

# NEGATIVE POLARITY INDEX (NPI) LICENSING AND BINDING THEORY: AN ANALYSIS OF HOW NEGATIVE CONSTITUENTS LICENSE NPIS

Alicia Hide

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**Abstract:** In Progovac's 1994 'Negative and Positive Polarity', she presents a theory of NPI licensing using the framework of Binding Theory. This dissertation uses her theory to explore how negative constituents are able to license negative polarity items, debating whether they do so through negation or a polarity operator. The negative constituents looked at are negative adverbs and negative quantifiers, which in Progovac's original theory, she considers covert negative expressions and thus proposes that they license NPIS through a polarity operator in CP. This dissertation explores this and other possibilities, suggesting that these negative constituents could be part of the projection NegP and so license NPIS through that. This prompts questions into the scope of negative constituents and how other syntactic features, like do-support, different types of negation, quantifier raising, and transformations, interact with NPIS.

**Keywords:** Negative Polarity Items, Negation, Syntax, Binding Theory, Negative Adverbs, Negative Quantifiers

**Supervisor(s):** Dr Geoffrey Poole

# NPI Licensing and Binding Theory: an analysis of how negative constituents license NPIs

Alicia Hide

## 1. Introduction

In discussions concerning negation and polarity, there are certain lexical items in most languages which behave more remarkably than others. These items seem to rely on some sort of negation or negative polarity in order to be grammatical in a sentence and so are often called Negative Polarity Items (NPIs). NPIs consist of items such as individual words, *any*, *ever*, *either*, *yet* and phrases like *budge an inch* or *lift a finger*. These items are defined as negative polarity items due to the fact that they are grammatical in a simple negative declarative sentence but are ungrammatical or ill-formed in the equivalent affirmative sentence. For example:

- (1)
- a. I didn't read *any* books
  - b. \*I did read *any* books

There are also such items that appear to be the opposite, Positive Polarity Items (PPIs). These are ungrammatical in negative sentences but grammatical in corresponding affirmative ones and consist of items such as: *already*, *neither*, *rather* etc.

- (2)
- a. He *already* left
  - b. \*He didn't *already* leave

It is tempting to say that it is simply negation which allows or disallows these Polarity Items (PIs) in sentences, however NPIs and PPIs are allowed in sentences which are not strictly their preferred polarity.

- (3)
- a. If I see *anything*, I'll let you know
  - b. Has he *already* left?

This shows that it is not just negation which licenses NPIs. Penka (2015, (19)) gives a non-exhaustive list of other NPI licensing contexts:

- (4)
- a. Scope of semi-negative quantifiers and adverbs like *few*, *at most*, *rarely*, *hardly* etc
  - b. Complement clauses of “negative” predicates like *doubt*
  - c. Clauses headed by *without*
  - d. Clauses headed by *before*
  - e. Relative clauses modifying a universal quantifier
  - f. Antecedents of conditionals
  - g. Comparison clauses
  - h. Questions

As NPIs have such varied licensing contexts, it prompts the question of what do these contexts have in common and thus what exactly is it that licenses NPIs. There have been many attempts to answer that question, with some using a syntactic approach and others using a semantic one. Klima (1964) is one of the earliest people to look at NPIs, although he does not call them that, and he does so using a syntactic approach. He concludes that NPIs are licensed by being c-commanded by an affective item, where affective is defined as the feature which licenses NPIs. Other syntactic approaches build on Klima’s ideas, Jackendoff (1969) and later Baker (1970) modify some of the transformations that Klima suggests.

Whereas Fauconnier (1975) and Ladusaw (1980) make the Fauconnier-Ladusaw hypothesis, a semantic theory which states that NPIs are licensed only in downward entailing contexts. This refers to utterances which their direction of entailment goes from superset to subset, e.g:

- (5)
- a. John was not a man ->
  - b. John was not a father

(5a) is downward entailing because it entails (5b), and that *man* is the superset of *father*. John cannot be a father if he is not a man. This theory has been updated by Zwarts (1998) and Giannakidou (2001) who both look into the idea of nonveridicality, which concerns the assertion of truth in an utterance, so if an utterance discusses an action which has happened/is true it is veridical whereas if it is not true it is nonveridical. Zwarts (1998) suggests that there

is a hierarchy of negative contexts, with weak NPIs being licensed in all downward entailing contexts, strong NPIs licensed in anti-additive, and superstrong in antimorphic contexts.

This dissertation will be focused on Progovac's (1994) Binding Approach and how it attempts to explain the licensing conditions of NPIs. In this theory, she likens NPIs to anaphors, subject to Principle A of Binding Theory (Chomsky, 1981) and PPIs are subject to Principle B. This allows her to overcome some of the issues surrounding previous syntactic and semantic theories. However, Progovac focuses on sentential negation and other non-negative contexts and does not provide as much detail for licensers that are negative constituents, like negative adverbs and negative quantifiers. This dissertation aims to fill these two gaps in her theory, attempting to explain how these negative constituents license NPIs, using the framework of Progovac's Binding Approach. Within Progovac's theory, there are two ways in which NPIs are licensed, either through negation in IP or through a polarity operator (Op) in CP. This means that negative constituents, in order to fit into Progovac's theory, must license NPIs through one of these options. Progovac's suggestion would be that negative adverbs raise to CP in order for Op to be realised, however there is little reason for adverbs to raise like this except to simply justify this theory. Instead, I suggest that negative adverbs are part of NegP and that this is what licenses NPIs. For negative quantifiers, Progovac suggests that they are negated NPIs but does not fully explain how this helps them license other NPIs. I conclude that negative quantifiers are not negated NPIs and that they license NPIs through negation, due to negative quantifiers being formed by NegP and an existential indefinite.

In the next section, there will be a brief introduction to Binding Theory (Chomsky, 1981) and then Section 3 will follow up by explaining how Progovac uses Binding Theory as a way to describe NPI licensing. Then, in Section 4, I will discuss and explore options as to how negative adverbs can license NPIs under Progovac's framework, drawing from others work like Potsdam (1998) and Zanuttini (1997) and seeing how their analyses of adverbs may or may not fit into Progovac's theory. There will also be some focus on how negation works in English, using Holmberg's (2016) idea of middle and low negation as a base. Section 5 will be discussing negative quantifiers, firstly dismissing the idea that, at least in English, negative quantifiers are not negated NPIs and secondly, suggesting that negative quantifiers are the combination of middle negation and indefinites and so it is middle negation which licenses NPIs.

## 2. Binding Theory

Progovac's theory about the licensing of NPIs uses the framework of Binding Theory (Chomsky, 1981). Binding theory concerns itself with how different types of nouns are connected to other nouns. For example:

- (6)
- a. Mary looked at herself
  - b. Mary looked at her
  - c. Mary thinks that Jane looked at her

In (6a) *herself* can only refer to Mary, whereas in (6b) *her* has to refer to someone other than Mary. In (6c) *her* can only refer to Mary and not to Jane. Binding Theory is an approach to explain this pattern.

In (6), we can see three different types of DP – anaphors, pronouns, and R-expressions. The first, anaphors, include reflexive pronouns (*himself*, *themselves*) and reciprocals (*each other*). The second are pronouns such as *her* and *them*. Then R-expressions are DPs such as names or *the cat* etc... essentially what the anaphor or pronoun is referring to.

In Chomsky's Binding Theory (1981), he proposes three principles: A, B, and C.

### 2.1. Principle A

Principle A is as follows:

An anaphor must be bound in its governing category.

This means that an anaphor must have an antecedent (an expression which provides meaning for the anaphor, in this context antecedents will be the noun phrase that the anaphor refers to, such as *Mary* or *the cat*) somewhere in the sentence in order for that sentence to be grammatical.

- (7)
- a. Mary looked at herself
  - b. \*Herself likes dancing.
  - c. I saw Mary yesterday. \*Herself feels better now.

