THE PRONOUN INTERPRETATION PROBLEM
IN ITALIAN COMPLEX PREDICATES

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The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been given to the work of others.

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ABSTRACT

This thesis explores the syntactic and pragmatic factors involved in the interpretation of clitic pronouns in Principle B contexts in both theoretical and acquisition perspective. The Pronoun Interpretation Problem, i.e. children's apparent difficulty with the application of Principle B, defines a stage lasting up to about age 6:

    (1) Mama Bear$_i$ is washing her$_i$ (50% correct at age 5;6)

    (2) Lo gnomo$_i$ lo$_{*i}$ lava   (85% correct at age 4;8) Italian

         The gnome him.washes

It is assumed that clitic pronouns like *lo* are exempted from interpretation problems because they can only be interpreted via binding. Romance children, however, show interpretation problems in complex sentences like (3):

    (3) La niña$_i$ la$_i$ ve bailar   (64% correct at age 5;6)

Sentences like the above, which involve Exceptional Case Marking, are the main focus of the present research. We maintain that (3) can only be explained if Principle B does not apply to these structures, as also proposed by Reinhart and Reuland's (1993) and Reuland's (2001) alternative binding theories. In order to explain (i) why clitics can only be interpreted via binding in simple sentences like (2) and (ii) why binding does not apply to (3), we draw on two fundamental assumptions: (i) binding effects in object cliticization are the output of the narrow syntactic derivation, specifically, of movement to the left edge of v*P; (ii) under a phase-based model of syntactic derivations (Chomsky 2001), the binding domain is not the sentence, but the vP phase. We argue that the derivation in (3) contains an unbound occurrence of the pronoun, which allows children to covalue the matrix subject and the pronoun in pragmatics; such hypothesis receives support by our experimental finding that another complex predicate in Italian, causative faire-par, triggers PIP. Ultimately, we suggest that the PIP can be ascribed to a unitary cause across languages, namely, the delayed pragmatic acquisition of local coreference.

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LIST OF ABBREVIATIONS

[iφ]   Interpretable feature

[uφ]   Uninterpretable feature

ACC   Accusative Case

Aux   Auxiliary

C   Complementiser phase

C$_{HL}$ Computational system of human language

C-I   Conceptual-intentional system

COMP   complementiser

D   determiner

DAT   Dative Case

DPBE   Delay of Principle B Effect

ECM   Exceptional Case Marking

ECP   Empty Category Principle

EPP   Extended Projection Principle

FI   Faire-Infinitif

FP   Faire-Par

GB   Government and Binding

Int   Interpretive complex (definiteness, specificity etc.)

IP   Inflection phrase

LF   Logical Form

MP   Minimalism Program

NEG	Negation
NOM	Nominative Case
OS	Object Shift
PF	Phonetic Form
PIC	Phase Impenetrability Condition
PIP	Pronoun Interpretation Problem
PP	Prepositional Phrase
QP	Quantificational Phrase
QR	Quantifier Raising
REFL	Reflexive
S	Sentence node
Spec	Specifier
TP	Tense Phrase
T_{def}	Defective T
UG	Universal Grammar
UPR	Universal Phase Requirement
v*	Phi-complete v
v_{def}	Defective v
VP	Verb Phrase
X°	Head
XP	Maximal projection

CHAPTER 1

PRINCIPLE B AND THE ACQUISITION RESEARCH

1. INTRODUCTION

The acquisition of binding Principle B is still a major challenge for linguistic theory. The first obstacle to an understanding of children's knowledge of Principle B is that there is much cross-linguistic variation in the empirical data: at the dawning of Chomsky's (1981) Standard Binding Theory, empirical research ascertained that some languages exhibit a stage in early acquisition (between age 3 and 6 approximately), in which children allow apparent violations of Principle B; in other languages, in contrast, children's application of Principle B seemed flawless at a very early stage: Italian was one of these (McKee 1992). Relatively recently, a great deal of complication has been added to the picture: children acquiring clitic pronouns do exhibit problems in the comprehension of object pronouns, but only in certain syntactic contexts, which involve clitic climbing (i.e. clitic movement onto the finite verb of a complex predicate). An important assumption in acquisition research is that cross-linguistic variation must reflect properties of UG. In other words, variation should be accounted for theoretically. Interestingly, one of the core problems of this phenomenon is that, at the present, the traditional theory of binding has never been able to account for it.

We set off therefore with a very ambitious theoretical question: if binding is determined in syntax, why are clitics obligatorily subject to it? Is the coreference option syntactically constrained for clitic pronouns? We develop a syntactic analysis which attempts to demonstrate that binding effects for a clitic pronoun are determined in narrow-syntax, and only under certain configurations. This perspective on binding is very much in line with current minimalist insights on the cyclic nature of the syntactic derivation: *phases*, and not sentences, define the "syntactic objects" which the interfaces read off the derivation. The shift is radical: ultimately, pursuing this avenue leads to a new definition of local domain, hence to a revision of the binding theory itself in strong minimalist terms. The theoretical part of this research is therefore completed with the establishment of

syntactic diagnostics to distinguish between bound and unbound occurrences of clitics in the derivation of complex predicates, with a clear experimental prediction: only derivations which contain a "free" thematic copy of the object trigger interpretation problems. The experimental study adds an important piece of empirical evidence to the puzzle, reporting that another type of complex predicate, the causative faire-par construction, is not exempted from interpretation problems in Italian. The constructions affected by this phenomenon raise a number of questions for both theoretical syntax and acquisition research. We dedicate our final reflections to the implications of such enriched cross-linguistic picture for our theoretical understanding of the syntactic and pragmatic mechanisms behind coreference and bound anaphora which, ultimately, open a window into the division of labour between the modules of the language faculty.

This chapter is dedicated to setting the problem: its cross-linguistic distribution, the theoretical debate it has fed, and how acquisition theories have attempted to cover the data recruiting pragmatic and processing arguments. In Chapter 2, we present the only two accounts which, at present, have addressed the presence of PIP in Romance ascribing the phenomenon to a unitary, processing-related cause. We argue that the current debate has left unanswered two fundamental questions: (i) in acquisition perspective, what does the phenomenon tell us about the modular architecture of the early grammar? (ii) in theoretical perspective, what prevents coreference in object cliticization? We start tackling the latter questions in Chapter 3: in order to understand how binding effects in cliticization arise in the derivation, in fact, we need to dig into the distinctive properties of the types of complex predicates which are known to cause interpretation problems. In Chapter 4, we translate a phase-based analysis of cliticization into a concrete semantic prediction, by capturing the configuration accomplishing variable binding in the transitive vP; consequently, in Chapter 5 we discuss whether our analysis fits the acquisition evidence, and what predictions we can draw for a structure which has not been tested experimentally yet, namely, complex predicates involving Faire-Par. After comparing our predictions against the current approaches (Chapter 6), we report our experimental data in Chapter 7. We dedicate Chapter 8 to a comprehensive analysis of the different coreference rules which have been proposed in the years. Both a revised, derivational definition of binding and a theoretical understanding of the interaction between pragmatics and UG in the local coreference rule can shed important light on the essence of Principle B, and its "delay".

2. THE PRONOUN INTERPRETATION PROBLEM

The Pronoun Interpretation Problem is a relatively recent label for a phenomenon which has received theoretical attention since the dawn of the Standard Binding Theory (Chomsky 1981). Children's apparent problem with Principle B, which requires pronouns to be free in a local domain, posed a problem for the innateness of the Binding principles as soon as empirical evidence was produced. Data from languages with strong pronouns – or ambiguous between the strong and the weak form – showed that children as young as 3 years old allow a direct object pronoun to refer to the subject of a simple sentence, such as:

(1) Mama Bear washed her (50% anaphoric interpretations in Chien and Wexler 1990)

Similar results were produced for languages other than English: Russian (Avrutin and Wexler 1992); Dutch (Philip and Coopmans 1996); Icelandic (Sigurjónsdóttir 1992). The phenomenon appeared to be a violation of Principle B because the pronoun, c-commanded by the subject of the sentence, was found to be optionally coindexed with it in children's interpretations, at a level which approaches chance-determination. Chien and Wexler (1990) called it Delay of Principle B Effect (DPBE).

At the same time, children's knowledge of Principle A and of its structural properties was found to be very early set in place by about age 5.6 (Wexler and Chien 1985): in fact, children appear to know that reflexives must be locally bound and that the binder must c-command the reflexive as in:

(2) (Kitty$_i$ says that [Melody$_j$'s mother$_k$] touches herself$_{*i/*j/k}$
(3) Kitty$_i$ says that [Melody$_j$'s father$_k$] touches herself$_{*i/*j/*k}$

The constraints on the interpretation of the reflexive in (2) and (3) are *configurational*, in the sense that the syntactic structure allows only Melody's *mother* – or *father* – as a potential binder. Thus (3) is ungrammatical because *herself* fails to find an antecedent in Melody's *father*, since anaphors must be coindexed with a local antecedent via feature checking. If children have innate knowledge of c-command and the principles of binding as part of their UG, the significant delay in the mastery of referential pronouns as opposed to anaphors thus required an explanation. Moreover, since Principle B states that pronouns must be free (i.e. not bound) in the local domain, the question of children's acquisition of binding cannot be disentangled from another crucial domain, namely, the acquisition of

reference. In particular, two more sets of data showed that children's anaphoric interpretation in a sentence like (1) might not be accomplished via binding: in fact, pronouns are exempted from DPBE when they:

a. have a non-referential antecedent (Quantificational asymmetry);
b. are "syntactic clitics" (Clitic Exemption Effect)

The label DPBE, therefore, bore a troublesome burden from the very beginning. According to Baauw and Cuetos (2003), it suggested that the non-adultlike behaviour consisted in a violation of Principle B and, most importantly, that such violation was due to *incomplete* acquisition. At an empirical level, this possibility has been discarded by ample cross-linguistic and syntactic evidence that children's anaphoric interpretations of pronouns, rather than a violation of Principle B, are to be regarded as a difficulty in blocking an anaphoric relation established via local coreference, either in pragmatics or at the syntax-pragmatics interface. In effect, it was soon made clear, already in Chien and Wexler (1990), that children have innate knowledge of binding, and therefore it could equally be argued that the "effect" originally defined by the authors was not a misleading or inaccurate description. However, what appears to be more problematic in the original description is the label "delay", as the phenomenon has been found to appear also in acquired language impairment, such as Broca's aphasia, as showed by Grodzinsky et al. (1993). The similar interpretations observed in two different populations suggest that the cause of the problem cannot be syntactic immaturity, and therefore the developmental representation of the phenomenon has now been abandoned in favour of the more neutral description "Pronoun Interpretation Problem", first proposed by Coopmans (2000).

3. THE QUANTIFICATIONAL ASYMMETRY

The first piece of evidence that children do not violate Principle B was already provided by the last of the four experiments conducted by Chien and Wexler (1990), which compared the rates of anaphoric interpretations of pronouns in simple sentences with referential antecedents and quantificational antecedents. The task was a truth value judgement task which required children to judge whether a target sentence matched the action portrayed in the picture:

(4) Is Mama Bear$_i$ touching her$_i$?
(5) Is every bear$_i$ touching her$_i$?

In order to covalue the quantificational subject and the direct object pronoun we must construe a bound-variable relation, because quantifiers do not refer: as Reinhart (1983) pointed out, "rather than fixing an individual [a quantified NP] is interpreted as an operator binding a variable. The only way a pronoun could be assigned the same interpretation as this variable is if it is bound by the same operator, which cannot be the case here, since the pronoun cannot be coindexed. In other words, in the case of genuinely quantified NP's the only type of anaphora possible is bound anaphora. Since they involve no reference they also cannot involve coreference" (Reinhart 1983:74). Interestingly, the result was consistently replicated (Thornton 1990, Boster 1991, Avrutin and Thornton 1994, Thornton and Wexler 1999) by other studies which showed that children do not treat pronouns as bound variables. In particular, Thornton (1990) also found that children do not allow a pronoun to be coindexed with a wh- subject as in:

(6) I know who$_i$ washed him$_i$: Bert. (8% anaphoric interpretations in Thornton 1990)

We will refer to the asymmetry observed in the interpretation of pronouns with referential and non-referential antecedents as Quantificational Asymmetry, following Elbourne (2005). What it proved was that binding cannot suffice to regulate the interpretation of referential pronouns, since whenever binding is the only option it is not violated. Namely, two mechanisms are at play: one – syntax – which defines the interpretation of bound variables; the other – pragmatics – which regulates the interpretation of a free variable and its antecedent under coreference. Binding, conceived as a configurational relation in the framework of Chomsky (1981; 1986), requires coindexing under c-command; in contrast, coreference simply requires two referential expressions to be assigned the same index in the context. When the pronominal and its antecedent can only undergo a bound-variable relation – as in the case of non-referential pronouns (reflexives) and non-referential subjects (quantifiers) – adult-like interpretations emerge very early. Reflexives are thus assigned their antecedent in the local domain as dictated by Principle A and, conversely, pronouns are not allowed to be "bound" by a quantifier in the local domain, in observance of Principle B. Chien and Wexler (1990) therefore pointed at their result as evidence for the modularity of syntax and pragmatics, lending support to Reinhart's (1983) theory of anaphoric relations:

"Principle A specifies the conditions for an obligatory binding interpretation; Principle B determines the conditions for an obligatory nonbinding interpretation. These two principles are part of the innate endowment that the

child brings to the language acquisition task. They are unlearned. For those cases where accidental coreference is possible (e.g., our name-pronoun condition), children allow optional coreference" (Chien and Wexler 1990: 275).

Accidental coreference (Lasnik 1989) arises if the pronoun, which is not bound, "accidentally" picks the same index as its antecedent. Following Reinhart's (1983) condition on coreference, Chien and Wexler (1990) proposed that children's problem pertained to pragmatics and, as such, laid in the early awareness of the role of the context in the application of coreference. The reason why adults, but not children, reject local coreference, is that they have acquired a pragmatic principle, which they called Principle P:

(7) Contraindexed NPs are not coreferential unless the context explicitly forces coreference.

As a rudimentary formulation of a constraint on coreference, Principle P offered a solution to the first puzzle which acquisition posed to the Standard Binding Theory: namely, that only syntactic contexts which allow coreference cause a delay, whereas the conditions on binding are innate and very early set in place in children's competence.

4. BINDING AND COREFERENCE AT THE INTERFACES

As Reinhart (2007) points out, the notion of coreference as originally stated in Reinhart (1983) was intended to pertain to pragmatic competence, i.e. knowledge of the context and the appropriateness of use of referential expressions, very much in line with a Gricean approach to conversational implicatures and the Cooperation Principle. Chien and Wexler (1990) and, later, Thornton and Wexler (1999) adopted a similar approach, which capitalised on the division of labour between syntax and pragmatics, thereby explaining non-adultlike acquisition of coreference as non-adultlike pragmatic competence[1]. However, a different line of approach to coreference emerged in the nineties which focussed on the *interface* conditions on coreference. Besides the modular view of the division of labour between syntax and pragmatics, much theoretical research started to be concerned with the concept of Interface, where the outputs of the different components connect. Grodzinsky and Reinhart (1993) pioneered this approach. Determining the availability of a coreference interpretation, according to Grodzinsky and Reinhart (1993)

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[1] We will devote chapter 8 to the discussion of the pragmatic difficulty which Thornton and Wexler (1999) attribute to the early cognitive system.

does not involve only pragmatic knowledge, but all the levels (syntax, semantics, and pragmatics) at which anaphoric relations can be encoded. In fact, Rule I, the principle governing intrasentential coreference, involves the comparison of two semantic representations: A-binding and coreference.

(8) Rule I: Intrasentential Coreference (as in Reinhart 2000)

α and β cannot be covalued if:

a. α is in a configuration to bind β, (namely, α c-commands β) and

b. α cannot bind β and

c. The covaluation interpretation is indistinguishable from what would be obtained if α binds β.

The reasoning in (8) follows from a reference-set computation. Given a potential binding configuration (c-command) and Principle B "violation" (α "cannot" bind β), covaluation between α and β is ruled out in pragmatics if it yields an undistinguishable interpretation from the ungrammatical binding interpretation.

Grodzinsky and Reinhart (1993) capitalise on the observation that children appear to perform at chance level in the PIP studies, and that chance-level performances are not mean group values but homogeneously distributed among individual subjects. They argue that knowledge of Rule I is innate, but the implementation of the computation required by it too costly. They also provide evidence that adult subjects with acquired agrammatism show PIP, thus challenging the "maturational" reasoning behind previous pragmatic hypotheses (such as the immature awareness of the speaker's perspective and of role of the context summoned by Chien and Wexler 1990). Rule I is intended to provide an answer to why computations which involve coreference are more difficult than those which only involve one possible mechanism, namely, binding. The reason has to do with the cost of comparing competitive representations, which causes subjects with limited processing resources to guess – thus explaining the virtual chance-level performance so far indicated by the available data. When binding is the only strategy available for the interpretation of a pronominal, and only one representation is possible, Rule I is not invoked and therefore the computation does not break down.

5. THE CLITIC EXEMPTION EFFECT

The second major challenge for a theoretical account of early PIP is the finding that children acquiring languages with clitic pronouns do not show interpretation problems in

exactly the same experimental setting (Padilla 1990; McKee 1992; Avrutin and Wexler 1992; Jakubowicz 1989; Hamann et al. 1997; Baauw et al. 1997; Baauw 2000). Since Baauw et al. (1997), this phenomenon has been known as the Clitic Exemption Effect.

McKee's (1992) study, based on a Truth Value Judgment Task, addressed the cross-linguistic distribution of DPBE in syntactic perspective, comparing the performances of children acquiring two different classes of pronouns: strong (English) and clitic (Italian). Knowledge of Principle A was found to be at ceiling in both language groups even in two-clause sentences which elicited a "no" response (i.e. which were true if the reflexive was bound be the extraclausal antecedent):

(9) While the clown was sitting down, Roger Rabbit covered himself.

A striking contrast was found in children's interpretation of clitics in the Principle B condition, which involved simple sentences and two-clause sentences:

(10) Lo gnomo lo lava
    the gnome him.washes

(11) Mentre la gnoma era sdraiata, la puffetta la copriva
    while the gnoma was laid down, the smurfette her.covered

Children responded "no" to sentences like (10) with an accuracy of 85%, and of 80% in two-clause sentences. In the "yes" condition, performance was 97% correct in both monoclausal and biclausal sentences. In the same experimental setting, English children performed with 61% accuracy and no main effect of clause was found.

The fundamental question raised by these findings is two-fold: on the one hand, why clitics behave differently from strong pronouns in Principle B contexts; on the other hand, why the context appears to be "neutralised" when the pronoun is a clitic. These questions are obviously entangled and tackle the very complex interplay between syntactic and pragmatic constraints on clitics interpretation. McKee's (1992) proposal was pioneering in that it identified the crucial factor involved in the clitic/strong pronoun asymmetry in the notion of Binding Domain. If the binding domain for a full (i.e. VP-internal) pronoun is the VP in the child grammar, anaphoric interpretations are no longer a violation of Principle B. On the other hand, if the clitic's binding domain is IP, Principle B excludes coindexing between the sentential subject and the pronoun.

(12)

```
        IP
      /    \
    NP      I'
          /    \
      INFL+cl   VP
                |
                V
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(13)

