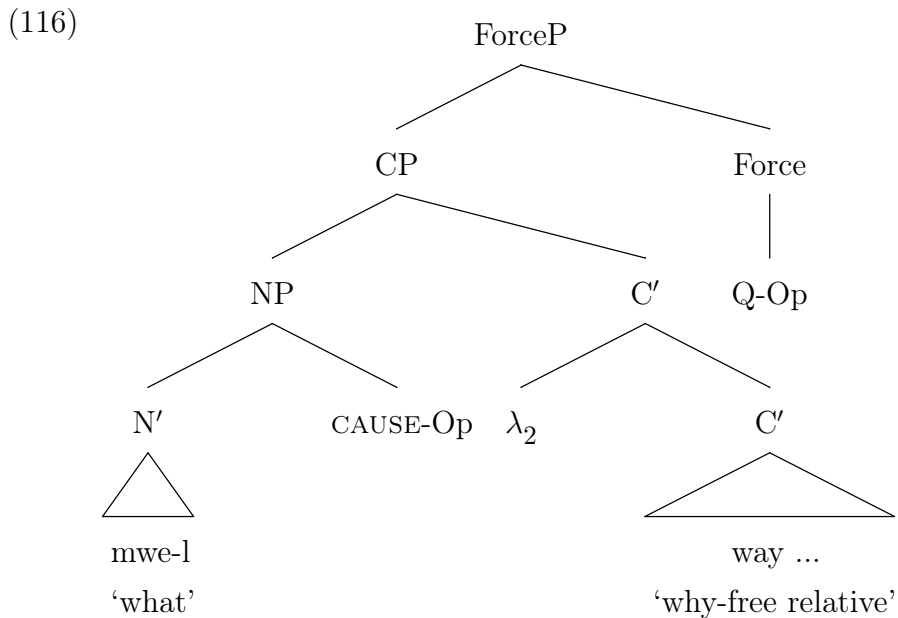
On this view, the *mwe-l*-questions in (114a) and (114b) are interpreted as asking about what proposition p is such that an event of propositional type p is the CAUSE of 'why only Mimi read so many papers' and what proposition p is such that an event of propositional type p is the CAUSE of 'why you ate the apple so quickly', respectively. Consequently, this line of reasoning lends credence to the claim that in Korean the nominal *wh*-adjunct WHAT is not a *wh*-adjunct like *why*, but an ordinary *what* that introduces a propositional variable in the formation of the Hamblin set.

In a similar vein, the present analysis provides a straightforward account of why the nominal *wh*-adjunct WHAT is blocked from occurring with the other *wh*-phrases (*what*, *who*, *when*, and *how*), regardless of the relative word order between the two *wh*-phrases involved. Consider the following pairs of examples:

(117) a. *Mimi-nun <u>mwe-l</u>   tto   <u>mwues-ul</u> mek-ess-ni?

       Mimi-TOP what-ACC again what-ACC eat-PST-QUE

       'What did Mimi eat why again?'

    b. *Mimi-nun <u>mwues-ul</u> <u>mwe-l</u>   tto   mek-ess-ni?

       Mimi-TOP what-ACC what-ACC again eat-PST-QUE

       'What did Mimi eat why again?'

(118) a. *<u>nwu-ka</u>   <u>mwe-l</u>   pelsse tochakhay-ss-ni?

       who-NOM what-ACC already arrive-PST-QUE

       'Who already arrived why (the hell)?'

b. *<u>mwe-l</u>　　pelsse　<u>nwu-ka</u>　　tochakhay-ss-ni?

　　what-ACC already who-NOM arrive-PST-QUE

　　'Who already arrived why (the hell)?'

(119) a. *<u>encey</u> <u>mwe-l</u>　　kulehkey pissan　　cha-lul　sa-ss-ni?

　　when what-ACC so　　　expensive car-ACC buy-PST-QUE

　　'Why did you buy such an expensive car when?'

b. *<u>mwe-l</u>　　kulehkey pissan　　cha-lul　<u>encey</u> sa-ss-ni?

　　what-ACC so　　　expensive car-ACC when buy-PST-QUE

　　'Why did you buy such an expensive car when?'

(120) a. *Mimi-nun <u>ettehkey</u> <u>mwe-l</u>　　tto　　hankwuk-ey　　ka-ss-ni?

　　Mim-TOP how　　what-ACC again South.Korea-to go-PST-QUE

　　'Why did Mimi go to South Korean again how?'

b. *Mimi-nun <u>mwe-l</u>　　tto　　hankwuk-ey　　<u>ettehkey</u> ka-ss-ni?

　　Mimi-TOP what-ACC again South.Korea-to how　　go-PST-QUE

　　'Why did Mimi go to South Korean again how?'

The ungrammatical examples above can be dealt with in the same sense as the ungrammatical examples in (121), where the given *wh*-clause, unlike a *why*-clause, fails to function as a propositional free relative that can serve as the semantic argument of the deverbal noun *cause*.

(121) a. *What is the cause of what John ate again?

b. *What is the cause of who arrived already?

c. *What is the cause of when you bought such an expensive car?

d. *What is the cause of how Mimi went to South Korean again?

In that sense, the sentences in (117)–(120) are deviant because the proposed analysis forces them to produce ill-formed propositions of the form 'An event of propositional type p is the CAUSE of {what/who/when/how} ...' by treating WHAT and the remaining *wh*-clause as the first and second arguments of CAUSE-Op, respectively.

2.4.6.2   Anti-intervention effects

Recall that Korean WHAT, unlike Japanese counterpart, can be compatible with negation, as in (122).

(122)   mwe-l   yethay an ca-ko   iss-ni?

  what-ACC still   not sleep-CONN COP-QUE

  'Why (the hell) are you still not asleep?'

Under the present analysis, the complex *wh*-phrase containing CAUSE-Op undergoes covert movement to Spec-CP, crossing the negative element, in order to take scope, as illustrated in (123).

(123)

```
                            ForceP
                          /        \
                        CP          Force
                      /    \          |
                    NP      C'       Q-Op
                   /  \    /   \
                 N'  CAUSE-Op λ₂   C'
                 △                 △
               mwe-l           ... [an] ...
```
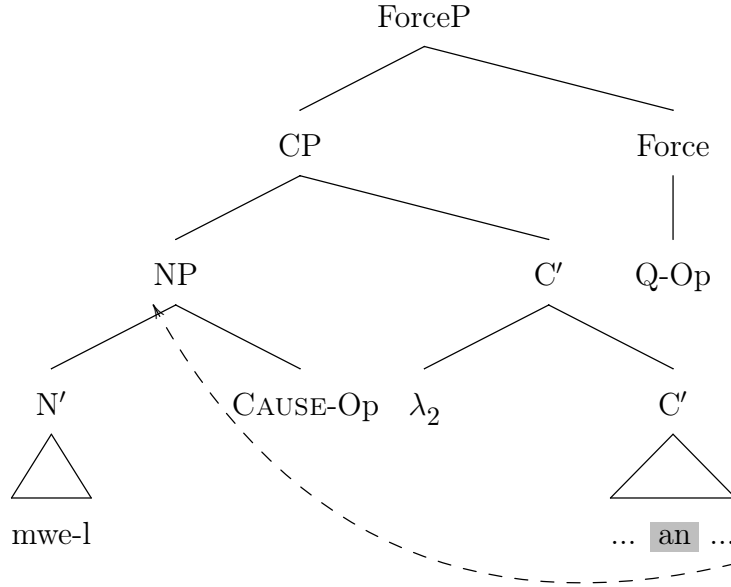
Here I follow Beck (2006), Kotek (2019) and others in arguing that an in-situ *wh*-phrase can move covertly across the intervening negation in order to avoid the intervention effect.[16] That is, I take the sentence like (122) to be irrelevant to the negative island effect, where negation blocks covert movement of an in-situ *wh*-phrase (cf. Ochi 2014).

In a similar vein, we have observed that the nominal *wh*-adjunct WHAT does not give rise to intervention effects when c-commanded by other intervenors like *man* 'only':

(124) John-man mwe-l   pelsse   ttena-ss-ni?

John-only what-ACC already leave-PST-QUE

'Why (the hell) did only John already leave?'

On the proposed analysis, the well-formedness of (124) is due to the covert movement of the

---

[16]The configuration that induces the intervention effect is given in (i), taken from Kotek (2019: 5)

(i)   a. *[$_{CP}$ C ... [**intervener** [... *wh* ...]]]

   b. [$_{CP}$ C ... [*wh* [**intervener** [... *t* ...]]]]

(ia) illustrates that if a *wh*-phrase is interpreted in the c-commanding domain of an intervenor, the sentence becomes ungrammatical due to the intervention effect. On the other hand, as shown in (ib), if a *wh*-phrase covertly or overtly moves above an intervenor, then the sentence can avoid the intervention effect (see also Beck 2006).

complex *wh*-phrase into the CP domain, crossing the subject intervenor, thereby avoiding the intervention configuration, i.e., being c-commanded by the intervenor.

2.4.6.3 Scopal interactions with negation

As we have discussed, in Korean WHAT-questions the causal (CAUSE) meaning needs to achieve wide scope with respect to negation. The relevant example is repeated below:

(125) John-un mwe-l   tto moim-ey   an o-ass-ni?

John-TOP what-ACC again meeting-LOC not come-PST-QUE

a. There is some event such that it caused John not to come to the meeting again. Specify the event? (CAUSE > *not*)

b. *There is some event such that it is not the case that that event caused John to come to the meeting again. Specify the event? (CAUSE < *not*)

Note, in addition, that the nominal *wh*-adjunct WHAT, which describes the causing event in the present system, necessarily takes wide scope over negation, as illustrated in (126).

(126) Mimi-nun mwe-l   yethay an ca-ko   iss-ni?

Mimi-TOP what-ACC still   not sleep-CONN be-QUE

'What is an event such that it caused an event of Mimi's not being asleep?' (WHAT > *not*)

'*What is not an event such that it caused an event of Mimi's being asleep?' (WHAT < *not*)

These scope behaviors of negation in WHAT-questions are readily captured by the present analysis: since the complex *wh*-phrase, consisting of the *wh*-operator *mwe-l* and CAUSE-Op,

covertly moves to Spec-CP and is interpreted there, the two operators always achieve wide scope relative to the negation (see (123)).

2.4.6.4   Incompatibility with nonfinite clauses: absence of ForceP

Recall from the discussion in section 2.4.6.5 that the nominal *wh*-adjunct *mwe-l* cannot be construed within the embedded infinitival clause taken by predicates like *sultukha* 'persuade' or *myenglyengha* 'order'. The relevant examples are repeated below as (127).

(127) a. *John-un Mary$_i$-eykey [PRO$_i$ mwe-l   tto   ku sosel-ul   ilku-lako]

John-TOP Mary-to   what-ACC again the novel-ACC read-COMP

seltukha/myenglyengha-yss-ni?

persuade/order-PST-QUE

'What is the reason x such that John persuaded/ordered Mary to read the novel again for that reason x? (long-distance reading)'

b. John-un   Mary$_i$-eykey mwe-l   tto   [PRO$_i$ ku sosel-ul   ilku-lako]

John-TOP Mary-to   what-ACC again   the novel-ACC read-COMP

seltukha/myenglyengha-yss-ni?

persuade/order-PST-QUE

'What is the reason x such that for x John again persuaded/ordered Mary to read the novel? (matrix reading)'

To explain this fact, here I adopt Shlonsky & Soare's (2011) account of the deviance of English infinitival clauses headed by *why*. Consider (128).

(128) a. ??I asked Bill why to serve spiced aubergines.   (Shlonsky & Soare 2011:

(4g))

b. ??Why to serve spiced aubergines is the big question.   (ibid.: (5g))

Shlonsky & Soare argue that infinitival clauses are 'truncated' at WhP, as illustrated in

below (cf. Haegeman 2010).

(129) ~~ForceP > IntP > TopP > FocP~~ > WhP > ... > ReasonP ...

They further argue that *why* is externally merged at Spec-ReasonP and needs to move to

Spec-IntP for scope taking. According to these views, the reason for the infelicity of (128)

is the lack of landing site of *why*—i.e., Spec-IntP—in the infinitival clause.[17]

I have argued that Korean WHAT only occurs in a double-CP structure in which the

higher C-layer is ForceP. Under this view, and adopting Shlonsky & Soare's proposal, the

inability of the nominal *wh*-adjunct *mwe-l* to occur in an infinitival clause follows from the

absence of ForceP in the infinitival clause.

---

[17] *Why* can have a long distance reading if it is merged in the matrix interrogative clause, as in (i) (taken from Shlonsky & Soare 2011: (12)).

(i)   Why did you ask her to resign?

a. What is the reason x, such that for x, you asked her to resign?
e.g.: Because I didn't want to just tell her. (short construal)

b. What is the reason x, such that you asked her to resign for that particular reason x?
e.g.: I asked her to resign because of her health, not because of her intelligence ... (long construal)

The long construal in (ib) is available due to the trace of *why* in Spec-ReasonP in the infinitival clause.

2.4.6.5 Fragments

As briefly noted in the introduction, unlike the ordinary *wh*-adjunct *way* 'why', the nominal *wh*-adjunct *mwe-l* cannot stand alone as a fragment question, as shown in (130).[18]

(130) A: John-un   pelsse   ttena-ss-e.

      John-TOP already leave-PST-DECL

      'John left already.'

   B: way?

      why

      'Why?'

  B′: *mwe-l?

      what-ACC

      'Why?'

To deal with this, I follow Merchant's (2004) analysis of fragment answers. Now let us briefly examine his analysis. Marchant argues that the fragment answer in (131B) is derived via movement and TP-deletion, which is illustrated in (132).
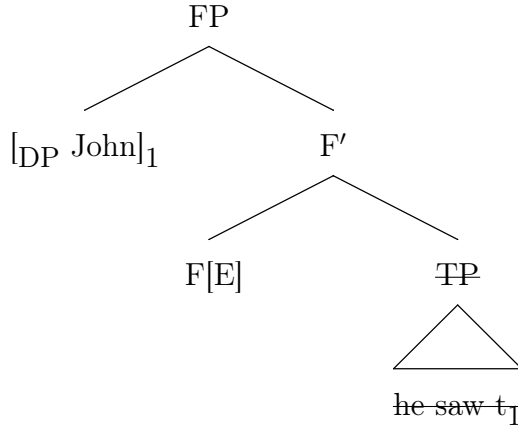
(131) A: Who did he see?

   B: John.

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[18]Similarly, as noted by Munaro & Obenauer (1999, 2002), German *was* 'WHAT', unlike *warum* 'why', cannot appear as a truncated question:

(i)   a. Jetzt lachst du wieder so blöd. {Warum/*Was (denn)?
      'Now you are again laughing so stupidly. Why?'   (Munaro & Obenauer 2002: (50))

(132)

```
              FP
            /    \
  [DP John]₁    F′
              /    \
          F[E]      T̶P̶
                    / \
                   /___\
                he saw t_I
```

The DP *John* moves to the specifier position of a functional projection FP (corresponding to FocP), and the rest of the clause (i.e., TP) is PF-deleted. The TP-deletion is triggered by the [E]-feature on the functional head; in sluicing, C has the [E] feature (see Merchant 2001).[19]

Adopting Merchant's movement-and-deletion mechanism, I assume that the fragment question in (130B′) may be derived as follows (note that the nominal *wh*-adjunct *mwe-l* cannot raise on its own, since it forms an N′):
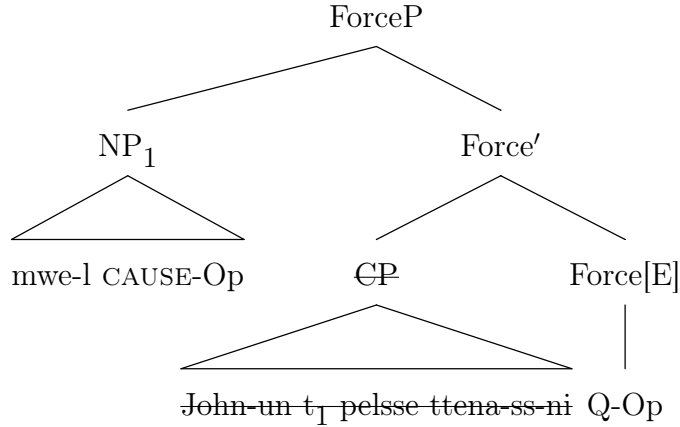
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[19]Note that not all linguistic expressions can be freely PF-deleted by the [E]-feature. In order for ellipsis to be licensed, there must be syntactic and/or semantic identity between elided material and its antecedent (see, among others, Chung et al. 1995; Merchant 2001; 2004). Merchant (2001, 2004) argues that IP/TP can be elided only if it is e-GIVEN. The definition of e-GIVENNESS is as follows (Merchant 2001: 31):

(i)   **e-GIVENness**
: An expression E counts as e-GIVEN iff E has a salient antecedent A and, modulo $\exists$-type shifting,
i. A entails F-clo(E), and
ii. E entails F-clo(A)

F-closure (Schwarzschild 1999)
: The F-closure of α, written F-clo(α), is the result of replacing F-marked parts of α with $\exists$-bound variables.

To put it briefly, TP-ellipsis is licensed by mutual entailment between the focus-closures of the antecedent and elided clauses. For example, the fragment answer in (111) satisfies the mutual entailment requirement like the following:

(ii)   a.   F-clo(TP_A) = $\exists x$.He saw x

       b.   F-clo(TP_E) = $\exists x$.He saw x

(133)

```
                              ForceP
                        ┌───────────┴───────────┐
                      NP₁                      Force′
                   ┌────┴────┐            ┌──────┴──────┐
              mwe-l CAUSE-Op           C̶P̶          Force[E]
                              ┌──────────┴──────────┐      │
                        J̶o̶h̶n̶-̶u̶n̶ ̶t̶₁̶ ̶p̶e̶l̶s̶s̶e̶ ̶t̶t̶e̶n̶a̶-̶s̶s̶-̶n̶i̶  Q-Op
```

As illustrated here, the complex *wh*-phrase raises to Spec-ForceP, and then the entire CP undergoes PF-deletion.[20] The CP deletion is assumed to be triggered by the [E]-feature on Force. The overt raising of the complex *wh*-phrase is needed to escape the ellipsis site. In this connection, the theoretical question arises as to what triggers/licenses such movement. If there is no independent syntactic and/or semantic motivation for the movement, the complex *wh*-phrase should be stranded in the CP domain and get PF-deleted unavoidably. If this line of reasoning holds true, we can understand why the nominal *wh*-adjunct *mwe-l* cannot appear as a fragment question.

There is a possible alternative view. Let us stipulate that it is theoretically valid for the complex *wh*-phrase to move to Spec-ForceP, resulting in the structure in (133). However, the assumed LF-structure poses a theoretical issue in interpreting the complex *wh*-phrase. On the proposed analysis, while the nominal *wh*-adjunct *mwe-l* is interpreted outside the question nucleus, the CAUSE-Op needs to be interpreted within the nucleus on the relevant reading. However, since the Q-operator encoding the interrogative force cannot outscope the CAUSE-Op, the WHAT-clause cannot get the intended interrogative interpretation. This is

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[20]One might identify the CP with the Focus projection.

another possible explanation for the inability of WHAT to occur as a fragment question.[21]

2.5   Summary

In this chapter, we have first examined the various grammatical properties of Korean WHAT-questions. In particular, the comparative study between Korean WHAT-questions and those in other languages (e.g., Japanese) has shown that the cross-linguistic patterns of the nominal *wh*-adjunct WHAT cannot fall under the *wh*-in situ/*wh*-fronting dichotomy (cf. Ochi 2004).

I have proposed to analyze WHAT-questions as 'ordinary *what*'-questions with a CAUSE-operator. The main points of the analysis are as follows. In terms of narrow syntax, the nominal *wh*-adjunct WHAT forms a complex *wh*-phrase with the CAUSE-operator, and the complex *wh*-phrase is externally merged in Spec-*v*P. WHAT-questions involve double CP structures in which the higher functional phrase corresponds to ForceP headed by the Q-operator. In accounting for how WHAT-questions can derive *why*-interpretations (i.e., causal/reason/purpose readings), the CAUSE-operator is analyzed as a binary causal function that takes as its arguments two propositions construed as sets of events. The nominal *wh*-adjunct WHAT denoting a proposition (p) serves as the first argument of the CAUSE-operator, while the rest of the

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[21]Note that Korean WHAT, just like its counterpart in other languages like Japanese, German, Hebrew, and Serbo-Croatian (see Ochi & Hsin 1999), resists sluicing:

(i)   Mimi-nun tto   ilccik ttena-ss-nunte, {way/*mwe(-l)}-i-nci   molu-keyss-e.
      Mimi-TOP again early leave-PST-but   why/what-ACC-COP-QUE not.know-PRES-DECL
      'Mimi left early again, but I don't know why.'

As seen here, the nominal *wh*-adjunct *mwe-l* cannot occur as a sluicing remnant. In fact, this is a natural result given that in Korean it is basically impossible for a nominal expression to bear structural Case (i.e., accusative Case) when it appears right before a copular verb *i* 'be' (J.-B. Kim 2015). In (i), the accusative-marked nominal *mwe-l* occurs right before the copular verb, which renders the example ungrammatical. As also indicated above, the nominal *wh*-adjunct in bare form (i.e., *mwe*) fail to survive the sentence in (i), since the putative source sentence for the sluice is ungrammatical, as in **mwe tto ilccik ttena-ss-nunci molu keyss-e.*

clause (i.e., C′) denoting a proposition (q) constitutes its second argument. On this semantic analysis, the WHAT-question is interpreted as an ordinary *what*-question asking about what proposition p is such that an event of propositional type p is the CAUSE of the unique salient event of propositional type q.

