Negative Concord in French as Constraints on Logical Forms

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1 Introduction

(1) a. Jean **ne** vient **pas**.
Jean NE comes NM
'Jean doesn't come.'

b. **Personne ne** vient.
nobody NE comes
'Nobody comes.'

2 Data

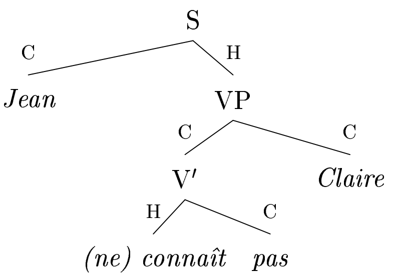
2.1 *Pas* is always negative

(2) a. Jean (ne) vient **pas**.
Jean NE comes NM
'Jean isn't coming.'

b. Jean (ne) peut **pas** (ne) **pas** connaître Marie.
Jean NE can NM NE NM know Marie
'Jean cannot not know Marie. [he surely knows her.]'

Following the analysis of Abeillé and Godard 1997, Kim and Sag 1996 and Kim 1996, we treat *pas* as a complement in finite clauses and as an adverb in nonfinite clauses.

(3) a. Jean ne connaît pas Claire.
Jean NE knows NM Claire
'Jean doesn't know Claire.'

b. 

Our informants do not get the indicated readings in apparent counterexamples:

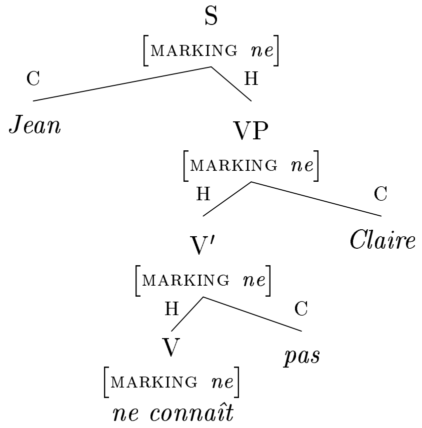
(4) a. Il faut avoir l'esprit plus libre que je ne l'ai **pas**.
it needs have the spirit more free than I NE it have NM
'One must have a freer spirit than I do.' (Racine, after Wilmet 1997, p. 513)

b. Il est plus instruit que je suis **pas**.
he is more instructed than I am NM
'He is better instructed than I am.' (Sturm, 1981, p. 24)

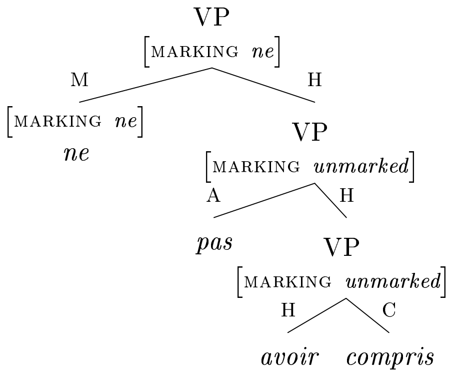
2.2 *Ne* is never negative

Syntactically, *ne* is an affix in finite clauses and a marker in nonfinite clauses (Recourcé, 1996).

(5) a. Jean **ne** connaît *(*pas*) Claire.



b. Jean affirme de [**ne** *(*pas*) avoir compris].



We distinguish three uses of *ne*:

1. Negative *ne*
2. Co-negative *ne*
3. Expletive *ne*

Negative *ne* is restricted to certain verbs or constructions (Grevisse and Goosse, 1993; Jones, 1996):

(6) Jean **ne** *peut*/ *veut venir.
Jean NE can/ wants to come
'Jean can't come.'

(7) a. *Si* je **n'**avais pris la voiture, l'accident ne serait pas arrivé.
if I NE had taken the car, the accident NE was NM happened
'If I hadn't taken the car, the accident wouldn't have happened.'

b. Il y a longtemps *que* je **ne** l'ai vu.
it there has long time that I NE him have seen
'I haven't seen him in a long time.'

We conclude that semantically, negative *ne* is not negative.
Co-negative *ne* cannot be the only overt expression of negation in a clause.

