

The Meaning of Being Meaningless

the how and why of uninterpretable features

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I. INTRODUCTION

1. Doubling: a manifestation of uninterpretability?

- (1) Doubling: a single semantic operator or property is manifested multiple times on the morpho-syntax
- (2)
 - a.

gato	bonito	Portuguese
cat.MASC	beautiful.MASC	
[MASC]	[MASC]	
'beautiful tomcat'		
 - b.

gata	bonita	
cat.FEM	beautiful.FEM	
[FEM]	[FEM]	
'beautiful cat'		
- (3) Two possible analyses:
 - a. Additional features carry semantic content that does not effect the final interpretations;
 - b. Additional features carry no semantic content, i.e. they are uninterpretable features;
- (4) Although (2) shows that one of the two feminine features are redundant, it does not prove that one of these two is meaningless:
- (5) $FEM(a) \ \& \ FEM(a) \ \& \ X(a) \leftrightarrow FEM(a) \ \& \ X(a)$

- (6) Although pragmatic effects may point in the direction that not every feminine feature gets semantically interpreted (*female girl* has a different meaning than *girl*), concord effects w.r.t. semantic *properties* cannot prove uninterpretability.
- (7) However this does not hold for semantic *operators*. It is not necessarily the case that a proposition carrying two operators entails a proposition carrying only one:
- (8) $Op_F(Op_F(x)) \rightarrow Op_F(x)$ does not hold for all F, x
- (9) Modality:
- | | | |
|----|---|------------------------------------|
| a. | You can 't possibly have been there | English |
| b. | Alle deelnemers moeten zich verplicht registeren
All participants must SELF obligatorily register
'All participants have to register' | Dutch
(Geurts and Huitink 2006) |
- (10) Negation:
- | | | |
|----|---|---------|
| a. | Gianni non ha telefonato a nessuno
Gianni NEG has called to n-body
'Gianni didn't call anybody' | Italian |
| b. | Nikdo ne-viděl nikoho
Nobody NEG.saw n-body
'Nobody saw anybody' | Czech |
- (11) Do all these additional markers of semantic operators carry semantic content or not?
- (12) Overview of the course:
- Negation and Negative Concord
 - Modality and Modal Concord
 - Motivating uninterpretable features

II Negation and Negative Concord

2. Properties of negation in naturel language

- (13) Three phenomena:
- Preverbal and postverbal negative markers
 - Strict vs. Non-strict Negative Concord
 - The ban on negative imperatives

2.1 Negative markers

- (14) Four different kind of negative markers (Zanuttini 1997; Zanuttini 2001):
- Affixal negative markers
 - Weak preverbal negative markers
 - Strong preverbal negative markers
 - Adverbial negative markers

- (15) a. John *elmalari sermedi* Turkish
 John apples like.NEG.PAST.3SG
 'John doesn't like apples' (affixal)
- b. Milan *nevolá* Czech
 Milan NEG.calls
 'Milan doesn't call' (weak particle)
- c. Gianni *non* ha telefonato Italian
 Gianni NEG has called
 'Gianni didn't call' (strong particle)
- d. Hans kommt *nicht* German
 Hans comes NEG
 'Hans doesn't come' (adverbial)
- (16) a. *No* serà (*pas*) facil Catalan
 NEG be.FUT.3SG NEG easy
 'It won't be easy'
- b. Jean *ne* mange *pas* French
 Jean NEG eats NEG
 'Jean doesn't eat'
- c. Valère (*en*) klaapt *nie* West Flemish
 Valère NEG talks NEG
 'Valère doesn't talk'

2.2 Negative Concord

- (17) Three types of languages wrt the way they interpret multiple negative expressionist (Giannakidou 1997; Giannakidou 2000; de Swart and Sag 2002; Zeijlstra 2004)
- a. *Double Negation (DN) languages*: two negative expressions cancel each other out.
- b. *Strict Negative Concord (Strict NC) languages*: negative indefinites need to / may be accompanied by a negative marker.
- c. *Non-strict Negative Concord (Non-strict NC) languages*: negative indefinites need to / may be accompanied by a negative marker if they are in postverbal position, but not if they are in preverbal position.
- (18) Negative indefinites in NC languages: *n-words*
- (19) a. Jan ziet *niet niemand* Dutch
 John sees NEG n-body (DN)
 'John doesn't see nobody' = 'John sees somebody'
- b. *Niemand* belt *niet*
 N-body calls NEG
 'Nobody doesn't call' = 'Everybody calls'
- (20) a. Milan **(ne)vidi nikoho* Czech
 Milan NEG.saw n-body (Strict NC)
 'Milan didn't see anybody'

- b. Dnes **(ne)volá nikdo*
 Today NEG.calls n-body
 'Today nobody calls'
- c. Dnes *nikdo *(ne)volá*
 Today n-body NEG.calls
 'Today nobody calls'
- (21) a. Gianni **(non) ha telefonato a nessuno* Italian
 Gianni NEG has called to n-body (Non-strict NC)
 'Gianni didn't call anybody'
- b. Ieri **(non) ha telefonato nessuno*
 Yesterday NEG has called n-body
 'Yesterday nobody called'
- c. Ieri *nessuno (*non) ha telefonato (a nessuno)*
 Yesterday n-body NEG has called to n-body
 'Yesterday nobody called anybody'

2.3 Negative imperatives

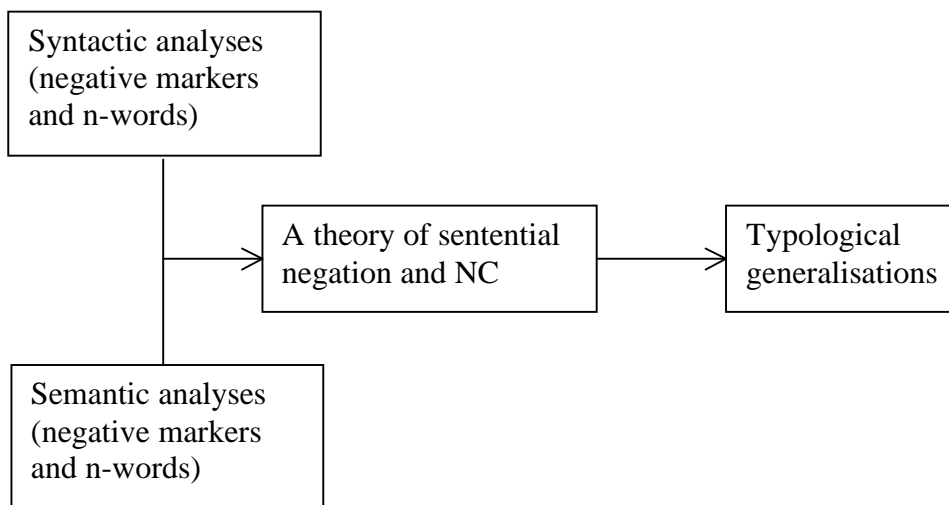
- (22) Two kinds of negative imperatives (Rivero 1994; Zanuttini 1997; Tomic 1999; Han 2001):
- a. *True negative imperatives (TNI)*: a construction with a verb in imperative form, negated in the standard way
- b. *Suppletive negative imperative (SNI)*: the replacement of a true negative imperative if the latter is ruled out
- (23) a. Pracuj! Polish
 Work.IMP
 'Work!'
- b. *Nie pracuj!* (TNI)
 Neg.work.IMP
 'Don't work!'
- (24) a. ¡Lee! Spanish
 Read.2SG.IMP
 'Read'
- b. **¡No lee!* (*TNI)
 Neg read.2SG.IMP
 'Don't read'
- c. ¡No leas! (SNI)
 Neg read.2SG.SUBJ
 'Don't read!'

2.4 Questions

- (25) a. How to account for the range of variation that languages exhibit with respect to the syntactic status of their negative markers?
- b. How to account for the different NC readings in a compositional fashion?
- c. How to account for the ban on true negative imperatives in some languages?

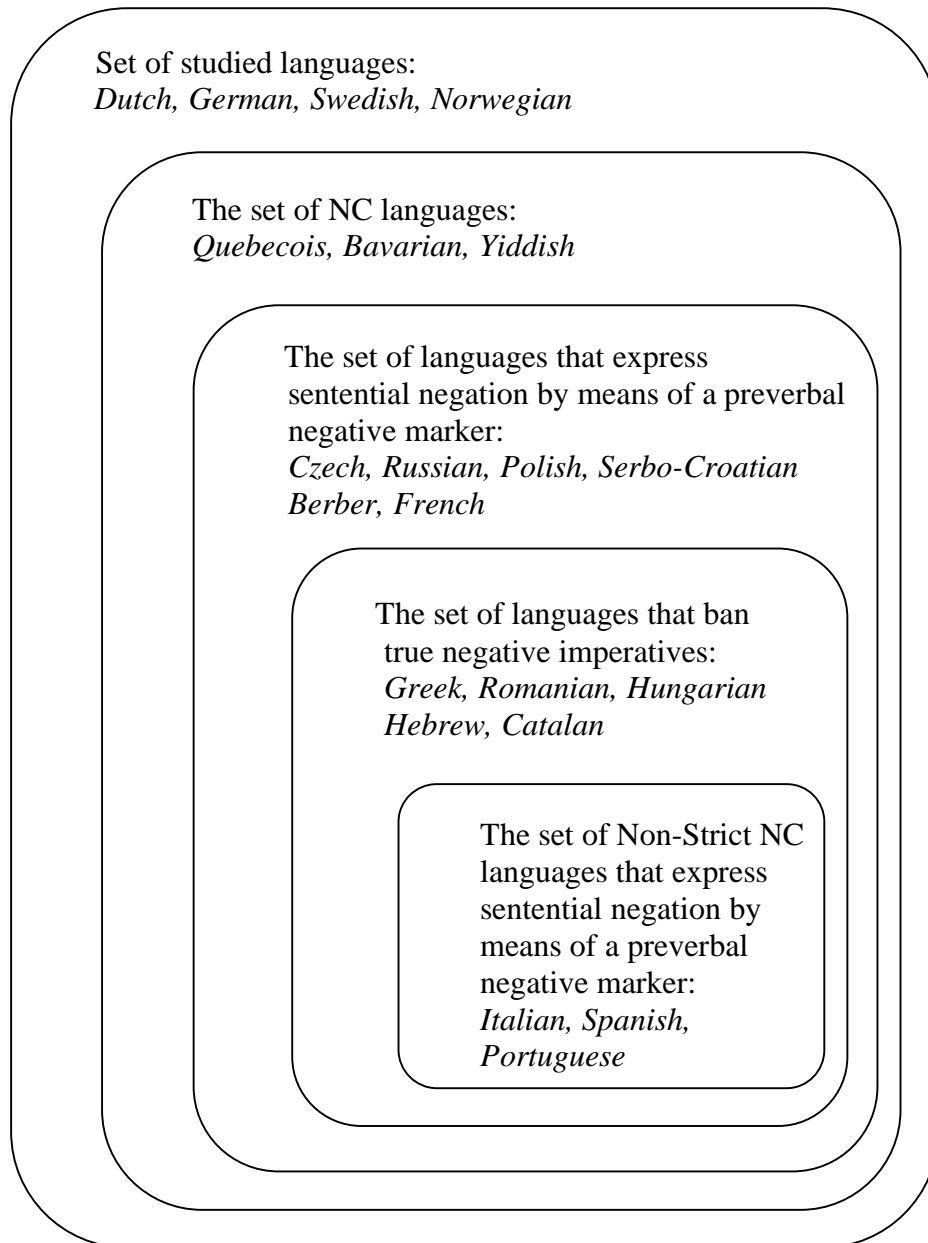
3 Typological generalisations

- (26) Evaluation tools for linguistic theories:
- Check whether the theory correctly predicts which sentences are ruled in and which are ruled out.
 - Check which typological generalisations can be derived from the theory and whether these generalisations are correct.
- (27) Conditions for a theory of sentential negation and negative concord:



- (28) Empirical domain:
- Dutch diachronic variation (n = 35)
 - Dutch dialectal variation (n = 267)
 - Cross-linguistic variation (n = 40)
- (29) Generalisations:
- G1:** Every Non-strict NC language that expresses negation by means of at least a preverbal or affixal negative marker bans TNI's.
 - G2:** Every language that bans TNI's expresses negation by means of at least a preverbal or affixal negative marker.
 - G3:** Every language that expresses negation by means of at least a preverbal or affixal negative marker is an NC language.

