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0.   Introduction

In this paper, I show that a well known case of cyclic historical change in sentential negators, the Jespersen cycle, can be accounted for by a general priciple of licensing that applies to all functional projections. The advantage of this approach is that it utilizes Economy of Projection (Speas 1994), an independently motivated principle of Universal Grammar, to account for cross-linguistic variation and historical change in sentential negation.

In section 1, I review data from the history of English and French. Section 2 introduces the claim of this paper in more detail. In section 3, I present cross-linguistic data on null subjects and introduce Speas's account using Economy of Projection. In section 4, I review the analysis of the syntactic status of negation in the histories of English and French. Section 5 provides details of an account of the Jespersen cycle

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based on the structural analysis of negation, and Economy of Projection. Section 6 concludes the paper with a summary.

1.   Data

Jespersen (1917) originally noted that English, French, and Scandinavian languages share a cyclic variation in the history of their negative expressions:

> "the original negative adverb is first weakened, then found insufficient and therefore strengthened, generally through some additional word, and this in turn may be felt as the negative proper and may then in course of time be subject to the same development as the original word." (p.4)

Jespersen's observation is based on parallel developments in word order and phonological reduction in the sentential negators of these languages. For example, in Old English, the sentential negator was the preverbal *ne*, as in (1).

(1)   Ic **ne** *toweorpe* ða   burg.
       I   not   destroy   the   castle
       'I didn't destroy the castle.' (Haeberli 1991 (53))

During Old English, postverbal *not* ('not at all') was added to make an emphatic negative and in Middle English *not* was reanalyzed as part of a bipartite negative *ne..not* (2).

(2)   ... he **ne** *shal* **nouȝt** deceiue him.
            he not   shall   not   deceive him
       '... he won't deceive him (in any way).' (Early Prose Psalter 161:131:11)

The *ne* dropped out of use soon after, and by the beginning of Early Modern English, *not* stood alone as a sentential negator (3).

(3)   Crist *shulde* **not** haue suffred deþ.
       Christ should   not   have suffered death
       'Christ shouldn't have suffered death.' (Wycliffite sermons I:415)

Finally, in Modern English, *not* is often reduced to postverbal clitic *-n't* (4).

(4)   I *won't* say.

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[1] All examples from original sources are from the Helsinki Corpus of English Texts (diachronic part), available from the Norwegian Computing Centre for the Humanities, and deposited by Merja Kytö, Department of English, University of Helsinki with the Oxford Text Archive. The text names are taken from the corpus documentation. The Middle English section of the diachronic part of this corpus is also the one used for the quantitative analysis later in the paper.

Thus, English displays the full cycle in the historical record. The single negator *ne* was reinforced by *not*, and then lost. The replacement, *not*, has since been phonologically weakened.

A similar evolution of French from preverbal *ne* to *ne V pas* to postverbal *pas* is also completing the cycle (5a-c). In Haitian Creole, *pas* has become preverbal *pa* (5d).

(5)   16th century French
       a.   ...affin qu'on   **ne**   les   *veit, ...*
               ...so that   one   not   them   see
               '... so that one would not see them, ...' (Hirschbühler and Labelle 1993)
       Literary or Standard French
       b.   Elle   **n'***est*   **pas**   partie.
               She   not-is   not   left
               'She hasn't left.' (Ashby 1981)
       Colloquial Modern French
       c.   Le   facteur   *arrive* **pas**.
               The   mailman   comes   not
               'The mailman isn't coming.' (Ashby 1981)
       Hatian Creole
       d.   Jan   **pa**   *tavale*   nan   mache.
               Jan   not   will-PST-go in   market
               'Jan would not have gone to the market.' (DeGraff 1993)

2.   Claim

In Frisch (1994), I argued following Pollock (1989), Kayne (1989), and Zanuttini (1991) that *ne* and *-n't* are heads of a functional projection of negation, NEGP, and that *not/pas* are in the specifier of NEGP. DeGraff (1993) argues that Hatian Creole *pa* is a head parallel to *ne*. Thus, to restate the Jespersen cycle in syntactic terms, the cycle represents structural variation between a head of NEGP negator and a specifier of NEGP negator over time.

