

A Typology of Negative Polarity Items

Chris Collins and Paul M. Postal

New York University

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Abstract: Collins and Postal (2014) postulate that English NPIs represent two distinct structures: a unary NEG structure and a binary NEG structure. Some NPIs, such as *any* and *ever* expressions, can instantiate either of these two structures in different contexts. Others (such as one use of *jackshit*) only have unary NEG structures. The present paper seeks to provide cross-linguistic support for this conception by showing that the two series of NPIs in Serbian/Croatian (Progovac 1994) should be analyzed in terms of the two structure types postulated for English NPIs. Based on the comparison of English, Ewe and Serbian/Croatian, a preliminary typology based on three parameters is presented.

Key Words: Negative Polarity Items, strict, non-strict, NEG deletion, NEG raising, non-standard English, resumptive negation, *jackshit*, Horn clauses, Serbian/Croatian, the Bagel Problem, *doubt*.

1. Introduction

Collins and Postal (2014) (henceforth CP2014) postulate that English NPIs represent two distinct structures: a unary NEG structure and a binary NEG structure. Some NPIs, such as *any* and *ever* expressions, can instantiate either of these structures depending on the context. Others (such as one use of *jackshit*) can only represent unary NEG structures. The present paper seeks to provide

cross-linguistic support for this conception by showing that the two series of Serbian/Croatian (henceforth SC) NPIs should be analyzed in terms of the two structure types postulated for English NPIs.

The two series of NPIs in SC are the ni-series, illustrated in (1) and the i-series, illustrated in (2). We analyze the ni-series as examples of unary NEG NPIs and the i-series as examples of binary NEG NPIs:

(1) Progovac (1994: 40)

Milan *(ne) vidi ništa

Milan not see nothing

“Milan cannot see anything.”

(2) Progovac (1994: 64)

Ako Milan povred i(t)ko-ga/ *ni(t)ko-ga, bi ce kažnjen

if Milan hurts anyone-ACC/ no-one-ACC be-FUT punished

“If Milan hurts anyone, he will be punished.”

In section 2, we outline the basic assumptions of CP2014. In section 3, we summarize the consensus view of NPIs in the literature. In section 4, we discuss resumptive NEG. In section 5, we discuss the NPI *jackshit_A* and show it is uniquely a unary NEG NPI. In section 6, we discuss Horn clauses. In section 7, we present an overview of the two classes of SC NPIs. In section 8, we present an analysis of SC unary NEG NPIs. In section 9, we present an analysis of SC binary NEG NPIs. In section 10, we discuss so-called sentential negation, and show how it fits into our framework. In section 11, we discuss the Bagel Problem. In section 12, we discuss NPIs in the clausal complement of *doubt*. In section 13, we present a typology of NPIs based on a comparison of English, Ewe and SC. Section 14 is the conclusion.

2. Collins and Postal (2014)

We assume there is a notion of syntactic negation, whose representative is NEG. Unlike most linguistic studies of negation, with their common appeal to ‘sentential negation’ (and now frequently a clausal NEGP), we assume that NEG can syntactically modify a large range of categories including AdjPs, NPs, Ds, and in general any category with predication semantics (see Collins 2015). A fundamental assumption of the present framework is that while a NEG may raise from its position of origin, it is always and only interpreted as modifying its sister constituent in the original locus. The reader is referred to CP2014 (chapters 3 and 5) for further discussion of NEG interpretation.

According to CP2014, each NPI originates in a construction which obligatorily contains a syntactic negation, and some originate in a construction with two, yielding the partially contrasting situations in (3):

- (3) Two Types of NPIs
 - a. [NEG X] unary NEG NPIs
 - b. [NEG [NEG X]] binary NEG NPIs

We can call the proposal that each NPI originates with at least one instance of NEG, the *negative conception* of NPIs, and the related proposal that there are the two types in (3a,b) the *bifurcated (negative)* view. Standard views of NPIs do not adopt either of these assumptions, as we review in section 3.

Consider from this point of view the examples in (4):

- (4) a. I didn’t advocate any proposal.
 - b. No linguist accepted any proposal.

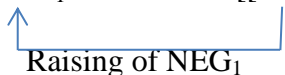
- c. Elissa doesn't do anything on Sunday.
 - d. Elissa doesn't go anywhere on Sunday.
- (5)
- a. Not many people advocated any proposal.
 - b. If he accepted any proposal, he was mistaken.
 - c. Everyone who did anything on Sunday was praised.
 - d. Everyone who went anywhere on Sunday got rained on.

In the framework of CP2014, the NPIs in (4) have a structure and meaning identical to the structure and meaning of negative quantifiers, accounting for the truth conditional equivalence of pairs like the following:

- (6)
- a. I advocated no proposal. $\neg\exists x[\text{proposal}(x) \wedge \text{advocate}(\text{I}, x)]$
 - b. I didn't advocate any proposal. $\neg\exists x[\text{proposal}(x) \wedge \text{advocate}(\text{I}, x)]$

In particular, CP2014 analyzes both the *no proposal* and the *any proposal* in (6) as DPs of the form $[[\text{NEG SOME}] \text{proposal}]$, where NEG modifies an existential quantifier SOME. The differences between (6a,b) lie in the fact that in (6a), *SOME* is realized as null, while NEG is spelled out as *no*. But in (6b), NEG raises to the post-Aux position, and *SOME* is spelled out as *any* (see rule (8) below).

In these terms, a more precise structure of (4a) is given in (7b):

- (7)
- a. I didn't advocate any proposal.
 - b. I did NEG₁ advocate $[[<\text{NEG}_1> \text{SOME}] \text{proposal}]$
- 

Raising of NEG₁

In (7b), NEG₁ originates in a position modifying *SOME* (internal to the NPI *any proposal*). While NEG₁ raises to the post-Aux position, it is nonetheless interpreted in its position of origin, modifying *SOME*. The angled brackets around the lower occurrence of NEG₁

in (7b) indicate a non-pronounced occurrence. The reader is referred to CP2014 (chapters 3 and 5) for further discussion.

Because the NPIs in (4) are analyzed as having the structure $[[\text{NEG SOME}] \text{NP}]$, we call them unary NEG NPIs. As seen below, they contrast with binary NEG NPIs which involve two underlying NEG. We will return to examples like (4b), which involve no post-Aux NEG, in the discussion of (13) below. They will also be analyzed as unary NEG NPIs.

CP2014 claim that *any* in (7a) is a suppletive form of *SOME*, determined by rule (8):

(8) The SOME/any Mapping

- a. $\text{SOME} \rightarrow \text{any}$, in the context $[\langle \text{NEG} \rangle \text{ ___}]$ (NEG unpronounced)
- b. $\text{SOME} \rightarrow \text{null}$, in the context $[\text{NEG } \text{ ___}]$ (NEG pronounced)
- c. $\text{SOME} \rightarrow \text{some}$, otherwise

Since CP2014 analyze *nobody* as $[[\text{NEG SOME}] \text{body}]$, an additional rule is needed for the realization of NEG:

(9) The NEG Mapping

- a. $\text{NEG} \rightarrow \text{no}$ in the context $[_D \text{ ___ } [_D \langle \text{SOME} \rangle]]$
- b. $\text{NEG} \rightarrow \text{not}$, otherwise.

Statement (9b) is a simplification, since there are other forms of NEG (such as *un-*, *non-*, *n't-*, *n-*) that we will not account for in this paper.

The NPIs in (5) are analyzed in CP2014 as double negation structures. Consider again (5b), repeated below as (10):

(10) If he accepted any proposal, he was mistaken.

First, no overt NEG precedes the verb in (10), unlike the situation with unary NEG NPIs illustrated in (4a). Second, the interpretation of *any proposal* in (10) is equivalent to the

existential quantifier DP *some proposal*. CP2014 argue that the NPI *any proposal* in (10) has the double negation structure in (11). In such a structure the semantics of NEG₁ cancels that of NEG₂, so that the resulting interpretation is identical to that of *some proposal*.

(11) If you see [[<NEG₁> [<NEG₂> SOME]] thing], tell me.

A binary NEG NPI (also called a reversal NPI) such as that in (11) contains two unpronounced NEG_s. We sometimes refer to NEG₁ as the outer or reversal NEG. According to CP2014, the NEG_s in (11) are unpronounced because they are deleted. NEG deletion involves a relation between individual NEG_s and other phrases, their *NEG deleters*. Some relevant NEG deleters in the case of binary NEG NPIs include the following:

(12) Some NEG Deleters in English Binary NEG Structures

- a. The conditional complementizer *if*
- b. The yes-no question complementizer (the Q morpheme)
- c. verbs such as *surprise*
- d. the quantifier *every*
- e. the phrase [only DP]

So in (11), the conditional complementizer *if* deletes the NEG₁ of the structure [NEG₁ [NEG₂ SOME]] (while NEG₁ deletes NEG₂). Because NEG₂ is deleted, *SOME* is realized as *any* by rule (8a). See CP2014 (chapter 4) for further detail.

The distinction between unary NEG and binary NEG NPIs corresponds to the traditional distinction drawn between strong versus weak NPIs, and strict vs. non-strict NPIs (see CP2014: section 9.4 for discussion).

Return to example (4b), repeated below:

(13) No linguist accepted any proposal.