(30) Venn-diagram of studied languages:



4 Syntactic and semantic analyses

(31) Three analyses:

- a. The syntactic status and position of negative markers
- b. The semantic status of negative markers
- c. The semantic status of n-words

4.1 The syntactic status and position of negative markers

- (32)
- a. Strong negative markers
 - b. Weak preverbal negative markers / affixal negative markers
 - c. Adverbial negative markers

4.1.1 *Strong negative markers*

- (33) a. Jean l₁'a fait manger t₁ à Paul¹ French
 Jean it.has made eat by Paul
 'Jan made Paul eat it'
 b. *Jean l₁'a fait *ne pas* manger t₁ à Paul
 Jean it.has made NEG NEG eat by Paul
 'Jan made Paul not eat it'
- (34) a. Gianni li_i vuole vedere t_i² Italian
 Gianni them wants see
 'Gianni wants to see them'
 b. *Gianni li_i vuole *non* vedere t_i
 Gianni them wants NEG see
 'Gianni wants not to see them'
- (35) a. Vien-lo?³ Paduan
 Comes-he
 'Is he coming'
 b. *Vien-lo *no*?
 Comes-he NEG
 'Isn't he coming'
- (36) a. *Perché *non*?⁴ Italian
 b. *Giati *dhen*? Greek
 Why NEG
 'Why not'
 *[YP [X°] [YP]]

(37) Strong negative markers: X°

4.1.2 *Weak negative markers / affixal negative markers*

- (38) a. U ni va *nent* Cairese
 SU-CL NEG.LOC-CL goes NEG
 (weak marker)
 'He doesn't go there'
 b. John elmalari *sermedi* Turkish
 John apples like.NEG.PAST.3SG
 (affixal)
 'John doesn't like apples'

¹ Example taken from Kayne (1989).

² Example taken from Zanuttini (2001).

³ Example taken from Zanuttini (2001).

⁴ *Why neg* test adopted from Merchant (2001a).

- c. Milan *nevolá* Czech
 Milan NEG.calls (?)
 ‘Milan doesn’t call’

(39) Two analyses for weak negative markers / affixal negative markers

- a. Head adjunction onto V_{fin} : $[v [Y] [v]]$
 $*[v [YP] [v]]$
 b. Affixes are uninterpretable features that are part of V_{fin} ’s feature bundle:
 $V_{\langle [V], [NEG] \rangle}$

(40) *Feature Scattering Principle (Giorgi and Pianesi 1998):*
 Every feature can head a projection

(41) $[_{NegP} [NEG] [_{VP} [V_{\langle [NEG] \rangle}]]]$


- (42) a. **Pochemune?* Russian
 b. **Waarom en?* West Flemish
 Why neg
 ‘Why not’

(43) Weak negative markers / affixal negative markers: X^0

4.1.3 Adverbial negative markers

- (44) a. ...dat Jan *niet* liep Dutch
 ...that Jan NEG liep
 ‘...that Jan didn’t walk’
 b. Jan liep *niet*
 Jan walked NEG
 ‘Jan didn’t walk’

- (45) a. ...om Jan *inte* köpte boken Swedish
 ...that Jan NEG bought books
 ‘... that Jan didn’t buy books’
 b. Jan köpte *inte* boken
 Jan bought NEG books
 ‘Jan didn’t buy book’

- (46) *Inte* var det Selma Swedish
 NEG was it Selma
 ‘It was NOT Selma’

- (47) a. *Waarom niet?* Dutch
 b. *Varför inte?* Swedish
 Why NEG
 ‘Why not’

(48) Adverbial negative markers: XP

4.2 *The semantic status of negative markers*

- (49) a. Milan moc *nejedl* Czech
 Milan muc NEG.eat.PERF
 $\neg >$ much: ‘Milan hasn’t eaten much’
 *much $>$ \neg : ‘There is much that Milan didn’t eat’
 b. Molto *non* ha mangiato Gianni Italian
 Much NEG has eaten Gianni
 * $\neg >$ much: ‘Gianni hasn’t eaten much’
 much $>$ \neg : ‘There is much that Gianni didn’t eat’
- (50) a. O Jannis *(*dhen*) dhiavase Greek
*oute kan tis Sindaktikes Dhomes*⁵
 The Jannis neg reads even the Syntactic Structures
 ‘Jannis doesn’t read even Syntactic Structures’
 b. *Oute kan ti Maria (dhen) proskalese o pritanis*
 Even Maria NEG invite the dean
 ‘Not even Maria did the dean invite’
- (51) *Oute i Maria oute o Janis (dhen) methisan sto parti* Greek
 neither the Maria nor the Janis got.drunk at.the party
 ‘Neither Maria nor Janis got drunk at the party’
- (52) a. Italian/Spanish: • negative marker corresponds to *Op*_¬
 • negative markers carries [iNEG]
 b. Greek: • negative marker does not correspond to *Op*_¬
 • negative markers carries [uNEG]
- (53) Negative markers in NC languages come about as either carrying [iNEG] or [uNEG]

4.3 *The semantic status of n-words*

- (54) a. *Non* ha telefonato *nessuno* Italian
 NEG has called n-body
 ‘Nobody called’
 b. *Nessuno* ha telefonato
 N-body has called
 ‘Nobody called’
- (55) *Two previous approaches:*
 a. *The negative quantifier approach:* n-words are semantically negative unary quantifiers and through some process of polyadic quantification *k* n- words turn into one *k*-ary quantifier (Zanuttini 1991; Haegeman and Zanuttini 1996; de Swart and Sag 2002).

⁵ Example taken from Giannakidou (2005).

- b. *The NPI approach*: N-words are semantically non-negative NPI's that need to be licensed by a possibly abstract negative operator (Laka 1990; Ladusaw 1992; Giannakidou 1997; Giannakidou 2000).

4.3.1 Problems with the negative quantifier approach

(56) Problems with the *negative quantifier approach*:

- a. It is unclear why n-words need to be licensed by a negative marker.
- b. If n-words are negative quantifiers, the cross-linguistic variation remains unexplained. What rules out polyadic quantification in DN languages?
- c. N-words may appear in the scope of some Downward Entailing verbs or prepositions.
- d. The typological generalisations **G1-G3** do not follow from this approach.

(57) a. Gianni **(non)* ha telefonato a *nessuno* Italian

Gianni NEG has called to n-body
'Gianni hasn't called anybody'

b. Jan heeft **(niet)* *niemand* gebeld Dutch

Jan has n-body called
'Jan hasn't called anybody'

(58) a. Dudo que vayan a encontrar *nada*⁶ Spanish

Doubt.1SG that will.3pl.subj to find n-thing
'I doubt that they will find anything'

- b. Sin *nadie*
Without n-body
'Without anybody'

(59) N-words are not negative quantifiers.

4.3.2 Problems with the NPI approach

(60) Problems with the *NPI approach*:

- a. NC is subject to syntactic locality constraints, contrary to NPI licensing.
- b. N-words, but not NPIs, may be modified by *almost*.
- c. In Strict NC languages, n-words may appear to the left of the negative marker, contrary to NPIs.
- d. N-words may constitute fragmentary answers, NPIs may not.
- e. The typological generalisations **G1-G3** do not follow from this approach.

(61) I Ariadne *dhen* ipe oti idhe {**TIPOTA/ tipota*}⁷ Greek

The Ariadne NEG said that saw.3SG n-thing / anything(NPI)
'Ariadne didn't say she saw anything'

⁶ Example taken from Herburger (2001).

⁷ Example taken from Giannakidou (2000): 470

- (62) *No* ha detto quasi *niente*/**alchunché*⁸ Italian
 NEG has said almost n-thing/anything
 ‘He said almost nothing’
- (63) a. Dnes *nikdo* *nevolá* Czech
 Today n-body NEG.comes
 ‘Today nobody comes’
 b. **Petník* by za to *nebyl* dan
 A.nickle(NPI) would for it NEG.be given
 ‘A red cent wouldn’t be given for it’
- (64) *Quién* vino? {*Nadie* / **Un alma*} Spanish
 Who came? N-body / a single soul
 ‘Who came? Nobody’
- (65) N-words are not NPI’s.

5 Negative Concord: a syntactic agreement approach

- (66) N-words: neither negative quantifiers, nor non-negative NPI’s.
- (67) *Alternative hypothesis*: n-words are non-negative indefinites (introducing a free variable) or existential quantifiers that are syntactically marked for negation, i.e. they carry a [uNEG] feature.
- (68) a. $[[n-Q]] = \lambda P.[Q(x) \ \& \ P(x)]_{[uNEG]}$ or alternatively
 b. $[[n-Q]] = \lambda P.\exists x[Q(x) \ \& \ P(x)]_{[uNEG]}$
 where $Q \in \{\mathbf{Person}, \mathbf{Thing}, \mathbf{Place} \dots\}$
- (69) In the case of indefinites, the (abstract) negative operator is able to bind variables under existential closure.
- (70) a. $[[Op_{-}]] = \neg(\exists)$
 b. $[[Op_{-}]] = \neg$
- (71) Multiple Agree is allowed) (Haraiwa 2000; Haraiwa 2001; Ura 1996)
- (72) “*Phonological Economy*”: a phonologically empty negative operator may be assumed to be present in a grammatical sentence iff without it this sentence would be ungrammatical. (Given multiple agree no second Op_{-} may be assumed if the first one is able to check all present [uNEG] features.)
- (73) $[X [Y Op_{-[iNEG]} [Y [uNEG] [Z [uNEG]]]]]$
 $\quad \quad \quad \boxed{\quad \quad \quad} \quad \boxed{\quad \quad \quad}$

⁸ Example taken from Zanuttini (1991).