In a cross-linguistic analysis of null subjects, Speas (1994) argues that there is a principle of Economy of Projection which can be used to give an account of null subject phenomena. Economy of Projection states that every maximal projection must be licensed in order to appear in the phrase marker. There are two ways in which a maximal projection is licensed: it must contain overt material in either the head or the specifier position. When this principle is applied to subjects, it predicts that there are two ways to license the agreement projection, AGRP. Either the AGR head, or the specifier of AGRP can be used. In languages with rich inflection, the AGR head will license NEGP. In languages with poor inflection, the specifier of AGRP licenses AGRP.

While Speas's analysis pertains to only to AGRP, it can be extended to NEGP as well. Thus, I claim that the Jespersen cycle is the result of alternation between

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licensing strategies for NEGP. This account provides evidence for the principle of Economy of Projection as an independent licensing condition in Universal Grammar.

3.   Null subjects and Economy of Projection

I now turn to a principle of economy of representation proposed in Speas (1994). Speas proposes a licensing condition on XPs to explain the distribution of null subjects cross-linguistically. Under standard assumptions, subjects are realized in the specifier of an agreement phrase (AGRP). Languages vary as to whether that subject must be realized overtly. I will first briefly discuss the status of AGRP, then turn to the distribution of null subjects, and finally discuss the effect that Economy of Projection will have on NEGP.

Before introducing the status of AGRP as it relates to null subjects, I must first introduce the formal distinction of "strong" verus "weak" agreement. Rohrbacher (1994) offers a theory of verb raising which correlates verb movement with agreement cross-linguistically. He suggests that there are two lexically different types of inflection which correspond to the syntactic types of "strong" and "weak". In languages with "strong" agreement, the agreement morpheme has an individual lexical entry, and is inserted as an independent INFL head in the syntax (6a). Verbs will become inflected by head movement to the AGR position. Thus, overt verb movement must occur in order to avoid stray affixes. By contrast, languages with "weak" agreement inflect the verb in the lexicon, and the fully inflected verb is inserted into the V node in the tree (6b). In this case, no overt verb movement is required for the verb to gain inflection.

(6)   a.   b.
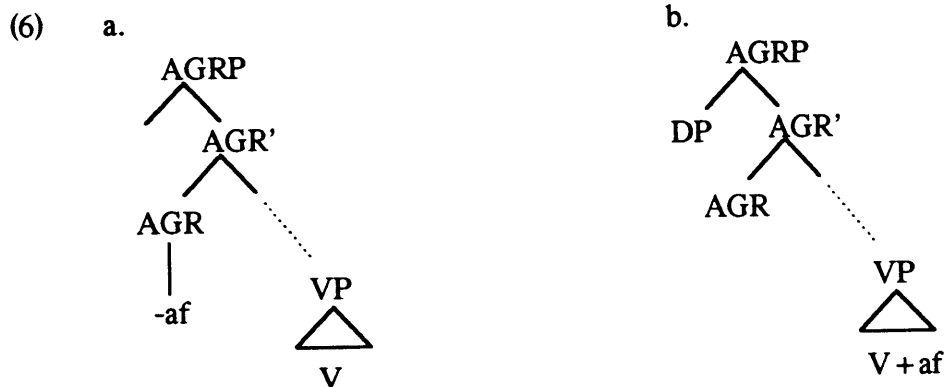
Speas suggests that we can take advantage of the distinction proposed by Rohrbacher to account for the distribution of null subjects. She proposes a condition of Economy of Projection which requires that either the head or the specifier of XP must contain contentful material in order for that XP to be licensed, and consequently to appear in the phrase marker. In languages with "strong" agreement, the independent AGR head will be sufficient to license the AGRP projection. In this case, the subject position, specifier of AGRP, could be left empty without violating the licensing condition. By contrast, languages with "weak" agreement do not have contentful AGR heads, as the verb is inflected before insertion into the tree. The only way to license the

AGRP projection is with a subject in the specifier of AGRP. Finally, it may be that some languages have no AGRP. In this case, there is no need to license AGRP, and null subjects are again a possibility.

These three structural possibilities correspond to three types of languages: "rich" agreement, "poor" agreement, and no agreement (Jaeggli and Safir 1989). Languages with "rich" agreement tend to have "strong" AGR heads, and consequently, null subjects (e.g. Italian). Languages with "poor" agreement generally have "weak" AGR heads, and overt subjects are required (e.g. English). Languages with no agreement have no AGRP and allow null subjects (e.g. Chinese).

