Anatomy of an Exceptive+Modal Construction

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Introduction

Exceptive *pakkey*

(1) John-*pakkey* an w-ass-ta.
John-PAKKEY NEG come-PST-DECL
'No one but John came. (= Only John came.)'

(2) $\text{came}(\text{JOHN}) \wedge \forall x \in D_e : x \neq \text{JOHN} \rightarrow \neg\text{came}(x)$

Korean *pakkey* has a semantics of an exceptive, similar to Japanese *sika*, French *que*, Greek *para*, etc.

The licensing condition of *pakkey*

Descriptively speaking, *pakkey* is licensed by clausemate negation (Choe, 1988).

(3) a. *John-*pakkey* w-ass-ta.
John-PAKKEY come-PST-DECL

b. *Mary-nun [John-*pakkey* w-ass-ta-ko] *an* mit-nun-ta.
Mary-TOP John-PAKKEY come-PST-DECL-COMP NEG believe-PRES-DECL

c. Mary-nun [John-*pakkey an* w-ass-ta-ko] mit-nun-ta.
Mary-TOP John-PAKKEY NEG come-PST-DECL-COMP believe-PRES-DECL
'Mary believes no one but John came.'

Sufficiency modal *myen toy*

(4) John-i o-*myen toy*-n-ta.
John-NOM come-IF GOOD-PRES-DECL
'It suffices if John comes.'
'(Lit.) If John comes, good.'

(5) a. $\forall w' \in \text{BEST}_{t(w)}(\text{come}(\text{JOHN})) : \text{BEST}_{d(w)}(ALT)(w') = 1$ (Chung, 2019)
b. $\mathbb{E}_w[\mu_{\text{EVAL}} \mid \text{come}(\text{JOHN})] > \theta$ (Chung and Mascarenhas, 2023)

Korean modal expressions are expressed in terms of a conditional and an evaluative predicate (Chung, 2019; Chung and Mascarenhas, 2023).

The puzzle: when *pakkey* meets *myen toy*

(6) a. *John-*pakkey* o-myen toy-n-ta.
John-PAKKEY come-IF GOOD-PRES-DECL

b. *John-*pakkey an* o-myen toy-n-ta.
John-PAKKEY NEG come-IF GOOD-PRES-DECL

c. *John-*pakkey* o-myen *an* toy-n-ta.
John-PAKKEY come-IF NEG GOOD-PRES-DECL

d. John-*pakkey an* o-myen an toy-n-ta.
John-PAKKEY NEG come-IF NEG GOOD-PRES-DECL

If *pakkey* is licensed by clausemate negation, why is (6b) ungrammatical?

A closer look at the semantics of *pakkey*

Exceptives as NPIs

Recent literature has made significant progress in understanding the behavior of exceptives by analyzing them as negative polarity items (NPIs) (von Fintel, 1993; Gajewski, 2008; Hirsch, 2016; Sauerland and Yatsushiro, 2023).

The key assumption is that NPIs obligatorily co-occur with an exhaustivity operator (Chierchia, 2006, 2013).

(7) $[\![\text{EXH}]\!](\text{ALT})(p_{st}) = p \wedge \forall q \in ALT : q \rightarrow p \Rightarrow q$

This is a very much simplified version of EXH, which negates all non-weaker alternatives. For a detailed discussion of exhaustivity, see Fox (2007).

NPIs and exhaustivity

As is well-known, the distribution of NPIs is restricted to downward-entailing (DE) environments.

Chierchia shows that exhaustification leads to semantic contradiction when an NPI is outside a DE context.

(8) a. *I read any book.
b. EXH [I read any book]

(9) a. $\exists x : x \in \{a, b, c\} \wedge \text{read}(\text{I}, x)$
b. $\exists x : x \in \{a, b\} \wedge \text{read}(\text{I}, x)$
c. $\exists x : x \in \{a, c\} \wedge \text{read}(\text{I}, x)$
d. $\exists x : x \in \{b, c\} \wedge \text{read}(\text{I}, x)$
e. $\exists x : x \in \{a\} \wedge \text{read}(\text{I}, x)$
f. $\exists x : x \in \{b\} \wedge \text{read}(\text{I}, x)$
g. $\exists x : x \in \{c\} \wedge \text{read}(\text{I}, x)$

Apart from (9a), all domain alternatives in (9) are stronger than $\exists x : x \in \{a, b, c\} \wedge \text{read}(\text{I}, x)$.

The semantics of *pakkey*

The exhaustification-based analysis of exceptives can be easily extended to *pakkey*.

(1) John-pakkey an w-ass-ta.
John-PAKKEY NEG come-PST-DECL
'No one but John came. (= Only John came.)'

