QUANTIFIERS AND NEGATION:
A MINIMALIST APPROACH TO PARTIAL NEGATION

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This paper explores some syntactic aspects of negative sentences in which some QP is focused in the scope of negation ("partial negation"). Assuming that sentential negation is licensed by the application of Agree between Pol and a negative element in TP, I argue that the distributions of QPs for partial negation naturally follow from the interactions between the Agree operation and a focus condition on QPs. I also argue that the adjunction type of quantifier raising (QR), whose optional application is justified and controlled by economy considerations, should be a tool for QPs to accord with the condition.*

Keywords: partial negation, PolP, Agree, quantifier raising (QR), strict single cyclic derivation (SSCD)

1. Introduction

Some quantifiers can obtain an interpretation of "partial negation" within the scope of negation while others cannot even in the same syntactic environment.

(1) a. John couldn't solve many of the problems.
    b. She's not had much difficulty.
(2) a. John couldn't solve all the problems.
    b. John didn't invite every student.
(3) a. #John couldn't solve some of the problems.¹
    b. #John didn't invite several guests.
    c. #John didn't solve most of the problems.

* I have benefited from the discussion with Masako Maeda. I am deeply indebted to two anonymous EL reviewers for invaluable comments. I would like to express my gratitude to David Taylor and Denis Jonnes for acting as informants and suggesting stylistic improvements. All remaining inadequacies are my own.
¹ The unavailability of partial negation is represented by # through the paper. I will add the same symbol even to the cited examples just for ease of reference.

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The contrast of the availability of partial negation is reflected in the grammaticality of the following sentences in which *not* immediately precedes the relevant QPs (Quantifier Phrases). The interpretation of partial negation seems to be enforced upon this syntactic form.²

(4) a. Not many people arrived.
    b. Not much foliage survived the frost.

(5) a. Not all of the crops were destroyed.
    b. Not every student passed the test.

(Lasnik (1972: 18, 19))

(6) a. *Not some of the problems were solved.
    b. *Not several people showed up.

(Lasnik (1972: 72, 77))

c. *Not most people attended the party. (Ota (1980: 352))

This fact has been attributed to the inherent property of quantifiers (see among others Lasnik (1972), Kroch (1974), Ota (1980), Ota and Kato (1986) and Kaga (1997)).³ To list some quantifiers according to this property:⁴

(7) a. Quantifiers which inherently cannot be within the scope of negation: some, several, most, a number of, a few, a little, a good deal of, etc.
    b. Quantifiers which have a potential to be within the scope of negation: all, every, many, much, a dozen, a lot of, etc.

Focusing on quantifiers such as in (7b), I explore the possible distributions of QPs in the clauses with the interpretation of partial negation. Specifically I take up the problems of the subject-object asymmetry of EQPs (existential quantifier phrases), the complement-adjunct asymmetry of QPs embedded in NPs and the distributions of *not* QPs. Although

² Both is exceptional in that it cannot be immediately preceded by *not* even if the partial negation is otherwise possible.

(i) a. John didn’t see both of them.
    b. *Not both of the students could pass the exam. (Ota (1980: 354))

³ Quantifiers which cannot be within the scope of negation have been assumed to have inherent features such as [+somal/+referential] (Lasnik (1972)), [-neg] (Kroch (1974)), [+SM] (Ota (1980), Ota and Kato (1986)). Kaga (1997) attempts to accommodate this property semantically and pragmatically in terms of two kinds of scales for QPs/quantified adverbs.

⁴ See Ota (1980) and Ota and Kato (1986) for a detailed description of the list with the possible distributions.
the interaction between negation and QPs has attracted a lot of attention in the literature (among many others, Lasnik (1972), Jackendoff (1972), Kroch (1974), Ota (1980), Ota and Kato (1986), Beghelli and Stowell (1997)), these problems have not received any systematic analysis beyond the description of facts, at least to my knowledge, and still remain unexplained. This paper attempts to accommodate them along the minimalist lines. Specifically, my analysis is based on the clause structure and the licensing mechanism of sentential negation proposed by Nishioka (2002a, b, 2003), who assumes PolP above TP and argues that Agree (Chomsky (2000, 2001a, b) applies between Pol and negative elements in TP. Therefore, as long as the analysis of partial negation presented in this paper is plausible, it will lend support to the PolP analysis. I also argue that QR (Quantifier Raising) is a covert adjunction operation optionally applied to QPs, and that the derivations proceed strictly in a bottom-up fashion, as suggested by Chomsky (2001a).

The paper is organized as follows. In section 2, I discuss the ambiguity of negative sentences involving QPs and suggest the syntactic nature of partial negation, clarifying what the interpretation of partial negation involves. In section 3, I introduce Nishioka's PolP analysis and newly propose a syntactic condition for partial negation. In section 4, I explicate the above-mentioned problems of the possible distributions of QPs for partial negation, based on the analysis presented in section 3. Section 5 sums up and concludes the discussion with the implications of the analysis for the distribution of NPIs (negative polarity items).