The existence of a universal licensing principle for projections has interesting consequences for NEGP. Economy of Projection predicts there will be cross-linguistic variation between head-licensing and specifier-licensing for all functional projections. Thus, there are two possible positions for a negator in NEGP which satisfy the licensing condition: head of NEGP and specifier of NEGP. Assuming that, in the languages under discussion, a licensed NEGP is required to express sentential negation, there must be base generated overt material in the NEGP of a syntactically negated sentence.[2] Either a head negator or a negator in the specifier is a potential licenser of NEGP. There is cross linguistic evidence for this approach. Zanuttini (1991), in a study of several Romance languages, indicates that sentential negation in these languages behaves as either a head or a specifier of NEGP. Speas's hypothesis can also be used to explain the general character of the Jespersen cycle as a cycle between head and specifier negators, the potential licensers of NEGP.

4.   The structure of negation

In this section, I present the account of negation in the history of English from Frisch (1994). A parallel account is assumed for French, based on the results of Pollock (1989), Kayne (1989), Zanuttini (1991), and DeGraff (1993).

4.1   Evidence for negative heads

Evidence for negative heads can be found in certain parallels between the behavior of sentential negation and verbal inflection. In particular, both Modern English -*n't* and Middle English *ne* show inflectional behavior based on several tests set forth in Zwicky and Pullum (1983).

Evidence that -*n't* is a head comes directly from the analysis of Zwicky and Pullum (1983). I will briefly review selected arguments. First, inflection is selective with respect to its stem, while phonological clitics exhibit a low degree of selectivity. For

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[2] I leave open the possibility of languages which have no NEGP, and thus have no need to license one. This case in sentential negation is structurally parallel to the case of null subjects in Chinese. In this case, the sentential negator may appear as a sentence adverb, in a position adjoined to a functional projection (cf. the use of adverb *not* in section 5) or in some other position.

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example, *-n't* appears only with auxiliary and modal verbs, while *'s* can cliticize to many categories of words. (Examples (7-9) are from Zwicky and Pullum 1983, (7') is my own).

(7)   a.   The person I was talking to's going to be angry with me.
        b.   The ball you hit's just broken the dining room window.
        c.   Any answer not entirely right's going to be marked as an error.
        d.   The drive home tonight's been really easy.

By contrast, if *-n't* were a simple clitic, formed by a regular phonological rule, we would expect the examples in (7') to be grammatical.

(7')   a.   *Ton't drink the wine would offend your hosts.
                (phonologically parallel to *do+not = don't*.)
        b.   *Any answern't entirely right is going to be marked as an error.
                (phonologically parallel to *were+not = weren't*.)

A second difference between inflection and cliticization is that inflectional paradigms can have arbitrary gaps, whereas clitics combine with all hosts of the appropriate form. For example, there is no *-n't* form of *may* or *am*, while there is no particular lexical item which blocks cliticization by *'s*. Conversely, there is the word *ain't* which does not correspond to a particular word plus *-n't*. This is impossible under the phonological analysis of clitic combinations, which combine distinct syntactic words based on phonological rules.

In addition, inflectional paradigms may contain unpredictable phonological forms, while host+clitic forms are always predictable. In particular, the existence of forms like *won't, shan't,* and *don't*, which have irregular stem changes, is evidence for the inflectional analysis of *-n't*.

The final piece of Zwicky and Pullum's data I will review is the possibility of multiple clitic combinations on the same host. For example, the two clitics *'d* and *'ve* corresponding to *would* and *have* can both attach to a single host.

(8)   I'd've done it if you'd asked me.

The *-n't* form is incompatible with other clitics.

(9)   *I'dn't be doing this unless I had to.

All of these tests indicate that *-n't* behaves like verbal inflection. Since verbal inflection is normally taken to be the head of a functional projection, the status of *-n't* as a head is thus clear. There are similar parallels between the behavior of *ne* and the behavior of verbal inflection (cf. Pollock 1989 for French, Haeberli 1991 for English). For example, *ne* participates in subject-verb inversions, and consequently appears along with the verb before the subject.

(10)   [**Ne** canstu]   me   noȝt   know?
        neg can+you   me   not   know
        'Can't you recognize me?' (King Horn 55)

In addition, *ne* shows some allomorphy which is characteristic of inflection.