(8) Jean **ne** vient *(*pas*).
Jean NE comes NM
'Jean doesn't come.'

It is optional in spoken language (Sturm, 1981):

(9) a. Jean (**ne**) vient *pas*.
Jean NE comes NM
'Jean doesn't come.'

b. *Personne* (**ne**) vient.
nobody NE comes
'Nobody comes.'

Expletive *ne* is restricted to certain constructions.

(10) a. Je *doute* qu'il (***ne**) vienne.
I doubt that he NE comes
'I doubt he is coming.'

b. Xavier ne *doutait pas* qu'il **ne** fît semblant de lire.
Xavier NE doubted NM that he NE made seeming to read
'Xavier didn't doubt that he was pretending to read.'

c. *Douterez*-vous que Canova et Rossini **ne** soient de grands artistes?
will-doubt you that Canova and Rossini NE are some great artists
'Will you deny that Canova and Rossini are great artists?'

2.3 N-words

(11) Jean n'a parlé à **personne**.
Jean NE has talked to nobody
'Jean hasn't talked to anyone.'

(12) **Personne** n'a **rien** dit. [single negation (SN), double negation (DN)]
nobody NE has nothing said
'Nobody said anything.' [SN]
'Nobody said nothing.' [DN]

(13) Il est *impossible* qu'**aucun** d'eux boive d'alcool.
it is impossible that none of them drink alcohol
'It is impossible that any of them drinks alcohol.'

(14) **Personne** n'est *pas* venu. [DN]
nobody NE is not come
'Nobody did not come.'

3 Implications for an Analysis

Properties of the ideal analysis:

1. For each n-word, there is only one logical form.
2. The distribution of n-words is characterized in terms of entailment properties (Ladusaw, 1980; Zwarts, 1981; Giannakidou, 1997).

The data, however, dictate an analysis which assumes

1. a lexical ambiguity of each n-word, and
2. a characterization of the distribution of n-words in terms of their semantic representations.

3.1 One logical form

(15) a. Personne n'écrit sur Simone Weil.
nobody NE writes about Simone Weil
'Nobody writes about Simone Weil.'

b. J'hésite à rien écrire sur Simone Weil, ...
I hesitate to nothing write about Simone Weil, ...
'I hesitate to write anything about Simone Weil, ... ' (Muller, 1991, p. 263)

3.2 Negative concord

If we assume a lexical ambiguity of n-words, which variant of the n-words occurs in negative concord readings?

(16) Personne n'a rien vue.
nobody NE has nothing seen
'Nobody saw anything.' [SN]
'Nobody saw nothing.' [DN]

Haegeman and Zanuttini 1991, Ladusaw 1995, and Corblin 1994, among others, argue that for negative concord (NC) readings with n-words, it is inadequate to assume that one n-word is negative and the others are NPIs. **But:**

1. This leads to a non-compositional analysis.
2. The NC reading is optional in French.

Instead, we assume that

in NC constellations, only one n-word is negative.

3.3 Entailment-based vs. representation-based analyses

Can the non-negative variant be treated as a *Negative Polarity Item* (NPI)?
NC does not seem to occur with *pas*. A strong NPI such as *un chat* is only possible in its idiomatic reading with clausemate *pas* (Déprez, 1997).

(17) a. Jean n'a *pas* **rien** vu.
Jean NE has NM nothing seen
$'Jean didn't see anything.' [SN]
'Jean didn't see nothing.' [DN]

b. Je ne vois *pas* **un chat**.
I NE see NM a cat
'I don't see a soul.'

(18) a. *Personne* n'a **rien** vu.
nobody NE has nothing seen
'Nobody saw anything.' [SN]
'Nobody saw nothing.' [DN]

b. *Personne* ne voit **un chat**.
nobody NE sees a cat
'Nobody sees a cat/$ anyone.'

(19) a. Il faut *éviter* que Jean voie **personne**.
it needs avoid that Jean sees nobody
'It must be avoided that Jean sees anybody.'

b. Il faut *éviter* que Jean voie **un chat**.
it needs avoid that Jean sees a cat
'It must be avoided that Jean sees a cat/$ anyone.'