CHAPTER 3

The structure of *what*-exclamatives in Korean

3.1   Introduction

Cross-linguistically, *what*-exclamatives are used to express the speaker's emotion/attitude, such as surprise and amazement, towards either an individual referred to by a *wh*-phrase or an event in which the individual is involved (Nouwen & Chernilovskaya 2015). (1) illustrates typical examples of *what*-exclamatives in English, Japanese, German, Spanish, and Greek:

(1) a. What an expensive car John bought! (English)

   b. John-wa nan-te   takusanno hon-o   yonda-nodeshoo!   (Japanese)

       John-to what-TE many   book-ACC read-EXCL

       'How many books John read!'   (Oda 2008: 234)

c. Was für Schuhe die getragen hat!   (German)

   what for shoes   she wears   has

   'What shoes she wore!'   (Driemel 2016: 199)

d. ¡Qué tan alta es Ana!   (Spanish)

   what so   tall is Ann

   'How tall Ann is!'   (Eguren & Pastor 2020: 110)

e. Ti   nostima glyka pu   ftiaxni o   Janis!   (Greek)

   what delicious sweets that bakes the John

   'What delicious desserts John bakes!'   (Trotzkea & Giannakidou 2021: 6)

By way of example, the utterance of English *what*-exclamative in (1a) conveys the speaker's surpirse at the high/extreme degree of expensiveness of the car John bought.

As shown in (1b), Japanese is a *wh*-in situ language that employs *what*-exclamatives in which the exclamative marker *nodeshoo* is involved (Hirayama 2021; Ono 2006; Oda 2008). (1b) can be used to express that the speaker is surprised or amazed at the quantity of books John read. At this point, one may wonder if Korean, which is a *wh*-in situ language that is typologically similar to Japanese, uses *what*-exclamatives. In fact, it has been tra-ditionally assumed that Korean does not have *what*-exclamatives. In this chapter, however, I demonstrate that *mwe-l-{ku/i}lehkey*-clauses like that in (2B) should be recognized as *what*-exclamatives.

(2) A: John-i   Lamborghini-lul   sa-ss-tay.

John-NOM Lamborghini-ACC buy-PST-DECL

'(I heard that) John bought a Lamborghini.'

B: wa, mwe-l   kulehkey pissan   cha-lul   sa-ss-e!

wow what-ACC so   expensive car-ACC buy-PST-EXCL

'Wow, what an expensive car he bought!'

A: kulekey!

yeah

'Yeah!'

In (2B), the *wh*-clause, which I analyze as a *what*-exclamative, involves the in-situ *wh*-phrase *mwe-l* 'what-ACC' and the exclamative particle *-e*.[1] As the English translation indicates, the nominal *wh*-phrase does not have a canonical *wh*-meaning (i.e., denoting an entity/individual) as in information-seeking *wh*-questions. Its non-interrogative nature is

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[1]Mun (2013) notes that the role of sentence ending particle *-e* is to (informally) mark declaratives, interrogatives, imperatives, exhortatives, and exclamatives:

(i)   a. Chelswu pap mek-e.   (declarative)
          Chelswu meal eat-DECL
          'Chelswu is having a meal.'

      b. Chelswu pap mek-e?   (interrogative)
          Chelswu meal eat-QUE
          'Is Chelswu having a meal?'

      c. Chelswu-(ya)   pap mek-e.   (imperative)
          Chelswu-(VOC) meal eat-IMV
          'Chelswu, have a meal.'

      d. Chelswu-(ya)   (kathi)   pap mek-e.   (exhortative)
          Chelswu-(VOC) (together) meal eat-EXH
          'Chelswu, let's have a meal.'

      e. Chelswu pap mek-e!   (exclamative)
          Chelswu meal eat-EXCL
          '(Wow, it is surprising that) Chelswu is having a meal!'

evidenced by the addressee's response (cf. A: What did you read? B: #Yeah!). The *what*-exclamative in (2B) is used to express the speaker's surprise at the high/extreme degree of expensiveness of the car John bought.

As we will see, Korean *what*-exclamatives provide a variety of linguistic diagnostics that we can use to develop our understanding of cross-linguistic variation in *what*-exclamatives. For one thing, Korean *what*-exclamatives must involve a degree expression like *{ku/i}lehkey* 'so' to obtain relevant degree readings. For example, if the degree adverb *kulehkey* is absent in (2B), the resulting sentence becomes ungrammatical, as shown in (3).

(3)   *wa, mwe-l   manhun nonmwun-ul ilk-ess-e!   (cf. (1b) in Japanese)

      wow what-ACC many   paper-ACC   read-PST-EXCL

      'Wow, how many papers he read!'

This fact indicates that the degree expression *{ku/i}lehkey* plays a pivotal role in licensing *what*-exclamatives in Korean. In this chapter, I aim to provide an analysis that can account for not only the aforementioned fact, but also other syntactic and semantic characteristics of Korean *what*-exclamatives.

The key ideas in my analysis are summarized below:

- The exclamative *wh*-phrase, consisting of *mwe-l–{ku/i}lehkey*–Adj–N, has the following internal structure: the (gradable) adjective takes as its complement a DegP headed by the degree adverb *{ku/i}lehkey*. The head noun then combines with the AP as its complement and with the nominal *wh*-phrase *mwe-l* as its specifier. At LF, the degree adverb *{ku/i}lehkey*, which I analyze as a maximality operator, raises up, leaving behind a trace of type d. This degree-denoting trace serves as a degree argument of the

gradable adjective of type $\langle d, \langle e, t \rangle \rangle$. The AP then composes with the head noun via Predicate Modification. The resulting N′ then combines with *mwe-l* that denotes an identity function, yielding the NP denoting a property of individuals.

- The descriptive content of Korean *what*-exclamatives is analyzed as denoting a maximal degree d which is derived via the maximality operator *{ku/i}lehkey* that is modeled as a function from a set of degrees to a unique maximal degree in the set of degrees.

- In terms of speech acts, Korean *what*-exclamatives are viewed as assertions. The assertive speech act is obtained by assuming that the maximal degree denoted by the *mwe-l*-clause serves as input to an assertive force operator, Excl-Op, which is modeled as a function of the form '$d \geqslant s$', where s refers to a contextually provided standard established by the speaker's expectation. This assertive proposition entails speaker unexpectedness, which naturally leads to a sense of surprise or other relevant emotions/attitudes on the part of the speaker.

- The speaker evaluates the assertive proposition (i.e., $d \geqslant s$) as positive/good or negative/bad depending on contexts. To capture this pragmatic aspect, it is argued that the assertive content serves as input to an evaluative operator, Eval-Op, a function from propositions to evaluative attitudes on the part of the speaker. The nominal *wh*-phrase *mwe-l* endowed with [+Eval] undergoes LF-movement from Spec-NP to Spec-EvalP to activate Eval-Op by feature checking.

3.1.1 Content of this chapter

The next section discusses some key issues that have been discussed in the literature; those relating to factivity, scalarity, expressive attitudes, degree readings, and assertiveness. Section 3.3 reviews analyses of *wh*-exclamatives in two prominent frameworks, the propositional framework of Michaelis & Lambrecht (1996), Zanuttini & Portner (2003), and Gutiérrez-Rexach (1996, 2008) and the degree framework of Rett (2011) and Castroviejo (2021), and discusses some theoretical and empirical issues related to them. Section 3.4 presents the basic description of Korean *what*-exclamatives, from both a syntactic and a semantic perspective, and provides an analysis within a compositional semantics. Section 3.5 summarizes the main points of this chapter.

3.2 Background: some key issues in *wh*-exclamatives

This section gives an overview of what has been at issue in the study of *wh*-exclamaives. The key issues we consider here are about factivity, scalarity, expressive attitudes, degree readings, and assertiveness.

3.2.1 Factivity

Elliott's (1971, 1974) observation that *wh*-exclamatives can only be embedded under factive predicates, as illustrated by the contrast between (4) and (5), paves the way for Grimshaw's (1979) argument that *wh*-exclamatives are factive—that is, their propositional content is presupposed to be true.

(4)   a. I know what a fool Kim is.

        b. I am surprised at/by how very expensive cars John bought.

(5)   a. *I asked what a fool Kim is.

        b. *I think how very delicious cookies John baked.

According to Grimshaw's view, (4a) is acceptable because the presupposition expressed by the exclamative clause—that Kim is a fool—is compatible with the factive predicate *know*, which presupposes the truth of its clausal complement. (5a), by contrast, is ungrammatical because the factive presupposition triggered by the exclamative clause is incompatible with the non-factive predicate *ask*, which does not presuppose the truth of its clausal complement. The same can be said for the contrast between (4b) and (5b).

   As noted by Grimshaw (1979), Zanuttini & Portner (2003), and many others, the pre-suppositional status of exclamatives can be extended to account for ill-formed data like (6), first observed by Elliott (1971, 1974).

(6)   a. *I don't know what a fool Kim is.

        b. *I don't remember what a tall man John is.

Both the examples are ruled out because the presupposition expressed by the embedded exclamative conflicts with the presupposition of speaker ignorance expressed by the matrix clause.[2]

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[2]The argument based on the embedding-under-factive-predicate test may not be enough to support the factivity nature of exclamatives. As pointed out by Abels (2010), *wh*-exclamatives can be embedded under matrix *assert*, which is antifactive in the sense of Kiparsky & Kiparsky (1970):

(i)   a. Gun nuts can't even wait for the shooter's barrel to cool off before they jump in to assert

Michaelis & Lambrecht (1996) and Michaelis (2001) likewise argue that exclamatives are presuppositional, but their view differs from Grimshaw's in terms of the type of presupposed proposition. Their idea is that what is presupposed in *wh*-exclamatives is an open proposition involving a scalar degree represented as a free variable. To illustrate this, take, for instance, the *wh*-exclamative in (7).

(7)   What an expensive car John bought!

On their approach, the *wh*-exclamative denotes the presupposed open proposition "John bought a *d*-expensive car", where "[t]he degree itself is not mutually presupposed; the speaker purports to know it, but assumes that the hearer does not, since the speaker's purpose in exclaiming is to inform the hearer that the degree in question is extreme (Michaelis 2001: 1040)".[3]

Michaelis (2001) notes that such presuppositionality gives an account of why the subject in *wh*-exclamatives cannot be indefinite, as illustrated in (8), from Michaelis (2001: 1041).

(8)   a. *What a nice cake no one ate!

        b. *What a nice guy someone is!

Generally, the arguments involved in a presupposed proposition should be mutually identifiable/known to both the speaker and the hearer. In both of the examples in (8), however,

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         how very, very important it is that everybody get to have as many guns of any variety that
         they desire.

   b.   It would have done your heart good to have heard him assert what a valuable contribution
         to the cause your document is.   (Abels 2010: 146)

[3]As mentioned by Zanuttinu & Portner (2003), they appear to interpret the open proposition via existential quantification over the free degree variable.

the subjects (*no one* and *someone*) are indefinite NPs, whose referents are non-identifiable to both the speaker and the hearer, which in turn make the examples infelicitous.

Meanwhile, Rett (2008, 2011), among others, advances a broad array of empirical arguments against the claim that the propositional content of exclamatives is presupposed to be true. For one thing, Rett points out that we can felicitously utter *wh*-exclamatives even in contexts where their propositional content is new to the hearer. Imagine, for the sake of illustration, a scenario where Kim goes to Milwaukee and writes a letter to his parents living in South Korea and having no idea of his visit there, Kim can use the exclamative sentence *What a beautiful city Milwaukee is!* in the beginning of the letter to let the parents know that the city is more beautiful than he expected. Rett concludes from this kind of example that the presuppositional view is inappropriate.

Another argument against the presuppositionality of *wh*-exclamatives comes from Rett's observation that unlike presuppositions, the propositional content of exclamatives can be directly denied by an expression like *not really*:

(9)   A: Mico's wife does macrame.

      B: #Not really; he's not married.   (Rett 2008: 199)

(10) A: How very tall Elwood is!

      B: Not really; he's just wearing platform shoes.   (ibid.: 199)

Notice, here, that the force of Rett's argument depends on what the actual content of the presupposition is. If what is presupposed in (10A) is that Elwood is very tall, i.e., that he exceeds the relevant scalar threshold, then B's reply in (10B) indeed serves as a

good counterargument to the presuppositional analysis of *wh*-exclamatives. However, if the hypothetical presupposition is just an open proposition with a free degree variable (as argued by Michaelis 2001), that is, that Elwood is *d*-tall, then Rett's argument loses its validity here, since all that is being denied in (10B) is that Elwood exceeds the scalar threshold, not that Elwood is tall to some degree or other.

Rett's argument against the presuppositional view continues by noting that *wh*-exclamatives fail von Fintel's (2004) *Hey, wait a minute!* test. As illustrated in (11), the expression *Hey, wait a minute!* is felicitously used by the hearer to complain about the presuppositional part of the speaker's statement, but not to complain about the asserted, non-presuppositional part.

(11) A: Mico's wife does macrame.

    B: Hey, wait a minute, Mico isn't married!

    B′: #Hey, wait a minute, she doesn't do macrame!   (Rett 2008: 199)

(12) shows that *wh*-exclamatives cannot pass the test in question.

(12) A: What incredibly large feet you have!

    B: #Hey, wait a minute, they're not that big![4]   (ibid.: 199)

Rett uses paradigms like the one in (12) to argue that the propositional content of exclamatives is not presupposed (see also Mayol 2008 for the same point).[5]

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[4]Some native speakers of English find (12B) to be fine.

[5]Abels (2010) raises a question about the validity of both *not really* and *Hey, wait a minute* tests by showing that presuppositions can also fail the tests, as illustrated below:

(i)   A: Sue stopped smoking.

Rett (2011) casts serious doubt on the treatment of exclamatives on a par with *wh*-clauses embedded under factive predicates like *be surprised*. As will be discussed in detail, she analyzes exclamatives as expressive speech acts. Given that, and the general assumption that speech acts cannot be embedded (cf. Krifka 2001), exclamatives are viewed as matrix/root phenomena, and thus they should be differentiated from *wh*-clauses embedded under emotive predicates such as those in (13).

(13) a. I am surprised at/by what an expensive car John bought.

   b. I am surprised at/by how very delicious desserts Mary baked.

Rett presents some syntactic and semantic discrepancies between *wh*-exclamatives and *wh*-clauses embedded by *be surprised*. While *wh*-exclamatives can be introduced by a limited set of *wh*-words, as in (14), the predicate *be surprised* allows any *wh*-clause to occur as its complement, as in (15).

(14) a. *Who that lovely woman married!

   b. *Why she dropped out of college!   (Rett 2011: 417)

(15) a. I'm surprised at/by who came to the party.

   b. I'm surprised at/by why he bought a horse.   (ibid.: 437)

Exclamatives and embedded *wh*-clauses also differ in that unlike the latter, the former can only receive degree interpretations. Consider (16).

   B: Not really. She never smoked.   (Abels 2010: 148)

   (ii) A: Did you know that Sarah is pregnant from Ryan?
      B: #Hey, wait a minute! I didn't know that Sarah was pregnant from Ryan.   (ibid.: 149)

(16) a. (My,) What cars John bought!

      b. I'm surprised at/by what cars John bought!

The sentence in (16b) can be felicitously uttered in a situation where the speaker expected John to buy a K6 and a BMW6, but he actually bought a Lamborghini Aventador and a Ferrari 488 contrary to the speaker's expectation. She calls this kind of interpretation the 'individual interpretation'. The *wh*-exclamative in (16a), by contrast, cannot receive such an interpretation. Its utterance rather would be felicitous in a situation where the cars John bought instantiate some gradable property (e.g., expensiveness) to a degree higher than the speaker expected. She calls this kind of interpretation the 'degree interpretation'.

Villalba (2008) also calls into question the factivity analysis of exclamatives by discussing the behavior of non-expletive negation in them (see also Espinal 1997; Portner & Zanuttini 2005). If the truth of the proposition denoted by an exclamative is presupposed, the insertion of negation should not affect its truth condition, just as observed in the context of factive predicates, as in (17).

(17) a. I regret having bought this book. ⇒ I have bought this book.

      b. I don't regret having bought this book. ⇒ I have bought this book.
          (Villalba 2008: 18)

Though, in most cases, negation is interpreted as expletive within exclamatives (Espinal 1997), there is exceptional cases like (18)—those known as negative quantitative exclamatives—where the negation is not expletive.

(18) a. ¡Cuántos libros no pudiste   leer jamás!

      how.many books not could.you read never

      'How many books you could never read!'

   b. ¡Caramba, la   de cosas que no compró nadie!

      why   the.FEM of things that not bought nobody

      'Why, the things that nobody bought!'   (Villalba 2008: 18)

As observed in the examples, the negative polarity items *jamás* 'never' and *nadie* 'nobody'
can be licensed by the negation involved, meaning that it is recognized as standard negation.
This interpretive contribution of negation in such examples leads Villalba (2008) to throw
doubt on the factivity analysis of *wh*-exclamatives.

3.2.2   Scalarity

An important semantic property that distinguishes exclamatives from other clause/sentence
types is scalarity. Zanuttini & Portner (2003) argue that if a clause is an exclamative, it must
be associated with a scalar implicature, where the individual denoted by an exclamative lies
at the extreme end of some contextually determined scale. For example, the *wh*-exclamative
in (19a) below expresses that the denoted individual, i.e., *the house John bought*, is placed
on the extreme end of the scale of expensiveness evoked by the gradable adjective *expensive*.
This meaning can be paraphrased as in (19b).

(19) a. What an expensive house John bought!

   b. The house John bought is expensive to an extreme degree.

Zanuttini & Portner further argue that the implicature of extreme degree is not conversational, but conventional, given that it is cancellable or detachable. Consider (20).

(20) a. ??How very cute he is!—though he's not extremely cute.

    b. He's quite cute!—though not extremely cute.

    (Zanuttini & Portner 2003: 47)

(20a) shows that the scalar implicature introduced by the exclamative—the extreme degree of his cuteness—cannot be cancelled by the continuation. The contrast adduced above indicates that the scalar implicature is related not to the meaning, but to the form of exclamatives.

Zanuttini & Portner provide two more pieces of evidence in favor of the conventional scalar implicature of exclamatives. One concerns the fact, initially pointed out by Elliott (1974), that exclamatives can be embedded under *It is amazing*, but not under its negative counterpart:

(21) a. *It isn't amazing how very cute he is!

    b. It is amazing how very cute he is!   (Zanuttini & Portner 2003: 47)

The other piece of evidence has to do with the contrast presented in (22).

(22) a. Isn't it amazing how very cute he is?

    b. *Is it amazing how very cute he is?   (Zanuttini and Portner 2003: 47)

In Zanuttini & Portner's account, (21a) and (22b) are intuitively ruled out due to the denial and the question of the amazingness of his cuteness, respectively, in contradiction to the

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scalar implicature. By contrast, (22a) is acceptable since it is interpreted as a rhetorical question, where both the speaker and the hearer believe that he is extremely cute, supporting the conventional scalar implicature.

Meanwhlie, Castroviejo (2006) casts doubt on Zanuttini & Portner's claim that the scalar implicature is conventional. She presents the data in (23) as serious counterexamples, illustrating that declarative clauses introduced by *though* and *but* cannot follow *wh*-exclamatives, even though the former do not cancel the scalar implicature of the latter.

(23) a. ??How very cute he is!—though I shouldn't say it so loud.

　　　b. ??How very cute he is!—but he lives a thousand miles away.

　　　(Castroviejo 2006: 27)

Castroviejo suggests that the unacceptability of (20a), in combination with (23), is due to the clash between an exclamative speech act expressed by *wh*-exclamatives and an assertive speech act expressed by declaratives.[6]

In a similar vein, Villalba (2008) raises doubts about the validity of conventional scalar implicature by pointing out that the nondefeasibility of scalar implicature is not even attested. Consider (24) and (25).

(24) a. ¡Marta es de buena!

　　　　Marta is of good

　　　　'Marta is so good!'

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[6]Some native speakers of English find (23) to be perfectly fine.

    b. ¡El chico es de travieso!

       the boy   is of naughty

       'The boy is so naughty!'   (Villalba 2008: 14)

(25) a. ¡Marta es de buena! #Si es que lo es.

       Marta is of good   if   is that it is

       'Marta is so good! #If at all.'

    b. ¡El chico es de travieso! #Aunque no demasiado.

       the boy   is of naughty although not too.much

       'The boy is so naughty! #Although not much.'   (ibid.: 14)

Examples like (24) have come to be known as Spanish hidden exclamatives (see Villalba 2003 for detail discussion). In (25), the defeasibility test tells us that the hidden exclamatives involve the scalar implicature. With this observation, Villalba (2008) argues that the conventional implicature of extreme degree is not tied to the exclamative form, contrary to Zanuttini & Portner's argument.

3.2.3 Expressive attitudes

Exclamatives also differ from other clause types in that they necessarily convey expressive attitudes on the part of the speaker, such as surprise, amazement, and unexpectedness (Gutiérrez-Rexach 2008; Nouwen & Chernilovskaya 2015; Rett 2008, 2011; Villalba 2008). It is assumed that the speaker's emotive attitude is pragmatically evoked by the high/extreme degree of the individual/event in question that violates the speaker's expectations. Consider

(26).[7]

    (26)   a. How expensive this wine is! #Which doesn't surprise me at all, because it's

                kosher.

          b. The wine is extremely expensive, which doesn't surprise me at all, because

                it's kosher.   (Villalba 2008: 15)

In (26a), the *wh*-exclamative is uttered to express the speaker's surprise at the extreme degree of expensiveness of the wine under consideration. This expressive attitude makes the exclamative semantically incompatible with the continuation.

   Rett (2008, 2009) argues that in order for an exclamative to be expressively correct, its content "must additionally be objectively surprising; specifically, the degree in question must be high relative to a contextual standard (Rett 2009: 607)", which she calls the 'evaluative restriction'. Consider (27).

    (27)   [Scenario: Luke expects Duke's children to be extremely short (say, because

               Duke and his wife are extremely short). Specifically, he expects their 12-

               year-old Manny to be 3 and a half feet tall. In fact, Manny is 4ft tall, which,

               say, is still relatively short for a 12-year-old boy (Rett 2009: 608).]

