The Delay of Principle B Effect (DPBE) and its Absence in Some Languages

Anna Maria Di Sciullo, Calixto Agüero-Bautista

Université du Québec à Montréal

Key words

binding

coreference

interface conditions

reconstruction

scope economy

Abstract

The Delay of Principle B Effect (DPBE) has been discussed in various studies that show that children around age 5 seem to violate Principle B of Binding Theory (Chomsky, 1981, and related works), when the antecedent of the pronoun is a name, but not when the antecedent is a quantifier. The analysis we propose can explain the DPBE in languages of the Dutch-English type, and its exemption in languages with (dis)placed pronouns (clitics). In both types of languages, the phenomenon arises when children have to compare two alternative representations for equivalence. The principle that induces the comparison is different in both cases, however. The comparision of children speaking languages with pronouns occurring within the VP is induced by Grodzinsky and Reinhart's (1993) Rule I. However, the comparison of children in languages where the pronouns occur above the VP is induced by Scope Economy. In both cases the result is similar: the children take guesses in the process of interpreting the anaphoric dependency, thereby performing at chance level.

1 Introduction

Whereas adult speakers do not normally allow the pronoun and the name in sentences like (1) to be *anaphorically related*, numerous studies show that children around age 5 do under certain conditions (e.g., Chien & Wexler, 1990; Grodzinsky & Reinhart, 1993; Thornton & Wexler, 1999, for English; Koster, 1993; Philip & Coopmans, 1996, for Dutch; Avrutin & Wexler, 1992, for Russian; Hamann, Kowalski, & Philip, 1997; and Jakubowicz, Müller, Kang, Riemer, & Rigaut, 1996, for French, among many others).[1] This phenomenon is known as the *Delay of Principle B Effect* (DPBE), since Principle B is taken to be the constraint that plays the main role in blocking

[1] We use the term *anaphorically related* as a cover term for expressing the co-valuation of two arguments instantiated either through binding or through coreference.

Acknowledgments: This work is supported in part by funding from the Social Sciences and Humanities Research Council of Canada to the Major Collaborative Research on Interface Asymmetries (<http://www.interfaceasymmetry.uqam.ca>), grant number 214-2003-1003, awarded to Anna Maria Di Sciullo.

Address for correspondence. Professor Anna Maria Di Sciullo, Département de Linguistique at Université du Québec à Montréal; e-mail: <di_sciullo.anne-marie@uqam.ca>.

'Language and Speech' is ©Kingston Press Ltd. 1958 – 2008

the intended anaphoric relation in adult grammars, and it is at least plausible that its effects are somehow delayed in child grammars allowing the given relation.

(1) Mama Bear$_1$ touches her$_{*1}$

A very influential subset of the studies on the acquisition of Principle B (e.g., Avrutin & Wexler, 1992; Chien & Wexler, 1990; Grozindsky & Reinhart, 1993; Thornton & Wexler, 1999) have found that the DPBE is subject to what Elbourne (2005) has called a *quantificational asymmetry* (QA) because the phenomenon seems to depend on whether the antecedent of the pronoun is a referring or a quantificational DP. In particular, Chien and Wexler (1990) found that children around age 5 accepted the subject NP in (1) as an antecedent for the pronoun around 50% of the time, but not in (2), where the subject is quantificational and where their infant subjects rejected the intended interpretation around 85% of the time.

(2) Every bear$_1$ touches her$_1$ (rejected 85% of the time, Chien & Wexler, 1990)

Although various studies have essentially replicated these findings (e.g., Avrutin & Wexler, 1992; Thornton & Wexler, 1999, among others) providing additional support for the QA, two recent papers (i.e., Conroy et al., 2007; Elbourne, 2005) have raised some methodological concerns regarding the QA in the DPBE. We find, however, that the crosslinguistic distribution of the DPBE poses many questions that need to be addressed from a crosslinguistic perspective before the conclusions of these proposals can be counted as real challenges to the analyses they criticize.[2] We will therefore continue to assume the QA until solid empirical evidence forces us to do otherwise.

If knowledge of Principle B on the part of adult native speakers of languages like English is what accounts for the fact that they reject sentences like (1), under the interpretation in which the pronoun and the name refer to the same entity, then the findings of the studies alluded to in the first paragraph of this introduction are at first sight unexpected. This is because Principle B is taken to be one of the principles of UG, the initial state of the language faculty, which is given to us as a genetic endowment. Principles of UG are predicted to be universal across languages and across age groups, so the fact that children in some languages seem to violate Principle B raises important questions that need to be seriously addressed.[3]

---

[2] For instance, a common concern of Elbourne (2005) and Conroy et al. (2007) is that the good performance of English children in examples like (2) and the DPBE in examples like (1) might be due to the salience of the referent of the pronoun in contexts like (2) and the lack of salience in contexts like (1). This hypothesis, however, is at odds with the crosslinguistic data. The literature is full of examples showing that the DPBE is not found in simple clauses in languages with clitic-pronouns. If salience plays a role in determining the English DPBE, then the same property, not being contingent on grammatical structure, should have a similar effect in languages with clitic pronouns. The predicted effect, however, is generally missing for the counterpart of (1) once Chien and Wexler's study is replicated in languages with clitic pronouns. This suggests that there is something grammatical, rather than just pragmatic about the DPBE. Similar questions can be raised for the other concerns of these authors, who focus mainly on the DPBE in English.

[3] For example the question of whether Principle B needs to be learned, a question to which a potential affirmative answer would suggest that the principle is not a part of UG. The available evidence overwhelmingly suggests otherwise.

In this paper we assume Di Sciullo's (2005) *Asymmetry Hypothesis* according to which the principles of the grammar rely on asymmetric relations. We also assume that the application of these principles is categorical and does not induce comparisons between derivations, as discussed in Di Sciullo (2006) for path length.[4] As we will see below, the DPBE is a complex phenomenon that seems to be determined by nonlinguistic and linguistic factors.[5] One of the intriguing features of the phenomenon is that it is not universal in all environments, as it is notably missing in languages with clitic pronouns in simple clauses (Baauw, 2000; Baauw, Coopmans, & Philip, 1999; Baauw, Escobar, & Philip, 1997; McKee, 1992; Padilla, 1990), a phenomenon referred to in the literature as the *Clitic Exemption Effect* (CEE). The situation is even more complicated since the DPBE is found to some extent in what Baauw and his associates call *Verbal Small Clauses* (VSC) (Baauw, et al., 1997, 1999; Baauw, 2000; Baauw & Cuetos, 2003). We adopt their terminology. The right theory of our knowledge of Principle B should therefore account for the crosslinguistic presence of the DPBE and for its absence as well (i.e., for the CEE).

We will argue that the DPBE is not due to a lack of knowledge of Principle B, or any other aspect of the binding theory, but rather to the fact that certain (interface) principles induce comparison of structures for truth-conditional equivalence. We will closely follow the logic of Grodzinsky and Reinhart (1993), henceforth G&R, in assuming that such comparisons lead children to take a guess in the process of determining the legitimacy of certain *antecedent-variable chains*, which causes them to perform at chance level.[6] Following G&R, we will also assume that the principle that induces the comparison of structures, in languages like English, is what they call *Rule I*, a principle that enforces a binding interpretation over an alternative coreferential reading of an antecedent-variable dependency. However, unlike these authors, we will assume that what makes Rule I relevant is the possibility of interpreting the vP-internal copy of a referential subject as a coreferential antecedent for the pronoun. This has the effect, as we will see, of activating and deactivating the given principle depending on the syntactic context, a result that we need in order to explain why the principle seems irrelevant in languages where the pronouns occur outside the vP.

---

[4] Paths are not compared in order to determine the shortest among all possible paths. Rather path length follows from the interaction of the principles of the grammar and Local Economy. Comparisons between derivations and representations are external to the grammar and may give rise to a decrease in human performance. See Di Sciullo (2006) for discussion.

[5] The nonlinguistic factors include the ability to handle the additional computational complexity implied in the process of comparing alternative structures to choose the optimal one, what Collins (1997) calls global economy.

[6] We follow Chierchia (1995) in using the term *variable* as a cover term for both pronouns and DP-traces. An *antecedent-variable chain* or *dependency* is just the dependency established by an antecedent and a pronoun or trace that it c-commands when these elements are related either by binding or by coreference. Throughout the paper by *binding* we mean binding in the semantic sense rather than in the syntactic sense. Although coindexation under c-command sometimes can result in semantic binding, that is certainly not always the case. Accordingly, by *bound pronoun* we mean a pronoun interpreted as a *bound variable* (in the sense of ordinary logic) regardless of whether the pronoun is a reflexive or not. The question of pronominal binding is independent from the reflexive/nonreflexive grammatical distinction.