Question: If there exists an NPI-like n-word *personne*, why is it not licensed by *pas*?
Answer: A positive n-word can only be licensed by *pas* in certain contexts.

(20) a. Je n'ai *pas* donné le moindre renseignement **à personne**.
I NE have NM give the least information to nobody
'I didn't give any information to anybody.' [SN]

b. Je n'ai *pas* donné **rien** à qui que ce soit.
I NE have NM given nothing to anyone
$ 'I did not give anything to anyone.' [SN]
'I did not give nothing to anyone.' [DN]

We conclude that some notion of "immediate scope" must be available. An analysis in terms of entailment alone is not possible.

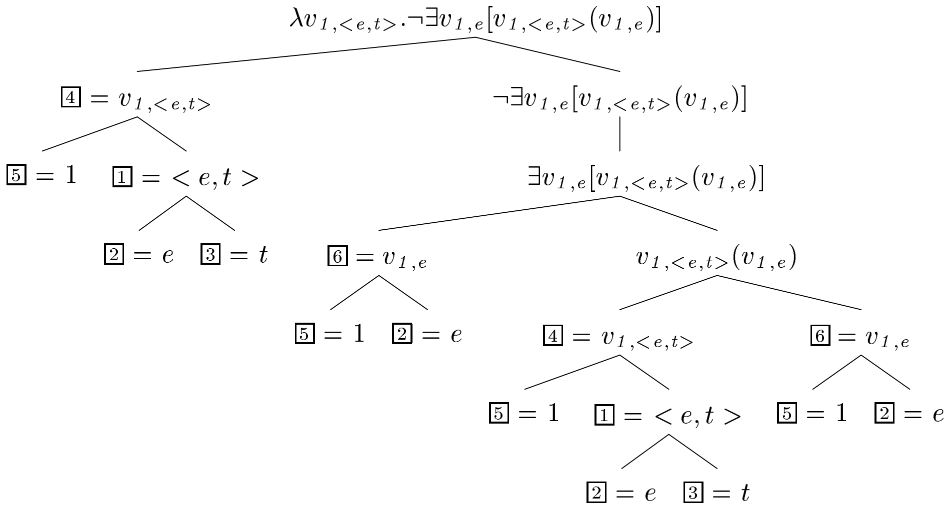
4 Semantics in HPSG

4.1 The semantic representation language

The CONTENT value must be an expression of an appropriate semantic representation language. We choose Ty2 (Gallin, 1975) as the language of our logical forms.

(21) a. $\lambda v_{1,<e,t>}.\neg\exists v_{1,e}[v_{1,<e,t>}(v_{1,e})]$

b. subterm tree:



c. AVM description:

$$\begin{bmatrix} \textit{abstraction} \\ \text{VAR } \boxed{4} \begin{bmatrix}\textit{variable}\\ \text{TYPE } \boxed{1}\begin{bmatrix}\textit{complex-type}\\ \text{IN } \boxed{2}\ \textit{entity}\\ \text{OUT } \boxed{3}\ \textit{truth}\end{bmatrix} \\ \text{NUMBER } \boxed{5}\begin{bmatrix}\textit{non-zero}\\ \text{NUMBER } \textit{zero}\end{bmatrix}\end{bmatrix} \\ \text{ARG } \begin{bmatrix}\textit{negation}\\ \text{ARG }\begin{bmatrix}\textit{existential}\\ \text{VAR }\boxed{6}\begin{bmatrix}\textit{variable}\\ \text{TYPE }\boxed{2}\\ \text{NUMBER }\boxed{5}\end{bmatrix}\\ \text{SCOPE }\begin{bmatrix}\textit{application}\\ \text{FUNC }\boxed{4}\\ \text{ARG }\boxed{6}\end{bmatrix}\end{bmatrix}\end{bmatrix}\end{bmatrix}$$