From the perspective of CP2014, a natural question is whether *any proposal* in this example is a unary or a binary NEG NPI. CP2014 advance several reasons to believe that *any proposal* in such cases is a unary NEG NPI (see the sections below on the distribution of *jackshit_A* and Horn clauses). On that assumption, the structure of (13) is the following:

(14) [[NEG SOME] linguist] accepted [[NEG SOME] proposal]

Given this structure, regardless of whether the subject or object DP is taken to have higher scope, the normal result given the occurrence of two distinct NEG_s would be a so-called double negation meaning. In the case of two negative existentials, this should result in the interpretation that every linguist accepted some proposal. Since this is incorrect, something in the posited overall structure must prevent this incorrect inference.

CP2014 (chapter 6) appeals to the semantic notion of polyadic quantification while adding a novel syntactic basis for that. The latter involves the idea of the sharing of D_s, so that in such terms the subject and object of (13) would have a representation like:

(15) [_{DP} [NEG₁ SOME₂] NP]..... [_{DP} [NEG₁ SOME₂] NP]

In other words, while the subjects and objects involve distinct DPs with distinct NP components, these DPs share the identical D [NEG₁ SOME₂]. Critically, since the two distinct DPs originally share the D containing NEG₁, and since it is such structures which are semantically interpreted, the problem of the cancellation of the negative force of distinct NEG_s simply does not arise.

One key element in the analysis just sketched is that the NEG occurring in *any proposal* in (13) is deleted. In the framework of CP2014, this deletion appeals to a second kind of NEG deletion (distinct from that seen above with binary NEG NPIs), one subject to a number of governing conditions discussed in detail in CP(2014: chapter 8). One of these conditions is that the first argument of the deletion relation must c-command the second argument.

A mild warning is in order here. While we use terms like ‘NPI’ and ‘licensing’ for descriptive convenience and to make contact with the standard literature, our uses of such terms must be considered a kind of sometimes inaccurate, disposable shorthand for the more complex structures and relations we take to be involved in this domain.

One important consequence of the bifurcated view is that every proposed analysis of any so-called NPI involves a decision as to whether to posit a unary or a binary NEG structure. More accurately, the possibility is left open that some morphologically defined NPIs might allow either analysis and we take this to be the actual case with both *any* and *ever* in English. But this still leaves open the question of whether any particular occurrence of NPI *any* or *ever* represents a unary or a binary NPI. We return to this issue in section 6.

3. The Consensus View of NPIs

Although there are of course many different approaches to NPIs, it seems fair to state that current mainstream views of them share a core of common features. Focusing on NPIs such as English *any* forms, such expressions are almost always taken to simply be indefinites or existentials, as indicated in (16).

(16) a. (Linebarger 1980:217)

“The three arguments presented here in support of the E-theory (in which polarity *any* is represented as an existential quantifier in the scope of NOT)...”

b. (Carlson 1980:800)

“*Any* is an existential quantifier which must appear within the scope of negation.”

c. (Kadmon and Landman 1993:357)

“The NP with *any* has the usual semantic properties of an indefinite. We won’t make a choice here concerning the proper way of treating indefinite NPs. If indefinite NPs are best regarded as existential quantifiers, then so is the *any* NP; if indefinite NPs are best treated as new variables (Heim 1982), then the *any* NP too is a new variable. From either assumption the existential behavior of PS *any* follows without problems.”

d. (Ladusaw 1995: 211)

“Since Klima 1994, these NPIs have been termed as ‘indefinites’, and it is best to interpret this term in the sense of Heim 1982... “Argument NPIs like *any* and *ever* can be treated as indefinites which are subject to twin licensing requirements, ...”

None of (16a-d) recognize that NPIs like *any* or *ever* forms involve any instance of NEG. For current views, syntactic negation plays a role only in the formation of *other* expressions which can serve as licensers of NPIs. Let us call such views the *NEG-free conception (of NPIs)*.

The NEG-free conception is obviously motivated by the fact that in general NPIs do not appear *overtly* with instances of NEG. But in any framework which recognizes NEG raising and deletion, the absence of the overt presence of some X internal to a constituent Y is anything but a definitive justification for the syntactic absence of X from Y.

Statements (16a-d) and many similar ones reveal their authors’ assumption that not only are the relevant NPIs nonnegative expressions but also that *any* NPIs appearing in various contexts always have the same structure (namely, that of an indefinite/existential DP). None of these authors question whether there might be distinct types of NPI *any* (putting aside the issue of free choice *any*). Analogous remarks hold for *ever*. Let us call the assumption that there is a unique NPI type found in the range of environments occupied by English NPI *any* and *ever* the

homogenous view. Thus currently common views of English *any* and *ever* forms assume a NEG-free, homogenous view of these expressions.

4. Resumptive NEG_s

Some support for our view, sketched in the previous section, that the notion of NPI dissolves into a complex of analyses involving NEG raising, NEG deletion and morphophonemic modifications can be derived from simple facts about *nonstandard* English (see Blanchette, 2015 for a much more detailed study). Consider the following triple, where (17a,b) represent standard English, (17c) some variant of nonstandard English.

(17) a. I punched nobody.

b. I didn't punch anybody.

c. I ain't punched nobody.

(books.google.com/books?isbn=1462819346)

For us, the ideal analysis gives all three object DPs the same underlying structure, that in (18):

(18) [DP [NEG SOME] [NP body]]

In standard English (17a), NEG₁ is neither raised nor deleted and SOME is then forced to be null, while NEG is realized as *no* via the mappings in (8) and (9). In standard English (17b), NEG₁ raises and SOME is required to appear as *any* via mapping (8a).

Unanalyzed so far is the nonstandard case (17c). If the object DP *nobody* there receives the same analysis as the corresponding DP in standard English (17a), then the additional presence of the post-Aux NEG raises the obvious issue of why the combination of that NEG and the NEG assumed to be part of *nobody* fails to yield a double negation, wrongly determining that

(17c) means ‘I punched somebody’. Commonly, approaches to cases like nonstandard (17c) invoke some notion of *negative concord*, not recognized for standard English. But analyzing closely related variants of a language such that one has something as basic as negative concord and the other doesn’t is, we believe, suspicious.

In the overall framework of C2014, these issues are addressed via appeal to one further concept relevant to the syntax of negation, that of a *resumptive* or *copy* NEG. While we will not attempt a formal characterization of that concept here, it can be conceived of as the close analog of the notion of *resumptive pronoun* in extraction studies. The latter idea is instantiated by the highlighted pronoun in English cases like:

(19) Jane is the sort of person who I wonder whether *she* will ever finish her doctoral work.

One tradition allows that such pronominals can occur in extraction sites normally not filled with overt material, especially in cases where the extraction site is separated from the final locus of the extracted element (here *who*) by an island boundary.

Let us take the resumptive/copy NEG associated with any NEG_x to be represented as $cNEG_x$. The resumptive NEG concept is then relevant for (17c) as follows. Despite our claim that the object DPs in all three examples of (17) originate with the common structure in (18), these cases illustrate three distinct structural possibilities, two of which we have already gone over. The notion copy/resumptive NEG provides the third analysis, relevant for nonstandard (17c). There NEG_1 raises out of its containing DP and moves to the post-Aux position, as in the analysis of standard English (17b). However, in (17c), the NEG raising leaves a resumptive/copy NEG in the original position of NEG_1 , resulting in the structure:

(20) I Aux NEG_1 punch [DP [$cNEG_1$ SOME]] [NP body]]

|_____|

NEG raising + copying

Notably, (20) does not satisfy condition (8a) but does satisfy (8b). Hence it also satisfies (9a). Thus (20), despite its partial structural contrast with the corresponding DP in (17a), also ends up as *nobody*.

Consider now an analogous subject triple involving the same three DP types seen in (17):

- (21) a. Nobody showed up.
b. *Anybody didn't show up.
c. And nobody ain't showed up here from FEMA...

(<http://transcripts.cnn.com/TRANSCRIPTS/0509/12/asb.01.html>)

Here, (21a, b) are representations of standard English, (21c) an instance of nonstandard English. For (21a), the subject form *nobody* is the expected result when NEG₁ neither raises nor is deleted. For (21b), the NEG has raised and the shape of the remnant subject is the same as that in the object case (17b). But for reasons so far unspecified, the overall result is ungrammatical.

What accounts for the contrast between the ungrammatical standard English (21b) and the grammatical nonstandard (21c)? Looking at the object cases in (17), one might have assumed that nonstandard *no* forms are just analogs of standard English NPI *any*. But were that true in general, (21c) would be parallel to (21b) and hence, counterfactually, ungrammatical.

A key question then is why in our terms the nonstandard English subject case (21c) is grammatical, while standard English (21b) is not, although both object cases (17a,b) are grammatical. There are two sorts of contrasts here. One is a contrast between standard and nonstandard English. The other is a contrast between subject and non-subject with respect to co-occurrence with post-Aux NEG which has raised from either the particular subject or non-subject.

