# Negation and negative concord in a polyadic quantification framework

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**Abstract**

This paper addresses the two interpretations a combination of negative indefinites can get in concord languages like French, namely a concord reading which amounts to a single negation, or a double negation reading. I defend a polyadic approch in which a sequence of negative indefinites can be interpreted as iteration of quantifiers or as resumption. The first option leads to a scopal relation, interpreted as double negation. The second option leads to the construction of a polyadic negative quantifier, interpreted as negative concord. I propose an extension of the polyadic quantifier approach which can deal with non-variable binding operators such as negation and negative prepositions.

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# 1 Local and global approaches to negative concord

Negative concord is the general term for cases where multiple occurrences of morphologically negative constituents express a single negation. The phenomenon is exemplified by the French example in (1):

(1) Personne (n')a rien fait
No one NE has nothing done

a. No one has done nothing (i.e. everyone did something) [DN]
$\neg\,\exists x\,\neg\,\exists y\ \mathrm{Do}(x, y)$

b. No one has done anything [NC]
$\neg\,\exists x\,\exists y\ \mathrm{Do}(x, y)$

(1) contains two negative quantifiers, and can be interpreted as expressing double negation (1a) or single negation (1b). The single negation reading is the concord interpretation in which two negative quantifiers 'merge' into one. We also find negative concord in other Romance languages (Spanish, Catalan, Italian), in West Flemish, African American Vernacular English, Polish, etc. This paper mainly discusses negative concord in French, but establishes some comparisons with other Romance languages.

## 1.1 Compositionality problems

Negative concord raises problems for the principle of compositionality of meaning. If we interpret the negative quantifiers in (1) in terms of first-order logic with negation and universal/existential quantification, we can derive the double negation reading, but this leaves the single negation reading (the 'concord' reading) unaccounted for. Roughly, two types of analysis of negative concord have been proposed in the literature: one 'local', one 'global'.

The global approach preserves the negative character of both quantifiers, and translates them as negative indefinites. Zanuttini (1991) and Haegeman and Zanuttini (1996) define an operation of factorization which reinterprets a sequence of quantifiers $\forall x_1 \neg \ldots \forall x_n \neg$ as a new sequence $\forall x_1 \ldots x_n \neg$. According to May (1989), factorization fails to preserve compositionality, because part of the semantic contribution of the composing elements is simply erased. As an alternative, he defines an absorption operation which interprets a sequence of negative indefinites $\mathrm{NO}_{x_1} \ldots \mathrm{NO}_{x_n}$ as a polyadic quantifier complex $\mathrm{NO}_{x_1 \ldots x_n}$ (compare also Van Benthem 1989, Keenan and Westerståhl 1997). May's analysis has also been criticized for lack of compositionality. Note that Absorption requires a mode of composition different from function application. If we restrict ourselves to function application, the only interpretation for a sequence of negative indefinites is the iteration of the monadic quantifiers $\mathrm{NO}_{x_1} \ldots \mathrm{NO}_{x_n}$.

The local approach preserves strict compositionality by reinterpreting the concord item in such a way that function application yields the desired single negation interpretation. Typically, this is achieved by treating negative concord as a variety of negative polarity, which allows us to take the negative concord item to denote an existentially quantified NP, rather than a negative quantifier. According to Laka (1990), concord items are licensed by a possibly implicit

negation operator. This assumption makes it impossible to explain why (2b) is a felicitous answer to the question in (2a), but (2c) cannot be used in this context:

(2) a. Qu'est-ce que tu as vu?
What have you seen?

b. Rien [concord item]
Nothing

c. *Quoi que ce soit [negative polarity item]
Anything

Ladusaw (1992) overcomes the problems with Laka's analysis by assuming that negative concord items are negative polarity items that license themselves. In the absence of a trigger, *rien* thus licenses itself (2b), but *quoi que ce soit* (2c) does not. As pointed out by Corblin (1996), Ladusaw's analysis still suffers from too close an identification of concord items with negative polarity items. The [neg] feature contributed by each concord item is viewed as an agreement phenomenon: it is present multiple times, but only interpreted once. As a result, we only obtain the concord reading, and not the double negation reading.