(10) a. $[\![pakkey]\!] = \lambda x.\lambda D_e.\lambda p.\exists y \in D_e : x \neq y \wedge p(y)$
b. $D_e = \{\text{JOHN}, \text{MARY}, \text{BILL}\}$

(11) [[John-pakkey an w-ass-ta]]
$= \neg\exists y \in D_e : y \neq \text{JOHN} \wedge \text{come}(y)$
$= \neg\text{come}(\text{MARY}) \wedge \neg\text{come}(\text{BILL})$

(12) $$\text{ALT} = \left\{ \begin{array}{c} [\![\text{John-pakkey an w-ass-ta}]\!] \\ [\![\text{Mary-pakkey an w-ass-ta}]\!] \\ [\![\text{Bill-pakkey an w-ass-ta}]\!] \end{array} \right\} = \left\{ \begin{array}{c} \neg\text{come}(\textsc{Mary}) \wedge \neg\text{come}(\textsc{Bill}) \\ \neg\text{come}(\textsc{John}) \wedge \neg\text{come}(\textsc{Bill}) \\ \neg\text{come}(\textsc{John}) \wedge \neg\text{come}(\textsc{Mary}) \end{array} \right\}$$

(13) After exhaustification:
$(\neg\text{come}(\textsc{Mary}) \wedge \neg\text{come}(\textsc{Bill})) \wedge (\text{come}(\textsc{John}) \vee \text{come}(\textsc{Bill})) \wedge (\text{come}(\textsc{John}) \vee \text{come}(\textsc{Mary}))$
$= \neg\text{come}(\textsc{Mary}) \wedge \neg\text{come}(\textsc{Bill}) \wedge \text{come}(\textsc{John})$

The exhaustification-based analysis not only derives the proper semantics but also explains why *pakkey* has to be in the immediate scope of negation.

Back to the puzzle

(6b) *John-pakkey an o-myen toy-n-ta.
John-PAKKEY NEG come-IF GOOD-PRES-DECL

(14) a. [EXH [John-pakkey an o]]-myen toy-n-ta
b. [EXH [John-pakkey an o-myen toy-n-ta]]

Local exhaustification (14a) poses no issue as the antecedent of the conditional, in this case, is an exclusive claim that 'no one came but John.'

Working with global exhaustification (14b) requires a better understanding of how exhaustification works with respect to modal semantics.

Comparison with other exclusives

An exclusive claim in the antecedent of a conditional is not problematic *per se*.

(15) John-*man* o-myen toy-n-ta.
John-only come-IF GOOD-PRES-DECL
'(Lit.) If only John comes, good.'

(16) John-*ppayko* amwuto an o-myen toy-n-ta.
John-except anyone NEG come-IF GOOD-PRES-DECL
'(Lit.) If only John comes, good.'

Why does *pakkey* result in ungrammaticality within the scope of *myen toy*, while *man* 'only' and *ppayko* 'except' are perfectly acceptable in the same environment?

Scalarity

Unlike *man* and *ppayko*, *pakkey* can have scalar readings.

(17) a. *sey sal-man tw-ayss-e.
three year-only become-PST-DECL

b. *sey sal-ppayko amwukesto an tw-ayss-e.
three year-except anything NEG become-PST-DECL

c. sey sal-pakkey an tw-ayss-e.
three year-PAKKEY NEG become-PST-DECL
'(She's) only$_{\text{scalar}}$ three.'

Exclusive *pakkey* vs. Scalar *pakkey*

However, it is clear in our puzzle that *pakkey* is used in a logically exclusive sense. Surprisingly, scalar uses of *pakkey* are perfectly fine.

(6b) *John-pakkey an o-myen toy-n-ta.
John-PAKKEY NEG come-IF GOOD-PRES-DECL

(18) cokum-pakkey an o-myen toy-n-ta.
little-PAKKEY NEG come-IF GOOD-PRES-DECL
'If only little comes, good.'

(19) sey sal-pakkey an tw-ayss-umyen toy-n-ta.
three year-PAKKEY NEG become-PST-IF GOOD-PRES-DECL
'If (she's) only three, good.'

A closer look at the semantics of Korean modals

Korean modals

Korean modals are expressed in terms of a conditional and an evaluative predicate.

(4) John-i o-*myen* *toy*-n-ta.
John-NOM come-IF GOOD-PRES-DECL
'It suffices if John comes.' (Sufficiency)

(20) John-i wa-*ya* *toy*-n-ta.
John-NOM come-ONLY.IF GOOD-PRES-DECL
'John has to come.' (Necessity)

(21) John-i wa-*to* *toy*-n-ta.
John-NOM come-EVEN.IF GOOD-PRES-DECL
'John can come.' (Possibility)

A degree semantics for modals

(22) According to Chung and Mascarenhas (2023),

a. $[\![\text{must } p]\!] = (\mathbb{E}_w[\mu_{\text{EVAL}} \mid p] > \theta) \wedge \forall q \in Alt(p) : (\mathbb{E}_w[\mu_{\text{EVAL}} \mid q] \leq \theta)$

b. $[\![\text{might } p]\!] = (\mathbb{E}_w[\mu_{\text{EVAL}} \mid \neg p] \leq \theta) \vee \exists q \in Alt(\neg p) : (\mathbb{E}_w[\mu_{\text{EVAL}} \mid q] > \theta)$

Simply put, modals take the prejacent and measure its 'goodness' compared to its alternatives.