               #(My,) How tall Manny is!

According to her view, the *wh*-exclamative is infelicitous in the given scenario because the actual degree of tallness of Manny is not objectively tall according to a standard in the common ground, though it exceeds the speaker's expectation.

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[7]Declaratives like *Kim is filthy rich* express attitudes associated with degree. However, they should be differentiated from exclamatives in that the former are not factive: they can be used as an answer to the question *How rich is Kim?* (Gutiérrez-Rexach 2008).

Gutiérrez-Rexach (2008) takes the different view that the actual degree of some property of the individual in question need not be objectively higher than a standard degree, but rather needs to exceed the speaker's expectation, which might follow common-ground norms or socially-accepted standards, or might reflect his/her personal assessment. On Gutiérrez-Rexach's view, the *wh*-exclamative in (27) would be felicitous in a scenario in which "[Manny] is 5'6"—which is not being objectively tall according to US/European standards—but the speaker expected him to be shorter or, alternatively, if [Manny]'s relatives where all shorter, and the speaker meets [Manny] for the first time and realizes that he is taller than his relatives, i.e. taller than he expected him to be (p. 120)."

The infelicitous utterance of (27) in Rett's scenario may be captured in terms of scalar implicature. Manny's being 4ft tall is not placed at an extreme point on the relevant scale; in other words, just the 5" difference between the actual and standard degrees is not enough to give rise to a sense of surprise on the part of the speaker. This may be why (27) is infelicitously uttered in the scenario.

In this connection, it is worthy to note that exclamatives can be associated with extreme/high degree adverbs like *very* and *extremely*, but not with middle or low degree adverbs like *reasonably* (Castroviejo 2006; Gutiérrez-Rexach 2008):

(28) a. How very/extremely tall Kim is!

      b. #How reasonably tall Kim is!

This further supports the view that *wh*-exclamatives convey the speaker's emotional attitudes that are evoked by the extreme degree of some property of the individual in question.

3.2.4 Degree readings

In terms of the semantics of *wh*-exclamatives, many linguists argue that they denote sets of propositions, just as *wh*-interrogatives do in the sense of Hamblin (1973) and Karttunen (1977) (Abels 2004; d'Avis 2002; Delfitto & Fiorin 2014; Gutiérrez-Rexach 1996, 2008; Zanittini & Portner 2003; a.o.). On this propositional framework, the exclamative force is captured by positing an exclamative illocutionary force operator (proposed by Gutiérrez-Rexach 1996) or a pragmatic operation of widening (proposed by Zanuttini & Portner 2003). These kinds of propositional analysis are taken up in detail in section 3.3.1.

On the other hand, there are linguists who argue against the propositional framework (Castroviejo 2006, 2021; Nouwen & Chernilovskaya 2015; Rett 2008, 2011; a.o.); they instead propose to analyze *wh*-exclamatives as a kind of degree construction. In this, let us briefly review Rett (2008, 2011) pursuing such a semantic view. Her semantic analysis will be discussed in detail in section 3.3.2.

Rett's (2011) discussion begins by defining exclamations as "a natural class of utterances which express that a particular proposition has violated the speaker's expectations (p. 412)" and classifying them into two subtypes: sentence exclamations and exclamatives, the latter of which are further divided into *wh*-exclamatives, inversion exclamatives, and nominal exclamatives. Each type is exemplified by sentences like those in (29) and (30).

(29) (Wow,) John bakes delicious cookies!   (sentence exclamation)

(30) a. (My,) What delicious cookies John baked!   (*wh*-exclamative)

     b. (Boy,) Does John bake delicious cookies!   (inversion exclamative)

c. (My,) The delicious cookies John bakes! (nominal exclamative)

What follows examines her discussion of semantic differences between sentence exclamations and *wh*-exclamatives. I refer the interested reader to Rett (2011) for details and discussion on inversion and nominal exclamatives.

Rett (2011) argues that while sentence exclamations receive propositional interpretations, *wh*-exclamatives can only receive degree interpretations (specifically, degree properties), which she calls a *degree restriction*.[8] For example, the sentence exclamation in (29) is analyzed as asserting the proposition that John bakes delicious cookies and also expressing that the proposition has violated the speaker's expectation. The utterance of the *wh*-exclamative in (30a) expresses that the cookies that John baked are more delicious than the speaker expected; this speaker unexpectedness gives rise to a sense of surprise.

As Rett argues, the degree restriction holds even for *wh*-exclamatives that do not involve overt gradable or amount predicates. Consider (31) for instance.

(31)   What cookies John baked!

The *wh*-exclamative can be felicitously uttered to express that the degree to which the cookies John baked instantiate some gradable property (e.g., deliciousness) surpassed the speaker's expectations. As we will explore in section 3.3.2, in order to explain the degree reading of *wh*-exclamatives with no overt gradable predicates, Rett postulates a null measurement operator (M-Op), which does the same job as gradable predicates in terms of compositional semantics.

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[8]She argues that all types of exclamative, exemplified in (30), are subject to the degree restriction.

Rett (2008) provides a card trick scenario to verify the inherently scalar property of *wh*-exclamatives. Consider (32), from Rett (2008: 605-606).

(32)   [Scenario: Some friends are playing a card game, and it's Mac's turn to pick a series of pairs from the deck. He picks the ace of spades and the king of diamonds. The cards are shuffled back in and he picks another pair, and again he chooses the ace of spades and the king of diamonds. Again the cards are reshuffled and for a third time, Mac picks the ace of spades and the king of diamonds]

    a. #(My,) What cards Mac picked!

    b. (Wow,) Mac picked the ace of spades and king of diamonds (again)!

In Rett's account, the *wh*-exclamative in (32a) is expressively incorrect in the given scenario, since it can be used only to express surprise that the extreme/high degree of some gradable property (e.g., high-valued) of the cards in question is unexpected. The sentence exclamation in (32b), by contrast, is felicitously uttered in the given scenario, because it can be used to convey the speaker's surprise at the unexpected event of Mac's picking the ace of spades and king of diamonds again.

Sentence exclamations and *wh*-exclamatives also differ markedly with respect to the nature of violated expectation of the speaker. According to Rett (2011), sentence exclamations involve non-scalar expectations, where the speaker expected p, but the expectation has been violated (i.e., $\neg p$). By contrast, *wh*-exclamatives are associated with scalar expectations, where the speaker expected a particular degree of a gradable property, but the expected degree has been surpassed by the actual degree. As she notes, the association of the sentence

exclamation in (29) (repeated below as (33a)) with non-scalar expectations is supported by the fact that its utterance can be followed by a clarifying sentence like *I guessed that he would not bake delicious cookies*, but not by a sentence like *I guessed that he would bake delicious cookies, but not this delicious!* However, the *wh*-exclamative in (30a) (repeated below as (33b)), which is associated with scalar expectations, can be naturally continued with either *I guessed that he wouldn't bake delicious cookies* or *I guessed that he would bake delicious cookies, but not this delicious!*

(33)   a.   (Wow,) John bakes delicious cookies!

      b.   (My,) What delicious cookies John baked!

Meanwhile, Zanuttini & Portner (2003), pursuing a propositional analysis, object to characterizing *wh*-exclamatives in terms of concepts like unexpectedness, extreme degree, and a speaker's strong feelings. As we will discuss later, they analyze those meanings as begin derived via an operation of widening, which is derived indirectly from two semantic components, sets of alternative propositions and factivity. Zanuttini & Portner present some cases where those concepts are not evoked, meaning that they would not be part of core meaning components of *wh*-exclamatives. As to speaker unexpectedness, they mention that by uttering *wh*-exclamatives like *What a delicious dinner you've made!* and *What a nice house you've got!*, "the speaker doesn't mean to imply that he or she didn't expect a good dinner or a nice house (p. 54)". Rett (2011), however, argues against their view by pointing out that the given exclamatives in fact express the violation of speaker's expectation in the following way: the first *wh*-exclamative expresses that the dinner in question is more delicious than the speaker expected; the second *wh*-exclamative expresses that the house in

question is nicer than the speaker expected.

3.2.4.1 Two types of *wh*-exclamatives

Nouwen & Chernilovskaya (2015) basically argue in favor of Rett's claim that *wh*-exclamatives are inherently scalar. However, their view diverges from Rett's by proposing that *wh*-exclamatives can receive two different scalar interpretations depending on the type of scalarity, namely *i*-level and *e*-level interpretations, described in (34) (see also Chernilovskaya & Nouwen 2012).[9]

(34)   a.   *i*-level interpretation: an exclamative attitude towards the *wh*-referent. We will call this *i*-level exclamation: the expressive attitude targets the individual singled out by the *wh*-phrase.

       b.   *e*-level interpretation: an exclamative attitude towards the event the *wh*-referent is said to take part in. We will call this *e*-level exclamation: the expressive attitude targets the event rather than the *wh*-referent.

       (Nouwen & Chernilovskaya 2015: 209)

Based on this semantic distinction, Nouwen & Chernilovskaya propose to classify *wh*-exclamatives into two types, defined in (35) (Nouwen & Chernilovskaya 2015: 212).

(35)   Type 1: *wh*-exclamatives that are scalar in the *i*-level sense

         Type 2: *wh*-exclamatives that are scalar in the *e*-level sense

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[9]Nouwen and Chernilovskaya (2015) restrict their interest in only matrix *wh*-exclamatives.

Both *i*-level and *e*-level interpretations are based on the notion of scalarity, but the two differ in terms of the type of scalarity involved. As to *i*-level interpretations, the individual described by an exclamative *wh*-phrase is linked to scalarity: it is placed at an extreme/high point on a scale associated with a gradable predicate. Nouwen & Chernilovskaya note that English employs only Type 1 *wh*-exclamatives that receive *i*-level interpretations. As to *e*-level interpretations, the event in which the *wh*-referent is involved is associated with scalarity: it compares with alternative events on a scale of noteworthiness or surprise on the part of the speaker. Nouwen & Chernilovskaya note that languages that allow Type 2 *wh*-exclamatives are those like Dutch, German, Turkish, Russian, and Hungarian. For the sake of illustration, let us consider Dutch, which allows *who-*, *which-*, and *where*-exclamatives with *e*-level exclamation, as exemplified in (36) (taken from Nouwen & Chernilovskaya 2015: 203).[10]

(36) a. Wie ik gisteren   tegenkwam!

        Who I   yesterday came-across

        (roughly) 'You wouldn't believe who I met yesterday!'

     b. Welk   boek hij nu   aan het lezen is!

        Which book he now on   it   read is

        (roughly) 'You wouldn't believe which book he's reading now!'

---

[10]Dutch *what*-exclamatives can receive either *i*-level or *e*-level interpretations.   See Nouwen & Chernilovskaya (2015) for more information.

c. Waar hij op vakantie gaat!

   Where he on holiday goes

   (roughly) 'You wouldn't believe where he goes on holiday to!'

The *who*-exclamative in (36a) only receives the *e*-level interpretation: it is felicitously uttered in a scenario in which the speaker is surprised at the unexpected event of his/her encountering the person yesterday, but not in a scenario in which the speaker is surprised at an extreme degree to which the person in question instantiates some gradable predicate (e.g., tall). The same can be said for the *which*- and *where*-exclamatives.

As pointed out by Nouwen & Chernilovskaya, not every language that employs exclamatives using *who*, *which*, and *where* allows *e*-level exclamation. For example, *which*-exclamatives in Swedish like that in (37) are only compatible with *i*-level exclamation, just as English *what*-exclamatives.

(37) Vilken lärare du har!

      which teacher you have   (Nouwen & Chernilovskaya 2015: 212)

The *which*-exclamative is compatible with a scenario in which the speaker wants to express her expressive attitude towards the scalar features of the teacher in question.

Nouwen & Chernilovskaya argue that the two types of *wh*-exclamative are also differentiated in terms of morpho-syntactic properties. For example, Type 1 and Type 2 exclamatives in Dutch have different word order. It is known that in Dutch, main clauses have V2 word order (SVO), while embedded clauses have verb-final word order (SOV). With this in mind, let us consider the following *wh*-exclamatives (taken from Nouwen & Chernilovskaya 2015: 213-214).

(38) a. Wat   maakte Jan een herrie!   (Type-1 exclamative)

What made   Jan a   racket

'What a racket Jan made!'

b. Wat   Jan een herrie maakte!

What Jan a   racket made

'What a racket Jan made!'

(39) a. Wie   ik net zag!   (Type-2 exclamative)

Who   I   just saw

b. *Wie   zag ik net!

Who saw I   just

(38) illustrates that Type 1 *wh*-exclamatives can have either V2 word order or verb-final word order, while (39) shows that Type 2 *wh*-exclamatives can only have verb-final word order.

Another morpho-syntactic property that distinguishes between Type 1 and Type 2 exclamatives in Dutch concerns reducibility. In Type 1 exclamatives, all but a *wh*-phrase can be reduced, as in (40a), but not in Type 2 exclamatives, as in (40b-c):

(40) a. Wat een boek!

What a   book

b. *Wie!

who

c. *Welk (mooi) boek!

which beautiful book

Now let us take a look at German data. As (41) shows, when the *wh*-determiner *which* is used in information-seeking *wh*-questions, it needs to be inflected in gender and number.

(41) Welch*(er) Mann hast du geholfen?

which.MASC.SG man have you helped.

'Which man did you help?'

With this in mind, consider the following *wh*-exclamatives (taken from Nouwen & Chernilovskaya 2015: 217-218).

(42) a. Welch(*er) schwerer Irrtum! (Type 1)

which.MASC.SG serious.MASC.SG mistake

'What a serious mistake!'

b. Welches Buch der Jan gelesen hat! (Type 2)

which.MASC.SG book the J. read has

'the book Jan read!'

The inflected *which* is disallowed in Type 1 exclamatives, but it is allowed in Type 2 exclamatives, as in information-seeking *wh*-quesitons. Based on this observation and others, Nouwen & Chernilovskaya argue that Type 1 *wh*-exclamatives with *i*-level readings involve non-standard *wh*-structures, while Type 2 *wh*-exclamatives with *e*-level readings have (embedded) question-like structures.

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Nouwen & Chernilovskaya conclude by mentioning that "languages differ with respect to which *wh*-expressions are involved in which kind of exclamatives, and whether both kinds are available in the first place (p. 223)". In section 3.4.2.6, I show that Korean is a *wh*-in situ language that employs both *e*-level and *i*-level *what*-exclamatives.

3.2.5   Assertiveness

As discussed in section 3.2.1, the exclamatives literature has produced no consensus on the matter of whether the propositional content of exclamatives is presupposed to be true. This debate extends to the issue of whether exclamatives can serve as responses to information-seeking questions. A defender of the factivity analysis argues that exclamatives cannot be used as answers to information-seeking questions, since they lack assertive content. This argument is first made by Grimshaw (1979). Consider (43).

(43)   Q: Did John buy a big car?

     A: #What a big car John bought!

     A′:   John bought a big car.

Unlike the declarative sentence, the exclamative clause cannot be used as the answer to the *yes-no* question. In order to account for this, Grimshaw adopts a general conversational principle, which states that the response to a question cannot constitute a sentence that presupposes the answer to that question. This principle is independently verified by the dialogue in (44).

(44)   Q: Did Bill leave?

A: #It's odd that he did.

The answer using the factive expression *It's odd that ...* is infelicitous since the presupposed proposition that Bill left is what the question is asking about. The same line of reasoning applies to (43): since the exclamative clause presupposes the proposition that John bought a big car (on Grimshaw's view), the presupposed proposition cannot constitute the response to the question. Meanwhile, the declarative sentence is felicitous since its propositional content is asserted. Based on this discussion, Grimshaw (1979) argues that the descriptive content of exclamatives is presupposed, but not asserted (see also Zanuttini & Portner 2003).

Trotzke & Giannakidou (2021) argue against the view that the descriptive content of exclamatives is presupposed.[11] Instead, they propose to analyze exclamatives as what they call 'emotive assertions', which are semantically equivalent to assertions of declarative sentences with emotive predicates such as *be surprised/amazed*. Consider (45).

(45) a. How fast Eliud Kipchoge was!

  b. I am amazed at how fast Eliud Kipchoge was.
  (Trotzke & Giannakidou 2021: 15)

On their view, both the *wh*-exclamative and the declarative behave alike with respect to assertion and presupposition: they both assert the speaker's emotional attitude (i.e., amazement) towards the believed proposition that Eliud Kipchoge was extremely fast, and presuppose the speaker's belief in the truth of the proposition.

According to Trotzke & Giannakidou's account, the ill-formedness of (46B′) is due to mismatch in information structure, regardless of assertive force.

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[11]Trotzke & Giannakidou (2021) is an unpublished manuscript.

(46) A: How fast was Eliud Kipchoge?

B: Eliud Kipchoge was [very]$_F$ fast.

B′: #[How fast Eliud Kipchoge was!]$_F$

B″: #[Eliud Kipchoge war$_{\text{'was'}}$ aber$_{\text{PART}}$ auch$_{\text{PART}}$ schnell$_{\text{'fast'}}$!]$_F$

The *how*-question, as a narrow-focus question, is asking about the actual degree of fastness of Eliud Kipchoge's running in the race. However, the exclamative in (46B′) presupposes the speaker's belief that Eliud Kipchoge was extremely fast, which in turn makes it inappropriate as the response providing new information. The German declarative sentence containing the exclamative particle *aber auch* in (46B″) is presented to show that the infelicity of the exclamative is irrelevant to assertiveness: even though the declarative is assertive, it cannot function as the answer to the question.

On the other hand, if there is no such information-structure mismatch, *wh*-exclamatives can be used as responses to information-seeking questions, as illustrated in (47), where the question is a broad-focus question, so the above issue does not arise; that is, the exclamative does not presuppose the information that provides the response to the question (see also Trotzke & Villalba 2020).[12]

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[12]Trotzke & Villalba (2020) show that so-called *that*-exclamatives in both Germanic and Romance languages can be used as responses to polar questions:

(i) A: Hast Du in letzter Zeit mal von Hans gehört?   (German)
      'Have you heard from Hans recently?'

B: Ach der Hans! Dass ich ihn so lange nicht gesehen habe!
      'Lordy, Hans! How long it has been since I have last seen him!'

(ii) A: Saps alguna cosa del Joan?   (Catalan)
      'Have you heard form Joan recently?'

B: El John, redue! Que en fa de temps que no el veig!
      'Lordy, Joan! How long it has been since I have last seen him!'

(47) A: Tell me, how did Eliud Kipchoge do in the race?

    B: [He was very fast]$_F$

    B′: My god! [How fast he was!]$_F$

    B″: My god! [Der$_{‘this\text{-}one’}$ war$_{‘was’}$ aber$_{PART}$ auch$_{PART}$ schnell$_{‘fast’}$!]$_F$

Rett (2011) contends that unlike sentence exclamations, exclamatives do not count as assertions since they do not make a contribution to discouse. To support this argument, she presents the following contrast in terms of deniability:

(48) A: (Wow,) John bakes delicious desserts!

    B: No (he doesn't), these are store-bought. John's actually a terrible cook.

(49) A: (My,) What delicious desserts John bakes!

    B: ?No (he doesn't), these are store-bought. John's actually a terrible cook.

As observed here, the utterance of sentence exclamations can be denied by the negative particle *no*, but that of *wh*-exclamatives cannot.[13]

Trotzke & Giannakidou (2021) argue against Rett's view by first pointing out that other native speakers of English they consulted find no problem in using the negative particle *no* to reject the descriptive content of exclamatives; that is, they find (49B) to be completely fine.[14]

They suggest that while *that*-exclamatives are preferred as responses to polar questions, *wh*-exclamatives are restricted to responses to non-polar questions. See Trotzke & Villalba (2020) for their syntax-pragmatics analysis for the differences between *that*- and *wh*-exclamatives in their response uses in a discourse.

    [13]Some native speakers of English find (49B) to be acceptable when the VP ellipsis is eliminated, like *No he doesn't bake delicious desserts*, ...

    [14]As Trotzke & Giannakidou (2021) put it, following Horn (2001), Giannakidou (1997, 1998), and Giannakidou & Stavrou (2009) "[e]xternal negations such as *No* are known to be anaphoric responses to the previous utterance, and can be used to reject various aspects of the utterance including what is asserted (in which case we talk about denial proper) but also what is presupposed or implicated in which case the negation is metalinguistic (p. 6)".

They likewise provide Greek examples given in (50) and (51), which illustrate that both sentence exclamations and exclamatives can be rejected by the negative particles *Oxi/Ba/A, ba* (data taken from Trotzke & Giannakidou 2021: 6-7).

(50) A: Po po, o   Janis ftiaxni nostima glyka!

wow   the John makes delicious sweets

'Wow, John bakes delicious desserts!'

B: Oxi/Ba/A, ba! Ta agorase apo to zaxaroplasteio.

'No! These are store-bought.'

B′: Oxi/Ba/A ba. Dhen mou aresoun.

'No! I don't like them.'

(51) A: Ti   nostima glyka pu   ftiaxni o   Janis!

what delicious sweets that bakes   the John

'What delicious desserts John bakes!'

B: Oxi/Ba/ A, ba! Ta agorase apo to zaxaroplasteio.

'No! These are store-bought.'

B′: Oxi/Ba/A ba. Dhen mou aresoun.

'No! I don't like them.'

Based on these facts, Trotzke & Giannakidou propose that exclamatives have assertive force (see Trotzke & Giannakidou 2021 for their semantic analysis of exclamatives).