Now, in the cases at hand, it is a banal observation that English subjects both precede and c-command the Aux and the NEG associated with it, while English objects are preceded and c-commanded by the Aux and NEG. Given the subject/object contrast between (17b) and (21b), there must be a constraint which references this distinction. A second observation is that the nonstandard English subject cases have been analyzed as involving overt copy NEGs in the extraction positions of raised NEGs, while the standard English cases involve gaps we represent as <NEG>. We can then suggest then the following constraint:

(22) The Remnant Raising Condition

If $M = [_{DP} [_D <NEG_x> \text{SOME}] \text{NP}]$, then no occurrence of M
c-commands an occurrence of NEG_x .

Condition (22) amounts to a ban on remnant raising. That is, a constituent containing an occurrence of a raised *unary* NEG cannot itself raise to a point higher than an occurrence of that NEG. Condition (22) could be thought of as a version of the well-known c-command constraint on NPIs, albeit one stated in terms of the framework of CP2014 and its further elaboration here.

In the terms we have developed, the contrasts between standard English and nonstandard English with respect to the distribution of *any* and *no* forms that have been gone over reduces to the minor issue of whether NEG raising leaves a resumptive NEG or not.

5. Jackshit_A

A different form of motivation for the unary/binary NEG distinction is derivable from the following fact. It leads on syntactic grounds to the view that there are two basic classes of environments as far as English NPIs are concerned, e.g. those like *No linguist* ____ vs. those like *Not many people* _____. This demarcation shows up in a way not yet touched on, specifically, in

the behavior of a class of English NPIs referred to in CP2014 with the cover term JACK. This class includes *dick*, *diddly*, *diddly squat*, *jack*, *jackshit*, *shit*, *squat*, etc., of which we cite here only *jackshit*. These forms have in general two uses (see Postal, 2004: chapter 6 for detailed discussion), which we, as in CP2014, will annotate as *jackshit_A* and *jackshit_Z*. These are illustrated in:

- (23) a. Terry knows *jackshit_Z* about transponders.
 b. Terry doesn't know *jackshit_A* about transponders.

The form *jackshit_Z* (Z for 'zero') functions as an equivalent of *nothing* or *zero* and does not require a licenser in the sense of common approaches to NPIs. It is of no relevance to the present discussion and is ignored from this point on. The form *jackshit_A* (A for 'any') functions as an NPI and is the equivalent of one use of *anything*. It is a unary NEG NPI in the sense of CP2014.

One notices that the environments in (24) and (25) are differentiated by the distribution of *jackshit_A*:

- (24) a. I didn't advocate anything/*jackshit_A*.
 b. No linguist accepted anything/*jackshit_A*.
 c. Elissa doesn't do anything/*jackshit_A* on Sunday.
- (25) a. Not many people advocated anything/**jackshit_A*.
 b. If he accepted anything/**jackshit_A*, he was mistaken.
 c. Everyone who did anything/**jackshit_A* on Sunday was praised.

A rough generalization is that *jackshit_A* can only occur in environments containing a post-Aux NEG or a preceding negative quantifier DP defining an antiadditive operator. Our claim is that those *any* forms which occur in environments which accept *jackshit_A* represent unary NEG

NPI structures, while those *any* forms which occur in environments incompatible with *jackshit_A*, are binary NEG NPI structures.

Our analysis of *jackshit_A* is then that it represents a unary NEG structure, as in (26):

(26) [_{DP} [_D NEG₁ [_D SOME]] [_{NP} *jackshit_A*]]

Compared to unary NEG *any* forms, however, members of JACK_A are subject to additional constraints. First, NEG₁ in (26) must either be raised or deleted, determining that no NEG occurrence internal to the original DP is overt. So JACK_A forms never have overt *no* forms:

(27) a. They proved no theorem/nothing.

b. *They proved no *jackshit_A*.

Second, according to rule (8a) above, raising or deletion of the NEG associated with SOME forces its realization as *any*. But a further peculiarity is that the resulting *any* must be null in a DP whose NP is a member of JACK_A. So instances of the DP structure in (26) always surface with only the NP *jackshit_A* overt (SOME is not realized overtly, and NEG raises out of the DP).

We can then account for the ungrammaticality of the bad *jackshit_A* cases like those in (25), in contrast to the well-formed ones in (24). Consider the structure of the JACK version of (25b):

(28) If he accepted [[NEG SOME] *jackshit_A*]...

In order for this structure to be realized as in (25b), NEG needs to raise to the post-Aux position and be deleted. To block this analysis we appeal to a version of a principle originally due to Szabolcsi (2004), which we called the *NEG Deletion Evenness Condition*; see CP2014 (pgs. 32, 75) for initial and refined versions of this principle. For present purposes, we oversimplify and say simply that standard instances of general (nonlexical) NEG deletion must lead to the

deletion of an even number of NEG_s. Since *jackshit_A* cases like (28) have only a single NEG, the Evenness Condition cannot be satisfied.

The *anything* case of (25b) does not involve a violation of evenness, since *anything* can be analyzed as a binary NEG NPI, as shown below:

(29) If he accepted [[NEG₁ [NEG₂ SOME]] *jackshit_A*]....

In (29), the conditional complementizer *if* is the NEG deleter. It deletes NEG₁, which in turn deletes NEG₂. Since two NEG_s are deleted, there is no violation of the Evenness Condition.

That raises the obvious question of how the *jackshit_A* case in (24a) can be grammatical. There no NEG is deleted. Rather, the unary NEG of the original JACK_A DP is raised to post-Aux position, so no violation of the NEG Deletion Evenness Condition can arise. For cases like (24b), the situation is more complex, as we take these to be instances of polyadic quantifier formation based on D sharing between *no linguist* and *jackshit_A*. While there is NEG deletion in such cases, it is not subject to the Evenness Condition. The reader is referred to CP2014: especially chapter 6 for detailed discussion of these matters.

6. Horn Clauses

An argument showing that English NPIs divide into the two classes represented in (3) above is based on what CP2014 call *Horn clauses*; see CP2014 (chapters 13 and 14) for extensive discussion. These are complement clauses manifesting the subject auxiliary inversion word order typical of the *Negative Inversion* construction. The key peculiarity of Horn clauses is that where a standard Negative Inversion clause involves a fronted overt negative or decreasing phrase, the fronted phrase in a Horn clause is an NPI. Thus one finds:

(30) Negative Inversion Clauses

- a. Under no conditions would she move to Alaska.
- b. They believed that under no conditions would she move to Alaska.
- c. None of the cats could they train to play ping pong.
- d. They expected that none of the cats could they train to play ping pong.

(31) Horn Clauses

- a. They didn't believe that under any conditions would she move to Alaska.
- b. They didn't expect that any of the cats could they train to play ping pong.
- c. I don't suppose that even a red cent would he contribute.
- d. It doesn't seem that even the slightest deviation from the plan would she accept.

One hypothesis might be that a Horn clause can be formed by the extraction of any NPI (or a PP containing such a NPI). But in fact only a subset of NPIs can be extracted in Horn clauses and these must be of the unary NEG type. For instance, it is well known that NPIs can occur without negation in conditional clauses, restrictive relative clauses with universal DP heads, complements of predicates like *astounding*, in clauses with *only* DPs, etc., as in:

- (32)
- a. If she rejects any application, the Dean will object.
 - b. No professor who rejected any application was criticized.
 - c. It is astounding that she rejected any application.
 - d. Only Rachel bought any blouse.

But no NPI of the type in (32) can form a Horn clause:

- (33)
- a. If you believe that she rejected any application, you are mistaken.
 - b. *If you believe that any application did she reject, you are mistaken.
- (34)
- a. No scientist who imagined that he taught any pigeons to text was rational.
 - b. *No scientist who imagined that any pigeons did he teach to text was rational.

- (35) a. It is astounding that they think she visited anywhere like that.
 b. *It is astounding that they think that anywhere like that did she visit.
- (36) a. Only Carl thinks she bought any blouse.
 b. *Only Carl thinks that any blouse did she buy.

In the framework of CP2014, the contrasts just gone over are not mysterious. Horn clauses are shown to be special cases of Negative Inversion clauses and in the class of cases at issue, only negative phrases can be fronted in Negative Inversion clauses. The relevant NEG_s are covert in the NPIs in Horn clauses because they have raised into the containing main clauses. Critically, the main verbs in such cases are triggers for Classical NEG Raising. So the conclusion is that the fronted phrases in Horn clauses manifest unary NEG NPIs because such fronted phrases must satisfy the conditions on Negative Inversion. The fact that NPIs can do that makes sense only under a view which can take them to represent underlying structures of the form [DP [D NEG₁ SOME] NP].

7. Overview of SC NPIs

If the distinction between unary and binary NEG NPIs drawn in the previous sections is correct, one would expect it to manifest in other languages in ways unexpected from the perspective of a language like English in which common NPIs like *any* and *ever* do not *morphologically* mark that distinction. That is, where the unary NEG NPI and binary NEG NPI forms of *any* and *ever* are homonymous, there could well exist languages in which the two types posited in our framework are systematically morphologically distinct. And such cases are in fact already well-described in the literature, although not in the theoretical terms we have developed.

The first documentation of this state of affairs we are aware of is due to the work of Progovac (1990, 1991, 1993, 1994, 2005). Progovac (1994) showed that SC has two classes of NPIs (see also Szabolsci 2004: 439, fn. 29, and see Zeijlstra 2004 for a completely different approach to Slavic *ni*-NPIs). The basic material in this subsection is from Progovac (1994). But we also cite data from other works of hers and from many extensive and extremely helpful personal communications from her.