5.1 *Strict vs. Non-strict NC*

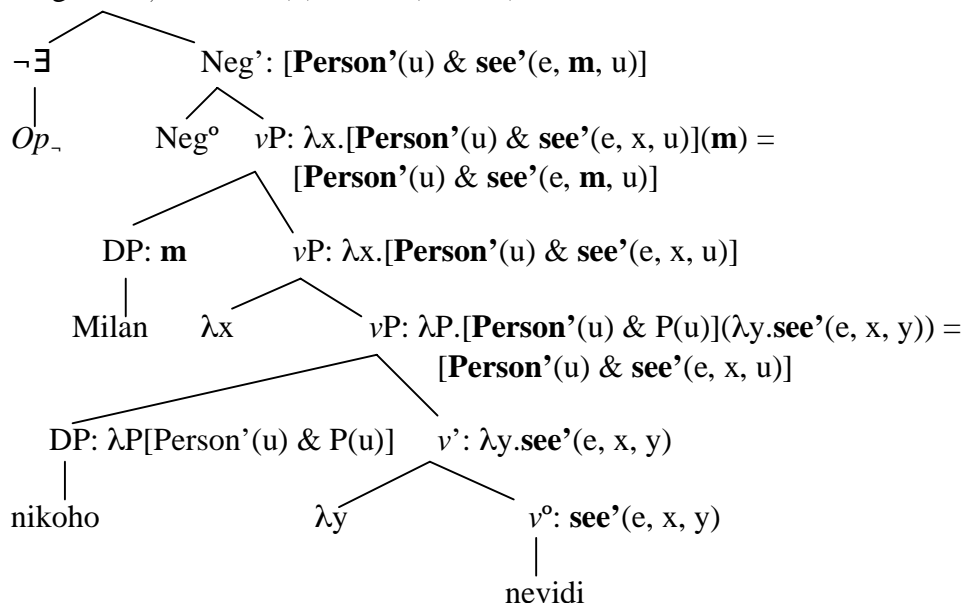
- (74) The difference between Strict and Non-strict NC languages is due to the value of the formal feature [i/uNEG] of the negative marker
- (75) Strict NC: the negative marker carries [uNEG]
- (76) Dnes *Op*₋ *nikdo nevolá* Czech
 Today n-body NEG.calls
 'Today nobody calls'
- (77) Non-strict NC: The negative marker corresponds to *Op*₋
- (78) **Ieri nessuno non ha telefonato a nessuno* Italian
 Yesterday n-body NEG has called to n-body
 'Yesterday nobody called anybody'
- (79) ?*Ieri NESSUNO non ha telefonato a nessuno* Italian
 Yesterday n-body NEG has called to n-body
 'Yesterday nobody didn't call anybody'

5.2 *Examples*

- (80) Milan *nevidi nikoho* Czech
 Milan NEG.sees n-body
 'Milan doesn't see anybody'

(81) [_{NegP} *Op*₋ [_iNEG] [_{Neg°} *nevidi* [_uNEG] [_{vP} Milan *nikoho* [_uNEG] *t*_i]]]

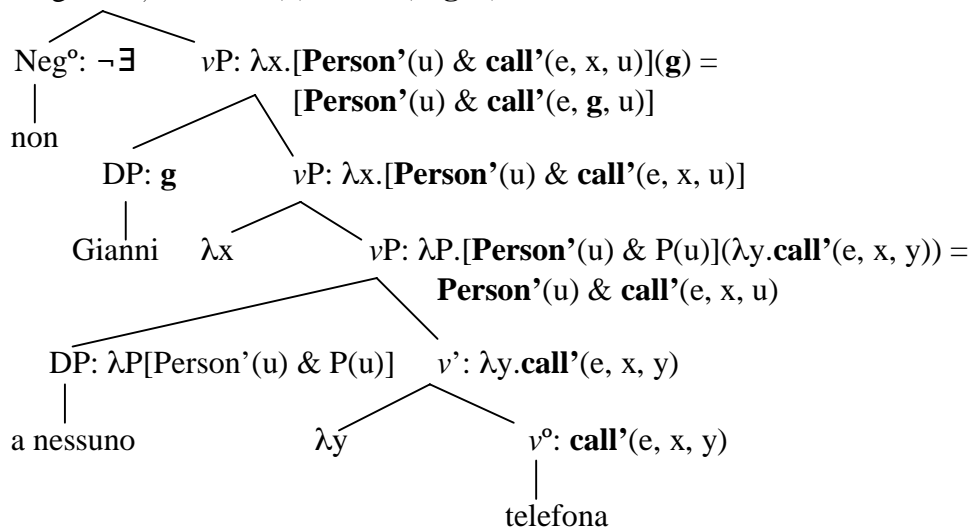
(82) NegP: $\neg \exists_{u,e} [\mathbf{Person}'(u) \ \& \ \mathbf{see}'(e, m, u)]$



(83) Gianni *non* telefona a *nessuno* Italian
 Gianni NEG calls to n-body
 ‘Gianni doesn’t call anybody’

(84) [_{Neg°} non_[iNEG] [_{vP} Gianni a nessuno_[uNEG] telefona]]

(85) Neg': $\neg\exists_{u,e}[\mathbf{Person}'(u) \ \& \ \mathbf{see}'(e, \mathbf{g}, u)]$



5.3 Solutions to previous problems

5.3.1 Problems with the negative quantifier approach

(86) Problems with the *negative quantifier approach*:

- a. It is unclear why n-words need to be licensed by a negative marker.
- b. If n-words are negative quantifiers, the cross-linguistic variation remains unexplained. What rules out polyadic quantification in DN languages?
- c. N-words may appear in the scope of some Downward Entailing verbs or prepositions.

(87) N-words need to be licensed by $Op_{-[iNEG]}$ in order to prevent the derivation from crashing. Given the economy conditions in (72), the abstract negative operator may be assumed only immediately above the n-word. As sentential negation involves negating the entire vP, the negative operator must be marked in a higher position. (Basic idea: the event variable e is introduced in the highest head of the layered vP.)

(88) a. El bebé *no* está mirando a *nadie*
 The baby NEG is looking at n-thing
 ‘The baby isn’t looking at anything
 $\neg\exists x\exists e[\mathbf{look}'(e) \ \& \ \mathbf{Agent}(e, \mathbf{b}) \ \& \ \mathbf{thing}'(x) \ \& \ \mathbf{Patient}(e, x)]$

- b. El bebé está mirando a nadie⁹
 The baby is looking at n-thing
 ‘The baby is staring at nothing’
 $\exists e[\text{look}'(e) \ \& \ \text{Agent}(e, \mathbf{b}) \ \& \ \neg \exists x[\text{thing}'(x) \ \& \ \text{Patient}(e, x)]]$

(89) The cross-linguistic variation follows from the differences between n-words and negative quantifiers

- (90) Dudo que vayan a encontrar *nada*¹⁰ Spanish
 Doubt.1SG that will.3PL.SUBJ to find n-thing
 ‘I doubt that they will find anything’

(91) [_{CP} Dudo_[iNEG] [_{FinP} que vayan a encontrar nada_[uNEG]]]]

5.3.2 Problems with the NPI approach

- (92) Problems with the *NPI approach*:
- NC is subject to syntactic locality constraints, contrary to NPI licensing.
 - N-words, but not NPIs, may be modified by *almost*.
 - In Strict NC languages, n-words may appear to the left of the negative marker, contrary to NPIs.
 - N-words may constitute fragmentary answers, NPIs may not.
- (93) NC obeys syntactic locality conditions. Hence, NC is clause bound, contrary to Negative Polarity Item (NPI) licensing:
- (94) I Ariadne *dhen* ipe oti idhe {**TIPOTA*/ tipota} Greek
 The Ariadne NEG said that saw.3SG n-thing / anything(NPI)
 ‘Ariadne didn’t say she saw anything’
- (95) [_{CP} I Ariadne *Op*_[iNEG] *dhen*_[uNEG] ipe [_{CP} oti idhe {**TIPOTA*_[uNEG]/ tipota}]]
- (96) (Penka 2005) argues that *almost* is an operator that takes a proposition as its argument. Moreover, she argues that the interpretation of *almost* involves Horn scales. *Almost P* entails the truth of a corresponding sentence in which P is replaced by a close value, lower on the Horn scale. Indefinites can thus not be modified by *almost*, as they form the begin point of the scale. However, if *almost* scopes over the negation, the Horn scale is reverse. Indefinites under the scope of negation can thus be modified by *almost*. The fact that real NPIs such as any cannot be modified by *almost* is a result of a General Minimality Effect (Beck t.a.): both the NPI licenser and *almost* evaluate alternatives.

⁹ Example taken from Herburger (2001).

¹⁰ Example taken from Herburger (2001).

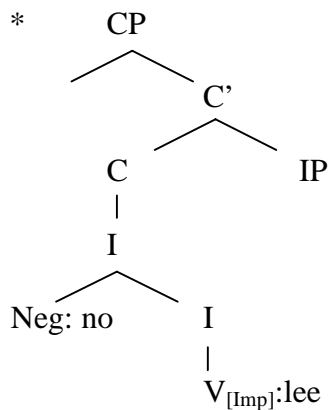
- (97) N-words may be licensed by an abstract Op_- . In Strict NC languages the negative marker is not Op_- , and thus the n-word maybe licensed to the left of the negative marker.
- (98) Within the tradition takes that NPI licensing to follow from the lexical properties of NPI that require a certain context (Kadmon and Landman 1993; Krifka 1995; Lahiri 1998; Chierchia 2005) NPI expressions in veridical contexts are not syntactically unwell formed, but simply pragmasemantically infelicitous.
- (99) a. Quién vino? {*Nadie* / #*Un alma*} Spanish
 Who came? N-body / a single soul
 ‘Who came? Nobody’
 b. Ti ides? {*TIPOTA* / #*tipota*}
 What saw.2SG? N-thing / anything
- (100) [Op_- [*TIPOTA* [~~*dhen-ida*~~]]] Greek
 N-thing [NEG saw.1SG]
- (101) (Watanabe 2004) points out that (100) violates the semantic identity requirement for ellipsis (Merchant 2001) notion of e-GIVENness). The deleted part contains a negation which the question itself does not contain. This problem disappears under the syntactic agreement approach, where the abstract Op_- is still present.
- (102) a. Q: Ti ides? A: [Op_- [*TIPOTA* [~~*dhen-ida*~~]]] Greek
 What saw.2SG? N-thing [NEG saw.1SG]
 ‘What did you see?’ ‘Nothing!’
 b. Q: ¿A quién viste? A: [Op_- [*A nadie* [*víó*]]]
 What saw.2SG? N-thing [saw.1SG]
 ‘What did you see?’ ‘Nothing!’