(22) The relevant part of the lexical entry of negative *personne*:

$$\begin{bmatrix} \textit{word} & \\ \textsc{phon} & \langle \textit{personne} \rangle \\ \textsc{synsloccont} & \lambda P.\neg\exists x[P(x)] \end{bmatrix}$$

(23) The relevant parts of the lexical entry of *pas*:

$$\begin{bmatrix} \textit{word} & \\ \textsc{phon} & \langle \textit{pas} \rangle \\ \textsc{syns loc} & \begin{bmatrix} \textsc{cat marking} & \textit{unmarked} \\ \textsc{cont} & \lambda p.\neg p \end{bmatrix} \end{bmatrix}$$

4.2 HPSG principles of Ty2

We only allow functional application for the combination of logical forms at phrase level.

(24) SEMANTICS PRINCIPLE (first approximation)

$$\textit{phrase} \rightarrow \begin{bmatrix} \textsc{synsem} & \begin{bmatrix} \textsc{loc content} & \begin{bmatrix} \textit{application} & \\ \textsc{func} & \boxed{3} \\ \textsc{arg} & \boxed{4} \end{bmatrix} \end{bmatrix} \\ \textsc{dtrs} & \begin{bmatrix} \textsc{head-dtr synsem loc content} & \boxed{1} \\ \textsc{nonhead-dtr synsem loc content} & \boxed{2} \end{bmatrix} \end{bmatrix}$$

$$\textbf{and} \begin{pmatrix} (\boxed{1} = \boxed{3} & \textbf{and} & \boxed{2} = \boxed{4}) \\ & \textbf{or} & \\ (\boxed{1} = \boxed{4} & \textbf{and} & \boxed{2} = \boxed{3}) \end{pmatrix}$$

(25) a. Personne ne vient.
nobody NE comes
'Nobody comes.'

b.

S
$$\begin{bmatrix} \textsc{phon} & \langle \textit{personne, ne vient} \rangle \\ \textsc{syns loc cont} & (\lambda P.\neg\exists x[P(x)])(\lambda y.\mathsf{come}'(y)) \end{bmatrix}$$

C: NP
$$\begin{bmatrix} \textsc{phon} & \langle \textit{personne} \rangle \\ \textsc{syns loc cont} & \lambda P.\neg\exists x[P(x)] \end{bmatrix}$$

H: V
$$\begin{bmatrix} \textsc{phon} & \langle \textit{ne vient} \rangle \\ \textsc{syns loc cont} & \lambda y.\mathsf{come}'(y) \end{bmatrix}$$

(26) SEMANTICS PRINCIPLE (final version)

$$\textit{phrase} \rightarrow \begin{bmatrix} \textsc{synsem} & \begin{bmatrix} \textsc{loc content} & \boxed{5} \end{bmatrix} \\ \textsc{dtrs} & \begin{bmatrix} \textsc{head-dtr synsem loc content} & \boxed{1} \\ \textsc{nonhead-dtr synsem loc content} & \boxed{2} \end{bmatrix} \\ \beta\textsc{-reduction} & \begin{bmatrix} \textsc{input} & \begin{bmatrix} \textit{application} & \\ \textsc{func} & \boxed{3} \\ \textsc{arg} & \boxed{4} \end{bmatrix} \\ \textsc{output} & \boxed{5} \end{bmatrix} \end{bmatrix}$$

$$\textbf{and} \begin{pmatrix} (\boxed{1} = \boxed{3} & \textbf{and} & \boxed{2} = \boxed{4}) \\ & \textbf{or} & \\ (\boxed{1} = \boxed{4} & \textbf{and} & \boxed{2} = \boxed{3}) \end{pmatrix}$$

$$\textbf{and } \texttt{redex-free}(\boxed{5})$$

(27)

S
$$\begin{bmatrix} \textsc{phon} & \langle \textit{personne, ne vient} \rangle \\ \textsc{syns loc cont} & \boxed{1}\ \neg\exists x.[\mathsf{come}'(x)] \\ \beta\textsc{-reduction} & \begin{bmatrix} \textsc{input} & (\lambda P.\neg\exists x[P(x)])(\lambda y.\mathsf{come}'(y)) \\ \textsc{output} & \boxed{1}\ \neg\exists x.[\mathsf{come}'(x)] \end{bmatrix} \end{bmatrix}$$