One class of SC NPIs, the *ni*-NPIs, are marked with the prefix *ni*- or morphological variants. The second class, the *i*-NPIs, are marked with the prefix *i*- or morphological variants. Some *ni*-NPIs are given below:

(37) Progovac (1994: 40)

a. *ni(t)ko* ‘no one’ b. *ništa* ‘nothing’ c. *nikud* ‘nowhere’ d. *nikad* ‘never’

These forms are compounds consisting of three elements which Progovac glosses from left to right as *n*- ‘NEG’, *i*- ‘any’ and a *wh*-form ‘who’, ‘what’, etc. In the framework of CP2014 it is tempting to think of *i*- as a morphological realization of SOME so that ‘no one’ would have the structure [[[_D n-] [_D i]] [_{NP} tkɔ]]; but see Bošković (2008, 2009) for an alternative.

Some *i*-NPIs are given below:

(38) Progovac (1994: 41-42)

a. *i(t)ko* ‘anyone’ b. *išta* ‘anything’ c. *ikud* ‘anywhere’ d. *ikad* ‘ever’

Both classes of forms qualify as NPIs in the usual sense. Neither can, for example, occur in simple positive declarative sentences:

(39) a. Progovac (1994: 40)

Milan *(ne) vidi ništa

Milan not see nothing

“Milan cannot see anything.”

b. Progovac (1994: 43)

*Milan to i-kado odobrava

Milan that any-how approves

“Milan approves of anything.”

SC *ni*-NPIs have the key property of essentially only occurring in clauses which contain an overt NEG, *ne*, regardless of the position of the NPI as object, subject, or adjunct.

Our initial hypothesis is that while both types of SC NPIs involve an existential component, SC *ni*-NPIs correspond to unary NEG structures like (40):

(40) Abstract Structure of SC *ni*-NPIs

[_{DP} [_D NEG SOME] [_{NP} X]]

SC *i*-NPIs, however, correspond to binary NEG structures of the form (41):

(41) Abstract Structure of SC *i*-NPIs

[_{DP} [_D NEG [_D NEG SOME]] [_{NP} X]]

Under these analyses, there is an *overt* NEG in SC *ni*-NPIs but not in SC *i*-NPIs. The bases for the above conclusions are these. First, there is a correspondence between the type of syntactic environments which sanction SC *ni*-NPIs and English unary NEG NPIs. Second, the properties of *ni*-NPIs in SC can be explained in terms of the unary NEG analysis. Third, there is a correspondence between the syntactic environments which allow English binary NEG NPIs and the syntactic environments which allow SC *i*-NPIs.

8. SC *ni*-NPIs

8.1. Obligatory NEG Raising

Consider the following examples of SC *ni*-NPIs:

(42) a. Progovac (1994: 80)

Marija ne voli ni(t)ko-ga

Mary NEG loves no-one-ACC

“Mary does not love anyone.”

b. Progovac (1994: 41)

Milan ni-kada ne vozi

Milan no-when NEG drives

“Milan never drives.”

c. Progovac (1994: 35)

Niko ne poznaje Marij-u

no-one NEG knows Mary-ACC

“No one knows Mary.”

In each of these cases, there is a *ni*-NP accompanied by a clause mate instance of NEG *ne*. One can reasonably see the sentence in (42a) as analogs of English (43), containing a NEG external (to the DP) and an *any*-NPI which we have argued is a unary NEG structure.

(43) Mary doesn't love anyone.

A difference between English and SC is the absence of analogs of standard English *no*-forms, that is, unary NEG structures occurring without a DP-external NEG.

(44) Progovac (1994: 36)

*Marija ce videti niko-ga

Mary will see no-one-ACC

“Mary will see no one”

We claimed that the underlying structure of the object in (39a) is of the form in (40). However, that claim must be expanded to account for the fact that the presence of the clausal NEG *ne* does not combine with our posit of an underlying NEG in the *ni*-NPI to wrongly yield a double negation reading. To that end, we appeal again to the notion of resumptive/copy NEG discussed in section 4. A first step is to claim that the structure of (39a) is given by (45) (assuming that *i-* is a form of SOME):

(45) Milan NEG₁ vidi [DP [D cNEG₁ i] [NP šta]]

Under this analysis, the only underlying NEG, NEG₁, originates in the D of the DP and raises out, leaving a copy NEG in that position. The possibility of a wrong double negation analysis then does not arise.

As shown in (44), unlike standard English, whose *no* forms we also claim instantiate structure (40), there is no possibility in SC of not raising the underlying NEG. We thus posit constraint (46):

(46) SC Obligatory NEG Raising

In A= [DP [D NEG SOME] NP], NEG raises out of A into the lowest clause containing A, leaving a copy cNEG.

This condition is intended to account for why (44), lacking a clausally located NEG, is ungrammatical. That is, NEG raising is obligatory and must leave a copy NEG.

8.2. The Remnant Raising Condition

One sharp difference between the SC *ni*-NPI cases we have cited and corresponding standard English ones is revealed in (42c), where the *ni*-NPI occurs in a subject preceding and presumably

c-commanding the local instance of NEG. The standard English analogs are of course ungrammatical on the relevant readings:

- (47) a. *Anyone does not know Mary.
b. *Anyone knows Mary.
c. *No one doesn't know Mary.

While (47b) might have a free choice reading, and (47c) with stress on *doesn't* is grammatical on a double negation reading, none of (47a-c) paraphrases SC (42c). However, significantly, SC does seem parallel to nonstandard English:

- (48) a. Outside of this country around us, nobody ain't seen Ben Curry in years.
(<https://books.google.com/books?isbn...>)
b. I ain't seen nobody
(<https://books.google.com/books?id>)

We suggested in section 3 that the contrast between standard English *any* NPIs and nonstandard cases like (48) lay in constraint (22), the Remnant Raising Condition, on the displacement of remnants of NEG raising. There are at least two possibilities for SC. It might be that SC simply has no constraint analogous to (22). Or, it might be that some version of (22) is a universal principle and that as in nonstandard English cases such as (48a), SC cases like (42c) escape the constraint because the obligatory presence of the copy NEG guarantees that the antecedent of the condition is not satisfied in such cases.

The Remnant Raising Constraint may also account for the fact that SC *ni*-NPIs contrast with standard English *any* NPIs with respect to appearance in fragment answers to questions. SC *ni*-NPIs can in fact serve as fragment answers:

- (49) Bošković 2009: (19)

a. Šta si kupio?

what are bought

“What did you buy?”

b. Ništa/*Išta

Nothing

But English *any* NPIs cannot function as such answers:

(50) a. What did you buy?

b. Nothing/*Anything

This difference between SC *ni*-NPIs and standard English *any* NPIs is striking since we analyze both as involving NEG raising from a unary NEG NPI.

Following Boskovic 2009 (for a similar analysis in Japanese, see Watanabe 2004), we assume that examples such as (49b) represent preposing of the NPI followed by clausal deletion (parallel to the analysis of Sluicing first proposed in Ross, 1969 and defended in Merchant, 2001).

(51) Nista <[nisam kupio]>

Nothing NEG.am bought

Applying the same analysis to the *any* variant of English (50b) would yield structure (52):

(52) [[<NEG₁> SOME] thing]]₂ <[I did NEG₁ (= not) buy <DP₂>]

But this violates the Remnant Raising Constraint. However, SC example (49b) avoids a violation of that condition since the raised NEG leaves a copy.

8.3. Determiner Sharing

Cases of multiple *ni*-NPIs (all highlighted) in the same clause raise further key issues:

(53) Progovac (personal communication)

a. Milan nije poslao nikome ništa.

Milan NEG AUX sent no one.DAT nothing

“Milan sent no one anything.”

b. Niko nije ništa video.

No one NEG AUX nothing seen

“No one saw anything.”

c. Nijedan student nije pio nikakav viski.

No student NEG AUX drunk no whiskey

“No student drank any whiskey.”

d. Nijedan student nije pio nikakav viski ni u jednom baru.

no student NEG AUX drunk no whiskey NEG in one bar

“No student drank any whiskey in any bar.”

In all these sentences, there is only a single clausal NEG. A semantic problem arises in single clauses containing more than unary NEG NPI. That is, an even number of such NPIs (analyzed as we do) should yield a double negation meaning. That fails to predict the concord meanings actually found. For instance, one must explain why (53c) means what it does rather than ‘every student drank some whiskey’.

Again, as in our discussion of (15) above, we appeal to the semantic notion of polyadic quantification based on the idea of the sharing of D constituents. In such terms, the subject and object of (53c) have a representation like (54):

(54) [DP [D NEG₁ SOME₂] [NP student]]..... [DP [D NEG₁ SOME₂] [NP viski]]

While the subject and object are distinct DPs with distinct NP components, these DPs share the identical D constituent: [_D NEG₁ SOME₂]. In different terms, the D constituent in (54) has multiple (DP) mothers.

The key fact is that, since there is only one original syntactic determiner [_D NEG₁ SOME₂] in (54), there is only one semantic negation. Since determiner sharing is interpreted in terms of polyadic quantification, for (54) with X = ‘student’ and Y = ‘a quantity of whiskey’, the resultant meaning is that there is no pair (X, Y) of student and quantity of whiskey such that X drank Y. The same assumptions hold for cases with three NPIs, four NPIs, or indeed any number.