3.3 Previous analyses

The purpose of this section is to review two prominent analyses of the semantics of *wh*-exclamatives. One is a propositional analysis, according to which a *wh*-exclamative is assumed to denote a proposition. This propositional analysis can be further classified into three approaches according to the semantic type of a proposition: a presupposed open proposition (Michaelis & Lambrecht 1996; Michaelis 2001; a.o.), a set of propositions (Zanuttini & Portner 2003 and many others), and the unique true proposition (Gutiérrez-Rexach 1996, 2008). The other prominent analysis is a degree analysis, which assumes that *wh*-exclamatives denote degree properties. The degree analysis can be divided into two different approaches according to how the degree property is obtained: one is that a *wh*-word functioning as a degree operator plays a pivotal role in deriving the degree reading (Rett 2011), and the other is that a degree expression like *so* does such a job (Castroviejo 2021).

3.3.1 Propositional frameworks

3.3.1.1 Michaelis & Lambrecht 1996

From the Construction Grammar perspective (Fillmore & Kay 1993; Goldberg 1995), Michaelis & Lambrecht (1996) suggest that the nine types of exclamative construction, exemplified in (52), share the semantico-pragmatic properties listed in (53) (see Michaelis & Lambrecht 1996 for detailed discussion of major properties of each type).

(52)   a.   It's amazing how much you can get in the TRUNK.

      b.   It's amazing the DIFFERENCE! (Fixodent commercial)

c. You wouldn't believe the BICKERING that goes on. (For Better or for Worse' 8/15/94)

d. GOD my feet hurt.

e. What a DAY (I had).

f. The things I DO for that boy!

g. Are YOU in for it!

h. I'm amazed at how much TIME it took.

i. It's so HOT in here! (Michaelis and Lambrecht 1996: (2))

(53) a. Presupposed open proposition

b. Scalar extent

c. Assertion of affective stance: expectation contravention

d. Identifiability of described referent

e. Deixis

Here let me explain the first three properties, with reference to the *wh*-exclamative in (54).

(54) What a spicy pepper Kim ate!

The *wh*-exclamative denotes the presupposed open proposition 'Kim ate a *d*-spicy pepper', where the free degree variable undergoes existential quantification. The denoted individual (i.e., *the pepper Kim ate*) is placed at some point on the scale of spiciness invoked by the

gradable expression *spicy*. The utterance of the *wh*-exclamative results in an expression that the actual degree of spiciness of the pepper in question is higher than the speaker expected, giving rise to a sense of surprise on the part of the speaker (see also Michaelis 2001).[15]

As will be seen, I side with Michaelis & Lambrecht (1996) and Michaelis (2001) by suggesting that Korean *what*-exclamatives express a presupposed open proposition with a free degree variable. But my view diverges from theirs in the following aspects: the open proposition in question is contributed by the maximality operator *{ku/i}lehkey* 'so', and the descriptive content of Korean *what*-exclamatives denotes not a presupposed open proposition, but a maximal degree derived via the maximality operator.

3.3.1.2 Zanuttini & Portner 2003

Zanuttini & Portner (2003) (henceforth, Z&P) is recognized as one of the most influential studies on exclamatives in the generative literature. This paper is focused primarily on *wh*-exclamatives in English, Italian, and Paduan. Paduan and Italian *wh*-exclamatives are exemplified below in (55).

(55) a. Che roba che l   magna!   (Paduan)

          what stuff that he eats

          'The things he eats!'   (Z&P: 49)

      b. Che   alto che é!   (Italian)

          which tall that is

          'How very tall he is!'   (ibid.: 66)

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[15]In terms of syntactic behavior of *what* in *wh*-exclamatives, M&L briefly mention that *what*, as a nominal modifier, encodes a scalar degree and undergoes *wh*-movement to Spec-CP.

c. Che libri, a tua sorella, (che) le hanno regalato! (Italian)

what books to your sister that her have given

'What books they gave your sister!' (ibid.: 68)

Z&P argue that there are two core syntactic components that define the class of exclamatives: (i) a WH operator-variable structure and (ii) an abstract factive operator (FACT) in the CP domain. These syntactic ingredients characterize exclamatives by producing two core meaning components: (i) a set of alternative propositions produced by the operator-variable structure (in the sense of Karttunen 1977) and (ii) presuppositionality produced by the factive operator.

Z&P further argue that *wh*-exclamatives involve the sentential force that is characterized as a pragmatic operation of *widening*, a concept which is adopted from Kadmon & Landman's (1993) theory of *any*. They note that "exclamatives widen the domain of quantification for the WH operator, which gives rise to the set of alternative propositions denoted by the sentence (p. 40)". The widening operation is derived, indirectly, on the basis of the semantic components, i.e. sets of alternative propositions and factivity. Z&P formally define the widening operation and the factivity that apply to exclamatives as follows:

(56) WIDENING: For any clause S containing $R_{widening}$, widen the initial domain of quantification for $R_{widening}$, D1, to a new domain, D2, such that

(i) $[\![S]\!]_{w,D2,\prec} - [\![S]\!]_{w,D1,\prec} \neq 0$ and

(ii) $\forall x \forall y [(x \in D1\ \&\ y \in (D2{-}D1)) \rightarrow x \prec y]$. (Z&P: 52)

(57)   FACTIVITY: For any clause S containing $R_{factivity}$ in addition to $R_{widening}$,

every $p \in [\![S]\!]_{w,D2,\prec} - [\![S]\!]_{w,D1,\prec}$ is presupposed to be true.   (Z&P: 54)

The contextually provided set of propositions denoted by an exclamative constitutes the initial domain of quantification for $R_{widening}$, D1. The condition (ii) in (56) requires that any element that is to be added to the new domain D2 must have a property to a higher degree in a contextually determined scale than any element in D1. This semantic condition captures an extreme/high degree interpretation of exclamatives. The factivity condition in (57) indicates that every proposition which has been added to the initial domain is presupposed to be true: that is, they are already entailed by the common ground in the sense of Stalnaker (1978). Now let us see how the domain-widening operation and factivity work together for the *wh*-exclamative in (58) in the following context given by Z&P:

> We're discussing which hot peppers some of our friends like to eat. The domain of quantification for $R_{widening}$, let us call it D1, is a set of peppers that contains (in increasing order of spiciness): poblano, serrono, jalapeño, and güero. Our friends who like spicy food tend to eat the poblanos, serranos, and occasionally jalapeño. We say [(55a)] about one of these friends. In this context, the sentence implicates that he eats all types of peppers, not only all those in D1 but also, for example, the habanero, which is so spicy that it often makes people ill (p. 50).

(58)   What things he eats!

Widening extends the initial domain D1 given in (59a)—the set of propositions ordered according to the degree of spiciness of the peppers—to include new propositions 'He eats güero'

and 'He eats habanero' that are presupposed to be true, resulting in the new domain D2 given in (59b). Consequently, the widened domain including the values that the speaker didn't expect (i.e. güero and habanero) naturally leads to a sense of surprise or unexpectedness on the part of the speaker.

(59) a. D1: {He eats poblano, He eats serrano, He eats jalapeño}

b. D2: {He eats poblano, He eats serrano, He eats jalapeño, **He eats güero**, **He eats habanero**}

Note that unlike information-seeking *wh*-interrogatives, *wh*-exclamatives cannot function to ask a question, as shown in the contrast below:

(60) A: How tall is he?

B: Seven feet. (Z&P: 47)
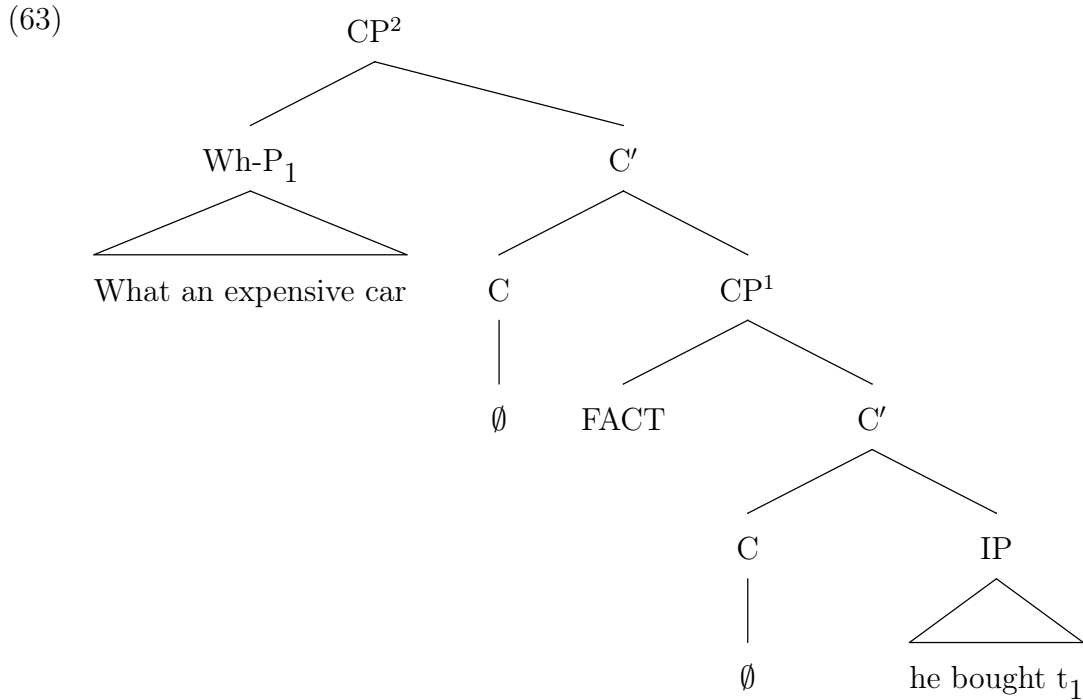
(61) A: How very tall he is!

B: *Seven feet. (ibid.: 47)

Z&P explain that the inability of exclamatives to serve as questions is because their function is not to introduce sets of propositions into the discourse in the way *wh*-interrogatives do, but to widen the domain of quantification produced by the WH operator-variable structure. The issue here can also be accounted for in terms of factivity: it would be meaningless to ask a question where the answer is already known to both the speaker and the addressee.

In terms of syntactic structure, Z&P claim that exclamatives involve more structure in the CP domain than interrogatives. On their view, the *wh*-exclamative in (62) would be

derived as in (63), where the entire *wh*-phrase moves to the higher Spec-CP and the factive operator FACT is merged at the lower Spec-CP.

(62)   What an expensive car he bought!

(63)

```
                        CP²
                 ┌───────┴───────┐
              Wh-P₁            C′
            ┌───┴───┐      ┌────┴────┐
      What an expensive car  C      CP¹
                             │   ┌───┴────┐
                             ∅  FACT     C′
                                      ┌───┴───┐
                                      C       IP
                                      │     ┌──┴──┐
                                      ∅   he bought t₁
```

The operator-variable chain formed by the *wh*-movement yields the set of alternative propositions, just like *wh*-interrogatives. The factive operator FACT in the CP domain carries the factive presupposition.

Through Z&P's approach is widely accepted in the literature, its feasibility and validity are still an open issue. For one thing, Rett (2011) raises a question about Z&P's widening-based account of the semantics of exclamatives. Suppose that "there are ten supercentenarians in the world, and they've all been named on *The Today Show* (p. 435)". Under Z&P's view, uttering the exclamative in (64) should widen the initial domain of quantification given in (65a). However, doing so would be impossible in the given context; there are only ten supercentenarians in the world.

(64)   (My,) What supercentenarians have been named on The Today Show!

(65)   a.   D1: $\{S_1$ has been named on *The Today show*, S_2 has been named on *The Today show*, S_3 has been named on *The Today show*, ..., S_{10} has been named on *The Today show*$\}$

   b.   D2: $\{S_1$ has been named on *The Today show*, S_2 has been named on *The Today show*, S_3 has been named on *The Today show*, ..., S_{10} has been named on *The Today show*, **???**$\}$

Another issue is related to *wh*-exclamatives containing closed-scale adjectives such as *dry* and *empty* (Castroviejo 2006; Gutiérrez-Rexach 2008; Villalba 2008). They run counter to the prediction of the widening analysis, given that it is impossible to widen the scale of dryness or emptiness beyond a certain point. The *wh*-exclamative *How empty the room is!* does not entail that the room is empty.[16]

A further nontrivial issue comes from the factivity condition and its interaction with emotional attitudes on the part of the speaker. As noted above, in the process of widening operation the propositions that have been added to the initial domain are presupposed to be true. In this regard, it is hard to understand how to reconcile the intuitive clash between presupposition and surprise. That is, it is not clear how a proposition at the extreme end of a scale (and/or the larger set of propositions entailed by it) can give rise to a sense of surprise on the part of the speaker if it is presupposed true, in other words if the speaker already knows the proposition to be true.

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[16] As Nicholas Fleisher (p.c.) notes, this kind of phenomenon is found elsewhere with closed-scale adjectives: an intensifying modifier paradoxically has the effect of attenuating the meaning down from its ordinary scalar endpoint-related meaning. For example, "This airplane is very safe!" will often be understood to mean something weaker than "This airplane is safe!".

3.3.1.3 Gutiérrez-Rexach 1996, 2008

Adopting Karttunen's (1977) semantics for questions and Groenendijk & Stokhof's (1984) notion of strong exhaustivity, Gutiérrez-Rexach (1996, 2008) analyzes exclamatives as basically having the same denotation as (degree) questions. Gutiérrez-Rexach treats degree questions like (66a) as asking about maximal degrees, as paraphrased in (66b).

(66) a. How tall is John?

 b. What is the maximal degree d such that John is d-tall?

 c. $\iota p \exists d[p(w) \ \& \ p = \lambda w'[d = \text{MAX}(\lambda d'[\text{tall}(w')(j,d')])]]$ (Gutiérrez-Rexach 2008: 119)

As formally sketched in (66c), the degree question denotes the unique true proposition of the form 'John is d-tall in w', where d refers to a maximal degree.

 Gutiérrez-Rexach's analysis differs from Zanuttini & Portner's in that in order to capture the exclamative force, Gutiérrez-Rexach posits an illocutionary operator EXC, which distinguishes exclamatives from interrogatives. The definition of EXC is as follows (Gutiérrez-Rexach 1996):

(67) Let a be an agent (the speaker), w a world (typically the actual world), p a proposition, and P ∈ EMOT (the set of emotive properties). Then, EXC $=_{\text{df}} \lambda a_i \lambda w_s \lambda p_{\langle s,t\rangle} \exists P_{\langle s,\langle\langle s,t\rangle,\langle e,t\rangle\rangle\rangle}[\text{P(w)(p)(a)}]$ where i refers to the type of the speaker's variable and s refers to the type of the world variable.

The intensional operator EXC of type $\langle i, \langle s, \langle \langle s,t \rangle, t \rangle \rangle \rangle$ takes a proposition and returns true iff there is a P (construed as the set of emotive properties) that is true of a and p in w. For example, the meaning of the exclamative in (68a) is formally sketched as in (68b).

(68)   a.   How tall Kim is!

   b.   EXC(a)(w)(ιp$\exists$d[p(w) & p = λw'[d = MAX(λd'[tall(w')(j,d')])]]) iff $\exists$P $\in$

   EMOT[P(w)

   (ιp$\exists$d[p(w) & p = λw'[d = MAX(λd'[tall(w')(j,d')])]])(a)]

The utterance of (68a) results in the speaker's emotional attitude (e.g., surprise or amazement) toward the fact that Kim is d-tall.

As Gutiérrez-Rexach (1996, 2008) points out, the degree of a gradable property that triggers the speaker's emotive attitude needs to be higher than any other degree in the relevant scale established by the speaker's expectations. No such meaning can be derived by the function of EXC in (67). So, in order to obtain the missing meaning, Gutiérrez-Rexach provides the denotation given in (69), which involves an ordering relation on degrees ($<_a^P$) associated with an emotive property P according to the speaker (a)'s expectations (as discussed, Zanuttini & Portner (2003) postulates an operation of widening to derive the meaning in question).

(69) $\forall$d,d'[d'$<_a^P$d & EXC((a)(w)(P(d))) $\rightarrow$ $\neg$EXC((a)(w)(P(d')))]

   (Gutiérrez-Rexach 2008: 121)

The denotation informally indicates that the speaker's emotive attitude is not evoked in any alternative world where the degree denoted by the exclamative is lower than the degree established by the speaker's expectation.

Along with Elliott (1974), Grimshaw (1979), and many others, Gutiérrez-Rexach (1996, 2008) argues that exclamatives are factive. Given that a factivity property is generally associated with emotive predicates such as *be surprised/amazed*, Gutiérrez-Rexach ties the factivity feature to a null emotive predicate involved in the EXC operator.

In terms of syntactic derivation of exclamatives, Gutiérrez-Rexach (2008) argues that a *wh*-word encodes features [+deg] and [+excl]. Under his approach, the Spanish *wh*-exclamative in (70) is analyzed as being derived as in (71).

(70) ¡Qué libros que has   leído!

what books that have-you read

'The books that you have read!'   (Gutiérrez-Rexach 2008: 128)

(71) a. [$_{\text{Focus/Deg}}$ [qué libros]$_1$ [$_{\text{Topic}}$ que has leído t$_1$]] $\rightarrow$

b. [$_{\text{Force/Excl}}$ qué$_2$ [$_{\text{Focus/Deg}}$ [t$_2$ libros]$_1$ [$_{\text{Topic}}$ que has leído t$_1$]]

As illustrated in (71a), the entire DP *qué libros* 'what books' moves to Spec-FocusP to check the [+deg] feature, yielding the relevant degree property (high degree presupposition). As shown in (71b), the next derivational step is for the *wh*-word *qué* in Spec-DP to move to Spec-ForceP to check its [+excl] feature encoded as an interface requirement of the EXC operator. I refer the interested reader to Gutiérrez-Rexach (2008) for details and discussion on his syntactic analysis.

3.3.2 Degree frameworks

3.3.2.1 Rett 2011

As discussed, Zanuttini & Portner (2003) argue that *wh*-exclamatives denote sets of true propositions contributed by an interrogative *wh*-operator and that their discourse contribution comes from the domain-widening operator, derived, indirectly, from the semantic components (sets of propositions and factivity). As we see here, however, Rett (2011) argues against Zanuttini & Portner's analysis and other similar ones (Gutiérrez-Rexach 1996, 2008; Michaelis & Lambrecht 1996), showing that *wh*-exclamatives denote degree properties (type $\langle d,t \rangle$) derived via a degree *wh*-operator and that their contribution to discourse is mediated by an expressive force operator (E-FORCE).

Rett argues that *wh*-exclamatives can only be headed by a limited set of *wh*-phrases that can range over degrees, such as *what*, *how*, and *how many/much/few/little*. Consider the examples below, taken from Rett (2011: 417).

(72) a. How (very) short your children are!

     b. How (very) few papers you've written!

     c. What mean neighbors you have!

     d. *Who that lovely woman married! (... He's so acerbic!)

     e. *Where she goes out partying! (... It's so seedy!)

     f. *When she gets out of bed in the morning! (... I eat lunch at that hour!)

g. *Why she dropped out of college! (... Her cat isn't that lonely!)

Under her view, the examples in (72d-g) are ruled out since the *wh*-phrases like *who, where, when*, and *why*, which range over persons, locations, times, and reasons, respectively, cannot introduce well-formed *wh*-exclamatives denoting degree properties.

Assuming that the semantic function of *what* is to range over degrees in *wh*-exclamatives as in (72c), Rett argues that the degree property denoted by a *wh*-exclamative is derived via the semantics of *what* as a degree operator whose range is underspecified, as defined in (73).

(73) $[\![\text{what}]\!] = \lambda P_{\langle \tau, t \rangle} \lambda x_{\langle \tau \rangle}.P(x)$ (*for any type* τ)

   (Rett 2011: 423)

To illustrate her semantic analysis in detail, let us consider (75) that describes step-by-step how the *wh*-exclamative in (74) can come to denote a degree property through the degree operator *what*.

(74) What delicious cookies John baked!

(75) $[\text{what}_j \ [[t_{j_{\langle d \rangle}} \text{ delicious cookies}]_i \text{ John baked } t_{i_{\langle x \rangle}}]]$

   a. $[\![\text{John baked } t_{i_{\langle x \rangle}}]\!] = \text{baked}'(\text{j},x)$

   b. $[\![t_{j_{\langle d \rangle}} \text{ delicious cookies}]\!] = \lambda x.\text{cookies}'(x) \wedge \text{delicious}'(x, d)$

   c. $[\![t_{j_{\langle d \rangle}} \text{ delicious cookies}]\!] \ (\lambda x_i.[\![\text{John baked } t_{i_{\langle x \rangle}}]\!])$
       $= \lambda x.\text{baked}'(\text{j}, x) \wedge \text{cookies}'(x) \wedge \text{delicious}'(x, d)$

   d. $[\![\text{what}]\!] \ (\lambda d_j.[\![t_{j_{\langle d \rangle}} \text{ delicious cookies John baked } t_{i_{\langle x \rangle}}]\!])$
       $= \lambda d \lambda x.\text{baked}'(\text{j}, x) \wedge \text{cookies}'(x) \wedge \text{delicious}'(x, d)$

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e. $\leadsto_{\exists closure} \lambda d \exists x [\text{baked}'(\text{j}, x) \wedge \text{cookies}'(x) \wedge \text{delicious}'(x, d)]$

The *wh*-phrase *what* first undergoes *wh*-movement to Spec-CP, which pied-pipes the rest of the NP constituent that contains it, leaving a trace of type e in the object position of the verb. The *wh*-phrase further undergoes degree-operator movement, leaving a trace of type d. This degree-denoting trace composes with the gradable adjective of type $\langle d, \langle e, t \rangle \rangle$ via Predicate Modification, and the resulting constituent intersectively composes with the head noun of type $\langle e, t \rangle$, as shown in (75b).[17] The entire NP combines with the VP via Predicate Modification, as in (75c). Then, *what* denoting an identity function on degree properties $(\lambda P_{\langle d, t \rangle} \lambda x_{\langle d \rangle}.P(x))$ composes with the rest of the clause, yielding the denotation with the individual and degree variables lambda-bound, as in (75d). Rett assumes that the individual variable undergoes existential closure, resulting in the degree-property-denoting object, as in (75e).