6 The ban on True Negative Imperatives: previous analyses

- (103) Three different analyses:
 a. (Rivero 1994; Rivero and Terzi 1995)
 b. (Zanuttini 1997)
 c. (Han 2001)
- (104) (Rivero 1994; Rivero and Terzi 1995): The ban on TNIs is a consequence of the Head Movement Constraint (HMC, (Travis 1984))
- (105) CP > NegP > IP > VP
- (106) a. Romance languages: V-movement to C° in order to express imperative illocutionary force.
 b. Slavic languages: V-movement to I° in order to express imperative illocutionary force.

- (107) a. $*[C^\circ \text{ Lee}_i [\text{No} [I^\circ \text{ t}_i]]]$ Spanish
 NEG read.2SG.IMP
 ‘Don’t read’
- b. $[\text{Neg}^\circ \text{ Nie} [I^\circ \text{ pracuj}]]$ Polish
 NEG work.2SG.IMP
 ‘Don’t work!’
- (108) Problems:
- a. If imperative illocutionary force is induced from a category lower than the position of the negative operator, since this would yield the incorrect semantics ‘it is not imperative that...’ rather than ‘It is imperative that not...’
- b. It is unclear why, in the case of Romance languages, the negation cannot attach to V_{imp} and move to C° as complex unit.
- (109) (Zanuttini 1997): Preverbal negative markers that can negate a clause by themselves subcategorize for a mood projection in clauses with the illocutionary force of an imperative.
- (110) a. $[\text{NegP non-1} [\text{MoodP} \dots [\text{VP}]]]$ imperative clauses
 b. $[\text{NegP non-2} \dots [\text{VP}]]$ other clauses
- (111) TNIs contain a verb carrying (poor) imperative morphology, which cannot check the [Mood] features of Mood° . Hence the sentence is ruled out. The only way to check these [Mood] feature is by using a suppletive form that is morphologically rich enough.
- (112) Problems:
- a. One has adopted two different negative markers, which are phonologically identical (lexical ambiguity).
- b. The analysis covers most Romance varieties, but does not apply to Slavic languages (Polish, Bulgarian) or Old Italian / Old Portuguese varieties that do not ban TNIs.
- (113) (Han 2001): Imperative illocutionary force is induced by moving the [Imp] feature carried by V_{imp} to C° . If this takes place through movement of V_{imp} to C° the preverbal negative marker may not be attached to V_{imp} , since otherwise the imperative would be in the scope of negation. The difference between languages that ban and that do not ban TNIs lies in the fact that only in the first case *Neg* dominates V_{imp} in C° .

(114) * Spanish



(115) [CP slaap_{[Imp]_i] [NegP/VP niet t_i]] Dutch}

(116) [CP [Imp]_i] [NegP nie [IP pracuj_i]]] Polish

(117) Problems:

- a. It remains unclear why feature movement of [Imp] may not take place in Romance languages.
- b. The assumption hinges crucially on the fact that all negative markers are semantically negative, but as we saw before, this does not seem to be the case.

7 The ban on True Negative Imperatives: proposal

(118) Four assumptions:

(119) V_{imp} universally has to move to C° in order to express imperative illocutionary force (Zanuttini 1997; Han 2001; Zeijlstra 2006).

(120) C°[Imp] > NegP

(121) Relativised minimality: a negative marker X° blocks verbal movement to a higher position if it cannot attach to it.

(122) The operator that encodes the illocutionary force of an imperative is hosted in C° and may not be outscoped by negation.

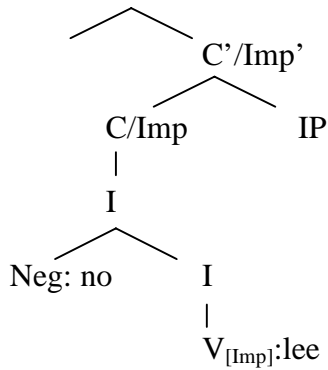
7.1 Languages with a negative marker X° carrying [iNEG]

(123) If the negative marker is an X° V_{imp} may not move across it on its way to C°. The negative marker must attach/cliticize to it.

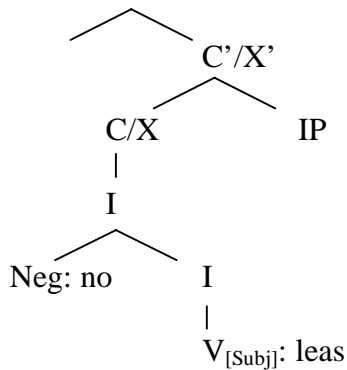
(124) But, if the negative marker carries [iNEG], V_{imp} may not adjoin it to C°/Imp°, since otherwise the illocutionary force is in the scope of negation, which is universally banned.

(125) SNIs may move to such a position, since there is no imperative operator hosted in C°/X° that may not be c-commanded by the negative marker. The sentence has not the ‘true semantics’ of an imperative, but is pragmatically interpreted as such in order to fill the functional gap.

(126) * CP/ImpP Spanish
(*TNI)



(127) CP/XP Spanish
(SNI)



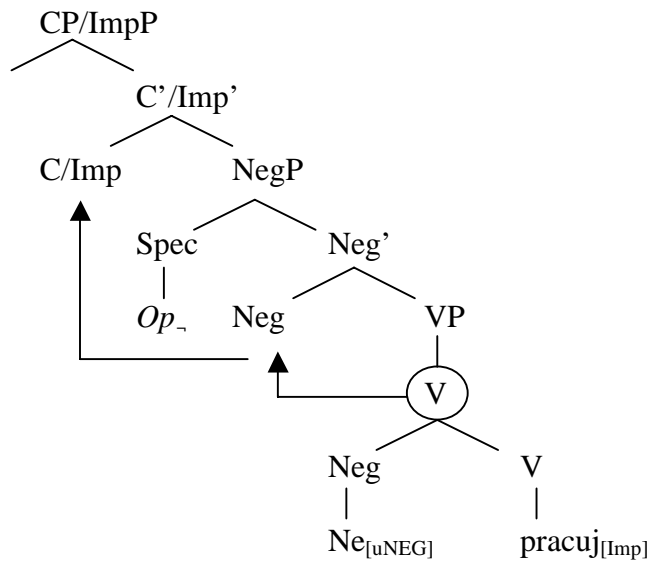
7.2 Languages with a negative marker X° carrying [uNEG] that allow TNIs

(128) Possible positions, where negative markers may be base-generated:

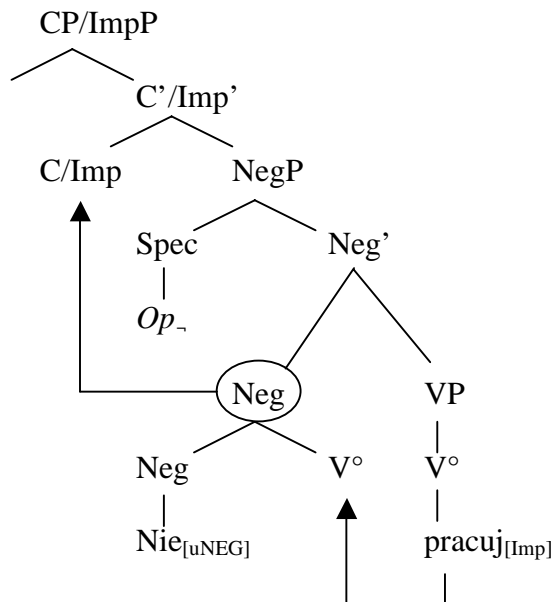
- a. Head adjoined to V_{fin} .
- b. Base-generated in a specified position (higher than VP): Neg°

(129) If the negative marker is base-generated within V° or if it allows for clitisation, the negative marker does not block verbal movement to C°/Imp° .

(130) Czech



(131) Polish

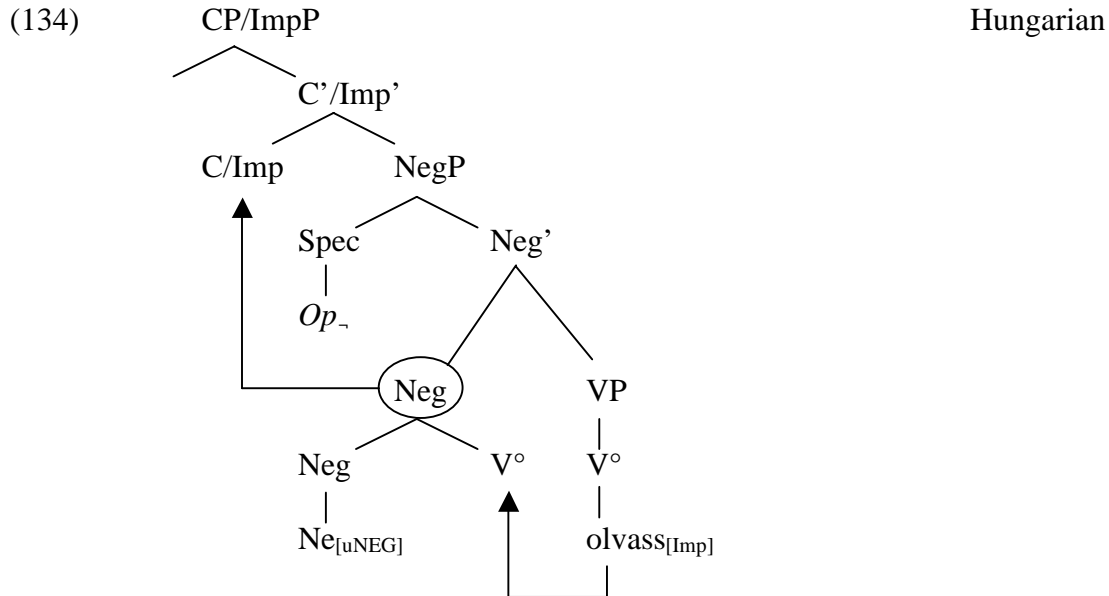


7.3 Languages with a negative marker X[•] carrying [uNEG] that ban TNIs

(132) One would expect that every language with an X[°] negative marker [uNEG] allows TNIs. This is not the case at first sight. Hungarian e.g. is a Strict NC language, but does not allow TNIs with its negative marker *nem*. This is due however to the fact that Hungarian exhibits a special negative marker *ne* for subjunctives. Given that subjunctives and imperatives both express *irrealis* mood, it could be said that this negative marker is used in imperative expressions as well. This prediction is born out.

(133) a. **Nem* olvass!
 Neg read.IMP
 'Don't read!' Hungarian

- b. *Ne olvass!*
 Neg read.IMP
 'Don't read!'