## 1.2 Problems for the local approach

An important problem for the approach of negative concord in terms of negative polarity is the observation that a sentence like (1) is actually ambiguous between a double negation reading and a concord reading, but that the polarity approach to concord only derives the single negation reading. The reason that most researchers including Ladusaw (1992), Haegeman (1995), Depréz (1997) and others have ignored the double negation reading in Romance, is that sentences like (1) strongly prefer a concord reading. Examples which provide a better illustration of the double negation reading are provided by Corblin (1996):

(3) a. Personne n'est le fils de personne [ambiguous]
No one NE is the son of no one
= No one is the son of anyone [NC]
= Everyone is the son of someone [DN]

b. Personne n'aime personne [ambiguous]
No one NE loves no one
= No one loves anyone [NC]
= Everyone loves someone [DN]

French speakers agree that sentences like (3a) and (b) have a double negation as well as a concord reading. The existence of double negation readings has led people to defend an analysis in terms of contextual ambiguity. Van der Wouden (1994: 98–103) argues that contextual ambiguity nicely reflects the two faces of concord items: they are negative if they are unembedded, but within the scope of a negative quantifier they shift towards existential quantifiers. Corblin (1996) adopts a similar approach, and formulates a construction rule for negative quantifiers in a DRT framework, which introduces a negation, and

an indefinite in the scope of negation. If a new negative quantifier shows up when the construction rule has already applied, we can optionally just apply the second half of the rule. This is equivalent to a shift of the concord item to an existential quantifier.

The analyses defended by van der Wouden and Corblin raise the question whether the ambiguity of the concord item is well motivated. I am aware of only one argument that has been advanced in favor of the existential interpretation of expressions like *rien, personne, jamais*. This involves modification by *presque* ('almost'), an adverb which combines with universal (4a), but not with existential quantifiers (4b):

(4) a. J'ai invité presque tous les étudiants.
I have invited almost all the students.

b. *J'ai invité presque quelques étudiants.
I have invited almost some students.

Accordingly, Van der Wouden and Zwarts (1993) take the contrast between (5a) and (5b) to indicate that the lower item in a concord chain is to be interpreted in terms of an existential quantifier, rather than a universal quantifier:

(5) a. Presque personne n'a rien dit. [ambiguous]
Almost no one NE has nothing said.
= Almost no one said anything [NC]
= Nearly everyone said something [DN]

b. Personne n'a presque rien dit. [DN only]
No one NE has almost nothing said.
= No one said almost nothing
= *No one said almost anything

However, it seems that the data are too weak to support this conclusion. As Vallduví (1994) points out, this leaves the felicity of the concord reading of the counterpart of (5b) in Catalan unaccounted for. Moreover, it turns out that modification of the lower concord item by *presque* is not always impossible in French, witness (6):[1]

(6) a. Un vieil écrivain nous a quittés sur la pointe des pieds sans que presque personne y prête attention.
An old writer has left us quietly without that almost no one paid attention to it.
= hardly without any attention

b. Je n'ai plus trouvé presque rien ridicule
I have no more found almost nothing ridiculous
= There was hardly anything I found ridiculous anymore

According to Muller (1991: 319), *presque* can modify an embedded concord item as long as we interpret the adverb as taking wide scope over the concord chain as a whole. This suggests that it is possible to interpret the data in (5) and (6) in such a way that they are compatible with an absorption analysis.

[1] (6a) is from Grevisse *Le bon usage*, section 726. (6b) is from S. de Beauvoir. *Mémoires d'une jeune fille rangée*, Poche p. 355, and is quoted by Muller (1991: 319).