We have seen that *wh*-exclamatives with no gradable predicates can receive degree interpretations, i.e., denote degree properties. In this regard, the question arises as to how and where a degree argument arises, since, as observed above, it is typically introduced by a gradable predicate. To solve this issue, Rett postulates a measurement operator (M-Op), defined in (76), where it maps individuals to degrees, just like gradable adjectives.

(76) M-Op $\leadsto \lambda d \lambda x. \mu(x) = d$, where μ, a measurement function, is valued contextually

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[17]Predicate Modification is defined as follows:

(i) *Predicate Modification* (PM)
If α is a branching node and $\{\beta, \gamma\}$ the set of its daughters, then, for any assignment a, if $[\![\beta]\!]^{\text{a}}$ and $[\![\gamma]\!]^{\text{a}}$ are both functions of type $\langle e,t \rangle$. then $[\![\alpha]\!]^{\text{a}} = \lambda x \in D . [\![\beta]\!]^{\text{a}}(x) = [\![\gamma]\!]^{\text{a}}(x) = 1$. (Heim & Kratzer 1998: 95)

(Rett 2011: 425)

As (77) illustrates, M-Op does the same job as a gradable adjective in introducing a degree argument and taking the *wh*-trace as its degree argument.

(77) $[\text{what}_j\ [[t_{j\langle d\rangle}\ \text{M-Op desserts}]_i\ \text{John baked}\ t_{i\langle x\rangle}]]$

    a. $[\![\text{John baked}\ t_{i\langle x\rangle}]\!] = \text{baked}'(\text{j},x)$

    b. $[\![t_{j\langle d\rangle}\ \text{M-Op desserts}]\!] = \lambda x.\text{desserts}'(x) \wedge \mu(x) = d$

    c. $[\![t_{j\langle d\rangle}\ \text{M-Op desserts}]\!](\lambda x_i.[\![\text{John baked}\ t_{i\langle x\rangle}]\!]) = \lambda x.\text{baked}'(\text{j},x) \wedge \text{desserts}'(x)$
       $\wedge\ \mu(x) = d$

    d. $[\![\text{what}]\!]\ (\lambda d_j.[\![t_{j\langle d\rangle}\ \text{M-Op desserts John baked}\ t_{i\langle x\rangle}]\!]) = \lambda d\lambda x.\text{baked}'(\text{j},x) \wedge$
       $\text{desserts}'(x) \wedge \mu(x) = d$

    e. $\rightsquigarrow_{\exists closure} \lambda d\exists x[\text{baked}'(\text{j},\ x) \wedge \text{desserts}'(x) \wedge \mu(x) = d]$ (Rett 2011: 426)

Assuming that exclamations, a natural class including exclamatives and sentence exclamations, are a type of expressive speech act that expresses a violation of the speaker's expectation, Rett proposes that exclamatives involve an illocutionary force operator E-FORCE, defined in (78), where it is modeled as a function from propositions to expressive speech acts.

(78)   E-FORCE(p), uttered by s_C, is appropriate in a context C if p is salient and true in w_C. When appropriate, E-FORCE(p) counts as an expression that s_C had not expected that p.

Since E-FORCE is treated as requiring a proposition as its input, the degree property denoted by an exclamative needs to be converted into a proposition to reconcile type mismatch. In this regard, Rett argues that the conversion takes place by two-step process. To illustrate this, consider (79).

(79)   How tall John is!

    a. λd.tall(john,d)

    b. tall(john,d')

    c. E-FORCE(p) counts as an expression that $\exists d'$ such that s_C had not expected that $D(d')$.

    (Rett 2011: 431)

Context provides an argument for the denoted degree property, yielding the proposition with the free degree variable (d'), as in (79b). This open proposition serves as input to E-FORCE, with the degree variable bound by existential closure at the end of the utterance, resulting in the denotation in (79c). Consequently, what the *wh*-exclamative contributes to the discourse is an expression that there is a degree d' such that the speaker had not expected that John is d'-tall.

3.3.2.2   Castroviejo 2021

Castroviejo's (2021) paper is focused on Catalan *wh*-exclamatives introduced by the *wh*-word *quin* 'what/which' functioning as a *wh*-determiner. She analyzes *quin*-exclamatives as

involving the syntactic structure described in (80).[18]

(80) [_{whP} Quin cotxe [_{DegP} [_{Deg}′ [_{Deg} tan] [_{AP} llampant]]]]_i que s'ha comprat
what car so flashy that self.has bought

t_i la Laia!
the Laia

'What a flashy car Laia bought!'

Quin-exclamatives structurally differ from English *what*-exclamatives in that a degree expression like *tan* 'so' is allowed to occur (cf. **What so flashy cars Laia bought!)* and takes an AP as its complement, forming a DegP that functions as a modifier to the *quin*-NP. As we will see below, the presence of the degree expression *tan* plays a pivotal role in characterizing the meaning of Catalan *quin*-exclamatives.

In terms of the semantics of *quin*-exclamatives, Castroviejo argues that they denote degree properties derived via the degree quantifier *tan*. Before discussing this type of degree analysis, let us review some remarkable semantic properties of *quin*-exclamatives. Castroviejo argues that *quin*-exclamatives are sensitive to Rett's (2011) degree restriction in that they only receive degree interpretations. For example, the *quin*-exclamative in (81) with no gradable adjective (introduced by *tan*) can be felicitously uttered only in a context where the car John bought instantiates some gradable property (e.g., flashiness) to a degree higher than the speaker expected, but not in a context where John bought a car other than the one he was expected to. The example in (80) is interpreted analogously..

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[18]The degree expression *més* 'more' can be used instead of *tan*. Here I focus on exclamatives with *tan*. See Castroviejo (2021) for relevant discussion on exclamatives with *més*.

(81) Quin cotxe (que) s'ha   comprat en Joan!

what car   that self.has bought   the John

'What a car John bought!'   (Castroviejo 2021: 46)

Another notable semantic property concerns the fact that adjectives that occur in *quin*-exclamatives must be gradable. For example, non-gradable adjectives like relational adjectives cannot occur in *quin*-exclamatives, as shown in (82).

(82) Quin cotxe tan {bonic/rápid/modern/*esportiu} (que) s'ha   comprat en

what car   so beautiful/fast/modern/sports   that self.has bought   the

Joan!

John

'What a beautiful/fast/modern/sports car John bought!'(Castroviejo 2021: 48)

As for gradable adjectives, Castroviejo notes that their occurrence is not permitted if they are not preceded by *tan* 'so':

(83) ??Quin cotxe rápid que s'ha   comprat en Joan!

what   car   fast   that self.has bought   the John   (Castroviejo 2021: 48)

The utterance of (83) is infelicitous in a context where the car in question instantiates fastness to a degree higher than the speaker expected. Rather, it would be felicitous in a context where the fast car John bought instantiates a contextually retrievable/salient gradable property (e.g,. beautifulness) to a degree higher than the speaker expected, as in its overt form such as (84).

(84)   Quin cotxe rápid tan bonic   que s'ha   comprat en Joan!

what car   fast   so   beautiful that self.has bought   the John
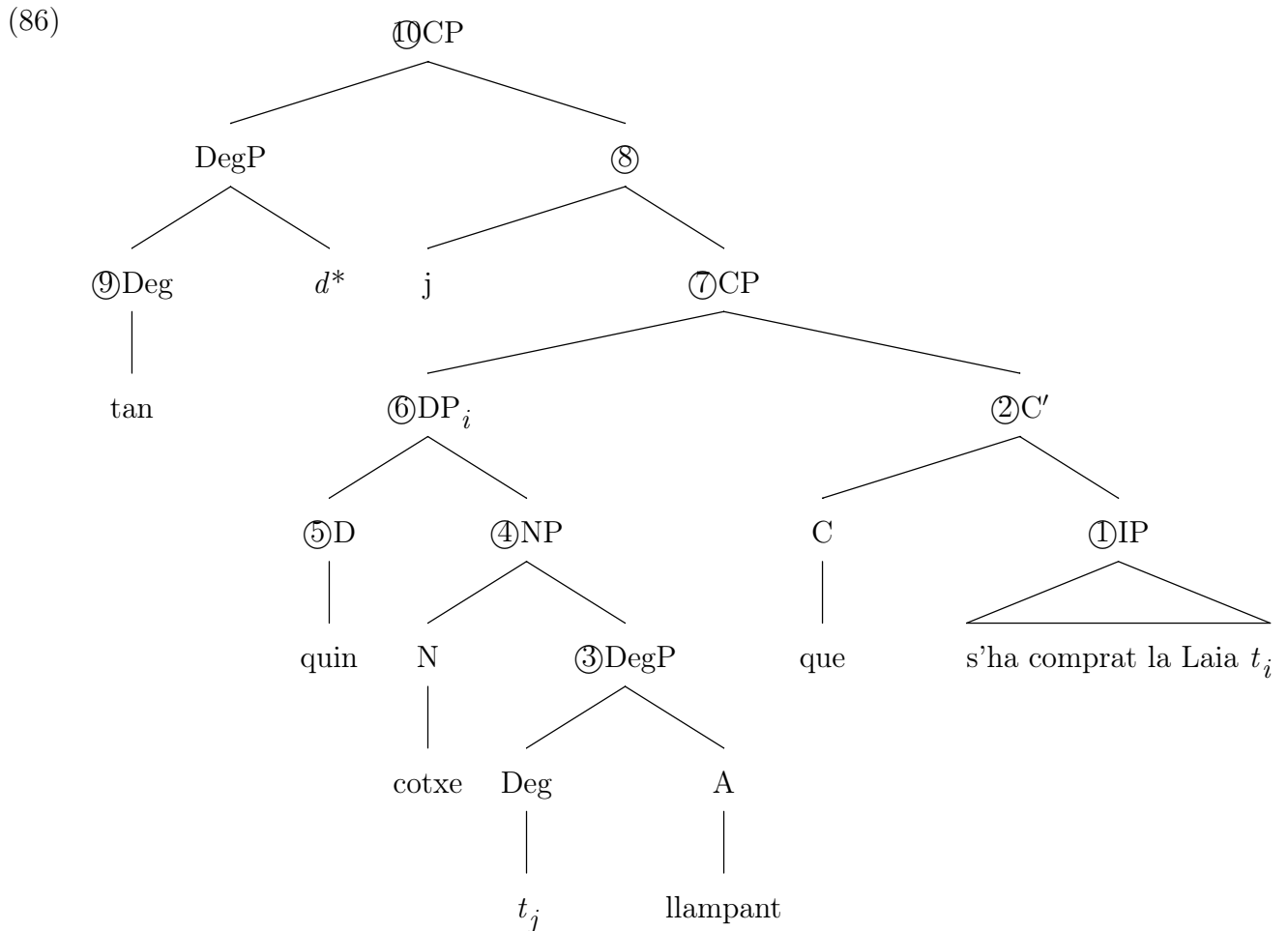
'What a beautiful fast car John bought!'   (Castroviejo 2021: 48)

Now let us explore Castroviejo's semantic analysis of *quin*-exclamatives. Consider the LF-structure in (86) for the *quin*-exclamative in (85).

(85)   Quin cotxe tan llampant que s'ha   comprat la   Laia!

what car   so   flashy   that self.has bought   the Laia

'What a flashy car Laia bought!'

(86)

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$$[\![①]\!] = \text{bought}(x)(\mathrm{l})$$

$$[\![②]\!] = \lambda x.\text{bought}(x)(\mathrm{l})$$

$$[\![③]\!] = \lambda x.\text{flashy}(d)(x)$$

$$[\![④]\!] = \lambda x.\text{car}(x) \wedge \text{flashy}(d)(x)$$

$$[\![⑤]\!] = \lambda P \lambda x.P(x)$$

$$[\![⑥]\!] = \lambda x.\text{car}(x) \wedge \text{flashy}(d)(x)$$

$$[\![⑦]\!] = \lambda x.\text{car}(x) \wedge \text{flashy}(d)(x) \wedge \text{bought}(x)(\mathrm{l})$$

$$\rightsquigarrow_{\exists closure} \exists x[\text{car}(x) \wedge \text{flashy}(d)(x) \wedge \text{bought}(x)(\mathrm{l})]$$

$$[\![⑧]\!] = \lambda d.\exists x[\text{car}(x) \wedge \text{flashy}(d)(x) \wedge \text{bought}(x)(\mathrm{l})]$$

$$[\![⑨]\!] = \lambda d_d \lambda D_{<d,t>}.\text{MAX}(D) \geqslant / > d$$

$$[\![⑩]\!] = \text{MAX}(\lambda d.\exists x[\text{car}(x) \wedge \text{flashy}(d)(x) \wedge \text{bought}(x)(\mathrm{l})]) \geqslant / > d^*$$

Let us first examine how the meaning of *quin*-phrase is compositionally derived. The degree expression *tan* 'so' is taken as a degree quantifier ($[\![⑨]\!]$), which takes as its argument a standard degree argument (d^*) that is taken from context. The degree quantifier undergoes Quantifier Raising, leaving a trace of type d in its base position. This degree-denoting trace composes with the gradable adjective, yielding a property of individuals ($[\![③]\!]$), which in turn intersectively composes with the head noun denotation ($[\![④]\!]$). The resulting NP denotation composes with the denotation of determiner *quin* as an identity function ($[\![⑥]\!]$). The resulting DP denotation composes with the C′ denotation via Predicate Modification ($[\![⑦]\!]$). At this point, Castroviejo follows Rett (2011) in arguing that the individual variable undergoes existential closure, yielding the CP with the free degree variable. Lambda abstraction over

the degree variable turns the open proposition into a set of degrees ($[\![⑧]\!]$). The degree property then serves as the second argument of the degree quantifier. At the end of the derivation, the *quin*-clause denotes the open proposition that the maximal degree of flashiness of any car Laia bought meets or exceeds the standard degree $d*$ ($[\![⑩]\!]$).

Following a suggestion by Burnett (2010), Castroviejo assumes that the final output denoting the open proposition is equivalent to (87) denoting the degree property.

(87) $\lambda d'.\text{MAX}(\lambda d.\exists x[\text{car}(x) \wedge \text{flashy}(d)(x) \wedge \text{bought}(x)(\text{l})]) \geqslant / > d'$

The degree variable d', she assumes, is bound by the existential quantifier introduced by an expressive force operator EXP-OP, defined in (88).[19]

(88) $[\![\text{EXP-OP}_{wh}]\!](D) = \exists d[S_c \text{ did not expect } D(d)]$.

Consequently, the expressive content conveyed by the *quin*-exclamative is that there is a degree d such that the speaker did not expect that the car Laia bought would be d-flashy.

As Castroviejo notes, her analysis differs sharply from Rett's (2011) one in that the *wh*-component *quin* is taken not as a degree operator, but just as an identity function. Recall that Rett treats *what* as a degree operator that denotes a type-flexible identity function in *wh*-exclamatives. Consider (89).

(89) $[\text{what}_j \; [[t_{j\langle d\rangle} \; \text{delicious cookies}]_i \; \text{John baked} \; t_{i\langle x\rangle}]]$

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[19]For sentence exclamations like (i), she proposes the different lexical entry for EXP-OP given in (ii).

(i)   La Laia s'ha comprat un Honda!
        'Laia bought a Honda!'

(ii) $[\![\text{EXP-OP}]\!](p) = S_c \text{ did not expect that } p$.

a. $[\![\text{what}]\!]$ $(\lambda d_j.[\![t_{j\langle d\rangle}$ delicious cookies John baked $t_{i\langle x\rangle}]\!])$

   $= \lambda d\lambda x.\text{baked}'(\text{j}, x) \wedge \text{cookies}'(x) \wedge \text{delicious}'(x, d)$

b. $\rightsquigarrow_{\exists closure} \lambda d\exists x[\text{baked}'(\text{j}, x) \wedge \text{cookies}'(x) \wedge \text{delicious}'(x, d)]$

In Rett's analysis, the trace of the degree operator *what* allows for the intersection between the gradable adjective and its head noun. Without the degree-denoting trace, such an intersection is not achieved due to type mismatch. Unlike in English *what*-exclamatives, in Catalan *quin*-exclamatives the *wh*-word *quin* as a determiner head cannot be adjacent to a gradable adjective; the two expressions are separated by the degree quantifier *tan* (and the head noun), as shown in (90).

(90) [DP Quines [NP postres [DegP tan [AP delicioses]]]] que ha   preparat en

      what   desserts   so   delicious   that has prepared the

   Joan!

   John

   'What delicious desserts John prepared.'

This apparent structural difference makes it implausible to treat *quin* as a degree operator, whose trace serves as a degree argument of the gradable adjective. Rather, as we have examined in (86), the degree quantifier *tan* does such a job in obtaining the degree property. If Castroviejo's analysis is on the right track, it confirms that the treatment of a *wh*-word as a degree operator, as argued by Rett (2011), does not hold cross-linguistically.

   Before concluding this section, I would like to mention one potential weakness of Castroviejo's analysis, in my view. As noted, she treats the degree adverb *tan* 'so' as a degree

quantifier. Its denotation is presented in (86), which is repeated below as (91) for conve-
nience.

(91) $[\![\text{tan}]\!] = \lambda d_d \lambda D_{<d,t>}.\text{MAX}(D) \geqslant / > d$

The degree quantifier takes as its arguments a standard degree (taken from context) and a set
of degrees, and extracts an open proposition (with the standard degree as the free variable)
that the actual maximal degree in the set of degrees (represented by $\text{MAX}(D)$) exceeds or
meets the standard degree. In this sense, we can understand that the open proposition entails
a violation of the speaker's expectation, provided that the contextually provided standard
is established by the speaker's expectation. That is, it entails that the speaker expected a
gradable property to hold only up to a particular degree (standard degree), but the actual
value has exceeded the expectation. Given this, I think, the semantic work of EXP-OP to
express the speaker's unexpectedness towards the actual maximal degree denoted by the
wh-clause, as defined in (88), would be redundant, except for its function to existentially
bind the standard degree variable in the open proposition.

3.4   Korean *what*-exclamatives at the syntax-semantics in-
terface

In the previous sections, we have identified some major issues that are still open in the
literature, and then reviewed the two prominent frameworks (proposition vs. degree) for *wh*-
exclamatives. In this section, I show that *what*-exclamatives in Korean share some properties
with those in other languages, but also retain their own syntactic and semantic features

which can help us investigate cross-linguistic variation in *wh*-exclamatives. On the basis of the observed properties, I then go on to present a compositional syntactic and semantic analysis of Korean *what*-exclamatives.

3.4.1 Basic description

3.4.1.1 Grammatical status of exclamative *what*

A unique property of the exclamative *wh*-word in Korean *what*-exclamatives is that it can only appear in its reduced form *mwe* 'what'. Consider the following contrast:

(92) a. mwe-l   kulehkey maywun kochwu-lul   mek-ess-e!

         what-ACC so   spicy   pepper-ACC eat-PST-EXCL

         'What spicy peppers you ate!'

     b. *mwues-ul kulehkey maywun kochwu-lul   mek-ess-e!

         what-ACC so   spicy   pepper-ACC eat-PST-EXCL

         'What spicy peppers you ate!'

Unlike (92a), (92b) is ruled out due to the use of the unreduced form *mwues*.

As shown in (92a), the non-standard *wh*-word *mwe* can have accusative Case *-(u)l*. However, as shown in (93), it cannot bear nominative Case *-ka* or genitive Case *-uy*.

(93) a. *mwe-ka   kulehkey maywun kochwu-lul   mek-ess-e!

         what-NOM so   spicy   pepper-ACC eat-PST-EXCL

         'What spicy peppers you ate!'

b. *mwe-uy   kulehkey maywun kochwu-lul   mek-ess-e!

  what-GEN so   spicy   pepper-ACC eat-PST-EXCL

  'What spicy peppers you ate!'

I assume that the accusative Case on *mwe-l* is an inherent Case, not a structural Case. This assumption is supported by the fact that the *wh*-expression can occur in a strict transitive construction with the accusative-marked object (see (92a)).

   Note that the exclamative *wh*-word can be associated with an NP that functions as the subject or the object in a sentence:

(94) a. ecey   [mwe-l   kulehkey manhun salamtul-i]   chwiha-yss-e!

        yesterday what-ACC so   many   people-NOM get-drunk-PST-EXCL

        'How many people got drunk yesterday!'

   b. Mimi-nun [mwe-l   kulehkey elyewun nonmwun-ul] se-ss-e!

        Mimi-TOP what-ACC so   difficult paper-ACC   write-PST-EXCL

        'What a difficult paper Mimi wrote!'

   The exclamative *wh*-word cannot appear discontinuous from the associated NP, as shown in (95).

(95) a. *mwe-l   ecey   [kulehkey manhun salamtul-i]   chwiha-yss-e!

        what-ACC yesterday so   many   people-NOM get-drunk-PST-EXCL

        'How many people got drunk yesterday!'

b. *mwe-l Mimi-nun [kulehkey elyewun nonmwun-ul] se-ss-e!

what-ACC Mimi-TOP so difficult paper-ACC write-PST-EXCL

'What a difficult paper Mimi wrote!'

As will be shown, the above distributional fact can be captured by positing that the *wh*-phrase *mwe-l* is base-generated in the specifier position of the NP in question.

As mentioned at the outset, the exclamative *wh*-phrase *mwe-l* does not contribute an interrogative meaning, and the exclamative sentence it occurs in is not interpreted as information-seeking questions. Consider (96).

(96) A: mwe-l kulehkey maywun kochwu-lul mek-ess-e!

what-ACC so spicy pepper-ACC eat-PST-EXCL

'What spicy peppers you ate!

B: kulekey.

yeah

'Yeah.'

B′: #hallaphinyo-lang kwueylo

jalapeño-and güero

'jalapeño and güero'

B″'s reply is infelicitous, because A's utterance is not an information-seeking *wh*-questions asking about what kind of spicy peppers the addressee ate, but an exclamative. In terms of the semantics of the exclamative *wh*-phrase *mwe-l*, I will argue that it is modeled as a type-flexible identity function (cf. Zanuttini & Portner 2003; Gutiérrez-Rexach 1996. 2008).