(135) This does not work for Greek however. Greek has also a special negative marker in subjunctives, *mi*, but does not allow TNIs. However it can be shown that Greek is a Non-strict NC language w.r.t. *mi*. *Mi* carries thus [iNEG]

- (136) a. **Dhen diavase to!* Greek
 NEG read.IMP it
 'Don't read it!'
 b. **Mi grapes to!*
 NEG write.IMP it
 'Don't write it!'
 c. *Mi to grapsis!*
 NEG it read.SUBJ
 'Don't read it!'

- (137) a. **Thelo KANENAS na mi fiji* Greek
 Want.1SG n-body PRT NEG leave.3SG.SUBJ
 'I want nobody to leave'
 b. *Thelo na mi fiji KANENAS*
 Want.1SG PRT NEG leave.3SG.SUBJ n-body
 'I want nobody to leave'

7.4 Languages with no negative marker X°

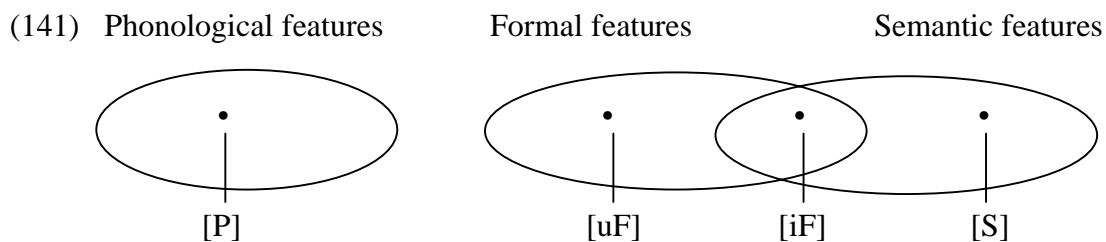
(138) As the negative marker is not a syntactic head, it does not block verbal movement to C°/Imp°. Hence TNIs are allowed.

- (139) [_{CP} slaap_[IMP]_i [_{NegP/VP} niet t_i]] Dutch

8 On the relation between formal features and negative concord

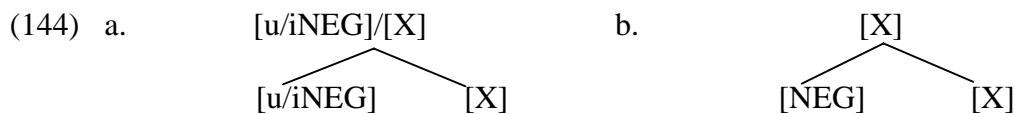
8.1 Negation as a flexible syntactic category

(140) Following standard minimalist assumptions, lexical items consist of three kinds of features: phonological features, semantic features and formal features.



(142) Question: what is the status of the negative feature in DN languages? Is it a formal feature [iNEG] or is it a semantic feature [NEG]?

(143) Following standard assumptions that only formal features are allowed to project (projection is a syntactic operator and thus applies only to syntactic objects)



(145) Prediction: if negation is a flexible category, only in NC languages the negative feature may project. Consequently, only in NC languages one may find negative markers that are syntactic heads (Neg^o).

(146) Overt Neg^o → NC

(147) This prediction is born out. In (Zeijlstra 2004) it is shown on the basis of 25 diachronic and 267 dialectal varieties of Dutch and a sample of 40 other languages that every language/variety that exhibits an overt negative head is also an NC language/variety.

8.2 NC as the trigger for formalising the negative feature

(148) If negation is not a formal feature in every language, its formal status cannot be determined by UG. Hence, it must be acquired during L1 acquisition. The question is then what the trigger is for its formal status.

(149) The major difference between NC and DN languages is that in NC languages not every negative element corresponds to a semantic negation. Hence it must carry a [uNEG] feature.

(150) The overt presence of material equipped with [uNEG] forces the L1 learner to analyse negation as a formal feature [i/uNEG].

8.2.1 Dutch

(151) Jan doet *niets* [NEG] $\neg \exists x. [\mathbf{thing}'(x) \ \& \ \mathbf{do}'(j, x)]$

(152) *Niemand* komt [NEG] $\neg \exists x. [\mathbf{person}'(x) \ \& \ \mathbf{come}'(x)]$

(153) Jan loopt *niet* [NEG] $\neg \mathbf{walk}'(j)$

8.2.2 Italian

(154) Gianni *non* ha visto *nessuno* [iNEG] [uNEG] $\neg \exists x. [\mathbf{person}'(x) \ \& \ \mathbf{see}'(g, x)]$

(155) *Op,* *nessuno* ha telefonato [iNEG] [uNEG] $\neg \exists x. [\mathbf{person}'(x) \ \& \ \mathbf{call}'(x)]$

(156) *Non* ha telefonato Gianni [iNEG] $\neg \mathbf{call}'(g)$

8.2.3 Czech

(157) Milan *nevidí* *nikoho* [iNEG] [uNEG] $\neg \exists x. [\mathbf{person}'(x) \ \& \ \mathbf{see}'(m, x)]$

(158) *Op,* *Nikdo* *nevolá* [iNEG] [uNEG] [uNEG] $\neg \exists x. [\mathbf{person}'(x) \ \& \ \mathbf{call}'(x)]$

(159) Milan *Op,* *nevolá* [iNEG] [uNEG] $\neg \mathbf{call}'(m)$

8.3 The Flexible Formal Features Hypothesis

(160) Properties of formal and semantic features:

- a. $\|X_{[F]}\| = \|X_{[iF]}\|$
- b. [iF] is the counterpart of [uF], and vice versa

(161) Proposal:

- a. Every feature [F] is first analysed as a semantic feature ([F])
- b. Only if there is positive evidence in the language input for a [F] having to be analysed as [uF], the semantic feature [F] is reanalysed as [i/uF]

(162) Properties of [uF]'s:

- a. [uF] is semantically vacuous
- b. [uF] triggers syntactic operations Move and Agree (Chomsky 1995; Chomsky 2001)

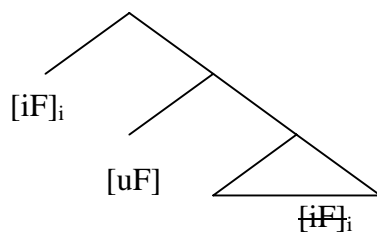
(163) Both properties in (162) reduce to doubling properties.

(164) [uF] is semantically vacuous, but marks the presence of a feature [iF], without which the derivation would crash. Hence the functional category F is manifested twice in the morphosyntax, whereas its semantic force is only contributed once.

(165) Agree: [[uF] [[iF]]]

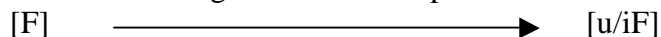


(166) Move (Agree + Pied-piping + Merge):



(167) If a feature [F] appears to be subject to doubling properties, this forms a cue that in some cases [F] comes about as [uF], and therefore [F] is reanalysed as [i/uF]

(168) Doubling effects with respect to F



(169) The set of formal features is empty at the initial stage of the language learning process. During L1 acquisition several semantic features may be formalised, i.e. ‘syntactisized’ (or: grammaticalized), as a result of doubling effects: the ability of a functional category F being manifested in the morpho-syntax more than once. Doubling effects function in the sense of so-called ‘informatic principles’.

(170) Flexible Formal Features (FFF) Hypothesis

- a. Every feature [F] is first analysed as a semantic feature ([F]).
- b. Only if there are doubling effects with respect to F in the language input, [F] has to be reanalysed as a formal feature [i/uF].¹¹

(171) Consequence: if doubling is the driving force behind feature formalisation, only in languages that exhibit doubling effects w.r.t. F, [i/uF] may project. Consequently, only among those languages a head F° may be realised.

(172) Overt F° → F-Concord

¹¹ The FFFH is not a hypothesis for an L1 acquisition theory. It is motivated by learnability requirements and should, if correct, count as a prerequisite for L1 acquisition theories.

9 Deriving the typological generalisations

(173) Generalisations:

- a. **G1:** Every Non-strict NC language that expresses negation by means of at least a preverbal or affixal negative marker bans TNI's.
- b. **G2:** Every language that bans TNI's expresses negation by means of at least a preverbal or affixal negative marker.
- c. **G3:** Every language that expresses negation by means of at least a preverbal or affixal negative marker is an NC language.

(174) **G1:** If a negative marker is X° and carries [iNEG] it can never express a TNI, since it blocks movement of V_{imp} to C° . Attachment/clitisation does not work either, since then negation would outscope the operator that encodes the illocutionary force of an imperative. Hence, every Non-strict NC language that expresses negation by means of at least a preverbal or affixal negative marker bans TNI's.

(175) **G2:** If a negative marker is not X° it can never block verbal movement to C° (following the Head Movement Constraint). Therefore every language that bans TNI's must express negation by means of at least a preverbal or affixal negative marker.

(176) **G3:** During L1 acquisition a language learner must determine whether negation is a syntactic category or not. In other words, whether negative elements carry [i/uNEG] or simply [NEG]. Since elements with a semantic feature [NEG] cannot be distinguished from formal features [iNEG], the proper cue must be the overt manifestation of uninterpretable features [uNEG]. This is the case in NC languages. Hence, only in NC languages negation can be a syntactic category. Consequently, only in NC languages a negative marker may surface as a negative head X° . Thus, every language that expresses negation by means of at least a preverbal or affixal negative marker is an NC language.

10 Concluding remarks

(177) The theory presented above accounts for NC in a compositional fashion, whereas it does not face those problems that previous analyses have been facing.

(178) The presented theory explains the range of variation that languages exhibit with respect to the expression of sentential negation, Negative Concord, the distinction between Strict and Non-strict NC, and the ban on true negative imperatives.

(179) The theory predicts correctly typological generalisations **G1**, **G2** and **G3**.

III MODALITY AND MODAL CONCORD

11 Modal Concord: the phenomenon

- (180) Expressions consisting of multiple modal expressions normally yield a cumulative reading.
- (181) Maybe Mary has to leave
- (182) John should be allowed to read this file
- (183) However, if two modal elements are of the same modal type (epistemic/deontic) and have similar quantificational force (universal/existential), the most salient reading is mostly not a cumulative one, but a concord reading, where the semantics seems to contain only one modal operator. This phenomenon has first been observed by (Halliday 1970) and (Lyons 1977) and has been analysed by (Geurts and Huitink 2006) who have dubbed it *Modal Concord (MC)*.
- (184) You may possibly have read my little monograph upon the subject
'The speaker thinks that it is possible that you read his little monograph'
* 'The speaker thinks that it is possible that it is possible that you read his little monograph'
- (185) Power carts must mandatorily be used on cart paths where provided
'It is obligatory that power cats are used on cart paths where provided'
* 'It is obligatory that it is obligatory that power cats are used on cart paths where provided'

1.2 MC is a grammatical phenomenon

1.2.1 MC cannot be explained by means of entailment

- (186) It should be noted that although the epistemic concord reading in (184) may be explained by means of entailment, this does not hold for deontic modal concord in (185), as argued for by (Geurts and Huitink 2006).
- (187) Veridicality:
 $\Box\phi \rightarrow \phi$ (knowledge is factive)
- (188) Positive Introspection:
 $\Box\phi \rightarrow \Box\Box\phi$ ($\equiv \Diamond\Diamond\phi \rightarrow \Diamond\phi$)
- (189) Veridicality does not hold for deontic modality: not everything that is obligatory or desirable is actually the case. Hence the derivation of the MC reading in (185) is left unexplained. This indicates that MC is a grammatical phenomenon that needs to be accounted for.