2. Partial Negation and External/Metalinguistic Negation

The sentence in (8) has ambiguous scope interpretations with respect to negation and a QP (many).

(8) John didn’t solve many of the problems.

The most common interpretation is (i), “It wasn’t many of the problems that John solved/John solved few of the problems.” This is the interpretation of partial negation, in which negation has a QP in its scope and the QP is the focus of negation. The other interpretation is (ii), “There were many of the problems which John didn’t solve,” in which the QP has wide scope over negation. The difference between (i) and (ii) would be made clear by continuing the sentence with e.g., “but, he solved many of them,” as suggested by Jackendoff (1972: 327).
Logically (i) causes contradiction while (ii) does not necessarily so. Imagine the situation where John solved 50 and did not solve 50 out of 100 problems. These are two often discussed interpretations, but (8) has another interpretation which can be paraphrased as “It is not the case/It is not true that John solved many of the problems.” With this interpretation, it is possible to continue the sentence with “He solved none of them,” or “He solved all of them,” which contradicts the implications of the interpretations (i) and (ii). This is the case of so-called external negation and has the pragmatic nature observed in the case of metalinguistic negation (Horn (1985, 1989)), which is typically used to explicitly deny the previous utterance or thought as in (9).⁵

(9) a. Some men aren’t chauvinists—all men are chauvinists.⁶  
    b. I’m not a Trotskyite, I’m a Trotskyist.  
    (Horn (1989: 370, 372))  
    c. I didn’t solve most of the problems—I solved all of them.

The pragmatic nature of this kind of negation is suggested by the fact that quantifiers which cannot usually be in the scope of negation such as some and most (see (7a)) can be the focus of negation in (9a, c). The difference between this kind of negation and partial negation is also detected in the fact concerning the sensitivity to the islands, as Lasnik (1972) points out.

(10) a. #I didn’t understand Euclid’s proofs of many of the theorems.  
    b. #I didn’t talk to Chomsky and all of his colleagues.

(11) a. I didn’t understand Euclid’s proofs of many of the theorems; I understand his proofs of only a few of them.  
    b. I didn’t talk to Chomsky and all of his colleagues; I talked to Chomsky and most of his colleagues.  
    (Lasnik (1972: 85))

In (10) and (11), (a) examples involve the specific subject (possessive D) and (b) examples a coordinate structure, both of which constitute islands.⁷ Partial negation is impossible with respect to QPs in islands.

⁵ This kind of negation corresponds to Ota’s (1980) “echo negation” and Quirk et al.’s (1985) “denial.”  
⁶ The underline represents the emphatic stress put on the word.  
⁷ The islandhood of these structures is illustrated by the ungrammaticality of the sentences such as (i).
in (10), whereas metalinguistic negation is possible in (11). Therefore, the focalization of QP involved in partial negation can be regarded as a syntactic process distinct from the pragmatic process involved in external/metalinguistic negation. In this paper, I focus on the syntactic aspects of partial negation, putting aside other aspects of negation.

3. The Syntactic Mechanism of Sentential Negation and Partial Negation

3.1. The Clause Structure of Sentential Negation and Agree

Nishioka (2002a, b, 2003), observing the sentences in (13) and (14), assumes the clause structure in (12), in which PolP is postulated above TP.\(^8\)

\[(12) \quad \text{[CP C [PolP Pol [TP T vP]]]}\]

\[(13) \quad \begin{align*}
\text{a. } & \text{Lee said [CP that [PolP at no time would [TP she agree to visit Robin]]]} \\
\text{b. } & \text{Lee wonders [CP why C [PolP in no way would [TP Robin volunteer]]]} 
\end{align*}\]

\[(14) \quad \begin{align*}
\text{a. } & \text{Unless [TP it rains tomorrow], ...... (= If it does not rain tomorrow, ....)} \\
\text{b. } & \text{Make haste lest [TP you (should) be late]. (=Make haste so that you should not be late.)}
\end{align*}\]

In (13) PPs with negative elements and inverted T occupy the position between typical C (\textit{that}/Q with a \textit{wh}-word in its specifier) and TP, which suggests the existence of a functional projection i.e. PolP. The sentences in (14) involve negative conjunctions, which provide TP with the negative value ([+NEG]) from outside. This also suggests the existence of PolP with [+NEG], which is selected by negative conjunctions (C), or the possibility that negative conjunctions themselves project PolP.

\[\text{i. } \begin{align*}
\text{a. *Who did see Mary's picture of t?} \\
\text{b. *Who did you see Mary and t?}
\end{align*}\]

with [+NEG]. Based on the clause structure in (12), Nishioka (2002a, b, 2003) proposes (15) as a unified licensing mechanism of sentential negation in terms of Agree, extending Chomsky’s (2000) analysis.\(^\text{10}\)

(15) Sentential negation in English is licensed/encoded by Pol obtaining [+NEG], which is (a) supplied by negative conjunctions, or (b) transferred from a negative element (NE) in TP through Agree between Pol and an NE.