(11)   a.   My   mouþe   **nis**   nouȝt   hidde   fro   þe ...
              My   mouth   *ne*-is   not   hidden   from   you
              'My mouth isn't hidden from you ...' (Early Prose Psalter 138:168:14)
        b.   ... for   **nulle**   ich   leauen   his   luue.
                    for   *ne*-will   I   leave   his   love
              '..., for I won't leave his love.' (Biography of St. Juliana 104:13)
        c.   Hit   **nas**   for   none   gode.
              It   *ne*-was   for   no   good
              'It was for no good.' (King Horn 13:16)

Thus, I conclude that *ne* and *-n't* are heads of NEGP. This establishes endpoints for the Jespersen cycle in English. Haitian Creole *pa* provides the modern endpoint for the French cycle. It is analyzed as a head by DeGraff (1993).

4.2   Evidence for negatives in the specifier of NEGP

I assume *not* occupies the specifier of NEGP, based on the quantitative results of Frisch (1994) and the following structural evidence. First, in contrast to *ne* and *-n't*, *not* is unaffected by inversion of the verb with the subject.

(12)   [Wyll] he **not** com nere?
        'Won't he come near?' (Mankind 162)

In addition, *not* does not phonologically cliticize to surrounding words.[3] *Not* has all the characteristics of an independent word, and thus should not be treated in a manner parallel to verbal inflection. Assuming that *not* is a constituent of NEGP, it must be located in the specifier position.

In the case of French, I follow Pollock (1989), who argues that French *pas* is in the specifier of NEGP. This establishes the other half of the Jespersen cycle, where the negator is in the specifier of NEGP. Note also that the structural positions of the two types of negators are independent. Both a head negator and a specifier negator can be used. The result is a bipartite negation, the "strengthened" negation in Jespersen's (1917) terms.

The data presented thus far establish a structural contrast between two types of negator: a head negator and specifier negator. Assuming the split-INFL framework of

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[3] I follow Kayne (1989) in taking *-n't* and *not* to be syntactically distinct entities.

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Pollock (1989) as modified by Belletti (1990), the sentences in (3) and (4), repeated here as (13a,b) would have representations along the lines of (14a,b).

(13) a.   Crist   shulde **not**   haue   suffred   deþ.
              Christ   should not   have   suffered   death
              'Christ shouldn't have suffered death.' (Wycliffite sermons I:415)
      b.   I **won't** say.

(14) a.   b.

```
          AgrP                                          AgrP
         /    \                                        /    \
       NP      Agr'                                  NP      Agr'
       /      /   \                                  /      /   \
   Christ  AGR    NegP                             I    AGR    NegP
            |     /   \                                   |     /   \
          shulde_i ZP   Neg'                           won't_i  t_i   Neg'
                   /\   /  \                                        /  \
                  /__\ /    \                                      /    \
                 not  t_i   TP                                    t_i    TP
                           /  \                                         /  \
                          /    T"                                      /    T"
                              /  \                                         /  \
                            t_i   VP                                     t_i   VP
                                  /\                                            /\
                                 /__\                                          /__\
            have suffred deaþ                                    say
```

Note that this structure assumes that the modals *schulde* and *will* originate in the lower INFL projection (TP) and raise to AGRP. I also assume that this movement is mandatory (Chomsky 1993, Rohrbacher 1994).

4.3   Summary

Given the structural analyses in (14), the Jespersen cycle is fluctuation between a negative head (*ne*) and a SPEC negator (*not*) over time. There is one asymmetric property of this fluctuation. The transition from head negator to SPEC negator has an intermediate stage with a bipartite negator (*ne V not*), consisting of both the head and SPEC negator. By contrast, the change from SPEC negator to head negator (*not* to *-n't*) is direct, with no two part negator. This asymmetry will be accounted for in section 5.

5.   Account of the Jespersen cycle

Recall that Economy of Projection allows two ways of licensing functional projections. Either the head position or the specifier position must be filled. The Jespersen cycle is fluctuation from a head negator, to a bipartite head and specifier negator, to a lone specifier negator, which is reanalyzed as a head. I deal with each stage of the cycle in turn.

5.1   Head negator (*ne*) to bipartite negator (*ne V not*)

In this stage, the NEGP is initially licensed by the negative head *ne*. Notice, though, that the specifier position of NEGP is open, and that a bipartite negator could be formed by reanalysis of some other constituent. This is the case for Middle English *not*, which was reanalyzed from a sentence adverb to a sentential negator while *ne* was still present. I present a brief review of data originally presented in Frisch (1994).