11.2.2 MC is dependent on the syntactic status of modal elements

- (190) MC can only be established between a modal auxiliary and another modal element. An expression consisting of two non-auxiliary modal elements of the same type cannot yield an MC reading. This also strongly indicates that MC is a grammatical phenomenon
- (191) The general demands that the troops must leave MC
- (192) John must obligatorily read the books MC
- (193) The general demands that the troops are required to leave *MC
- (194) John mandatorily obligatorily read the books *MC
- (195) Inflectional morphemes are required obligatorily by the syntax *MC

11.2.3 MC is subject to syntactic locality constraints

- (196) MC is subject to syntactic locality constraints such as adjunct island effects:
- (197) [The general demands that [[when the soldiers surrender] they must behave correctly]]
→ MC
- (198) [The general demands that [[when the soldiers must surrender] they behave correctly]]
→ *MC

11.3 Questions

- (199) At first sight, MC appears to behave on a par with other concord phenomena, such as Negative Concord (NC):
- (200) Non ha telefona a nessuno Italian
Neg has called to n-body
NC: 'He hasn't called anybody'
- (201) Thus the following questions arise
- Is MC is a unique phenomenon or is it similar to other concord phenomena, such as Negative Concord (NC)?
 - If so, how can MC and NC be explained in a unified way?

12. Modal Concord vs. Negative Concord

- (202) MC and NC differ w.r.t. the following 3 aspects:
- MC is not obligatory as opposed to NC
 - MC normally yields an emphatic effect as opposed to NC
 - MC does not apply between all modal elements as opposed to NC

- (203) Are the observations in (202) fundamental differences between MC and NC or do they follow from other syntactic, semantic or pragmatic phenomena?

12.1 MC vs. NC: Obligatoriness

- (204) NC constructions are normally obligatory, but MC constructions are not:

(205) Ieri *(non) ha detto niente Italian
 Yesterday neg has said n-thing
 ‘Yesterday he didn’t say anything’

(206) Alle deelnemers moeten zich (verplicht) registreren Dutch
 All participants must SE (obligatorily) register
 ‘All participants must register themselves’

- (207) The fact that NC is obligatory in constructions as in (205) is due to the fact that in (205) the n-word *niente* is in located VP in situ. Sentential negation however requires negation of the entire VP, which closes off the event variable (Ladusaw 1992; Herburger 2001; Zeijlstra 2004).

(208) El bebé no está mirando a nada Spanish
 The baby NEG is looking at n-thing (Herburger 2001)
 ‘The baby isn’t looking at anything
 $\neg \exists x \exists e[\text{look}'(e) \ \& \ \text{Agent}(e, \mathbf{b}) \ \& \ \text{thing}'(x) \ \& \ \text{Patient}(e, x)]$

(209) El bebé está mirando a nada Spanish
 The baby is looking at n-thing (Herburger 2001)
 ‘The baby is staring at nothing’
 $\exists e[\text{look}'(e) \ \& \ \text{Agent}(e, \mathbf{b}) \ \& \ \neg \exists x[\text{thing}'(x) \ \& \ \text{Patient}(e, x)]]$

- (210) (Zeijlstra 2004; Zeijlstra 2006), following (Ladusaw 1992) argues that n-words are indefinites that are licensed by either an overt or a covert negative operator. In (208) the n-word *nada* is licensed by the overt negative operator *no*, which is outside VP. In (209) no negative marker can be found outside VP and the n-word is licensed by a VP internal abstract negative operator, which is therefore outscoped by the existential quantifier binding the event variable.

- (211) The obligatoriness of NC in (205) is thus related to the fact that the n-word has been base-generated VP in situ due to its argumental status and has not moved out of VP. In fact, in languages like Italian if an n-word has been moved out of VP, there is no need to have it overtly licensed by negation, and NC is no longer obligatory.

(212) *Nessuno* ha telefonato Italian
 N-body has called
 ‘Nobody called’

- (213) This observation is further supported by the existence of optional NC languages, such as West Flemish and Afrikaans, where the n-word obligatorily scrambles out of VP.
- (214) ... da Valère niemand (*nie*) ken West Flemish
... that Valère n-body (neg) knows
'... that Valère doesn't know anybody'
- (215) As MC does not involve concord relations between a negative marker and one or more arguments, but between modal auxiliaries (located in I° (or Mod°/T°)) and other modal elements (verbs, adverbs) every modal element is VP external and therefore high enough to operate by itself.
- (216) You may possibly have read the book
- (217) You may have read the book
- (218) You have perhaps read the book
- (219) In (216)-(218) all modals take scope from within IP (or ModP/TP). Consequently, no additional concord relation has to be established in order to enable the modal operator to take scope from the appropriate position. This explains the difference w.r.t. the obligatoriness between NC and MC.
- (220) The same mechanism applies to the case of deontic MC in (221) where the sentence without *obligatory* in (222) can have the same reading as (223), but where the sentence without *must* cannot receive this reading.
- (221) The students must obligatorily register
- (222) The students must register
- (223) The students obligatorily register
- (224) The modal adverb *obligatorily* occupies a VP-in situ reading and thus modifies the event itself rather than that it expresses that it is required that this event takes place. The behaviour of the modal auxiliary is that of a scope marker.

12.2 MC vs. NC: *Emphasis*

- (225) The second difference between MC and NC concerns the fact that MC constructions always introduce an emphatic effect, whereas NC constructions generally do not.
- (226) However, NC expressions can be emphatic too. This is for instance the case when particular intonational effects take place, but also when NC is not obligatory, e.g. in Afrikaans or certain dialects of Dutch.

- (227) Sij is nooit beskikbaar nie Afrikaans
She is n-ever available neg
'She is never available'
- (228) Sij is nooit nie beskikbaar nie Afrikaans
She is n-ever neg available neg
'She is never ever available'
- (229) Zij heeft niemand gezien Dutch
She has n-body seen
'She didn't see anybody'
- (230) Zij heeft niemand niet gezien Subst. Dutch
She has n-body neg seen
'She didn't see anybody at all'
- (231) Following (Van der Wouden 1994; Zeijlstra 2004; Biberauer 2006) those effects can be explained in terms of pragmatics. As the inclusion of the optional negative element does not alter the truth-conditions of the sentence, the inclusion of the redundant element leads to emphatic effect.
- (232) The same holds for MC effects. Since every MC construction can be replaced by construction without MC, the emphatic effects immediately follow.

12.3 MC vs. NC: Types of MC

- (233) NC may take place between negative elements of different kinds: negative markers, n-words and negative verbs.
- (234) Non ha detto niente a nessuno Italian
Neg has said n-thing to n-body
'He didn't say anything to anybody'
- (235) Timeo ne veniat Latin
Fear neg comes
'I fear that comes'
- (236) Dudo que vayan a encontrar nada Spanish
Doubt that will to find n-thing
'I doubt that they will find anything'
(Herburger 2001)
- (237) In most languages all negative elements may establish NC relations, but exceptions are known. Czech and Russian differ w.r.t. the grammaticality of NC constructions involving *bez* ('without'). In Afrikaans multiple n-words do not yield NC readings.
- (238) Bez *nikoho* Czech
Without n-body
'Without anybody'

- (239) *Bez *nikogo* Russian
Without n-body
'Without n-body'
- (240) Niemand verstaan niks nie Afrikaans
N-body understand n-thing neg
'Nobody understands nothing'
- (241) In (Zeijlstra 2004; Zeijlstra 2006) these facts are covered by assuming that NC constructions consist of one element (possibly phonologically abstract) that is semantically negative ([iNEG]) and one or more elements that are semantically non-negative ([uNEG]).
- (242) Modal elements also come about in different syntactic forms: modal verbs (*to require, to demand*); modal auxiliaries (*must, can, may*); and modal adverbs (*probably, obligatorily*).
- (243) But MC readings can only be established between a modal auxiliary and another modal element. Constructions with multiple modal adverbs and/or modal verbs only yield cumulative readings, as shown in (191)-(195) (copied as (244)-(249) below).
- (244) The general demands that the troops must leave MC
- (245) John must obligatorily read the books MC
- (246) The general demands that the troops are required to leave *MC
- (247) John mandatorily obligatorily reads the books *MC
- (248) Inflectional morphemes are required obligatorily by the syntax *MC
- (249) Multiple modal auxiliaries cannot appear in a single clause in English, but this is due to particular properties of the syntax of English modals. In other languages MC relations between modal auxiliaries can be established.
- (250) *That would can happen
- (251) Dat zou kunnen gebeuren MC, Dutch
'That would can happen'
'That (really) could happen'
- (252) Apparently, only modal auxiliaries are allowed to introduce an MC reading. In other words, modal auxiliaries do not always seem to introduce a separate modal operator in the semantics, whereas all other types of modal elements do so.

- (253) The different behaviour between NC and MC could thus also be analysed along the lines of the semantic value of modal features. The data above indicate that modal adverbs and modal verbs are semantically modal ([iMOD]), whereas modal auxiliaries are not ([uMOD]).
- (254) Apart from the above-mentioned restrictions, two other restrictions on MC apply: (i) MC can only be established between elements of the same modal type (epistemic/deontic); and (ii) MC can only be established between elements that exhibit the same quantificational force (existential/universal).
- (255) It is allowed that he may enter the room MC
- (256) It is allowed that he might enter the room *MC
- (257) It must necessarily be the case MC
- (258) It may necessarily be the case *MC
- (259) The fact that there are different types of modality makes that a distinction in terms of [iMOD] vs. [uMOD] is not sufficient. These features need to be more specified, e.g. [i \exists -MOD] vs [u \exists -MOD]
- (260) The question how deeply different modal types must be embedded in the lexical specification of modal elements is discussed in the next section. For now, it suffices to conclude that the fact that MC is subject to further specification does not imply that the concord mechanism behind it must function in a different way.

12.4 Concluding remarks

- (261) The three differences between MC and NC that have been mentioned at the beginning of this section can be explained as being the results of the application of independent grammatical principles. Hence, it can be concluded that MC and NC are not fundamentally different, thus paving the way for a unified account.
- (262) In the next section I demonstrate that the analysis for NC that I provided in (Zeijlstra 2004) also applies to MC.
- (263) However, this analysis of NC should not be the only one taken into consideration. The main claim is that application of an NC theory to the MC data should be taken as an evaluation mechanism for particular accounts of NC. If a theory of NC can be generalised to the extent that it also accounts for MC it is superior to an alternative theory that cannot do that.