The semantics outlined above are reminiscent of the exclusivity of *only* and the additivity of *even*, respectively, a connection that is reflected in the morphology of Korean modal expressions.

Expanding the puzzle

(6b) *John-pakkey an o-*myen toy*-n-ta.
John-PAKKEY NEG come-IF GOOD-PRES-DECL

(23) John-pakkey an wa-*ya* *toy*-n-ta.
John-PAKKEY NEG come-ONLY.IF GOOD-PRES-DECL
'It is necessary that no one but John comes.'

(24) John-pakkey an wa-*to* *toy*-n-ta.
John-PAKKEY NEG come-EVEN.IF GOOD-PRES-DECL
'Even if no one but John comes, good.'

A sketch

Idea:

- Korean modal expressions are obligatorily strengthened by an exhaustivity operator.
- Conditional morphemes *myen*, *ya*, and *to* form a scale: *ya* signals that the prejacent is high on the scale of goodness among the alternatives, while *to* signals that the prejacent is low on the same scale.

Example: strengthening *ya toy*

Assumption:

- *ya* presupposes that the goodness of the prejacent is the highest among the alternatives, and has the exact same assertive content as plain conditionals.

(25) Scalar presupposition:
$\forall q \in Alt(p) : \mathbb{E}_w[\mu_{\text{EVAL}} \mid q] < \mathbb{E}_w[\mu_{\text{EVAL}} \mid p]$

(26)
a. $[\![p\text{-}ya\ toy]\!] = \mathbb{E}_w[\mu_{\text{EVAL}} \mid p] > \theta$
b. ALT = $\{\mathbb{E}_w[\mu_{\text{EVAL}} \mid q] > \theta \mid q \in Alt(p)\}$
c. According to (25), $\forall q \in Alt(p) : (\mathbb{E}_w[\mu_{\text{EVAL}} \mid q] > \theta) \Rightarrow (\mathbb{E}_w[\mu_{\text{EVAL}} \mid p] > \theta)$
d. EXH negates all alternatives, $\forall q \in Alt(p) : \mathbb{E}_w[\mu_{\text{EVAL}} \mid q] \leq \theta$

Exceptives and scales

Exceptives are known to favor end-of-the-scale environments.

(27) a. Every student but John came.
b. No student but John came.
c. *{Some / three / most} student(s) but John came.

Exhaustification-based accounts successfully explain this restriction: EXH leads to contradiction when exceptives like *but* are within the scope of quantifiers denoting intermediate points on the scale (Chierchia, 2013; von Fintel, 1993; Gajewski, 2008; Hirsch, 2016).

What I want to say vs. What I have to say

(6b) *John-pakkey an o-*myen toy*-n-ta.
John-PAKKEY NEG come-IF GOOD-PRES-DECL

What I want to say:

- (6b) is ungrammatical because *pakkey* is not in an end-of-the-scale environment. In other words, EXH will lead to contradiction.
- However, *myen* is traditionally analyzed as a plain conditional; it does not seem to convey any inference about the relative goodness of the prejacent and its alternatives.

Formal implementation to come

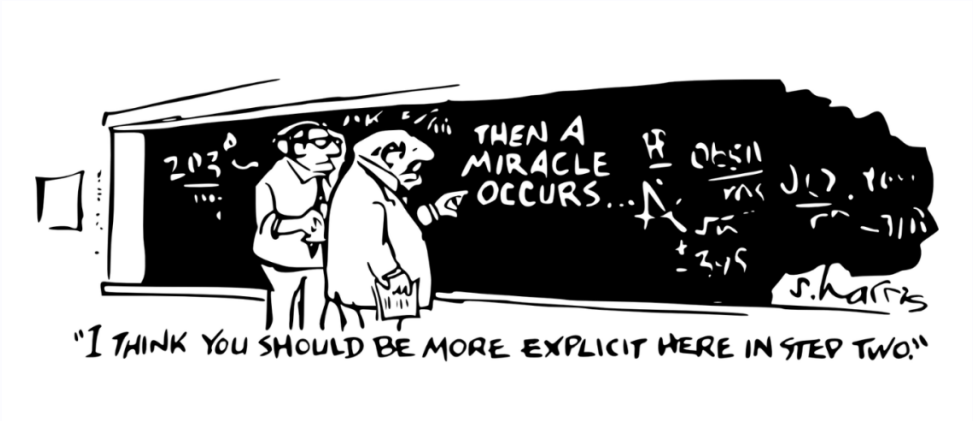

Image from von Fintel and Iatridou (2024).

Q & A

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