Agree is a feature checking operation advanced by Chomsky (2000, 2001a, b), by which an uninterpretable feature (probe: P) searches for matching features (goal: G) and as a result uninterpretable features are deleted.\(^\text{11}\) (16) and (17) are technically assumed for the operation.

(16) a. Matching is feature identity.
   b. G must be in D(P) (the domain of P), which is the sister of P (i.e. c-command domain of P).
   c. The relation must satisfy the locality condition of closest c-command.

(adapted from Chomsky (2000: 122))

(17) Goal as well as probe must be active for Agree to apply.\(^\text{12}\)

(Chomsky (2001b: 6))

I claim in (15) that sentential negation requires Agree between Pol and an NE in TP except for the cases involving negative conjunctions. Specifically I assume (18) in order for Agree to operate between Pol and an NE.\(^\text{13}\)

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\(^{9}\) See Nishioka (2002b, 2003) for more empirical and theoretical arguments for the postulation of PolP.

\(^{10}\) Negative sentences as well as interrogative sentences are marked in that they require formal licensing, which is unnecessary for affirmative declarative sentences. Extending the idea of Haegeman and Zanuttini (1991) and Rizzi (1991), Haegeman (1995) proposes NEG-criterion (i) as a licensing condition for sentential negation, which is argued to apply at S-structure in English.

(i) a. A NEG-operator must be in a Spec-head configuration with an X\(^0\) [NEG];
   b. An X\(^0\) [NEG] must be in a Spec-head configuration with a NEG-operator.


\(^{11}\) Move is a composite operation composed of Merge, Agree and generalized pied-piping (determining what moves together).

\(^{12}\) This means that a relevant uninterpretable feature is required both for P and G as a prerequisite for the application of Agree.

\(^{13}\) Kato (2000) proposes a similar but less formalized idea in the earlier minimalist framework (Chomsky (1995)).
(18)  

  a. Pol has an uninterpretable \([NEG]\) feature (represented as \([uNEG]\)). (Or Pol is provided with \([+NEG]\) lexically (through being selected) by negative conjunctions.) Otherwise Pol has an interpretable \([-NEG] = [+POS]\) feature.

  b. NEs have an interpretable \([+NEG]\) feature and an uninterpretable \([neg]\) feature (represented as \([uneg]\)).

NEs in (15) and (18b) include \textit{not}, negative quantifiers (NegQs) such as \textit{no(...), few} and negative adverbs such as \textit{hardly, seldom}, all of which contribute to sentential negation. The assumptions in (18) are in parallel with Chomsky’s (2000: 128) assumptions in (19) made for sentences involving \textit{wh}-movement.

(19)  

  a. C has an uninterpretable \([Q]\) feature (\([uQ]\)).

  b. \textit{wh}-phrases have an interpretable \([Q]\) feature and an uninterpretable \([wh]\) feature (\([uwh]\)).

The transference of \([+NEG]\) from NE to Pol is a trivial matter in Chomsky’s (1995) feature movement analysis. However, Chomsky (2000, 2001a, b) claims that feature movement should be eliminated in his Agree system. Thus the EPP feature is required in order to carry \([+NEG]\) of an NE to Pol. However, since it is an invisible operation, there are still two possibilities. One is to assume a phonetically null operator (Op), where \([+NEG]\) and \([uneg]\) reside, in NEs and suppose that its overt movement satisfies the EPP feature in line with Watanabe (1992). The other is to simply assume covert phrasal movement, as argued for by Pesetsky (2000) and Chomsky (2001a). The proposed analysis would not be affected by the choice. Thus I simply assume without further discussion that \([+NEG]\) is transferred from an NE to Pol through Agree (TTA (Transfer through Agree)) as stated in (15b).

Let us see concretely how Agree works for establishing sentential negation.

(20)  

  a. John does \textit{not} eat chocolates.

  b. John \textit{never/seldom} eats chocolates.

  c. John ate \textit{nothing}.

All of these would involve the schematic structures in (21).

(21)  

  a. \([PolP Pol[uNEG] \ [TP (...) NE_{([+NEG][uneg] (...))]})]

  b. \([PolP [+NEG] Pol[uNEG] \ [TP (...) NE_{([+NEG][uneg] (...))]})]

\[TTA\]

The structure in (21a) is formed at a stage of the derivation, and the
uninterpretable feature [uNEG] of Pol searches as a probe for a matching [+NEG] and successfully finds the goal, an NE, which is active ((17)). Thus Agree is fulfilled and [uNEG] and [uneg] are deleted, and as a result [+NEG] is transferred from the NE to Pol, deriving the structure in (21b). Thus the sentences in (20) are successfully licensed/encoded as those expressing sentential negation.