13. Modal Concord is syntactic agreement

- (264) Hypothesis: MC is an instance of syntactic agreement.

- (265) The quantificational force of modal elements is lexically encoded (in the languages under discussion); the modal type is determined by the context. Therefore it is natural to assume that modal features are only specified for quantificational force.
- (266) [\exists -MOD] or [\forall -MOD]
- (267) Furthermore, modal features are semantically interpretable or uninterpretable.
- (268) [$i\exists$ -MOD] or [$u\exists$ -MOD] or
[$i\forall$ -MOD] or [$u\forall$ -MOD]
- (269) Every element that carries a feature [$u\forall$ -MOD] or [$u\exists$ -MOD] must have its feature checked against an element carrying [$i\forall$ -MOD] or [$i\exists$ -MOD] (Standard syntactic agreement (Chomsky 1995)).
- (270) “(Phonological) Economy”: Only if a particular sentence is grammatical and none of the overt elements is responsible for the grammaticality of the sentence, the sentence must be grammatical due to a covert element.
- (271) If a sentence, in which some modal element carries a feature [$u\forall$ -MOD] or [$u\exists$ -MOD], is grammatical, it is grammatical due to the presence of a covert modal element carrying [$i\forall$ -MOD] or [$i\exists$ -MOD].
- (272) John must go home
[John $OP_{\forall\text{-MOD}[i\forall\text{-MOD}]}$ $must_{[u\forall\text{-MOD}]}$ [VP go home]]
- (273) John must be home
[John $OP_{\forall\text{-MOD}[i\forall\text{-MOD}]}$ $must_{[u\forall\text{-MOD}]}$ [VP be home]]
- (274) John must obligatorily register himself
[John $obligatorily_{[i\forall\text{-MOD}]}$ $must_{[u\forall\text{-MOD}]}$ [VP be home]]
- (275) John may perhaps have read the book
[John $perhaps_{[i\exists\text{-MOD}]}$ $may_{[u\exists\text{-MOD}]}$ [VP have read the book]]
- (276) However, MC does not always apply. For instance, if there are two modal adverbs, no MC relation can be established. This is due to the fact that boot adverbs carry an interpretable modal adverb.
- (277) John mandatorily_[i \forall -MOD] obligatorily_[i \forall -MOD] read the books
- (278) Cases, in which the two modal elements are of different quantificational type, also immediately follow. In those cases the uninterpretable feature cannot have been checked by the interpretable feature on the adverb.
- (279) *It $may_{[u\exists\text{-MOD}]}$ necessarily_[i \forall -MOD] be the case

- (280) However, a problem is formed by cases in which an no MC relation has been established because the two modal elements do not match w.r.t. the modal type.
- (281) Inevitably_[iV-MOD] John must_[uV-MOD] have left the room MC
- (282) Inevitably_[iV-MOD] John must_[uV-MOD] leave the room *MC
- (283) In such cases the MC reading that (282) is unavailable, since events selected by *must* require a deontic reading of *must* rather than an epistemic one. Hence (282) and applying (270) only results in a syntactic representation of the sentence as in (284).
- (284) Inevitably_[iV-MOD] John OP_{V-MOD}_[iV-MOD] must_[uV-MOD] leave the room
- (285) The sentence contains two modal operators: *inevitably* and *OP_{V-MOD}*. Due to the lexical semantics of *inevitably* it is an epistemic modal operator; due to the characteristics of the event structure the second modal operator can only receive a deontic interpretation.
- (286) Finally, it follows immediately from the syntactic agreement analysis of MC that MC is subject to syntactic locality constraints, such as adjunct islands.
- (287) [The general demands that [[when the soldiers surrender] they must behave correctly]]
 → MC
- (288) [The general demands that [[when the soldiers must surrender] they behave correctly]]
 → *MC

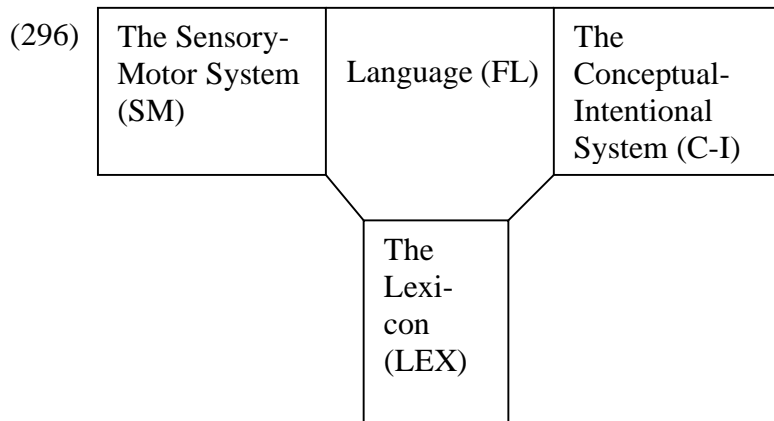
14. Concluding remarks

- (289) MC is a grammatical phenomenon.
- (290) MC is not fundamentally different from other concord phenomena such as NC.
- (291) All apparent differences between NC and MC can be explained independently.
- (292) The idea that NC is an instance of syntactic agreement naturally extends to MC.
- (293) MC can be seen as an instance of syntactic agreement.
- (294) Note that all adoptions put forward in this analysis, such as the assumption of abstract operators or the [uX]/[iX] feature architecture, have been motivated not only for MC, but also for other grammatical phenomena (NC, subject verb agreement, Sequence of Tense (von Stechow 2005)).

III MOTIVATING UNINTERPRETABLE FEATURES

15. The Revised Strongest Minimalist Thesis

(295) The Strongest Minimalist Thesis (SMT): Language is an optimal solution to interface conditions that the Faculty of Language (FL) must satisfy (Chomsky 2005).



(297) Different interface conditions:
a. SM interface conditions
b. C-I interface conditions
c. LEX-interface conditions

(298) Two kind of interface conditions:
a. Hard conditions
b. Soft conditions

(299) Hard conditions: conditions that must always be obeyed: compositionality; interpretability.

(300) Soft conditions: preferences between two candidates, such that all other things being equal, one candidate is preferred over another (economy constraints).

(301) a. $*\beta$ (hard)
b. $\alpha > \beta$ (soft)

(302) This leads to a new perspective on satisfying interface conditions in an optimal way: suppose that a particular soft C-I and soft SM interface condition are to some extent conflicting; if a grammar G solves the particular C-I condition in an optimal way, for that reason it does not solve the particular SM interface condition optimally and vice versa.

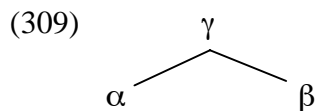
(303) Given the fact that conflicting soft interface conditions lead to the solution of interface conditions in a suboptimal way, individual languages can optimally solve interface conditions in different ways.

- (304) Different grammars form an equally optimal solution to legibility conditions at the (different) interfaces.
- (305) *The Revised Strongest Minimalist Thesis (RSMT)*:
 Every possible grammar G is a (different) optimal solution to legibility conditions at the interfaces.
- (306) The RSMT opens up a parametric space for language variation, i.e. it restricts the set of possible languages.
- (307) The entire range of parametric variation (i.e. possible cross-linguistic variation) is governed by the RSMT.

16. Interface conditions

16.1 C-I interface conditions

- (308) The C-I interface condition requires (at least) that the interpretation of higher nodes in the structure follow compositionally through Function Application (FA) or Predicate Modification (PM) (Heim and Kratzer 1998).



- (310) FA: $\|\gamma\| = \|\alpha(\beta)\| = \|\alpha\|(\|\beta\|)$

- (311) Note that the structure in (310) does not require any additional functional structure or any other structural relations (such as Agree) apart from those required for the compositional interpretation of the sentence.

- (312) Semantic Simplicity Metric (Zeijlstra 2006)

A structural representation R for a substring of input text S is simpler than an alternative representation R' iff R contains less uninterpretable features than R' .

16.2 SM interface conditions

- (313) a. *Word > Foot > Syllable > Mora* (McCarthy 1986)
 b. *Content word > Particle > Clitic > Affix* (Hopper and Traugott 1993)

- (314) Phonological Simplicity Metric

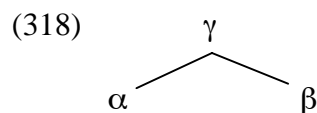
A structural representation R for a substring of input text S is simpler than an alternative representation R' iff R contains less prosodic structure than R' .

16.3 LEX interface conditions

- (315) As has been argued for on the basis of diachronic studies, the lexicon tries to avoid as many feature syncretisms as possible (Roberts and Roussou 2003): 201, after (Longobardi 2001)
- (316) Lexical Simplicity Metric
A structural representation R for a substring of input text S is simpler than an alternative representation R' iff R contains fewer feature syncretisms than R'.

17. Conflicting interface conditions: explaining uninterpretability, dislocation and categorization

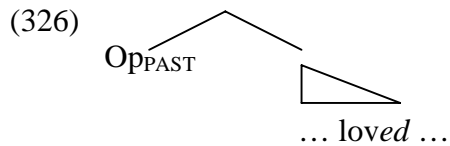
- (317) Following all C-I interface conditions the only possible type of grammar would one that only yields structures that without any (abstract) transformation can be fully interpreted



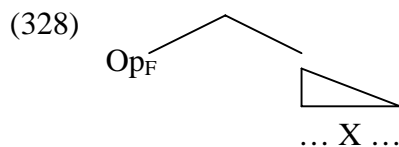
- (319) However this is not what is generally attested. Many syntactic structures in fact exhibit dislocation effects and/or overt uninterpretable features. This requires principled explanation
- (320) Hypothesis: Uninterpretability and dislocation follow from the RSMT

17.1 Uninterpretability

- (321) John loved Mary
- (322) Wolfgang played tennis on every Sunday (von Stechow 2002)
= 'For every Sunday in Past_c there is a time t at which Wolfgang plays tennis'
≠ 'There is past time on every Sunday at which Wolfgang plays tennis'
≠ 'For every Sunday, there is time before it s.t. Wolfgang plays tennis at that time'
- (323) The affix *-ed* cannot be the phonological realization of the semantic past tense operator
- (324) $[[\text{PAST}_c]] c = \lambda_w. \lambda P_{it}. \exists t [t < t_c \ \& \ P(t)]$
- (325) Due to Op_{PAST} semantic types, it may not be interpreted on V, but must take a full VP as its semantic complement.



(327) [Op_{PAST} [John loved Mary]]



(329) Question: how is Op_F licensed?

(330) If a sentence is grammatical and its grammaticality is not due to its overt elements, than a covert element is responsible for its grammaticality.