For the case of the DPBE in VSCs in Romance, we will argue, essentially following Agüero-Bautista (2001), that the principle that induces the comparison of structures for equivalence is Fox's (2000) *scope economy*. Having to deal with comparison of structures, Romance children are predicted in our theory to go through a processing breakdown, just like their English counterparts, which will lead them to take a guess in the task of determining if certain antecedent-variable chains are legitimate, which will result in a chance-level performance.

The remainder of the paper is organized as follows. First we examine one particular experiment conducted by Chien and Wexler (1990) illustrating the condition under which the DPBE occurs in English-type languages. We then examine what we consider to be an elegant and very plausible analysis of the English data, the account of Grodzinsky and Reinhart (1993), pointing out the problems that arise when one considers languages with clitic pronouns, in which the DPBE occurs in VSCs, but not in simple sentences. Finally, we develop a unifying account of the DPBE in the two different types of languages, by arguing that in both cases the problem arises when some underlying interface principle induces children to compare alternative structures for equivalence in the process of determining whether a particular anaphoric dependency is possible.

2 Experiments illustrating the DPBE

The experiments in the works mentioned in the introduction to this paper have all illustrated the DPBE. Reasons of space prevent us from discussing each of these experiments. For the purpose of illustrating the issues of more direct concern to our research, we will start with the study conducted by Chien and Wexler (1990), which was later replicated by Avrutin and Wexler (1992), and Thornton and Wexler (1999), among other studies. Other approaches will be considered as we go.

2.1 *Chien and Wexler, 1990*

Chien and Wexler (1990), henceforth C&W, conducted an interesting experiment to explore children's knowledge of Principle B. Their experiment had at least two parts that are relevant to our discussion. In the first relevant part of the experiment, children were presented a picture of Mama Bear and Goldilocks standing in front of each other. In the picture, Mama Bear, but not Goldilocks was touching herself. Several control sentences were also included, testing, among other things, the ability of the children to interpret object reflexive pronouns correctly (see C&W for full details of experiment).[7] C&W reported that in the context of the picture just described their infant subjects answered the question *Is Mama Bear touching her?* with a "yes" around

[7] Children around age 6 had a virtually perfect performance with reflexives. C&W found that the performance of their subjects improved with age, something they attribute, plausibly we think, to the role of lexical learning. What is important for our discussion is that children can perform adult-like with reflexives long before they do so with regular pronouns.

50% of the time. In other words, about half of the children in the study found that the pronoun can be bound by the name in a sentence like *Mama Bear touches her.*

If this phenomenon is not simply an artifact of the experimental design, it raises the question of whether children need to learn Principle B, which would imply that the given principle is not innate, or whether the poor performance of the relevant subjects can be attributed to some performance factors of some sort, a possibility still consistent with the idea that knowledge of the given principle is innate.

Interestingly, that last possibility is in fact suggested by the result of the second part of C&W's experiment. The authors elaborated a scenario in which the antecedent of the pronoun was a quantifier rather than a proper name, and this fact alone bolstered the performance of their subjects. After being presented a picture of Goldilocks and several bears standing at a considerable distance from each other, the subjects were presented the sentence in (3). In the relevant picture each of the bears was touching itself, but Goldilocks was not.

(3) These are the bears; this is Goldilocks. Is every bear touching her?

Unlike the result of the first part, this time children said "no" to the question in the input sentence about 85% of the time.[8] With some idealization of the results, one can say that the performance of C&W's subjects in evaluating the legitimacy of the anaphoric relation between a pronoun within the VP and the subject of the clause was at chance level when the subject was referential and adult-like when the subject was quantificational. These results were assumed by Grodzinsky and Reinhart (1993) and have been virtually duplicated in Thornton and Wexler (1999). The question that arises is what the principle or mechanism is that triggers such a QA, to use Elbourne's term, in connection with the DPBE.[9]

---

[8] Philip and Coopmans (1996) object that uncertainty about the gender of the bears might prevent English children from accepting the quantifier as an antecedent for the pronoun in (3). Thornton (1990) replicated C&W's experiment using gender neutral *who* and had virtually identical results (85% rejections for the sentence *who washed him?* where the operator is binding the pronoun), which suggests that the results are not just an experimental artifact.

[9] To qualify these remarks we must say that some studies have found a DPBE with both quantifiers and referential antecedents alike. An anonymous reviewer cites Philip and Coopmans (1996) as a prominent example typifying such results. We are not convinced, however, that the relevant experiment actually tests what it is intended to test. For one thing, in the relevant example, Philip and Coopmans used a picture depicting three women and a girl. In the picture each of the women is holding one of her own legs, whereas the girl is just standing close by. The test condition for the quantifier is the sentence *Is every mom holding her?* Negative answers to this condition are interpreted as a refusal to bind the pronoun with the quantifier on the part of the subjects in the experiment. But does a negative answer to this test condition really measure the refusal of a speaker to bind the pronoun with the quantifier? It seems to us that it does not. The problem with the test condition is that it uses the predicate *hold*, which, as shown by Talmy (2000) has a "preventive" meaning (i.e., one holds something from doing something). It is a property of verbs with such preventive meanings that they do not seem to license inferences based on the part-whole relation. Thus, if A is touching B's leg, it follows, that A is touching B. But from A's holding B's hand, it does not follow that A is holding B. From this, it follows that although the women in the picture are holding their legs, they are not actually holding themselves. The

The gist of C&W's account of the QA is that there is a pragmatic principle, *Principle P*, which blocks the *coreferential* interpretation of (1), but not the *binding* interpretation. They argue that children would not allow the binding interpretation of (1), as they know Principle B, but that they would sometimes allow the coreference interpretation because they struggle with Principle P. Since coreference is not an option with quantifiers, Principle P is irrelevant in examples like (3), whence children are predicted to perform more adult-like in such examples. We will not adopt this analysis because, in our opinion, it does not fit well with the data in languages with clitic pronouns where the DPBE is absent in simple clauses but present in ECM-type environments, as we will see below. For instance, the explanation advanced in this type of analysis of why Principle P does not seem to apply to clitics is usually that coreference is not available with clitics. But as McKee (1992) points out (in an observation she attributes to Jane Grimshaw), the Romance version of *John's mother loves him* is well formed where the clitic clearly can corefer with the non-c-commanding name inside the possessive. In the next section, we proceed to consider an account of C&W's facts that in our opinion is more promising from the perspective of developing a unified analysis of the crosslinguistic facts of the DPBE.

3 An elegant explanation: Grodzinsky and Reinhart (1993)

Grodzinsky and Reinhart (1993), provide an elegant account of the performance contrast discussed in the previous section. Following Reinhart (1983), these authors assume that there are two distinct strategies for relating the pronoun and the name anaphorically in a sentence like *Mama Bear touches her*: *Binding* and *Coreference*. Under the binding option, we use the index of the subject NP to abstract over (i.e., bind) both the object pronoun and the trace of the subject, yielding the one place predicate λx *(x touches x)*. This predicate then combines with Mama Bear, which yields the representation Mama bear touches Mama Bear, but only after lambda conversion. Under the coreference option, on the other hand, there is no binding involved. Rather, the pronoun simply happens to pick out a referent, directly from context, which in turn happens to be the same referent picked out by the name.

G&R further assume that binding theory is about binding, not about coreference, and that there is an interface principle, which they call *Rule I*, that ensures that binding takes precedence over coreference. Rule I is defined below:

---

context licensing condition for the preventive meaning is different in each case (the women are holding their legs from touching the ground, but they are not holding themselves from touching the ground). Given this, a speaker can give a negative answer to the quantifier condition in Philip and Coopmans' study not because (s)he cannot bind the pronoun with the quantifier, but because the context makes the sentence false even if (s)he can. What this means is that the relevant condition is actually not testing knowledge of Principle B, at least if the Dutch version of *hold* is like its English, Italian, or Spanish counterparts, which do not license inferences based on the part-whole relation of the sort discussed above.

(4) *Rule I*

NP A cannot corefer with NP B if replacing A with C, C a variable A-bound by B, yields an indistinguishable interpretation (Grodzinsky & Reinhart, 1993).