In (7a), there is no antecedent and thus the sentence is not grammatical. In (7b), there is. (7c) shows that discourse antecedents (an antecedent which is not in the same sentence but is within the same discourse) are not acceptable ways to license anaphors. (7) helps us to conclude that: 1. Anaphors must have an antecedent and 2. This antecedent must be within the sentence. Specifically, this antecedent must be within the anaphors governing category. A governing category is described as the minimal XP which contains the anaphor, the antecedent, and a subject.

(8) Mary thinks that [IP John likes himself]

The governing category for *himself* in (8) is the IP shown, as it contains *himself*, the anaphor, and *John*, the antecedent and the subject. IP is often the governing category as it is usually only IPs which have a subject, however in some sentences like (9) the minimal XP is not IP and so the clarification that the minimal XP must also have a subject is important.

(9)

- a. Mary [IP likes [DP John's picture of himself]]
- b. \*Mary [IP likes [DP John's picture of herself]]

The governing category of the reflexives in (9) is the DP shown. The governing category is not the higher IP as the DP is the first/smallest XP which contains all three items which make up a governing category.

In this governing category, the antecedent must bind the anaphor. Binding is where the antecedent both c-commands the anaphor and is coindexed with it. Coindexed refers to when two elements in a structure have the same referential index, meaning that they refer to the same thing. An anaphor refers to the same thing the antecedent refers to, and so they are coindexed. However, Chomsky (1981) says that if this coindexation violates a grammatical rule then it cannot be considered for the antecedent.

(10) Mary<sub>i</sub> thinks that [a picture of herself<sub>i</sub>]<sub>i</sub> is hanging on the wall

In (10) the reason why *a picture of herself* is not a suitable governing category is because of the idea that if *a picture of herself* also refers to *herself* then to know what *herself* is, you need to know what *a picture of herself* is and to know that you need to know what *herself* is and so on. Chomsky refers to this as the I-Within-I Filter.

## 2.2. Principle B

Principle B is:

A pronoun must be free in its governing category.

Here ‘free’ means not bound. In the same domain where an anaphor must have an antecedent, a pronoun cannot. This still means that an antecedent can be in the same sentence as a pronoun, as long as it is outside of its governing category.

These two principles also show the complementary distribution between pronouns and anaphors.

(11)

- a. Mary<sub>i</sub> looked at herself<sub>i</sub>
- b. \*Mary<sub>i</sub> looked at her<sub>i</sub>

As can be seen in (11) a lot of the time where an anaphor can be, a pronoun cannot and where a pronoun can be, an anaphor cannot. This is a fairly important point in Progovac’s theory as to why she believes a Binding Approach to NPI licensing is appropriate.

## 2.3. Principle C

Finally, Principle C:

An R-expression must be free.

Again, ‘free’ simply means not bound and so as long as an R-expression does not c-command or coindex itself then it will be grammatical.

## 3. Progovac 1994: Applying Binding Theory to NPI Licensing

Progovac uses the framework of Binding Theory as the basis of her theory for NPI licensing. Her approach suggests that polarity items follow the different principles of Binding Theory. Although, these principles do have to be modified slightly to fit with NPIs. This section focuses on her analysis of English NPIs, but she does look into Serbian/Croatian NPIs and discusses how some NPIs follow Principle A and some Principle B. With English as my focus, English NPIs only follow Principle A while English PPIs only follow Principle B.

### 3.1. Principle A

In Progovac's theory Principle A changes to:

NPIs must be bound to negation (or other truth-functional operator) in their governing category.

In this theory the governing category is the first maximal projection XP which contains the NPI and its first potential antecedent (which in the context of polarity items is its licenser, either negation or a truth-functional operator).

(12) I [IP didn't read *any* books]

In (12) the first potential antecedent for *any* is negation and so the first maximal projection is IP as it contains both *any* and negation. Progovac would then say that *any* is also bound to the negation – this essentially means that *any* falls within the scope of negation. This is a fairly big change to the definition of binding as a key part of Chomsky's Binding Theory was the idea of coindexation.

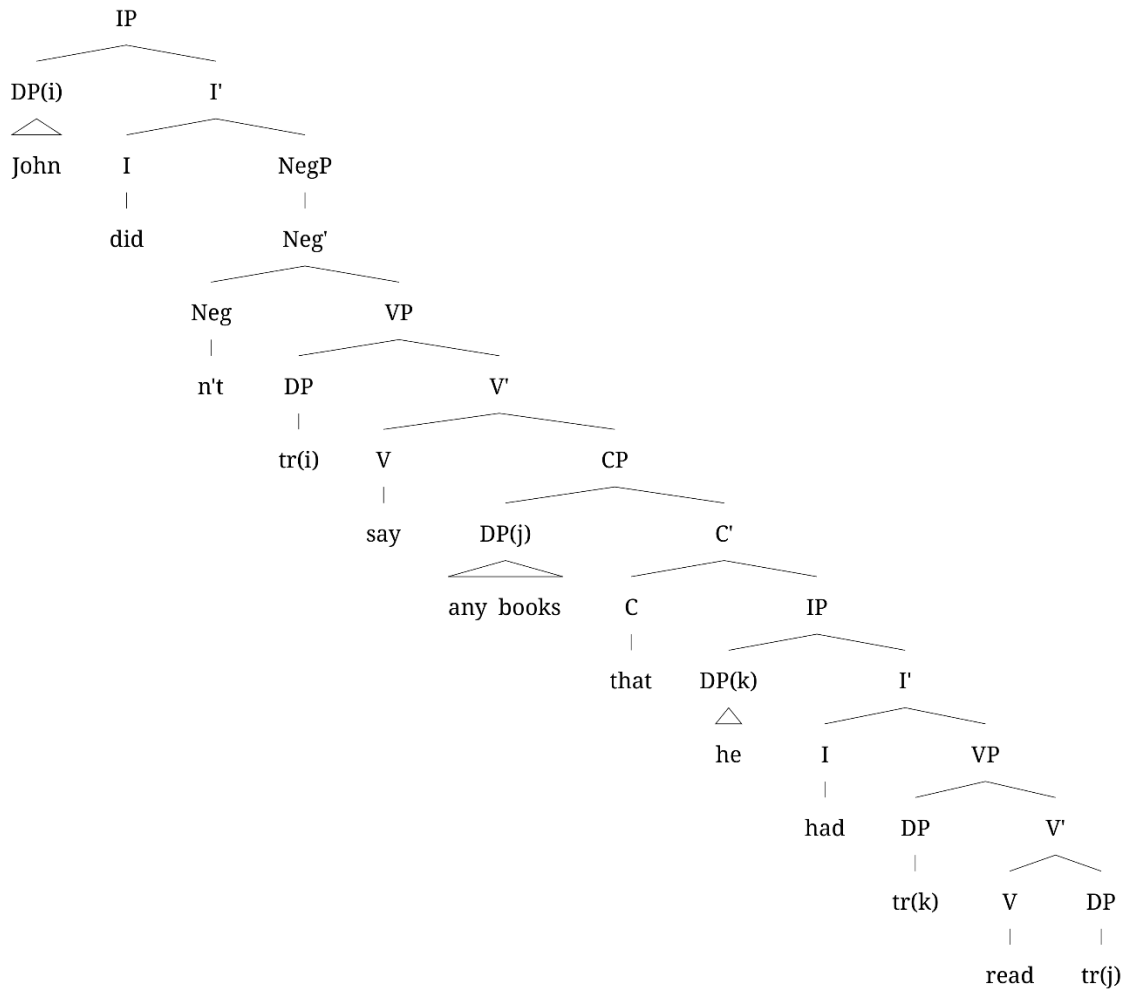
This explains simple clausemate negation fairly well. With superordinate negation, the negation is now no longer in the first IP, as can be seen in (13):

(13) John [IP didn't say that he [IP read *any* books]]

Principle A would suggest that this is not grammatical as the first potential antecedent (negation) is not present in the first IP (the embedded IP). To account for this, Progovac suggests that *any* raises in Logical Form (LF) to the specifier of CP and thus the syntactic structure of (13) at LF would look as (14):

(14)





This allows the NPI to change its governing category and be licensed by the superordinate negation.