3.4.1.2 Degree interpretations and emotional attitudes

As noted in section 3.2.4, Rett (2011) argues that exclamatives involve a violation of the speaker's expectations and they only receive degree interpretations. These meaning components allow exclamatives, unlike sentence exclamations, to be associated with scalar expectations, where the speaker expected a particular degree of some gradable property of the *wh*-referent's denotatum, but the actual degree surpassed the expected degree.

Building on Rett's ideas, I show here that Korean *what*-exclamatives have an interpretation of speaker unexpectedness and only receive degree readings. To illustrate this, let us consider (97) for instance.

(97) mwe-l   kulehkey pissan   khemphyuthe-lul sa-ss-e!

what-ACC so   expensive computer-ACC   buy-PST-EXCL

'What an expensive computer you bought!'

The *what*-exclamative is uttered felicitously only in a context in which the actual/reference degree of expensiveness of the computer the addressee bought has surpassed the standard established by the speaker's expectation. That is to say, the exclamative is used to express that the price of the car in question is more expensive than the speaker expected. This expectation contravention is empirically verified by the fact that it is odd to continue the exclamative by saying someting like *The price is exactly what I expected*, as in (98).

(98) mwe-l   kulehkey pissan   khemphyuthe-lul sa-ss-e!   (#nay-ka

what-ACC so   expensive computer-ACC   buy-PST-EXCL I-NOM

cenghwakhi yeysangha-n kakyek-i-ney.)

exactly   expect-MOD price-COP-DECL

'What an expensive computer you bought! The price is exactly what I expected.'

In addition, the degree reading of (97) is evidenced by the fact that the exclamative can be associated with a scalar expectation: it can be naturally followed by a clarifying sentence like *I guessed that you would buy an expensive computer, but not this expensive!* or *I guessed that you wouldn't buy an expensive computer.*

We have seen that English *what*-exclamatives can get degree readings even though they do not involve overt gradable adjectives (Rett 2011). For example, the *what*-exclamative in (99) can be felicitously uttered to express that the degree to which the car John bought instantiates some gradable property (e.g., expensiveness) has surpassed the speaker's expectations.

(99)   What a car John bought!

As we have discussed, Rett (2011) accounts for this by positing that the measurement operator (M-Op) of the same semantic type as gradable adjectives is involved in such exclamatives which would be otherwise ruled out.

Meanwhile, different from English counterparts, Korean *what*-exclamatives do not behave the same in this respect. As (100) illustrates, the absence of an overt gradable adjective leads to ungrammaticality.

(100) a. *mwe-l   kulehkey cha-lul   sa-ss-e!

        what-ACC so   car-ACC buy-PST-EXCL

        '(int.) What an expensive car you bought!'

b. *mwe-l   kulehkey kochwu-lul   mek-ess-e!

   what-ACC so   pepper-ACC eat-PST-EXCL

   '(int.) What a spicy pepper you ate!'

This indicates that the measurement operator (M-Op) is of no help in saving Korean *what*-exclamatives with no overt gradable adjectives. In the following, I will revisit this issue.

What-exclamatives in Korean, as in other languages, express the speaker's emotional feelings such as surprise and amazement. The exclamative in (97) is used to exclaim that the speaker is surprised/amazed at the extreme/high degree of expensiveness of the computer in question. This emotional attitude on the part of the speaker is empirically evidenced by the fact that the exclamative cannot be naturally continued with a sentence like *I'm not surprised at all*, as illustrated in (101).

(101) mwe-l   kulehkey pissan   khemphyuthe-lul sa-ss-e!   (#cenhye

       what-ACC so   expensive computer-ACC   buy-PST-EXCL at all

       nollap-ci   ahn-a.)
       surprise-CONN not-DECL

   'What an expensive computer you bought! I'm not surprised at all.'

Thus far, we have established that like English counterparts, Korean *what*-exclamatives (specifically, *mwe-l-{ku/i}lehkey*-exclamatives) involve the two core meaning ingredients, namely speaker unexpectedness and degrees, and represent a speaker's emotional attitude

3.4.2 Analysis

Having established some of the basic properties of Korean *what*-exclamatives, I now turn to

a syntactic and semantic analysis of them.

3.4.2.1 Structure and meaning of an exclamative *wh*-phrase

I begin by analyzing a complex exclamative *wh*-phrase, consisting of *mwe-l* + *{ku/i}lehkey*

+ Adj + N, as involving the internal structure presented in (102).

(102)

NP
├── NP
│   └── △
│   mwe-l
└── N′
     ├── AP
     │   ├── DegP
     │   │   └── △
     │   │   {ku/i}lehkey
     │   └── A
     └── N
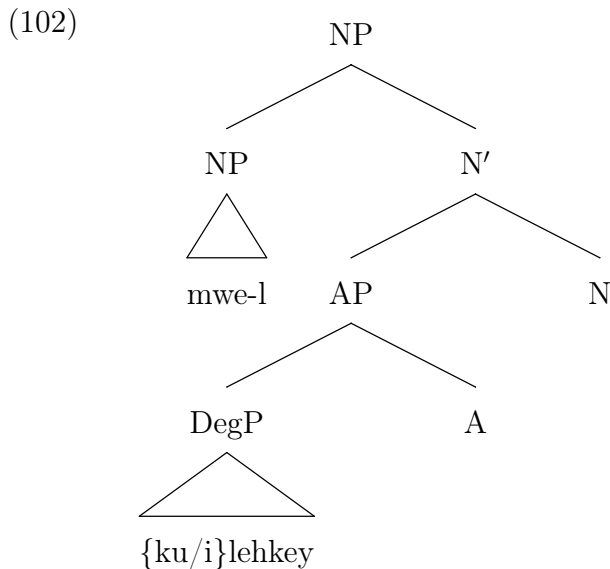
The (gradable) adjective takes as its complement a DegP headed by the degree expression

{ku/i}lehkey, resulting in the AP. The head noun then combines with the AP as its com-

plement and with the *wh*-phrase *mwe-l* as its specifier. As noted above, I assume that the

accusative case on *mwe-l* is an 'inherent' Case, not a structural Case, so the assumption that

mwe-l originates within the NP could not be rejected for Case-related reasons.

A piece of evidence in favor of the internal structure proposed above comes from the

following ungrammatical examples regarding overt scrambling: (103a) provides a baseline,

well-formed *what*-exclamative.

(103) a. ecey   [mwe-l   kulehkey pissan   cha-lul] sa-ss-e!

        yesterday what-ACC so   expensive car-ACC buy-PST-EXCL

        'What an expensive car you bought yesterday!'

    b. *[kulehkey pissan   cha-lul] ecey   mwe-l   sa-ss-e!

        so   expensive car-ACC yesterday what-ACC buy-PST-EXCL

        'What an expensive car you bought yesterday!'

    c. *[pissan   cha-lul] ecey   mwe-l   kulehkey sa-ss-e!

        expensive car-ACC yesterday what-ACC so   buy-PST-EXCL

        'What an expensive car you bought yesterday!'

    d. *[mwe-l]   ecey   kulehkey pissan   cha-lul sa-ss-e!

        what-ACC yesterday so   expensive car-ACC buy-PST-EXCL

        'What an expensive car you bought yesterday!'

The sentence in (103b) is inappropriate due to the scrambling of N′, leaving behind the NP *mwe-l* in its specifier position. The sentence in (103c) is ill-formed due to the scrambling of the non-constituent sequence *pissan cha-lul*. The unacceptablity of (103d), where *mwe-l* originating in Spec-NP has scrambled on its own, falls out as a violation of Left Branch Constraint (Ross 1967, 1986), which bans extraction of a constituent on the lefthand edge of an NP (e.g., *Whose did John read book?*).

Note that an exclamative *wh*-phrase can stand alone, as illustrated in the following examples:

(104) a. mwe-l   kulehkey pissan   cha-lul!

       what-ACC so   expensive car-ACC

       'What an expensive car!'

    b. mwe-l   kulehkey maywun kochwu-lul!

       what-ACC so   spicy   pepper-ACC
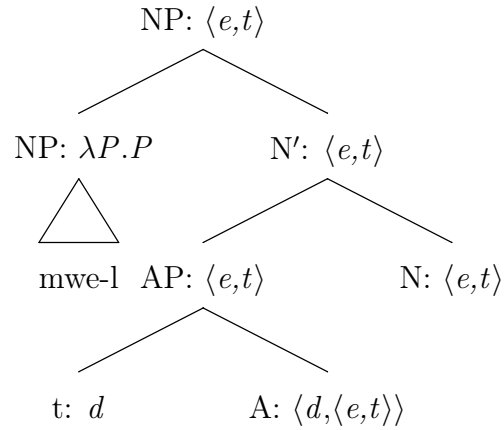
       'What a spicy pepper!'

Assuming that such non-clausal, reduced exclamatives are derived through fronting of the entire exclamative *wh*-phrase and the subsequent PF-deletion of the rest of the clause, I take (104) as another piece of evidence to claim that the non-standard *wh*-phrase *mwe-l* forms an exclamative *wh*-phrase with the sequence '*{ku/i}lehkey* + Adj + N' that immediately follows it.[20]

In terms of exploring the semantics of an exclamative *wh*-phrase, I assume that the *wh*-expression *mwe-l* denotes an identity function, gradable adjectives denote relations between degrees and individuals (Heim 1985, 2000; Kennedy & McNally 2005; von Stechow 1984), and the degree adverb *{ku/i}lehkey*, which I shall analyze as a maximality operator (Heim 2000; Rullmann 1995), raises at LF up to the CP domain. Based on these assumptions, I take the denotation of an exclamative *wh*-phrase to be derived in a compositional manner, as illustrated in (105).
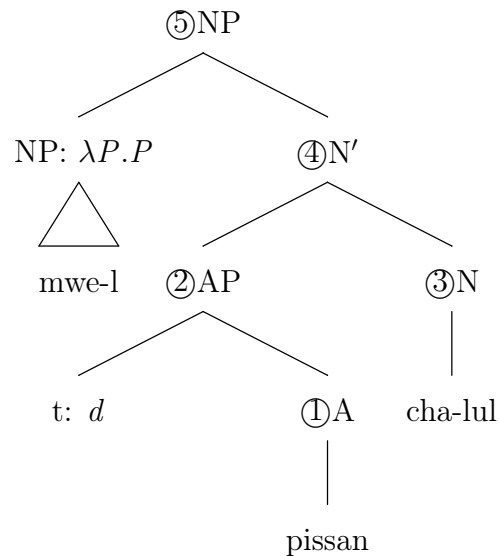
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[20]See Siemund (2017) for a corpus-based study on English non-clausal exclamatives.

(105)

NP: $\langle e,t \rangle$

NP: $\lambda P.P$ N′: $\langle e,t \rangle$

mwe-l   AP: $\langle e,t \rangle$ N: $\langle e,t \rangle$

t: d A: $\langle d,\langle e,t \rangle \rangle$

The LF-raising of *{ku/i}lehkey* leaves a trace of type d. This degree-denoting trace is taken by the gradable adjective as its degree argument. The resulting AP then composes with the head noun via Predicate Modification (Heim & Kratzer 1998), yielding the N′ denoting a property of individuals. The N′ in turn composes with *mwe-l* denoting an identity function, resulting in the NP of the same type. Under this semantic view, for example, the exclamative *wh*-phrase in (103a) denotes a set of individuals x such that x is a d-expensive car, as formally described in (106).

(106)

⑤NP

NP: $\lambda P.P$ ④N′

mwe-l   ②AP   ③N

t: d ①A   cha-lul

pissan

$\llbracket ① \rrbracket = \lambda d \lambda x \ . \ \text{expensive}(d)(x)$

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$$[\![②]\!] = \lambda x \ . \ \mathrm{expensive}(d)(x)$$

$$[\![③]\!] = \lambda x \ . \ \mathrm{car}(x)$$

$$[\![④]\!] = \lambda x \ . \ \mathrm{car}(x) \wedge \mathrm{expensive}(d)(x)$$

$$[\![⑤]\!] = \lambda x \ . \ \mathrm{car}(x) \wedge \mathrm{expensive}(d)(x)$$

The present semantic analysis of an exclamative *wh*-phrase offers a straightforward way to account for the fact that non-gradable adjectives, like relational adjectives, cannot be used in *what*-exclamatives, as illustrated below.

(107) a. mwe-l   kulehkey {pissan/khun} kapang-ul sa-ss-e!

      what-ACC so   expensive/big bag-ACC buy-PST-EXCL

      'What an {expensive/big} bag you bought!'

   b. *mwe-l   kulehkey suphochu kapang-ul sa-ss-e!

      what-ACC so   sports   bag-ACC buy-PST-EXCL

      'What a sports bag you bought!'

The infelicity of (107b) is tied to the relational adjective *suphochu*'s inability to semantically compose with the degree argument represented by the trace of *kulehkey*.

As noted before, the occurrence of overt gradable adjectives is necessary in licensing Korean *what*-exclamatives:

(108)   mwe-l   kulehkey *(pissan/khun) kapang-ul sa-ss-e!

      what-ACC so   expensive/big bag-ACC buy-PST-EXCL

      'What an (expensive/big) bag you bought!'

Under the present account, without an overt gradable adjective, there is no way to interpret the exclamative *wh*-phrase in a compositional way; the degree-denoting trace of *kulehkey* cannot compose with the head noun due to type mismatch. As pointed out above, the requirement of overt gradable predicates in Korean *wh*-exclamatives indicates that the measurement operator (M-Op) proposed by Rett (2011) for English *wh*-exclamatives with no overt gradable predicates (e.g., *What a bag you bought!*) does not work for Korean cases like (108). Absent a principled way of resolving this issue, I leave it unsettle here, hoping simply to have offered a new perspective on the availability and vaildity of M-Op from a cross-linguistic point of view.

3.4.2.2 Maximality operator *{ku/i}lehkey*

As briefly mentioned in the previous section, I propose to analyze the degree adverb *{ku/i}lehkey* 'so' as a maximality operator. In doing so, I follow Rullmann (1995) in claiming that the maximality operator denotes a function from a set of degrees to the maximal degree in the set, as defined in (109).

(109) Lexical entry for *{ku/i}lehkey*:

$\llbracket \{\text{ku/i}\}\text{lehkey} \rrbracket = \lambda D_{\langle d,t \rangle}$. $\text{MAX}(D)$, where $\text{MAX}(D) = \iota d[d \in D \wedge \forall d' \in D[d' \leq d]$.
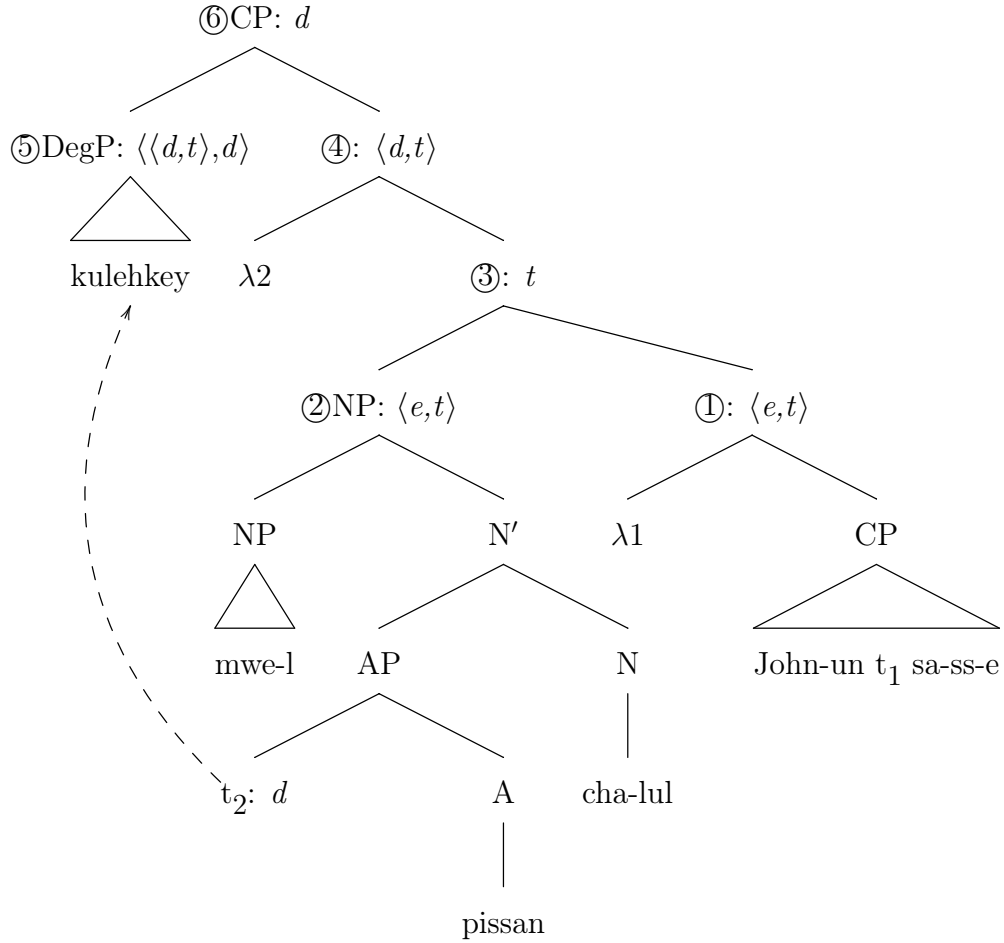
To illustrate how the maximality operator contributes to deriving a degree property in *what*-exclamatives, let us consider the assumed LF structure for (110) given in (111).

(110) John-un   mwe-l   kulehkey pissan   cha-lul   sa-ss-e!

John-TOP what-ACC so   expensive car-ACC buy-PST-EXCL

'What an expensive car John bought!'

(111)

⑥CP: d
⑤DegP: $\langle\langle d,t\rangle,d\rangle$ ④: $\langle d,t\rangle$
kulehkey $\lambda2$ ③: t
②NP: $\langle e,t\rangle$ ①: $\langle e,t\rangle$
NP   N′ $\lambda1$ CP
mwe-l   AP   N   John-un t_1 sa-ss-e
t_2: d A   cha-lul
pissan

$[\![①]\!] = \lambda x \;.\; \text{bought}(x)(\text{J})$

$[\![②]\!] = \lambda x \;.\; \text{car}(x) \wedge \text{expensive}(d)(x)$

$[\![③]\!] = \lambda x \;.\; \text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})$

$\quad = \leadsto_{\exists closure} \exists x[\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})]$

$[\![④]\!] = \lambda d \;.\; \exists x[\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})]$

$[\![⑤]\!] = \lambda D_{\langle d,t\rangle} \;.\; \text{MAX}(D)$

$$\llbracket\text{\textcircled{6}}\rrbracket = \text{MAX}(\lambda d \, . \, \exists x[\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})])$$

$$= \iota d[d \in \lambda d \, . \, \exists x[\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})] \wedge \forall d' \in \lambda d \, . \, \exists x[\text{car}(x)$$
$$\wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})][d' \leq d].$$

The exclamative *wh*-phrase (type $\langle e,t \rangle$), which functions as the direct object of the verb *sa* 'buy' (type $\langle e,\langle e,t \rangle \rangle$), undergoes Quantifier Raising to resolve type mismatch. The exclamative *wh*-phrase then merges with the CP (type $\langle e,t \rangle$) via Predicate Modification, and the output undergoes existential closure over the individual variable (in the sense of Heim 1982), yielding the propositional denotation (see $\llbracket\text{\textcircled{3}}\rrbracket$).[21] The degree variable in the proposition denotation gets lambda-abstracted over, and then the result that denotes a degree property (type $\langle d,t \rangle$) serves as the argument of the maximality operator *kulehkey* that has undergone LF-raising. As a result, at the end of the derivation, the *mwe-l-kuleheky*-clause denotes a maximal degree d such that John bought a d-expensive car (see $\llbracket\text{\textcircled{6}}\rrbracket$).

It is worth to point out here that the maximality operator projects an existential presupposition such that there exists a unique maximal degree in a given set of degrees. For example, what is presupposed in (110) is that there is a unique maximal degree d such that John bought a d-expensive car. This view is consistent with Michaelis & Lambrecht's (1996) assumption that *wh*-exclamatives denote a presupposed open proposition with a free degree variable (i.e., John bought a d-expensive car), except that in my analysis the degree in question should be maximal (see section 3.3.1.1). The current view, on the other hand, diverges from Zanuttini & Portner's (2003) one that assumes that exclamatives are factive, that is, every proposition which has been added to the initial domain of quantification through widening is presupposed; the factivity presupposition is triggered by a factive

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[21] I take the complementizer as an identity function.

operator FACT in the CP domain.

Example (112) illustrates that the degree adverb *maywu* 'very' cannot be used in place of *{ku/i}lehkey* 'so' in Korean *what*-exclamatives.

(112) a. mwe-l   {kulehkey/*maywu} pissan   cha-lul sa-ss-e!

what-ACC so/very   expensive car-ACC buy-PST-EXCL

'What an expensive car you bought!'

b. Mimi-nun mwe-l   {kulehkey/*maywu} manhun nonmwun-ul

Mimi-TOP what-ACC so/very   many   paper-ACC

ilk-ess-e!

read-PST-EXCL

'How many papers Mimi read!'

In the semantics developed above, the *mwe-l*-clause must be mapped onto a maximal degree. This mapping is effected by the maximality operator *{ku/i}lehkey*, which takes a set of degrees and extracts the unique maximal degree in the set. Given this, the deviance of (112) can be said to follow from the semantics of the degree adverb *maywu* as a degree modifier (type $\langle\langle d,t\rangle,\langle d,t\rangle\rangle$); it takes a set of degrees and yields a more restricted set of degrees, not a unique maximal degree in the set of degrees.[22]

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[22]The same contrast is observed in sentence exclamations in English and Italian. Consider the following examples taken from Michaelis (2001: (11) and (12)):

(i)   a. ??GOD, it's very HOT!
       b. GOD, it's so HOT!
       c. ??I can't BELIEVE it's very HOT!
       d. I can't BELIEVE it's so HOT!