C: NP
$$\begin{bmatrix} \textsc{phon} & \langle \textit{personne} \rangle \\ \textsc{syns loc cont} & \lambda P.\neg\exists x[P(x)] \end{bmatrix}$$

H: V
$$\begin{bmatrix} \textsc{phon} & \langle \textit{ne vient} \rangle \\ \textsc{syns loc cont} & \lambda y.\mathsf{come}'(y) \end{bmatrix}$$

We assume a flexible type shifting system à la Hendriks 1993 and implement it as object level lexical rules in the sense of Meurers 1995. In order to distinguish them terminologically from meta level lexical rules, we call them *derivational rules*.

(28) The Quantifier Raising Derivational Rule (QR-DR)

$$\begin{bmatrix} \textit{word} \\ \text{SYNS LOC CONT} \quad \lambda x_1 \ldots \lambda x_i \ldots \lambda x_n.\phi \end{bmatrix} \Longrightarrow$$

$$\begin{bmatrix} \textit{word} \\ \text{SYNS LOC CONT} \quad \lambda x_1 \ldots \lambda X_i \ldots \lambda x_n.X_i(\lambda x_i.\phi) \end{bmatrix}$$

(29) The Adjunct-Introduction DR (AI-DR):

$$\begin{bmatrix} \textit{word} \\ \text{SYNS L} \begin{bmatrix} \text{CAT} \begin{bmatrix} \text{HEAD} \begin{bmatrix} \textit{verb} \\ \text{VFORM } \textit{finite} \end{bmatrix} \\ \text{VAL} \quad \text{COMPS } \boxed{1} \\ \text{MARKING } \textit{unmarked} \end{bmatrix} \\ \text{CONT } \lambda x_1 \ldots \lambda x_n.\phi \end{bmatrix} \end{bmatrix} \Longrightarrow$$

$$\begin{bmatrix} \textit{word} \\ \text{SYNS L} \begin{bmatrix} \text{CAT} \begin{bmatrix} \text{VAL} \quad \text{COMPS} \left\langle \begin{bmatrix} \textit{synsem} \\ \text{L CAT H MOD L CAT MARKING } \boxed{2} \end{bmatrix} | \boxed{1} \right\rangle \\ \text{MARKING } \boxed{2} \end{bmatrix} \\ \text{CONT } \lambda a \lambda x_1 \ldots \lambda x_n.a(\phi) \end{bmatrix} \end{bmatrix}$$

4.3 A theory of collocations

Signs exhibit idiosyncratic distributional properties. We capture them in a theory of collocations (van der Wouden, 1992, 1997).

- A list-valued feature COLL(OCATION) is appropriate for *signs*.
- For "regular" phrases, the COLL value is the empty list. For most words and for idioms such as *by and large* or *kick the bucket*, it is a non-empty list.
- If the COLL value is a non-empty list, then its value specifies the context(s) that allow(s) the occurrence of the sign.
- A collocation specification indicates two things:
  1. the domain in which the collocation condition must hold (e.g., the minimal clause that contains the sign)
  2. the licensing context (e.g., the CONTENT value of the licensing domain)
- For every possible licensing domain LD, a general COLLOCATION PRINCIPLE states that LD contains a licensing context for all signs that must be licensed within LD (Richter and Sailer, 1999a,b).

For all n-words in French, there is a COLL value that specifies the minimal clause in which they are contained as their licensing domain. The CONTENT value of the minimal clause is their licensing context.