As already noted, NPIs can appear in contexts that are not strictly negative. To explain the distribution of NPIs in non-negative contexts, Progovac suggests that there is a polarity operator (Op) in the head of CP which can also license NPIs. This Op only appears in sentences that are non-negative, or it is selected by a predicate or verb. Progovac also says that Op is a clitic, meaning it must be attached to a lexical word in the utterance, and so joins to anything else that resides in the head of CP. NPIs still raise but this time through IP adjunction and not to the specifier of CP. An example of Op being selected as a result of a non-negative sentence is with a Yes-NO questions (something which semantic analyses, like Ladusaw (1980), have difficulty explaining):

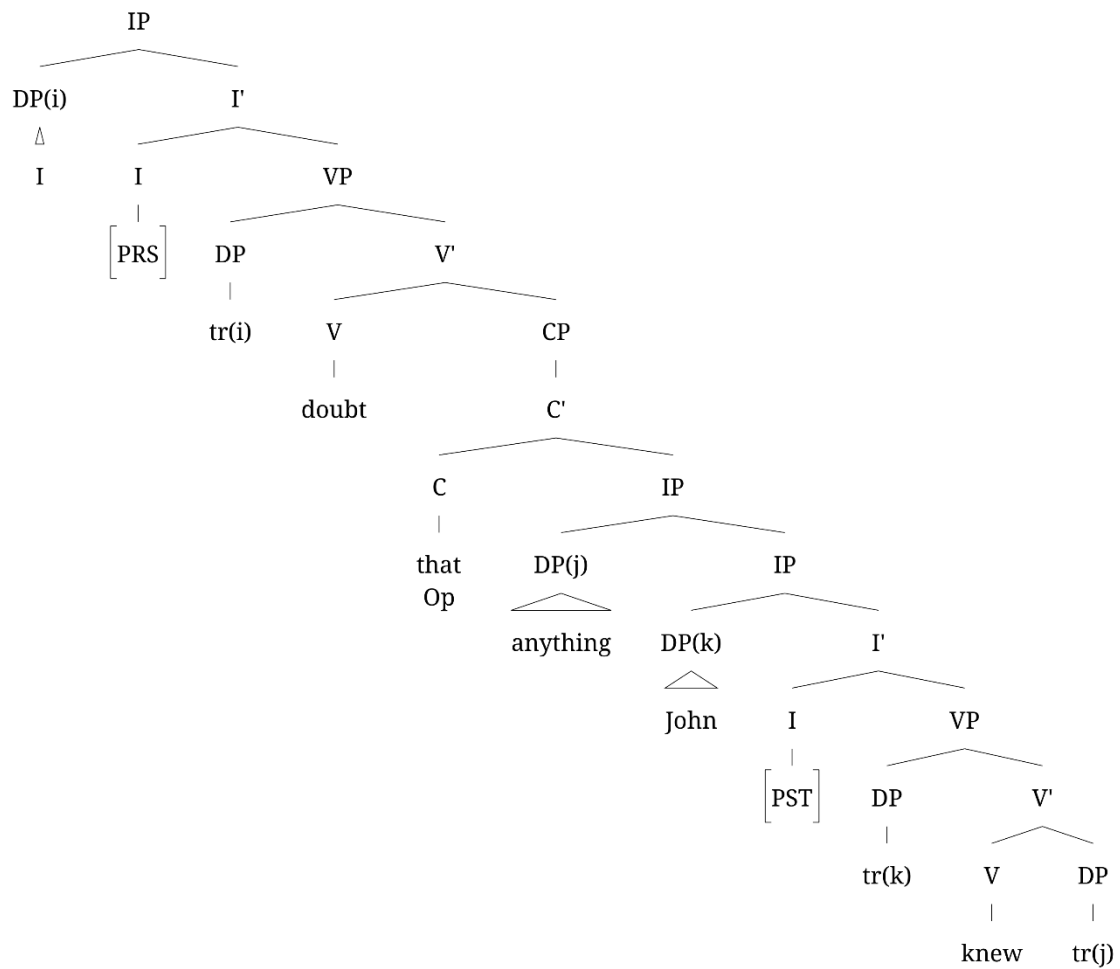
- (15)
- a. [CP Op Did you see *anyone* at the park]?

An example of NPIs raising through IP-adjunction is with adversative predicates. In fact, adversative predicates are part of Progovac's evidence for the involvement of CP in NPI licensing. Consider (16):

- (16)
- a. I doubt [CP Op that John knew *anything*]
  - b. \*I doubt *anything*

(16a) is grammatical because according to Progovac, *doubt* hosts a CP and selects an Op which licenses the NPI *anything*. Whereas, in (16b) *doubt* does not select an Op and thus there is no Op in the sentence to license *anything*. Then in LF, *anything* raises to become an adjunct to IP:

(17)



### 3.2. Principle B

Principle B changes to:

PPIs must not be bound to negation (or a truth-functional operator) in their governing category.

Governing categories and binding refer to the same thing they did in Principle A. As can be seen in (18), English PPIs will only be grammatical when they are not bound (c-commanded) by negation or Op.

(18)

- a. \*John [IP has not *already* arrived]
- b. Mary did not say that John [IP had *already* arrived]
- c. John [IP has *already* arrived]

This highlights the reason why it is important that Op is found within the head of CP. This allows it to be outside of the governing category for both NPIs and PPIs. This means that PPIs will still be licensed even in contexts with an Op.

### 3.3. Summary

This approach allows Progovac to capture the near-complementary distribution of polarity items. This is due to Op being outside of the governing category for polarity items and that some NPIs can raise at LF. This means that NPIs and PPIs can have complementary distribution within IP, as NPIs have to have negation and PPIs must not have negation, but both are allowed in non-negative contexts. Following on from that, the introduction of Op gives an explanation for non-negative contexts, specifically questions which theories like Ladusaw (1980) have had to leave unexplained. This theory also accounts for variation among NPIs and licensing of NPIs in other languages as some NPIs can raise through both the specifier of CP and as an adjunct to IP, some can only raise through one of those options, and some cannot raise at all.

## 4. Negative Adverbs

This section will be discussing the syntactic structure of negative adverbs and how, in the context of Progovac's Binding Approach, they license NPIs. In Progovac's work (1993, 1994) there is very little discussion on negative adverbs, with the focus being instead on how sentential negation (like *not* and *n't* as heads of NegP) and Op license NPIs. Negative adverbs are able to license NPIs and yet Progovac does not mention them in her work; this leaves a gap in Progovac's work. I want to know how negative adverbs fit into her theory and how they license NPIs. In Progovac's Binding Approach, there are two ways in which NPIs can be licensed, either through negation in IP or through Op in CP. This section attempts to answer which is the more plausible way that negative adverbs can license NPIs. Firstly, by looking at Progovac's suggestion, that they license NPIs by raising to CP and thus license Op which in turn licenses NPIs. Then, looking at the idea of negative adverbs being some type of negation, specifically following the idea of middle and low negation (Holmberg, 2016) and how they differ from negative adverbs. Dismissing both of these options, I turn to the ideas of Zanuttini (1997) and suggest that negative adverbs are positioned as the specifiers of NegP, allowing for the difference between negative adverbs and middle negation but also keeps NegP as part of the syntactic structure of sentences which is what licenses NPIs.

#### 4.1. The Issue of Negative Adverbs

Initially, I want to address what exactly I mean by negative adverbs. In this dissertation negative adverbs refer to adverbs such as *never*, *rarely*, *hardly* etc, essentially adverbs that are inherently negative and not adverbs that have a negative prefix like *unnaturally*, *uncertainly*, etc. As can be seen in (19), adverbs with a negative prefix do not seem to license NPIs. Perhaps this is to do with the fact that the negative meaning comes from the prefix rather than the root word and so the negation is only affecting the adverb.