But even acceptance of the determiner sharing view of these negative concord cases leaves a serious issue. Namely, how do such structures interact properly with condition (46), which is intended to force the NEG in an SC unary NEG structure to raise to yield the clausal NEG found as a clause-mate of a *ni*-NPI? We propose that in such cases of multiple *ni*-NPIs the NEG₁ raises from the shared determiner [SOME NEG].

For (53c), the shared determiner is [_D NEG SOME]. The NEG raises from this shared determiner to a DP-external location in the clause. The raising leaves a copy NEG in the D of the containing DP. But since that D is shared by several DPs, the ultimate result is the presence of a copy NEG occurrence in every DP sharing the same D.

We observe though that while the account just sketched arguably suffices for SC, it is insufficient for standard English under our assumptions. This is due to the fact that in English the NEG does not have multiple realized copies, but instead is represented as null in all but one of the containing DPs, as in (13); see CP2014 (section 6.4) for discussion of English.

8.4. The Clausemate Condition

A last NPI distributional issue concerning *ni*-NPIs involves the condition that they must appear with a clausemate negation:

(55) Progovac (1994: 41)

- a. *Milan ne tvrdi da Marija poznaje ni(t)ko-ga
Milan NEG claims that Mary knows no-one-ACC
- b. *Milan ne tvrdi da ni(t)ko vidi Marij-u
Milan NEG claims that no-one sees Mary-ACC
- c. *Milan ne tvrdi da Marija nikada vozi.
Milan NEG claims that Mary never drives
- d. *Milan ne tvrdi da Marija to ni-kakp odobrava
Milan NEG claims that Mary that no-how approves

As Progovac notes “A negative particle in a superordinate clause does not license a *ni*-NPI...”. To explain the unacceptability of these sentences in the framework of CP2014, two alternative structures must be considered, one in which the *ni*-NPI has embedded scope and another in which it has matrix scope.

If *ni-koga* in (55a) is interpreted with embedded scope, then its scope position occurrence is internal to the embedded clause. In that case, the main clause position of the clausal NEG in (55a) would require NEG raising from the embedded clause to the matrix clause. The ungrammaticality of (55a) suggests that such raising is impossible. This is not surprising, since the apparently banned case would yield a variety of Classical NEG Raising in the sense of CP2014. But a verb meaning ‘claim’ is not the sort of form expected to be a trigger for such raising. Moreover, Bosković (2007) argues that SC lacks the analog of Classical NEG raising.

If, however, *ni-koga* has matrix scope in (55a), then raising of the NEG from the matrix scope position of *ni-koga* to the pre-verbal position of the matrix clause would not violate any known general conditions. Relevantly, CP(2014: chapter 9) discussed English cases where strict NPIs seem to be separated from the associated NEG by a clause boundary, illustrated by (56):

(56) Andrew didn't claim that Carl said *jackshit_A* about compilers.

Here, although *jackshit_A* is a unary NEG NPI, if it is stressed, it can appear with a non-clausemate negation. The meaning is then 'There is nothing_X such that Andrew claimed that Carl said X about compilers'. CP2014 propose that the DP *jackshit_A* in (56) has matrix scope and that the NEG arising in *jackshit_A* raises from the scope occurrence of *jackshit_A* in the matrix clause. See CP(2014: chapter 9) for discussion of NEG raising from scope positions. A key point is that such raising is not Classical NEG Raising, which involves raising from a complement clause into a matrix clause.

The ungrammaticality of example (55a) seems to indicate that such an analysis is impossible in SC. That is, SC appears to block a structure in which a unary NPI in a complement clause takes high scope with the obligatory NEG raising occurring in the matrix clause.

On the contrary, Collins, Postal and Yevudey (2015) show that a high scope analysis parallel to the English case in (56) is admitted for unary *ke*-NPIs in the African language Ewe.

9. SC *i*-NPIs

9.1. Distribution of *i*-NPIs

The distribution of SC *i*-NPIs is essentially complementary to that of *ni*-NPIs. Whereas the latter cannot occur without a clausemate instance of NEG, the former are systematically

banned in the presence of clausemate instances of NEG, with apparently one exception mentioned in Progovac (2005), to which we return.

The following examples list a variety of contexts in which *i*-NPIs appear. First, they occur in complement clauses with a negated matrix, as in (57) and (58):

- (57) Progovac (1994: 42 and personal communication)

Milan ne tvrdi da i(t)ko/ *ni(t)ko voli Marij-u

Milan NEG claims that anyone/no one loves Mary-ACC

“Milan does not claim that anyone loves Mary.”

- (58) Progovac (1994: 42)

Milan ne tvrdi da Marija pozna i(t)ko-ga

Milan NEG claims that Mary knows anyone

“Milan does not claim that Mary knows anyone.”

We note that the grammatical complement clause object in (58) corresponds to the type of English case which we have argued to represent a binary NEG NPI. For instance, it is the type which cannot, as in (59a), form a Horn clause or, as in (59b), contain members of JACK_A (ignoring issues of possible high scope readings, see CP2014, chapter 9:

- (59) a. *Mike does not claim that anyone does Mary know.

b. *Mike did not claim that Mary had discovered jackshit_A.

Second, Progovac (1994: 64-65) makes clear that *i*-NPIs are possible in conditional clauses:

- (60) Progovac (1994: 64)

Ako Milan povredi i(t)ko-ga/ *ni(t)ko-ga, bi ce kažnjen

if Milan hurts anyone-ACC/ no-one-ACC be-FUT punished

“If Milan hurts anyone, he will be punished.”

The grammatical *i*-NPIs in such conditional examples correspond to the type of English *any* forms which cannot form Horn clauses or be replaced by members of JACK_A:

- (61) a. If the judge believes that Milan injured anyone, he should be punished.
b. *If the judge believes that anyone did Milan injure, he should be punished.
c. *If the judge believes that Milan stole jackshit_A, he will punish him.

Third, SC allows *i*-NPIs inside restrictive relatives with universal quantifier DP heads as licensors:

- (62) Progovac (1994: 64-65)

Svako (t)ko povredi i(t)ko-ga/ *ni(t)ko-ga mora biti kažnjen
everyone who injures anyone/ no-one must be punished

“Everyone who injures anyone must be punished.”

Here too the corresponding English clauses cannot contain Horn clauses or externally linked members of JACK_A and are thus arguably binary NEG structures:

- (63) a. Every one who believes she stole anything is being kind of unfair.
b. *Everyone who believes that anything did she steal is being kind of unfair.
c. *Everyone who stole jackshit_A was interrogated by the police.

Fourth, SC *i*-NPIs can appear in yes/no questions (lacking negation), as in:

- (64) Progovac (1994: 43)

Da li Milan voli i(t)ko-ga/ *ni(t)ko-ga?

That Q Milan loves anyone-ACC/ no-one-ACC

“Does Mary love anyone?”

Such cases also parallel English *any* NPIs which cannot form Horn clauses and which occur in contexts precluding members of JACK_A, that is, they correspond to English binary NEG NPIs:

- (65) a. Can you really believe that Mary loves anyone?
 b. *Can you really believe that anyone does Mary love?
 c. *Can you really understand jackshit_A about love? (ignore rhetorical reading)

Fifth, a SC *i*-NPI can occur as a clausemate of a form meaning ‘few’:

- (66) Progovac (personal communication)
 Malo ljudi je išta/ *ništa kupilo.
 Few people AUX anything/ nothing bought
 “Few people bought anything.”

This also is a semantic type allowing an English *any* NPI incapable of forming a Horn clause or of being replaced by a member of JACK_A.

- (67) a. Few people believe that they bought anything.
 b. *Few people believe that anything did they buy.
 c. *Few people understand jackshit_A about thermodynamics.

Sixth, an element meaning ‘only’ licenses clause mate SC *i*-NPIs:

- (68) Progovac (personal communication)
 Samo je Milan išta/ *ništa kupio.
 Only AUX Milan anything/ nothing bought
 “Only Milan bought anything.”

And again, the corresponding English NPI cannot be the basis of a Horn clause or be replaced by a member of JACK_A.

- (69) a. Only Mike believes that they bought anything.

b. *Only Mike believes that anything did they buy.

c. *Only Mike bought jackshit_A.

Seventh, some SC *wh*-questions can yield *i*-NPIs:

(70) Progovac (2005: Chapter 6 ??)

Kako bi Milan ikoga/ *nikoga zavoleo?

how would Milan anyone/ no one love

“How would Milan fall in love with anyone?”

Once more, the English analog determines binary NEG NPIs, as shown by the Horn clause and JACK_A tests:

(71) a. How could Mike believe Milan would fall in love with anyone?

b. *How could Mike believe that anyone would Milan fall in love with?

c. *How could Mike accomplish jackshit_A?

The star on (71c) refers only to the genuine interrogative reading. On a rhetorical assertion reading, the example is well-formed.

Eighth, SC *i*-NPIs can occur in the complement of a verb meaning ‘forget’:

(72) Progovac (personal communication)

Ernest je zaboravio da je Gladys ikoga/*nikoga uvredio.