In early Middle English, *not* was used as a sentence adverb. It was used in both preverbal and postverbal position, as in (15).

(15)   a.   Þat Jesuss **nohht** ne *wollde* Ben boren nowwhar i   þe land, ...
                That Jesus   not   not would   been born   nowhere   in the land, ...
                'That Jesus did not want to be born anywhere in the land, ...'
        b.   My mouþe *nis*   **nouȝt** hidde fro   þe, ...
                My mouth not-is not   hidden from you, ...
                'My mouth isn't hidden from you, ...' (Frisch 1994 (4))

This is parallel to the preverbal and postverbal positions of Middle English *never*.

(16)   a.   ... & heo **næfre** ne *beoð* isceadde from þare ece   murhðe.
                ... and he   never   not is   separated from there each mirth.
                '... and he never is separated from each joy.'
        b.   ... and þu *nast*   **neure** hwenne; ...
                ... and you not+know   never   when; ...
                '... and you never know when; ...' (Frisch 1994 (2))

In late Middle English, the use of *not* in the preverbal position (15a) is lost. This indicates that *not* has been reanalyzed syntactically.

The reanalysis of *not* can be studied quantitatively. Kroch (1989) and Frisch (1994) independently estimate the use of preverbal position for adverbs to be 16%, based on the distribution of *never* in the history of English. Thus, the loss of the preverbal position can be used to estimate the change in syntactic status for *not*. Table 1 shows the estimated use of *not* as an adverb and as a sentential negator for five time periods in Middle English assuming that the instances of preverbal *not* represent 16% of the total number of cases of adverbial *not*.

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Table 1: The rise in use of *not* as a sentential negator.						
time period	actual preverbal *not*	estimated adverb *not*	estimated negation *not*	actual total *not*	estimated %adverb *not*	estimated .%negation *not*
1150-1220	16	100	0	85	100%	0%
1220-1290	7	44	28	72	61%	39%
1290-1360	7	44	191	235	19%	81%
1360-1430	6	38	679	717	5%	95%
1430-1500	2	13	328	341	4%	96%

Table 1 shows that *not* had essentially been reanalyzed as a sentential negator, occupying the specifier of NEGP, by 1360.

Not is used alone as sentential negator as well as in combination with *ne*. Table 2 shows the use of *not* with and without *ne* in the corpus.

Table 2: The use of *not* with and without *ne*.					
time period	with *ne*	without *ne*	total	%with *ne*	%without *ne*
1150-1220	82	3	85	96%	4%
1220-1290	67	5	72	93%	7%
1290-1360	191	44	235	81%	19%
1360-1430	110	607	717	15%	85%
1430-1500	0	341	341	0%	100%

Based on the percentages with and without *ne* in table 2, and the estimated number of uses of *not* as a sentential negator from table 1, the use of bipartite negation *ne..not* and *not* alone as a sentential negator can be estimated. For example, in the 1290-1360 time period, there were 191 uses of *not* as a negator. 155 of these (81%) are uses of bipartite *ne..not* and 36 (19%) are uses of *not* alone as a sentential negator.

Table 3 contains the results of this computation for all time periods, along with the use of *ne* alone. The rate of use of *ne* as a sentential negator can be estimated by summing the cases with *ne* and the cases with *ne..not* and dividing by the total number of negations.

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Table 3: The use of *ne*, *ne..not*, and *not* as sentential negation.					
time period	actual *ne*	*ne..not* negation	*not* negation	total negation	%negation with *ne*
1150-1220	150	0	0	150	100%
1220-1290	112	26	2	140	99%
1290-1360	186	155	36	377	90%
1360-1430	29	104	575	708	19%
1430-1500	2	0	328	325	1%

Table 3 shows that the use of the head of NEGP, *ne*, as sentential negator did not decline significantly until after 1360 – that is, after *not* was established in the specifier of NEGP position.

The reanalysis of the particular lexical item *not* as a sentential negator in the case of English was the result of semantic drift. During early Middle English, *not* was used as an emphatic negator (Jespersen 1917). Over time, most emphatics weaken semantically (Hock 1984), and *not* was used more generally as the ordinary negator. This led to the syntactic reanalysis of *not* based on its new semantic role.