(19)

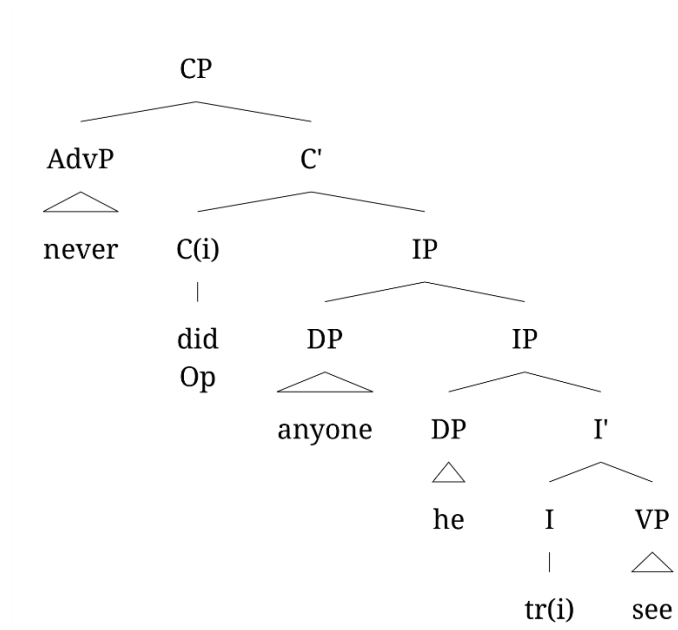
- a. John never/rarely sees anyone
- b. \*John uncertainly/unprofessionally sees anyone

Nonetheless, negative adverbs do license NPIs and so this is an attempt to explain why they do so.

The discussions that Progovac has on negative adverbs comes in three forms:

Firstly, in her book ‘Negative and Positive Polarity’ (1994: 75-77), she mentions negative adverbs in the context of Subject Auxiliary Inversion (SAI). Here she concludes that the CP of these types of sentences has an Op selected. As Op is a clitic, it must be attached to a word and in this way causes inversion as it needs the auxiliary to join it in CP. The negative adverb has moved to the specifier position of CP.

(20) Never did he see anyone



This can explain how negative adverbs license NPIs in SAI contexts but still does not explain negative adverbs in other contexts. Progovac explains that it is the semantics of the moved negative phrase that triggers the Op in the head of CP, which then triggers the inversion. This requires the movement of the negative phrase to the specifier position of CP, which it is not in, in sentences like (19), at least at S-structure.

Secondly, Progovac does talk about the determiner *only* (1993: 176-177, 1994: 73-74.). I bring this up as a point about negative adverbs as she groups these types of words together as covert negative expressions (although she does differentiate *never* as being overt, whereas I am grouping it with negative adverbs). With this grouping, and the fact that *only* can also be an adverb, looking at how she analyses *only* does give insight into how she would try to analyse negative adverbs. Progovac notes that *only* can only license NPIs from either subject or the CP position.

(21)

a. [IP Only Mary showed any respect for the visitors]

- b. [CP Only to his girlfriend [C' did [IP John give any flowers.]]]
- c. [CP Only last year [C' did [IP John get any grey hairs.]]]
- d. ?\*John gave only his girlfriend any flowers
- e. ?\*John told only Mary about any book

Taken from Progovac 1993: ch3(73-77)

Progovac concludes that *only* can only license NPIs from CP and raises to CP when it is a subject. Then she uses a similar explanation to SAI above, in that *only* raises to CP triggering Op and thus licensing NPIs. Progovac suggests that a similar explanation should be used to explain other covert negative expressions.

Thirdly, Progovac does admit to negative adverbs being a problem for her theory (1994: 177), saying that she leaves this problem open for future research.

Negative adverbs obviously involve negation somehow and as mentioned in Section 3, Progovac views overt negation as the maximal projection NegP. This is a crucial part of her theory as NegP is the first potential licenser for NPIs. She makes a distinction between negation as a functional head and negation as an adverb (1994: 55). If negation is just an adverb adjoined to a maximal projection, then it cannot license NPIs, however if it is the head of a functional category NegP then it can. This is a very similar idea, if not the same idea with different labels, to Holmberg (2016) and his idea of middle and low negation. Where middle negation is a head of NegP and has sentential scope over the sentence. This type of negation can be realised as either *not* or the clitic *n't*. Low negation is where negation is an adverb adjoined to VP and has scope over only the VP. Low negation can only be realised as *not*. Both of these types of negation block tense from IP from lowering to VP and thus need do-support. Progovac seems to follow this idea, as said above, and so it is middle negation she describes as being able to license NPIs, but low negation is not able to.

(22)

- a. John does *not* go to any parties
- b. John does *not* normally go to any parties
- c. ?John does normally *not* go to any parties

In (22a) it is not easy to tell which type of negation is being used, however if there is another adverb placed between the auxiliary *do* and *not*, then a low negation reading is forced (22c). This is due to the adverb *normally* adjoining to VP and so middle negation is not low enough

to appear to the right of the adverb but low negation, as another adverb that also adjoins to VP, can appear lower than *normally*.

This raises the question that if low negation does not license NPIs and if low negation is just an adverb, then negative adverbs should also not be able to license NPIs. However, as seen earlier in this section, this is not the case.

This leads to the issue of how to fit negative adverbs into Progovac's theory while making sure that there is a reason for the differences between low negation and negative adverbs. For Progovac's theory, there are two ways in which NPIs can be licensed: through NegP or Op. I will first consider negative adverbs licensing NPIs through a polarity operator and then through negation.

#### 4.2. A Polarity Operator within Negative Adverbs

One way for Progovac's approach to account for negative adverbs would be through the polarity operator that Progovac describes. Progovac (1993: 152) claims that covert negative expressions, which include negative adverbs (apart from *never*), license NPIs through Op rather than NegP. From her explanation of *only*, it seems that she would suggest that negative adverbs raise to the CP position in order to trigger Op and license NPIs, but she is not sure what would cause negative adverbs to raise.

One of the main reasons that this explanation does not seem probable is the grouping of negative adverbs into covert negative expression, especially as she does not group *never* into this category, instead grouping it with overt negative expressions like *not* and *n't*. If *never* is an overt negative expression and a negative adverb, then it would suggest that other negative adverbs are also overt negative expressions. Consider (23):

(23)

- a. He hardly eats bananas
- b. He always eats bananas
- c. He eats bananas

A major feature of adverbs is the fact that they can be removed from a sentence and that sentence will still be grammatical. This is true for both (23a) and (23b), however I argue that the sentence that results, (23c), does not mean the same thing as (23a) whereas it does for

(23b). The removal and insertion of *hardly* in (23a) changes whether the subject is doing the action or not. On the other hand, the removal and insertion of *always* in (23b) changes how the subject is doing the action, but the subject is still doing the action. I suggest that this shows that the negative adverb *hardly* is impacting the polarity of the sentence. The semantic strength of the adverb may not be as strong as *never*, but I would still want to group *never* and other negative adverbs together.

The other reason I think this is an inadequate explanation is the same one that Progovac mentions, in that there is no reason for negative adverbs to raise to CP, except for the fact that it will get the result that she wants. When Progovac discusses NPI-raising, she notes that it is only NPIs that can be considered quantifiers that will raise, matching with the idea of Quantifier Raising and thus have similar reasons for raising that are not simply because this approach requires it.

There is another possible way that negative adverbs could involve licensing NPIs through Op, where the negative adverb is able to select a CP complement which contains Op. This would be similar to Progovac's description of some adversative predicates (like *doubt* or *forget*) and negative propositions (like *without*) selecting a CP complement which contains the Op that licenses NPIs. This, again, does not seem very likely as NPI licensing is clause based and so this explanation would be suggesting a sentence like (23a) had an invisible or unpronounced clause in the middle of it.