Ernest forgot that AUX Gladys anyone no one insulted

“Ernest forgot that Gladys had insulted anyone.”

This environment also permits only binary NEG NPIs in English, as shown, for example, by the Horn clause criterion. Here, we cannot cite a parallel JACK_A examples, since all instances of JACK_A are inanimate nouns. However, the rather stilted human phrase *a living soul* functions in

much the same way, that is, it can only be a unary NEG NPI. And as expected, it is impossible in the complement of *forget* when unaccompanied by an embedded NEG:

- (73) a. Ernest forgot that Gladys had insulted anyone.
 b. *Ernest forgot that anyone like that had Gladys insulted.
 c. *Ernest forgot that he had insulted a living soul.

Ninth, another environment for SC *i*-NPIs is in the complement of a form meaning ‘sorry’:

- (74) Progovac (personal communication)
 Žao mi je što je on ikoga/ *nikoga obmanuo.
 Sorry me-DAT AUX COMP AUX he anyone/ no one misled
 “I am sorry he misled anyone.”

As expected, the Horn clause and *a living soul* criteria determine that the English analog can only involve a binary NEG NPI:

- (75) a. I am sorry that he misled anyone.
 b. *I am sorry that anyone at all did he mislead.
 c. *I am sorry that he misled a living soul.

We have thus illustrated nine different types of SC context which allow *i*-NPIs. These correspond to English contexts which only allow *any* NPIs of the type which known tests (specifically, those based on Horn clauses and strict NPIs like *jackshit_A* and *a living soul*) show are binary NEG NPIs. This provides, we suggest, solid initial grounds for the conclusion that *i*-NPIs are binary NEG NPIs. Given the reasons for taking SC *ni*-NPIs to be unary NEG structures, there then emerges a basis for the conclusion that the distinction between binary and unary NEG NPIs worked out in CP2014 almost entirely on the basis of English exists in SC. Strikingly then,

in SC this distinction is marked morphologically and in a systematic way. This in turn provides strong cross-linguistic support for the distinction between unary and binary NEG NPIs drawn in CP2014.

9.2. Analysis of *i*-NPIs

Given the detailed parallelisms between English and SC documented above, we assume that the structure of the nine SC *i*-NPI cases we have mentioned represents the same binary NEG structure argued for English in CP2014, one with an underlying form:

(76) [DP [D NEG₁ [D NEG₂ SOME]] NP]

As in English, there is no evidence in SC that binary NEG NPIs contain *overt* NEGs. So the two NEGs we posit must be deleted. And for us, NEG deletion involves a relation with a phrase which is a NEG deleter, a relation subject to a number of general constraints spelled out in CP2014 (chapter 8). We cannot review that detailed discussion. Here the most we can do is list what we posit to be the plausible NEG deleter in a few of the binary NEG NPI cases we have gone over.

In cases like (60), we take the conditional element *ako* ‘if’ to be the NEG deleter. In those like (62), we assign this function to *svako* ‘everyone’. In cases like (64), the NEG deleter is the Q marker. For (66) the NEG deleter is *malo ljudi* ‘few people’ and in (68) the form *samo* ‘only’. In (72), the NEG deleter is the main verb *zaboravio* ‘forgot’, while in (74) the relevant NEG deleter is *Žao* ‘sorry’. Arguably, each of these forms defines an operator which is not increasing with respect to the original positions of the deleted NEGs. CP2014 (chapter 8) claims that a general NEG deleter lawfully has this property (see the General NEG Deletion Condition, p. 72). This imposes strong limitations on our analysis of, in particular, binary NEG structures. In many

cases, it is by no means obvious how to provide an analysis which satisfies the General NEG Deletion Condition and much further research is required in this area.

10. Sentential Negation

The traditional notion of sentential negation (and the related more recent syntactic concept of a clausal NEGP) have played no role in the preceding sections. In all the SC cases involving *ni*-NPIs we have discussed, the omnipresent clausal NEG was analyzed as involving raising from a unary NEG NPI (which raising was claimed to leave a copy NEG). Such an analysis leaves open how to analyze the endless variety of sentences containing clausal NEGs that do not appear to involve NPIs at all, such as those in (77):

(77) (Progovac, personal communication)

a. Milan nije plesao.

Milan neg-AUX danced.SGM

“Milan didn’t dance”

b. Milan ne pleše.

Milan not dances.

“Milan does not dance.”

c. Milan nije video Mariju.

Milan neg-AUX seen Mary.ACC

“Milan did not see Mary.”

The issue is the correct syntactic analysis of *ne* in examples like (77). What is its structural origin? Since there is no overt NPI in any such cases, *ne* appears not to have raised

from an NPI. Obviously, parallel questions arise in every language for negative clauses not containing NPIs.

Does dealing with this issue require recognizing sentential negation, of the kind that heads a clausal NEGP syntactically and negates a proposition semantically? We suggest not.

One solution to the problem posed by cases like (77) would assume that the needed NEG in so-called sentential negation examples modifies the relevant verb, VP, adjective, AdjP or other predicate in the clause. Such a NEG would then raise from such predicational positions to higher clausal positions. This is the sort of analysis of simple negation (that not accompanied by NPIs) given in CP2014.

In the present paper, we suggest a much more radical alternative, although one we will not be able to argue for in detail here; see Collins, Postal and Yevudey (2015) for a related treatment. See also Bošković (2009), who arrives at a partially related conclusion about a “null operator (Op) with iNEG”. We propose that examples such as (77) involve a covert negated existential quantifier DP and that the so-called sentential NEG is actually the NEG raised from such a quantifier DP. The semantics of this syntactic assumption fall in the general domain of so-called event semantics introduced in Davidson (1967). But we believe the idea that the relevant quantifier has a syntactic (albeit covert) reality to be novel.

The covert existential quantifier DP we posit will function just like other existential quantifier DPs, sharing with them the property that their *scope* occurrences are covert. Its unique feature is the additional covertness of its *argument* occurrence.

We do not assume that the relevant existential quantifier DP is limited to events but would recognize a range of other possibilities (e.g. states), sometimes called eventualities. Maienborn (2011: 809) cites the following a propos remark from Kim (1969): “When we talk of

explaining an event, we are not excluding what, in a narrower sense of the term, is not an event but rather a state or process.” See Maienborn (2011) for more recent discussion and alternative formulations of event semantics

To illustrate these ideas, we begin with the following NPI-free simple English sentence:

(78) Claudia sang.

Example (78) can be represented in predicate logic in terms of quantification over an event (we leave out reference to time):

(79) $\exists e.\text{sing}(e, \text{Claudia})$

“There is an event e such that e is a singing event by Claudia.”

The syntactic version of this hypothesis simply posits a covert quantifier DP that quantifies over events, as in:

(80) [Claudia sang [_{DP} SOME EVENT]]

As with all quantifier DPs, this silent one will have two syntactic positions: a scope position and an in-situ position (interpreted as a variable); see CP2014, chapter 2. Structure (80) illustrates the in-situ position. We leave out the representation of the scope position here and need take no stand on the exact location of the event variable DP_1 (e.g. whether or not it is internal to the VP).

Turning then to the negative case, on the Davidsonian view, the negative example (81a) would have the semantic representation in (81b).

(81) a. Claudia did not sing.

b. $\neg\exists e.\text{sing}(e, \text{Claudia})$

“There is no event e such that e is a singing event by Claudia.”

In other words, (81) represents a case of the negation of existential quantification. In the framework of CP2014, negated existential quantifiers have the following structure:

(82) no boy = [[NEG SOME] boy]

In this representation, NEG is realized as *no*, while SOME is covert. So (81a) would be represented with a negated existential quantifier over events.

Given this background, the SC sentence in (77b) will have the following structure, ignoring the scope position occurrence of the event quantifier; see CP2014 (chapter 5) for NEG raising from scope positions:

(83) Milan NEG₁ dance [[cNEG₁ SOME] EVENT]

In this structure, NEG₁ modifies SOME and raises to a pre-verbal position leaving a copy. The whole expression [[cNEG₁ SOME] boy] is covert, the general case for event quantifiers. In other respects, the SC examples in (77) fall together with the *ni*-NPI cases.

11. The Bagel Problem

Bifurcated systems of NPIs more or less parallel to that of SC are found in other languages already described in the literature, including Russian (Pereltsvaig 2006) and Hungarian (Toth 1999). Pereltsvaig suggests that the facts in Russian create what she calls *the bagel problem*. The basic fact is that Russian analogs of SC *i*-NPIs, like the latter themselves, are incompatible with sentential negation under conditions which semantic views of licensing predict should be ideal licensing environments (since they are then under the scope of an antimorphic operator). The relevant SC fact is illustrated in (84):

(84) Progovac (1994: 42)

a. *Marija ne poznaje i(t)ko-ga

Mary not knows anyone-ACC

“Mary does not know anyone.”

b. *I(t)ko ne vidi Milan-a

anybody not sees Milan-ACC

“Anyone does not see Milan.”

c. *Milan ikada ne vozi

Milan ever not drives

“Milan doesn’t ever drive.”

d. *Milan to i-kako ne odobrava

Milan that any-how not approves

“Milan does not approve of that in any way.”