Rule I essentially says that an antecedent-variable chain cannot be resolved through coreference if it can be resolved through binding and the two alternatives have the same truth conditions. This means that the sentence *Mama bear touches her* cannot have the coreference interpretation. This is because that interpretation is the one associated with the formula Mama bear touches Mama bear and that is also the formula that we will arrive at through binding, after Mama Bear composes with the predicate λx *(x touches x)* and lambda conversion replaces the variable for the name. Both the binding and the coreferential interpretations of the relevant sentence inevitably yield the same truth conditions, and Rule I ensures that the binding analysis is the one selected.

Assuming both Rule I and Principle B to be innate principles, G&R develop an elegant account of the contrast reported in C&W. For the first part of the experiment, in which children perform at chance level when the antecedent of the pronoun is a proper name, G&R argue that children have problems with neither Rule I nor Principle B. Rather, they argue that infant subjects get lost in the process of comparing two structures for equivalence, as required by Rule I. Being lost, children take a guess in the process of interpreting the given anaphoric relation, whence their performance at chance level.

For the second part of the experiment, where the antecedent of the pronoun is a quantifier, G&R argue that in that case coreference is ruled out as a strategy for the interpretation of an antecedent-variable chain, as quantifiers are not referential expressions. Rule I, thus, does not apply and children do not need to compare representations for equivalence. As a consequence, their interpretation of a given antecedent-variable dependency will conform to Principle B just as in the case of adult speakers.

3.1
An unexpected problem

Although G&R's account explains the difference in performance between children and adults concerning Principle B in languages like English, a surprising finding has been that in languages with clitic pronouns, or pronouns that occur outside the vP complex, children do not show a Delay of Principle B Effect, at least in simple sentences. This phenomenon has been called the *Clitic-Exemption Effect* (CEE), and has been reported in a number of studies (e.g., Baauw, 2000; Baauw et al., 1997, 1999; McKee, 1992; Padilla, 1990).

McKee (1992), for instance, conducted an experiment with Italian children using a picture similar to the Goldilocks-Mama Bear picture of C&W. In McKee's picture, a boy, Gianni, appears in the proximity of another male. In the picture Gianni is drying himself off and nobody is drying the other person. In that context, Italian children did not allow the pronoun to take the subject as an antecedent in the input sentence below (with virtually 100% level of rejection).

(5) Gianni lo asciuga
Gianni him-dries off
'Gianni dries him off' (McKee, 1992)

Baauw et al. (1997) replicated that experiment by presenting Spanish children with a picture containing a girl wrapped in a towel and a woman standing close by. In the experiment, the visual context makes it clear that the girl is drying herself off and that nobody is drying the woman off. According to Baauw et al. (1997), the infant subjects in this experiment rejected 90% of the time the interpretation in which the clitic takes the subject DP *la niña* as an antecedent in the sentence below:

(6) la niña la seca
the girl her-dries off
The girl dries her off (Baauw et al., 1997)

Baauw et al. also investigated sentences in which the antecedent of the clitic pronoun was a quantifier. Their subjects were presented with the Spanish version of the question *Is every mom pointing at her?* in the context of an accompanying picture depicting three women and a girl, where each woman is pointing at herself and nobody is pointing at the girl. In this case the result was essentially the same as in the previous context: the subjects had a 90% rejection rate. The evidence just reviewed suggests that there is no DPBE in simple clauses in languages with clitic pronouns and the challenge is to explain why.

4 Our proposal

To explain why there is a DPBE in languages like English, and why the given phenomenon disappears in simple clauses in languages with clitic pronouns, we assume that the algorithm in (7), concerning the interpretation of an antecedent-variable chain, is in effect in the grammar. (7) can be considered, we think, a consequence of the interaction of Rule I with economy considerations.

(7) *Algorithm for binding/coreference processing (ABCP).*

For any NP … variable dependency, resolve the antecedent-variable chain through binding, and if binding is not possible (e.g., because of semantic considerations) resolve the dependency through any other alternative strategy.

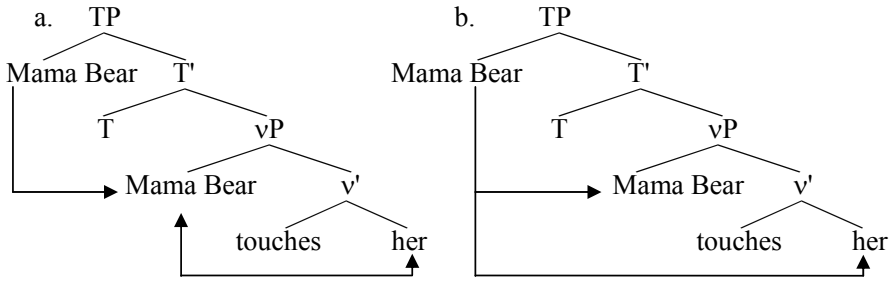
Before we show the effect of (7) in the grammar, we need to spell out another important assumption of our analysis. We will assume that a subject in situ, that is, an unmoved subject, cannot semantically bind a pronoun that is (one of) the internal argument(s) of the verb.[10] This is because to bind a pronoun we need to abstract over it in the semantics with some syntactic or nonlexical lambda operator. Following Heim

[10] Notice that the problem is in the semantics, not in the syntax. The unmoved subject can, of course, c-command any pronoun in its scope, but c-command, although necessary, is not sufficient for binding. One also needs to be able to abstract over the pronoun to be bound, and we assume that lambda abstraction is not possible from the position of an in situ subject for reasons to be discussed next in the text.

and Kratzer (1998), we will assume that such an operator is created by XP movement, hence it will be absent in the case of an unmoved subject. The relevant structure will still be interpretable because the sister of an unmoved subject is a lexical predicate. However, the lexical lambda associated with a lexical predicate is lexical, which means that it is invisible in the syntax, and consequently cannot be used to abstract over an internal argument of the verb.[11] This being the case, there is no way for an unmoved subject to bind a pronominal internal argument of the verb (see appendix for a step-by-step demonstration of this fact).

Given what we said above, here is what we argue. The problem with sentences like *Mama Bear touches her* in languages like English is that the fact that binding is not possible (on semantic grounds) from the νP-internal subject position creates the possibility of interpreting the object pronoun as coreferential with the νP-internal copy of the subject, given Rule I and the ABCP (i.e., the algorithm in (7)). This in turn creates the possibility of two different strategies for resolving the anaphoric chain as illustrated in (8).

(8)



Strategy 1: Binding + Coreference.

The subject binds its copy, and the copy corefers with the pronoun.

Strategy 2: Binding.

The subject binds both its copy and the pronoun.

When confronted with the sentence *Mama Bear touches her*, which has the syntactic structure in (8), English children need to resolve the potential anaphoric chain between the subject and the object pronoun. The ABCP dictates that binding takes precedence, that is, that they should solve the chain through binding, and through coreference (or any other strategy) only if binding fails. When children consider the relation between the pronoun and the νP-internal copy of *Mama Bear*, they will discover that the latter cannot semantically bind the pronoun (for the reasons

[11] One question that arises here is why we cannot simply insert a λ-operator between the in situ subject and its sister predicate to create a derived predicate out of the lexical predicate, which would allow us to abstract over object pronouns. Our answer to this question is that we assume that interpretation is a local process without look-ahead or look-back. The in situ subject can combine with its sister, the lexical predicate, naturally. Accordingly, creating a derived predicate at the point where the subject combines with the lexical predicate is unnecessary and therefore blocked by economy considerations.

discussed above, see the appendix for a demonstration). Since binding fails in this case, children can now consider if the pronoun can be coreferential with the νP-internal copy of the subject. That is a real possibility, resulting in the two different strategies for resolving the anaphoric chain in the relevant sentence. The strategy in (8a) combines both binding and coreference: the subject binds its νP-internal copy, and the object pronoun is taken to corefer to that copy, which is what the doubly-headed arrow is intended to convey in that structure.[12] In the strategy in (8b), on the other hand, the subject in Spec, IP binds both its νP-internal copy and the object pronoun. Given the two possibilities, Rule I dictates that only one should be possible if they are truth-conditionally equivalent. As in G&R's original proposal we can maintain that processing breaks down in English children when they have to compare structures like those in (8) for equivalence. Consequently, they take a guess in the process of determining whether the anaphoric chain formed by the subject and the object pronoun is a legitimate object. Their guessing leads to their chance-level performance.