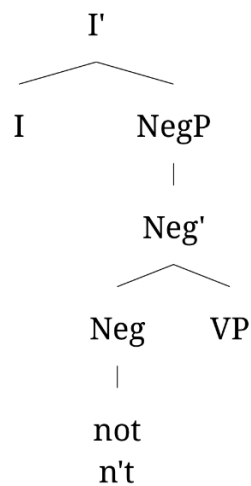
### **4.3. Negative Adverbs as part of NegP**

#### **4.3.1. Middle Negation**

The other option is for negative adverbs to be a part of NegP. I will assume the structure of NegP following Holmberg (2016), where he has both middle negation and low negation. The basic structure of middle negation looks like this:

(24)





One way in which negative adverbs could be part of NegP is if they can be the head of NegP and essentially be the same as middle negation. This would then be very easy to add into Progovac's theory as negative adverbs would simply have the same explanation as middle negation.

However, there are many differences between negative adverbs and middle negation that would not exist if they had the same syntactic structure. One difference is that negative adverbs are able to appear in different positions in a sentence, unlike middle negation.

(25)

- a. She (*hardly*) should (*hardly*) have (*hardly*) seen that
- b. She (\*n't/\*not) should (n't/not) have (\*n't/not) seen that

In (25) we can see that *hardly* has more freedom within a sentence and is able to move between the auxiliary verb, lexical verb, and object, but middle negation is stuck between the auxiliary verb and the lexical verb. Low negation, which is seen between the auxiliary *have* and lexical verb *seen* and is low negation due to the fact that *n't* is not allowed, has a bit more freedom, being able to go slightly lower in the sentence than middle negation. Although, this is not a surprise as Holmberg (2016) already analyses low negation as an adverb.

Santorini and Kroch (2007) also point out a couple of differences between negative adverbs and negation. One being that negative adverbs can undergo negative inversion, but negation cannot. They describe this as being because inversion cannot happen if the element preceding

the auxiliary is not a maximal projection. Negative adverbs are maximal projections, they do not have specifiers or complements but NegP does, it has a VP complement.

(26)

- a. Never did she realise that
- b. \*Not did she realise that

This is the same reasoning as why *no* as a determiner cannot undergo inversion either, unless it had the rest of the DP it is attached to.

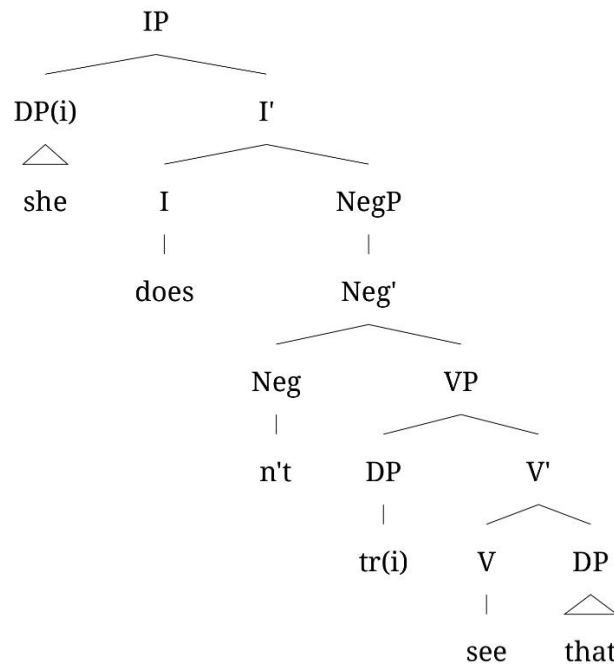
The other difference Santorini and Kroch (2007) point out is that negation requires do-support, but negative adverbs do not.

(27)

- a. She does(n't/ not) see that
- b. She hardly sees that

This is more evidence that negative adverbs and negation have different syntactic structures. Santorini and Kroch (2007) explain that the reason negation causes do-support is because the features of I are being blocked by negation from lowering to V. This happens because lowering is subject to a locality condition, so the features of I must lower to a head which is local. This means there cannot be a projection of a head in between where the features of I want to go.

(28) She doesn't see that



As can be seen from (28), the NegP comes in between and blocks I from lowering to VP. This is not an issue with *hardly* as in Santorini and Kroch’s analysis, the AdvP is below VP and so does not interfere with the lowering. This explanation, however, does create a problem when considering low negation. As mentioned before, low negation requires do-support and does not accept inversion. In Santorini and Kroch’s (2007) analysis, they consider low negation a feature of Old and Middle English that was lost during the course of Middle English. This contrasts Holmberg (2016), whose analysis of middle and low negation I have used.

Whether or not low negation is a current type of negation in Present Day English, the rest of Santorini and Kroch’s (2007) argument shows that negative adverbs and negation are two separate things, and that negative adverbs cannot simply be inserted as the head of NegP.

#### 4.3.2. Zanuttini 1997 on Negative Adverbs

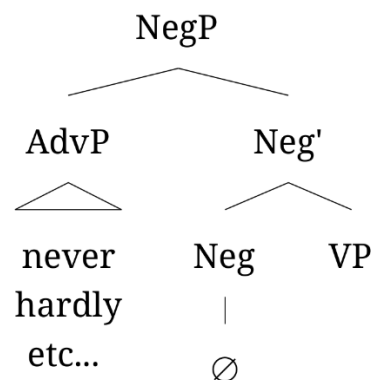
So far, I have dismissed the idea that negative adverbs indirectly license NPIs through a polarity operator and the idea that negative adverbs have the same structure as middle negation. Another way to analyse negative adverbs as part of NegP is instead of placing them as the head of NegP, place them as the specifier of NegP. This idea comes from the work of Zanuttini (1997), who presents the idea that NegP can occur in multiple places in a sentence

and takes the stance of adverbs being adjuncts that occur as part of the specifier of the maximal projection that they modify. This idea allows for the differences between middle negation and negative adverbs whilst allowing for NegP to still be part of the sentence and license NPIs.

There are multiple ways to analyse the structure of adverbs; one is to analyse adverbs as adjuncts that adjoin to various parts of a sentence. Potsdam (1999) analyses adverbs in this way and splits them into three groups, following from Jackendoff's (1972) two groups: S-adverbs, VP-adverbs, then Potsdam adds E-adverbs. These adverbs are distinguished from each other by where they can be adjoined. S-adverbs can adjoin around CP, VP-adverbs around VP, and E-adverbs around IP. On the other hand, Zanuttini (1997) analyses adverbs as occurring in the specifier position of an XP, and this is the approach I will take on for the discussion of negative adverbs as specifiers of NegP.

Zanuttini (1997) presents the idea that NegP has several positions in the sentence, not just the one that Holmberg suggests for middle negation. Zanuttini has four NegP positions, one above IP and the others below. Different kinds of negation reside in each of these NegP positions, but this dissertation will only focus on adverbs within NegP. Zanuttini goes with the analysis that adverbs are part of the specifier of functional projections, going off of the analysis of Cinque (1995). This means that for a negative adverb it is in the specifier position of NegP and that the head of NegP is null. This would result in the analysis of NegP like (29):

(29)



Then, Zanuttini suggests there are four places that NegP occurs. One above IP and the others in between IP and VP, these are scattered between MoodP and AspP and others.

Interestingly, these positions line up fairly well with Potsdam's (1999) observation of E-adverbs.

For the most part this analysis seems to work well with Progovac's theory. As negative adverbs are part of NegP, there is still a NegP within the sentence to license NPIs how Progovac suggests. Zanuttini does discuss the NegP that occurs above IP, which she calls NegP-1, however, Zanuttini is concerned with the Romance languages rather than English and she is also concerned with multiple types of negation not just negative adverbs and so for NegP-1 it could be that it simply does not apply to English or that it does not apply to negative adverbs. Zanuttini (1997) discusses NegP-1 in the first sections of her books about pre-verbal negation and does not discuss adverbs until her second section about post-verbal negation where she introduces the idea of NegP-2, 3, and 4. This, and Potsdam's analysis, show that negative adverbs, perhaps only in English, only occur below IP. If this is the case, then there is no need to change Progovac's original theory. Negative adverbs are the specifier to NegP and as there is a NegP in the sentence below IP, and as negative adverbs never appear anywhere else, this allows NPIs to be licensed.