Similar ungrammatical examples can be given where both a *ni*-NPI and an *i*-NPI occur in the same clause:

(85) (Progovac, personal communication)

a. Niko nije video nikoga/*ikoga

nobody NEG.Aux saw anybody

“Nobody saw anybody.”

b. ?*Milan nije nikada video nikoga/?*ikoga

Milan NEG.Aux never saw anybody

“Milan never saw anybody.”

Recall that SC NEG raising from DPs is only relevant in the case of unary NEG NPIs. For binary NEG NPIs, those of the form: [[NEG₂ [NEG₁ SOME]] NP], NEG₁ and NEG₂ are deleted as a consequence of some general NEG deleter. So, under these assumptions, the

preverbal NEG_s in (84) cannot result from the raising of a NEG arising in the binary NEG *i*-NPIs. Rather, these preverbal NEG_s must be modifiers of the Davidson event quantifier: [[NEG SOME] EVENT].

We propose that the following condition (to be modified below on the basis of more complicated data) rules out such examples:

(86) The Bagel Condition (first version)

If $K = [_{DP} [_{D} \text{NEG}_1 \text{ SOME}] \text{ NP}]$ is a general NEG deleter for a reversal NEG, NEG₂, K is not a clause mate of NEG₂.

So consider a partial structure of (84a):

(87) [[NEG₁ SOME] EVENT]] [Mary knows [[NEG₂ [NEG₃ SOME] one]]]

In this case, the NEG deleter of NEG₂ is the negated event quantifier DP [[NEG SOME] EVENT]], but it is a clause mate of NEG₂, violating condition (86).

When the pre-verbal negation and the *i*-NPI are not clausemates, there is no violation of (86) as shown in (88):

(88) Progovac (1994: 42)

Milan ne tvrdi da Marija pozna je i(t)ko-ga

Milan NEG claims that Mary knows anyone-ACC

“Milan does not claim that Mary knows anyone.”

In this case, [[NEG SOME] EVENT] is separated from the *i*-NPI by the clause boundary before *da*, so there is no violation of the Bagel Condition.

A further issue related to the bagel problem involves the grammaticality of cases like (94b):

(94) Data from Progovac (2005, chapter 6) and Progovac (personal communication)

- a. Ne tvrdim da Milan nikoga ne voli.
 not claim that Milan no-one not likes
 “I do not claim that Milan likes no one.”
 “I do not claim of Milan that he is such that he likes no one.”
- b. ?Ne tvrdim da Milan ikoga ne voli.
 not claim that Milan anyone not likes
 “I do not claim of anyone that Milan does not like him.”
 “There is no person of whom I claim that Milan does not like him.”

The complement clause in (94a) seems regular, as a *ni*-NPI occurs with a clausemate instance of NEG. But as (94b) contains an *i*-NPI in clause with a clausemate NEG, it at first sight seems anomalous. Clearly, it violates the simple statement (Progovac, 1994: 42) that *i*-NPIs are incompatible with clause mate instances of NEG.

Cognizant of our limited knowledge of SC, we can only speculate as to the basis of the grammaticality of the *i*-NPI in (94b). We take the relevant clue to be given by the translation, which indicates that the quantifier NPI DP *ikoga* in (94b) has high (main clause) scope. As already indicated, in the terms of CP2014, quantifier scope is syntactically represented, with every quantifier DP having both an argument position (normally, overt), and a scope position, always covert. The structure is given below:

- (95) ?Ne <[ikoga]₁> tvrdim [da Milan DP₁ ne voli]
 not anyone claim that Milan not likes

We propose that in (94b), the main clause scope position of *ikoga*, a binary NEG NPI, is subordinate to the matrix clause negated event quantifier DP, in which the main clause NEG

originates. And it is this negative quantifier DP which is the NEG deleter of the reversal NEG of NPI *ikoga*.

Since *ikoga*'s scope position is in the matrix clause, that position is a clausemate of the NEG deleter. Therefore, condition (86), the Bagel Condition, needs to be modified to ensure that while the scope occurrence of an *i*-NPI can be a clausemate of the NEG deleter of its outer NEG, the overt occurrence of the *i*-NPI cannot be:

(96) The Bagel Condition (second version)

If $K = [_{DP} [_{D} \text{NEG}_1 \text{ SOME}] [_{NP} Z]]$ is a general NEG deleter for a reversal NEG, NEG_2 , contained in DP_R , K is not a clause mate of an overt occurrence of DP_R .

In these terms, although *ikoga*'s overt occurrence in (94b) is a clausemate of a NEG, that NEG bears no NEG deletion relation to the deleted NEG of the *ikoga* DP. Hence condition (96) is not violated. Moreover, the matrix clause scope occurrence of *ikoga* in (94b) is covert. But condition (96) only refers to overt occurrences of binary NEG NPIs like *ikoga*.

The Bagel Condition arguably also plays a role in blocking the bad cases of the following pair; these are examples (16) and (17) of Bošković (2008):

(97) *Nikoga/ *Ikoga nisi tvrdio da je poljubio.*

nobody.acc anybody.acc neg.are claimed that is kissed

“You did not claim that he kissed anyone.”

Unfortunately, the translation of the grammatical variant of (97) fails to indicate the scope of *Nikoga*. But we infer this is main clause scope. And in the *ni*-NPI variant of (97), we take the clausal NEG to have raised out of that high scope occurrence of the negative quantifier DP which yields *Nikoga*.

The bad *i*-NPI variant of (97) violates condition (96) since the overt occurrence of *ikoga* is a clausemate of the NEG deleter of its outer NEG, which is the covert negative event quantifier DP.

However, despite its virtues, condition (96) is still not correct. While it properly blocks cases where an *i*-NPI is overt in a clause containing what we would take to be the NEG deleter of its outer NEG, it fails for analogs of such cases where the *i*-NPI or a larger DP containing it is extracted. Condition (96) predicts such extractions should ‘rescue’ such violations but they do not. They are ungrammatical, as shown by the following data from Bošković (2008):

(98) a. = Bošković’s example (19)

**Ikoga tvrdiš da nije poljubio.*

anybody claim that neg+is kissed

“You claim that he did not kiss anyone.”

b. = Bošković’s example (21)

**Ičja kola tvrdiš da nije ukrao.*

anybody’s car claim that neg+is stolen

“You claim that he did not steal anyone’s car.”

Here the *i*-NPI phrases have been extracted and are thus not overt clausemates of the clausal NEG in the complement clause. Thus (98a,b) do not violate condition (96). We thus modify this formulation modestly to the following:

(99) The Bagel Condition (third version and final)

If $K = [_{DP} [_{D} \text{NEG}_1 \text{ SOME}] [_{NP} Z]]$ is a general NEG deleter for a reversal NEG, NEG_2 , contained in DP_R , K is not a clause mate of any argument position occurrence of DP_R .

By ‘argument position occurrence’ we mean any occurrence that is not a scope position occurrence or one in the left periphery of the clause. The revised condition claims that any

phrase instantiating K cannot be a clausemate of the original argument position of the *i*-NPI, entailing rightly that extraction of that NPI as in (98) does not prevent the *i*-NPI from falling under the scope of the Bagel Condition.

12. *doubt*

Certain SC facts involving forms meaning ‘doubt’ and ‘without’ raise issues for our view of SC NPIs. Progovac (1994: 130) indicates that a verb meaning ‘doubt’ licenses *i*-NPIs in its complement clauses (containing no NEGs) and Progovac (personal communication) states that *ni*-NPIs are precluded there, as illustrated in (100):

- (100) Sumnja-m da je Mira voli i(t)koga/*ni(t)koga
 doubt-1SG that is Mira loves anyone

“I doubt that Mira has insulted anyone.”

The problem for us is that standard English analogs permit Horn clause complements and thus the NPIs they contain must, by our criteria, be unary not binary NEG NPIs. Collins and Postal (2015) cites (101a-c)

- (101) a. I doubt that at any time did a dragonfly think tank get together
 and decide that the species needed to fly faster, change colors or become smaller.
 (catbirdscout.blogspot.com/.../life-without-error....)
- b. Yes his actions were incredibly stupid but I doubt that
 at any time did he think a single punch would result in someone's death.
 (forums.scottishfootballforums.co.uk/.../14179-f...)
- c. I doubt that under any circumstances would we let our defenses down in that regard.
 (brookelorrren.com/blog/page/53/)

In cases like (100) a SC *i*-NPI exceptionally corresponds to an English unary NPI structure. While the SC verb in (100) and English *doubt* can be taken as semantically equivalent, roughly meaning ‘NEG(BELIEVE)’, we hypothesize that the English verb permits multiple NEG (but nonreversal) structures which for (101c) would yield representations of the schematic form in (91):

(102) I doubt that [_S NEG₂ [_S [_{DP} NEG₁ [_D SOME]] [_{NP} circumstances] would we let.....]]

Such a complement structure is equivalent to one in which neither NEG is present (since the two NEG_s cancel semantically), which captures the meaning of (101c). Because of the presence of NEG₂, the unary NEG structure of the NPI yields the correct positive meaning ‘in some circumstances’ for the NPI while remaining compatible with Horn clause formation. Collins and Postal (2015) provides extensive discussion of analyses like (102). Ultimately, we would interpret NEG₂ in (102) as the NEG of an event type negative existential quantifier of the sort discussed briefly in section 10.