Thus, modification of negative indefinites by *presque* does not provide evidence in favor of an interpretation of concord items in terms of existential quantifiers.

The second problem the contextual ambiguity approach faces is that it is difficult to formulate the conditions under which the negative and the indefinite interpretation show up as part of the lexical entry of the concord item. Consider in particular the problems which arise when we embed concord items under the sentential negation *pas*. The contrast between (7a) and (7b) suggests that *pas* is outside the concord system and provides the prime context to distinguish negative polarity items from concord items in French (compare Corblin 1996, Haegeman and Zanuttini 1996, de Swart 1998):

(7) a. Je n'ai pas vu quoi que ce soit [NPI: $\neg\exists$]
= I have not seen anything

b. Ce n'est pas rien [DN only]
It is not nothing
= It is quite something

(7a) has a single negation reading as expected, but (7b) only has a double negation reading. Note however that *pas* does trigger negative concord in other cases:

(8) a. Il ne veut pas que personne soit lésé. [NC]
He NE wants not that no one is-SUBJ wronged.
= He does not want anyone to be wronged

b. S'il y a quelque chose, il fera pas d'cadeau à personne. [non-standard French][NC]
If there is something, he will not give a present to no one
= If there is something, he will not grant anyone a favor

c. Il y a pas personne en ville. [Québécois][NC]
There is not no one in town
= There is no one/not anyone in town

d. Jan pa we pèsòn [Haitian creole][NC]
Jan not see no one
= Jan does not see anyone

The examples in (8a) and (b) are from Muller (1991: 261, 263), who points out that a concord item can be embedded under *pas* if it is in an indirect argument or in an embedded clause. Actually, the felicity of the concord reading of (8b) is subject to dialectal variation. We will come back to this issue in section 3.1 below. These observations suggest that we do not want to rule out embedding of concord items under negation, but that we want to impose syntactic anti-locality restrictions on the relation between *pas* and the concord item. The claim that the relation between negation and negative concord is subject to syntactic, rather than semantic constraints received further support from the fact that in older stages of the language (e.g. middle French) concord items were easily licensed by *pas*. This is still the case in modern Québécois French as illustrated by (8c) (from Muller 1991: 262) and in the French-based Haitian creole, as exemplified by (8d) (from Depréz 1997).

The interaction with the syntax suggests that we should treat the constraints on the interpretation of the concord item in the syntax-semantics interface, rather than in the lexical semantics of the concord item. This suggests that we might need a 'global' approach after all. As pointed out above, May (1989) and Van Benthem (1989) develop a polyadic quantifier approach in which a sequence of negative indefinites is interpreted as a complex negative quantifier. The aim of this paper is to use the polyadic approach to develop a serious model of interpretation of negation and negative concord in Romance.

# 2 A polyadic analysis of negative concord

## 2.1 Monadic and polyadic quantifiers

The polyadic quantifier approach has been developed as an extension of the generalized quantifier framework developed by Lindström (1966), Barwise and Cooper (1981), Van Benthem (1986) and others to sentences involving multiple quantifiers. In the generalized quantifier framework, NPs are analyzed as expressions of type $\langle\langle e,t,\rangle,t\rangle$, and determiners are expressions of type $\langle\langle e,t\rangle,\langle\langle e,t\rangle,t\rangle\rangle$ which denote relations between sets. These type assignements correspond with the Lindström characterization of NPs as quantifiers of type $\langle 1\rangle$ and determiners as quantifiers of type $\langle 1,1\rangle$. In a transitive, ditransitive, ... sentence, we need to interpret a sequence of NPs. If we just combine monadic quantifiers by function application, we obtain an iteration of NPs, corresponding with a scopal order between the NPs:

- Function application allows for a sequence of NPs $\langle$ $\mathrm{NP}_1$ ... $\mathrm{NP}_n\rangle$ to be interpreted as the iteration of the monadic quantifiers $\mathrm{NP}_1 \ldots \mathrm{NP}_n$ applied to the $n$-ary relation $\mathrm{R}_n$.