There is one main issue with this suggestion. As mentioned in section 4.2.1, Santorini and Kroch (2007) analyse do-support as needed when NegP blocks features of I from lowering to V. With this analysis of negative adverbs as being part of the specifier of NegP, this locality condition should apply, and thus negative adverbs should require do-support. However, this is not seen.

Laka (1990) provides a slightly different analysis of do-support. She argues that tense must c-command negation at S-structure and so cannot lower to V when there is negation.

Unfortunately, this analysis does not resolve the issue of how I then lowers to V when there are negative adverbs if negative adverbs are specifiers to NegP. I am unsure how to settle this issue. It would require an analysis of do-support where I lowering to V is not blocked by NegP, rather something else blocks it that both middle and low negation have but negative adverbs do not.

There is a possibility that because the head of NegP, in this analysis, is null, this allows the lowering of tense from I to pass the null head to V. This would have to be under the assumption that for tense lowering, the tense is wanting to move to the closest head to it. When there is nothing between I and V, tense can lower normally. When there is middle negation, I cannot be realised but can also not pass by the negation as it is the closest head.

Perhaps, due to the fact that the head of NegP is null the features of I are able to pass it and go onto V. This still does not solve the issue of how low negation still requires do-support, if using Holmberg's (2016) analysis, but as this dissertation is on negative adverbs and not low negation, I leave this for future research.

#### **4.4. Summary**

This section has been discussing the structure that negative adverbs have and how this structure fits into Progovac's Binding Approach and how they license NPIs. I have taken the analysis of Potsdam (1998) where he describes three types of adverbs, basing his analysis off of Jackendoff (1972), S-adverbs, E-adverbs, and VP-adverbs. Where the letter before points to where they can be adjoined within a sentence. Notably, the only negative adverbs that Potsdam uses are for the examples of E-adverbs (although, he does use a non-negative adverb as an example of an E-adverbs as well), perhaps showing that negative adverbs are a separate class to non-negative adverbs and thus this may suggest that they have a different structure. From Potsdam analysis, it was concluded that having a polarity operator within the underlying structure of negative adverbs was not possible as this would require an entire unpronounced clause. It was also concluded that negative adverbs could not simply be another realisation of middle negation. This is due to the many positions that negative adverbs can occupy within a sentence compared to middle negation. However, negative adverbs must also have a different structure from low negation as low negation does not license NPIs, but negative adverbs do. Using the analysis of Zanuttini (1997), the idea of negative adverbs as part of NegP becomes more probable, where they are positioned as part of the specifier of NegP. Yet, this poses a problem for do-support, as many analyses of do-support suggest it is caused by NegP. Analysing negative adverbs as part of NegP would suggest that do-support is also needed with negative adverbs, but this is not seen in English. This section ends with suggesting that perhaps do-support is not required with negative adverbs somehow because of the null head in NegP. This approach still does not provide an explanation for low negation and why that needs do-support either. Overall, more research needs to be done in order to resolve this issue.

### **5. Negative Quantifiers**

In this section I will be discussing negative quantifiers, often called n-words, such as *no-one*, *nothing*, and *nowhere* and how they fit into Progovac's Binding Approach. Progovac does discuss these types of words in her theory, however, she considers them negated NPIs. These negated NPIs are formed from the combination of Neg and an NPI, for example:

(30) Neg + anyone = no one

This view that negative quantifiers are negated NPIs is fairly common as in some languages they have the same lexical form. For example Zanuttini (1997) uses the example of *nessuno* which can be translated into English from Italian to be either *nothing* or *anything* depending on the context. Zanuttini (1991) concludes that negated NPIs are not NPIs, however Progovac disagrees, saying that negated NPIs are indeed different from non-negated NPIs but should still be counted as NPIs.

This idea of negative quantifiers as negated NPIs is presented also in Laka (1990) and can be seen a lot in Romance languages where there is no lexical difference between the NPI *anyone* and the negative quantifier *no-one*. Klima (1964) also presents the idea that negative quantifiers are the combination of NPIs and negation, and he describes different rules to explain the distribution and creation of negative quantifiers. In this section, I will explore Progovac's explanation of negative quantifiers as negated NPIs and then discuss Zanuttini's opposing analysis. Both of these analyses focus on Romance languages, and I will conclude that negative quantifiers and NPIs are one and the same in these languages but disagree that this explanation can also be applied to English. This section will end by determining that negative quantifiers are not negated NPIs and will suggest a way in which they could license NPIs.

## 5.1. Negative Quantifiers as NPIs

### 5.1.1. Rhetorical Questions

When discussing negative quantifiers, Progovac describes these as negated NPIs formed from Neg and an NPI, as in (30). From Progovac's explanation, these negated NPIs seem to be able to essentially license themselves. They host a negative morpheme which, when they are situated in the specifier position of CP, triggers spec-head AGR (Chomsky, 1986) and so the polarity operator in the head of CP sets its value to negative. This then triggers negation and licenses an NPI elsewhere in the sentence. Although, this discussion is not on its own but in

the context of rhetorical and wh-questions and so other contexts of negated NPIs licensing other NPIs are not explored.

Her explanation of rhetorical wh-questions involves negated NPIs and how questions like (31a) can be paraphrased as (31b).

- (31)
- a. When did Mary insult anyone?
  - b. Never did Mary insult anyone

Progovac says that due to the NPI in (31a), the wh-phrases loses its wh-force and is interpreted as the negative expression *never*. This is due to the fact that the wh-phrase triggers wh-AGR in the head of CP, however the polarity operator is also in the head of CP. This can be seen from the fact that the NPI is licensed and that there is inversion. Progovac says that wh-AGR and Op are incompatible and so the wh-AGR is suppressed (it cannot be that Op is suppressed as it is needed to license the NPI) and the sentence loses its wh-force. This means that the wh-phrase is no longer a wh-phrase, even if it still looks like one, and so Progovac concludes that the only way for wh-phrase to now be interpreted, is as a negated NPI.

### 5.1.2. Italian *Nessuno*

Progovac (1994) also discusses negated NPIs such as *nessuno* which shows subject-object asymmetry as when it is in subject position it must not have local negation in the sentence. However, when it is in object position it must have local negation in the sentence.

- (32) Mario \*(non) ha visto nessuno  
Mario neg has seen no-one  
'Mario has not seen anyone'
- (33) Nessuno (\*non) ha visto Mario  
No-one neg has seen Mario  
'No-one has seen Mario'

Taken from Progovac 1994: ch1(96-97)

Here she suggests that when a negated NPI is in the specifier position of either IP or CP then it can trigger spec-head AGR and then the now negative AGR in IP is able to then license the

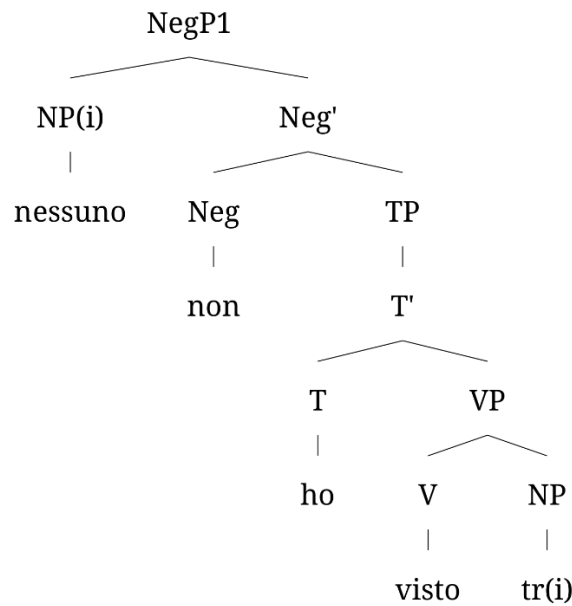


NPI. When the negated NPI is in object position it is thus not able to trigger AGR and must be licensed by some other negation.