We stress that we know of no evidence that English *doubt* does not *also* permit binary NEG NPIs in its complement clauses. Our proposal is that SC does not permit analyses of the form in (102), at least not for the verb meaning ‘doubt’. Hence the only NPI analyses in the complements of ‘doubt’ with the NEG deleter in the main clause are reversal analyses.

Further, Progovac (2005: example (80); 1993: 163) states that SC licenses *i*-NPIs in the complement of a form meaning ‘without’. She also claims that *ni*-NPIs are barred in this context. In English, however, some unary NEG NPIs are allowed with the analog:

(103) Valerie left school without learning jackshit_A.

Again, we know of no evidence that would argue that binary NEG NPIs are not possible in this context. To account for cases like (103) and their contrast with semantically equivalent SC *ni*-

NPI structures we would appeal to an analysis significantly parallel to that in (102). But full discussion is beyond the scope of this article.

Complicating the picture, however, Zeilstra (2004: 124) cites an example indicating that some speakers do permit *ni*-NPIs in the complements of SC ‘without’. If accurate, this observation suggests to us that for some SC speakers a unary NEG NPI analysis is found in ‘without’ complements.

13. A Typology of NPIs

Collins, Postal and Yevudey (2015) analyzes NPIs in the west African language Ewe. The syntax of Ewe *ke*-NPIs is fairly close to that of SC *ni*-NPIs. A combination of the conclusions of the present study and those of Collins, Postal and Yevudey (2015), building on but expanding the framework of CP2014, suggests a general cross-linguistic typology for NPIs.

Parameter A distinguishes whether a language permits or requires the raising of the NEG of a unary NEG NPI of the form [_{DP} [_D NEG SOME] NP]. Standard English evidently falls into the first class, and SC, Hungarian, Russian and Ewe fall under the second class.

(104) Parameter A

Standard English: NEG optionally raises from a unary NEG structure.

SC/Ewe: NEG obligatorily raises from a unary NEG structure.

A second parameter, Parameter B, is only defined for languages either requiring or permitting the raising of the NEG of unary NEG NPIs. This parameter distinguishes whether or not such raising leaves a copy NEG.

(105) Parameter B

Standard English: NEG raising (from a unary NEG NPI) does not leave a copy.

SC/Ewe: NEG raising (from a unary NEG NPI) leaves a copy.

A third parameter, Parameter C, distinguishes those languages which allow reversal NEG NPIs of the form $[_{DP} [_D \text{ NEG } [_D \text{ NEG SOME}]] \text{ NP}]$ from those which do not. Standard English, SC, Russian and Hungarian fall into the first category, while Ewe falls into the second.

(106) Parameter C

SC/Standard English: Allows binary NEG NPIs.

Ewe: Disallows binary NEG NPIs.

The typology just described raises various questions which only extensive cross-linguistic research can answer. At issue is the extent to which the logical combinations of the properties at issue can actually be attested. For example, are there languages lacking binary NEG NPIs but which have unary NEG structures whose NEGs cannot raise. This would be a language with negative quantifiers like *nobody*, but no NPIs.

Or are there languages lacking binary NEG NPIs where unary NPI NEGs do raise but without leaving a copy. We currently know of no such languages, but we can see no reason why they could not exist.

In general then, research is needed to determine the existence or not of languages manifesting the various logical possibilities of the NPI properties characterized by Parameters A, B and C. It is our hope that this study will help stimulate such research.

14. Conclusion

In this paper we have argued on the basis of evidence from SC for the claim in CP2014 that NPIs instantiate two distinct structure types: unary NEG NPIs and binary NEG NPIs. We claimed that SC *i*-NPIs correspond to binary NEG NPIs while SC *ni*-NPIs correspond to English

unary NEG NPIs. We showed how the properties of SC *ni*-NPIs can be understood in terms of their analysis as unary NEG NPIs, and we also explained syntactic differences between SC *ni*-NPIs and English unary NEG NPIs in terms of the assumption that *ni*-NPIs, like *no* forms in nonstandard English, involve copy raising. Further, we suggested that these ideas combined with a version of what is now called event semantics could provide a novel approach to so-called sentential negation. Lastly, we presented a syntactic typology of NPIs based on the framework of assumptions in CP2014 as extended here.

References

- Blanchette, Frances. 2015. *English Negative Concord, Negative Polarity, and Double Negation*. New York: Doctoral Dissertation, CUNY Graduate Center.
- (<http://ling.auf.net/lingbuzz/002654>)
- Bošković, Željko. 2007. On the clausal and NP structure of Serbo-Croatian. In R. Compton, M. Goledzinowska, and U. Savchenko (eds.) *Formal Approaches to Slavic Linguistics: The Toronto Meeting, 2006*, 42-75. Ann Arbor: Michigan Slavic Publications.
- Bošković, Željko. 2008. On Two Types of Negative Constituents and Negative Concord. *Proceedings of FDSL 6*, 9-35.
- Bošković, Željko. 2009. Licensing Negative Constituents and Negative Concord. *Proceedings of NELS 38*.
- Carlson, Greg N. 1980. Any is existential. *Linguistic Inquiry* 11:799–804.
- Collins, Chris. 2015. Not Even. Ms., NYU.
- Collins, Chris and Paul M. Postal. 2014. *Classical NEG Raising*. Cambridge, Massachusetts: MIT Press.
- Collins, Chris and Paul M. Postal. 2015/to appear. Dispelling the Cloud of Unknowing.

- In Laurence R. Horn and Ken Turner (eds.) *An Atlas of Meaning: Papers on Pragmatics, Semantics, and Truth*. Leiden: Brill. (<http://ling.auf.net/lingbuzz/002269>)
- Collins, Chris, Paul M. Postal and Elvis Yevudey. 2015. Negative Polarity Items in Ewe. (<http://ling.auf.net/lingbuzz/002651>)
- Davidson, Donald. 1967. The Logical Form of Action Sentences. In Nicholas Rescher (ed.), *The Logic of Decision and Action*, 81-95. Pittsburgh, PA: University of Pittsburgh Press.
- Giannakidou, Anastasia. 2006. N-Words and Negative Concord. In M. Everaert and H. van Riemsdijk (eds.), *The Blackwell Companion to Syntax, vol. 1*. Blackwell Publishing Ltd.
- Heim, Irene. 1982. *The semantics of definite and indefinite noun phrases*. Doctoral dissertation. Amherst: University of Massachusetts.
- Kadmon, Nirit, and Fred Landman. 1993. *Any*. *Linguistics and Philosophy* 16:353–422.
- Kim, Jaegwon. 1969. Events and Their Descriptions: Some Considerations. In Nicholas Rescher (ed.) *Essays in Honor of Carl G. Hempel* 198-215. Dordrecht: Reidel.
- Ladusaw, William A. 1995. Configurational Expression of Negation. In Jaap van der Does and Jan van Eijck (eds.) *Quantifiers, Logic and Language*. Stanford: CSLI.
- Linebarger, Marcia. 1980. *The grammar of negative polarity*. Doctoral dissertation, MIT.
- Maienborn, Claudia. 2011. Event Semantics. In C. Maienborn, von Stechow and P. Portner (eds.), *Semantics: An International Handbook of Natural Language Meaning*, 802-829. De Gruyter.
- Merchant, Jason. 2001. *The Syntax of Silence*. Oxford: University Press.
- Pereltsvaig, Asya. 2004. Negative Polarity Items in Russian and the ‘Bagel Problem’. In A. Przepiorkowski and S. Brown (eds.) *Negation in Slavic*, 153-178. Bloomington: Slavica Publishers.

- Postal, Paul M. 2004. *Skeptical Linguistic Essays*. Cambridge: MIT Press
- Progovac, Liljana. 1990. Free-Choice Bilo in Serbo-Croatian: Existential or Universal? *Linguistic Inquiry* 21, 130-135.
- Progovac, Ljiljana. 1991. Polarity in Serbo-Croatian: Anaphoric NPIs and Pronominal NPIs. *Linguistic Inquiry* 22, 567-572.
- Progovac, Ljiljana. 1993. Negative Polarity: Entailment and Binding. *Linguistics and Philosophy* 16, 149-180.
- Progovac, Ljiljana. 1994. *Negative and Positive Polarity*. Cambridge, England: Cambridge University.
- Progovac, Ljiljana. 2005. *A Syntax of Serbian: Clausal Architecture*. Bloomington: Slavica Publishers.
- Ross, John Robert. 1969. Guess Who? In *Papers from the Fifth Regional Meeting of the Chicago Linguistic Society*. Chicago: University of Chicago.
- Szabolcsi, Anna. 2004. Positive polarity—negative polarity. *Natural Language and Linguistic Theory* 22: 409-452.
- Tóth, Ildikó. 1999. Negative Polarity Item Licensing in Hungarian. *Acta Linguistica Hungarica* 46, 119-142.
- Watanabe, Akira. 2004. The Genesis of Negative Concord: Syntax and Morphology of Negative Doubling. *Linguistic Inquiry* 35, 559-612.
- Zeijlstra, Hedde. 2004. *Sentential Negation and Negative Concord*. Doctoral dissertation: Amsterdam: University of Amsterdam.