(ii)   a. Non ci posso   credere   che sia   cosi imbecille.
           not it can.1SG believe.INF that is.SBJ.3SG so   stupid
           'I can't believe he's so stupid!'

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Another piece of evidence to support the claim that Korean *what*-exclamatives denote maximal degrees comes in part from their incompatibility with negation, as illustrated by the infelicity of (113).

(113) a. #John-un mwe-l   kulehkey pissan   cha-lul   sa-ci

John-TOP what-ACC so   expensive car-ACC buy-CONN

anh-ass-e!

not-PST-EXCL

'What an expensive car John didn't buy!'

b. #Mimi-nun mwe-l   kulehkey manhun nonmwun-ul ilk-ci

Mimi-TOP   what-ACC so   many   paper-ACC   read-CONN

ahn-ass-e!

not-PST-EXCL

'How many papers Mimi didn't read!'

Under the present analysis, (113a) is assumed to denote a maximal degree d in the set of degrees of the form 'John didn't buy a d-expensive car'. However, the problem with this denotation is that the set of degrees has no maximum, since the relevant scale is open-ended at the top: for example, "5 billion dollars" is an actual degree of expensiveness d such that John didn't buy a d-expensive car, but it is not the greatest such degree. That

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b. *Non ci posso   credere   che sia   molto imbecille.
not it can.1SG believe.INF that is.SBJ.3SG very   stupid
'??I can't believe he's very stupid!'

Michaelis explains that the use of 'anaphoric' degree adverbs like *so* and *cosi* can be understood by considering the assumption that an exclamative presupposes an open proposition with a scalar degree as the variable; she notes that "the use of an anaphoric degree adverb like *so* relies upon the hearer's ability to recover the relevant scale from the context (p. 79)".

is, MAX(λd[John didn't buy a d-expensive car]) denoted by the exclamative is undefined or leads to a presupposition failure.[23] This is why (113a) is semantically deviant. The same line of reasoning applies to (113b).

Here I have proposed that Korean *what*-exclamatives denote maximal degrees derived via the maximality operator *{ku/i}lehkey*. This analysis crucially differs from the existing degree analyses which assume that *wh*-exclamatives denote degree properties (type $\langle d,t \rangle$) (Castroviejo 2021; Rett 2011). In the next section, l show that the maximal degree denoted by a *mwe-l-kulehkey*-clause serves as the semantic argument of an assertive force operator that yields an assertion that the maximal degree surpasses the standard established by the speaker's expectation.

3.4.2.3 Assertive speech acts

As discussed in section 3.2.5, there is an ongoing debate in the literature about whether *wh*-exclamatives count as assertions or not. Regarding this issue, I propose here that Korean *what*-exclamatives express 'assertive' speech acts, given that their content can be denied/rejected, as in (114), or can be referred to by the propositional anaphor *kulehkey* 'so', as in (115), and they can be used as responses to information-seeking questions, as in (116).

(114) A: mwe-l   ilehkey pissan   senmwul-ul sa-ss-e!

            what-ACC so   expensive gift-ACC   buy-PST-EXCL

            'What an expensive gift you bought!'

---

[23]This explanation is based on Rullmann (1995) and Heim (2000).

B: ani. pyello an pissa.

not much not expensive

'No. It's not that expensive.'

(115) A: Mimi-ka   ecey   lampolukini-lul   sa-ss-tay.

Mimi-NOM yesterday Lamborghini-ACC buy-PST-DECL

'(I heard that) Mimi bought a Lamborghini yesterday.'

B: wa, mwe-l   kulehkey pissan   cha-lul   sa-ss-e!

wow what-ACC so   expensive car-ACC buy-PST-EXCL

'Wow, what an expensive car she bought!'

A: na-to kulehkey sayngkakhay!

I-also so   think

'I think so!'

(116) A: nay senmwul ettay?

my gift   how
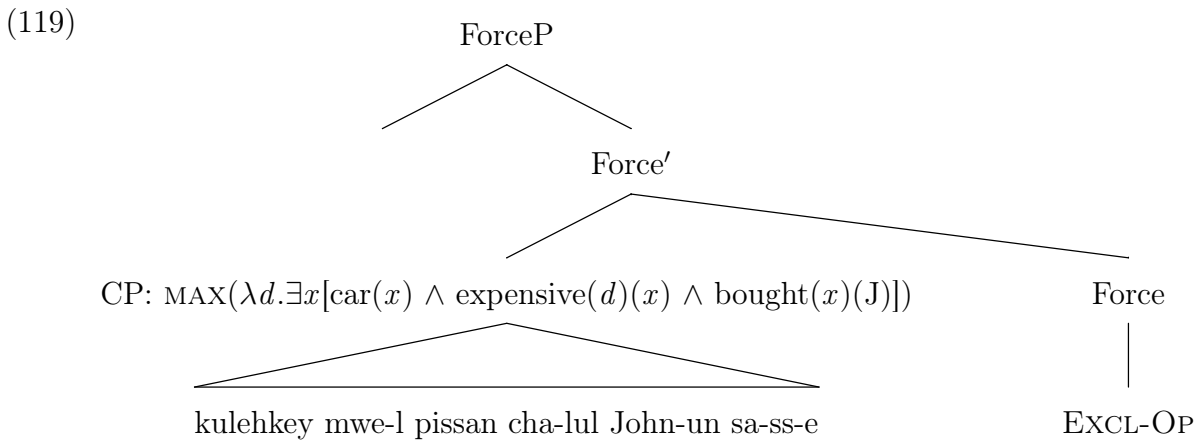
'How do you like my gift?'

B: mwe-l   ilehkey yeyppun senmwul-ul sa-ss-e!   komawe!

what-ACC so   pretty   gift-ACC   buy-PST-EXCL thank you

'What a pretty gift you bought! Thank you! ($\approx$ The gift is much prettier

than I expected! Thank you!)'

In order to capture the assertive force of Korean *what*-exclamatives, I propose that they involve an assertive force operator, EXCL-OP, which is a function from degrees to assertive speech acts, as defined in (117).

(117) EXCL-OP(d) counts as an assertion that $d \geqslant s$, where s refers to a contextually provided standard established by the speaker's expectation.

The maximal degree d conveyed by the *mwe-l-{ku/i}lehkey*-clause is fed to the assertive force operator. I assume that the assertive force operator occupies the Force head. Under the present analysis, the exclamative in (110), repeated below as (118), is assumed to involve the LF structure given in (119).

(118) John-un mwe-l   kulehkey pissan   cha-lul sa-ss-e!

John-TOP what-ACC so   expensive car-ACC buy-PST-EXCL

'What an expensive car John bought!'

(119)

ForceP
Force′
CP: MAX($\lambda d.\exists x[\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})]$)   Force
kulehkey mwe-l pissan cha-lul John-un sa-ss-e   EXCL-OP

The function of EXCL-OP characterizes the discourse contribution of (118) as an assertion that the maximal degree d such that John bought a d-expensive car exceeds a contextually provided standard established by the speaker's expectation. Here, the speaker's expectations

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could follow common-ground norms or socially-accepted standards, or they could be ones reflecting his/her personal assessment (Gutiérrez-Rexach 2008).

In (114), using the negative particle *ani* 'no', the speaker B negates A's assertion, thereby asserting that the maximal degree of expensiveness of the gift in question does not exceed A's expectation of being expensive. Note that if the price of something does not surpass someone's expectation, then s/he thinks that the price is not expensive, but reasonable or cheap. So B's negative assertion in (114B) can be understood as meaning that the gift is not that expensive given A's expectation. In (116), by uttering the exclamative, the speaker B responds by asserting that the maximal degree of prettiness of the gift in question surpasses B's expectations, which is taken to mean that the gift is very pretty, giving rise to the speaker's gratitude.

As noted before, Korean *what*-exclamatives, as with their counterparts in other languages, express a sense of surprise or amazement on the part of the speaker. This is evidenced by the fact that they are incompatible with a continuation like *I'm not surprised at all*, as shown below:

(120) a. John-un   mwe-l   kulehkey pissan   wain-lul   sa-ss-e!

       John-TOP what-ACC so   expensive wine-ACC buy-PST-EXCL

       (#cenhye nollap-ci   ahn-a.)

       at all   surprise-CONN not-DECL

       'What an expensive wine John bought! I'm not surprised at all.'

   b. mwe-l   kulehkey manhun chayk-ul   ilk-ess-e!   (#cenhye

      what-ACC so   many   book-ACC read-PST-EXCL at all

nollap-ci   ahn-a.)

surprise-CONN not-DECL

'How many papers you read! I'm not surprised at all.'

The speaker's emotional attitude can be captured by the present analysis. It is clear that the assertive content ($d \geqslant s$) yielded by EXCL-OP entails a violation of the speaker's expectation, since the contextually determined standard is consistent with the speaker's expectations. The speaker unexpectedness then naturally gives rise to a sense of surprise, amazement or awe (Zanuttini & Portner 2003). This explains the anomaly of the examples in (120).

3.4.2.4   The speaker's evaluation of $d \geqslant s$

Korean *what*-exclamatives are unique in that depending on the context, the assertive content ($d \geqslant s$) obtained by EXCL-OP is evaluated by the speaker as positive/good or negative/bad. To illustrate this, let us consider (121).

(121)   [Context 1: My parents gave me a very expensive gift for my birthday.]

[Context 2: I wanted my brother to buy a cheap gift for his friend's birthday, but he bought a very expensive gift.]

Me: mwe-l   ilehkey pissan   senmwul-ul sa-ss-e!

what-ACC so   expensive gift-ACC   buy-PST-EXCL

'What an expensive gift you bought!'

The assertive content of the exclamative—that the maximal degree of expensiveness of the gift in question exceeds the standard established by the speaker's expectations—is evaluated

as positive in Context 1; the speaker feels very happy to receive the very expensive gift. The same assertive content, on the other hand, is judged negatively by the speaker in Context 2; the speaker thinks that the gift is too expensive; that is, the actual price of the gift should not have surpassed his threshold.

Notice that the speaker's evaluative attitude towards the assertive content ($d \geqslant s$) may not arise if the *wh*-expression *mwe-l* is absent. Consider the following case:

(122)   kulehkey pissan   senmwul-ul sa-ss-e!

       so   expensive gift-ACC   buy-PST-EXCL

       'You bought a very expensive gift!'

By uttering the exclamative without *mwe-l*, the speaker just expresses his/her surprise at the high price of the gift, but does not judge whether the price is too expensive or not. This suggests that the non-standard *wh*-phrase *mwe-l* contributes to expressing evaluative attitudes of the speaker.

In order to account for how such evaluative attitudes are derived, I propose that Korean *what*-exclamatives involve an evaluative operator, EVAL-OP, which maps propositions onto evaluative attitudes on the part of the speaker, as defined (123).

(123) EVAL-OP(p) = The speaker evaluates p as E, where $E \in$ {positive/good, negative/bad}.
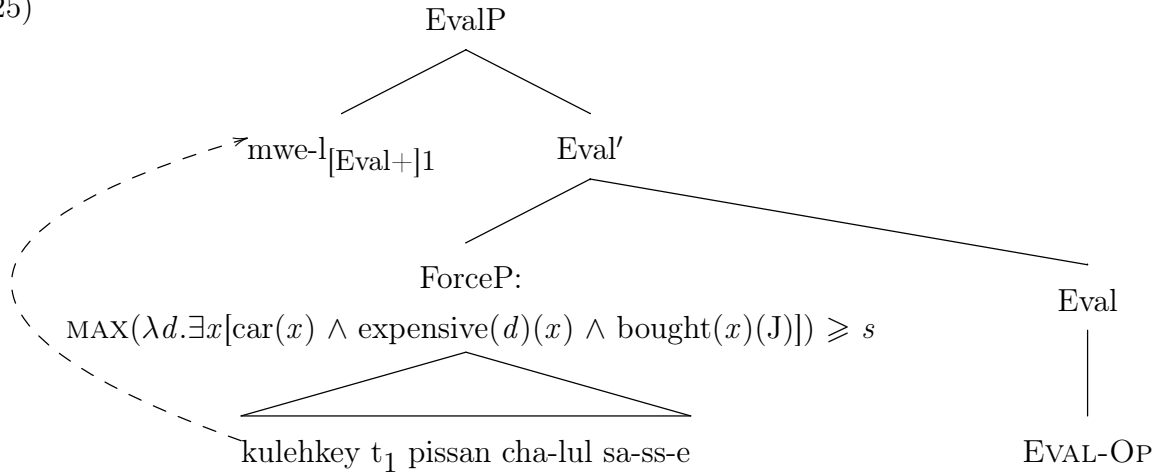
As represented in the tree structure in (125), the EVAL-OP is assumed to head the EvalP, configured higher than ForceP.

(124) John-un   mwe-l   kulehkey pissan   cha-lul   sa-ss-e!   (= (118))

      John-TOP what-ACC so   expensive car-ACC buy-PST-EXCL

      'What an expensive car John bought!'

(125)

The assertive content (p) expressed by the assertive force operator is fed to the EVAL-OP to yield the speaker's evaluative attitude. As can be seen from the LF structure above, I assume that the non-standard *wh*-word *mwe-l* is endowed with [Eval +] and undergoes covert movement to Spec-EvalP to activate the evaluative operator by feature checking.[24] This assumption gives an account of why exclamatives like (122) without *mwe-l* do not express the speaker's evaluative attitudes: since there is no *wh*-expression with [Eval+], the evaluative operator cannot be active.

3.4.2.5   Some theoretical implications

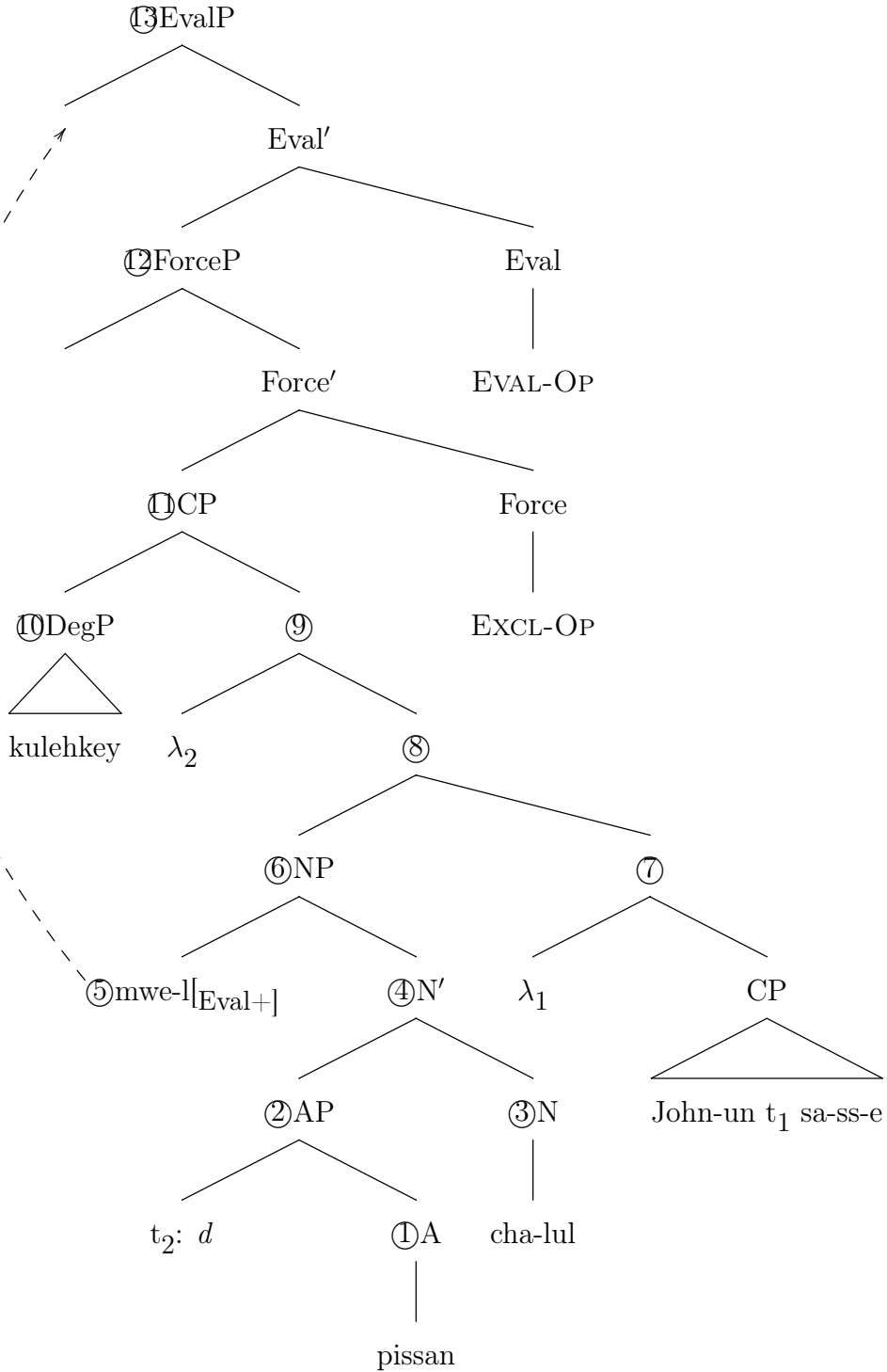Taken together, the *wh*-exclamative in (126) is taken to be derived as in (127).

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[24]I assume that the *wh*-expression in Spec-EvalP obligatorily reconstructs to its original position for interpretation.

(126) John-un mwe-l kulehkey pissan cha-lul sa-ss-e! (= (117))

John-TOP what-ACC so expensive car-ACC buy-PST-EXCL

'What an expensive car John bought!'

(127)

⑬EvalP
- Eval′
  - ⑫ForceP
    - Force′
      - ⑪CP
        - ⑩DegP
          - kulehkey
        - ⑨
          - λ₂
          - ⑧
            - ⑥NP
              - ⑤mwe-l[Eval+]
              - ④N′
                - ②AP
                  - t₂: d
                  - ①A
                    - pissan
                - ③N
                  - cha-lul
            - ⑦
              - λ₁
              - CP
                - John-un t₁ sa-ss-e
      - Force
        - EXCL-OP
  - Eval
    - EVAL-OP

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$[\![①]\!] = \lambda d \lambda x.\text{expensive}(d)(x)$

$[\![②]\!] = \lambda x.\text{expensive}(d)(x)$

$[\![③]\!] = \lambda x.\text{car}(x)$

$[\![④]\!] = \lambda x.\text{car}(x) \wedge \text{expensive}(d)(x)$

$[\![⑤]\!] = \lambda P.P$

$[\![⑥]\!] = \lambda x.\text{car}(x) \wedge \text{expensive}(d)(x)$

$[\![⑦]\!] = \lambda x.\text{bought}(x)(\text{J})$

$[\![⑧]\!] = \lambda x.\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})$

$\qquad = \leadsto_{\exists closure} \exists x[\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})]$

$[\![⑨]\!] = \lambda d.\exists x[\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})]$

$[\![⑩]\!] = \lambda D_{\langle d,t \rangle}.\text{MAX}(D)$

$[\![⑪]\!] = \text{MAX}(\lambda d.\exists x[\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})])$

$\qquad = \iota d[d \in \lambda d.\exists x[\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})] \wedge \forall d' \in \lambda d.\exists x[\text{car}(x)$

$\qquad \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})][d' \leq d].$

$[\![⑫]\!] = \text{MAX}(\lambda d.\exists x[\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})]) \geqslant s$

$[\![⑬]\!] = \text{The speaker evaluates } \text{MAX}(\lambda d.\exists x[\text{car}(x) \wedge \text{expensive}(d)(x) \wedge \text{bought}(x)(\text{J})])$

$\qquad \geqslant s \text{ as } E, \text{ where } E \in \{\text{positive, negative}\}.$

If the analysis of Korean *what*-exclamatives I propose here is on the right track, it has some implications for the previous studies on *wh*-exclamatives from a cross-linguistic perspective. For one thing, the present analysis casts doubt on Zanuttini & Portner's (2003) view that like

wh-interrogatives, *wh*-exclamatives denote sets of propositions provided by a WH-operator-variable structure. In Korean *what*-exclamatives, the entire *wh*-phrase is argued to undergo Quantifier Raising to resolve type mismatch between it and the verb, and the nominal *wh*-phrase *mwe-l* itself raises up to activate the evaluative operator by checking of the evaluative feature. These types of covert movement are not intended to generate a set of alternative propositions, as ordinary *wh*-movement in interrogatives does.

As discussed, Rett (2011) and many others argue that a *wh*-phrase 'what' functions as a degree operator in *wh*-exclamatives. According to Rett's (2011) approach to English *what*-exclamatives, the *wh*-expression *what* is considered as a degree operator that denotes a type-flexible identity function. Its main semantic contribution is to allow for the intersection between the gradable adjective and the head noun: its degree-denoting trace composes with the gradable adjective (type $\langle d, \langle e, t \rangle \rangle$, and the output intersectively composes with the head noun (type $\langle e, t \rangle$).

As for Korean *what*-exclamatives, however, it has been assumed that the degree expression *{ku/i}lehkey* as a maximality operator does such a job in deriving the degree interpretation (see $[\![②]\!]$), whereas *mwe-l* syntactically contributes to activating Eval-Op.

The claim that *{ku/i}lehkey* behaves like a degree operator in Korean *what*-exclamatives receives empirical support from the fact that if the non-degree adverb *tto* 'again' is used in place of *{ku/i}lehkey*, as shown in (128), the given sentence cannot receive a degree interpretation, even in the presence of *mwe-l*. That is, it cannot be felicitously uttered to express the speaker's emotional attitude towards the high degree of expensiveness of the car that the addressee bought again.