As for the case in which the antecedent is a quantificational phrase, as in the sentence *every bear touches her*, we just have to assume that the νP-internal copy of a nonreferential expression (i.e., a quantifier) is not referential either. Given this assumption, it is not possible to interpret a pronoun as coreferential with the copy of a quantifier. This in turn means that if we substitute *Mama Bear* in (8) for *every bear*, strategy (8a) will not be available and only strategy (8b) will be possible. Since there is one single strategy in this case, Rule I is inapplicable and children will proceed to resolve the anaphoric chain in accordance with Principle B.

Let us consider now why the phenomenon does not arise in languages with clitic pronouns, which is the case for Romance languages. Consider the Spanish sentence in (9), from Baauw et al. (1997), with the LF representation in (10).

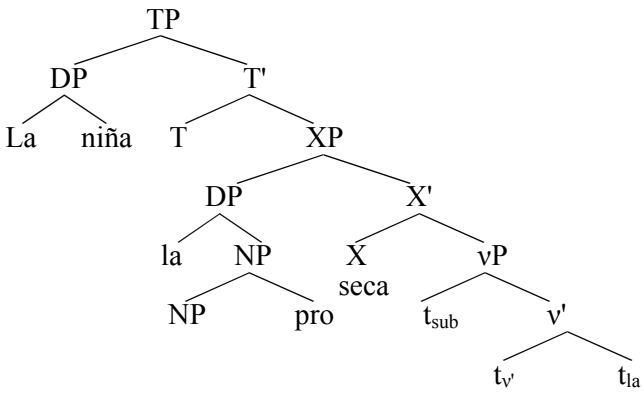
(9) La niña la seca
the girl her-dries off

The girl dries her off (90% adult-like performance, Baauw et al., 1997)

We assume, following Uriagereka (1995) and Di Sciullo (1990, 2005), that a third-person object clitic is a functional element, which is interpreted in the functional field. Furthermore, we assume that it moves outside the νP to a position below TP. We further assume, following Postal (1969), Uriagereka (1995), and Agüero-Bautista

[12] Cornelia Hamann (in comments addressed to us) points out that it is not clear why the structure in (8a) is not available for reflexives. She worries that if that is in fact the case, our proposal might be predicting a DPBE also in such cases. The concern is unwarranted, however. It is a lexical property of true reflexives that they can only be interpreted as bound variables. This is evident from pronominal interpretation under ellipsis. Thus whereas the elided pronoun in *John saw a snake next to him and so did Bill* is subject to the familiar *strict/sloppy* readings found in ellipsis, the elided reflexive in *John saw a snake next to himself and so did Bill* only gives rise to the sloppy interpretation, which indicates variable binding (Sag, 1976; Williams, 1977). The fact that semantic binding fails from the νP-internal position in (8) is not sufficient for the activation of Rule I: coreference must still be a real possibility. (8a) is not a possibility with reflexives for the same reason that it is not a possibility with quantifiers: coreference is not an option with such lexical items.

(10)



(2005), that this pronominal element is a determiner heading a DP that takes a null complement NP with an adjoined pro, as shown above.

One immediate difference between the Romance sentence in (10) and its English counterpart in (8) is that the pronoun in the Romance example (i.e., the clitic) occurs above the vP, as observed by McKee (1992) and others.[13] Therefore, the vP-internal copy of the subject cannot be a potential antecedent for the clitic, because the vP-internal position does not c-command the vP-external surface position of the clitic, which we take to be around the INFL projection.[14] The only possible antecedent for the clitic

[13] An anonymous reviewer wonders whether the result of Varlokosta (2000) is a problem for our proposal, given that the performance of her Greek infant subjects was adult-like with clitics and strong pronouns alike (Greek has both types of pronouns). The Italian evidence discussed by McKee (1992) suggests that it cannot just be the case that there is something about the mere presence of clitics in a given language that somehow turns off the DPBE (as suggested by the reviewer): Italian children were better with clitics than they were with full pronouns. According to Varlokosta, an interesting property of Greek strong pronouns is that they must be interpreted contrastively. Now, contrastive interpretations, being the hallmark of focus (Rooth, 1992), require that there be a set of alternatives under discussion in the domain of discourse for them to be felicitous. This means that for a pronoun to be interpreted both contrastively and as a variable bound by the subject of a simple clause as in *Goofy$_1$ covered him$_1$*, there must be a set of competing alternatives such as the ones in the set {*Micky$_2$ covered him$_2$*, *Donald$_3$ covered him$_3$*, … } under discussion. But in the story used by Varlokosta, such a set of alternatives is not under discussion, rather what seems to be under discussion is something like the set {*Goofy$_1$ covered him$_2$*, *Goofy$_1$ covered him$_3$*, *Goofy$_1$ covered him$_4$*, … }. A Greek child might therefore reject the anaphoric relation between the subject and the pronoun in *Goofy covered him*, not because of Principle B, but rather because the felicity conditions required for the intended interpretation are not satisfied in the context of the story, given the contrastive nature of Greek strong pronouns. Without carefully controlling for the pragmatic factors associated with contrastive interpretations, it seems to us that it is not possible for anyone to draw clear conclusions from Varlokosta's experiment.

[14] One reviewer wonders why the clitic cannot simply be coreferential with the vP-internal copy of the subject, given that coreference does not require c-command. There are at least two reasons why that is not possible in our proposal. The first reason is that we are assuming that coreference is only possible when binding is not possible for independent reasons (see the discussion surrounding (7)). But in (10) although the vP-internal copy of the subject does not c-command the clitic, the latter does c-command the copy and so a binding relation can in principle be

in that sentence is, therefore, the subject that has moved to the Spec IP position. Since moved XPs create derived predicates (Heim & Kratzer, 1998), the moved subject can of course semantically bind pronouns in its scope, although this possibility may or may not be prevented by the relevant binding conditions. Since binding is possible in this case, the ABCP dictates that that should be the strategy taken to resolve the anaphoric relation between the subject and the clitic. The possibility of coreference does not even arise, therefore, and Rule I is thus irrelevant. This means that the legitimacy of an anaphoric dependency between the subject of a simple clause and an object clitic-pronoun is determined solely on the basis of Principle B in the corresponding child grammar.

In other words, the reason why the DPBE does not obtain in languages with pronouns that occur above the νP is that in these languages, contrary to what is the case for the English-type languages, the νP-internal copy of a referential subject does not cause an interference, so to speak, as it cannot be considered a potential antecedent for a pronoun that c-commands it. Since the νP-internal copy is what brings about the possibility of coreference for the English cases, as we saw for the sentence in (8), the fact that clitics occur above the νP renders Rule I inapplicable in these languages. Romance-speaking children are, therefore, predicted to resolve anaphoric chains in accordance with Principle B. The innateness of this principle accounts for the fact that these children show an adult-like performance in simple clauses.

4.1
The problem of a DPBE in Verbal Small Clauses

So far we have tried to explain the reason why there is a DPBE in English-type languages and why the given effect does not show up in simple sentences in languages where the pronouns occur above the νP. There is another problem, however, that we wish to address now. Hamann et al. (1997), and Baauw and his associates have conducted several studies showing that an apparent DPBE shows up in what the latter researchers call *verbal small clauses* (VSCs) in languages with clitic pronouns. Consider the sentence in (11) in the context of a picture depicting a woman and a girl in front of a mirror, and where the woman sees herself dancing while the girl is sitting on the floor.

(11) La madre la ve bailar
The mom her-sees dance
The mom sees her dance

Baauw et al. (1997, 1999) found that children only rejected the subject *la madre* 'the mother' as an antecedent for the clitic *la* 'her' in the sentence in (11) 64% of the time. That is, when confronted with sentences like (11), Romance children seem to

established between these two elements. Given (7) the possibility of coreference in this case does not even arise. The second reason is that we are treating moved clitics as quantificational (i.e., as Russellian descriptions or general terms), and quantificational phrases do not refer (see the discussion in the last three paragraphs of this section).

have performed at chance level also. The question then is what is responsible for the poor performance of Romance children in this case. Baauw and his associates have written several papers to explain this phenomenon, concluding that binding is not a unitary phenomenon.

We want to take a different approach here. A reasonable hypothesis is that the problem that Romance children have with sentences like (11) does not have to do with binding or with Principle B, but rather with some interface principle that triggers comparison of structures for truth-conditional equivalence, just as in the English cases discussed above. Pursuing this hypothesis, the question is what the relevant principle should be, when we already saw that Rule I is irrelevant in languages where the pronouns occur above the vP. We adopt a suggestion by Agüero-Bautista (2001) that Fox's (2000) *scope economy* is the principle responsible for the DPBE in VSCs in languages with clitic pronouns.

(12) Scope economy

The output of a scope-shifting operation must be semantically different from its input.