5 The Analysis

(30) n-words (*personne*):

negative	CONT:	$\lambda P.\neg\exists x[P(x)]$
	COLL:	none
positive	CONT:	$\lambda P.\exists x[P(x)]$
	COLL:	$\neg Op\ y \ldots \exists x \ldots$

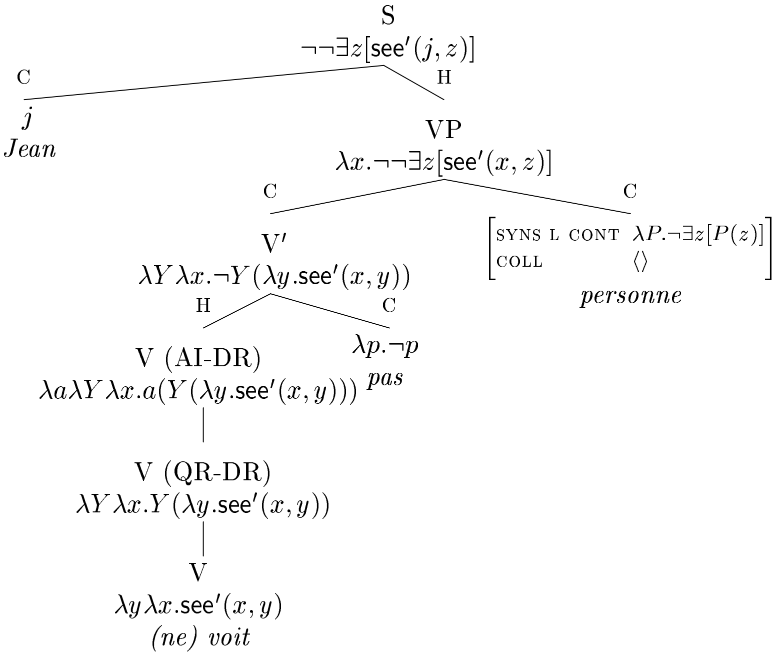
(where $Op\ y$ is a logical operator that binds a variable, i.e., λ, $\exists$ or $\forall$)

(31) Jean ne voit pas personne.
Jean NE sees NM nobody

$ 'Jean doesn't see anybody.' [SN]
'Jean doesn't see nobody.' [DN]

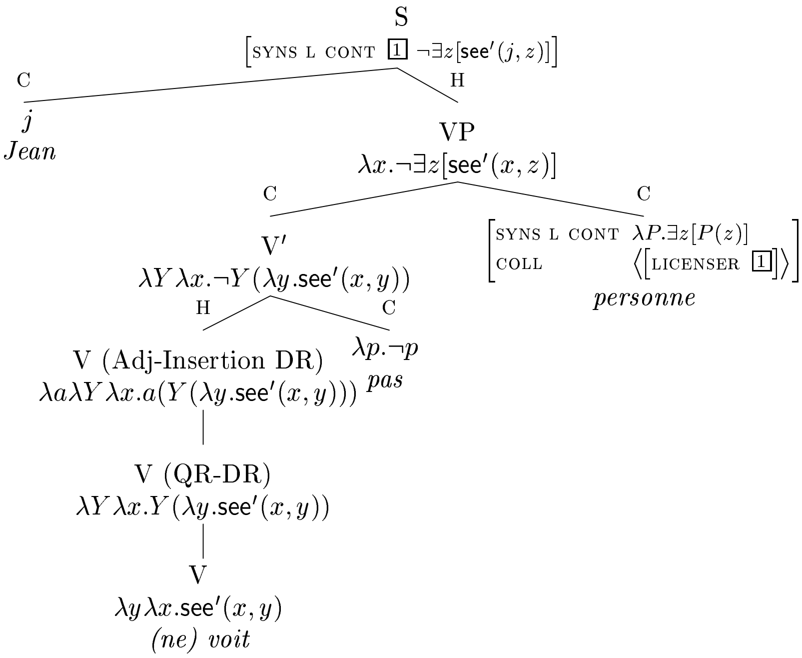
The DN reading:

(32)



The (unavailable) SN reading:

(33)