For a sentence like (9a), iteration of the monadic quantifiers leads to the quantificational structure in (9b), which gets the interpretation in (9c):

(9) a. Some student read no book
b. SOME (STUDENT, $\{x|$ NO (BOOK, $\mathrm{READ}_x)\}$
c. STUDENT $\cap$ $\{x|$ BOOK $\cap$ $\mathrm{READ}_x = \emptyset\} \neq \emptyset$
d. [SOME, NO] (STUDENT, BOOK, READ)

(9d) reflects the insight that the determiner complex denotes a relation between two common nouns and a two-place predicate. The Lindström type of the quantifier complex in (9d) is $\langle 1,1,2\rangle$. Some examples of combinations of quantifiers which are not reducible to an iteration of monadic quantifiers are given in (10a–c):

(10) a. Every student likes himself.
[EVERY, HIMSELF] (STUDENT, LIKE)
b. Every student bought a different book.
[EVERY, DIFFERENT] (STUDENT, BOOK, BUY)
c. No one loves no one.
$[\mathrm{NO}_{x,y}]$ LOVE

The reflexive pronoun *himself* in (10a) is crucially dependent on the quantificational NP *every student*, because it is bound by the subject. The dependency relation makes it impossible to reduce the quantifier complex to an iteration of monadic quantifiers (Keenan 1987). Similar considerations apply to (10b): we have to match the pairs of students and books in order to verify that the book $x$ read is different from the book $y$ read (Keenan 1987). May (1989) and Van Benthem (1989) treat the reading of (10c) in which the love relation is empty (the 'no love world') as a case of resumptive quantification. Although the negative quantifier occurs twice, it is interpreted only once, as a negative quantifier complex which binds two variables. The phenomenon of negative concord we find in Romance languages and elsewhere can be viewed as a generalization of the resumptive quantifier interpretation in (10c).

## 2.2 Negative concord as resumptive quantification

According to May (1989), the construction of a resumptive quantifier requires a sequence of the 'same' NPs. As observed by Ladusaw (1992) and others, negative concord is restricted to anti-additive expressions like *personne*, 'no one', *rien* 'nothing', *jamais* 'never', at the exclusion of simply downward entailing expressions like *peu* 'few', *rarement* 'seldom', etc. The rule for absorption of negative quantifiers is thus restricted to anti-additive NPs:

- Absorption of a sequence of $k$ $\langle 1,1\rangle$ anti-additive quantifiers leads to the construction of a resumptive negative quantifier of type $\langle k,k\rangle$.
- If Q is an NP of type $\langle 1,1\rangle$, the $k$-ary resumption of Q, $\mathrm{Res}^k(Q)$, is defined for $R, S \subseteq E^k$ by: $\mathrm{Res}^k(Q)^R_E(S) = Q^R_{E^k}(S)$. [cf. Keenan and Westerståhl (1997)]

If negative quantifiers enter a scopal relation as an iteration of monadic quantifiers, we end up with a double negation reading (11a). If negative quantifiers undergo absorption, they create a resumptive polyadic quantifier, which corresponds with a concord reading (11b):

(11) a. Personne n'aime personne [DN]
No one is such that they love no one
$[\mathrm{NO}_x, \mathrm{NO}_y]$ (Human × Human)(Love$(x,y)$)
$= \neg\exists x\, \neg\exists y$ Love$(x,y)$

b. Personne n'aime personne [NC]
No one loves anyone
$\mathrm{NO}_{x,y}$ (Human × Human)(Love$(x,y)$)
$= \neg\exists x\, \exists y$ Love$(x,y)$

c. $[\mathrm{NO}_x, \mathrm{SOME}_y]$ (Human × Human)(Love$(x,y)$)

Resumption is not limited to two quantifiers:

(12) a. Personne ne dit rien à personne
No one says nothing to no one

b. $\mathrm{NO}_{x,y,z}$ (Human × Thing × Human) (Say$(x,y,z)$)

c. $[\mathrm{NO}_x, \mathrm{SOME}_y, \mathrm{SOME}_z]$ (Human × Thing × Human) (Say$(x,y,z)$)

(13) a. Personne ne dit jamais rien à personne
No one NE says never nothing to no one
b. $\mathrm{NO}_{x,y,z,e}$ (Human × Thing × Human × Time) (Say$(x, y, z, e)$)
c. [$\mathrm{NO}_x$, $\mathrm{SOME}_y$, $\mathrm{SOME}_z$, $\mathrm{SOME}_e$] (Human × Thing × Human × Time) (Say$(x, y, z, e)$)

Note that the polyadic quantifiers in (11b), (12b) and (13b) are equivalent to the iteration of monadic quantifiers in (11c), (12c) and (13c) respectively. The fact that the truth conditions of negative sentences in concord languages can be captured in terms of iteration of monadic quantifiers has been construed as an argument against the polyadic analysis of negative concord and in favor of the local approach. It is unclear how strong this argument is in view of the observation that natural language does go beyond the Frege boundary, and we find unreducible polyadic quantifiers (compare May 1989, Van Benthem 1989, Westerståhl 1989, Keenan 1987, 1992, Moltmann 1995, and Keenan and Westerståhl 1997 for discussion). Moreover, an approach in terms of iteration of monadic quantifiers is only possible if we interpret the concord item in terms of existential quantification. The problems raised against the assimilation of negative concord with negative polarity in section 1.2 above suggest that this does not provide the right analysis of negative concord in Romance. In fact, it seems that the diachronic development of the negation system in French underlies the move from a monadic to a polyadic analysis. Concord items like *rien, personne*, and even the negation operator *pas* started out as indefinites indicating minimal amounts. They became polarity items when they were used as a reinforcement of the negation *ne*. Over the centuries, *ne* grew weaker and weaker, until, in standard modern French, it became incapable of being the sole expression of negation. As a result, the original indefinites ended up becoming real negatives. Because the iteration of monadic quantifiers in (13c) is equivalent to the polyadic quantifier (13b), it became possible to view each of the support items as negative items in and of themselves. Once the concord items were analyzed as real negative quantifiers, it became possible to combine them in other ways than just by absorption. This opened the way to the interpretation of a sequence of negative indefinites as an iteration of monadic quantifiers, which made it possible to derive a double negation reading. The main difference between a concord language like French and a double negation language like English is then that the former has a preference for absorption over iteration of negative indefinites, whereas the latter has a preference for iteration over absorption of negative indefinites. However, this is just a matter of preference: in principle, both interpretations are available for both types of languages.

## 3 The role of negation in negative concord

In the studies on resumption within the polyadic quantifier approach (May 1989, Van Benthem 1989, Keenan and Westerståhl 1997), there is not much discussion of constraints on the types of quantifiers that undergo absorption. For *wh*-expressions, absorption seems to be restricted to variable binding operators like

*who*, *which N*, etc. (cf. May 1989). Non-variable binding operators like *if*, or *whether* do not participate in this process. Negative concord is different in that not only negative quantifiers, but also non-variable binding negative operators such as sentential negation (section 3.1) and negative prepositions (section 3.2) participate in negative concord.

### 3.1 Embedding under sentential negation

As observed with respect to (7b) in section 1, repeated here as (14a), the combination of *pas* and a concord item often leads to a double negation reading. However, examples like (8a) and (b), repeated as (14b) and (c) illustrated that concord readings are available as well:

(14) a. Ce n'est pas rien [DN only]
It is not nothing
= It is quite something

b. Il ne veut pas que personne soit lésé. [NC]
He NE wants not that no one is-SUBJ wronged.
= He does not want anyone to be wronged

c. S'il y a quelque chose, il fera pas d'cadeau à personne. [NC]
If there is something, he will not give a present to no one
= If there is something, he will not grant anyone a favor

I will first give an account of the semantics of negation in a polyadic approach, and then come back to the syntactic anti-locality constraints which block absorption in contexts like (14a).