```
        IP
      /    \
    NP      I'
          /    \
      INFL      VP
              /    \
             V      NP
```
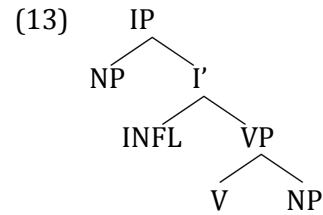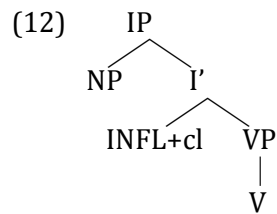
The representations in (12) and (13) illustrate the phrase markers assumed by McKee (1992) for clitics and full pronouns respectively. Following Huang (1983), she assumed that the notion of governing category has different implications for anaphors and pronouns. Crucially, whereas the interpretation of anaphors relies on an accessible subject, the interpretation of pronouns does not, since Principle B requires pronouns to be "free" in the domain of its governing category. It is important to note that this is already a breach in the formulation of the Binding Theory: Principle A and Principle B are not under discussion, but a modification of the binding domain leads to a radical revision of the conditions on coindexing for pronouns. In fact, McKee (1992) argues that English children initially analyse the VP as the governing category. This predicts no consequences for the interpretation of full anaphors, as their requirement for an accessible subject renders the subject NP the closest and only possible antecedent, thus Principle A is satisfied. However, if the subject and the pronoun are analysed as belonging to different binding domains (IP and VP, respectively), coindexing between the two NPs does not violate Principle B. Clitics, differently from full pronouns, occur in the same binding domain as the sentential subject (IP): this has the consequence that the same binding domain contains the subject and the clitic, thus prohibiting coindexing under Principle B.

This analysis encounters two evident limits: the first one is the VP-internal subject hypothesis (Koopman and Sportiche 1991) which now uncontroversially assumes that subjects are generated as specifiers of VP. Pierce, in 1992, had already demonstrated that children can interpret the subject as VP-internal. This crucially renders the trace of the subject a local antecedent for a full pronouns inside the VP, and therefore Principle B should always be relevant in simple sentences. The second limit has to do with learnability, in particular with the hypothesis that English children initially assume the VP to be the relevant binding domain and subsequently learn to analyse the IP as the binding domain for all pronominal categories. This would amount to saying that children's syntactic knowledge is different from the adults'. At an empirical level, it is also implausible that children acquiring languages with different pronominal systems set

different binding parameters, as it has been amply demonstrated that children acquiring languages with clitic pronouns also show PIP in the comprehension of strong pronouns (see Hamann, Kowalsky and Philip 1997 for French). Moreover, as Baauw and Cuetos (2003:227) note, any hypothesis based on syntactic immaturity is challenged by the agrammatics' data, since it seems very unlikely that acquired language impairment involves *loss* of knowledge of the binding domain parameter.

The insight of this proposal rests on the intuition that a change in the local domain determines a change in the way Principle B, hence syntax, constrains the interpretation of a pronoun. McKee (1992) incorrectly assumed that the subject was merged outside the VP, and therefore outside the local domain of the pronoun in the DPBE cases reported in languages with full pronouns. Moreover, she only hinted at the syntactic analysis of the VP as a binding domain as a stage of syntactic immaturity. In the light of the recent theoretical developments (Chomsky 2001), which have rethought the vP as the first interpretable syntactic object at the interfaces, we do not need to assume that children *misanalyse* the binding domain. This would mean that the VP-external position of clitics causes the latter to be special compared to strong pronouns. In particular, in the current framework McKee's syntactic account of DPBE cannot hold for simple sentences due to the locality configuration in which the subject and the pronoun are inside the vP, and therefore cannot elude the fundamental problem of explaining child local coreference – local, in the sense that children do allow covaluation between pronouns and c-commanding NPs in Principle B contexts. However, the insight that treating the VP as a binding domain gives rise to special semantic effects in cliticization remains valid, and can explain why a syntactic factor comes into play in complex sentences – as we will discuss in detail in the following chapters. It is in fact the case that, when data showed that the "severity" of PIP is syntactically determined – i.e. that children allow anaphoric interpretations of full pronouns at much higher rates in Exceptional Case Marking environments – only a non-standard theory of binding could provide an answer to the interaction between coreference and Principle B in different syntactic contexts. It seems remarkable therefore that, although from the wrong (maturational) perspective, this analysis was anticipating the possibility that different constraints on anaphoric relations can be derived from the interaction between the syntactic position of the pronoun and the notion of local domain – a possibility we will explore in this dissertation.

The advantage of an account of the Clitic Exemption Effect based on the syntactic difference between clitic and full pronouns, rather than on children's mastery of

pragmatics per se, is that it suggests that local coreference is syntactically constrained, and in particular that clitics cannot be interpreted via local coreference – at least in simple sentences – for structural reasons. This is in open contrast with pragmatic accounts of PIP which relate the absence of the phenomenon in languages with clitic pronouns to the referential deficiency of this class of pronouns, hence their lack of nominal content and autonomous stress, which prevents demonstrative use. Early accounts of the absence of PIP with non-full pronouns, in fact, maintained that clitics, unlike strong pronouns, are always bound variables (Grodzinsky 1989). In response to Grodzinsky, Grimshaw (1989) pointed out that clitics are able to corefer with a non-commanding antecedent, as covaluation between the NP inside the island and the clitic in (14) cannot be obtained via syntactic binding:

(14) Dopo che Gianni$_i$ ha dormito, Maria lo$_i$ ha picchiato

After Gianni$_i$ has slept, Maria him$_i$ has hit

In sum, under McKee's analysis, Principle B obligatorily applies to clitics at the IP level, whereas it is not violated if the sentential subject and the pronoun belong to different binding domains. However, an only-syntactic account, at least in this formulation, encounters severe empirical problems for full pronouns. While conservatively assuming that the cross-linguistic data could be explained in terms of syntactic binding, McKee's (1992) analysis completely ignored the role of coreference – as also Baauw and Cuetos (2003) observe. For example, it could not explain the Quantificational Asymmetry found by Chien and Wexler (1990) in English: if the subject in English children's representation is not local with respect to the VP-internal object position of the pronoun, the same DPBE would show up with quantificational antecedent. In McKee's (1992) study, in fact, quantified subjects were not tested. The difference in the pragmatics of these two classes of pronouns was precisely what the pragmatic accounts were going to focus on.

5.1 PRAGMATIC EXPLANATIONS FOR THE CLITIC EXEMPTION EFFECT

A different explanation for the Clitic Exemption Effect is advanced by Avrutin and Wexler (1992) and Thornton and Wexler (1999) who adduce this phenomenon in support of their argument that children's problem with coreference has to do with the pragmatic context. Avrutin and Wexler (1992) focus on the observation that Principle B simply cannot account for the acceptability of local coreference in sentences like:

(15) a. John$_1$ likes HIM$_1$

b. I'm gonna make me a sandwich   (from Avrutin and Wexler 1992: 278)

An only-syntactic approach cannot explain why stress on the pronoun in (15a) allows coindexing, since stress does not seem to alter the notion of binding domain in any way[2]. The difference between clitics and full pronouns is argued to be a pragmatic one, since the latter are unable to refer deictically:

> "We make the null hypothesis that Italian children know this property of clitic pronouns. Therefore, when they hear a sentence with an object clitic pronoun, they know it must have a coindexed antecedent. Because a coindexed subject antecedent implies a violation of Principle B (which we assume the children know), the children cannot take the subject to be the antecedent of the clitic pronoun. Therefore, they will reject sentences in which the subject is coreferential with the clitic pronoun. Therefore, McKee's results follow from the Principle P/modularity theory with no extra assumptions or stipulations." (Avrutin and Wexler 1992: 279).

Under a modular view, syntax is responsible for the interpretation of elements which are referentially dependent: not only reflexives, but also clitics, are assumed to need a coindexed antecedent in order to be interpretable. Full pronouns, on the other hand, are necessarily contraindexed with their potential antecedent. The gist of this proposal is therefore that DPBE is evidence for the distinctness of the two modules responsible for the interpretation of pronominal elements, and of the innateness of syntactic knowledge.

Thornton and Wexler (1999) also argue for an underlying pragmatic source for the DPBE, but they assume a refined version of the conditions on local coreference as in Heim's (1998) reinterpretation of Reinhart's approach. Against a processing account, they assume that children do not violate Rule I, given that their non-adultlike pragmatic competence leads them to accept a coreferential interpretation distinct from an A-binding interpretation. In other words, the crucial point of departure from Reinhart's approach lays in the axiom in (8c) discussed above, which states that covaluation is impossible when undistinguishable from a binding representation which violates Principle B. The locus of non-adultlike interpretations is not the evaluation of Rule I but, rather, the pragmatic knowledge behind the implementation of the rule. Children's immature pragmatic

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[2] We will return to the effect of stress on the notion of binding domain in Chapter 4.3 under a phase-based analysis.

knowledge of the contexts which allow local coreference in the adult grammar – including those in (15) – leads them to accept cointraindexed NPs to be covalued even in absence of contextual cues, for instance, stress. If there is no comparison of two identical representations – binding and coreference – for equivalence, the problem is solely pragmatic, and does not emerge for deficient pronominals such as clitics which cannot refer deictically.

5.2 Non-pragmatic explanations for the Clitic Exemption Effect

The absence of PIP with clitic pronouns is predicted by purely pragmatic accounts based on the referentially deficient status of clitic pronouns. Given that clitics cannot refer deictically, non-adultlike interpretations like those described above cannot be generated by Romance children. On the other hand, Grodzinsky and Reinhart's (1993) computational approach only addresses the clitic exemption indirectly. Rule I is not invoked – and therefore no costly reference-set computation is required – in all those cases in which only one representation, namely, binding, is available. As for the English data, this allows Grodzinsky and Reinhart (1993) to explain why children perform with adult-like accuracy on pronouns with quantified antecedents, given that the latter exclude coreference. As for the Romance data, in light of children's adult-like performance with clitics – with or without referential antecedent – the argument behind Rule I leads to the following conclusion:

> (16) Children do not allow intrasentential coreference as an option with clitics.
> (Baauw 1999)

Since the clitic exemption effect is only indirect evidence to deduce (16), the reason why it is so, i.e. why non-reflexive clitics would not be able to enter a coreference relation with a local antecedent, needs to be independently explained. In fact, whereas in the pragmatic accounts of PIP the cause of PIP and the cause of the CEE are one and the same, interface accounts of PIP must also provide an analysis explaining why PIP does not shows up with clitic pronouns in simple sentences, i.e. why the interpretation of clitics pronouns cannot involve Rule I. It should be noted that the two accounts may, but need not, converge on the same explanation: given that coreference is a broader concept than deixis – invoked by the pragmatic accounts – it is less trivial to demonstrate that clitics cannot be linked to an NP antecedent via coreference. In an early analysis of the Clitic Exemption Effect in Romance, Baauw, Escobar and Philip (1997) take a morphosyntactic stance on the difference

between clitics and full pronouns with respect to coreference; more recently, Baauw (1999; 2000) and Baauw and Cuetos (2003) have analysed the ban on coreference with clitics as a result of syntactic movement.

Baauw, Escobar and Philip (1997) share with Avrutin and Wexler (1992) the assumption that coreference, and not just *local* coreference, is not an option with clitics because clitics are *always* bound, either in syntax or in discourse. Baauw, Escobar and Philip (1997), following Delfitto and Corver (1993), propose that the clitic must be bound in order to value the lexical feature [human] for which it is underspecified. Without a binder to assign a value to the feature [± human], in fact, it would not be interpretable at LF. In turn, this excludes deixis and also coreference.

One problem with this analysis is that it predicts absence of PIP with all pronouns which are underspecified for the feature [human], and consequently, following the argument in Baauw, Escobar and Cuetos (1997), with all pronouns which cannot refer deictically. Interestingly, weak pronouns provide a test for this hypothesis: if the relevant property is some referential deficiency (such as an N-feature underspecification) all weak pronouns should be exempted by PIP. Baauw (1999) showed that this was not the case in Dutch, in fact Dutch weak pronouns trigger PIP. The study tested the weak pronoun *'m* (him), which has ambiguous XP/X° status and can scramble over low VP adverbs and negation (e.g. *niet*):

(17) Ik heb 'm [*waarschijnlijk niet* [*t* gezien]]

    I have 'm [probably   not   seen]]

    'I have probably not seen him'

When it is a DO, the Dutch pronoun *'m* is underspecified for the feature [human]; however, when it appears in the complement of a PP, it can only be interpreted as [+human]. Baauw (1999) tested DO weak pronouns in both (overtly) scrambled position (i.e. on the left of an adverb, 18a) and without adverbs (18b); a third condition tested weak pronouns in PPs (18c).

(18) a. Jan heeft 'm denk ik geverfd

      Jan has 'm think I painted

      'Jan probably painted him'

    b. Het jongetje heeft 'm getekend

The boy has 'm drawn
'The boy drew him'

c. Jan heeft naar 'm gewezen
Jan has at 'm pointed
'Jan pointed at him'

The results indicated that the Dutch weak pronoun *'m* in all syntactic contexts gives rise to PIP, thus disconfirming the hypotheses based on the pronoun's feature specification and ability to refer deictically. Baauw (1999) reports 62% non-anaphoric interpretations with pronouns overtly-scrambled over adverbs, 53% with simple OS and 47% with pronouns contained in PPs.

The distribution of PIP in languages with weak pronouns, however, is not very clear-cut. Different results have been obtained as for German by Ruigendijk (2008), who found adult-like comprehension of weak pronouns in simple sentences (95%). Ruigendijk (2008) proposes that the property which distinguishes German weak pronouns from Dutch and English pronouns and makes them akin to Romance clitics has to do with movement, namely, with the fact that they can occur in the left periphery of the clause – the so-called Wackernagel position:

(19) ...dass ihn/'n der Junge gesehen hat
that him/'m the boy seen has
' that the boy has seen him'

Baauw (1999) suggests that the presence of PIP with weak pronouns and its absence with Romance clitics is evidence that not all clitics, but only *syntactic* clitics are special, that is, pronouns which undergo (head) movement out of vP to the functional domain. Baauw (1999) in fact proposes the following generalization:

(20) The Clitic Exemption Effect shows up with head-moved pronouns only.

Instead of resorting to a morphological account based on feature specification, therefore, Baauw (1999) capitalises on head movement as the relevant property of syntactic clitics which makes them obligatorily interpreted via binding. The semantic effects of cliticization thus would follow from movement out of vP, which would create a variable chain. As a consequence, the clitic itself is turned into a lambda operator, and its trace into

a bound variable. At the vP level, therefore, coindexation with the local subject results in a Principle B violation. This makes an interesting prediction for languages with object scrambling: according to Baauw (1999), Dutch weak pronouns target an XP position inside the vP. Following Neeleman and Weerman (1999), the author maintains that languages with generalised object shift have dedicated XP projections inside the vP and that scrambling out of vP takes place only if it is a case of head movement to X°-projections in the functional field. Baauw (1999) proposes that this accounts for the difference between Dutch and Icelandic, on one hand, and Norwegian, on the other hand. The latter language, which belongs to the Mainland Scandinavian group, is assumed to differ from Icelandic in lacking generalised object shift (Holmberg and Platzack 1995) and weak pronouns appear to scramble out of vP via head-movement. More data are still needed, as the distribution of PIP in simple sentences with weak pronouns can give crucial contribution to the research of the causes of the Clitic Exemption effect – syntactic movement vs. pragmatic deficiency.

6.   THE ECM PUZZLE

In the eighties, the first empirical obstacle to treating Principle B of the Binding Theory as the only module responsible for the interpretation of pronouns came from the acquisition facts reviewed above: firstly, the very early mastery of Principle A and c-command; secondly, the evidence that ungrammatical interpretations in Principle B contexts are limited to pronouns with referential antecedents; thirdly, the adult-like competence shown by children with simple sentences with clitic pronouns, regardless of the referentiality of the antecedent. All these facts point to the conclusion that Principle B as such is not sufficient to account for the interpretation of referential pronouns. In the Government and Binding framework, this means that the Binding module, which was intended as a component of LF, is not the only one responsible for the interpretation of anaphoric expressions, because the interpretation of free (i.e. not bound) pronouns is handled by pragmatics, a distinct module outside syntax. The modular view of reference assignment, especially as endorsed by Chien and Wexler (1990) and Avrutin and Wexler (1992), conceived pragmatics as the module dealing with anything that could not be treated in syntax. However, because the contexts excluding coreference could be easily identified (for example, testing pronouns with quantified or wh- antecedents) and children's adult-like competence with them was ascertained cross-linguistically and consistently, the universality and innateness of Principle B was not under discussion.

A more serious challenge for the Standard Binding Theory and its formulation of Principle B emerged in the late nineties, when acquisition studies also began to test comprehension of object pronouns in complex sentences and in cross-linguistic perspective. The first evidence of an asymmetry in children's performance with simple and complex sentences is already offered by Jakubowicz's (1984) pioneering experiments on children's acquisition of Principle A and Principle B. Jakubowicz (1984:165) tested English children on anaphors and pronouns in four different types of embedding (21): root-like finite clauses with the anaphor/pronoun in direct object position (a); object control infinitival clauses with the anaphor/pronoun in subject position (b); root-like finite clauses with the anaphor/pronoun inside a PP (c); root-like finite clauses with the pronoun/anaphor contained in a picture-of-N in subject position:

(21) a. John said that Peter washed him/himself

b. Peter wanted him/himself to kick the ball

c. John said that Peter put the ball next to him/himself

d. John told Peter that the picture of him/himself was on the door

In finite clauses, Jakubowicz (1984) found a strong age effect for pronouns, but not with anaphors, which were correctly linked to their c-commanding antecedent from age 3. However, a striking asymmetry appeared between (a) and (b), that is, between objects in finite clauses and controlled subjects of non-finite clauses. Her results indicated that, at age 5, children's rate of correct interpretations of pronouns was much lower in non-finite object control clauses: children abode by Principle B around 75% of the time, but 50% of the time they allowed the pronominal subject of a control infinitival (21b) to corefer with the c-commanding antecedent. Jakubowicz (1984) proposed that the asymmetrical path in the development of anaphors and pronouns could be explained in terms of Subset Property (Berwick, 1985): in other words, A-free pronouns are in a subset relation with A-bound pronouns. Given that it is the most restrictive option, local binding is the unmarked option. As children never hear reflexives outside A-binding configuration, the first principle is fixed. As for Principle B, positive evidence indicates to the child that the pronoun must be A-free, thus the distribution of anaphors and pronouns is fixed. As for the finite/non-finite asymmetry, Jakubowicz (1984) advanced that the property in question is S'-deletion, in which case a grammar which permit S'-deletion is in a superset with a grammar which does not. Following the logic of the Subset Principle, she proposes

that the child first makes the assumption that S'-deletion is not possible, thus analysing the pronoun in (b) as A-free[3].

Sentences like those in (21b) have not received much attention in subsequent studies of English acquisition, but the asymmetry between embedded objects and embedded subjects was not an isolated finding, as it emerged also in Exceptional Case Marking Structures or Verbal Small Clauses. Philip and Coopmans (1996) compared children's interpretation of pronouns and reflexives in simple clauses (22) and ECM complex structures (23):

(22) a. Jan aaide hem

'Jan stroked him'

b. Jan aaide zichself

'Jan stroked himself'

(23) a. Het meisje zag haar dansen

'The girl saw her dance'

b. Het meisje zag zich dansen

'The girl saw herself dance'

The task adopted was similar to the Truth Value Judgment Task in Chien and Wexler (1990). The youngest group (aged 4 to 6) correctly rejected covaluation between the matrix subject and the pronoun in (23a) only 10% of the time and the oldest group (8 year-olds) 38% of the time; in simple sentences the youngest group provided 36% adult-like responses and the oldest group around 50%, consistently with the previous findings. Thus, for the first time, it was shown that children accept an anaphoric interpretation on a pronoun more often when the pronoun is inside an ECM configuration. This suggests at least two considerations:

a. If knowledge of locality is innate, ECM constructions must impose different locality conditions on the interpretation of the pronoun from simple transitive sentences.

b. If the severity of PIP is not homogeneous across clause types, the role of the context in the determination of antecedent-pronoun relations must interact with (children's knowledge of) locality.

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[3] We will come back to the hypothesis that S'-deletion is delayed in early English, also proposed by Roper and de Villiers (1992) on the basis of wh- extraction phenomena, in Chapter 5§4.

From the viewpoint of the Standard Binding Theory, (a) is unexplained, since Principle B poses the same restrictions on the interpretation of the pronoun and, in particular, it assumes that the same structural configuration defines the local domain of the accusative pronoun in the matrix clause of ECM and simple transitive sentences. Furthermore, the special status of ECM poses a conundrum to the pragmatic hypotheses: if children's DPBE is not in fact a violation of binding but, rather, a coreference strategy, why is the latter more readily available in some syntactic contexts – as witnessed by the fact that more anaphoric interpretations are allowed by children in complex sentences involving ECM? The problem is not avoidable even following Grodzinsky and Reinhart's (1993) proposal that the problem does not reside in children's pragmatic knowledge of the conditions on internal coreference but rather in "choosing" between binding and coreference, a task which involves not just the mastery of syntactic and pragmatic knowledge but an interface computation. In fact, if the chance-level performance in simple transitive sentences suggests that no strategy is actively chosen, the (consistently) less-than-chance level in ECM cannot be the result of a guessing strategy.

The additional difficulty posed by ECM structures in children's interpretation of pronouns, therefore, is evidence that the syntactic position of the antecedent - or, as it will be shown, the syntactic configuration hosting the clitic and its antecedent – plays a critical role not only in constraining binding representations but also in making coreference interpretations available, thereby allowing the context to set the interpretation of the pronoun.

7. BINDING AS REFLEXIVITY

7.1 THE DISTRIBUTION OF ANAPHORS AND PRONOUNS

Reinhart and Reuland (1993) propose that Conditions A and B of binding should be best intended as conditions on the well-formedness of reflexive predicates rather than as structural conditions on the distribution of anaphoric expressions. The problem they intend to overcome is represented precisely by the structural conditions which the Standard Binding Theory poses on the distribution of pronouns and anaphors, which are assumed to be complementary hence mutually exclusive with respect to the concept of local domain. In particular, since Principle A of the binding theory requires anaphors to be bound and Principle B requires pronouns to be free, the theory predicts that anaphors and pronouns cannot be both grammatical in the same context. As R&R (1993) note, this is

empirically false. In fact, the complementary distribution of anaphors and pronouns is suspended when the pronominal is inside an adjunct PP or an NP (the so-called "picture-of-N" contexts):

(24) Max$_i$ saw a gun near himself$_i$/him$_i$ (Reinhart and Reuland 1993: 661)

(25) Lucie$_i$ saw a picture of herself$_i$/her$_i$

If c-command is not sufficient to define the acceptability of pronouns and anaphors in the same domain, another property stands out as crucial, namely, coargumenthood. R&R (1993) in fact propose that Condition A and Condition B of binding should be defined as a condition on reflexive predicates and, as such, a condition on the well formedness of a predicate when two of its arguments are coindexed: "we define a predicate as reflexive iff (at least) two of its arguments are coindexed" (p. 662). This very easily allows us to derive the acceptability of a pronoun in the contexts in (24) and (25) given the fact that the two coindexed NPs are not arguments of the same predicate. In fact, Condition B licences coindexing of two arguments only if the predicate is marked as reflexive:

(26) A predicate (formed of P) is i-reflexive-marked iff either P is lexically reflexive with respect to an i-indexed argument, or one of P's i-indexed arguments is a SELF anaphor.

In other words, reflexive marking can obtain either in the lexicon or in syntax; in the latter case, one of the argument must be able to reflexive-mark the predicate. According to R&R (1993), only SELF anaphors have a reflexivizing function, namely, those of the form Pron/SE+SELF (e.g. Dutch *zichself*; English *himself*; Italian *se stesso*). The structure of these anaphors, in fact, is that of an NP headed by the reflexivizing marker –SELF and in which the pronominal occupies a determiner position. R&R (1993) also derive a fine-grained typology of pronominal expressions, which includes pronouns and two types of anaphors, namely, SE and SELF anaphors. Pronouns and SE anaphors are homogeneously analysed as determiners with an empty nominal complement; SELF anaphors, in addition, have an overt N head. Anaphors, however, differ from pronouns in their lack of referentiality, which is defined as a syntactic property consisting in a full specification of phi-features and structural Case. With respect to reflexivity, therefore, both pronouns and SE-anaphors are unable to reflexive-mark a predicate; only SELF-anaphors can, and this explains why SE-anaphors are long-distance anaphors, and ungrammatical in contexts like (27) and (28), where they are locally bound:

(27) Gianni$_i$ ama solo se stesso$_i$/*sé$_i$ (Giorgi 1991: 186)

  Gianni loves only himself/*SE

(28) Jan$_i$ haat zichself$_i$/*zich$_i$/*hem$_i$ (Reinhart and Reuland 1993: 661)

  Jan hates himself/*SE/*him

The Dutch pronominal system provides a very clear-cut distinction between SE anaphors and pronouns on the one hand, and SELF anaphors on the other; as far as reflexivity is concerned, only the latter are truly reflexivizing arguments. The reason why an anaphoric relation between a SE anaphors or a pronoun and a coargument NP is ill-formed, therefore, is that it does not satisfy the requirement on reflexive marking imposed by Condition A and B, which can now be introduced:

(29) Condition A:

   A reflexive-marked predicate is reflexive

   Condition B:

   A reflexive predicate is reflexive-marked

   (Reinhart and Reuland 1993: 170-171)

Both conditions are conceived as conditionals. Condition B bars the pronoun in (28) because the predicate is reflexive (its arguments are coindexed) but there is no reflexive-marking: in fact, the predicate is not intrinsically reflexive, and the pronoun cannot reflexive-mark it. In contrast, a reflexive predicate taking a SELF-anaphor as its argument is well-formed because the latter is able to reflexive-mark it. Condition A, on the other hand, states that if a predicate is reflexive-marked – i.e. if one of its arguments is a SELF-anaphor – its arguments must be coindexed: this, in turn, blocks all cases in which the SELF-anaphor is not coindexed with a coargument:

(30) *A famous physicist has just looked for yourself (p.669)

An apparent problem for Condition A is represented by those anaphors which occur as free. In fact, cases like (31) and (32) below are in overt contrast with the requirement posed by the Standard Binding Theory for anaphors to be bound in their governing category: this marks a crucial difference with R&R's (1993) model:

(31) There were five tourists in the room apart from myself.

(32) Max boasted that the Queen invited Lucie and himself for a drink