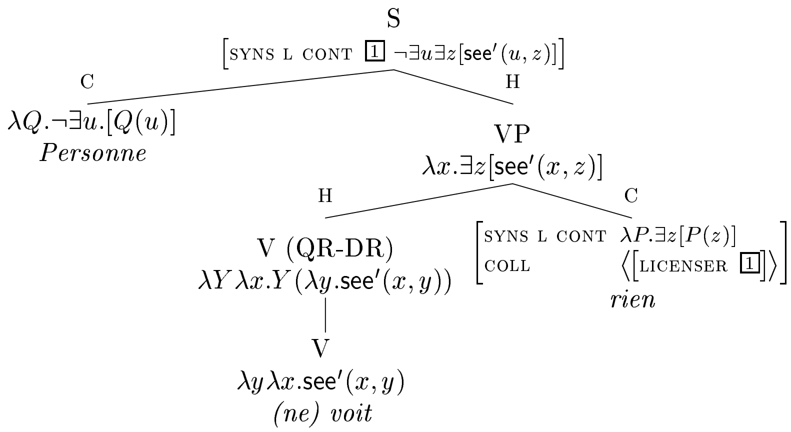
In $\boxed{1}$, the variable introduced by the n-word is in the immediate scope of the negation ($\neg$). This violates the collocation restrictions of positive n-words.

(34) Personne ne voit rien.
nobody NE sees nothing

'Nobody sees anything.' [SN]
'Nobody doesn't see anything.' [DN]

The SN reading:

(35)



The quantifier introduced by the negative n-word *personne* in subject position ($\exists u$) intervenes between the negation ($\neg$) and the quantifier introduced by the positive n-word *rien* ($\exists z$). The collocation restrictions of the positive n-word are satisfied.

6 Conclusions

- French n-words are systematically ambiguous.
- HPSG's CONTENT value must be regarded as the logical form of signs.
- The distribution of French n-words should be accounted for by a theory of collocations, where the logical form of the clause that contains the n-word is the relevant licensing context.

Appendix: Different Types of N-words

(36) a. n1-words:

Jean n'a parlé à **personne**.
Jean NE has talked to nobody

'Jean hasn't talked to anyone.'

b. n2-words:

Jean n'a dit **mot**.
Jean NE has said word

'Jean said nothing.'

c. n3-words:

Jean n'a parlé à **âme qui vive**.
Jean NE has talked to a living soul

'Jean hasn't talked to a living soul.'

(37) Two n-words:

a. **Personne** n'a **rien** dit. [SN, DN]
nobody NE has nothing said

'Nobody said anything.' [SN]
'Nobody said nothing.' [DN]

b. **Personne** n'a dit **mot**. [SN]
nobody NE has said word
'Nobody said anything.' [SN]

c. **Personne** n'a **jamais** rencontré **âme qui vive** dans cet endroit désert. [SN]
nobody NE has never met a living soul in this place deserted
'Nobody has ever met anyone in this deserted place.'

(38) Non-negative uses:

a. Il est impossible qu'**aucun** d'eux boive d'alcool.
it is impossible that none of them drink alcohol
'It is impossible that any of them drinks alcohol.'

b. Il est impossible qu'il dise **mot**.
it is impossible that he says word
'It is impossible that he says anything.'

c. C'est à peine si j'ai aperçu **âme qui vive.**
it is hardly if I have perceived a living soul
'I hardly saw anyone.'

(39) One n-word with *pas*:

a. **Personne** n'est pas venu. [DN]
nobody NE is not come
'Nobody did not come.'

b. * Il ne dit pas **mot**.
he NE says not word

c. Il n'y a pas **âme qui vive**. [SN]
it NE there has not a living soul
'There is noone.'

A sketch of the analysis:

(40) a. n1-words (*personne*):

negative	CONT:	$\lambda P.\neg\exists x[P(x)]$
	COLL:	none
positive	CONT:	$\lambda P.\exists x[P(x)]$
	COLL:	$\neg Op\ y \ldots \exists x \ldots$

(where $Op\ y$ is a logical operator that binds a variable, i.e. λ, $\exists$ or $\forall$.)

b. n2-words (*mot*):

negative	CONT:	$\lambda P.\neg\exists x[P(x)]$
	COLL:	$* \neg \ldots \exists x \ldots$
positive	CONT:	$\lambda P.\exists x[P(x)]$
	COLL:	$\neg Op\ y \ldots \exists x \ldots$

c. n3-words (*âme qui vive*):

negative	CONT:	$\lambda P.\neg\exists x[P(x)]$
	COLL:	$* \neg \ldots \exists x \ldots$
positive	CONT:	$\lambda P.\exists x[P(x)]$
	COLL:	$\neg \ldots \exists x \ldots$

A detailed discussion of the analysis, including its formalization, can be found in Richter and Sailer 1999a.