In order to treat a mixture of negation and negative quantifiers in a polyadic approach, we need to determine the type of negation. Given that the type of a quantifier reflects the number of variables it binds, we can take non-variable binding operators such as negation to be quantifiers with adicity zero, or quantifiers of type $\langle 0 \rangle$.

- Non-variable binding operators such as negation are treated as quantifiers of type $\langle 0 \rangle$.

We can now extend our absorption rule to allow resumption of quantifiers of different types. We define a mixed rule as follows:

- Absorption of a sequence of $k$ type $\langle n, n \rangle$ and $l$ type $\langle m, m \rangle$ anti-additive quantifiers leads to the construction of a resumptive negative quantifier of type
$\langle (k \times n) + (l \times m), (k \times n) + (l \times m) \rangle$.

The variant of this rule which we need in the combination of sentential negation and concord items is the following:

- Absorption of a sequence of $k$ type $\langle 1, 1 \rangle$ anti-additive quantifiers and $l$ type $\langle 0 \rangle$ anti-additive quantifiers leads to the construction of a resumptive negative quantifier of type $\langle k, k \rangle$.

Adding zero does not add anything, so the result of combining negation and a sequence of negative quantifiers is that negation does not affect the type of the polyadic quantifier. This means that negation is semantically empty in a concord context.

At first, the semantic emptiness of negation might come like a surprise if one is used to local approaches to negative concord in which sentential negation plays an important role as the licensor of the concord item (cf. Laka 1990, Ladusaw 1992, Przepiówski and Kupść 1997 and others). However, as Ladusaw (1992: 247) admits, that assumption creates a serious problem for the local approach. The participation of sentential negation in negative concord is subject to cross-linguistic variation, which means that we have to assume that each language has its own set of licensing conditions on concord items. Given that licensing conditions on negative polarity are grosso modo the same across languages, and that variation only obtains within strict limits, this is not a very attractive result. The polyadic approach provides a more principled explanation. Given that negation is semantically empty in concord contexts, languages are free to include or exclude negation from the concord system, or to give negation a syntactic function as a scope marker in the absence of any semantic contribution. Across the Romance languages, we find several versions of these possibilities.

In Catalan, the use of negation becomes optional in a concord context. As a result, both (15a) and (b) are grammatical, and they have the same meaning (from Vallduví 1994):

(15) a. Cap d'ells vindrà [Catalan]
None of them comes

b. Cap d'ells no vindrà
None of them not comes
= None of them comes

In other Romance languages, negation is required when the negative quantifier is in a postverbal position, but is excluded (or leads to double negation) when the negative quantifier is in preverbal position, e.g. Italian, Spanish:

(16) a. No funciona nada [Spanish]
Not works nothing
= Nothing works

b. Nada funciona
Nothing works
= Nothing works

(17) a. Gianni *(non) dice niente a nessuno [Italian][NC]
Gianni *(not) says nothing to no one
= Gianni does not tell anyone anything

b. Nessuno (*non) legge niente.
No one (*not) reads nothing
= No one reads anything