These occurrences of anaphors are called *logophoric*, in that the anaphor is allowed to refer to a long-distance antecedent. Although the traditional literature attempted to account for logophoric uses as reflecting the speaker's point of view, the grammaticality of third person anaphors in examples like (32) indicates that the use is syntactically licensed in broader contexts than those involving first/second person pronominals. The solution proposed by R&R (1993) is that logophoric anaphors are licensed because they are not arguments of the verb, hence reflexivity does not obtain. When no coarguments of the same verb are coindexed, Condition A does not apply: "with respect to the binding theory, in any case, a SELF anaphor can always be used logophorically when it is not in an argument position" (p.673). This has an important consequence: differently from Chomsky (1981; 1986), in fact, R&R (1993) claim that anaphors need not be bound variables, despite the fact that they are referentially dependent categories. This is because the use of anaphors, as well as pronouns, has not to do with inherent requirements on these categories, but rather on reflexive predicates. Another context in which anaphors are perfectly grammatical as logophors is focus:

(33) Only Lucie buys pictures of herself (p.673, ft.18)

If even referentially dependent elements such as anaphors do not need to be linked to their antecedent via binding, the consequence is striking: given the licit syntactic positions, anaphors can be linked to their antecedent via coreference. The example (33) shows that this is the case, as the sentence can be easily interpreted ambiguously: under the bound-variable interpretation, X is the only individual who buys pictures of X; under the coreference interpretation, X is the only individual who buys pictures of Lucie. But when the anaphor is in argument position and does not bear focus, thus reflexive-marking the predicate, only the bound-variable reading becomes available:

(34) Lucie praised herself, and Lili (did) too.

In sum, the reflexivity model does not pose restrictions on the occurrence of anaphors and pronouns and is not concerned with the referential properties of the pronominal category. In other words, binding conditions only filter out representations which fail to mark reflexivity on a reflexive predicate.

7.2 SYNTACTIC AND SEMANTIC PREDICATES

 Let us now see how binding applies to pronouns which are not in coargumenthood with the NPs they are coindexed with. The answer proposed by R&R (1993) is that Condition A and Condition B apply to different types of predicates: the former applies to arguments of a syntactic predicates, whereas the latter applies to the semantic representation of the predicate:

> (35) a. The *syntactic* predicate formed of (a head) P is P, all its syntactic arguments, and an external argument of P (subject). The syntactic arguments of P are the projections assigned θ -role or Case by P.
>
> b. The *semantic* predicate formed of P is P and all its arguments at the relevant semantic level.

Since Condition A applies to syntactic arguments, it correctly licenses coindexing between a raised subject and an anaphor in raising predicates, even though the subject of a raising verb – e.g. seem – is not a theta-argument of the verb at the semantic level:

> (36) Lucie seems to herself [t to be beyond suspicion]

Likewise, expletives, which bear no theta role at the semantic level, still can be part of a syntactic predicate in cases like (37), where the anaphor is ruled out as a violation of Condition A – as it reflexive-marks the predicate *bother*:

> (37) *Max thinks that [it would bother himself [that the place is so noisy]]

Whereas the effect of Condition A at the syntactic level is apparent, demonstrating that Condition B does not apply at the syntactic level, but only when the predicate is mapped into a semantic representation, is less obvious. Under the definition in (35), Exceptional Case Marking is expected to provide a case of the dissociation between syntactic and semantic argumenthood. In fact, in ECM the matrix predicate satisfies the definition in (35a): it projects a subject and it assigns structural Case (ACC) to the pronoun. Therefore, Condition A is expected to apply. Clearly, the fact that an anaphor is licit when the matrix predicate is reflexive – i.e. when the matrix argument and the anaphor are coindexed – suggests that Condition A is operative. However, at the semantic level, the pronoun is a theta-argument of the lower verb, and therefore, if Condition B does not apply, we would expect coindexation to be possible with the matrix subject, given that reflexivity would not be violated on the matrix predicate. However, this is not allowed:

(38) a. Lucie$_i$ expects [herself$_i$ to entertain herself$_i$]

     b. *Lucie$_i$ expects [her$_i$ to entertain herself$_i$]

Condition B states that, if the predicate *expects* is interpreted reflexively at the semantic level, it must be reflexive-marked: in other words, one of its theta-arguments must be a SELF anaphor. However, in (38b) the predicate cannot be reflexive, as the coindexing links two arguments of different predicates. Therefore, (b) should be licit, contrary to fact. In order to overcome this problem, R&R (1993) propose that binding conditions are tightly related to movement, and in particular to the conditions on the well-formedness of chains. This is the main point of departure from the Standard Binding Theory and, in particular, from the framework proposed in Barriers (Chomsky 1986), in which the Binding module and the Chain module are conceived as distinct, as the distribution of pronouns and anaphors is defined exclusively by syntactic domains, whereas the conditions on traces are governed by Chain theory. Recovering the original transformational architecture of Chomsky (1976), R&R (1993) argue that NP traces should not be kept separate from anaphoric chains and that, therefore, some binding phenomena in fact fall under chain theory. In the case at stake, although Condition B does not prevent a pronoun from being coindexed with the subject of the matrix predicate, the sentence is ill-formed because a crucial property of chains is violated. Here, the referential status and not the reflexivizing function of anaphoric expressions become the critical factor. The principle which bars a pronoun from being the tail of the chain [Lucie ...   her] is the Condition on A-chains:

(39) A maximal A-chain ($\alpha 1$, $\cdots$, αn) contains exactly one link- $\alpha 1$-that is both +R and Case-marked.

This principle assumes equal treatment for anaphors and NP traces, drawing on the observation that NP traces can be bound in the same domain where anaphors, but not pronouns, can appear:

(40) a. Felix$_1$ was fired t$_1$

     b. Felix$_1$ behaved himself$_1$

     c. *Felix$_1$ behaved him$_1$

The well-formedness of the chains in (40 a,b), therefore, has to do with the [-R] status of the lower link of the chain, defined in terms of phi-feature specification. Most importantly, R&R (1993) contend against Chomsky (1986) that A-chains form a syntactic argument, but not one single theta-role, i.e. a semantic argument. This is the reason why the link between

the coindexed subject and the ECM pronoun forms an A-chain, despite the distinct theta-roles expressed by the two positions, and as such is ill-formed:

(41) a. He$_1$ is believed [t$_1$ to be smart].   (R&R 1993: 693)

b. He$_1$ believes [himself$_1$ to be smart].

c. *He$_1$ believes [him$_1$ to be smart].

In sum, under the Standard Binding Theory the link in (41c) does not fall under Chain theory, which is assumed to regulate movement and chains which form one theta/Case position, but falls under Principle B. Exceptional Case Marking constructions, therefore, should provide the same binding domain for the pronoun as simple transitive sentences and Principle B should be responsible for the distribution of anaphors and pronouns in both cases. This assumption is challenged by child data, but is also problematic at the empirical level, once we take into consideration the distribution of anaphors in language with a richer system than the English one. The Dutch tripartite anaphoric system offers us more limpid   evidence: SE anaphors, which pattern with pronouns in the lack of a reflexivizing function, and therefore are ruled out by Principle B in simple sentences, behave differently in exceptional case-marked position. In such case, as we have seen, the relevant criterion for the well-formedness of the anaphoric link is the Condition on A-chains, which only looks at the referential status of the tail – given that no reflexive predicate is formed and the two links of the chain belong to different predicates. With respect to this property, SE-anaphors do not pattern with pronouns, because they are [-R]: and indeed, they are licensed in the ECM position:

(42) Jan$_1$ hoorde [zichzelf$_1$/zich$_1$/*hem$_1$ zingen]

Jan heard [himself/SE/*him sing]

In Reinhart and Reuland's (1993) framework, the anaphoric relation between a matrix and an ECM object does not form a reflexive predicate; in other words, there is no possible semantic representation in which a lambda operator can take scope over the matrix predicate and thus turn the embedded pronoun into a bound variable. Conversely, SELF-anaphors are forced to be bound variables in the same contexts due to the requirement imposed by Condition A, which only applies at the syntactic level. As we have seen, Reinhart and Reuland's (1993) definition of reflexivity accounts for logophoric uses of anaphors in contexts in which Condition A does not apply: since the relevant property which Condition A – just like Condition B – sees is reflexivity-marking on a predicate,

when an anaphor is not an argument its reflexivising property is irrelevant. In such cases, "it can end up either syntactically bound (i.e. coindexed with a c-commanding NP) or not. Hence, it can either be a bound variable, or corefer." (p.675). The contrast in (43 a,b) shows that an anaphor in ECM contexts is indeed subject to Condition A, since it is a syntactic argument of the matrix predicate and, by virtue of reflexive-marking it, it must be coindexed with its c-commanding NP:

(43) a. Lucie expects [herself to entertain herself] (Reinhart and Reuland 1993:680)

b. *Lucie expects [myself to entertain myself]

c. *Lucie$_1$ expects [her$_1$ to entertain herself]

Another type of contexts in which Condition B and the condition on A-chains interact, yielding a different pattern for SE anaphors and pronouns, are those in which the predicate is intrinsically reflexive, hence Condition B is never violated, even if the predicate takes a non-reflexivizing argument. Although Condition B is met, the condition on A-chains poses the further requirement that the lower link of the chain be [-R] and, again, this leads to the ungrammaticality of a pronoun and the grammaticality of the anaphor. In Duch, this anaphor must be a SE anaphor, given that the intrinsically reflexive predicate is reflexive-marked in the lexicon and does not need to take a SELF anaphor:

(44) Lucie gedroeg zich/*haar goed

Lucie behaved SE/*her well

Sigurjónsdóttir and Coopmans (1996) tested inherently reflexive verbs in the acquisition of Dutch and found extra PIP with this class of verbs as opposed to transitive verbs. When a verb like *wassen* (wash) is reflexive-marked in the lexicon, a pronoun is ruled out only by the condition on A-chains. Children appeared to be more sensitive to the well-formedness of reflexive marking than they were to the well-formedness of chains, since they accepted pronouns in contexts where SE anaphors would have been licit more than 80% of the time (only 17% correct rejections) whereas they rejected covaluation of the pronoun and the subject in transitive predicates – e.g. *aaiden* (stroke) – 58% of the time.

Another contrast holds between ECM and object control clauses, which seems to indicate that Condition B does not apply uniformly to the two types of complex sentences:

(45) Henk$_1$ overreedde zichzelf$_1$/*zich$_1$ [PRO zingen]

Henk persuaded himself/SE [PRO to sing]

Whereas the SE anaphor is not subject to Condition B in ECM and therefore allowed to appear in free alternation with a SELF anaphor, in object control Condition B appears to be at play, in fact a SE anaphor is also an argument of the matrix predicate at the semantic level and is as such barred from appearing in the object position due to its inability to reflexive-mark the predicate.

In sum, ECM receives a special treatment in the Reflexivity framework because the latter conceives binding conditions as conditions on reflexive predicates. The coindexation between a matrix subject and an ECM embedded subject does not form one reflexive predicate at the semantic level, but nonetheless gives rise to a chain. The distribution of pronouns in an ECM construction only depends on the well-formedness of chains, but the locality condition on the application of Condition B – intended by R&R (1993) as coargumenthood – is not at play. This theory predicts that binding applies differently in ECM and object control sentences – a fact for which, based on Jakubowicz's (1984) unique test of object control sentences in acquisition, we do not have confirmation. But it also hinges on the dissociation between thematic role and syntactic position in the application of Principle B, at the same time maintaining the tight relation between binding and chains in the well formedness of anaphoric relations, which the Standard Binding of the Barriers (1986) framework had completely separated.

8. CHILDREN'S INTERPRETATION OF ECM

8.1 THE INCOMPLETE LEXICAL FEATURE ACQUISITION HYPOTHESIS

If ECM can be identified as "exceptional" by virtue of being exempted from Principle B, the very low performance exhibited by young children in ECM is clear evidence that DPBE is not due to a problem with the acquisition of binding principles. As Baauw, Coopmans and Philip (1997:15) point out, poorer performance "cannot be strictly interpreted as a delay in the knowledge or application of Principle B. It must be due to something else" (ft. 3). The key factor, according to the authors, is in the acquisition of the lexical specification on pronouns. Baauw et al. (1997) follow the Reflexivity model in assuming that the coindexation in a sentence like *Het jongetje$_1$ zag hem$_1$ dansen* (the boy saw him dance) violates only the condition on A-chains, but not binding Principle B. If children accept such interpretation, therefore, the problem must lie in the condition itself. Most importantly, Baauw et al. (1997) claim that children have innate knowledge of the condition on A-chains, but they misanalyse pronouns as [-R] elements, thus in fact allowing the link [NP$_1$...

hem₁] to form an A-chain. At the same time, Baauw et al. (1997) maintain the hypothesis advanced by Grodzinsky and Reinhart (1993) that the chance-level performance in simple sentences is due to the breakdown in the application of Rule I. In cross-linguistic perspective, this is explicative, according to Baauw et al. (1997), of the difference reported in the performance on ECM children by Philips and Coopmans (1996) as for Dutch and English, which was poorer than chance-level in the former and still at chance in the latter. Given that Dutch first and second person pronouns can be [±R], the authors hypothesise that children overgeneralise the underspecification for referentiality to third person pronouns, thus failing in blocking an A-chain in ECM contexts; in contrast, English first and second person pronouns are only [+R], and this in turn leads to early acquisition of the referentiality feature and chance-level performance in both simple and complex ECM sentences in early English. In sum, this hypothesis capitalised on the reflexivity model of binding proposed by Reinhart and Reuland (1993) to explain the asymmetry between simple and complex sentences involving ECM, but at the same time maintained that PIP is due to children's failure in the application of Rule I in languages with full third person pronouns.

Concomitantly, cross-linguistic research in the same years converged towards the direction paved by Coopmans and Philip (1996) and Baauw et al. (1997), bringing to light the novel finding that Romance languages are not exempted from PIP in ECM sentences. Baauw et al. (1997) and Baauw and Cuetos (2003) for Spanish and Hamann, Kowalsky and Philip (1997) for French adopted the same experimental design and replicated the previously known finding that children acquiring clitic pronouns do not show PIP in simple sentences, either with referential or quantified antecedents (46a; b); however, Baauw et al. (1997) reported only 64% correct performance in the Spanish ECM sentence (46c):

(46) a. ¿La niña$_i$ la$_i$ seca? (90% correct)

' Is the girl drying her off?'

b. ¿Cada mamá$_i$ la$_i$ señala con el dedo? (90% correct)

'Is every mom pointing at her?'

c. ¿La mamá$_i$ la$_i$ ve bailar? (64% correct)

'Does the mom see her dance?'

These findings were claimed to give support to Reinhart's account: the absence of PIP in simple sentences was related to the clitic exemption effect, namely, the impossibility of

interpreting clitics via coreference, as anticipated above; on the other hand, the presence of PIP in complex ECM sentences was explained as a problem with A-chains in structures where Condition B does not apply.

8.2 PROBLEMS WITH THE INCOMPLETE LEXICAL FEATURE ACQUISITION account

The lexical feature specification account, which found robust support cross-linguistically in the late nineties (Dutch: Coopmans and Philip 1996; Spanish: Baauw et al. 1997; French: Hamann, Kowalsky and Philip 1997 and Norwegian: Hestvik and Philip 1999), presents several problems both at a theoretical and an empirical level.

The first theoretical problem has to do with the hypothesis that in some languages (Spanish, French, Norwegian and Dutch) PIP is due to incomplete lexical acquisition, namely, that children overgeneralise third person pronouns as [±R] when the pronominal system of the language they are acquiring allows first and second person pronoun to be [±R]. The argument in Baauw et al. (1997) maintains that Spanish pronouns can be [-R] in cases like (47a; c) and [+R] in cases like (47 b; d):

(47) a. (pro) me he secado.

    ' (I) have dried myself off'

  b. Juan me ha visto.

    'Juan has seen me'

  c. (pro) te es secado.

    (You) have dried yourself off

  d. Juan te ha visto

    'Juan has seen you'

The difference between the [-R] and the [+R] pronouns in the examples above simply follows from treating the pronouns in (47a; c) as bound, and those in (47b; d) as picking their reference from the context. In the latter case, *me*, *te* are simply free variables which, in the utterance context, refer to the speaker (first person) or the addressee (second person). The authors point out that English does not allow first and second person pronouns to be [-R], namely, that the English counterparts of (47a; c) are ungrammatical; a reflexive – i.e. [-R] pronoun – must be used instead:

(48) a. I am drying *me/myself off

    b. Did you dry *you/yourself off?

Although English children do not hear first and second person pronouns as A-bound, however, it is obviously not the case that they do not hear [-R] pronouns outside coargumenthood. If children's problem resides in the lexicon, i.e. in the acquisition of phi-feature specification in the pronominal system of the language they are acquiring, it is not clear why cases like (49) below should not trigger the same overgeneralisation. As we have seen, in Reinhart and Reuland's (1993) model binding is not only a matter of referentiality specification on the pronominal but, rather, interacts with the pronominal's ability to reflexive-mark a predicate. English children may hear first, second and third person pronouns as bound– assuming that bound elements are [-R] – in all cases in which coargumenthood does not hold, as in sentences in which the pronoun is inside a PP, hence an argument of a prepositional predicate:

(49) a. I saw a snake next to me$_{[-R]}$/myself.

b. You saw a snake next to you$_{[-R]}$/yourself

c. He saw a snake next to him$_{[-R]}$/himself

In Dutch, pronouns can be used in contexts in which long-distance SE anaphors can be bound and coargumenthood does not hold, as in:

(50) Jan zag jou achter zich/hem staan   (Reinhart and Reuland 1993:661)

 Jan saw you behind SE/him stand

'Jan saw you stand behind SE/him'

Under the reflexivity model, the contexts in which pronouns and anaphors are not in complementary distribution are defined by their reflexivising function and not by their [±R] specification. PPs (those which are not part of the theta grid of the verb) are one case in which the pronoun can be coindexed with its antecedent because coindexing does not form an A-chain and, at the same time, Condition B does not apply. If children overgeneralise the [±R] specification as a consequence of immature lexical acquisition, they would arguably do so regardless of the syntactic context where the pronoun occurs. If we assume that children's knowledge of the condition on A-chains is intact and the generalisation concerns only the lexical feature specification on pronouns, it should be much more pervasive than the authors predict and should not be affected by the syntactic position of the pronoun – i.e. relegated to A-chain contexts.

A second theoretical problem has to do with the interaction between the incomplete lexical specification acquisition hypothesis and the acquisition data. Di Sciullo and Agüero-

Bautista (2008:95) observe that this hypothesis leads to the following paradox: "if misanalyzing the clitic as a reflexive is what leads to the DPBE in Verbal Small Clauses contexts, what stops children from doing the same in simple clauses so that a DPBE is also found in that environment?". The answer to this is found in Baauw and Cuetos (2003), who correctly point out that, *even if* children misanalysed pronouns as [-R] in Condition B contexts, such as simple transitive sentences, the sentence would still be blocked by Condition B itself, given that, regardless of the referential status of the pronoun, the predicate would fail to be reflexive-marked. Therefore, it appears that Baauw and colleagues in effect intend incomplete morphosyntactic acquisition to be a pervasive problem, whose consequences, however, are only visible in those syntactic contexts in which the A-chain Condition is the only factor which blocks an anaphoric relation between a pronoun and an antecedent. These contexts are, by definition, those in which Condition B and the A-chain condition are dissociated – i.e. ECM complex sentences and coargumenthood cases in which the predicate is reflexive-marked in the lexicon. Since in the former case a reflexive predicate is not formed, and in the latter reflexive-marking is ensured at the lexical level, what renders the pronoun ungrammatical is solely its [+R] status, which prevents it from appearing at the tail of an A-chain.

However, the argumentation does not seem to suffice to explain the stronger severity of PIP in ECM sentences in Dutch – a language with [±R] first and second person pronouns – compared to English – a language in which, according to the authors, the [+R] status of third person pronouns is acquired very early. According to Baauw et al. (1997), children perform at chance level in both simple transitive sentences and in ECM sentences because, in both cases, the source of the breakdown is the implementation of Rule I. In Dutch, in addition to Rule I, children experience problems with the Condition on A-chains. However, an important question must be addressed: if in ECM sentences the Condition on A-chains is the only principle which prevents binding, and this principle is misapplied by Dutch children, is Rule I still relevant? Rule I compares an *impossible* A-binding representation and a covaluation (i.e. pragmatic coreference) representation thereby blocking the latter precisely because it would be indistinguishable from the ungrammatical binding representation. The rule applies to configurations in which the antecedent c-commands the pronoun but cannot bind it: by definition, in the typical case in which α and β are co-arguments of the same semantic predicate, there are two concomitant reasons why α cannot bind β:

a. β cannot reflexive-mark the predicate, hence covaluation does not form a reflexive predicate at the semantic level;

b. β is [+R], hence covaluation yields an ill-formed A-chain at the syntactic level.

If the pronoun is (misanalysed as) [-R], (a) still blocks binding as a Condition B violation – as Baauw et al. (1997) correctly pointed out. However, if (a) does not hold – for instance because the predicate is reflexive-marked in the lexicon or, more importantly for the case at stake, because α and β are not coarguments at the semantic level, misanalysing the pronoun as [-R] has the consequence that α can form an A-chain with β, hence correctly bind it. According to Reinhart's definition of Rule I, the problematic reference-set computation should therefore be avoided: local coreference is only rejected when undistinguishable from an *ungrammatical* A-binding representation; however, if the binding representation is allowed in narrow syntax, no further interface computation should be invoked. Even more, if the pronoun is analysed as [-R], coreference would not even be an option. Put differently: just as binding is the only option with reflexives, the same should arguably hold when pronouns are analysed as such. In this case, the high rate of acceptance of anaphoric interpretations in ECM by Dutch children should only be due to a problem with the A-chain condition and not to a cumulative effect of Rule I and the A-chain condition. In turn, this would predict equal rates of anaphoric responses in ECM contexts in all languages in which the [±R] overgeneralisation is argued to take place, including Romance languages, contrary to fact.

In sum, the incomplete lexical feature acquisition hypothesis, conceived as a more powerful alternative to incomplete pragmatic acquisition hypotheses in cross-linguistic perspective, runs into a theoretical paradox, by postulating two different sources of DPBE, incomplete lexical acquisition and Rule I, at the same time maintaining the cross-linguistic possibility of a cumulative effect of both, in disregard of the fact that the former would bleed the latter in the relevant contexts.

8.3 THE PROCESSING ARGUMENT OF FEATURE RETRIEVAL IN BAAUW AND CUETOS (2003)

Baauw and Cuetos (2003) offer an answer to the empirical problems left open by the morphological account in its original formulation and attempt to explain cross-linguistic variation in ECM as a result of a probability calculation. The authors propose that children do not *always* analyse pronouns as [-R], but only around 50% of the time. In fact, they also point out (p.238, ft.20) that, if pronouns were never analysed as [+R] extrasentential

reference would not be possible. If this is the case, Dutch children's problems with Rule I come into play in ECM whenever pronouns are correctly analysed as [+R]; hence, besides the 50% chance to interpret the pronoun and the matrix subject as an A-chain, Dutch children additionally have to cope with the computation required by Rule I in those 50% instances in which they do not form an A-chain. As for Spanish, when children correctly analyse third person clitics as [+R], they do not have an alternative to a binding representation and are therefore exempted from further interface computations. According to Baauw and Cuetos (2003), this roughly fits with the Dutch data reported by Coopmans and Philip (1996) and Sigurjónsdóttir and Coopmans (1996) and the Spanish data reported in their own study: in "A-chain" contexts (i.e. in ECM and lexically reflexive predicates) in which Condition B does not apply, Dutch children perform closely to the 25% they predict based on the calculation described; in contrast, the performance of Spanish children in ECM is predicted to be at chance, corresponding to the 50% probability that a pronoun is analysed as [+R].

A second problem in the incomplete feature acquisition hypothesis is that it cannot explain why children's misanalysis should occur sporadically. Although Baauw, Escobar and Philips (1997) assumed that children's problems pertain to the overgeneralisation of the [±R] feature specification, rather than in the incomplete acquisition of phi-features per se – as originally proposed by Coopmans and Philips (1996) – the phenomenon is still attributed to a developmental stage in the acquisition of personal pronouns. As Baauw and Cuetos (2003) point out, this is also at odds with the data reported by the studies which have looked at agrammatism. As Ruigendijk et al. (2006) point out, a lack of knowledge of syntactic features on pronouns is unlikely to be the cause of PIP in agrammatic population, as a study by Vasic and Ruigendijk (2004) showed that "agrammatic aphasic speakers are well able to use gender and number information to guide pronoun interpretation" (Ruidengijk et a. 2006:312). In order to overcome this problem, Baauw and Cuetos (2003) propose that the reason why children misanalyse the lexical features on pronouns half of the time is also processing-related: in particular, that failure to analyse the pronoun as [+R] is due to a difficulty in the retrieval of the relevant features: "in fact, there is online experimental evidence suggesting that children have difficulties in retrieving the morphosyntactic feature content of pronouns (Tyler 1983), which means that the PIP found in ECM constructions may also be due to a processing difficulty after all" (p.251).

This hypothesis, however, whilst solving a problem in Coopmans and Philip's (1996) original proposal, risks to lose descriptive power in the same data: if retrieving the

pronoun's phi-feature causes a processing difficulty, why should this occur in Dutch more than in English? In fact, once the overgeneralisation hypothesis is dismissed, a processing account of feature retrieval opens new rifts. In particular, it is apparent that the processing arguments in the application of the A-chain condition and of Rule I cannot be unified – and they are in fact kept separated in Baauw and Cuetos (2003), who explicitly argue that the phenomenon has a non-unitary cause across languages. The difficulty in retrieving the phi-feature specification on pronouns should arguably reside in the limited processing capacity of the early system (and of brain damaged populations such as Broca's aphasics), although it is not clarified what operation in this process exceeds children's capacity; the processing difficulty in the application of Rule I, in contrast, is expressly defined by Reinhart (2006) as a problem with reference-set computations, namely, with keeping two representations active in memory for equivalence. This is a different task and, therefore, Grodzinsky and Reinhart's (1993) argument does not necessarily apply to other types of computations. In particular, Grodzinsky and Reinhart (1993) predict chance-level performance whenever Rule I is involved, as the child, overwhelmed by the cost of comparing a binding and a coreference representation, ends up guessing between the two. However, retrieving the morphosyntactic features of a pronoun does not involve a reference-set choice and therefore the hypothesis that children should fail in this process around 50% of the time finds no explanatory support.

9. CONCLUSIONS