To understand the effect of scope economy, let us consider the structure of the example in (11), to which we assign the structure in (13).

(13) [[La madre] [la [ve [t_{la} bailar]]]]

In (13) the clitic *la* 'her' is the thematic subject of the verb in the embedded clause. We assume that the clitic has raised to some projection below the matrix TP, leaving a copy in the original position. Principle B prevents binding of the raised clitic by the matrix subject because the two elements are in the same local domain: namely the matrix IP. This result accounts for the fact that in adult Romance the relevant interpretation is not available. Imagine, however, what would happen if one reconstructs the clitic to its original position, that is, to the subject position of the embedded vP headed by *bailar* 'sing'. In that case, the clitic could in principle be bound by the matrix subject without violating Principle B, as the pronoun would still be free within the embedded vP.[15] However, reconstruction, being a scope-shifting operation, is

[15] A reviewer finds the idea of reconstruction feeding binding in child Romance "surprising," given that "so many accounts of binding predict that in-situ ECM subjects count as being in the same local domain as arguments in the next higher clause." We believe that any such account must piggyback on the assumption that ECM subjects must raise overtly and (possibly) covertly as well, in languages like English, ending up in the same domain as the matrix arguments only after raising. This assumption is necessary to explain an array of facts following under the rubric of what is now called the EPP, and to explain, also, the adjacency requirement of ECM. Both types of facts are on display in examples like *John$_1$ saw him$_{2/*1}$ carefully revise the proposal* as opposed to **John saw carefully him revise the proposal*. Note that for binding theory we need to argue that at LF *him* must be in the same local domain as the matrix subject in the first example, as that example registers a Principle B violation. We know, however, that in such examples the ECM subject is not in situ, as it is separated from its thematic predicate by the vP-edge-demarking adverb *carefully*. In fact, for reasons having to do with the EPP, ECM subjects in situ (i.e., in the vP-internal position) yield ungrammatical results: witness the ungrammaticality of the second example above. The term 'in situ' in the reviewer's remarks is misleading as the considerations

constrained by scope economy as defined in (12). Scope economy requires comparison of two structures for equivalence: the input to the relevant scope-shifting operation, and the output of the given operation. Since pronouns are scopeless elements, just like proper names, reconstruction of the clitic *la* 'her' in (13) will result in a structure that is truth-conditionally equivalent to the structure in which reconstruction does not take place. We can then assume that both Romance adults and children know both Principle B and scope economy. However, just like in the case of Rule I with the English children, Romance children, unlike Romance adults, experience a processing breakdown when scope economy induces them to compare the input and the output of reconstruction for equivalence. As a result of the breakdown, they also take a guess in determining whether the clitic can be bound by the matrix subject, whereby they perform at chance level.

The reconstruction account can therefore explain the appearance of the DPBE in ECM-like contexts. There is a question that arises, however, as the alert reader might already be aware of. The question is: why can't the clitic be reconstructed in simple sentences in child Romance, which would in our terms predict a DPBE also in such cases?

We believe that the answer to this question lies in the theory of NP-types. Montague (1973), for instance, assumed that all NPs, including pronouns and proper names, are of the generalized quantifier type, that is, the type ⟨⟨e, t⟩, t⟩. The motivation for Montague's treatment of all NPs as generalized quantifiers comes from the fact that the generalized quantifier type is the most common type for NPs: all NPs can be assigned that type, which is not the case for the e-type. Partee (1987), however, has argued that some NPs, namely the referential ones, should be assigned the type *e* in some specific contexts, that is, when occurring in positions that semantically select that type (i.e., argument positions). This makes the type *e* the most specific type, and the generalized quantifier type the more general type.

A reasonable hypothesis, given this state of affairs, is that type assignment for an ambiguous NP might be regulated by a condition along the lines of the Paninian principle or *elsewhere condition*. Thus, in the process of assigning the appropriate type to a referential NP in a specific argument position, the relevant condition will result in assignment of the type *e*, which is specifically required in the given position, the generalized quantifier being assigned elsewhere.[16]

---

just discussed indicate that ECM subjects are not in situ (this is also clear in examples like *John believes him$_1$ to have t$_1$won the lottery*). There is no contradiction, then, between the assumption that ECM subjects can be in the same domain as the matrix arguments, at some stage of the derivation, and our assumption that the embedded vP is a domain distinct from the matrix one, given that raising can move an argument from an embedded domain into a matrix one.

16 We leave open the possibility that types are not assigned but are available as part of the lexical meaning of NPs. To get the desired effect in this case, we would need to assume that navigation among the possible types of an NP is done by type-shifting rules of the sort proposed in Partee (1987). If one begins with the higher generalized quantifier type, as suggested by Montague, the Paninian condition will apply in such a case by making sure that the type-shifting rule resulting in the more specific type *e* will take place in the environment where that type is specifically

Pursuing this hypothesis, although the clitic can naturally be construed as a referential DP, we will assume that its occurrence in a nonargument position forces it to have a generalized quantifier type in child grammar due to something like the Paninian principle suggested above. As a generalized quantifier, the clitic can be reconstructed to the embedded subject position in the VSC sentence in (13), but not to the object position in simple sentences like (10), the reason being that a type mismatch prevents reconstruction in the latter case.[17] Given this difference, scope economy will be relevant for examples like (13) together with the comparison of structures that it induces, but not for examples like (10). Romance children are thus predicted to show a DPBE in the former type of examples, due to the effect of scope economy, but not in examples like (10), where neither scope economy nor Rule I applies.

5 Comparison with previous accounts

As we have seen, the present analysis can explain the DPBE in English-type languages in simple clauses and the unexpected appearance of the phenomenon in the small clause-like syntactic environments of (13) in Romance. We have argued that in both types of languages the phenomenon arises when children have to compare two alternative representations for equivalence. We have also argued that the principle that induces this equivalence comparison is different in the two types of languages. The equivalence comparison incurred by children speaking languages like English (i.e., with pronouns occurring within the νP) is induced by Rule I, as argued by G&R. On the other hand, the equivalence comparison incurred by children speaking languages with pronouns displaced above the νP (e.g., the Romance languages) is induced by scope economy. However, although the principle triggering the comparison process resulting in the DPBE is different in the two language types, the process itself is the same: namely the global computation required for comparing two derivations for equivalence, a process that proves to be too complex for children regardless of their native language. To this extent we have provided a unified account of the DPBE in these two broad types of languages.[18]

required, and that any other type-shifting principle resulting in the more general generalized quantifier type will take place elsewhere if necessary. This is a reasonable possibility since the Paninian principle applies to rules, and type-shifting principles are just such objects.

[17] It is a well-known fact that quantifiers in object position lead to a type mismatch, whereas quantifiers in subject position do not (see Heim & Kratzer, 1998, for discussion). It might sound contradictory that we are assuming that a moved clitic pronoun is a generalized quantifier, when we said above that it is not a scoping element for the purpose of scope economy. The appearance of contradiction arises only under the assumption that a generalized quantifier is necessarily a scoping element. It is easy to show that this assumption is not warranted: pronouns remain scopeless even in their generalized quantifier form. The reader is referred to the appendix, where we show that the sentence *every woman loves him*, where we will treat *him* as a generalized quantifier, has exactly the same truth conditions regardless of whether *him* is interpreted above or below the universal quantifier.

[18] An anonymous reviewer objects that our treatment of the DPBE is nonunitary, since we assume in the reviewer's opinion that the phenomenon is caused by two different principles. The perceived

Another highlight of our proposal is that it also provides a principled account of the CEE (clitic exemption effect) in simple clauses. We have argued that given the algorithm in (7) and the fact that a subject in Spec IP can semantically bind a variable in its scope, children in languages with pronouns displaced above the νP will only attempt to resolve a potential anaphoric relation between the clause-displaced subject and the displaced pronoun through binding and never through coreference. Their knowledge of Principle B, however, will prevent them from carrying out the intended binding, which accounts for the fact that they virtually never allow clitics to corefer to the subjects of the clause. To this extent child Romance behaves like adult Romance.

Our account, however, is not the only logically possible account of the CEE and the DPBE in Romance, and we will devote the remaining of this section to comparing our proposal with other previous attempts to account for these phenomena.

5.1
Other accounts relying on the νP-external position of clitic pronouns

McKee (1992): Our proposal is very close to that of McKee (1992), who in fact suggested that the absence and presence of the DPBE in languages with clitic pronouns and languages with full pronouns, respectively, has to do with the position of the pronoun with respect to the νP.[19] Her proposal is essentially an adoption of a similar suggestion by Valera (1989). Although we essentially follow McKee in adopting the same idea, there are important differences in the way in which this idea is implemented in our proposal and hers.