Ladusaw (1992) argues that negation functions as a scope marker in these languages. A VP-internal (i.e. postverbal) negative quantifier in Spanish or Italian cannot take sentential scope in the absence of a negation marker, but obviously, this problem vanishes for negative quantifiers in a VP-external (i.e. preverbal) position. The fact that *pas* in (14a) is incompatible with a concord interpretation suggests that French is like Italian and Spanish in that sentential negation is excluded as soon as a concord item takes sentential scope. However, the definition of the scope domain in French and Spanish/Italian is slightly different. For Spanish/Italian the borderline is between VP-internal arguments (direct and indirect objects) and VP-external arguments (subjects): only VP-external arguments take sentential scope. In French, the borderline is between direct and indirect arguments of the predicate: only direct arguments take sentential scope. Subjects and direct objects always count as direct arguments. In dialects in which the indirect object counts as an indirect argument of the predicate, we find that *pas* is inserted to mark the clausal nature of negation (14c). In dialects in which the indirect object counts as a direct argument of the predicate, the concord reading of (14c) is blocked, but we find concord chains established across clausal boundaries. The occurrence of a concord item in the embedded clause of (14b) requires the presence of a sentential negation marker in the main clause in order to give negation scope over the construction as a whole. It seems useful to separate syntactic from semantic constraints on negative concord and locate dialectal and cross-linguistic variation in the particular syntactic structure at hand.

### 3.2 Embedding under negative prepositions

One advantage of the extension of our rule of absorption to include non-variable binding operators is that we can integrate embedding of NCIs under *sans* in our system. We take *sans* to be the negative counterpart of the gerund construction. The gerund construction consists of the preposition *en*, which combines with a present participle to build an intersective modifier as in (18):

(18) Anne est partie en chantant
Anne has left EN singing
a. en = $\lambda P' \, \lambda P \, \lambda x \, [P(x) \ \wedge \ P'(x)]$
b. Anne est partie en chantant = [Leave($a$) $\wedge$ Sing($a$)]

Along similar lines, we treat *sans* as a preposition which combines with an infinitival complement to build an intersective modifier negating the complement (19a). The interpretation of (19) is then as in (19b):

(19) Anne est partie sans dire au revoir
Anne has left without saying goodbye
a. sans = $\lambda P' \, \lambda P \, \lambda x \, [P(x) \ \wedge \ \neg P'(x)]$
b. Anne est partie sans dire au revoir = Leave($a$) $\wedge$ $\neg$ Say-goodbye($a$)

The same interpretation of *sans* as in (19a) is the basis of the concord reading of (20a). The crucial step in the derivation is the application of absorption in (20b), which eventually leads to the interpretation in (20c):

(20) Anne est partie sans rien dire
Anne has left without nothing say
= Anne has left without saying anything

a. rien dire = $\neg\,\exists y$ Say($y$)

b. (sans, rien) (dire) $\rightsquigarrow_{absorption}$
[ NO$_x$](Thing)(Say($x$))

c. Anne est partie sans rien dire
= [Leave($a$) $\wedge$ $\neg\,\exists y$ Say($a, y$)]

*Sans* contributes a negation which combines with a negative quantifier to build a polyadic quantifier. Given that the semantic effect of negation in a concord chain is zero, the result is a monadic quantifier, which binds the variable corresponding with the object of the infinitive. This treatment of *sans* allows us to integrate this context into the analysis of negative concord, so we do not need to treat it as illustrating the negative polarity use of concord items (as proposed by Muller 1991).

# 4 Conclusion

The interpretation of negation and negative concord in a polyadic quantifier framework has a number of advantages over treatments of negative concord in terms of negative polarity. First, we can derive the double negation and the concord readings as different ways of building up the polyadic quantifier. This means that we do not need to postulate a contextual ambiguity which lacks independent motivation. Second, the extension of the resumptive polyadic approach to include non-variable binding operators allows us to treat negation as semantically empty in concord contexts. The observation that the negation marker can take up a syntactic function (e.g. as a scope marker) in the absence of a semantic role explains why languages vary in the participation of negation in negative concord. Finally, the polyadic approach opens a new way to talk about the famous Jespersen cycle, i.e. the observation made by Jespersen (1917) that existential expressions which are introduced as a reinforcement of negation tend to fossilize as negative polarity items and can finally shift to real negative quantifiers in the development of a language. This diachronic phenomenon can be captured in terms of changes in the interpretation of a sequence of quantifiers from iteration to absorption and back to iteration.

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