3.2. Focus Movement for Partial Negation

In addition to the syntactic mechanism for sentential negation, as described in the previous subsection, I propose that the condition in (22) be satisfied for the interpretation of partial negation.

(22) Focus Condition on QPs: QPs to be interpreted as the focus of partial negation must be in the immediate c-command domain of Pol with [+NEG].

Here the "immediate c-command domain" is defined as follows.

(23) Y is in the immediate c-command domain of X iff (a) X c-commands Y and (b) there is no Z such that X c-commands Z and Z asymmetrically c-commands Y.

According to (23), the subject (QP₁) in [Spec, TP] is in the immediate c-command domain of Pol while the object (QP₂) is not, as shown in (24), where irrelevant parts are omitted.

(24)

```
  PolP
   /\  \\
  Pol /  TP
   |   |
  QP₁ T'  \\
     /  |
    T  vP
     |
  QP₂
```

14 The notion of phase and the Phase-Impenetrability Condition in (i) is irrelevant to the discussion in this paper because (i) is supposed to be effective between strong phases (CP and vP) and the relation between Pol and an element in the same clause is not restricted by it.

(i) The domain of H is not accessible to operations at ZP, only H and its edge are accessible to such operations (where ZP is the smallest strong phase). (Chomsky (2001b: 14))
Note that there are no elements which asymmetrically c-command QP₁ except for Pol, while T also asymmetrically c-commands QP₂. Therefore, the object QP must move to a position in the immediate c-command domain of Pol to undergo the focus interpretation of partial negation. I argue that the mechanism for the syntactic movement is the traditional QR as an optional adjunction operation (cf. May (1977, 1985), Aoun and Li (1993), Kennedy (1997), Fox (2000)). Some alternative analyses to the traditional QR have been recently proposed: (i) an analysis which denies the existence of QR as an independent operation and reduces it to A-movement (Hornstein (1995), Kitahara (1996)), (ii) an analysis which argues for the movement of QPs to the spec positions of different functional categories depending on the kinds of QPs (Beghelli and Stowell (1997)) and (iii) an analysis which reduces QR to the movement triggered by EPP (P-feature) (Bruening (2001)). As long as my analysis of partial negation presented in the following section is correct, it would support the traditional QR analysis. Movement based on an optional adjunction operation is independently postulated for scrambling (see, among many others, Saito (1985), Johnson (2000)) and the existence of the operation in grammar cannot be theoretically denied. However, I assume in accord with Chomsky’s (2001: 34) suggestion for an optional operation that although QR is an optional movement operation, the legitimacy of the application is evaluated in terms of the effect on outcome. Specifically I assume that QR must apply to QPs in the base position for an interpretative reason (Heim and Kratzer (1998)) or to avoid vacuous quantification (Aoun and Li (1993)) because of the inherent property of QPs. However, as long as this

15 Under the vP shell analysis (Chomsky (1995)), which is assumed here, it seems that v (v-V) also asymmetrically c-commands the object QP₂. However, QPs in vP must leave the original 0-position for an independent reason (interpretive reason (Heim and Kratzer (1998)) or vacuous quantification (Aoun and Li (1993)). Therefore, the object QP must undergo QR to be adjoined to vP or a higher position and v (v-V) does not c-command the object QP when (22) applies.


17 Johnson (2000) argues that QR is identified with scrambling.
requirement is satisfied, QR which has no semantic effect should be eliminated by an economy principle (cf. Fox’s (1995, 2000) scope economy, and Reinhart’s (1995) interface strategies).

The syntactic mechanism for the partial negation of the sentences in (25a, b) is illustrated by (26a, b), respectively.

(25)  a. Everyone didn’t attend the meeting.
     b. John didn’t eat many dishes.

(26)  a. [PolP [+NEG] Pol[+uNRG][TP everyone didn’t[+NEG][+uneg] attend
       \__________________________\                TTA
       the meeting]]

       \__________________________\     QR
       [TP many dishes][TP John didn’t[+NEG][+uneg] eat many dishes]]]

In (26a) Pol obtains [+NEG] through Agree (TTA) and as a result, the subject QP (everyone) in [Spec, TP] satisfies (22), successfully producing the partial negation in (25a). Recall that the subject QP in [Spec, TP] is in the focus position in accord with (22). In (26b), on the other hand, the object QP (many dishes) undergoes QR and is adjoined to TP, while Pol obtains [+NEG] in the same way as (26a). As a consequence, it satisfies (22), resulting in the partial negation interpretation of (25b). Here I crucially adopt Chomsky’s (2000, 2001a, b) single cyclic derivation analysis, interpreting it in the strict sense, following the suggestion by Chomsky (2001a). That is, I assume that all derivations proceed strictly in a bottom-up fashion in a single cycle, in which overt and covert operations are interspersed. I refer to this way of derivation as a strict single cyclic derivation (SSCD). Accordingly, the QR to TP must occur before the application of Agree between Pol and not in (26b).