Unlike the case with our proposal, McKee accounts for the presence and absence of the DPBE in simple clauses in English-type languages and languages with clitics in strictly structural terms. She argues that children in the two types of languages use a different governing category for the pronoun. She also argues that the governing category for clitics is the IP, given their structural position (IP is the first domain containing the clitic and a governor of the clitic). McKee further argues that children in English-type languages initially miscontrue the νP as the relevant governing category for full pronouns, and that in the resulting child grammar it is possible for the subject of the clause to bind the pronoun inside the νP without violating Principle B, given that it would not be coindexed with another νP-internal c-commanding NP (i.e., it would be free within the νP domain).

We see at least three problems with McKee's account. First, as pointed out by Avrutin and Wexler (1992), the proposal is not compatible with the νP-internal subject hypothesis, for which we have accumulated an ever-increasing amount of evidence

nonunitary property of our analysis is only apparent and is probably based on a confusion of the actual process that causes the DPBE, namely the comparison of structures for equivalence, with the triggers of the given process. We do not assume that either Rule I or scope economy causes the DPBE directly. Rather what we assume is that comparing structures for equivalence is what causes the relevant phenomenon. Rule I and scope economy are just the triggers. What we argue is that although the triggers are different in English and Romance-type languages, respectively, the language-independent process that actually causes the DPBE is the same in both cases.

19 Notice that McKee's "VPs" are today's "νPs," once we adapt her usage to contemporary conventions.

since the works of Koopman and Sportiche (1991) and others. If the subject originates inside the vP in child English, as it is assumed to be the case for adult English, then "coindexing" the pronoun (in McKee's terms) with the vP-internal copy of the subject will result in a Principle B violation. Consequently, an English child who knows both Principle B and the vP-internal subject hypothesis will not allow coindexing between the pronoun and the subject just like the Romance child does not. So if the vP-internal hypothesis is correct, it is not clear that McKee's account can actually distinguish between the English and Romance types of languages.

A second problem with McKee's analysis is that it is not clear how the approach fits with the chance level of performance exhibited by English children in dealing with the anaphoric relation in sentences like (1). If misconstruing the vP as the relevant governing category is what allows the anaphoric relation between the subject and the pronoun in (1), children should move from a stage in which they always allow the given relation into the opposite stage in which they never allow the relation, once they have learned that the IP rather than the vP is the relevant category in McKee's terms. It is not clear how and if such a drastic acquisition leap should translate into the attested chance-level performance. The approach also fails to account for the reported QA asymmetry of the DPBE, since construal of a domain as governing category is not contingent on the referential property of the DPs found in the given domain. Avrutin and Wexler (1992) also raise the same points.

Finally, the third problem of McKee's analysis is that it cannot account for the DPBE that shows up in Romance in small clause-like contexts like (11) (Baauw et al., 1997, 1999). This is because in both simple clauses like (9) and the VSC environments like (11), the structural position of the clitic is above the matrix vP (see (13)). According to Mckee, the matrix IP will then be the relevant governing category in both cases, which incorrectly predicts that Romance children should equally disallow the anaphoric relation between the matrix subject and the clitic in such environments. As we saw, the data discussed in section 3.1 indicate otherwise.

Unlike McKee's account, our proposal does not assume that certain structural features of constructions are the elements directly responsible for the DPBE. Rather, our proposal uses the relevant structural features in the different constructions to turn on and off the language-independent interface principle(s) that triggers the process ultimately responsible for the DPBE. Thus, unlike the case with McKee's account, a central tenet of our proposal is that the vP-internal copy of the subject makes Rule I revelant in some conditions and irrelevant in others. Our proposal is thus not only consistent with the vP-internal subject hypothesis, but requires it.

Furthermore, the interplay of structural features and the interface principles of Rule I and scope economy allow us to escape the problems that have been raised against McKee's account. For instance, an anymous reviewer points out that Avrutin and Wexler (1992) discuss the case of a Russian pronominal that can be used pre- and postverbally. Avrutin and Wexler tested the performance of Russian children with the pronoun in question (i.e., the pronoun *ego* 'him') in both environments and found a DPBE effect in both cases. The reviewer wonders whether this is a problem for our account. The answer is a categoric "no". This becomes evident once we consider certain interesting aspects of the experiment in question. First, it must be pointed out

that the performance of the children in the relevant experiment was 66% adult-like in the preverbal cases and only 48% adult-like in the postverbal cases. As Avrutin and Wexler point out, this is an almost statistically significant improvement ($p = .085$). The suggestions of these authors is that Russian children might sometimes treat the preverbal pronoun as a pronominal clitic and sometimes as a regular pronoun in the absence of clear evidence favoring one of these strategies.

It turns out that if we adopt Avrutin and Wexler's suggestion, the prediction of our theory may actually be closer to the actual results than that of their own proposal. In the absence of clear evidence for Russian children to treat preverbal *ego* 'him' as a scrambled pronoun, or as a displaced clitic pronoun, a reasonable expectation is that the process is entirely determined by chance. If this is so, then in 50% of the preverbal cases, namely when the pronominal is analyzed as a clitic, there will not be a DPBE for the reasons discussed in section 3. The question now is what happens to the other 50% of the cases, that is, the cases in which the preverbal pronoun is analyzed as a scrambled pronoun. It has been argued for Dutch, a language where pronouns can be scrambled, that scrambled pronouns are actually inside the VP (Neeleman & Weerman, 1999). If something similar is the case in child Russian, then the prediction given Rule I is that Russian children will only disallow the anaphoric relation between the subject and a preverbal pronoun in 25% of all the cases; that is, in 50% of 50%. The overall prediction of our theory given the previous discussion is that the rejection rate of Russian children with preverbal pronouns should be around 75%, that is, in 50% of all the cases (i.e., when the pronoun is treated as a clitic) plus 25% of all the cases (i.e., in 50% of the remaining 50% that represents the cases in which the pronoun is a νP-internal scrambled pronoun subject to Rule I). It is easy to see that 75% is closer to the actual results (i.e., 66%) than 48% is, which is roughly the prediction of Avrutin and Wexler and other similar proposals.[20]

As we have seen then, our analysis, unlike McKee's proposal, predicts the chance-level performance of the DPBE in English and Romance-type languages respectively in a unified way and without facing the problems that arise for her account. The gist of our account is that the global computation induced by Rule I (for English) and scope economy (for Romance) generally induces a guessing strategy in children. In addition, our proposal accounts for the apparent QA dependence of the DPBE in English, which was not the case with McKee's: the quantificational nature of the νP-internal copy of a quantifier has the effect of turning off Rule I and the accompanying chance-level performance.

Baauw and Cuetos (2003)

Following earlier work by Baauw and others (e.g., Baauw, 1999), Baauw and Cuetos (2003) partly adopt McKee's account of the CEE. In their analysis, however, clitics behave essentially as the vacuous operators of relative clauses, whose sole function

[20] Cornelia Hamann (in comments to us) wonders whether our proposal can account for the extra strong DPBE reported by Philip and Coopmans (1996) in VSC environments. We lack the space to treat the matter here, but it is evident from the above Russian facts that different arrays of the interplay of structural, lexical, and processing factors in our account have the potential of predicting DPBEs of variable strength.

seems to be that of turning the structure they c-command after movement into a derived predicate (Heim & Kratzer, 1998; Quine, 1960). They argue that as a result of predicate abstraction, the constituent immediately below the subject NP in sentences like (6) (i.e., in *La niña la seca* 'the girl dries her off') can be represented as the two-place abstract $\lambda x \lambda y$ *(x dries off y)*. They conclude that, interpreted in this way, clitics cannot be coreferential and that only binding and Principle B are relevant in this case.

We find a number of problems with this account. First Baauw and Cuetos (2003) do not define a semantic rule to derive the posited two-place abstract and we find it impossible to derive it with the standard semantic rules. Under standard assumptions, the νP constituent containing the trace of the subject and that of the pronominal object associated with the clitic is of the semantic type t. Abstraction over the object variable by the pronoun associated with the clitic and treating the pronominal vacuously as suggested by these authors will yield the predicate λy *(x dries off y)* (type $<e,t>$) as the denotation of the Clitic Phrase. But we have a problem now! The way the rule of predicate abstraction works (see Heim & Kratzer, 1998), if we abstract now over the trace of the subject to yield the constituent that the subject combines with semantically, the resulting constituent will be of type $<e,<e,t>>$. But this has the unwanted and counterintuitive consequence that after semantic composition takes place in sentence (6), the given sentence should not be an assertion if the subject is of type e, and should be uninterpretable if the subject is a quantifier (the type of the quantifier and the abstract would not match in the latter case).