References

Abeillé, A. and D. Godard. 1997. The syntax of French negative adverbs. In D. Forget, P. Hirschbühler, F. Martineau, and M.-L. Rivero, eds., *Negation and Polarity*, pages 1–27. Benjamins.

Corblin, F. 1994. Multiple negation processing. Research Paper HCRC/RP-62, Human Communication Research Center.

Déprez, V. 1997. Two types of negative concord. *Probus* 9:103–143.

Gallin, D. 1975. *Intensional and Higher-Order Modal Logic*. North-Holland, Amsterdam.

Giannakidou, A. 1997. *The Landscape of Polarity Items*. Ph.D. thesis, Rijksuniversiteit Groningen.

Grevisse, M. and A. Goosse. 1993. *Le bon usage. Grammaire française*. Duculot, 13th edn.

Haegeman, L. and R. Zanuttini. 1991. Negative Heads and the Neg Criterion. *The Linguistsic Review* 8:233–251.

Hendriks, H. 1993. *Studied Flexibility*. ILLC Dissertation Series 1995-5. Institute for Logic, Language and Computation, Amsterdam.

Jones, M. A. 1996. *Foundations of French Syntax*. Cambridge University Press.

Kim, J.-B. 1996. *The Grammar of Negation: A Lexicalist Constraint-Based Perspective*. Ph.D. thesis, Stanford University.

Kim, J.-B. and I. Sag. 1996. French and English negation: A lexicalist alternative to head movement. Unpublished manuscript.

Ladusaw, W. 1980. *Polarity Sensitivity as Inherent Scope relations*. Garland Press.

Ladusaw, W. 1995. Configurational expression of negation. In J. van der Does and J. van Eijck, eds., *Quantifiers, Logic and Language*, pages 203–223. CSLI, Stanford University.

Meurers, W. D. 1995. Towards a semantics for lexical rules as used in HPSG. In *Proceedings of the Conference on Formal Grammar*. Barcelona. Also in: Proceedings of the ACQUILEX II Workshop on Lexical Rules, 1995, Cambridge, UK.

Muller, C. 1991. *La Négation en Français. Syntaxe, sémantique et éléments de comparaison avec les autres langues romanes*. Librairie Droz, Genève.

Recourcé, G. 1996. Une double analyse de la particule *ne* en français. *Langages* 30(122):62–78.

Richter, F. and M. Sailer. 1999a. A lexicalist collocation analysis of sentential negation and negative concord in French. In V. Kordoni, ed., *Tübingen Studies in HPSG*, Arbeitspapiere des SFB 340. Universität Tübingen. URL: `http://www.sfs.nphil.uni-tuebingen.de/~fr/cards/french.html`.

Richter, F. and M. Sailer. 1999b. LF Conditions on Expressions of Ty2: An HPSG Analysis of Negative Concord in Polish. In R. D. Borsley and A. Przepiórkowski, eds., *Slavic in HPSG*, pages 247–282. CSLI Publications. In press.

Sturm, J. 1981. *Morpho-syntaktische Untersuchungen zur* phrase négative *im gesprochenen Französisch. Die Negation mit und ohne NE*. Verlag Peter Lang.

van der Wouden, T. 1992. Beperkingen op het optreden van lexicale elementen. *De Nieuwe Taalgids* 85(6):513–538.

van der Wouden, T. 1997. *Negative Contexts. Collocation, Polarity and Multiple Negation*. Routledge.

Wilmet, M. 1997. *Grammaire critique du Français*. Duculot.

Zwarts, F. 1981. Negatief polaire uitdrukkingen. *GLOT* 4(1):35–132.