The derivations for another scope interpretation (i.e. QP > NEG) of the sentences in (25) are represented by (27).
Here both Agree and QR involve Pol/PolP and the operations can be assumed to apply in any order or at the same time. All the applications of QR in (26b) (27a, b) are justified by a semantic effect (i.e. the focus in (26b), and the change of scope relation in (27)).

In summary, the mechanism to produce partial negation is composed of two ordered syntactic operations which satisfy two independent requirements, as given in (28).

(28) a. The application of QR to a QP to adjoin to TP unless the QP is in [Spec, TP] (required by the Focus Condition (22))

b. The application of Agree between Pol and an NE in TP, causing the transference of [+NEG] from the NE to Pol (TTA) (required by the licensing condition of sentential negation (15))

4. Distributions of QPs for Partial Negation

Based on the syntactic mechanism developed in the preceding section, I explicate puzzling distributions of QPs for the production of partial negation.

4.1. Subject-Object Asymmetry of EQPs

In the positions following not, i.e. the typical object position in vP, both universal quantifier phrases (UQPs) and existential quantifier phrases (EQPs) serve to produce partial negation interpretation as seen in (1) and (2) (repeated here as (29) and (30)).

(29) a. John couldn’t solve many of the problems.
    b. She’s not had much difficulty.

(30) a. John couldn’t solve all the problems.
    b. John didn’t invite every student.

On the other hand, in the positions preceding not, i.e. the typical sub-
ject position in [Spec, TP], EQPs, unlike UQPs, cannot be interpreted as involving partial negation.$^{18}$

(31)  
(a) All of Mary's friends do not live on the East Coast.
(b) Everyone didn't come to the party.

(32)  
(a) #Many of the children did not go to school yesterday.
(b) #Much of the stolen gold hasn't been found yet.

I have demonstrated the syntactic mechanism for the partial negation involving the subject QP and the object QP in (26) in section 3. It is also illustrated by the tree diagrams in (33).

(33)  
(a) \[
\begin{array}{cc}
\text{a} & \text{PolP} \\
\text{(33a)} & \text{TP} \\
\text{QP} & \text{TP'} \\
\text{TTA} & \text{not}_{[+\text{NEG}]_{\text{uneg}}}
\end{array}
\]

(b) \[
\begin{array}{cc}
\text{b} & \text{PolP} \\
\text{(33b)} & \text{TP} \\
\text{QP} & \text{DP} \\
\text{TTA} & \text{not}_{[+\text{NEG}]_{\text{uneg}}}
\end{array}
\]

(33a) represents the case of the subject QP and (33b) the case of the object QP. In both cases, Agree must apply between Pol and not in TP to be licensed as sentential negation (see (15)). What should be

$^{18}$ To take the subject UQP in the scope of not requires a rising intonation without a break after the subject (Jackendoff (1972), Lasnik (1972)). The subject EQP cannot be interpreted to be in the scope of not even if the same intonational strategy is used.
noted here is that the subject QP in (33a) is in the path of the Agree operation without the application of QR; it is c-commanded by Pol and asymmetrically c-commands not. Therefore, the contrast between (31) and (32) could be attributed to the difference of the intervention effect on Agree between UQPs and EQPs. From this standpoint, I propose (34).

(34) EQPs, unlike UQPs, have some feature [+F] in common with NEs.

Beghelli and Stowell (1997: 93) independently suggest that not is a QP which originates in an event argument position in the sense of Davidson (1967). Based on this suggestion we can understand not as an existential quantifier expressing the existence of the event with null quantity, i.e. nonexistence of the event and, moreover, extending this, [+NEG] of NEs in general can be regarded as a kind of existential feature. Then (34) would follow and [+F] might be an existential feature, although the exploration of its identity will be left for further study.

If this line of consideration is on the right track and (34) is justified, the Agree operation holding between Pol and not should be blocked by the subject EQP and the derivation will crash, excluding the partial negation in (32). Note that adjoining the subject EQP to TP by QR in order to avoid the intervention effect will be excluded by an economy principle because it has no semantic effect (i.e. no scope change or no new focus effect since [Spec, TP] is already in the focus domain of Pol (see (22) and (23))).

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19 In Beghelli and Stowell (1997) the covert existential event QP, adverbal QPs such as never, rarely and whQP whether are also assumed to originate in the event argument position.