(331) Note that (330) cannot be implemented in a derivational system and therefore must be a parsing constraint, much akin to the way that rightward movement is banned in (Ackema and Neeleman 2002) (but see (Nilsen 2003) for a critical evaluation of this account).

- (332) a. [Op_F [... X_{+?} ...]]
 b. *[Op_F [... X ...]]
 c. * [... X_{+?} ...]

- (333) X must have some mystery property ? that
 a. is morpho-syntactically visible
 b. cannot occur in a grammatical sentence without standing in a syntactic relation with an element that gets a particular interpretation at LF
 c. does not have any semantic content

(334) This property ? must be an uninterpretable feature:

- (335) A feature F is an uninterpretable feature [uF] iff
 a. It is morpho-syntactically visible
 b. It cannot occur in a grammatical sentence without standing in a syntactic relation with a feature [iF] that is interpretable at LF
 c. It does not have any semantic content

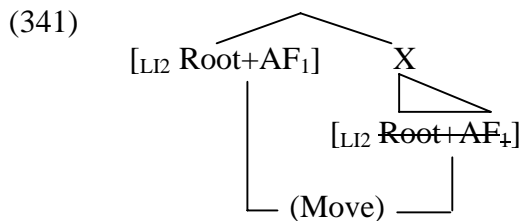
(336) This account rules out the existence of features that lack any semantic counterpart. Under this view case must be semantically motivated, as has been argued for by (Bittner and Hale 1996; Pesetsky and Torrego 2001; Svenonius 2006).

(337) Agree w.r.t. a particular semantic operator Op_F can only take place in a particular grammar G iff G_{LEX} exhibits elements carrying [u/iF].

- (338) Hence a grammar that exhibits Agree effects w.r.t. a particular semantic function F does not maximally satisfy the semantic simplicity metric, but it does optimally satisfy the phonological simplicity metric.
- (339) The existence of (un)interpretable formal features can be accounted for by adopting RSMT

17.2 Dislocation

- (340) Agree is not the only possible way to enable spell-out of semantically mismatching elements on one and the same morphological word. Another way would be to remerge the element into a second position, such that each semantic function is interpreted in its correct position.



- (342) Move concerns remerging of LI's. A process of Rmerge is however problematic to the extent that copying semantic material is forbidden by the Principle of Compositionality:

(343) $*[... A...] \rightarrow [... A ... [... A ...]]$

- (344) This leads either to feature movement or to copy+deletion

(345) $[...A-F...] \rightarrow [... F ... [... A ...]]$

- (346) However, under such a view the higher copy would have lost the categorial status of A. A can be a verb, a noun, etc., but a moved verb or noun remains a verb or noun. Hence the picture in (345) is not complete. A-F must have the form A-G-F, where A forms the semantic content of what is to be interpreted below, F is a formal feature that contains the semantic content of what is to be interpreted in the highest position and G is a formal feature that projects in the lowest copy. This leads to the model for Move as in .

(347) $[...A-F-iG...] \rightarrow [... F-uG ... [... A-iG ...]]$

- (348) Move an element projected by a feature F can only take place in a particular grammar G iff G_{LEX} exhibits elements carrying $[u/iF]$

- (349) V-to-C movement is semantically motivated: The V part is interpreted as a predicate and the C part is some kind of a speech act. As (Truckenbrodt 2006) has shown, V-to-C movement activates a speech act.

- (350) V-fin carries initially $[IMP][iV]$ and copies itself into $V-fin_{[IMP][uV]}$ and $V-fin_{[IMP][iV]}$

(351) Kill Mary!

(352) SEM Op_{IMP}(Kill(Mary))
 SYN [V-fin_{[uV][IMP]}] ... [V-fin_{[iV][IMP]} D]]
 PHON /Kill Mary/

(353) As Op_{IMP} cannot be interpreted on V°, it must move to a higher position. Given the fact that all operators encoding illocutionary force have to precede all elements carrying propositional contents, speech act formation is easily (but not necessarily) executed by verbal fronting.

(354) Move, similarly to Agree, is a marking strategy that is imposed to FL by the SM interface condition to express as much material as possible on one and the same lexical node. This condition can only be fulfilled if natural language exhibits uninterpretable material.

(355) The idea that movement is essentially triggered by semantic properties rather than by morpho-syntactic requirements is reminiscent of foot-driven movement analyses (though these analyses have never been based on semantic motivations), such as (Platzack 1996; Koenenman 2000; van Craenenbroeck 2006).

(356) This view on movement explains a problem in the study of negation, namely why are languages that express sentential negation only by means of inversion effects ruled out?

(357) a. John sleeps ~-> John sleeps
 b. Sleeps John ~-> John doesn't sleep

(358) As Op_{IMP} cannot be interpreted on V°, it must move to a higher position. Given the fact that all operators encoding illocutionary force have to precede all elements carrying propositional contents, speech act formation is easily (but not necessarily) executed by verbal fronting.

(359) However, negation, being a flexible operator, can in principal be interpreted in a position attached to every element. This means that negative marking itself can never be forced by a movement effect. Hence no language in the world can express sentential negation by means of inversion or fronting effects

17.3 Categorization

(360) Apart from the exhibition of Move and Agree effects, languages also differ from each other w.r.t. which categories are attested. For instance, in a language like Dutch negative markers share the same syntactic distributional properties as other adverbials. The sentences in (361) are structurally identical. This is not the case for the Italian sentences in (362).

- (361) a. Heeft Jan vaak gebeld? Dutch
 Has Jan often called
 'Did Jan often call?'
 b. Heeft Jan niet gebeld?
 Has Jan neg called
 'Didn't Jan call?'

- (362) a. Ha telefonato spesso Gianni? Italian
 Has called often Gianni
 'Did Gianni often call?'
 b. Non ha telefonato Gianni
 Neg has called Gianni
 'Didn't Gianni call?'
 c. *Ha telefonato non Gianni?
 Has called neg Gianni
 'Didn't Gianni call?'

- (363) Dutch *niet*: [ADV] [NEG]
 Italian *non*: [NEG]

- (364) Hence, in Italian, the feature [NEG] is a feature that projects, whereas Dutch negation does is not a negative projection; it is a plain adverbial projection

- (365) Lexical Simplicity Metric

A structural representation R for a substring of input text S is simpler than an alternative representation R' iff R contains fewer feature syncretisms than R'.

- (366) Italian negation is simpler w.r.t. (365). However, Italian violates the Semantic Simplicity Metric.

- (367) Phonological features Formal features Semantic features
-

- (368) As [uF] are possible given the RSMT, but not necessarily manifested in a particular grammar, the set of formal features is empty in the initial stage. L1 learners must acquire which features are formal(ised) and which features are not.

- (369) A feature F is an uninterpretable feature [uF] iff
- It is morpho-syntactically visible
 - It cannot occur in a grammatical sentence without standing in a syntactic relation with a feature [iF] that is interpretable at LF
 - It does not have any semantic content

(370) Properties of [uF]'s:

- a. [uF] is semantically vacuous
- b. [uF] are subject to syntactic operations Move and Agree

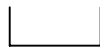
(371) Proposal:

- a. Every feature [F] is first analysed as a semantic feature ([F])
- b. Only if there is positive evidence in the language input for a [F] having to be analysed as [uF], the semantic feature [F] is reanalysed as [i/uF]

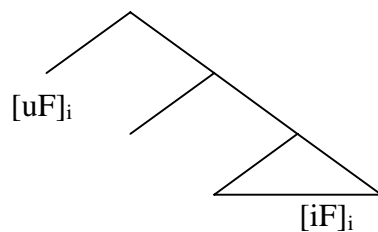
(372) Both properties in (370) reduce to doubling properties.

(373) [uF] is semantically vacuous, but marks the presence of a feature [iF], without which the derivation would crash. Hence the functional category F is manifested twice in the morphosyntax, whereas its semantic force is only contributed once.

(374) Agree: [[iF] [[uF]]]

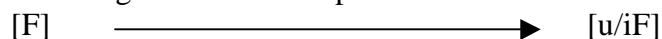


(375) Move:



(376) If a feature [F] appears to be subject to doubling properties, this forms a cue that in some cases [F] comes about as [uF], and therefore [F] is reanalysed as [i/uF]

(377) Doubling effects with respect to F



(378) The set of formal features is empty at the initial stage of the language learning process. During L1 acquisition several semantic features may be formalised, i.e. 'syntactisized' (or: grammaticalized), as a result of doubling effects: the ability of a functional category F being manifested in the morpho-syntax more than once.

(379) Flexible Formal Features (FFF) Hypothesis

- a. Every feature [F] is first analysed as a semantic feature ([F]).
- b. Only if there are doubling effects with respect to F in the language input, [F] has to be reanalysed as a formal feature [i/uF].

(380) The lexically desideratum to avoid feature syncretisms can only be fulfilled if a particular feature is overtly present in the grammar as a [uF] feature, something to be avoided by the Semantic Simplicity Metric:

(381) Semantic Simplicity Metric:
A structural representation R for a substring of input text S is simpler than an alternative representation R' iff R contains less uninterpretable features than R'.

(382) Consequence: if doubling is the driving force behind feature formalisation, only in languages that exhibit doubling effects w.r.t. F, [i/uF] may project. Consequently, only among those languages a head F° may be realised.



(384) Overt $F^{\circ} \rightarrow$ F-Concord/Doubling

(385) Since doubling and phrasal status are empirically detectable, the FFF hypothesis can be tested empirically, as can the flexible status of formal features

(386) $Neg^{\circ} \rightarrow$ Negative Concord (Zeijlstra 2004)
 $Mod^{\circ} \rightarrow$ Modal Concord (??)

18. Conclusions

(387) Concord phenomena w.r.t. semantic operators are the result of uninterpretable features.

(388) NC is an instance of syntactic agreement between interpretable and uninterpretable negative features,

(389) MC is an instance of syntactic agreement between interpretable and uninterpretable modal features,

(390) RSMT: Every possible grammar G is a (different) optimal solution to legibility conditions at the interfaces.

(391) The RSMT opens up a parametric space, and accounts for the existence of cross-linguistic grammatical variation.

(392) The RSMT explains the existence of uninterpretable features in terms of the result of conflicting interface conditions of FL (C-I - SM mismatch).

(393) The RSMT explains the existence of dislocation in terms of the result of conflicting interface conditions of FL (C-I - SM mismatch).

(394) The RSMT explains the existence of (flexible) categorization in terms of the result of conflicting interface conditions of FL (C-I - LEX mismatch).

- (395) Parametric variation arises due to the fact that semantic functions (properties, operators) can be express equally complex in different ways. There is no necessity to stipulate parameters to be innate. Perfect design (Chomsky 2000; Chomsky 2005) already calls parametric variation, and thus parameters into being.
- (396) Under this proposal cross-linguistic variation, and the morpho-syntactic tools underlying it (uninterpretability, dislocation, categorization) can all be understood as so-called 'Factor III' explanations.

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