The body of studies which have tackled the cross-linguistic dimension of pronoun interpretation problems has grown since the nineties and brought to light the weaknesses of the Standard Binding theory thanks to the acquisition evidence that children accept covaluation between a pronoun and its antecedent at different rates in different syntactic contexts. The higher rate of anaphoric interpretations of pronouns in Exceptional Case Marking sentences lent support to the Reflexivity model of binding, which can predict a difference between the two syntactic environments based on the notion of coargumenthood and the separation between the syntactic and semantic level at which reflexive predicates are interpreted. Reinhart and Reuland (1993) also take a fundamental step beyond the logic of Barriers (Chomsky 1986) which had drawn a line between binding and movement relegating them to distinct modules, governed by the Binding Theory and the Chain theory respectively. The crucial interaction which Reinhart and Reuland (1993) maintain between chains and binding, and the conditions on the well-

formedness of both relations, finds ample support in the cases in which the two can be seen dissociated, ECM being the most apparent.

Most importantly, no language has been found so far in which ECM contexts do not give rise to PIP, at the age under discussion and regardless of the type of pronoun. This evidence cannot be underestimated, and convincingly indicates that the concept of local binding domain as intended in terms of governing category within the Standard Binding Theory cannot be sufficient, unless we are willing to relegate the acquisition facts to a matter of syntactic immaturity or, more problematically, renounce to the innateness of the binding principles. In particular, the presence of PIP at the early stages of the acquisition of languages with clitic pronouns poses a problem for the standard binding Principle B by which clitics are uniformly supposed to abide. The split between thematic role (subject) and structural case (accusative) in ECM is finely captured by Reinhart and Reuland's (1993) intuition that Condition B applies at the semantic level at which a reflexive predicate is formed, and therefore that the binding theory itself does not rule out covaluation between an exceptional case marked pronoun and a matrix subject. We will argue that the entanglement between binding and movement is a strong theoretical premise to any account of PIP in Romance, and explore the consequences of clitic movement in transitive and complex sentences for binding relations.

We have also observed that, despite its adherence to the Reflexivity model and the interface account of PIP as originally proposed in Grodzinsky and Reinhart (1993), Baauw and colleagues' (1997) hypothesis that incomplete lexical acquisition might be a concomitant cause of DPBE across languages runs into the paradox of calling Rule I back into question in ECM contexts in a way which seems to be incompatible with the definition of binding they assume. If the Condition on A-chains is the only principle which forbids the pronoun to appear in (46c), children's analysis of pronouns as non-referential, hence anaphoric elements should yield a grammatical binding representation, therefore Rule I should not be invoked for the same reason why it is not invoked in the interpretation of anaphors. Therefore, the Incomplete Lexical Feature Acquisition hypothesis makes the right prediction that the same chance-level rate of anaphoric interpretations should occur in languages in which no lexical overgeneralisation takes place, as in both ECM and simple sentences Rule I would be relevant and, according to the hypothesis, the source of the problem; however, it leaves unexplained why ECM contexts in which Condition B does not apply should give rise to different rates of anaphoric interpretations in Romance and non-Romance languages when the problem is attributed to incomplete acquisition of the

referentiality specification on third person pronouns. In Baauw and Cuetos (2003), it is proposed that both the condition on A-chains and the Rule I computation are applied correctly at chance level and that, therefore, Dutch children's extra-severe problems in ECM stem from blocking coreference in the cases in which the pronoun is correctly analysed as [+R]; however, we have pointed out that the processing resources involved in the two computations are likely to be of a different type and that, therefore, the logic endorsed in Grodzinsky and Reinhart (1993) cannot convincingly be extended to Baauw and Cuetos' (2003) probability calculation to account for children's below-chance performance in ECM sentences. In the following chapter, we will present two recent proposals which have tried to explain the source of PIP across different classes of pronouns and syntactic contexts under a unifying analysis.

CHAPTER 2

PROCESSING ACCOUNTS OF ROMANCE PIP

1. INTRODUCTION

All the accounts of the PIP advanced so far treat clitic pronouns as bound variables. On the one hand, under the modular view endorsed by Avrutin and Wexler (1992) and Thornton and Wexler (1999), the pragmatic component is not concerned with the interpretation of clitic pronouns; therefore, if this is true, children's problems with the interpretation of object clitics in ECM sentences cannot be due to a pragmatic difficulty. On the other hand, the processing accounts proposed by Baauw et al. (1997) and Baauw and Cuetos (1993), share the assumption that clitics can only be interpreted via binding; thus the Romance PIP cannot be explained as a Rule I effect either, given that Rule I is only invoked when coreference is an option. These accounts, however, capitalise on an alternative definition of binding – Reflexivity (Reinhart and Reuland 1993) – which predicts a dissociation between two grammatical principles regulating binding and movement – Condition B and the A-chain condition – in Exceptional Case Marking, and assume that children's non-adultlike interpretations in Romance ECM constructions are due to the application of the A-chain condition. We pointed out that, since the knowledge required for the application of the A-chain condition is morphosyntactic in nature, such hypothesis has weak compatibility with a processing argument of the kind involved in reference-set computations (as in Reinhart 2006).

Recent accounts of the Romance PIP (Baauw et al. 2011; Di Sciullo and Agüero-Bautista 2008) have restated the phenomenon as caused by the availability of multiple semantic representations for truth-conditional equivalence. The general idea behind processing theories is that children have an immature processing system but the same underlying grammar as adults. If the grammar is intact, apparently deviant linguistic behaviour stems from the incapacity to carry out tasks that involve too high computational load. The accounts which we are going to discuss assume that the PIP has the same underlying cause across languages. In the spirit of Reuland's (2001) theory of binding, Baauw et al. (2011)

propose that the covaluation of an exceptional case-marked object clitic and a local subject violates a global economy principle which ranks the encoding of anaphoric dependencies in logical syntax as more costly than feature checking in narrow syntax – if it translates into equivalent semantic expressions. A different argument has been advanced by Di Sciullo and Agüero-Bautista, who contend that ECM sentences are special in that they allow the clitic to be interpreted in the surface position or in the initial merge position.

2. PRIMITIVES OF BINDING

Under Reuland's (2001) framework, binding is revisited under minimalist guidelines and reduced to the interaction between narrow syntax and the other subsystems of the human language. The Primitives of Binding model abandons representational notions of the Reflexivity model (Reinhart and Reuland 1993) to derive both binding conditions and the A-chain condition from the properties of the computational component of the human language (C_{HL}). A crucial property of C_{HL} is the Inclusiveness Condition (Chomsky 1995), which does not admit new elements to be inserted in the course of the derivation – i.e. the derivation only works with the lexical items selected from the numeration. Chains therefore cannot contain indices under minimalist principles: "chains in R&R 1993 are representational and based on coindexing. MP-type chains are derivational and not based on coindexing" (Reuland 2001:451). In order to obey the Inclusiveness Condition, a chain can only be derived via feature checking. Feature checking allows the features of the tail to be *deleted and recovered* by the head of the chain: "therefore, if we have a pair <F_C, F_C> and one member is used to delete the other, the remaining member can take over the role of the deleted one in full. In other words, different occurrences of such features are indeed just copies of one another" (Reuland 2001:456). Referential dependencies in narrow syntax can only encode anaphoric relations, because pronouns have a feature, namely, number, which cannot be deleted. At the C-I interface, pronouns can be translated as bound variables in logical syntax or recovered from the discourse storage in pragmatics. In a sentence like (1a), the ungrammatical dependency between *Oscar* and *him* can be expressed at the C-I interface as a bound variable dependency or coreference:

(1) a. $Oscar_i$ voelde [hem_i wegglijden]

      $Oscar_i$ felt [him_i slide away]

   b. Oscar λx (x voelde (x wegglijden))

   c. Oscar λx (x voelde (a wegglijden))   & a=Oscar

At the interface, the interpretation yielded by (1b) is indistinguishable from the interpretation yielded by a feature chain in narrow syntax; therefore, a bound variable chain is uneconomical because a cheaper option (binding in narrow syntax), a non cross-modular one, would translate into the same representation at the interface. In pragmatics, *Oscar* and the pronoun are two distinct objects because the pronoun receives a value directly from the discourse.

The encoding of referential dependencies outside narrow-syntax calls into the picture a fundamental question, namely, the division of labour between narrow-syntax and the other system of the human language – the semantic and pragmatic components. According to Reuland (2001), cross-modular operations are more costly than operations within one module, in fact a universal hierarchy of economy in encoding referential dependencies can be derived under processing considerations:

> "when it comes to assigning a value to some element β, the cheapest way to do it is in the syntax (by linking it to some element α, creating a syntactic chain), and the costliest way to do it is by interpreting it independently, accessing the discourse storage. Intermediate in cost is to do it in the interpretive process, turning it into a variable that is stored until it can be logically bound by an antecedent" (Reuland 2001:474).

The economy hierarchy of referential dependencies thus explains also why reflexivity needs to be licensed, that is, why the following contrast holds between SE and SELF anaphors in languages with a tripartite anaphoric system:

> (2) a. Willem$_i$ schaamt zich$_i$
>
>   Willem shames SE
>
>   b. Willem$_i$ haat zich$_i$
>
>   Willem hates SE

As we have seen in Chapter 1§7.2, according to Reinhart and Reuland (1993) the creation of a chain has the consequence that one argument is suppressed in the semantic interpretation, i.e. the head and the tail of the chain are interpreted as one argument (against Chomsky 1986). This process is called "arity reduction" by Reuland (2001). In (2a), the verb *shamen* is an inherently reflexive predicate, which only takes one argument; in contrast, in (2b) the verb *haten* is a two-place predicate, and therefore the chain <Willem, zich> is ill formed, not as a result of a non-convergent derivation in narrow

syntax but because "there is just a mismatch between the syntactic structure and semantic properties of *haten*" (Reuland 2001:478). In fact, the "reflexivising function" of SELF-anaphor is explained under Primitives of Binding because SELF-anaphors are arguments formally distinguishable from their antecedents, hence able to preserve arity. The distribution of SE anaphors in ECM follows from the same principle:

(3) Jan_i voelde [$zich_i$ wegglijden]
    Jan felt [SE slide away]

The sentence in (3) is well-formed because the SE anaphor is not an argument of the main verb. *Voelde* is a two-place predicate, but it takes the whole ECM clause as an argument: hence, *Jan* and *zich* do not form a chain. Condition B and the A-chain condition, under this model, are thus derived from a general interface requirement on chains, namely, to preserve the arity of predicates – i.e. the theta roles which the predicate takes in semantics – and the economy hierarchy of establishing referential dependencies with the lowest number of cross-modular operations.

3. BINDING IN SEMANTICS AND IN NARROW SYNTAX (BAAUW ET AL. 2011)

Abandoning the feature retrieval hypothesis, Baauw et al. (2011) have restated the processing argument as a processing difficulty in blocking referential dependencies outside narrow syntax under Reuland's (2001) Primitives of Binding model. In order to explain children's apparent violations of the economy hierarchy proposed by Reuland (2001), Baauw et al. (2011) capitalise on Avrutin's (2006) hypothesis that narrow syntax, the "hard-and-fast" computational component in the adult grammar, is not the cheapest route for children and populations with limited processing capacities. Clitics, unlike full pronouns, are assumed to lack a coreference option. In a simple transitive sentence, this is predicted to yield adult-like performance, because neither an A-chain nor a bound-variable construal is allowed, given that the chain would be translated into the semantic representation as a one-place predicate:

(4) a. La niña la señala
    The girl is pointing at her
    b. λx (x señala x)

In Reuland's (2001) terms, the chain (x, x) would not preserve arity in a two-place predicate like *señala* and thus yield an ill-formed semantic representation. In ECM clauses, a chain cannot be created in narrow syntax between a pronoun and a matrix subject via

feature checking; however, binding in semantics – i.e. a bound-variable dependency between the matrix subject and the clitic – is possible given the non-coargumenthood of subject and object in regard to their semantic predicates. In fact, covaluation of the clitic and the matrix subject does not cause an arity violation on the matrix predicate. The adult processing system, however, blocks semantic binding because it operates under a universal economy hierarchy which ranks dependencies established in the semantic component as more costly than dependencies established in narrow syntax – when the output is undistinguishable. Conversely, the child may optionally fail to block semantic binding and thus allow a bound variable dependency between the clitic and the matrix subject, if the latter is ranked as an equally-economical option. For the child acquiring a language like Dutch, the task is even harder because coreference is also an option: therefore, rejecting a sentence like (5) involves blocking two types of anaphoric dependencies, in logical syntax (semantics) and in the discourse:

(5) Jan$_i$ zag [hem$_i$ dansen]

Jan saw him dance

If the strategies to encode referential dependencies outside narrow syntax in child Dutch and in Spanish do not abide by the economy hierarchy proposed by Reuland (2001), an explanation must be found for why they are chosen around 50% of the time. Again, Baauw et al. (2011) propose that children's performance is simply accountable based on a probability calculation: both binding in semantics and coreference are blocked around 50% of the time. Since in ECM sentences both construals are potentially available to Dutch children, there is a 25% chance to succeed in blocking them; Spanish children, in contrast, only have to reject covaluation between the matrix subject and the exceptional Case marked clitic via a bound-variable chain. This is predicted to occur 50% of the time.

It is apparent that the Primitives of Binding framework offers a theoretical advantage to acquisition theories to account for the special status of PIP in children's interpretations without positing a separate rule – the A-chain condition – which involves mastery of morphosyntactic knowledge. Avrutin's (2006) Weak Syntax hypothesis maintains that the syntactic component is qualitatively intact but "slowed down" in populations with less processing resources, with the result that computations in the narrow-syntactic component – automatised and "subliminal" in the adult non-impaired brain – may become as costly as computations in the other linguistic modules, namely semantics and pragmatics. At the same time, however, this hypothesis is far from providing an answer to

how the division of labour between the computational component and the other linguistic subsystems operates in the child grammar. The disrupted hierarchy in children's strategies of reference assignment appears to result in a random choice of a bound-variable *or* a coreference construal in Baauw et al.'s (2011) hypothesis, but if so it is not clarified why this should occur 50% of the time. Blocking the relevant construal, in fact, would be a different strategy from guessing (Grodzinsky and Reinhart 1993) – which is the only non-problematic explanation for chance level performance on statistical grounds.

It should be observed that, under Baauw et al.'s (2011) account, the child may choose a less economical strategy because her immature processing system does not operate under adult-like considerations of global economy; if this is the case, the consequence is not a processing breakdown, i.e. failure to process the relevant semantic representations for equivalence. Ruigendijk, Vasić and Avrutin (2006) speculate that "the relationship between the syntactic and the extrasyntactic mode can be easily tipped towards one of the two systems in competition. What exactly can change the balance is not clear at the moment, but in any case, the observed chance performance would be consistent with such a situation" (p.313). However, if narrow syntax is weakened, it is not obvious why the hierarchy assumed by Baauw et al. (2011) based on Reuland (2001) should not be preserved at least in the other two systems – i.e why *both* the bound variable construal and the coreference construal should be blocked at chance. In fact, it is reasonable to imagine that, for a weak computational system, encoding a dependency through discourse should be always cheaper than creating a variable chain linguistically in logical syntax. This is an option which Ruigenijk et al. (2006) indeed admit in their discussion of the Dutch agrammatic data: "a second option is that the discourse dependency is always more economical than syntactic dependencies for these patients, and they can always, in principle, establish such dependency between the pronoun and the main subject. However, since there is a choice between two possible referents (either inside or outside the sentence) in our task, they could in principle choose between the two, thus yielding overall a chance performance again" (Ruigenijk et al. 2006:313). It is paramount to point out, however, that choosing between two pragmatic referents is a very different computation from the choice (i.e the evaluation of the processing costs involved) between two strategies of reference assignment: the former is a choice within one module, and not an evaluative computation at the interface.[1] We conclude that, if a Weak Syntax hypothesis

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[1] We will come back to this observation in regard to the role of the task adopted to assess the PIP in Chapter 7§4.

does not explain how the division of labour between narrow-syntax, semantic and discourse is instantiated in the child grammar, it seems ill-advised to predict the severity of the PIP in ECM sentences in Romance and non-Romance languages based on probability calculations.

4. Scope Economy: Di Sciullo and Agüero-Bautista (2008)

Di Sciullo and Agüero-Bautista (2008) propose a different argument that attempts to unify the processing cause of PIP across languages; in fact, they also argue that Romance PIP is caused by the comparison of representations for truth-conditional equivalence. It is not Rule I per se which is difficult to carry out, but any reference-set computation of this sort. Di Sciullo and Agüero-Bautista (2008) assume that the coreferential reading is excluded for clitics, so Rule I cannot be the cause of PIP in Romance. However, another operation is possible, namely, reconstruction, which occurs if the clitic is interpreted in its original position:

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

     the mother her sees t dance

Reconstruction involves comparison of two representations: the one with the clitic in its surface position and the one with the clitic reconstructed in the lower clause. This operation is as difficult as Rule I and Romance children display PIP in ECM sentences because, according to Di Sciullo and Agüero-Bautista (2008), these are the only ones that allow reconstruction.

This analysis also addresses the cross-linguistic distribution of PIP on the grounds of syntactic considerations, namely, whether the pronoun occurs inside or outside the vP. According to Di Sciullo and Agüero-Bautista (2008), the reason why English children allow an object pronoun to corefer with a local subject has to do with the syntactic and semantic configuration to which subject movement gives rise. When the subject is raised out of vP to spec,TP, it leaves a copy coindexed with it inside the vP.

(7)
```
            TP
          /    \
        DP      \
       / \       vP
      /___\     /  \
  Mama Bear₁   /    \
          Mama Bear₁  VP
                     /  \
                 touches  her₁
```
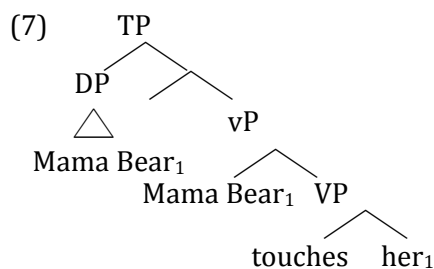
An unmoved subject cannot bind a vP-internal pronoun. Following Heim and Kratzer (1998), the authors assume that semantic binding obtains via XP movement – i.e. Quantifier Raising – which accomplishes lambda abstraction. In (7), therefore, the pronoun and the vP-internal copy of the subject can only be covalued via coreference. However, the configuration at the TP level allows for two different strategies to interpret the sentence: under the binding strategy, the moved subject binds both its trace and the pronoun; under the coreference strategy, the subject binds its copy and its copy simply corefers with the pronoun. Rule I says that, if two LFs convey the same meaning, the binding construal should be ranked as more economical than local coreference. Children, however, fail in the application of Rule I and resort to guessing.

Romance children are argued to be exempted from Rule I because the binding representation is the only one available to them, and Principle B bars it as ungrammatical. According to the authors, when the interpretation of a pronoun is solely regulated by binding, as in the case of clitics, children would produce an LF like (8):

(8)

TP
DP $_i$ La niña$_i$ — T'
T — XP
la$_i$ — X'
seca — vP
t$_{sub}$ — v'
t$_{v'}$ — t$_{la}$
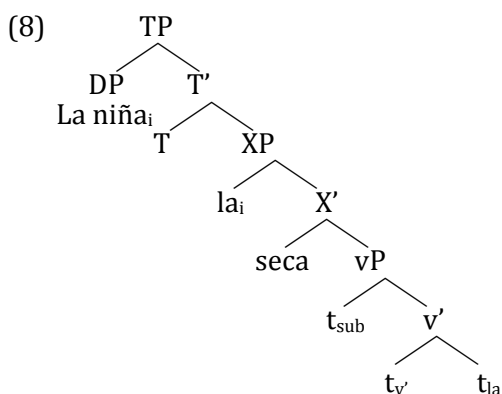
In such configuration, the moved subject can in principle bind the clitic: "since binding is possible in this case, the algorithm for binding/coreference processing dictates that that should be the strategy taken to resolve the anaphoric relation between the subject and the clitic" (Di Sciullo and Aguero-Bautista 2008:88). The binding strategy, however, marks (8) as a violation of Principle B and thus the child interprets the sentence as ungrammatical.

In the case of Romance ECM sentences, the trigger for the PIP is argued to be Scope Economy (from Fox 2000), which dictates that "the output of a scope-shifting operation must be semantically different from its input" (p.89). When the child analyses an ECM sentence such as "la niña la ve bailar", she gets stuck in the comparison of two sematic representations: one in which the clitic is interpreted in its derived position and one in

which it is reconstructured in its base argument position, i.e. the subject position of the infinitival clause.

In order to justify why reconstruction is an option only in ECM clauses, Di Sciullo and Agüero-Bautista (2008) advance that clitics have the same semantic denotation as generalised quantifiers in the child grammar (i.e. <e;,t; t>). Following Partee's (1987) idea that type <e> is the most specific semantic type (i.e. obligatory for referential NPs) and the generalised quantifier type <e,t; t> is the most general type for NPs, they maintain that the child assigns the most general semantic denotation to pronouns which occur in non-argument position (as an *elsewhere condition*) and therefore treats clitic pronouns as generalised quantifiers. Quantifiers cannot reconstruct in object position due to a type mismatch, which constrains semantic composition: transitive verbs (semantic type <e; e,t>) cannot combine semantically with generalised quantifiers (<e,t; t>) to obtain the denotation of VP, which is a function from individuals to truth values, i.e. <e,t>. In other words, a transitive verb can only take an individual <e> as internal argument in order to be interpreted by semantic composition. Therefore, Di Sciullo and Agüero-Bautista (2008) conclude that object clitics never give rise to PIP when they are merged in object position because the possibility of reconstruction does not arise. However, if the clitic is merged in subject position, as in ECM constructions, reconstruction is a possible option. Failing to compare two semantic representations for truth-conditional equivalence, the Romance child is predicted to perform at chance.

5. Some Problems in Di Sciullo and Agüero-Bautista's Semantic Analysis

There are two major concerns with this analysis. First, the authors' claim that clitics can reconstruct because they have the semantic denotation of generalised quantifiers seems problematic. On purely functional-semantics grounds, it is not clear what function the clitic would denote if its semantic type was <e,t; t>. Under Heim and Kratzer's (1998) definition, generalised quantifiers do not denote individuals, but second order predicates, since they take functions as arguments and yield truth values – e.g. "true" if the property denoted by the predicate applies to *all*, *none* or *some* of the individuals in the set. It is also unclear how, by the general rules of semantic composition, a node of the semantic type <e,t; t> can semantically combine with the node T in the final clitic landing site, i.e. ClP.

Secondly, Di Sciullo and Agüero-Bautista's analysis of Quantifier Raising applied to clitics appears to contradict a crucial property of the rule (as conceived by Heim and Kratzer): QR is an optional rule. When QR is applied to the antecedent of a VP-internal pronoun to

accomplish semantic binding, as in the structure illustrated in (7), another strategy, namely coreference, remains possible. Clitics, however, undergo obligatory movement out of vP, which creates a variable chain with the VP-internal copy. Di Sciullo and Agüero-Bautista (2008) maintain that the same configuration in (7) and (8) blocks binding between a QR'd subject and a pronoun – full or clitic – but in doing so they do not explain why clitics, differently from full pronouns, are obligatorily interpreted as bound variables. In Chapter 4§5 we will explore the possibility that the binding effects of object cliticization arise in the course of the clitic derivation and are therefore an entirely narrow-syntactic computation.

Furthermore, QR is strictly constrained by locality. This entails that full pronouns cannot always be interpreted via binding. In fact, In order to bind a pronoun, a QR'd DP must raise high enough in the clause to c-command it. Binding is not possible, for example, between a DP and a pronoun inside a relative clause, as in (9):

(9) Every problem [that no man could solve] kept *him* busy all day (Heim and Kratzer 1998:278)

If the pronoun were bound by the quantifier, the sentence in (9) would have an LF in which [no man] moved out of the relative clause to take scope over the matrix sentence. This movement is not licit, therefore it is impossible to imagine a representation in which the index on the quantifier binds the pronoun. The latter must be free, thus that its reference must be contributed by the context. If the DP were referential, coreference would be possible. However, in (9) the quantifier does not refer, so it is not possible to imagine the pronoun to bear the same index as [no man], even if via coreference rather than binding. This is why (9) is most naturally interpreted as referring to an individual in the context, whose reference cannot be understood from the sentence in absence of contextual information. Therefore we have to conclude that all cases of coindexing between a pronoun and a DP inside an island involve coreference. Indeed, this is what Heim and Kratzer conclude: "the highest adjunction site that we could possibly choose when we QR a DP is the root node for the whole sentence. It follows from this that bound-variable anaphora is a sentence-internal relation" (p.279).

The locality of QR entails very clear predictions. First, that non-referential subjects inside islands cannot bind pronouns (as shown in 9). Secondly, the converse also holds: a reflexive pronoun (i.e. non-referential) cannot be bound by a subject from a non-local domain (imagine a sentence like "ever problem that no man could solve kept himself

busy"). If a clitic pronoun were obligatorily in a semantic binding configuration such as the one assumed in (8) in order to be interpreted as a bound variable, the Romance counterpart of (9) with a clitic pronoun would be uninterpretable. This is a serious contradiction in Di Sciullo and Agüero-Bautista's analysis, because the claim that clitics are *always* bound is not compatible with the Predicate Abstraction rule that they overtly follow. In fact Di Sciullo and Agüero-Bautista (2008) seem to assume the same binding configuration for clitics and SELF-anaphors, with the difference that clitics obey Principle B and SELF-anaphors obey Principle A. This argument amounts to viewing Principle B as a filter which only blocks local binding after the representation in (8) has been generated. Differently from Principle A, Principle B has nothing to say about where eventually the clitic will pick up its reference. Otherwise, coindexation between a clitic and a DP inside an island would simply be impossible, contrary to fact.

In sum, this analysis faces serious problems from a semantic viewpoint. The first objection concerns the authors' analysis of clitics as generalised quantifiers, from which they derive their reconstruction argument. Even more important issues regard the analysis of binding they assume for clitic pronouns. Clitics are assumed to be interpreted only via binding – never via coreference – because they are c-commanded by a QR'd subject; at the same time, since the binding strategy is prevented by Principle B, they are ruled out in a local binding reading. We have objected, firstly, that QR is an optional rule, in fact pronouns also have the option to corefer (in which case QR does not apply). Secondly, we observed that QR is also constrained by locality: if binding was obligatory for clitics in the same way it is for SELF-anaphors, clitics could not corefer with referential DPs inside islands. Finally, Principle B in this analysis appears to intervene only to bar an LF which has been formed, which seems counterintuitive.

6. CONCLUSIONS