20 The affinity of negation with EQPs in contrast with UQPs is also suggested by the possibility of occurrence in the there-construction.

(i)  a. There were many people in the park.
    b. There was much money left in his safe.

(ii) a. There was nothing left there.
    b. There was nobody in the room.

(iii) a. *There was everybody in the room. (Kaga (1997: 126))
    b. *There were all the books in the table. (ibid.)

It is true that this simply shows that EQPs and NegQPs share a property related with indefiniteness. However, the very fact that negation can be incorporated into indefinite NPs seems to suggest the affinity of negation with EQPs, which reveal indefiniteness.

21 The adjunction to TP can circumvent the intervention effect because of a property of QR, which will be argued below.
produce a new scope relation (EQP > NEG), losing the interpretation of partial negation (see (27)). The intervention effect of the subject EQP would be technically reduced to the independently proposed constraint on Agree by Chomsky (2000).

(35) **Defective Intervention Constraints (DIC):** In structure \( \alpha > \beta > \gamma \), where \( > \) is c-command, \( \beta \) and \( \gamma \) match the probe \( \alpha \), but \( \beta \) is inactive so that the effects of matching are blocked.

(Chomsky (2000: 123))

This can be schematically illustrated by (36), where \( \alpha \) corresponds to [uNEG] of Pol, \( \beta \) [+F] of the subject EQP and \( \gamma \) [+NEG] of not in (33a).