A different approach to analysing *nessuno* comes from Zanuttini (1991), who suggests that *nessuno* is not a negated NPI. She argues that negative quantifiers cannot be considered NPIs due to the fact that they remain unlicensed in the preverbal position. See (33). Instead, negative quantifiers must be interpreted in the NegP projection and so raise to the specifier position of NegP at LF. Then, due to spec-head AGR, there would be only one instance of negation in the sentence. This shows an analysis of negative concord in Romance languages. Although, this is only when the negative quantifier is in object position.

Zanuttini (1991) presents the idea that there are two NegP projections, NegP-1, and NegP-2. NegP-1 is situated above TP (which is essentially IP, but the name is changed to emphasise the role of Tense) and takes TP as a complement whereas NegP-2 is positioned lower. The negative quantifier must raise to the specifier position of NegP-1, but Zanuttini (1991) points out that TP is a barrier to this movement. The way to overcome this barrier is if TP is voided through L-marking (Chomsky, 1986), where L-marking is defined as when A is a lexical category which theta-governs B (assigns a theta role to). NegP-1 is a lexical category, compared to functional categories like CP and IP/TP, and theta governs TP. This makes it possible for the negative quantifier to raise to the specifier position of NegP-1 as NegP-1 L-marks TP.

- (34)        Non ho visto nessuno  
              Neg have seen no-one  
              ‘I haven’t seen anybody’



Taken from Zanuttini (1991: pg162)

For negative markers that are part of NegP-2 this is not needed, as NegP-2 is lower than TP, negative quantifiers can raise as there is no barrier and thus the negative marker does not need to be realised.

This shows that there is a debate and multiple ways to analyse negative quantifiers which have the same lexical form as NPIs. However, both Zanuttini (1991) and Progovac (1994) are discussing Italian and not English. In English negative quantifiers do not have the same lexical form and so either of these analyses may not apply exactly. When comparing the distribution of *nessuno* to the distribution of English quantifiers like *no-one* and *nothing* it is clear that there are differences between them.

## 5.2. English Negative Quantifiers

### 5.2.1. Applying Progovac to English

Although Progovac's approach does seem to explain the distribution of *nessuno* and other negative quantifiers/NPIs in other languages, it does not seem to work when applied to English. There are multiple reasons for this, the main one being that in English, negative quantifiers do not overlap in distribution with NPIs. In the introduction, this dissertation characterised NPIs as items which are grammatical in simple declarative sentences and

ungrammatical in equivalent affirmative sentences. Taking into account this definition of NPIs, it is clear that negative quantifiers do not fit and that they are almost the opposite.

(35)

- a. \*I didn't see no-one (acceptable in some dialects of English)
- b. I saw no-one

Also, if negative quantifiers are negated NPIs, this means that they need to be licensed just as non-negated NPIs need to be licensed. However, as seen in (35), it does not seem that sentential negation nor a polarity operator are needed for negative quantifiers to be grammatical in a sentence. Progovac seems to suggest that due to the fact that these negated NPIs host a negative morpheme. It is the negation in this morpheme that somehow influences Op to be negative and thus license NPIs or it is enough on its own to license NPIs. Nonetheless, she does not go into detail with this explanation.

Another issue is with her grouping of certain items, specifically with her counting *never* as a negated NPI and using this grouping to explain negative inversion. This separates *never* from other negative adverbs, as she discusses *never* as overt negation and negative adverbs as covert negation, see section 4.2. for the issues with this. I would argue that the feature of negative inversion that Progovac uses *never* as a negated NPI to explain, is more an attribute of negation than of specifically negated NPIs. Negative adverbs are able to cause this same type of inversion, as do other negative constituents (see Martín 2020 for examples and analysis of negative inversion). It does not seem to be due to *never* being a negated NPI that it causes inversion, but rather that it is a property of some types of negation to cause inversion. This issue also feeds into the next issue. She seems to take random negative expressions and says that they are negated NPIs. For example, the apparently negated NPI *for no reason*, which is fine in most contexts and does not seem to be affected by polarity, compared to non-negated NPIs like *at all*.

(36)

- a. For no reason, she took the book home
- b. She took the book home for no reason
- c. She didn't take the book home for no reason

(37)

- a. \*At all, she didn't like him
- b. \*She liked him at all

- c. She didn't like him at all

It seems that when Progovac says 'negated NPI' she simply means a negative expression and so describing them as negated NPIs does not appear to accomplish anything within her theory. If 'negated NPI' is referring to the same types of items as 'negative expression', then there does not need to be two labels for the same thing. Describing negative quantifiers as negated NPIs may help to explain these elements in languages like Italian where negative quantifiers overlap with NPIs and so there are examples where negative quantifiers act like NPIs. However, this distinction is not needed in English, where there is a clear separation between negative quantifiers and NPIs and thus these 'negated NPIs' do not act like NPIs.

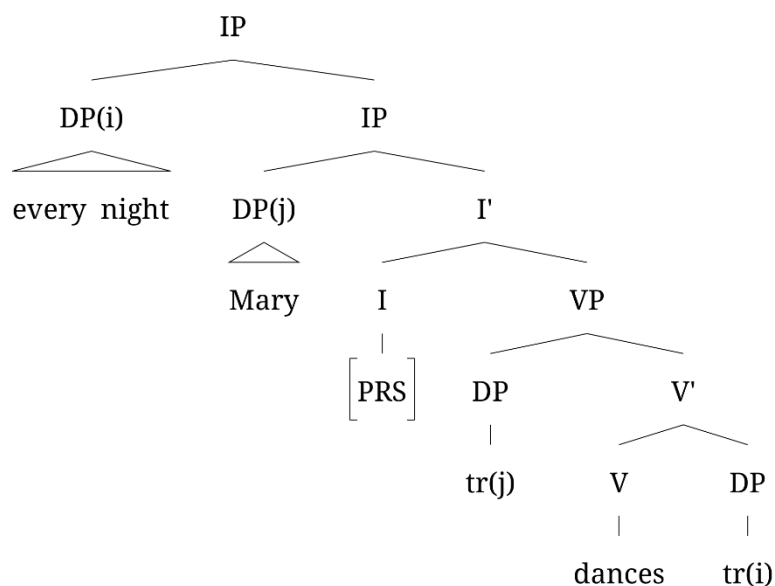
### 5.2.2. Licensing through CP

Now that it has been decided that negative quantifiers are not negated NPIs, they need some sort of explanation as to how they license NPIs. Similarly to section 4, there are two ways in Progovac's theory that NPIs can be licensed, either through Op in CP or negation in IP. This section, considering what has been discussed in previous sections, will present how negative quantifiers may license NPIs through the polarity operator in CP.

In order for negative quantifiers to license NPIs through Op, they would need to raise to the specifier position of CP and thusly license Op. Quantifier Raising (QR), presented first by May in 1977, is a known phenomenon where quantifiers raise in LF to adjoin to IP. To follow this idea, I suggest that negative quantifiers are able to raise and adjoin to CP instead, where they can license Op in the head of CP which in turn can license NPIs.

Quantifier Raising comes from the idea of wh-movement, where wh-phrases like *what* and *where* raise to the specifier position of CP. This is seen most of the time at S-structure in English but in other language, like Japanese, this movement happens at LF. This concept of wh-movement then inspired the idea that if wh-phrases can raise, then perhaps so can quantifiers. This comes from the similarities of wh-phrases and quantifiers. The basics of QR is that quantifiers raise and adjoin to the closest IP. Regular QR looks like this at LF:

- (38) Mary dances every night



Due to the negative quality of quantifiers like *no-one* and *nothing*, it could be that they act differently compared to other quantifiers in how they move at LF. One way to check the possible places where a quantifier can raise to, is to consider a clause which does not contain CP but only IP. Depending on which quantifier takes a wide scope reading, will show which one c-commands the other.