In this chapter, we have brought to light some contradictions deeply rooted in the processing accounts which have so far attempted to explain the presence of PIP in Romance ECM predicates. Both Baauw et al. (2011) and Di Sciullo and Agüero-Bautista (2008) maintain that clitic pronouns cannot undergo coreference and that the PIP testifies to immature processing capacities in the early system, namely, children's failure to deal with competing semantic representations for equivalence. Reuland's (2001) model of binding relations, stretched towards the search for the requirements imposed by the language faculty for Reflexivity to be licensed, has underscored that the locality effects on binding relations should be derived from the interaction between the different

submodules of the grammar. This amounts, ultimately, to define global economy as a the principle responsible for the division of labour between syntax, semantics and pragmatics. The "weakness" of the syntactic module in children's computational system, according to Avrutin (2006), causes the economy hierarchy to change. We have observed, however, that the claim that the child's processing system operates under a different hierarchy of economy to assign reference is too vague, until a coherent theory of the division of labour between the different components of the early language faculty is clarified. In particular, Baauw et al. (2011) appear to suggest that all the strategies are ranked as equally costly in the early system, but such assumption is far from obvious, given that the weakness of the narrow-syntactic component should at least imply even higher cost for encoding dependencies in logical syntax – the latter being a cross-modular operation. Even so, moreover, children's performance could not be attributed to chance: since children's "failure to block" an uneconomical strategy stems from a different economy hierarchy altogether and not from a processing breakdown, it cannot reliably be predicted to occur 50% of the time.

A second important observation we have raised is that a representational notion of the principle which constrains the interpretation of clitic pronouns is still highly inadequate. The problems of interpreting the Principle B effects which arise in the clitic configuration have emerged clearly in Di Sciullo and Agüero-Bautista's (2008) analysis. Clitics, differently from full pronouns, do not allow for optionality between binding and coreference in simple sentences. We have observed that movement is a critical property of object cliticization; in order to justify the assumption that clitics are interpreted via binding because they are c-commanded by a derived subject, we would have to accept a very counterintuitive notion of principle B as a constraint on a formed representation. Such idea aligns bound clitics with bound full pronouns assuming that binding obtains via subject movement creating lambda abstraction; if this were true, two fundamental properties of this operation – which Heim and Kratzer (1998) define as Quantifier Raising – would be violated in cliticization: firstly, the optionality of this rule, which is at odds with the narrow-syntactic hence obligatory nature of clitic movement; secondly, locality, which is overtly violated when an antecedent is covalued with the clitic from inside an island: if QR is a sentence-internal phenomenon, such configuration could never arise in island domains therefore we would expect these clitics to be uninterpretable. We conclude that a theory of binding effects in object cliticization must crucially confront itself with two questions: firstly, how binding effects arise in simple object cliticization preventing the

possibility of coreference; if this is a non-optional outcome, it must arise in narrow-syntax, not in logical syntax – the module at which QR of the subject applies; secondly, what the Romance PIP in ECM sentences may tells us about the division of labour between the different components in the early grammar – a question which the Weak Syntax hypothesis has left unanswered. To investigate the syntactic factors which appear to be involved in the Romance PIP, we will first explore the syntactic properties of Romance complex predicates in order to identify the distinctive properties of the construction which is known to give rise to PIP, namely, Exceptional Case Marking. By conducting a comprehensive analysis of the clitic derivations involved in different types of complex predicates we will demonstrate that both the Clitic Exemption Effect and the PIP testify that binding and coreference options are determined in narrow syntax.

CHAPTER 3

ROMANCE COMPLEX PREDICATES AND RESTRUCTURING

1. INTRODUCTION

The syntactic distribution of Romance PIP in clitic climbing environments is still poorly understood. Acquisition studies have shown that not all complex predicates are delayed: Exceptional Case Marking constructions (i.e. constructions with perception verbs) give rise to anaphoric interpretations in children aged three to six, but restructuring sentences seem to be not problematic (Escobar and Gavarrò 1999). The delay in adult-like comprehension of clitics in some clitic climbing contexts but not other thus compels us to analyse the derivation of clitics in complex predicates. The discussion that follows aims to provide a theoretical overview of the internal structure of complex predicates and a phase-based analysis for the properties of the phenomenon.

Complex predicates are "structures in which a verb and its infinitival complement appear to form a single unit" (Burzio 1986). In Italian, complex predicates can be formed of restructuring (i.e. modals, aspectuals, some motion verbs), perception and causative verbs. The distinctive property of Restructuring is that it appears to give rise to a "clause union" (Rizzi 1978) between a finite verb and an infinitival. The debate around this phenomenon has traditionally concerned the status of the finite verb – functional or lexical. Under a functional analysis of restructuring verbs, the structure is viewed as monoclausal, whereas under a lexical analysis the phenomenon is fundamentally biclausal. The gist of our proposal is that monoclausal and biclausal analyses can be reconciled under a phase based analysis. Following Boeckx and Gallego (2008; 2009) we maintain that transparent domains are defective phases, hence phi-incomplete heads. The advantage of this approach is to derive the properties of clitic climbing in different complex predicates (Restructuring, ECM and causative constructions) from the properties of the T and v heads involved in these constructions. In acquisition perspective, a derivational analysis of clitic climbing in complex predicates can shed more light on the syntactic factors which

distinguish the constructions affected by PIP. Particular attention will be dedicated to the Fair-Par construction, which has never been tested experimentally in the PIP literature.

2. RESTRUCTURING

2.1 DEFINING RESTRUCTURING

"Restructuring constructions are infinitival constructions which are characterised by the lack of clause-boundedness effects" (Wurmbrand 2004:991).

Traditionally, the major evidence that restructuring has taken place, forming a single unit, is constituted by syntactic phenomena which require transparent domains (Burzio 1986, ch.5), namely, clitic climbing (1), long object preposing (2, 3) and auxiliary switch (4):

a. Clitic climbing:

    A clitic thematically related to the embedded verb appears on the matrix verb.

    (1) Mario lo vuole leggere

    Mario it.wants to read

    'Mario wants to read it'

b. Long object preposing (SE-constructions)/ long passive:

    An embedded object moves to the matrix subject position.

    (2) Questi libri si volevano proprio leggere

    these books SE wanted really to read

    'we really wanted to read these books'

    (3) dass der Traktor [zu reparieren] versucht wurde (Wurmbrand 2004)

    that the tractor-nom [to repair] tried was

    'that they tried to repair the tractor'

c. Auxiliary Switch:

    The main verb is "transparent" to the auxiliary choice of the embedded infinitive. Whereas Italian *volere*, in its non-restructuring usage, takes auxiliary *avere*, when it appears in restructuring it inherits the auxiliary (*essere*) of the lower verb:

    (4) Mario sarebbe proprio voluto andare a casa

    Mario would-be really wanted to go home

    'Mario would have really wanted to go home'

The first extensive analysis of restructuring is offered in Rizzi (1978), who postulates a "restructuring rule" creating one verbal complex from the main verb and the infinitival (a clause-merge transformation).

In Burzio (1986) restructuring is accounted for as VP movement from the infinitival clause akin to the causative Faire-Infinitive (FI) structures of Kayne (1975): in both cases, the matrix verb selects a sentential complement (S') in which the VP has moved stranding the external/agent theta role behind. The main characteristic of Burzio's analysis is that it treats the finite verb+infinitival complex as derived – from an underlying biclausal structure:

(5) Giovanni$_i$ dovrebbe [$_S$ t$_i$ prendere il libro] →
   Giovanni would have to fetch the book
   Giovanni$_i$ dovrebbe [$_{VP}$ prendere il libro][$_S$ t$_i$ ___]

(6) Giovanni$_i$ vorrebbe [$_S$ PRO prendere il libro] →
   Giovanni would want   to fetch the book
   Giovanni$_i$ vorrebbe [$_{VP}$ prendere il libro][$_S$ PRO$_i$ ___]

The original idea was that restructuring results from a transformation applied to a biclausal structure: in (5) the raising verb *dovere* selects a sentential complement at D-structure and triggers S'-deletion, that is, it deletes the S' projection of its complement and can govern the trace in the embedded subject position. After the transformation, the embedded VP is preposed to the embedded subject and the SS order is derived. In the control structure in (6), the control verb *potere* does not trigger-deletion, as witnessed by the fact that only ungoverned PRO is allowed in the embedded clause. However, the same operation applies, namely, VP movement, which gives rise to a restructuring complex. In a nutshell, restructuring is viewed as a syntactic operation which can apply regardless of the properties of the matrix verb: "there is one syntactic process of VP-movement that applies to verbs of different classes, and everything else follows from this maximally simple statement" (Burzio 1986:325).

Recently, however, monoclausal approaches to restructuring have been predominant. Cinque (2004) advanced the proposal that restructuring verbs are always functional heads in the articulated IP field. Restructuring would involve a monoclausal structure where the infinitive is the "true" lexical verb merged in VP, whereas the finite verb is merged in one of the XPs that compose Cinque's universal and rigid hierarchy of functional heads.

Wurmbrand (2001; 2004) also endorses a monoclausal analysis of restructuring. However, she provides empirical evidence that the functional analysis of restructuring verbs is incomplete. In particular, it is not always the case that restructuring verbs lack thematic properties. Under the assumption that thematic relations pertain to VP and functional heads cannot participate in theta-role assignment, she concludes that a subclass of restructuring verbs is lexical in nature. A third approach (Cardinaletti and Shlonsky 2004) challenges the sharpness of a functional vs. lexical dichotomy in favour of a tripartition including a class of quasi-functional verbs, namely, motion, causative and perception verbs. Despite the different treatment of functional (i.e. raising) and quasi-functional verbs (i.e. perception verbs and causatives), the hierarchy is still intended to apply at a monoclausal level, with only one lexical position available in the VP. Finally, a different type of approach to restructuring has been proposed by Roberts (1997; 2010) in terms of incorporation. Under this approach, restructuring amounts to head movement and creates a complex verbal head, whereby the infinitival complement is in the extended projection of the higher restructuring verb (Roberts 1997). In more recent work (Roberts 2010), incorporation has been assimilated to movement within minimal phases – whereby each v counts as a phase – thus that restructuring amounts, in fact, to vP recursion. We will discuss the adequateness of these approaches in the following sections, with particular attention to how monoclausal and biclausal analyses can account for the phenomenon of clitic climbing.

The present analysis will reconcile the mono- and the bi- clausal analyses of restructuring under the assumption that the finite verb and the infinitival predicate belong to different vPs. Following Chomsky's (2001) model of *phases*, we will derive the properties of different complex predicates based on the defectiveness/full feature specification of the matrix v, the embedded T and the embedded v.

2.2 MONOCLAUSAL APPROACHES TO RESTRUCTURING

Cinque (2004) argues that restructuring involves a monoclausal structure, in which the finite verb is assimilated to a functional head projected in the inflectional field, whereas the infinitival verb is a lexical head merged in the VP. Restructuring verbs, therefore, do not differ from modals, auxiliaries, and aspectual verbs, and do not participate in theta role assignment. Moreover, the occurrence of restructuring verbs is not free, but each head expresses different mood, tense, aspect and voice properties in dedicated functional XP projections which comprise the cartographic map of the IP. This approach predicts that

restructuring verbs obey a rigid hierarchical order, which surfaces when two restructuring verbs co-occur:

(7) Non vi vuole smettere di importunare (Cinque 2004:139)[1]
   not you want-3SG stop to bother
   'He doesn't want to stop bothering you.'

(8) *Non vi smette di volere importunare
   not you stop-3SG to want to-bother
   'He doesn't stop to want to bother you'

The examples in (7) and (8) show that the order of occurrence of the restructuring verbs is rigid and cannot be reversed because "volere"(want) is merged in a higher functional head (ModP$_{volitional}$) than "smettere"(stop), which is in AspP$_{terminative}$.

Most importantly, the hierarchical order seems to be rigid even when there is no other apparent evidence for restructuring (e.g. clitic climbing):

(9) Soleva smettere di vederla ogni sei mesi(Cinque 2004:154)
   use-PAST-3SG stop of see-her every six months
   'He used to stop seeing her every six months.'

(10) *Smetteva di solerla vedere ogni sei mesi
   stop-PAST-3SG of use see-her every six months
   'He stopped using to see her every six months.'

Although the clitic appears in the infinitive, the two restructuring verbs ("solere"(to use to) in AspP$_{habitual}$, and "smettere"(to stop) in AspP$_{terminative}$) must occur in a rigid order, as expected if the verbs fill functional heads AspP$_{habitual}$>AspP$_{terminative}$ that are part of the inflectional skeleton of the clause.

The final observation is that auxiliary switch can also take place in absence of clitic climbing:

(11) Maria è dovuta venirci molte volte (Cinque 2004:66)
   Maria is must-PART-FEM-SG come-here many times
   'Maria has had to come here often.'

---

[1]Examples discussed in Haegeman (2006:486-487).

Cinque (2004) concludes that restructuring always involves a monoclausal structure in which the two verbs occupy two different projections, in the functional IP and in the VP field respectively.

Cardinaletti and Shlonksy (2004) back up Cinque's analysis of restructuring, proposing that clitic climbing takes place within a single CP and that cliticization can target two positions in the clause (and no other): the clausal IP position, the target site of clitic climbing, and a low IP position made available by the infinitival lexical verb. The latter is the position which competes with the morpheme [e] on the lexical infinitival verb (as in the alternation andar-*ci*/andar-*e* in 12(a, b, c):

> (12) a. ?Sarei voluto poter andar*ci* con Maria.
>
>   (I) would-be wanted (to) be-able (to) go.there with Maria
>
>   'I would have wanted to be able to go there with Maria.'
>
>   b. *Sarei voluto poter*ci* andare con Maria.
>
>   c. *Ci* sarei voluto poter andare con Maria.

The authors point out that this morpheme is not part of the infinitive morphology, which is only [r], but must be hosted by the same projection in the low VP area below Voice targeted by infinitive verbs and enclitic pronouns (see 12a). Partial climbing is not possible (12b). In fact, when two restructuring verbs occur in a sequence, the pronoun can potentially target only two positions: the higher modal verb (12a) or the lexical infinitival (12c) where it is in complementary distribution with the [e]. Again, distributional facts are taken to support the hypothesis that different restructuring verbs are merged in different projections in the IP area.

They also observe that, alongside so-called functional restructuring verbs, there is a class of quasi-functional verbs, namely, motion, perception and causative verbs, which behave differently from modals and volitional verbs. In brief, it is argued that: modals are bare functional heads, in Cinque's hierarchy of inflectional projections; lexical verbs head a fully-fledged VP shell (in other words, project a vP with full argument structure); in an intermediate site, lower than Voice but higher than VP, is the merge position of quasi-functional verbs, which share with functional verbs the property of giving rise to restructuring but display lexical properties that clearly witness the presence of richer

structure. The generalisation is captured that "the more impoverished a verb's structure is, the higher the verb merges in the tree" (Cardinaletti and Shlonsky 2004:548).

(13) [FP3 modal [FP2 aspectual [FP1 quasi-functional [VP lexical]]]]
        (Cardinaletti and Shlonsky 2004:524)

Quasi-functional verbs, in effect, coincide with those which Wurmbrand (2004) classifies as lexical restructuring verbs, on the basis of properties that will be discussed in the next section and which are clearly incompatible with modals and auxiliaries.

On the one hand Cardinaletti and Shlonsky's (2004) approach, together with other analyses, recognises the complexity of restructuring as a phenomenon not amenable to a unique (only-functional) analysis; on the other hand, it does not divorce from Cinque's analysis of restructuring as a rigid configuration of verbal heads, ordered in the clausal architecture. Thematic/restructuring properties (e.g. auxiliary selection, transparency to negation, clitic placement, aux-to-C movement) of these classes of verbs are uniquely determined by their merge position and by the richness of the structural layers with which such position is endowed. Under this approach, therefore, complex predicates are subsumed under the same analysis. Restructuring verbs are assumed to be merged higher than causative and perception verbs, but both classes of verbs are functional projections outside the VP and the infinitival complement is in actual fact a VP.

2.3 FUNCTIONAL AND LEXICAL RESTRUCTURING: WURMBRAND (2004)

2.3.1 PROBLEMS FOR "ONLY FUNCTIONAL" ANALYSES

"Only functional" analyses of restructuring leave open one question, namely, why control verbs can appear in non-restructuring configurations. If a verb expresses particular interpretive properties (mood, aspect, voice etc.) which can only be encoded in dedicated inflectional heads, can it be functional and lexical in different configurations? The examples discussed by Cinque precisely aimed to make the point that restructuring is obligatory, since functional restructuring verbs are "subject to rigid complementation" (Wurmbrand 2004). Functional analyses of restructuring hinge on the thematic "defectiveness" of the restructuring verb but cannot capture the fact that the structural condition on the formation of complex predicates is irrespective of the thematic properties of the finite verb.

Cinque's analysis of restructuring verbs as bare functional heads (which cannot projecting a theta grid) is not problematic for raising verbs (modals like "must", "can" etc.), but is

more problematic for complex predicates in which the finite head participates in theta-role assignment (i.e. perception and causative verbs). And even if we limit this analysis to restructuring complex predicates, we need an explanation for the raising/control alternation with control verbs, which are not thematically defective outside restructuring configurations.

Wurmbrand (2004) confirms that modals pattern with (i.e. behave like) raising verbs in that they:

a. allow non-thematic subjects (weather-*it* and inanimate subjects):
    (14) Esmuß morgen schneien (Root)
        It must tomorrow snow
        'It must snow tomorrow'
    (15) *Es versuchte zu schneien (Lexical restructuring)
        'It tried to snow'

b. cannot be passivized
    (16) Der Kuchen muß gegessen warden (Root)
        The cake must eaten AUXPASS
        'The cake must be eaten'
    (17) *Der Kuchen versuchte gegessen zu warden (Lexical restructuring)
        The cake tried eaten to AUXPASS
        'The cake tried to be eaten'

The obligatoriness of restructuring with modals suggests that a monoclausal phenomenon be involved at a single CP level. These verbs (i.e. inherently raising verbs such as "must") are defective in nature, hence the intuition that they may be non-lexical. Verbs like "try", "decide", "regret", "plan", force" etc., on the other hand, (i) select an external argument; (ii) never allow raising/non-thematic subjects and (iii) allow passive. This behaviour is consistent with the GB definition of control verbs and calls for a non-unitary treatment of the classes of restructuring verbs.

Control verbs, perception verbs and causatives have rich thematic properties and, most importantly, can select a simple lexical object DP as a complement. In other words, they can be lexical verbs:

(18) Gianni ha fatto una torta (Folli and Harley 2007:228)
    'Gianni has made a cake'

Despite important differences, these verbs also form complex predicates. An analysis of the properties which render possible the emergence of transparency phenomena is thus desiderable in order to identify the conditions on complex predicate formation and, at the same time, account for the behaviour exhibited by different classes of verbs with respect to auxiliary switch and clitic climbing, as originally suggested in Burzio (1986).

2.3.2 LEXICAL RESTRUCTURING

Wurmbrand (2001; 2004) proposes a structural analysis to account for the optionality of restructuring with control verbs, capitalising on the "transparency" or "opacity" of the infinitival complement.

Firstly, she notes that absence of restructuring side-properties (for instance, clitic climbing) in a structure with a (potential) restructuring verb is not evidence *per se* that we are dealing with a non-restructuring construction.

Auxiliary switch*,* which is independent of clitic climbing, is the major evidence that a sentence involves restructuring (Cardinaletti and Shlonsky 2004:537(37)):

(19) [Lo *ho/sono andato a trovare] (restructuring + clitic climbing)
    (I) him.have/am gone (to) visit
    'I went to visit him.'
(20) [*Ho/Sono andato a trovarlo] (restructuring without clitic climbing)

In order to account for the optionality of restructuring, it is thus better to look at the properties of non-restructuring structures, that is, to test opacity-inducing factors: only these can be taken as direct evidence that a structure containing a (potential) restructuring verb is a non-restructuring one.

Both Wurmbrand (2001; 2004) and Cardinaletti and Shlonsky (2004) show that there is a class of restructuring verbs that can appear in non-restructuring constructions. A crucial test is clausal negation, which is known (at least since Kayne 1989) to induce a blocking effect on both clitic climbing and auxiliary switch: in a nutshell, since clausal negation requires a full CP (Zanuttini 1997), it must be incompatible with restructuring.

(21) *[Lo vorrei non dover mai fare] (clitic climbing over clausal negation)

(I) it.would-want not (to) have ever (to) do

'I would want not to ever have to do it'

(22) *[Sarei voluta non andare da nessuna parte] (Aux switch with clausal negation)

(I) would-be wanted not (to) go to any where

'I would have wanted not to go anywhere'

These sentences are compatible with clausal negation only when the verb takes auxiliary *avere* 'to have' (the auxiliary it is associated to in its lexical usage), which is evidence that it takes a non-restructuring CP-complement:

(23) Avrei voluto [non andare da nessuna parte].

(I) would-have wanted not (to) go to any where

'I would have wanted not to go anywhere.'

While transparency phenomena (clitic climbing and auxiliary switch) are always incompatible with clausal negation in constructions containing "functional" restructuring verbs – which explains the obligatoriness of restructuring with these verbs – the same does not hold for another subclass of restructuring verbs, those which Wurmbrand (2004) argues to constitute "lexical" restructuring verbs. The former are obligatorily monoclausal because they "cannot combine with clausal complements and hence never allow non-restructuring properties" (Wurmbrand 2004:1006); the latter can appear in non-restructuring biclausal structures, as (23).

Ideally, verbal categories like functional (and quasi-functional) and lexical should not overlap. This is a problem for (23), which shows that even a modal verb like *volere*, "want" can behave like a non-restructuring verb – this would restrict the class of "obligatorily" restructuring functional verbs even further.

Cardinaletti and Shlonsky's (2004) solution, as we have seen, is a tripartite analysis of different restructuring verbs as functional, quasi-functional or lexical verbs depending on whether they are merged in a functional head or in the VP. This solution capitalises on an articulated cartography of the clausal architecture but seems to force an ad-hoc analysis of one and the same verb in different configurations (in some cases it would be merged as a functional head, in other cases as a lexical head) – as noted by Boeckx and Gallego (2008; 2009).

More problematically, quasi-functional verbs are postulated to start out in a VP-external projection, but at the same time they are shown to forbid auxiliary switch (i.e. they never inherit the auxiliary from the infinitive verb) and select an external theta argument – properties which can hardly be dissociated from phi-complete v in Minimalist theory. Therefore, it appears that Wurmbrand's (2004) intuition that all optional restructuring verbs are lexical in nature is more on the right track. It is superior in that it can arguably account for phenomena like auxiliary switch based on the "lexical" or "functional" status of the verb: only a fully-fledged v projecting an external argument can "impose" the choice of the auxiliary in complex predicates, whereas verbs which inherit their external argument from the embedded predicate will also be transparent to the choice of the auxiliary of the embedded infinitival. The correlation between *avere* and a rich (i.e. non-defective) vP structure is strong (it is never the case that raising verbs select the auxiliary *avere*) and, arguably, structurally motivated, as will be discussed in §3.2.1.

2.3.3 CONCLUSION

To sum up, restructuring verbs are only a subclass of the verbs which can give rise to complex predicates in Romance. Complex predicates are a broader phenomenon which also includes causative and perception verbs, and simply requires a structural condition, namely, the "transparency" of the infinitival complement. Phenomena such as auxiliary switch show that restructuring is parasitic on the presence of a transparent domain and is not an inherent property of restructuring verbs: in fact, a subclass of restructuring verbs (control verbs) can appear in non-restructuring configurations, in which case auxiliary switch is forbidden. More generally, auxiliary switch does not define univocally a condition on the formation of complex predicates: in fact, some complex predicates – with perception and causative verbs – never allow auxiliary switch.

Lexical subcategorizations based on the properties of verbs that can form complex predicates (modals, control verbs, perception verbs and causatives) and their lexical "richness" leave two crucial questions open. The first one concerns the reason why clitic climbing is optional with raising/control verbs and obligatory with with perception verbs and causatives. In §3.2, we will argue that a phase-based approach to clitic climbing as long distant Agree across defective domains (Chomsky 2001; Nunes 2008; Boecks and Gallego 2008; 2009) is the most adequate analysis under a phase-based concept of locality. The second question revolves around the relation between lacking an external thematic role and the restructuring/control alternation. A solution to this problem is offered by Roberts' (1997) biclausal analysis of V/T incorporation; in phase-based terms, we will

restate the gist of this proposal as a requirement that the complement T be defective. In doing so, we will recover both Roberts' and Burzio's (1986) intuition that restructuring complements contain an Agr$_S$/S' projection which does not act as an intervener.

2.4 AN ALTERNATIVE SOLUTION: INCORPORATION

2.4.1 INCORPORATION CREATES A SINGLE EXTENDED PROJECTION (ROBERTS 1997)

Roberts (1997) backs up an analysis of clitic climbing based on the notions of Incorporation – which amounts to head movement to another head – and Extended Projection in the sense of Grimshaw (1991). The extended projection of a lexical category L is the domain which includes all the functional projections in which L's morphosyntactic features are projected. The core intuition is that restructuring involves V/T incorporation from the verb of the embedded clause to the verb of the matrix clause. Therefore, the positions targeted by the clitic/the NP in clitic climbing and long object movement are licit landing sites because all the functional projections, including those of the embedded clause, are in the extended projection of the matrix T hence do not count as interveners.

Such analysis appears to be supportive of the biclausal nature of restructuring complexes. The notion of extended projection does not exclude the presence of lower functional projections (in this sense, the embedded complement does not need to be a bare VP). These functional projections are simply "inactive" probes because they fall under a single extended projection of the higher probe T. Roberts (1997) explicitly argues that Agr$_S$ is projected in the embedded clause and that this allows us to account for the raising/control alternation with Italian restructuring verbs.

Differently from other languages, like Turkish, where restructuring heads are realised as affixes, in Italian restructuring does not give rise to a complex verbal head but, rather a "clause union" (Rizzi 1978). For example, it is apparent that, in Romance, lexical material can separate the restructuring verb and the infinitival: adverbs (crucially, also low negative adverbs), floated quantifiers and even fronted wh-constituents (to some degree of marginality) can intervene before the complement verb:

(24) ? Certe risposte non si sanno *mai come* dare   (Roberts 1997:424)
    some answers NEG SI knows never how to-give
    'One never knows how to give certain answers'
    (from Rizzi 1982)