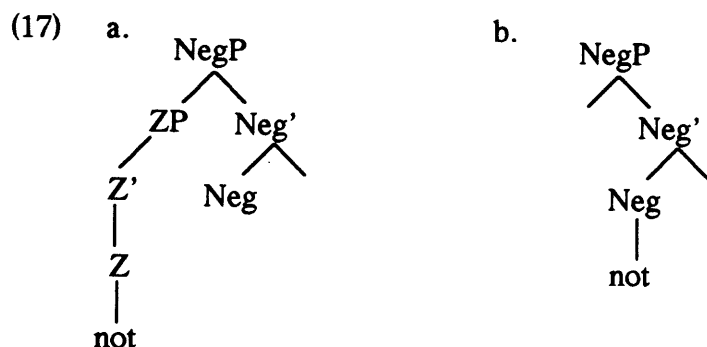### 5.2   Bipartite negator (*ne V not*) to specifier negator (*not*)

Economy of Projection requires that either the head or the specifier of XP must contain overt material in order for that XP to be licensed. Once *not* was reanalyzed as occupying the specifier of NEGP, *not* was able to license the NEGP. At this point, *ne* was no longer needed to satisfy the licensing requirement and was lost. Note that *ne* cannot be lost until *not* is established in the specifier of NEGP or the licensing requirement would be violated, and therefore some type of bipartite negation must be involved in the change from head negation to specifier negation.

The analysis presented here provides no syntactic motivation for the loss of *ne*. There no syntactic reason why *ne* must be lost. The loss of *ne* could have occurred for sociological, phonological, or semantic reasons. Based solely on orthographic records, it is difficult to determine the real motivation for the change. The true motivation is beside the point here, as regardless of the impetus for the change, the change must be syntactically possible, or it would not occur.

5.3   Specifier negator (not) to head negator (-*n't*)

In the SPEC negator stage, the NEGP has no head. In addition, the negator itself is not simply a bare head in the specifier position, but is the head of some ZP, as in (17a). I claim that this situation is an unstable one. The language learner must have evidence to posit a functional projection with no head and a separate ZP projection for the negator in specifier position. The most economical analysis from the point of view

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of the language learner is that the overt material and functional projections match up in a one-to-one manner, i.e. the overt negator is actually the head of NEGP (17b).[4]

(17) a.

```
        NegP
        /\
      ZP   Neg'
      /     /\
    Z'     Neg
    |
    Z
    |
   not
```

b.

```
        NegP
        /\
          Neg'
          /\
         Neg
         |
         not
```

Accounting for this change in terms of simplicity of structure also accounts for the lack of spontaneous reanalysis of a head negator as a specifier negator. In the head to specifier case, a more complicated structure would have to be innovated to replace a simpler one – a situation that is, by assumption, disfavored.

In the change from specifier to head negation, there is no requirement for an outside licenser for NEGP. Under either structural analysis of NEGP in (17), the NEGP is licensed. Thus, there is no need for any additional lexical item to be involved in this change. This is the desired result, as the Jespersen cycle has no intermediate bipartite negator in the change from specifier to head negation.

6.   Conclusion

In this paper, I presented the Jespersen cycle as a fluctuation between the syntactic status of the sentential negator as a head and the syntactic status of the sentential negator as a specifier. In the case of English, the cycle progressed from the head *ne*, to the bipartite *ne..not*, to the specifier negator *not* alone, and finally to the inflection-like head -*n't*.

The restriction of syntactic changes in negation from head to specifier or specifier to head results from the need to continue to satisfy the licensing condition on NEGP. This narrow range of possible syntactic changes in the Jespersen cycle provides evidence for Speas's principle of Economy of Projection. The parallel nature of licensing NEGP and AGRP, by either the head or specifier position, is predicted if Economy of Projection is taken as a principle of Universal Grammar which applies to all projections. This prediction could be further tested by exploring additional parallels between negation and null subjects, and by expanding the data to include other functional projections like tense or object agreement.

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[4] While the structure in (17a) is a violation of the X-bar principle of endocentricity (Chomsky 1970), the principle of Economy of Projection replaces endocentricity as the X-bar licensing condition. However, endocentricity remains as a language tendency, perhaps motivated by parsing constraints as mentioned in the text.

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