(36)

```
  α
 / \ 
|   |
β (inactive) γ
      *
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Here the inactiveness is meant to have no relevant uninterpretable features (see footnote 12) and the subject EQP in [Spec, TP] has no reason to suppose some uninterpretable feature.

The proposed syntactic analysis is supported by the fact that the following sentences can obtain the interpretation of partial negation even if EQPs precede *not* in linear order.22

(37) a. Fathers of many children didn’t attend the party. (=Fathers of not many/few children attended the party.)

b. The value of much material isn’t estimated by fair means. (=The value of not much/little material is estimated by fair means.)

The structure of these sentences can be schematically represented by (38), where the EQPs are not in the path between Pol and *not* (i.e. the EQPs do not asymmetrically c-command *not*) and Agree successfully applies between Pol and *not*.

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22 I am indebted to Denis Jonnes (personal communication) for the sentences in (37).
The EQP embedded in the subject must also be adjoined to the subject DP/TP by QR to satisfy the focus condition for partial negation (22). However, this will not cause the intervention effect because an element in an adjoined position will not interfere with the syntactic operation.

The lack of the intervention effect of an adjoined position produced by QR is also significant for (33b), which represents the derivation for (29) and (30). Under the strict single cyclic derivation (SSCD) hypothesis, the QR operation must precede the Agree operation in (33b) as I argued in section 3.2. Thus the adjoined position by QR should not be counted when [uNEG] of Pol searches for the relevant goal [+NEG] in order to guarantee the partial negation of (29). This is because EQPs, which are assumed to have [+F] ((34)), are involved in (29). Therefore, it is crucial to assume (39) in the proposed analysis.

(39) Adjoined QPs by QR do not interfere with any syntactic operations.

This will follow from the general property of adjunction. Chomsky (1995: 331) suggests that the ungrammaticality of (40a) is due to the interference of an adverbial with case-checking of the object.

(40) a. *John reads often books.
(40b) represents the vP structure of (40a). Translated in the present analysis, this means that *often* in [Spec, VP] should have a relevant feature to block Agree between *v* and the object (*books*). With this in mind, let us consider (41).

(41) a. They have often all skipped the class.
   b. [TP they have [vP often [vP t all skipped the class]]]24

The grammaticality of (41a) indicates that an adverbial (*often*) in an adjoined position does not block Agree between T and the subject as represented in (41b), even though it has a relevant feature, in contrast with the case in (40a). Thus the non-interference of an element produced by adjunction with the syntactic operation must be independently posited under the assumption that the notion of equidistance should be dispensed with (Chomsky (2001b)), and (39) is an instance of it.25

4.2. Complement-Adjunct Asymmetry of QPs in NPs

Partial negation is available in the sentences with QPs in the complement of NPs whereas it is not in those with QPs in the adjunct of NPs.

(42) a. I didn’t talk with fathers of many children.
   b. #I didn’t talk with fathers with many children.

(Ota (1980: 361))

(43) a. I couldn’t understand the proofs of all of the theorems.
   b. #We didn’t see pictures with all of the children painted on them.

---

24 The floating quantifier in [Spec, vP] indicates the original position of the subject. (Sportiche (1988))

25 Chomsky (2001a: 17) independently argues that “if α is adjoined to β, the construction behaves as if α isn’t there apart from semantic interpretation, which is not that of standard X-bar-theoretic constructions; island properties differ as well.”
This fact can be easily accommodated by the present analysis in which QR is required of QPs to satisfy the focus condition (22) except for the QP subject. QR is a movement operation and thus is expected to be sensitive to the island structure.  

Even if prepositions are pied-piped with QPs by QR in (42) and (43), the contrast still holds, as is witnessed by the overt extraction.

(44) a. Which city did you witness [the destruction of \( t \)]?  
    b. *Which city did you meet [the man from \( t \)]?  

(Chomsky (1986: 80))

(45) a. Of whom did you see [a painting \( t \)]?  
    b. *??From where/??By whom did you see [a painting \( t \)]?  

(Fox and Nissenbaum (1999: 133))

However the island condition is formulated, it should apply to (42) and (43) as well as (44) and (45). Moreover, the involvement of QR in the contrast in (42) and (43) is more directly to be detected in the scope interactions of two QPs.

(46) a. Two teachers talked with fathers of many children.  
    two > many, many > two  
    b. Two teachers talked with fathers with many children.  
    two > many, *?many > two

(47) a. Two students understood the proofs of all of the theorems.  
    two > all, all > two  
    b. Two students saw pictures with all teachers painted on them.  
    two > all, *all > two

In (46b) and (47b) the subject QP\(_1\) cannot be interpreted as distributed by the other QP\(_2\), taking the inverse scope (QP\(_2\) > QP\(_1\)). This makes sharp contrast with (46a) and (47a) and reveals QR's responsibility for the contrast.

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26 See (10) also. Reinhart (1995) corroborates the claim that QR obeys island conditions by arguing that apparent exceptions are accounted for by means of the choice function.

27 Pied-piping of prepositions has been assumed to account for the inverse scope of the sentences in which a QP is in an adjunct such as (ia), as represented in (ib) (cf. May (1985: 168), Johnson (2000)). The scope relation in terms of c-command ignores PP in this case.

(i) a. A different student stood near every visitor.  
    b. [IP [PP near every visitor] [IP a different student stood \( t \)]]
4.3. Distributions of Not QPs

Not QPs are restricted in their occurrence; they can only appear in the clause initial position.

(48) a. Not many people arrived.
     (=48) b. Not much foliage survived the frost.
(49) a. Not all of the crops were destroyed.
     (=50) b. Not every student passed the test.
(50) a. Not often do I cut astronomy class. (Lasnik (1972: 12))
     b. Not always do I attend class. (ibid.: 30)
     c. Not many boys did the doctor examine.
(51) a. *The doctor examined not many of the boys.
     (Ota (1980: 353))
     b. *I have seen not much snow.
(52) a. *The target was hit by not all of the arrows.
     (Lasnik (1972: 25))
     b. *John saw not every play.
(53) a. *I not often cut astronomy class.
     b. *I cut astronomy class not often.
     (Lasnik (1972: 12))

This fact can also be accounted for by the present analysis. The sentences (48) and (49) are considered to involve the derivation schematically represented in (54).