(39) Mary seems to *some person* to have watched *every film*

This only has the reading that there is a particular person who thinks that Mary has watched every film instead of there being for every film some person who thinks that Mary has watched it. So it seems that *some person* asymmetrically c-commands *every film* at LF. Now, the question is what happens if we replace *every film* with *nothing*.

(40) Mary seems to *some person* to have watched *nothing*.

This sentence seems to only suggest the same type of reading as (39), in that there is a particular person who thinks that Mary has watched nothing, rather than for no films there is a person who thinks Mary has watched it. Although, there is possibly an issue with semantics in that the latter interpretation does not make much sense. Nonetheless, going off of this example, it seems as though negative quantifiers cannot raise to CP and do follow the same LF movement as non-negative quantifiers.

### 5.2.3. Licensing through NegP

One issue with negative quantifiers which has not yet been mentioned, is the fact that in some contexts negative quantifiers can be interpreted in different ways. This can be seen in both split-scope readings (Penka, 2012), where the negative meaning and the existential meaning are applied to separate parts of the sentence, and a similar phenomenon of Neg-Raising (Horn 1978, 1989), where negation can be applied over the whole sentence or over just a part of the sentence. An example from Potts (2000 (9)) shows a sentence that is able to have a split-scope reading.

(41) The company need fire *no employees*

(42) It is *not* the case that the company is obligated to fire *employees*

The sentence (41) can be interpreted as (42), where the negation and the existential meaning that was originally captured by the DP *no employees* are now separated into *not* and *employees*.

Neg-Raising is similar in the sense that the scope of negation can be interpreted in different places. Neg-raising suggests that NegP starts in the lower clause and moves up to the matrix clause, this results in both sentences conveying the same meaning. Jespersen (1917: 53) uses the example of (43), stating it is often interpreted as (44).

(43) I *don't* think he has come

(44) I think he has *not* come

This shows *not* raising out of the subordinate clause and into the matrix clause. This can also be seen amongst negative quantifiers in sentences like (45), which can be interpreted as (46), suggesting that *nothing* contains a NegP, which raises to the matrix clause, leaving behind the indefinite *anything*.

(45) Mary *doesn't* think she picked up anything

(46) Mary thinks she picked up *nothing*

A similar analysis could be extended to split scope readings, where the negative meaning and existential meaning have split – so *nothing* has split into NegP and *anything*. If negative quantifiers are made from NegP, this would then mean that in all sentences with a negative quantifier, there is also a NegP. This NegP would be able to license other NPIs in the sentence, following Progovac's approach, as due to QR this NegP would eventually be under IP and thus license NPIs.

### 5.3. Summary

In summary, unlike Progovac's conclusion, negative quantifiers should not be analysed as negated NPIs in English. This is because negative quantifiers do not fit with the distribution of NPIs and are not dependent on negation licensing them in simple declarative sentences. Following Progovac's approach, there are two ways in which NPIs can be licensed by negative quantifiers: either through a polarity operator in CP or through negation in IP. When considering the former, it is understood that through QR quantifiers raise to specifier position of IP and that negative quantifiers also seem to follow this distribution. This means that they cannot raise to CP in order to license the polarity operator, and thus license NPIs. Licensing through NegP, then seems more likely. Through phenomena like split-scope readings and neg-raising, it appears that negative quantifiers can be analysed as a combination of negation, NegP, and an indefinite. It is the negation from NegP that can license NPIs and due to the head of NegP combining with the indefinite this means that the negation is realised with the indefinite and not as *not* or *n't*. This analysis still requires further research exploring exactly how negation and indefinites combine.

## 6. Conclusion

Progovac's (1994) Binding Approach uses the work of Chomsky's (1981) Binding Theory, which gives an analysis of the relationship between anaphors, pro-nouns, and R-expressions via three principles. Progovac uses this theory to suggest that NPI licensing follows similar principles, where NPIs follow Principle A and are bound by negation or Op and PPIs follow Principle B and must be free of negation and Op. Progovac's theory focuses on sentential negation and other non-negative contexts where NPIs are licensed. However, there was not much detail on how some negative constituents are able to license NPIs. The aims of this dissertation were to attempt to discern how negative constituents are able to license negative polarity items, within the framework of her theory. More specifically, do these negative constituents license NPIs through negation in IP or through Op in the head of CP.

The types of negative constituents which were looked at were negative adverbs and negative quantifiers. With negative adverbs, Progovac suggests that they raise at LF to the specifier position of CP and thus license Op in the head of CP which then licenses NPIs. However,

there is no reason to assume that negative adverbs would raise in LF, both due to the fact that other non-negative adverbs have not been theorised to and that there is no purpose for this raising except to accommodate this theory. This prompts the conclusion that negative adverbs do not raise at LF. I also dismiss the idea that negative adverbs select a CP complement that hosts an Op as this would suggest that there is an unvoiced clause in the middle of a seemingly one clause sentence.

The other option is that negative adverbs are part of NegP. I suggest that perhaps negative adverbs have the same structure as middle negation (that is presented by Holmberg, 2016). This is also dismissed due to the fact that middle negation and negative adverbs have different distributions, with negative adverbs being able to be placed in different positions in the sentence and middle negation is unable to. Also, middle negation requires do-support, whereas negative adverbs do not. Instead of having the same syntactic structure as middle negation, I suggest that negative adverbs could be located in the specifier position of NegP where the head of NegP is null. This would allow a NegP in the sentence which would license an NPI and gives reason as to the differences between negative adverbs and middle negation. However, there is still the issue of do-support, which under this analysis should be required in sentences with negative adverbs. Perhaps with more research, and a different analysis of either do-support or negative adverbs, a solution that explained how negative adverbs license NPIs while not requiring do-support could be found.

The other type of negative constituent was negative quantifiers. These are considered by Progovac to be negated NPIs themselves, which is a common conclusion for languages where NPIs and negative quantifiers share the same lexical item. With this idea, these negated NPIs essentially license themselves when they are in specifier position of CP. In this position they trigger AGR in the head of CP and cause the sentence to be negative, thus licensing an NPI further down the sentence. The issue that arises from this is that in English the distribution of negative adverbs does not pattern with the distribution of NPIs. This differs in languages where the two are one in the same, so perhaps Progovac's analysis works in these languages, but with English as the focus, this analysis does not work. The definition of NPIs that is being used in this dissertation is that an NPI is an item which is grammatical in a simple negative declarative sentence but ungrammatical in the equivalent affirmative sentence. Negative quantifiers simply do not fit this definition.



Quantifier Raising is the movement where quantifiers raise to adjoin to IP in LF, following this I suggest that perhaps negative quantifiers raise to CP instead, in order to indirectly license NPIs through Op. This idea was also dismissed as when considering sentences that involve two quantifiers and only one CP, the result suggests that the negative quantifier only interacted with the sentence below the second IP and not above, which would have suggested that it had moved to the matrix CP.

Klima (1964) presents the idea that negative quantifiers are made from the combination of negation and an existential indefinite. I follow through with this idea in that negative quantifiers start out as NPIs and then interact with the NegP in a sentence to form a negative quantifier. This explanation is supported by phenomena such as split-scope readings and neg-raising, in that there are multiple ways for negation in these sentences to be interpreted. They suggest that negative quantifiers can be split into negation and an indefinite, showing that if there is NegP within negative quantifiers then this could be what licenses NPIs. Especially as negative quantifiers, like all quantifiers, raise to IP at LF, which fits with Progovac's theory.

In conclusion, Progovac presents a thorough analysis of NPI licensing through the framework of Binding Theory, which accounts for many contexts where NPIs are licensed. This dissertation was to fill in the gaps of Progovac's theory, namely how the negative constituents, negative adverbs and negative quantifiers, license NPIs. I conclude that both of these types of negative constituents license NPIs through negation in IP and not through the polarity operator in the head of CP. There is still a lot of research to be done to refine and delve deeper into this issue. Namely, how these ideas interact with other ideas about negation and how polarity is affected by them.

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