A second (more damaging) problem of the proposal is the fact that even if the analysis can somehow be defended, it ultimately fails as an account of the interplay of the CEE and the DPBE in Romance. The suggestion of Baauw and Cuetos (2003) to explain the DPBE in VSC contexts is that children sometimes analyze third person clitics basically as reflexives (i.e., what they call a [-R] pronoun). But this machinery in combination with the one discussed in the preceeding paragraph leaves the approach in a paradoxical state of affairs. If analyzing the clitic as a vacuous lambda abstractor is what allows children to escape the DPBE in simple clauses, why can they not do the same in the VSC contexts? Likewise, if misanalyzing the clitic as a reflexive is what leads to the DPBE in VSC contexts, what stops children from doing the same in simple clauses so that a DPBE is also found in that environment? We found no answer to these questions in Baauw (1999) or Baauw and Cuetos (2003). This approach should therefore be rejected in favor of a simpler unifying account like ours.

The paradoxical situation just described applies mutatis mutandis to the proposals of Baauw et al. (1997) and Baauw et al. (1999). To illustrate the point we will briefly consider these proposals here, although they might belong in a different section, given that they take no clear stance with respect to the issue of clitic- (dis)placement.

The basic idea of these two papers is that the DPBE does not arise with clitics in simple clauses because clitics "can only be bound." The idea being that if coreference is not an option with clitics, then Rule I, which they assume to be the source of the DPBE, becomes irrelevant. The question that arises then is why there is a DPBE in VSC environments in languages with clitics if Rule I does not apply to clitics. The answer that these authors suggest is the same given in Baauw and Cuestos (2003): namely that children sometimes misanalyze clitics as reflexive-like pronouns (i.e., [-R]

pronouns) that can consequently be bound by the subject of the clause. But this answer, however, is of no help: If children in Romance-type languages (i.e., languages with clitic pronouns) show a DPBE in VSC contexts because of occasional lexical misanalysis of third person clitics, then by the same mechanism, they are expected to show a DPBE in simple sentences, given that lexical analysis is not contingent on syntactic structure. In fact a lexical misanalysis along the lines suggested by the researchers in question will allow binding of object clitics by the subject of a simple clause without a violation of either Principle B or Rule I. The absence of the phenomenon from simple sentences in Romance is therefore strong evidence against such approaches.

5.2
Guise theory

Avrutin (1994) observes that it is possible for definite NPs including pronouns to introduce what he calls *guises* (basically, definite descriptions) into the context. Thus, in a sentence like *John painted him*, the subject name and the object pronoun can be associated with the guises *the male individual named John* and *the male individual I am pointing at*, respectively. Under very special conditions (see Heim, 1993, for relevant discussion), it is possible for two guises to pick out the same referent in configurations that would normally violate the binding theory as in the example below:

(14) A. Is this speaker Zelda? B. How can you doubt it? *She* praises *her* to the sky. No competing candidate would do that.

In the third sentence in (14), we can associate the subject pronoun with the description *the speaker* and the object pronoun with the description *the female individual named Zelda*. The context of (14) provides the same salient referent for both descriptions, namely Zelda. Since the discourse in (14) is well formed, it seems that presenting the same referent under different guises might lead to anaphoric relations that may somehow circumvent the binding conditions, a topic clearly beyond the scope of this paper.

Avrutin (1994) argues that pronouns do not normally introduce new guises, but actually refer to guises that have already been introduced in the discourse (cf. Heim's (1982) familiarity condition). This explains why *She$_1$ praises her$_1$ to the sky* is wrong if uttered out of the blue, under the intended interpretation. Avrutin's account of the DPBE is that children, unlike adults, allow pronouns to introduce deitic guises in examples like *Mama Bear touches her.* That is, in this example, according to Avrutin's analysis, *her* is interpreted by English children as something like the description *the individual I am looking at*, which will pick out the same referent as the name whenever the child is in fact looking at Mama Bear. The explanation of the CEE in this analysis is that clitics cannot refer deitically and are therefore not expected to introduce deitic guises.

There are several problems with this account, but for reasons of space we will consider just two. First, the analysis does not explain why there is a DPBE in VSC in languages with clitics. If clitics cannot be used deitically, they should not give rise to a DPBE in any environment since deixis is not contingent on structural properties. Second, the approach predicts that weak pronouns in general should have a CEE since weak pronouns behave like clitics with respect to deixis. This prediction is incorrect: experiments from Dutch have found a DPBE involving weak pronouns (see Baauw &

Cuetos, 2003, for several relevant references). These two problems should also apply mutatis mutandis to the appoach of Thornton and Wexler (1999), and other analyses incorporating guise theory.

6 Conclusion

Our conclusion is that there are empirical advantages in a theory that attributes the DPBE to the effect of global computation on the process of determining the legitimacy of certain binding configurations. The main empirical advantage of such a theory lies in its ability to provide a unified account for the DPBE phenomenon as it manifests itself crosslinguistically. We have shown that in the main two types of languages in which the phenomenon has been investigated (i.e., English-type languages and languages with clitics), although different arrays of principles (i.e., Rule I vs. scope economy) and structures (simple clauses vs. VSCs) seem to be operative, the DPBE arises whenever such arrays trigger the same process: the global computation required for comparing structures for equivalence.

manuscript received: 04. 06. 2006
manuscript accepted: 04. 12. 2007

References

AGÜERO-BAUTISTA, C. (2001). *The delay of Principle B effect and its exemption in Romance*. Ms., MIT.

AGÜERO-BAUTISTA, C. (2005). *Pronominal effects in clitic-doubling*. Ms., University of Quebec at Montreal.

AVRUTIN, S. (1994). *Psycholinguistic investigations in the theory of reference*. PhD dissertation, MIT.

AVRUTIN, S., & WEXLER, K. (1992). Development of Principle B in Russian: Coindexation at LF and coreference. *Language Acquisition*, **2**, 259–306.

BAAUW, S. (1999). The role of the clitic-full pronoun distinction in the acquisition of pronominal coreference. In A. Greenhill, H. Littlefield, & C. Tano (Eds.), *BUCLD Proceedings,* **23**, 32–43. Somerville, MA: Cascadilla Press.

BAAUW, S. (2000). *Grammatical features and the acquisition of reference. A comparative study of Dutch and Spanish*. LOT Dissertation series 39, Utrecht University.

BAAUW, S., COOPMANS, P., & PHILIP, W. (1999). The acquisition of pronominal coreference in Spanish and the clitic-pronoun distinction. *UiL-OTS Yearbook, 1998–1999*. Universidad de Utrecht.

BAAUW, S., & CUETOS, F. (2003). The interpretation of pronouns in Spanish language acquisition and language breakdown: Evidence for the "Delayed Principle B Effect" as a non-unitary phenomenon. *Language Acquisition,* **11**(4), 219–275.

BAAUW, S., ESCOBAR, M., & PHILIP, W. (1997). A delay of Principle B effect in Spanish speaking children: The role of lexical feature acquisition. In A. Sorace, C. Heycock, & R. Shillcock (Eds.), *Proceedings of the GALA 97 Conference on Language Acquisition* (pp. 16–21). University of Edinburgh.

CHIEN, Y. -C., & WEXLER, K. (1990). Children's knowledge of locality conditions in bindings as evidence for the modularity of syntax and pragmatics. *Language Acquisition*, **1**, 225–295.

CHIERCHIA, G. (1995). *Dynamics of meaning*. Chicago: The University of Chicago Press.

CHOMSKY, N. (1981). *Lectures on government and binding: The Pisa lectures*. Berlin: Mouton de Gruyter.

CHOMSKY, N. (2001). Derivation by phase. In M. Kenstowicz (Ed.), *Ken Hale: A life in language*. Cambridge, MA: MIT Press.

COLLINS, C. (1997). *Local economy*. Cambridge, MA: MIT Press.

CONROY, A., TAKAHASHI, E., LIDZ, J., & PHILLIPS, C. (2007). *Equal treatment for all antecedents: How children succeed with Principle B*. Ms. University of Maryland, College Park.