(54)\[
\begin{array}{c}
\text{PolP} \\
\text{TP} \\
\text{QP}_1 \\
\text{not[+NEG][unNEG]} \\
\text{TTA}
\end{array}
\]

Here I assume that not is adjoined to QP in not QP phrases. Agree is successfully applied between Pol and not and Pol obtains [+NEG], consequently satisfying (15).\(^{28}\) QP\(_1\) is interpreted as the focus of partial

\(^{28}\) I assume following Hasegawa et al. (2000: 198) that the subject does not constitute a syntactic island but the effect should be attributed to a perceptual constraint.
The sentences in (51)–(53) would involve the derivation as in (55).

\[
\text{(55) } \quad \text{PolP} \\
\uparrow \\
\text{TP} \\
\uparrow \\
\text{QP}_1 \\
\uparrow \\
\text{not}_{[+\text{NEG}][\text{uneg}]} \quad \text{not}_{[+\text{NEG}][\text{uneg}]} \\
\uparrow \\
\ast \text{T}\text{TA} \\
\downarrow \\
\text{QR}
\]

Agree cannot apply between the elements in Pol and \textit{not} in the base position of \textit{QP}_1 before QR applies to adjoin it to TP. This is due to the SSCD hypothesis. If QR does not apply, the focus requirement in (22) cannot be met, causing inconsistency with the \textit{not} \textit{QP} form, which enforces partial negation interpretation. Thus QR, by which \textit{QP}_1 is adjoined to TP, must occur before the Agree involving elements of Pol in (55). However, because \textit{not} is contained in an adjoined position (via QR), the Agree operation is blocked by an adjunct island and the derivation will crash, resulting in the ungrammaticality of the sentences.

Let us finally consider (50). The sentences in (50) would involve the derivation illustrated in (56) (in which T to Pol movement is omitted).

The sentences in (i) are presented as evidence to support the non-syntactic nature of the constraint.

(i) a. *Which car was \([\text{NP} \text{ the hood of } \phi]\) damaged?
    b. Of which car was \([\text{NP} \text{ the hood } \phi]\) damaged?
Focus Movement, whose existence is independently detected in (57) and (58) apart from the cases of partial negation, serves here overtly to carry not QP to [Spec, PolP]. Technically by supposing uninterpretable [uFOC] and [EPP] in addition to [uNEG] in Pol, and interpretable [+FOC] and uninterpretable [ufoc] in QP, the operation would be in parallel to the cases of sentential negation (18) and wh-movement (19).

(57)  a. With no job would John be happy. (Ota (1980: 366))
     b. Never has John attended the meeting.
     c. No race could Lewis win. (Haegeman (2000: 26))

(58)  a. With this job John would be happy (not that job).
     b. Your book you should give to Paul (not mine).
          (Haegeman (2000: 33))

In (56) it is assumed that [uNEG] in Pol searches for its goal at the same time as [uFOC] in Pol. The Agree operations are successfully fulfilled, checking and deleting uninterpretable features. The focus phrase as a whole is overtly carried to [Spec, PolP] due to [EPP] of Pol. (15) is satisfied because Pol obtains [+NEG] through the Agree operation. (22) is also satisfied since it does not seem implausible to interpret (22) as “QPs to be interpreted as the focus of the partial negation must be in the immediate c-command domain of [+NEG] obtained by Pol.” In (56) QP is in the immediate c-command domain of [+NEG] in [Spec, PolP] obtained by Pol through the application of Agree. Recall that a segment does not dominate a category, and thus [+NEG] ccommands
QP₁ in the usual sense of c-command. This leads to the grammaticality of the sentences in (50).

5. Concluding Remarks

I have argued that the distributional problems of QPs in the sentences with the interpretation of partial negation are well explicated in the framework adopted in this paper. I have adopted the PolP system with the mechanism of Agree as a unified licensing condition on sentential negation ((15)). I have also assumed that QPs must obey the focus condition (22) to be interpreted as the focus of partial negation. The mechanism for satisfying it is the traditional adjunction type QR with its optional applications evaluated in terms of a semantic effect. I have furthermore supported Chomsky’s proposal that all the derivations must proceed in a bottom-up fashion in one cycle ((SSCD)). In this framework, specifically, I have claimed that the subject-object asymmetry with EQPs is derived from the distinctive feature of EQPs ((34)) with the help of an independently proposed intervention constraint on Agree ((35)). The complement-adjunct asymmetry of QPs in NPs simply follows from the island condition of the extraction since the relevant QPs undergo QR to satisfy (22). The distributions of not QPs are also accommodated by the condition banning the extraction out of an adjunct and SSCD. If my analysis is on the right track, the assumptions made here based on independent considerations gain support from it.

The analysis in this paper should have some implications for the behavior of negative polarity items (NPIs) such as any in English. As is well known, an NPI any also shows subject-object asymmetry as in (59).

(59) a. *Anyone did not attend the party.
   b. John did not eat anything.

If we pay attention to the fact that any is a member of EQs, the contrast in (59) will follow from the intervention effects on Agree between the Pol and the NE (not) in the same way as (29) and (32) (repeated here as (60) and (61)), although the focus condition (22) is irrelevant for NPIs, and therefore, QR is not necessary even in (59b), except for

29 α c-commands β if α does not dominate β and every γ that dominates α dominates β. (Chomsky (1995: 35))

30 See Nishioka (2003) for an in-depth analysis of NPIs, although it is simply assumed there that NPIs have [+NEG] with no reference to EQs
an independent reason.

(60) a. John couldn’t solve many of the problems.
(=(29)) b. She’s not had much difficulty.

(61) a. #Many of the children did not go to school yesterday.
(=(32)) b. #Much of the stolen gold hasn’t been found yet.

The sentence in (59a) is ungrammatical since if the NPI adjoins to PolP in the same way as in the wide scope of EQPs in (27), the basic property/definition of NPIs will be violated, being licensed by a c-commanding licensor (NEG, Q, etc.). If there is another licensor, the sentence with the subject NPI is grammatical with the any > NEG interpretation, as is correctly predicted.

(62) Did anyone not come to the party?

The present analysis also accounts for the grammaticality of the sentences in (63).

(63) a. Pictures of anyone did not seem to be available.
(Boeckx (2000: 362))

b. A good solution to any of these problems does not exist.
(Hoeksema (2000: 136))

The intervention should be circumvented by putting NPIs out of the path of Pol and an NE in parallel with (37)/(38). Thus the PolP based syntactic mechanism of sentential negation paves the way for unifying two seemingly different phenomena in negation: the licensing of NPIs and partial negation.

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