(128) mwe-l   tto   pissan   cha-lul sa-ss-e!

what-ACC again expensive car-ACC buy-PST-EXCL

'You bought an expensive car again!'

The proposed analysis attributes the unavailability of the degree reading to the absence of
the degree operator *{ku/i}lehkey*. The discussion here confirms that the treatment of 'what'
as a degree operator in *wh*-exclamatives does not hold cross-linguistically, as also stressed
by Castroviejo (2021).

In what follows, I argue that exclamatives like (128) are considered as *e*-level exclamatives
proposed by Nouwen & Chernilovskaya (2015).

3.4.2.6   Two types of Korean *what*-exclamatives

As discussed in section 3.2.4.1, Nouwen & Chernilovskaya (2015) propose that there are
two types of *wh*-exclamative, one with *i*-level exclamation and the other with *e*-level excla-
mation. The *i*-level *wh*-exclamative expresses the speaker's emotional attitude towards the
wh-referent. English *wh*-exclamatives belong to this type of exclamative. For example, the
wh-exclamative in (129) is used to convey the speaker's surprise at the house that instantiates
beautifulness to a degree higher than the speaker expected.

(129) What a beautiful house it is!   (*i*-level exclamation)

With regard to *e*-level *wh*-exclamatives, the exclamative attitude targets the event the *wh*-
referent takes part in. Languages like Dutch, German, Turkish, Russian, and Hungarian
employ such *wh*-exclamatives. For example, the utterance of Dutch *wh*-exclamative in (130),

repeated from (36a), expresses the exclamative attitude towards the unexpected event of the speaker's meeting the person in question.

(130) Wie ik gisteren   tegenkwam!   (*e*-level exclamation)

      Who I   yesterday came-across

      (roughly) 'You wouldn't believe who I met yesterday!'

Building on Nouwen & Chernilovskaya's ideas, I show here that Korean is another language that employs both *i*-level and *e*-level *wh*-exclamatives. Specifically, I argue that exclamatives involving *{ku/i}lehkey* 'so' involve *i*-level exclamation, while those involving a non-degree expression like *tto* 'again' involve *e*-level exclamation. To illustrate this, let us consider (131).

(131) a. mwe-l   kulehkey kin nonmwun-ul se-ss-e!   (*i*-level exclamation)

      what-ACC so   long paper-ACC   write-PST-EXCL

      'What a long paper you wrote!'

    b. mwe-l   tto   kin nonmwun-ul se-ss-e!   (*e*-level exclamation)

      what-ACC again long paper-ACC   write-PST-EXCL

      'You wrote a long paper again!'

The *mwe-l-kulehkey*-exclamative in (131a) expresses the exclamative attitude towards the *wh*-referent; it is uttered felicitously to exclaim that the speaker is surprised at the paper that instantiates length to a degree higher than the standard established by the speaker's expectation. However, the *mwe-l-tto*-exclamative in (131b) cannot be felicitous in such a context. It is rather felicitous in a context in which the speaker for some reason or other did

not expect the addressee to write a long paper again; that is, the exclamative attitude targets the unexpected event of the addressee's writing a long paper again. The *e*-level exclamation of (131b) is supported by the fact that it can be naturally followed by a clarifying sentence like *I'd guessed that you would not write a long paper again* (non-scalar expectation), but not by a sentence like *I'd guessed that you would write a long paper again, but not this long!* (scalar expectation).

As discussed before, the presence of an overt gradable adjective is necessary in licensing *mwe-l-{ku/i}lehkey*-exclamatives, as illustrated in (132).

(132) a. mwe-l   kulehkey *(kin) nonmwun-ul se-ss-e!

    what-ACC so long paper-ACC write-PST-EXCL

    'What a long paper you wrote!'

  b. *mwe-l kulehkey cenki cha-lul sa-ss-e!

    what-ACC so electric car-ACC buy-PST-EXCL

    'What an electric car you bought!'

The above examples show that either the absence of gradable adjectives or the use of non-gradable adjectives like relational/classifying adjectives like *electric* leads to ungrammaticality. This gradability restriction, however, does not hold in *mwe-l-tto*-exclamatives, as illustrated below.

(133) a. mwe-l tto (kin) nonmwun-ul se-ss-e!

    what-ACC again long paper-ACC write-PST-EXCL

    'You wrote a long paper again!'

b. mwe-l   tto   cenki   cha-ul   sa-ss-e!

what-ACC again electric car-ACC buy-PST-EXCL

'You bought an electric car again!'

These contrasts further weigh heavily in favor of the view that *mwe-l-tto*-exclamatives involve *e*-level exclamation: since the exclamative attitude targets the event itself, a certain degree property of the *wh*-referent is not a crucial semantic component in their interpretation.

Recall the fact that *mwe-l-{ku/i}lehkey*-exclamatives are incompatible with negation:

(134) *mwe-l   kulehkey pissan   wain-ul   an masy-ess-e!

what-ACC so   expensive wine-ACC not drink-PST-EXCL

'What an expensive wine you didn't drink!'

I have explained that the deviance caused by the negation is because the set of degrees denoted by the clause has no maximum, that is, MAX(λd[you didn't drink a *d*-expensive wine]]) derived via the maximality operator *kulehkey* is undefined or induces a presupposition failure. Note in this connection that *mwe-l-tto*-exclamatives behave differently in their ability to occur with negation, as illustrated in (135).

(135) a. mwe-l   tto   amwukesto an masy-ess-e!

what-ACC again anything   not drink-PST-EXCL

'You didn't drink anything again!'

b. mwe-l   tto   sihem-ul   an pwa-ss-e!

what-ACC again exam-ACC not take-PST-EXCL

'You didn't take an exam again!'

The compatibility of *e*-level exclamatives with negation is readily captured by the present approach, since they do not involve a maximality operator *{ku/i}lehkey*. Such an observation allows us to reasonably assume that *mwe-l-tto*-exclamatives denote propositions rather than maximal degrees. This view is reinforced by the fact that, as mentioned above, they can only be associated with non-scalar expectations, just like English sentence exclamations.

For *mwe-l-{ku/i}lehkey*-exclamatives that denote maximal degrees, I have posited the illocutionary force operator EXCL-OP that denotes a function from degrees to assertive speech acts, as defined in (136) (repeated from (123)).

(136) EXCL-OP(d) counts as an assertion that $d \geqslant s$, where s refers to a contextually provided standard established by the speaker's expectation.

However, since *mwe-l-tto*-exclamatives with *e*-level meanings denote propositions, the assertive force operator cannot be used for them. To overcome this issue, I posit another type of EXCL-OP used to express *e*-level exclamatives, defined in (137).[25]

(137) EXCL-OP(p) counts as an assertion that the speaker didn't expect that p.

This type of EXCL-OP denotes a function that specifies a relationship between propositions and assertive speech acts. (137) correctly characterizes the discourse contribution of (133a) as an assertion that the speaker had not expected that the addressee would write a long

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[25]Rett (2008) posits two types of illocutionary force operator E-FORCE, one for proposition/sentence exclamations and the other for exclamatives. Their definitions are given in (i) (see also Castroviejo 2021 for a similar point):

(i)   a.   PROPOSITION E-FORCE(p) is expressively correct in context C iff p is salient in C and the speaker in C is surprised that p.

   b.   DEGREE E-FORCE($D_{\langle d, \langle s,t \rangle \rangle}$) is expressively correct in context C iff D is salient in C and $\exists d, d > s$[the speaker in C is surprised that $\lambda w.D(d)(w)$].
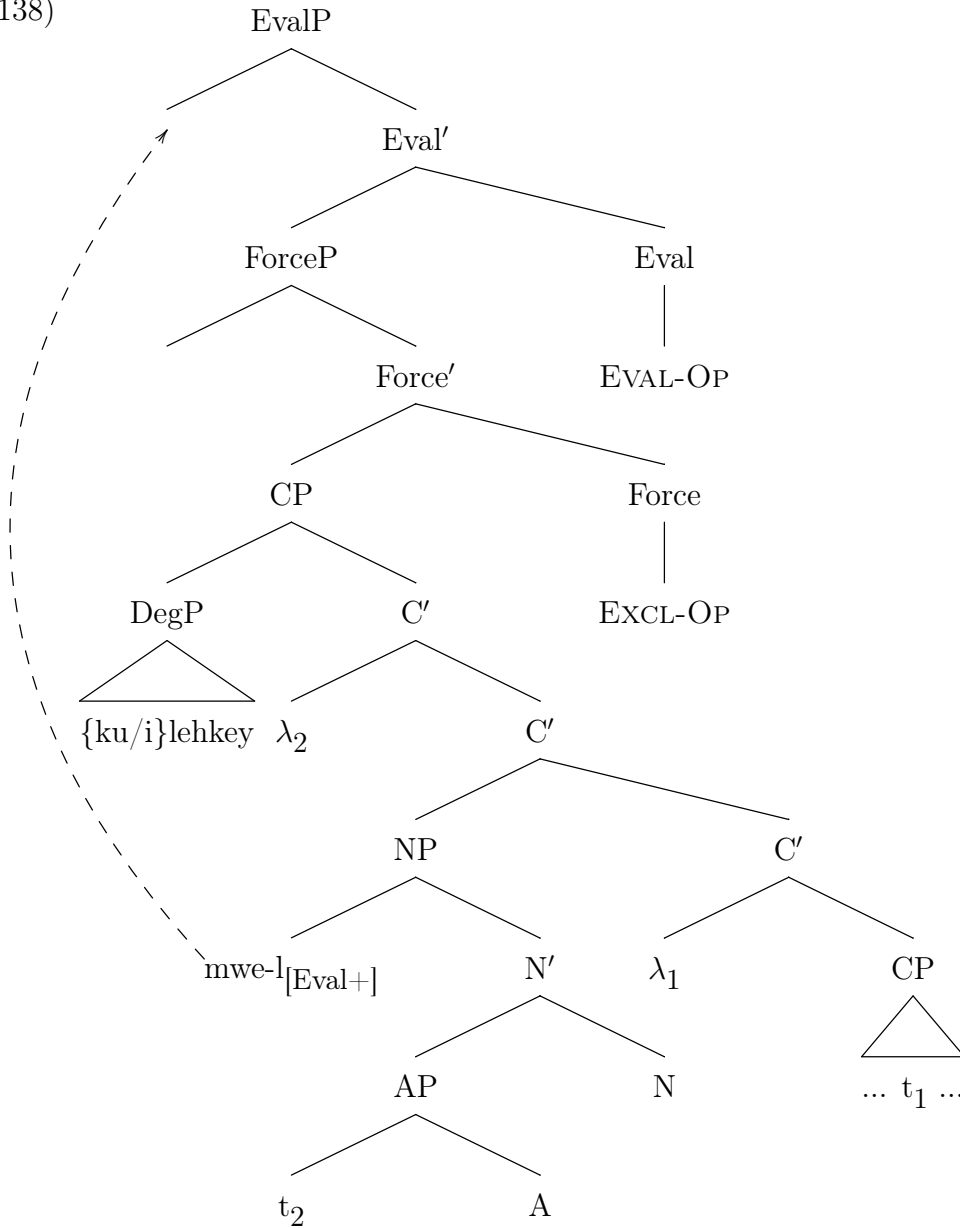
For further details of this analysis, see Rett (2008).

paper again. Needless to say, further detailed investigation of e-level exclamatives is needed to achieve a precise characterization of them. I leave it for future research.

3.5   Summary

In this chapter, as far as I am aware, I have presented the first attempt to identify Korean *wh*-exclamatives and to offer a compositional syntactic and semantic analysis of them. Taken together, I have proposed to analyze Korean *wh*-exclamatives as involving the LF structure illustrated in (138).

(138)

```
                          EvalP
                         /    \
                        /      \
                       /       Eval′
                      /       /    \
                     /       /      \
                    /    ForceP     Eval
                   /    /    \        |
                  /    /      \       |
                 /    /      Force′  EVAL-OP
                /    /       /    \
               /    /       /      \
              /    CP      Force
             /   /    \      |
            /   /      \     |
           /  DegP     C′   EXCL-OP
          /  /◣\      /  \
         / {ku/i}lehkey  \
        /       λ₂      C′
       /               /  \
      /               /    \
     /              NP      C′
    /              /  \     /  \
   /              /    \   /    \
  mwe-l[Eval+]   /     N′ λ₁    CP
               /     /  \       /◣\
              AP    N   ... t₁ ...
             /  \
            /    \
           t₂     A
```

In terms of surface structure, the sequence of '*mwe-l* + *{ku/i}lehkey* + (gradable) Adj + N' forms a noun phrase: the (gradable) adjective takes as its complement a DegP headed by the degree adverb *{ku/i}lehkey*, and the *wh*-phrase *mwe-l* originates in Spec-NP. At LF, the entire NP undergoes Quantifier Raising to resolve a type-mismatch issue.

The meaning of Korean *what*-exclamatives is assumed to involve two basic semantic aspects: a violation of the speaker's expectation and degree interpretations. As to the

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degree reading, the construction is regarded as expressing a maximal degree d derived via the maximality operator *{ku/i}lehkey*.

In terms of speech acts, Korean *what*-exclamatives count as assertions (cf. Rett 2011, Castroviejo 2021). In order to capture the assertive force, I have postulated that the construction involves an assertive force operator, EXCL-Op, which heads ForceP. The maximal degree denoted by the *mwe-l-{ku/i}lehkey*-clause semantically composes with the assertive force operator to generate an assertion that the maximal degree in question exceeds a contextually provided standard established by the speaker's expectation. This assertive proposition entails speaker unexpectedness, which naturally gives rise to a sense of surprise or amazement.

Depending on contexts, the assertive content derived via EXCL-Op is evaluated by the speaker as positive or negative. In order to account for this pragmatic aspect, I have proposed that Korean *what*-exclamatives involve an evaluative operator, EVAL-Op, which heads Eval(uative)P, configured higher than ForceP. This evaluative operator is taken as a function from propositions to evaluative attitudes on the part of the speaker. The propositional content obtained by EXCL-Op serves as input to EVAL-Op. The speaker's evaluative attitude do not arise if the *wh*-phrase is absent. In this connection, I have proposed that the *wh*-phrase *mwe-l* is endowed with the evaluative feature [Eval +] and undergoes movement to Spec-EvalP to activate EVAL-Op through feature checking.

CHAPTER 4

Conclusion

We are now in a good position to answer the research questions set forth in the introduction. The first research question I have posed in the dissertation is:

- What is the syntactic and semantic contribution/status of non-standard *what* in WHAT-interrogatives and *what*-exclamatives?

My answer to the question runs as follows. In terms of syntax, non-standard *what* in WHAT-questions behaves differently from its ordinary counterpart (i.e., argumenal *what*) in that it combines with a CAUSE-operator, resulting the complex *wh*-phrase (NP), which is externally merged in the specifier position of vP, configured higher than the base position of the subject (under the VP-/vP-internal subject hypothesis). In terms of semantics, on the other hand, WHAT is treated as ordinary *what*: it denotes a proposition (construed as a set of events of type $\langle s,t \rangle$) which is taken as an argument of CAUSE-Op. This semantic view has the theoretical advantage of placing no burden on the lexicon by not positing a special type of *what* meaning *why*.

As to Korean *what*-exclamatives, I have shown that non-standard, exclamative *what*

behaves differently from its ordinary counterpart in both syntax and semantics. I have argued that the sequence of '*mwe-l* + *{ku/i}lehkey* + Adj + N' forms an exclamative *wh*-phrase (NP): to be more specific, the gradable adjective takes as its complement a DegP headed by the degree adverb *{ku/i}lehkey*, and then the head noun combines with the resulting AP and with *mwe-l* as its specifier. The non-standard *what* in Korean *wh*-exclamatives is semantically unique in that it denotes a type-flexible identity function, just like *quin* 'what/which' in Catalan *wh*-exclamatives (as argued by Castroviejo 2021). On the analysis I have proposed, the main contribution of non-standard *mwe-l* in Korean *wh*-exclamatives is to activate Eval-Op, which maps the assertive content of an exclamative onto the speaker's evaluative attitude towards it.

As noted in the introduction, in Korean the same *what*-clause (i.e., *mwe-l*-clause) can be interpreted either as WHAT-interrogatives or *what*-exclamatives, just in case it occurs with a sentence ending particle *e*, as illustrated by the following pair of examples:

(4)   Korean WHAT-interrogatives:

    a. mwe-l   kulehkey pissan   sikyey-lul   sa-ss-e?

       what-ACC so   expensive wristwatch-ACC buy-PST-QUE

       'Why (the hell) did you buy such an expensive wristwatch?'

       Korean *what*-exclamatives:

    b. mwe-l   kulehkey pissan   sikyey-lul   sa-ss-e!

       what-ACC so   expensive wristwatch-ACC buy-PST-EXCL

       'What an expensive wristwatch you bought!'

This observation motivated us to consider the following research questions:

- Do *what*-exclamatives and WHAT-interrogatives in Korean involve the same syntactic structure?

  – If they have the same structure, how are their different meanings/illocutionary force obtained from the same structure?

  – If they have different structures, how are their different meanings/illocutionary force connected to their different syntactic structures?

The close investigation of the syntax and semantics of both non-standard *what*-constructions leads us to conclude that they involve different structures both in overt syntax and in LF. The details are as follows.

As for WHAT-interrogatives, they are analyzed as having double-CP structures in which the lower C-layer is the locus of *wh*-feature checking and the higher C-layer is where the interrogative force is encoded by a Q-operator sitting in the Force head. The *why*-interpretations of WHAT-questions are argued to be derived via a CAUSE-operator that takes as its propositional arguments the non-standard *wh*-phrase *mwe-l* (p) and the rest of the clause (i.e., C′) (q). On this compositional semantic analysis, a WHAT-question is interpreted as an ordinary *what*-question asking about what proposition p is such that an event of propositional type p is the CAUSE of the event of propositional type q.

As for Korean *what*-exclamatives, I have argued that the exclamative *wh*-phrase—consisting of '*mwe-l* + *{ku/i}lehkey* + Adj + N'—undergoes LF-movement to Spec-CP (to resolve type mismatch). Then, the maximality operator *{ku/i}lehkey* raises up to semantically compose with a degree property denoted by C′ to yield a maximal degree in the set of degrees. This maximal degree (d) denoted by the *mwe-l*-clause then serves as input to an assertive force

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operator in Force, yielding an assertion that the maximal degree exceeds a standard (s) established by the speaker's expectation. The additional functional projection EvalP, configured higher than ForceP, has been posited in order to derive the speaker's evaluative attitude towards the assertive proposition (i.e., $d \geqslant s$). In this connection, I have argued that the non-standard *wh*-phrase *mwe-l* endowed with [+Eval] undergoes movement to Spec-EvalP to activate Eval-Op through feature checking.

A major contribution of the dissertation has been to develop our understanding of the syntax and semantics of WHAT-questions from a cross-linguistic perspective. The comparative study between WHAT-questions in Korean and other languages (e.g., Japanese and German) has revealed that the cross-linguistic patterns of nominal *wh*-adjunct WHAT cannot fall under the *wh*-in situ/*wh*-fronting dichotomy. This means that the cross-linguistic variation in WHAT-questions cannot be captured by analyses that depend on differences between *wh*-fronting and *wh*-in situ, such as Ochi's (2014) analysis, which offers a unified analysis of WHAT-questions on the basis of the difference in feature strength (in the sense of Chomsky 1995) between *wh*-fronting and *wh*-in situ.

We have likewise observed that in capturing the causal/reason readings of WHAT-questions, a covert element—Miyagawa's (2017) causative verb CAUSE and Yang's (2021) light verb FOR—has been posited. What is common to both of these two previous analyses is that the assumed covert element is interpreted below negation (i.e., below vP). As for Korean WHAT-questions, however, I have shown that they only allow for the wide scope reading of a covert element in question over negation, which has led to the assumption that the CAUSE-Op is interpreted in the CP domain. Miyagawa's and Yang's analyses would lose their validity and find themselves open to question if Japanese and Chinese WHAT-questions exhibit similar

scopal patterns to Korean ones with respect to negation.

An additional significant contribution of this dissertation has been to demonstrate the existence of Korean *what*-exclamatives for the first time and to provide a syntactic and semantic analysis of them. As discussed, this study has significant cross-linguistic implications for the analysis of *what*-exclamatives. The three implications of particular interest are as follows. We have seen that in Korean *what*-exclamatives, the nominal *wh*-phrase *mwe-l*, unlike its English counterpart, does not function as a degree operator in deriving their degree interpretations; instead, I have argued that the degree expression *{ku/i}lehkey* 'so' does such a job as a maximality operator. From a cross-linguistic perspective, this view is consistent with Castroviejo's (2021) view that in Catalan *quin*-exclamatives, the degree quantifier *tan* 'so', but not the determiner *quin* 'what/which', plays a pivotal role in obtaining their degree properties.

We have observed that a measurement operator (M-Op)—one proposed by Rett (2011) to account for the degree readings of English *wh*-exclamatives with no overt gradable predicates (e.g., *What cookies John makes!*)—does not work for Korean *what*-exclamatives. Although I could not provide a solution to the issue, the observation offers a new perspective on the availability and validity of M-Op from a cross-linguistic point of view.

The other important implication of the study is that the two types of Korean *what*-exclamatives—*mwe-l-{ku/i}lehkey*-exclamatives and *mwe-l-tto*-exclamatives—have provided cross-linguistic support for Nouwen & Chernilovskaya's (2015) claim that *wh*-exclamatives can be divided into *i*-level and *e*-level *wh*-exclamatives; *mwe-l-{ku/i}lehkey*-exclamatives and *mwe-l-tto*-exclamatives are viewed as *i*-level and *e*-level *wh*-exclamatives, respectively. I believe that the current study has helped us to develop our understanding of cross-

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linguistic variation in *what*-exclamatives and to fill in a gap in the description of Korean *wh*-exclamatives.

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