This intuition is appealing: under this analysis, in fact, incorporation does not involve V-to-V movement but a V-to-T chain (along the lines of the Tense chain proposed by Guerón and Hoekstra 1988): the head of the chain is the restructuring verb V_R in the matrix Agr_S, the tail is the infinitival verb V_{inf} in the complement Agr_S. The result is that the incorporated head $[V_{inf} + T]$ "is spelled out at the highest L-related position in its chain prior to incorporation – that is, Agr_S of the lower clause" (Roberts 1997:426):

(25) … $[_{AgrS} [[V_{inf} + T] V_R]$ … $[_{CP}$ … $[_{AgrSP}$ … $[_{AgrS} V_{inf}]$ …

The effect of such V-to-T chain is to render any projection between V_R and V_{inf} transparent to local phenomena, such as long NP-movement with mediopassive *si*: whereas in (26a) no V-T incorporation obtains such that the intervening Agr_S blocks movement from the lower clause, in (26b) an extended projection has been formed.

(26) a. *Le nuove case   si   otterranno   di costruire (p.431)
           The new houses si will-get-permission to build
    b. Le nuove case si cominceranno a costruire
       The new houses si will-start   to build
       'The new houses will start being built'

The embedded Agr_S, however, is assumed to be present in the lower clause, but inert to intervention effects. Following Burzio (1986), therefore, Roberts (1997) maintains that restructuring complements are not bare VPs but full clauses projecting up to Agr_S, whereby the raising/control alternation is rather instantiated by the empty category allowed in spec,Agr_S (trace vs. PRO).

Roberts (1997) points out that the ability of a verb to assign an external argument does not define restructuring because the crucial property of restructuring is, rather, that the lower T must "combine" with the higher verb: "the ability to theta-mark the subject is an independent matter, as shown by the fact that the raising/control distinction holds for restructuring verbs. If we put this together with Pollock's (1989) idea that auxiliaries have no theta-roles to assign, we see the similarities between restructuring verbs and auxiliaries (and especially that between raising restructuring verbs and auxiliaries)" (Roberts 1997:454). But a lexical distinction based on optional theta-assignment – he rightly points out – is unmotivated because the "failure" to assign theta role is precisely the "trigger" for restructuring, which forces the complement T to form a unit with the

higher verb. Restructuring control verbs do so optionally, because they do not lack the ability to assign a theta-role, whereas raising verbs do so obligatorily, but the lexical properties are superfluous in this analysis, because what ultimately defines restructuring is the configuration: namely, raising.

2.4.2 INCORPORATION IS MOVEMENT WITHIN MINIMAL PHASES

In Roberts (2010), however, the solution is more radically monoclausal and explicitly in line with both Cinque's (2004) analysis of hierarchically-ordered functional heads and Cardinaletti and Shlonsky's (2004) proposal of two target sites of cliticization in the clausal architecture (a lower lexical head and a higher functional head, respectively). He argues that the clitic incorporates with the verb already in v^* creating a complex minimal head. The core idea, now, is the notion of Minimal Phases, borrowed from Marantz (2001). Under an analysis of words as minimal phases, "lexical integrity" is not a primitive property at the bare phrase structure but is simply derived by PIC: "one immediate consequence of treating words as phases is that we expect them to be opaque domains for syntactic operations […] Another consequence is that, as phases, words should have a left edge that is transparent to the outside; this is where the link with the clitic comes in". (Roberts 2010:42). In a nutshell, incorporation is restated in terms of movement of minimal phases, which allows recursion of vP projections in restructuring predicates.

The clitic moves to the edge of its host, namely, v^{*min} (the minimal phase headed by v^*). The reason why head movement is obligatory is that the clitic is a defective goal for the probe v^*:

(27) A goal G is defective iff G's formal features are a proper subset of those of G's probe P (Roberts 2010:62).

Clitics are defective goals under the assumption that they are bundles of phi-features (Dechaine and Wiltschko 2002) therefore, unlike DPs, they are in a subset relation with the features of v^*. The cl-v^*min complex can then move up if probed by a category (T or C) with uninterpretable V-features. However, sitting on the edge of a phase, the clitic can also move independently, and this is how clitic climbing is derived in both compound tenses and restructuring: "effectively, then, clitic climbing involves excorporation, as originally suggested in Roberts (1991)" (Roberts 2010: 76).

In compound tenses, the complex minimal phase v^{*min} incorporates with the past participle $Part^{min}$ (v^* being a defective goal in relation to Part). From the edge of $Part^{min}$,

the clitic is accessible to the higher probe Aux^{min}, and moves to it, valuing the uninterpretable phi-features of Aux. The result of this movement is an iteration of three vPs, namely, those headed by Aux, Part and v*. The clitic moves together with v* as a unit up to incorporation with Part; consequently, it excorporates probed by Aux and forms a unit with it.

In restructuring, it is assumed that the main verb is merged in a functional projection Asp (in line with Cinque 2004). In clitic climbing, the clitic incorporates with v* and is then probed by Asp. However, this is still not sufficient to explain the optionality of enclisis, since Cinque's functional analysis does not provide an answer for it. Roberts (2010) argues that enclisis is due to movement of the infinitive to a position higher than v*. This position is identified with the lower cliticization site in Cardinaletti and Shlonsky (2004) where the infinitive morphology –*e* appears in Italian. As we have seen in §2.2, this infinitive morpheme is in complementary distribution with enclisis:

(28) Lo vorrei vedere
     it.I-would want to-see
(29) Vorrei veder(*e)lo
     I-would want to-see.it

In Roberts' (2010) account, this is a consequence of v* incorporating with Inf. In non-restructuring contexts, this is always the case and enclisis obtains; in restructuring, the clitic can move further if probed by the unvalued features of Asp^{min}. So, the feature-based argument for clitic movement as Agree with a probe is maintained, but recast in an incorporation analysis which crucially capitalises on the notion of minimal phases: v^{min}, $Part^{min}$, Asp^{min} all count as phases, so that in the end the structure is an iteration of functional heads, not far from the monoclausal analysis supported in Cinque (2004).

An account of clitic movement based on prior incorporation with the verbal host appears to capture well the head-movement derivation of the clitic and the enclisis/proclisis patterns. A head movement analysis should also have the advantage to account for lack of semantic effect between proclisis and enclisis, if Chomsky's (2001:37) intuition is correct that head movement lacks semantic effect (possibly, because it is a PF process). However, this is not the position assumed in Roberts (2010): as we have seen, the clitic is assumed to incorporate in v and excorporation obtains via movement through the edge of a minimal phase. Under this analysis, the composite nature of clitic movement (XP/X°

movement, as in Belletti 1990) is lost and cliticization is only reduced to Agree. Roberts (2010) explicitly argues, in fact, that head movement is a narrow syntactic process which has LF semantic effects just like XP movement.

We will retain Robert's (2010) analysis of clitics as defective goals, which has two clear advantages: firstly, it explain why Agree between v* and a clitic object triggers obligatory movement whereas Agree with a full pronoun takes place at a distance; secondly, it captures the distribution of proclisis and enclisis as a result of incorporation; most importantly, it accounts for the semantic effects of cliticization as a consequence of a narrow-syntactic operation, Agree, which crucially involves movement through the left edge of v* and is triggered by the properties of a probing verbal head.

3. BACK TO A UNIFIED ANALYSIS OF COMPLEX PREDICATES

In the discussion that follows, we will introduce a phase-based analysis of complex predicates that aims to account for both the raising/control alternation in restructuring and the properties of complex predicates with causatives and perception verbs. Whilst causatives and restructuring verbs have traditionally received separate treatment in the literature (Kayne 1975; Rizzi 1978), we will follow Burzio's (1986) original intuition that the same underlying process is at play in the formation of complex predicates, creating a transparent domain between a matrix clause and an embedded clause headed by a defective projection.

The properties of the vP selecting the infinitival are crucial to account for the optionality of restructuring: raising verbs restructure obligatorily because – as also noted by Roberts (1997) – they do not participate in theta-role assignment; control verbs, however, have the option to "fail" to assign their own external theta role; perception verbs and causatives, finally, do not inherit the external theta argument of the lower argument.

In a nutshell, in order to account for complex predicate formation, the necessary property in question is the presence of a defective embedded T (Solà 2002; Wurmbrand 2004; Gallego 2011).

The trigger for restructuring is the inability/failure for the matrix v to theta-mark the external argument: defectiveness of T is therefore necessary to implement raising from the embedded subject position (30); in ECM constructions the matrix v is able to theta-mark the external argument and the defectiveness of T is rather necessary for the matrix v to Case-mark the embedded external argument (31); finally, Italian causative constructions lack T (see Guasti 2005) – as witnessed by the inability of an embedded

object clitic to appear in the enclitic position – and the embedded subject is assigned structural Dative Case inside vP (32):

(30) [Giovanni vuole [$_{Tdef}$ t leggerlo]]
     'Giovanni wants to read it'

(31) [Giovanni lo vede [$_{Tdef}$ t riparare la macchina]]
     'Giovanni sees him repair the car'

(32) [Giovanni gli fa [$_{vP}$ t riparare la macchina]]
     'Giovanni makes him repair the car'

Clitic climbing is only a side-effect of restructuring because it obtains if the clitic fails to be inactivated in the lower v – under the phase-based assumption that clitic movement is phi-feature inheritance (Chomsky 2008; Boeckx and Gallego 2008; 2009). When the clitic agrees (and incorporates) with the lower v, enclisis is an option. Furthermore, we will assume with Roberts (2010) that enclisis results from verb movement to a low inflectional projection (Pollock 1989).

In ECM and causative constructions, clitic climbing is obligatory because it is triggered by the absence of active probes in the embedded clause. In ECM, the clitic does not agree with the lower v* because it is an underlying subject, hence v* does not count as a probe for it. Differently from restructuring predicates, clitic climbing in this construction is linked to failure to assign NOM Case to a pronominal in the embedded spec,T. In causative constructions, the climbed clitic is an object: the obligatoriness of clitic climbing therefore suggests that the embedded verb is always unable to assign ACC Case.

The generalisation is that what saves the clitic derivation and allows a "clause union" is the intervention of a defective T. All the other properties of complex predicates are accountable for based on the properties of the matrix v (auxiliary selection, long NP-movement) and the embedded v (the inability of clitics embedded in ECM/causative constructions to check Case in the lower verb).

3.1 BURZIO'S SUBCLASSES OF RESTRUCTURING VERBS

In the GB framework, Burzio (1986) identifies three subclasses of verbs which can undergo restructuring in Italian:

1) Unaccusative, e.g. *andare* (to go), *venire* (to come)[2]

2) Raising, e.g. *dovere* (must); *potere* (can); *stare per* (to be going to); *sembrare* (seem)

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[2] These are called "ergative" in Burzio (1986).

3) Control, e.g. *volere* (to want); *sapere* (to know); *cominciare* (to start); *continuare* (to continue)

The infinitives selected by these verbs are assumed to be sentential complements. Unergative and Control verbs select PRO; raising verbs select a sentential complement containing the trace of the subject raised to the matrix clause. The distribution of trace and PRO follows from Empty Category Principle, under the theory of Control (Chomsky 1981; Huang 1982). ECP is the requirement that traces be governed; PRO, on the other hand, must be ungoverned. Furthermore, Burzio maintains that verbs can be classified according to two lexical parameters:

a. Ability to trigger S'-deletion
b. Ability to assign the external theta role

From this subcategorization he derives four classes of verbs:

(33) Class I: +S'-deletion; +Theta Role$_{subj}$(ECM)
      Class II: +S'-deletion; -Theta Role$_{subj}$ (Raising)
      Class III: -S'-deletion; +Theta Role$_{subj}$ (Control)
      Class IV: -S'-deletion; -Theta Role$_{subj}$

The first parameter defines the empty category that can appear in the complement selected by the verb: ECM and Raising predicates trigger S'-deletion, therefore the infinitival complement of these verbs contains a trace legitimated (i.e. governed) by the main verb; Control predicates do not trigger S'-deletion therefore only ungoverned PRO can be licensed in the infinitival complement (S' being a barrier for government). The fourth class of verbs is not very productive – in Italian, it contains verbs like "bisogna" (it is necessary to) which select arbitrary PRO and do not assign an external theta role. Apart from the latter, all the other three classes of verbs can give rise to complex predicates. Thus the crucial intuition is that there are no "restructuring verbs" but, rather, a single movement operation which forms complex predicates: causative constructions –which "are associated with causative and perception verbs like *make*, *let*, *see*, *hear*" (Burzio 1986:217) – are derived from a movement operation (VP preposing) in the complements of verbs of class I; restructuring is derived from the application of this rule to

raising/control verbs. Restructuring constructions include modal and aspectual verbs, and verbs of motion.

The second parameter defines the thematic properties of the restructuring verb: Raising verbs cannot assign the external theta role (i.e. matrix subjects in raising constructions are arguments of the embedded infinitival); ECM and Control predicates, in contrast, have their own thematic subject.

Such classification retains the advantage to capture two core structural properties of restructuring: the thematic properties of the finite verb, that it, its ability to assign an external theta role, and the properties of the infinitival complement selected by the finite verb (i.e. the requirement for transparency). The first defines the opposition between raising verbs, which do not participate in theta-role assignment, and control, causative and perception verbs, and is linked to auxiliary switch. This is a necessary condition only on restructuring, but not on the formation of complex predicates. The second property appears to be a necessary structural condition on the formation of complex predicates, without which local phenomena such as clitic climbing are forbidden, and defines the opposition between raising, perception verbs and causatives on the one hand, and control on the other.

The advantage of this analysis is to unify complex predicates (regardless of the lexical/thematic properties of the higher verb) under the same configuration: in Burzio, the "clause union" is derived from an underlying biclausal structure in which the embedded VP has been moved to the front of the lower S'. In the following section we will analyse S'-deletion as selection of a defective complement – T_{def}, as in Solà (2002) and Wurmbrand (2004). When a verb occurs in a non-restructuring structure, control is available; when restructuring applies, it ultimately creates a transparent domain in which the restructuring verb selects a defective T without C. As Gallego (2011:11) points out, "this is the only option, under phase-based guidelines".

Solà (2002) claims that such analysis meets a desideratum, namely, to treat restructuring constructions and their non-restructuring counterparts as minimally different constructions (raising/control): "it is unlikely that functional verbs systematically alternate with lexical verbs with a full clause complement. Restructuring verbs are, therefore, lexical verbs with a restructuring option" (Solà 2002:11).

3.2 RESTRUCTURING AND DEFECTIVE PHASES

In Burzio's (1986) categorization, each subclass of verbs correlates with different thematic properties and selects different infinitival complements (prior to restructuring). The

appeal of this analysis is to derive classes of verbs from the interaction of two general properties: thematic properties of v and properties of the infinitival complement T. Intuitively, thematic properties have to do with the (complete or defective) structure of the matrix verb, whereas S'-deletion has to do with locality relations between the matrix verb and the material inside the infinitival. ECM verbs can assign Case to the external argument of the infinitival, which indicates that the infinitival clause is not a barrier in traditional terms. Conversely, non-finite T can license PRO inside control complements.

In current phase-based terms, the ability to assign the external theta role defines a strong vP phase. In Chomsky (2001:43) defective v is defined by the following properties:

(34) a. It does not assign an external argument to its spec
    b. It cannot check ACC Case
    c. It does not define a phase

Defective vPs are involved in the passive and unaccusative derivations, in which the non-phasal status of v allows the higher T to count as a probe for the internal argument contained inside VP.

Defective T is T lacking a full phi-feature set. C can only select phi-complete T (i.e. is "one-to-one associated with phi-complete T"); when T is defective, no C is projected. Chomsky (2008) argues that finite and control clauses are CPs, with C selecting $T_{complete}$; the relation between C and T is one of transmission of Agree features from a phase head to a non-phase head. ECM and raising structures have a V-T_{def} relation. He develops Rizzi's observation that "control structures, like CPs, are phonetically isolable in ways that raising clauses are not", to claim that strong phases are syntactic units with semantic and phonetic independence.

If locality and transparency effects, such as clitic climbing, are defined on strong phases, a monoclausal vs. biclausal definition of restructuring is not conceptually needed, neither is the out-of-date concept of S'-deletion. If a phase is defective, it defies the PIC (Phase Impenetrability Condition) and everything inside its domain is within the probe of the higher strong phase.

An important consequence of defining restructuring on defective phases is that it is possible to account for the optionality of restructuring with control verbs without positing an additional transformational "rule" merging two clauses (as in the original analyses of Rizzi 1978; Burzio 1986; Kayne 1989, for example). Boeckx and Gallego (2008; 2009) and

Gallego (2011) maintain, following Solà (2002), a biclausal analysis along these lines, in which transparency between the two clauses obtains due to the non-intervening (inert) defective T in the infinitival complement. They advance that clitic climbing is a long-distance agreement relation, resulting when the clitic fails to be "frozen", ie. inactivated, in the embedded clause. Since defective T cannot delete the phi-features on the clitic, it does not act as a probe and allows the clitic to remain as an "active" goal throughout the derivation.

3.2.1 AUXILIARY SWITCH AND v_{DEF}

Auxiliary switch, as we have seen in §2.3.2, is a distinctive property of restructuring and is evidence that the matrix v is "transparent" to the auxiliary choice of the embedded verb when the latter selects BE. In fact, it correlates not only with defectiveness of T, but also of the matrix v.

D'Alessandro and Roberts (2008) have proposed a phase-based account of the link between auxiliary selection, part participle agreement and argument structure inside the vP. They follow Ross (1969) in treating periphrastic tenses as raising structures, proposing that the auxiliary v selects the lower v, which encodes perfect participle features. The structure of a non-defective, transitive v is as in (35):

(35)   vP   (D'Alessandro and Roberts 2008:481)

v_{Aux} $v_{Prt}P$

   DP_{EA} v_{Prt}'

      v_{Prt} VP

         V DP_{IA}
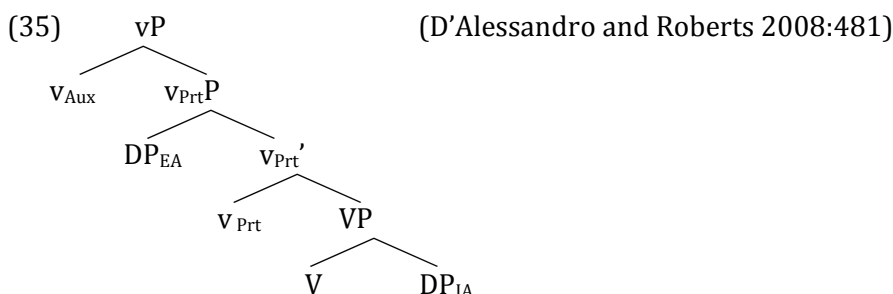
The lower v selects an external argument and is the head responsible for licensing the internal argument's ACC Case. When v_{Prt} is defective, it cannot delete the object's Case and assign an external theta-role. Passives and unaccusatives contain defective v in which the surface subject is raised from the internal position and selects auxiliary BE. The same holds for reflexive si-constructions – for which in fact we will adopt an unaccusative analysis (Chapter 4§5.5), assuming that v assigns a non-thematic external argument to its spec (the reflexive *si*). (36) summarises the generalisation which D'Alessandro and Roberts (2008:51-53) draw as for Standard Italian:

(36) a. If v_{Aux} takes $v*_{Part}$ as its complement, v_{Aux} is HAVE; otherwise v_{Aux} is BE

    b. HAVE can only select a v which licenses an internal argument.

    .

Unaccusative, passive and reflexive verbs take auxiliary BE because the lower v, identified with v_{Part}, is phi-defective. In all other cases, auxiliary is HAVE.

Restructuring verbs are sensitive to the auxiliary choice of the infinitival verb precisely because they select a defective T complement. When a restructuring verb takes BE, it is in a raising configuration: it projects, in other words, only one strong phase (the matrix C): thus the fine-grained periphrastic structure of a restructuring complex formed of a control verb (*volere*) + an unaccusative (andare) is:

(37) [C Mario$_{EA}$ T$_{[\varphi,\ Nom\ Case]}$ [v$_{Aux\ BE}$ [v$_{Prt}$ [VP volere [Mario$_{EA}$ T$_{def}$ [v$_{Prt}$ [VP andare Mario$_{IA}$]

Auxiliary switch hence qualifies as a good test to identify verbs that do not project an external theta role and cannot take a C-complement. In (38) "prendere" (to fetch) selects the auxiliary "avere"; in (39) "andare" (to go) selects "essere"[3]. In both cases, the choice of the auxiliary on the main verb is obligatorily that of the infinitival:

(38) Mario ha dovuto prendere il libro

    Mario has.AUX had to fetch the book

(39) Mario ci è dovuto andare

    Mario there.CL is.AUX had to go (Cl-Cl)

(40) Mario è dovuto andarci

    Mario is.AUX had to go there.CL (no Cl-Cl)

(41) *Mario ha dovuto andarci

    Mario has.AUX had to go there.CL (no Cl-Cl)

Not only "dovere" takes the auxiliary "essere" (40), but this is also independent of clitic climbing (41).

True raising verbs undergo "obligatory" restructuring in the sense that they cannot select a C-complement, because this would not allow the external argument to raise to the matrix T: in fact, expletive "seem" is precisely a case of raising verb which selects a C-complement and "saves" the matrix T position with an expletive.

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[3]In Italian, *essere* (to be) is always the auxiliary choice of unaccusative verbs, reflexives and middles.

In contrast, control verbs, namely, those verbs for which restructuring is optional, inherit the auxiliary BE of the embedded unaccusative predicate only in restructuring. When they select their own auxiliary (HAVE), this must indicate that the structure is not a restructuring one (examples from Burzio 1986:327):

(42) Mario ci sarebbe proprio voluto andare

Mario there.CLwould.be.AUX really wanted to go (Cl-Cl; auxiliary switch)

(43) Mario avrebbe proprio voluto andarci

Mario would.have.AUX really wanted to go there.CL (no Cl-Cl; no auxiliary switch)

(44) *Mario ci avrebbe proprio voluto andare

Mario there.CLwould.have.AUX really wanted to go (Cl-Cl; *no auxiliary switch)

On the other hand, when restructuring verbs select a transitive/unergative complement, auxiliary is HAVE: this means that the main verb is able to Case licence a (derived) embedded internal argument, although it does not theta-mark the external argument. As we will discuss below, this is what allows clitic climbing: in fact, only if the clitic does not delete Case in the embedded v a "long distance agree" between the matrix v and the embedded internal argument can obtain. As Gallego (2011) points out, in fact, the matrix and the embedded v must count as one A-domain for the clitic, under the assumption that Case checking freezes the clitic in place.

We can conclude that:

a. The defectiveness of the embedded T suffices to define a restructuring configuration and is a necessary condition on auxiliary switch. In fact, regardless of their ability to select an external theta role (which defines non-defective matrix v*), both "must" and "want" inherit the auxiliary of the infinitival verb in restructuring.

b. auxiliary selection, as well as long object preposing, indicate that the main v is transparent to the transitivity of the infinitival verb. As Roberts (2010) notes, selection-like relations are highly local, and under the PIC the higher v would not be able to be sensitive to the transitivity of the lower v if the latter were headed by a C phase.

In a nutshell: restructuring is derived via selection of a defective TP; optional restructuring verbs are those with non-defective v, which allows them to project argument structure

and select a non-defective complement in non-restructuring configurations. Obligatory restructuring verbs, in this analysis, are simply raising verbs which, due to their inherent defectiveness, do not have other option than appear in a raising configuration.

3.2.2 T_{DEF}, LOCALITY AND CLITIC CLIMBING

Under Chomsky's (2001) Agree framework and the assumption that movement is triggered by features, it is compelling to ask first: what is the probe of clitic movement? We take the position assumed since Kayne (1975) that clitics are internal arguments of the verb and raise to their derived position in order to check their uninterpretable features. Therefore we assume, in line with Chomsky (2008), that clitic movement is phi-feature inheritance between the clitic and a verbal head.

Chomsky (2001) defines Agree as the operation which values the uninterpretable features of a probe under matching (i.e. identity) with the interpretable features of a goal. Such operation has the consequence that uninterpretable features, once valued, are not distinguishable from the interpretable ones, therefore the computational component needs to send them to spell-out as soon as possible. If so, then clitic movement is driven by formal features, i.e. is narrow-syntactic in nature, and it also needs to be local.

Roughly, we can define locality in terms of distance from the probe. In traditional terms, local movement is assumed to be subject to Relativised Minimality (Rizzi 1990): that is, an element of the same category as the goal cannot intervene between the goal and the probe. In the case of A-movement, a higher A-position blocks the formation of an A-chain.

In the phase framework, it is also assumed that movement must respect strict cyclicity. Therefore, the goal is accessible to the probe iff (i) the goal occupies an edge position; (ii) movement is intra-phasal, which furthermore implies that everything – not only the edge – inside a defective phase is accessible to a higher probe. As it must also be the case that clitic climbing out of infinitival complements does not differ from simple cliticization and respects locality, we will conclude that such movement involves defective domains, hence non-intervening probes.

Let us start addressing the questions of how locality affects clitic movement, what are the verbal triggers of such movement and what allows the clitic to climb onto a finite verb in complex predicates.

As a case of A-movement, clitic climbing, like long object movement, must be local. As anticipated previously (§2.4.1), long object movement cannot cross an intervening A-position. Consider the example (26a) – here repeated as (45) (Roberts 1997:431, 14.b):

(45) *Le nuove case si otterranno di costruire

    The new houses SI-will.obtain to build

    'The new houses will get.permission to be built'

Ungrammaticality is due to the intervention of a phi-complete T in the infinitival complement. In Roberts' (1997) analysis, [Spec, Agr_S] is the A-position which is associated with the subject grammatical function (EPP). If the lower [Spec, Agr_S] is non-defective, it blocks raising of the subject to the matrix [Spec, Agr_S] (so called hyper-raising, cf. Nunes 2008). In line with Chomsky (2001; 2008) we have assumed that non-defective T is selected by a C (phase) head and that defective T is not a phase, hence is not headed by C. In order to account for the grammaticality of long object movement with restructuring verbs, therefore, we must conclude that the embedded Agr_S does not count as an intervener hence is defective:

(46) Le nuove case si cominceranno a costruire

    The new houses SI-will.start to build

    ''The new houses will start being built'

It is apparent that the same locality constraints hold on clitic climbing:

(47) *Gianni li vuole che Maria prenda   (Roberts 1997:436)

    Gianni them.wants that Mary take

(48) *Non lo so se fare

    Not it.I-know whether to-do

(49) *Lo voglio non fare

    it.I-want not to-do

In each case, the intervening element appears to be a head: a tensed complement in (47); a conditional complementiser in (48) and negation in (49). Such evidence clearly seems to indicate that clitic movement is constrained by head movement. It can also be argued that the clitic cannot cross a C phase for the reason that C selects for a non-defective T, hence an intervening probe. Clitic climbing results in fact in a long-distance agreement relation with the upper v*.

As for the triggers of clitic movement in restructuring, we must assume that the matrix domain can be accessible for the clitic only if no active probe intervenes in the embedded clause. This follows from Chomsky's (2001) Activity Condition, namely, the requirement that an element be active in order to be accessible to further operations.

As we have seen, Solà (2002) analyses restructuring as a raising configuration headed by T_{def}. Raising configurations are typically accounted for (Chomsky 2001) as involving defective T which implements movement (raising) of a subject but cannot inactivate it – i.e. match its full set of phi-features. The minimalist view is that uninterpretable features implement displacement: phi-complete T, in fact, has uninterpretable inflectional features so it agrees with the uninterpretable phi-features of a nominal and deletes structural Case. In restructuring, given the defectiveness of the embedded T, NOM Case of the external argument is valued in the matrix Agr_S; moreover, when clitic climbing obtains, ACC Case of the embedded clitic is checked in the matrix v*. In the first step, the embedded v has an EPP feature that probes the internal argument IA (the object clitic) to its outer spec; however, v does not assign ACC Case. The crucial assumption in the analysis is that v in the restructuring complement is phi-defective (Solà 2002: 244), hence it contains only Agr_{Prt} and not Agr_O. The reason behind this stipulation is that past participle:

(i) agrees with the internal argument (transitive objects and unaccusative subjects)
(ii) contains [number] and [gender] but no [person] feature, therefore it is unable to delete ACC Case

As a consequence, v (Agr_{Prt}) triggers movement to the outer spec, vP but the clitic is still active, since it has unvalued structural Case. At this level, the resulting configuration is:

(50) [$_{vP}$ IA [$_{vP}$ EA v [$_{VP}$ ...t_{IA}

The external argument EA and the internal argument IA have unvalued NOM and ACC case, respectively; T_{def} is inert to feature checking thus locality conditions are preserved for the matrix v* to check the clitic. The first conclusion is that locality conditions are the same in simple clitic clauses and in clitic climbing contexts: in the latter, the defective complement does not count as a phase so the object clitic still counts as an active goal for the restructuring verb in v*.

(51) [Cl [EA v* [V [T_{def} [Cl [EA v* t_{Cl} (clitic climbing)

(52) [Cl [EA v* [V t_{Cl} (simple cliticization)

The second conclusion concerns the optionality of clitic climbing within restructuring. Specifically, what allows the clitic to remain in the embedded verb (enclisis) in the same defective structure?

We will maintain that proclisis, i.e. clitic climbing, obtains when the embedded v cannot match the clitic in its full set of phi-features, whereas enclisis is possible when the interpretable phi-features on the clitic match the uninterpretable phi-features on v* thus v* can delete the clitic's unvalued Case.

Solà (2002) surmises that the alternation clitic climbing/enclisis correlates with the optional projection Agr_0. He argues that "Agr_0 is projected (or activated) only when necessary: in clitic climbing contexts it need not be projected in the embedded clause (although it can, if clitic climbing is indeed optional)"(p.16). Whereas Chomsky (1995) assimilates v, the head that assigns ACC Case to the internal argument and projects an external argument, to Agr_0, Solà (2002) claims that Agr_0 should be kept as an independent functional projection and that v should rather assimilated to Agr_{PstPrt}, as we have seen. If Agr_0 is projected in the embedded infinitive, a non-clitic climbing configuration arises.

However, an analysis of clitics as "active goals" is entirely compatible with an incorporation analysis à la Roberts (2006; 2010) and Mavrogiorgos (2010), under which the clitic can incorporate with a verbal head only if the former counts as a "defective goal" (see the discussion in §2.4.2). Under an incorporation analysis, therefore, we do not need to posit the existence of an Acc Case-assigning head in a vP-external position: in other words, if proclisis and enclisis are to be regarded as head movement, "the optionality of clitic climbing may reduce to the simple optionality of the unvalued phi-features associated with the higher v" (Roberts 2010:85).

Enclisis results when the clitic incorporates to the infinitival head, therefore ending up following the verb in Inf. If the features on the clitic are not a subset of the lower v* (i.e., if the lower v* has no [person]), incorporation does not obtain therefore the clitic can be probed by the higher v*. At this level, feature matching yields incorporation and movement to finite T.

(53) [T [v* [V [T_{def} $Inf_{[-fin]}$+cl [t_{Cl} [EA v* [V t_{Cl}]]]]   (enclisis)

(54) [cl+$T_{[+fin]}$ [t_{Cl} [v* [V [T_{def} [t_{Cl} [EA v* [VP t_{Cl}]]]]]   (clitic climbing)

In (53) the clitic incorporates with the lower v* – the interpretable features of the clitic (number, gender) being a subset of the uninterpretable features of v*(number, gender, person). After incorporation, the clitic and v move together to a low functional projection, hosting non-finite morphology; in (54), the clitic is not inactivated in the lower v* because this is assumed to lack [person] (in Solà's analysis, because this feature is assumed to be dissociated from Agr$_{Prt}$, which contains [number, gender]). If the clitic is not a defective goal for the lower v, it does not incorporate with it. Instead, it is probed by the matrix v* which has [person] and consequently deletes Case. After incorporation, the clitic ends up in the finite inflectional head T.

Summing up, a derivational analysis of clitic climbing has solid theoretical justification under the model of phases and can be recapitulated as follows:

1) Clitic climbing involves phi-feature inheritance;
2) It is optional, that is, it is not a necessary property of restructuring constructions, and it occurs when the clitic fails to be deactivated (i.e. check accusative Case) in the embedded v;
3) It is made available by the defective status of the embedded T which does not cause intervention effects.

3.2.3 THE RAISING/CONTROL ALTERNATION IN RESTRUCTURING: RESIDUAL QUESTIONS

If we maintain D'Alessandro and Roberts' (2008) analysis that only phi-defective v selects auxiliary BE, some residual issues need to be addressed as for the status of the matrix v in (object) clitic climbing contexts. As discussed previously, T$_{def}$ allows the matrix verb to be "transparent" to the auxiliary choice of the lower verb. In this configuration, raising (i.e. inherently defective verbs such as *dovere*) and control verbs exhibit parallel behaviour: when the lower verb is defective (e.g. unaccusative), the restructuring verbs obligatorily selects BE. In turn, we have maintained that this entails the phi-defectiveness of the higher v, as shown in (37). We have also noted that the only difference between control verbs and raising verbs is that the latter can never select auxiliary HAVE if followed by an unaccusative complement, even in absence of (locative) clitic climbing (see example 41): in other words, raising verbs are always in a restructuring configuration. Control verbs, on the other hand, undergo auxiliary shift optionally when the lower v is defective, in absence of clitic climbing – which is evidence that a structure without clitic climbing can potentially be a "true" non-restructuring (i.e. control) configuration (see example 43).

In light of an analysis of clitic climbing as long-distance agreement, however, it is important to observe that only phi-complete v* can trigger object clitic movement. If the lower v were responsible for assignment of ACC Case, enclisis would obtain, as we have seen, and it would be the only option. If clitic climbing is probed by a matrix ACC Case-assigning v, such head cannot be defective. We might speculate, therefore, that restructuring verbs selecting transitive (phi-complete) verbs, being transparent to the choice of the lower verb, can inherit full feature specification and the ability to assign Case from it. As Gallego (p.c.) points out, Case assignment in clitic climbing constructions should not raise a problem for control verbs, if we assume that T_{def} licenses PRO: in such case, the matrix verb is theta-complete and can assign Case; it is more problematic, however, for raising verbs, which are inherently defective. The natural solution is to assume that there is one A-domain (hence only one Case-assigning head) for two vPs.

If we combine the postulate that auxiliary HAVE is selected by non-defective v* – in other words, a Case-assigning head – with the assumption that restructuring creates one single A-domain by allowing the main verb to inherit the auxiliary choice (hence phi-completeness/defectiveness) of the lower verb, the raising/control alternation should follow unproblematically. Raising verbs can "inherit" HAVE and be the Case-assigning head for a climbed clitic in restructuring, but cannot select a non-restructuring complement. Therefore, (41) is impossible because *dovere*, an obligatory restructuring verb, cannot impose auxiliary HAVE when followed by a defective vP like the unaccusative *andare*; on the other hand, when it selects HAVE it inherits it from a lower non-defective verb which makes it the Case-assigning head and a probe. For control verbs, we can assume that the same process is at play in clitic climbing: although both the main and the embedded transitive verbs are potentially complete, restructuring creates one A-domain: if Case is assigned by the higher verb, the lower verb is inert to Case checking and allows the clitic to remain active throughout the derivation; otherwise, the clitic stops in the infinitival ending up in enclitic position.

We can conclude that, when a restructuring verb selects a transitive verb, it inherits the phi-completeness of the lower verb and its ability to delete ACC Case:

(55) C > v* > Tdef > v

The lower v is unable to be a probe for the clitic and Case-mark it, under the assumption that Case is deleted under full matching of phi-feature, yet it is thematically complete.

3.2.4 V-T$_{DEF}$ SELECTION VS. vP RECURSION

So far as any analysis of clitic climbing has to account for locality effects, we have shown that the complement of restructuring predicates cannot be C. As the examples (47-49) showed, restructuring is clearly incompatible with overt complementisers, with tensed complements and with clausal negation. The presence of C blocks any long-distance agreement operation between the embedded object and the matrix clause. Not only would C entail the phasal nature of the embedded clause, but also, since C is not a probe for the clitic, there would be no "escape hatch" to allow cyclic movement to the matrix clause. The relative contrast between non-restructuring and restructuring complements is therefore correctly captured by Roberts' (2010) analysis as follows: (56) represents a full CP complement. The impossibility of restructuring-related phenomena in this structure is clearly due to PIC, assuming that the lower TP is not accessible to further operations at the higher strong phase v*, but only C and its edge are.

(56) ...v [$_{VP}$ V [$_{CP}$ C [$_{TP}$ T [$_{vP}$ v [$_{VP}$ V ...

Three alternative structures are compatible with the restructuring facts: a matrix v taking a T (defective) complement (57); a matrix v taking a vP complement (58) and, finally, an iteration of vPs (59):

(57) ...v [$_{VP}$ V [$_{TP}$ T [$_{vP}$ v [$_{VP}$ V ...
(58) ...v [$_{VP}$ V [$_{vP}$ v [$_{VP}$ V ...
(59) ...v [$_{vP}$ v [$_{vP}$ v [$_{VP}$ V ...

The latter is the position which Roberts (2010) argues for. Such iteration of vPs follows from incorporation and from the assumption that each minimal category v^{min} is a phase, hosting the clitic in its edge, a position from which excorporation is allowed (thus clitic climbing takes place). Furthermore, such iteration of vPs gives rise to a monoclausal structure à la Cinque (2004), as explicitly stated, in which restructuring verbs are hierarchically ordered.

From a derivational viewpoint, all three syntactic structures (57-59) are potentially compatible with clitic climbing. Aside from the necessary assumption that the restructuring complement be not a full C, there is no apparent reason to reject (57) and (58). The structural condition for clitic climbing assumed by the present analysis coincides

with (57); as we will see in §4, (58) will represent our analysis of causative constructions, in which the embedded T is not projected.

We have argued that a T_{def} analysis of restructuring complements has the advantage of accounting for the biclausal yet non-phasal nature of the T complement. In a nutshell, the non-phasal nature of the complement accounts for clitic climbing as a probe-goal relationship in which a matrix head can "probe inside" the embedded complement due to the absence of C (i.e. no PIC/opacity effects). It is not the case that clitic climbing is a special property of restructuring verbs: it is also found in ECM-type constructions as well as in causative complements. Therefore, analysing T_{def} as a general condition for clitic climbing, not structure-specific and not entirely coincident with restructuring (in fact, long object movement and auxiliary section are truly specific to restructuring and no other infinitival complex) appears to be the "simplest assumption" in minimalist terms. Moreover, the enclisis/proclisis alternation is optional in restructuring and obligatory in ECM and causative complements. A vP-recursion/monoclausal account does not appear to answer exhaustively why it is so. This suggests that the structures in (57) and (58) might be more on the right track to account for the structure of different complex predicates.

Positing a T (although defective) projection selecting a non-defective vP, rather than a recursion of vPs, has several consequences. Firstly, it implies that restructuring complexes are in fact a "clause union" in the traditional sense (Rizzi 1978; Burzio 1986), where the fundamental shift in perspective from the transformational analyses lies in the fact that there is no "restructuring rule" but rather a structural condition on restructuring which is met when the T complement is defective. In this sense, there are two lexical verbs, each one projecting a vP and "some higher structure" above vP: the matrix vP is headed by C; the embedded vP is headed by T_{def}. Secondly, it hinges on a tight link between raising and control, very much in line with recent work on control (Hornstein 1999; Manzini and Roussou 2000). Third, T defectiveness has also interpretive properties associated with the EPP feature in the embedded clause – according to Roussou (2010), to supply a variable which unifies the argument structure of the two predicates – an issue with the vP-recursion analysis does not address.

3.2.5 T_{DEF} AND PERCEPTION VERBS

In Cardinaletti and Shlonsky's (2004) classification, perception verbs are quasi-functional verbs. In a phase-based analysis, complex predicates with perception verbs can also be

accounted for postulating that, in this configuration, they select a defective T complement. In fact, the finite verb:

a. projects a non-defective matrix v with its own external argument, distinct from the external argument selected from the infinitival;

b. obligatorily triggers clitic climbing;

c. never allows auxiliary switch.

These properties have a common explanation, namely, the non-defective status of the matrix v:

(60) matrix C > matrix v* >embedded T$_{def}$> embedded v*

The clitic which appears on the matrix verb is the external argument of the embedded verb; thus, two external arguments are evidence that both the matrix and the embedded v are non-defective. Under D'Alessandro and Roberts' (2008) analysis, the choice of auxiliary *avere* is related to the non-defectiveness of the matrix v*, which theta-marks its external argument and Case-licenses the derived embedded subject, unable to delete NOM Case on T.

The obligatoriness of clitic climbing from complements of perception verbs also follows from the thematic properties of the matrix and the embedded v*. The embedded clitic position is in effect a subject position and therefore cannot be Case-licensed by the non-defective embedded v*: since the (subject) clitic never agrees with v*, enclisis never obtains. The clitic merged in the lower external argument spec,vP is therefore probed by the embedded T$_{def}$.

As we have seen, defective probes are those that cannot match the goal in all features, due to their lack of some features, but nonetheless implement raising. Case assignment, on the other hand, is not a matching operation. Rather, it is deleted under matching of phi-features. Therefore, Case can be checked only after a goal has deleted its full set of phi-features. Chomsky (2001:17) advances that, on the simplest assumption, T$_{def}$ has only the feature [person] and no other. The clitic probed to the spec of the defective T, therefore, is still an active goal for the higher probe v* of the matrix clause, which has number and gender uninterpretable features. Under such analysis, the matrix v* matches the clitic in number and gender and deletes the clitic's unvalued Case. This probe-goal relation can take place in situ, since defective T is accessible to the v* head.

At this point, the external subject of the matrix predicate is merged and the derivation proceeds to the C phase, where the clitic is EPP-driven to the outer edge of the matrix vP and the subject raises to T to check nominative case. If T were not defective (i.e. if the ECM clause contained C) this position would not be accessible to the matrix v* and the derivation would crash because the clitic would reach Spell-Out with an unvalued Case feature. Since T is defective, it does not constitute a phase and it is in the phasal domain of the matrix v*, which can therefore probe the clitic in T to its outer spec.

3.3 CONCLUSION

In this section, we have defined complex predicates as bi-clausal structures containing, at least, a defective non-phasal complement. This configuration has general properties: firstly, we have argued that restructuring is a property of configurations and not of classes of verbs. Optional restructuring verbs (i.e. control verbs) have the option to appear in this configuration (raising) or not (control); obligatorily restructuring verbs do not have the option because they have inherently defective v hence they are always "transparent" to the feature and Case properties of the lower verb. Secondly, we have identified T_{def} as the structural property shared by restructuring constructions and complements of perception verbs – or "quasi-functional" verbs, in Cardinaletti and Shlonsky's (2004) categorization – deriving all other structure-specific properties (auxiliary choice of the matrix verb, enclisis/proclisis patterns, triggers of clitic movement) from Case properties of the matrix and the embedded v.

Clearly, defectiveness of T is not an inherent property of non-finite T: control *to*-clauses contain phi-complete T, endowed with an EPP feature therefore allowed to license PRO in subject position, as argued in Chomsky (2001; 2008). It is also explicitly stated in Chomsky (2008) that T is complete only when it inherits its phi-feature specification from a phase head C: hence phi-defectiveness of T is derived from the absence of the structural layer C. In contrast, Roberts' (2010) assumption that each verbal minimal head is a phase seems to imply that the properties of each head are independent from the configuration, and therefore need to be independently motivated.

Defectiveness of the matrix v is also not an inherent property of the finite verb. This is the main point of departure from "only functional" analyses. Control verbs do not lack the ability to project an external argument; in the restructuring configuration, however, they select the external argument theta-marked by the embedded verb: this is how identity of the matrix and the embedded subject is derived. When the matrix verb projects an external argument different from the embedded subject, such as in ECM constructions, the

syntactic consequences are simply related to the number of theta-roles provided by the predicates (and other vP-related properties, such as absence of auxiliary switch and long object movement).

The present analysis adopts an analysis of clitic climbing as long-distance agreement, allowed only if the clitic is an active goal for the matrix v. In restructuring, clitic climbing is parasitic on the phi-defectiveness of the embedded v, unable to delete the clitic's Case, and the non-phasal status of T. The object clitic of restructuring constructions transits through the outer spec,vP to be probed by the higher v*. Enclisis obtains if the feature specification on the lower v* allows the clitic to incorporate with the lower v, which consequently moves up to the low inflectional position targeted by infinitives.

In ECM-type constructions, the merge position of the embedded clitic yields a different derivation: the subject argument is merged in the EA spec,vP, transits through [spec,T$_{def}$], whereby it is probed by the matrix non-defective v*. This explains: firstly, why clitic climbing is obligatory even though the embedded v is phi-complete: in fact, the external argument fails to be Case-licensed not by v but by T, hence it surfaces ACC Case-marked by the higher v; secondly, why enclisis is not possible in ECM clauses: there being no agree between the clitic and the lower v, there is also no available enclitic site.

4.   CAUSATIVE CONSTRUCTIONS

The last type of complex predicates in Italian is formed of the causative verb "fare" and an infinitival complement. Causative constructions have a peculiar status in Italian: like ECM constructions, and unlike restructuring predicates, they disallow cliticization in the embedded infinitival. Case properties of the arguments of the lower v suggest that this structure is much more impoverished than an ECM structure: in particular, there is no NOM-Case assigner for the subject, which can surface with structural Case inside the embedded vP, and there is no enclitic position. It follows from the discussion developed so far that, since T is the head responsible for Nom-Case assignment, and Inf is the projection above v* target by infinitives, those properties suggest that causative complements do not project above vP. As we will see, the matrix subject of a causative construction also bears a special semantic relation with the arguments embedded in the infinitival: all these facts will be taken to confirm that the vP projected by "fare" does not embed a TP but only vPs, which can project different structures depending on the properties of the lower verb.

We will start introducing the properties of complements of causative constructions with regard to the argument position of the external argument and Case assignment (§4.1). Consequently, we will analyse the differences between two types of causatives: faire

infinitive (FI) and faire-par (FP) (§4.3). We will conclude that causative "fare" can only embed vPs and no T layer in Italian. Furthermore, important semantic and syntactic differences between FI and FP indicate that the vPs selected by "fare" are different in their structural richness: FI embeds a non-defective vP with an external theta-role; FP, in contrast, embeds a defective v which resembles the passive/unaccusative VP: in other words, a VP lacking an external argument.

4.1 CASE ASSIGNMENT IN CAUSATIVE COMPLEMENTS

We have been assuming so far that thematic properties of the higher vP in different complex predicates yield different Case patterns, despite the common presence of an intervening defective probe T. In raising/control structures, the embedded subject simply raises through defective T and therefore gets NOM Case by the matrix C-T; or, it is a coindexed PRO (under an analysis à la Landau 2002): hence there is always identity between the subject of the higher and the lower v. In ECM constructions, the embedded subject behaves like an "object" with respect to Case properties: in other words, since the higher v projects its own external argument, which is NOM-Case-marked by the matrix T, raising is not possible, and the only way to Case-license the embedded subject, probed by T_{def}, is to ACC-mark it under agree with the higher v*.

Causative complements, however, display special properties with regard to the embedded subject, not only with respect to Case but also to its distribution. As Guasti (2005) notes (see also Burzio 1986:287), SVO order is prohibited in causative constructions whereas it is acceptable with perception verbs complements:

(61) *Maria ha fatto Gianni riparare la macchina
        Maria has.AUX made Gianni repair the car
       'Maria made Gianni repair the car'

(62) Maria ha visto Gianni riparare la macchina
        Maria has.AUX seen Gianni repair the car
       'Maria saw Gianni repair the car'

In Burzio (1986), the impossibility of (61) followed from a constraint against Case assignment across S' boundaries. Under this analysis, the ungrammaticality of (61) simply amounted to ECP violation: in other words, the embedded subject fails to be Case-marked by "fare" in such a configuration due to the intervention of a sentential barrier:

(63) *Maria ha fatto [ₛ Giovanni riparare la macchina] (p.232)

    Maria has.ₐᵤₓ made Giovanni repair the car

    'Maria made Giovanni repair the car'

The relevant movement operation assumed by Burzio was, as we have seen in §2.1, VP movement:

(64) Maria ha fatto [ᵥₚ lavorare][ₛ Giovanni ___]

    Maria has.ₐᵤₓ made work   Giovanni

    Maria made Giovanni work

Examples like (61) and (62), however, are problematic to treat under the same analysis. Burzio's solution was, therefore, that perception verbs in actual fact do not have the structure in (64), namely, they do not take a bare sentential complement but, rather, an NP coindexed with PRO in a control clause:

(65) Ho visto [ₙₚ Giovanni_i] [ₛ PRO_i parlare con Maria]

    I.have.ₐᵤₓ seen Giovanni   speak with Maria

    'I saw Giovanni speak with Maria'

Burzio (1986) argues against a raising-to-object analysis as the one assumed in Radford (1977), arguing that this could not account for the apparent syntactic similarities between untensed clauses like (65) and pseudo-clefting cases like (66): in particular, the fact that they both allow cliticization of the object (67, 68):

(66) Ho visto Giovanni che parlava con Maria

    I.have.aux seen Giovanni who was speaking with Maria

(67) L'ho visto parlare con Maria

    him I.have.aux seen speak with Maria

    'I saw him speak with Maria'

(68) L'ho visto che parlava con Maria

    him I.have.aux seen who was speaking with Maria

    'I saw him speaking with Maria'

A raising-to-object analysis, on the other hand, is what we have argued for in the analysis of clitic climbing in ECM contexts as (67), based on the assumption that the clitic is raised to T_{def} before being attracted by the matrix v^*. We have argued that the reason why raising-to-object is allowed out of an untensed clause has to do with the defectiveness of the intervening T: such projection, however, must be present in the clause, as witnessed by the grammaticality of the preverbal subject in (62) and (65). The contrast with causative constructions, rather, seems to suggest that causative complements lack T altogether.

The second piece of evidence that causative complements do not have a spec,T position for the embedded subject comes from Case properties. According to Folli and Harley (2007), the subject of unergative predicates in complements of causative constructions absorbs ACC case from the embedded v^*. They also maintain, following Landau (2002) and Guasti (2005), that this vP projects a rightward specifier in Italian. Thus the structure of unergative causative complements like (69), following Folli and Harley (2007), would be:

(69)
```
          vP
         /  \
        v    vP
      fare   / \
           v'   DP_ACC
          / \   Giovanni
         v   VP
             |
             V
          lavorare
```
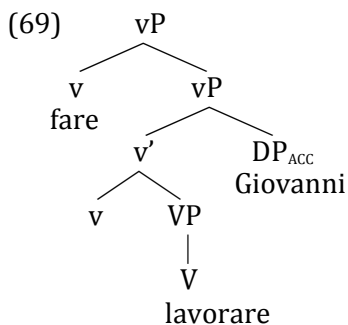
As they point out, there seems to be independent evidence for the presence of rightward specifiers in Italian: for example, the word-order contrast between English and Italian in adjectival small clauses like (70 a, b), which can only be explained if the subject in its unmarked Case projects on the right:

(70) a. John made Mary happy   (Folli and Harley 2007:208, ft.8)

      b Giovanni ha fatto felice Maria

       Giovanni has made happy Maria

       'Giovanni made Maria happy'

The rightward-specifier analysis thus does not appear to be problematic and will be maintained. We therefore conclude that, differently from perception verbs, causative "fare" embeds a vP complement and not T.

Case assignment properties of this constructions, therefore, must follow from a syntactic analysis of such vP. As we have just seen, when the embedded verb contains no direct object, the external argument absorbs ACC Case. This is also the Case exhibited by a cliticised embedded subject:

(71) Paolo la fa [$_{vP}$[$_{VP}$ ridere] _] (unergative)
     Paolo her.cl makes laugh
     'Paolo makes her laugh'

As in ECM-type complements, cliticization of the subject on the infinitive (72) is strongly deviant:

(72) *Paolo fa riderla
     Paolo makes laugh+her.cl

Again, this can be explained under Roberts' (2010) proposal that enclisis is incorporation to the lower v under Agree, followed by verb movement (Pollock 1989) to the non-finite Infl projection. Both in ECM and causatives, therefore, enclisis of the embedded argument is impossible from subject position due to the fact that phi-complete v* always agrees with its internal argument. Whereas the subject of infinitival complements of perception verbs is ACC-Case-marked by the higher v, the subject of transitive complements takes DAT Case. When it is a clitic, it cliticises on the main verb as a dative clitic.

(73) Maria gli fa riparare la macchina (transitive)
     Maria to.him.cl makes repair the car
     'Maria makes him repair the car'

According to Folli and Harley, ACC and DAT are structural cases, available in the embedded v. The reason why the embedded subject of a transitive predicate surfaces as DAT is that the ACC Case is taken by the embedded object. Under such analysis the Case assigning head in causative FI is not "fare", but the embedded v (against Landau 2002). If this is correct,

the impossibility of cliticization in the infinitival complement has not to do with Case but, rather, with the absence of Infl structure between the matrix and the embedded v, where infinitives must move in Italian.

Burzio (1986) noted, in fact, that cliticization in the infinitival clause leads to different degrees of ungrammaticality depending on the underlying position of the clitic. In fact, whilst cliticization of unaccusative arguments to the infinitive verb leads to severe ungrammaticality (as in 74 and, also, 72 above), it is less degrading when the object clitic is an internal argument of an embedded transitive verb (75):

(74) **Farò intervenir*lo* (unaccusative)
      I.will.make him.intervene
(75) ??Faccio legger*lo* a Giovanni (transitive)
      I.make it.read to Giovanni

Thus Guasti's (2005) observation that Agr_0 is absent in these complements is arguably correct. Under the assumption that the unaccusative v (74) is defective whereas the transitive v* (75) is not, we can account for the contrast based on the feature specification on those vPs: in fact, despite the absence of structure, possibly including an host for the infinitive+clitic complex, (75) has less degrading flavour because non-defectiveness of v* allows in principle the infinitival v* to agree with the clitic and delete ACC Case – in Roberts' terms, the clitic counts as a defective goal for non-defective v*. In (74), however, defectiveness of v does not allow the clitic to incorporate with v, because (i) only defective goals can incorporate to their probe and (ii) clitics are defective goals only if their features are a subset of the features on v* (which is no longer the case when v is defective).

Under Chomsky's (2008:154) definition of phases as "the domains in which uninterpretable features are valued" – hence structural Case – the transitive and unergative vPs embedded under FI, containing Case and external-argument-assigning v, are phases. Conversely, unaccusative vPs are defective. The unaccusative vP embedded in causative "fare", in fact, differs from the unergative vP in that no external argument position is filled in spec,vP (Marantz 1997):

(76)   vP   (Folli and Harley 2007:215)