Di SCIULLO, A. M. (1990). On the properties of clitics. In A. M. Di Sciullo & A. Rochette (Eds.), *Binding in Romance. Essays in honour of Judith McA'Nulty* (pp. 209–232). Special Publication of The Canadian Linguistic Association.

Di SCIULLO, A. M. (2005). *Asymmetry in morphology*. Cambridge, MA: MIT Press.

Di SCIULLO, A. M. (2006). Grammar and the Shortest Path. *WSEAS,* **9**(5), 1781–1787.

ELBOURNE, P. (2005). On the acquisition of Principle B. *Linguistic Inquiry*, **36**, 333–365.

FOX, D. (2000). *Scope and semantic interpretation*. Cambridge, MA: MIT Press.

GRODZINSKY, J., & REINHART, T. (1993). The innateness of binding and coreference. *Linguistic Inquiry*, **24**, 69–102.

HAMANN, C., KOWALSKI, O., & PHILIP, W. (1997). In E. Hughes, M. Hughes, & A. Greenhill (Eds.), The French "Delay of Principle B" effect. *BUCLD 21 Proceedings* (pp. 205–219). Somerville, MA: Cascadilla Press.

HEIM, I. (1982). The semantics of definite and indefinite NPs. PhD dissertation, University of Massachusetts, Amherst.

HEIM, I. (1993). Anaphora and semantic interpretation: A reinterpretation of Reinhart's approach. SfS-Report-07-93. Tübingen: University of Tübingen. Reprinted in U. Sauerland & O. Percus (Eds.), *The Interpretive Tract*, *MIT Working Papers in Linguistics 25* (pp. 205–246). Cambridge, MA: MIT Press.

HEIM, I., & KRATZER, A. (1998). *Semantics in generative grammar*. Malden, MA: Blackwell.

JAKUBOWICZ, C., MÜLLER, N., KANG, O.-K., RIEMER, B., & RIGAUT, C. (1996). On the acquisition of pronominal reference in French and German. In A. Stringfellow, et al. (Eds.), *BUCLD 20 Proceedings* (pp. 374–385). Somerville, MA: Cascadilla Press.

KOOPMAN, H., & SPORTICHE, D. (1991). The position of subjects. *Lingua*, **85**(1), 211–258.

KOSTER, C. (1993). *Errors in anaphora acquisition.* PhD dissertation, Utrecht University.

McKEE, C. (1992). A comparison of pronouns and anphors in Italian and English acquisition. *Language Acquisition*, **2**, 21–54.

MONTAGUE, R. (1973). The proper treatment of quantification in ordinary English. In K. J. J. Hintikka, J. M. E. Moravcsik, & P. Suppes (Eds.), *Approaches to natural language* (pp. 221–242). Dordrecht: Reidel.

NEELEMAN, A., & WEERMAN, F. (1999). *Flexible syntax: A theory of case and arguments, Vol. 47*. Dordrecht: Kluwer.

PADILLA, J. A. (1990). *On the definition of binding domains in Spanish*. Dordrecht: Kluwer.

PARTEE, B. (1987). Noun phrase interpretation and type-shifting principles. In J. Groenendijk, D. de Jongh, & M. Stokhof (Eds.), *Studies in discourser representation theory and the theory of generalized quantifiers* (pp. 115–143). Dordrecht: Foris Publications.

PHILIP, W., & COOPMANS, P. (1996). The double Dutch delay of Principle B effect. *BUCLD 20 Proceedings* (pp. 576–587). Somerville, MA: Cascadilla Press.

POSTAL, P. (1969). On so-called "Pronouns" in English. In D. A. Reibel & S. A. Schane (Eds.), *Modern studies in English: Readings in transformational grammar* (pp. 201–224). Englewood Cliffs, NJ: Prentice Hall.

QUINE, W. V. O. (1960). *Word and object*. Cambridge, MA: MIT Press.

REINHART, T. (1983). Coreference and bound anaphora: A restatement of the anaphora questions. *Linguistics and Philosophy*, **6**, 47–88.

ROOTH, M. E. (1992). A theory of focus interpretation. *Natural Language Semantics*, **1**, 75–116.
SAG, I. (1976). *Deletion and logical form.* PhD dissertation, MIT.
TALMY, L. (2000). *Toward a cognitive semantics*. Cambridge, MA: MIT Press.
THORNTON, R. (1990). *Adventures in long-distance moving: The acquisition of complex* wh-*questions*. PhD dissertation, University of Connecticut, Storrs.
THORNTON, R., & WEXLER, K. (1999). *Principle G, VP ellipsis, and interpretation in child grammar*. Cambridge, MA: MIT Press.
URIAGEREKA, J. (1995). Aspects of the syntax of clitic placement in Western Romance. *Linguistic Inquiry*, **26**, 79–123.
VALERA, A. (1989). *A structural explanation of children's apparent failure to respect Conditon B.* Paper presented at BUCLD 14.
VARLOKOSTA, S. (2000). Lack of clitic-pronoun distinctions in the acquisition of Principle B in Child Greek. In *Proceedings of the 24th annual Boston University Conference on Language Development* (pp. 738–748). Somerville, MA: Cascadilla Press.
WILLIAMS, E. (1977). Discourse and logical form. *Linguistic Inquiry*, **8**, 101–139.

Appendix

Demonstrating that a quantifier in the VP-internal subject position cannot semantically bind an internal pronominal argument of the verb.

(1) *Every man loves him.* (every man in the unmoved subject position).

What we want to demonstrate: that the variable associated with him remains free after full semantic composition of the sentence.

The notation [[(n)]] is to be read "the semantic value of the sentence in (n)", where *n* is a number. We use bold brackets for representing the denotation function, and normal brackets for representing the structural scope of an expression.

$[[(1)]] = [[\text{every man}]]\,([[\text{loves him}]])$ by function application.

$= \lambda P[\forall x[\text{man}(x) \rightarrow P(x)]]\,(\lambda\, y[y \text{ loves } z])$ by the meaning of the lexical items.

$= \forall x[\text{man}(x) \rightarrow \lambda\, y[y \text{ loves } z](x)]$ by lambda conversion (LC)

$= \forall x[\text{man}(x) \rightarrow x \text{ loves } z\,]$ by LC.

QED: The variable z remains free even after semantic composition of the sentence (because there is not a nonlexical lambda to bind the variable associated with the pronoun).

Demonstration of the scopelessness of pronouns as generalized quantifiers.

Example and relevant Logical Forms:

(2) *Every woman loves him*

a. [Every woman_x [him_y [x loves y]]]
b. [him_y [every woman_x [x loves y]]]

What we want to demonstrate: *(2a) is equivalent to (2b)*: something possible only if *him* is scopeless.

Semantic composition for (2a):

i. [[(2a)]] = [[every woman]] ([[λ x [him$_y$ [x loves y]]]] by Function Application and abstraction over the trace of the universal.

ii. [[him$_y$ [x loves y]]] = [[him]] (λ y[x loves y]) by Function Application and abstraction over the trace of the pronoun.

iii. = λP[P(y)] (λ y[x loves y]) by treating the pronoun as a generalized quantifier.

iv. = [x loves y] by two applications of LC.

v. So [[λ x [him$_y$ [x loves y]]]] = λ x [x loves y] by consequence of the steps ii, iii, and iv.

vi. Therefore, [[(2a)]] = λ Q∀x[man(x) → Q(y)] (λ x [x loves y]) by i, v, and the meaning of the universal.

= ∀x[man(x) → x loves y] by two applications of LC.

Semantic Composition for (2b):

i. [[(2b)]] = [[him]] ([[λ y[every woman$_x$ [x loves y]]]]) by FA and abstraction over the trace of the pronoun.

ii. [[[every woman$_x$ [x loves y]]]] = [[every woman]] (λ x[x loves y]) by FA, abstraction over the trace of the universal.

iii. = λQ∀x[man(x) → Q(y)] (λ x [x loves y]) by the meaning of the universal.

iv. = ∀x[man(x) → x loves y] by two instances of LC.

v. So [[λ y[every woman$_x$ [x loves y]]]] = λ y [∀x[man(x) → x loves y]] by the consequence of the steps ii, iii, and iv.

Therefore, [[2b]] = λP[P(y)] (λ y [∀x[man(x) → x loves y]]) by i, and v.

= ∀x[man(x) → x loves y] by two application of LC.

Therefore, we obtain this result since the meaning of (2a) = ∀x[man(x) → x loves y], as we saw above, and since this formula in turn equals the meaning of (2b), it follows by transitivity that (2a) = (2b) (QED), which is only possible because the pronoun is scopeless even in its generalized quantifier form.