```
(76)        vP                    (Folli and Harley 2007:215)
         /     \
        v       vP
       fare    /  \
      make    v    VP
              Ø   /   \
                 V     DP
                 |     △
              arrivare  il pacchetto
               arrive    the package
```
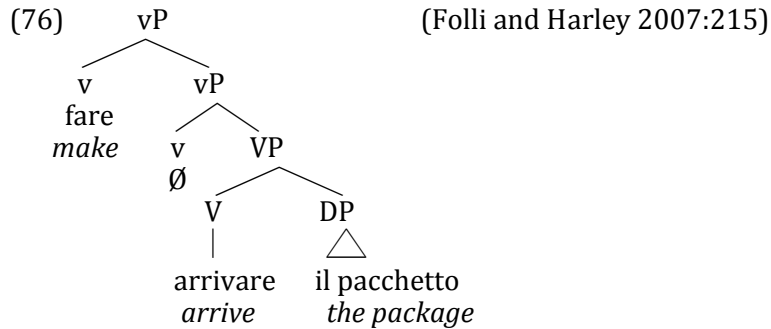
Arguably, ACC Case is assigned directly by the matrix verb in these constructions:

(77) Lo sciopero li ha fatti [$_{vP}$ [$_{VP}$ arrivare _] in ritardo]] (unaccusative, i.e. v$_{def}$)

The strike them.cl has.aux made arrive late

'The strike made them arrive late'

4.2 CASE ASSIGNMENT IN COMPLEMENTS OF PERCEPTION VERBS

Clitic climbing, as we have seen, is obligatory with both causative and perception verbs. However, there are important differences between subject and object clitics in complements of perception verbs: subjects obligatorily cliticise onto the matrix verb because the defectiveness of the lower T does not allow the external argument of the lower verb to check nom Case (79a); on the other hand, clitic objects can (79b), and actually must (79d), cliticise to the lower (non-defective) verb:

(78) Ho visto Gianni dare il pacchetto a Maria

    I.have.seen Gianni give the package to Maria

   'I saw Gianni give the package to Maria'

(79) a. *L*'ho visto dare il pacchetto a Maria

      him-ACC I.have.seen give the package to Maria

  b. Ho visto Gianni dar*lo* a Maria

     I.have.seen Gianni give.it-ACC to Maria

  c. Ho visto Gianni dar*glielo*

     I.have.seen Gianni give.to.her-DAT.it-ACC

  d. *L*'ho visto Gianni dare a Maria

      it-ACC I.have.seen Gianni give to Maria

  e. *Le* ho visto Gianni dare il pacchetto

      to.her.DAT I.have.seen Gianni give the package

  f.*Gliel*'ho visto Gianni dare

      to.her-DAT.it-ACC I.have.seen Gianni give

The reason why the object clitic can appear on the lower verb is that this complement contains an inflectional projection which is able to host the infinitive+clitic complex head. Furthermore, given that both structural ACC and DAT Case are available in the embedded v, both accusative and dative clitics are disallowed to move out of the complement clause past the exceptionally case marked subject, since they are not "active goals" for the higher v* (79d-f). We can thus conclude that complements of perception verbs are able to assign ACC Case to an internal object but not NOM Case: this forces the subject, attracted to spec,T_{def} for EPP checking, to cliticise to the finite verb, where it absorbs ACC Case. Hence clitic climbing in complex predicates with perception verbs qualifies as Exceptional Case Marking due to defectiveness of T for NOM Case checking, but the same does not hold in causative constructions, where clitic climbing is due to the absence of an Agr_O projection in the infinitival complement.

4.3 FAIRE-PAR VS. FAIRE-INFINITIF

Although we have shown that the complement of causative constructions projects no structure higher than vP, there are important differences in the vPs embedded in two types of causative constructions, namely, Faire-Par (FP) and Faire-Infinitif (FI). The distinction between FP and FI dates back to Kayne (1975). Such complements display very different properties with regard to the syntactic status of the "causer":

(80) Maria ha fatto riparare la macchina a Gianni (FI)
   Maria has.aux made repair the car to Gianni
   'Maria made Gianni repair the car'

(81) Maria ha fatto riparare la macchina da Gianni (FP)
   Maria has.aux made repair the car by Gianni
   'Maria had the car repaired by Gianni'

(82) Maria ha fatto riparare la macchina (FP)
   Maria has.aux made repair the car
   'Maria had the car repaired'

The subject of FI is always introduced by an a-phrase (80), whereas the subject of FP is introduced by a by-phrase (81) and can be optional (82). It appears that the event embedded under "fare" also expresses a special semantic relation between the external theta role of the main verb, the "causer", and the subject of the lower v, or "causee". As noted by Folli and Harley (2007), who follow an intuition by Hyman and Zimmer (1975), FI involves a tighter relation between the main subject and the causee (the *a*-phrase)

which involves *obligation*; this is not the case for FP constructions, as witnessed by the anomalous flavour of (83b) compared to (83a):

(83) a. Gianni ha fatto riparare la macchina dal meccanico di via Fiume
       Gianni has made repair the car by.the mechanic of street Fiume
       'Gianni had the car repaired by the mechanic in Fiume St.'

   b. ?Gianni ha fatto riparare la macchina al meccanico di via Fiume
      Gianni has made repair the car to.the mechanic of street Fiume
      'Gianni had the mechanic in Fiume St. repair the car'
      (from Folli and Harley 2007:201)

This is because "in the typical case, one does not oblige a mechanic to repair one's car" (p.201). Encyclopaedic knowledge tells us that this is a mechanic's job, hence obligation on the part of the Causee yields oddity.

Along the same lines, Kayne (1975) noted that the relation between the causer and the causee has different semantic possibilities in FP and FP. Firstly, idiomatic expressions are preserved under FI but not under FP (Kayne 1975:235):

(84) a. Son fils fera le malade
        His son will.make the patient
        'His son will play sick'

   b. Il fera faire le malade à son fils (FI)
      He will make make the patient to his son
      'He will have his son play sick'

   c. #Il fera faire le malade par son fils (FP)
       He will make make the sick by his son
      'He will have his son play sick'

Secondly, verbs of inalienable possession can only appear in FI constructions; the by-phrase of FP, in contrast, cannot function as an inalienable possessor for the object:

(85) a. Elle fera lever la main à Jean
        She will.make raise the hand to Jean
        'She will have Jean raise his hand'

   b. #Elle fera lever la main par Jean
      She will.make raise the hand by Jean

'She will have Jean raise his hand'

Guasti (1996, 2005) argues on the basis of binding phenomena that, whereas the subject of FI is a syntactic argument marked by structural DAT Case, the by-phrase of FP complements is not syntactically active: it is not an argument and it cannot bind an anaphor:

(86) *Faremo curare i propri$_i$ interessi dai nostri clienti$_i$

We.will.maketake.care.oftheir.own interests by our customers

'We will have their own interests taken care of by our customers'

In traditional terms, the causee of FP complements is an adjunct. This observation was also shared by Burzio (1986). Despite the apparent similarities, Guasti, argues against a passive-like analysis of FP. In fact, unlike the passive by-phrase, which is syntactically active, the FP by-phrase does not seem to be a possible binder:

(87) Questo edificio fu costruito (da Gaudì$_i$) PRO$_i$ per ottenere un premio

This building was built (by Gaudì) to PRO obtain a prize

(88) Il comandante$_i$ ha fatto attaccare i nemici dal generale$_j$ senza PRO$_{i/*j}$ avvisare il governo

The officer has made attack the enemies by the general without PRO informing the government

Furthermore, certain verbs (psych-verbs, epistemic verbs, some verbs of perceptions) can be passivized but cannot appear in FP:

(89) La grandine è temuta dai contadini

'the hail is feared by the farmers'

(90) *La grandine ha fatto temere un disastro dai contadini

the hail has.AUX made fear a disaster by the farmers

'The hail made the farmers fear a disaster'

Her conclusion is that the FP subject is logically suppressed, and for such reason incompatible with certain types of verbs. In passive sentences, the logical subject is absorbed by the passive morphology therefore it is "active" in syntactic terms, as it can bind an anaphor and it can be a controller for PRO.

In this sense, Guasti argues that FP does not pattern with verbal passives but rather with nominal passives. The latter, in fact, are also forbidden with certain types of nouns and

seem to be allowed only when the object is "affected" by the event described by the noun (as originally noted in Jaeggly (1986): thus (91) is ungrammatical because the external argument of "loss" is not affected:

(91) *John's loss of the job

The generalisation, captured under the Affectedness Constraint (Guasti 1993) has one important consequence: that FP complements are analysed as bare VPs, in which the external argument is logically suppressed.

Folli and Harley (2007) maintain the argument/adjunct distinction in FI and FP, but point out that Guasti's analysis is problematic in two respects: firstly, it posits a syntactic process of incorporation by virtue of which the Causee of FI absorbs three theta-roles, namely, <causer, event> and <benefactive>. Such "fusion" should follow from head movement and imply that a single verbal complex is created but, as Ippolito (2000) showed, it is indeed the case that syntactic material, e.g. adverbs, can intervene between the finite verb and the infinitival head, which is unexpected under a head incorporation analysis:

(92) Arturo ha fatto ancora una volta riparare la macchina a Corrado
     Arturo has made again one time repair the car to Corrado
     'Arturo had Corrado repair the car again'

In Guasti's analysis, suppression of the logical subject in FP constructions is a lexical operation. In contrast, Folli and Harley (2007) propose to derive the differences between types of causative constructions simply based on the different properties of the little v embedded under "fare". In particular, they argue that the FP construction lacks an external-argument-assigning v. In this way, the "nominalised" nature of the VP embedded under FP is derived structurally as lack of a functional layer v. Such structure, therefore, would look like:

(93)
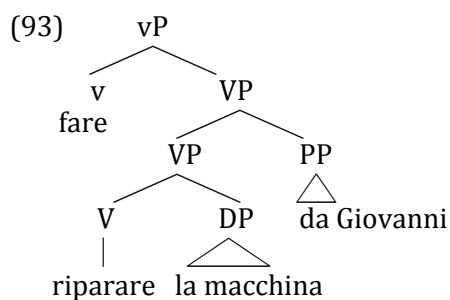
4.4 "FARE" AND DEFECTIVE vPS

In §4.1, we have accounted for Case assignment to the subject of FI constructions depending on the properties of the vPs embedded under "fare", namely, unergative and transitive (non-defective), and unaccusative (defective). The external argument of unergative and transitive vPs is projected in a rightward specifier and assigned DAT Case; the syntactic subject of unaccusative vPs, in contrast, is merged in the logical object position and assigned ACC Case. Following Hale and Keyser (2002), Folli and Harley (2007) argue that the causative little v can "come in different types, or "flavours"" (p.210). The little v of non-defective FI complements is a v_{DO} head, which requires the subject to be an agent: this accounts for the "obligatory obligation" involved in these constructions (as already shown in the examples 83 a,b); a v_{CAUSE} head, in contrast, simply takes a causer as its external argument. This correlates with animacy: v_{DO} can only take animate subjects and this explain why the dative subject of FI complements must be animate: in other words, it must be intentional:

(94) Gianni ha fatto rompere la finestra a Maria / *al ramo. (F&H 2007:212)

    Gianni has made break the window to Maria / to.the branch

    'Gianni made Maria / *the branch break the window.'

Not only transitive vPs, but also unergatives must contain v_{DO}. For instance, the restriction on animacy in the subject embedded under FI holds for a verb like *parlare* (to talk) which can in principle take inanimate agents, e.g. a radio, but not under FI:

(95) a. Maria / La radio ha parlato dell'aviaria.

    Maria / the radio has talked of.the bird.flu

    'Maria / The radio talked about bird flu.'

   b. Gianni ha fatto parlare Maria / *la radio dell'aviaria.

    Gianni has made speak Maria / the radio of.the bird.flu

    'Gianni made Maria / *the radio speak about bird flu.'

In the "fare" vP there are no restrictions on the animacy and intentionality of the external argument: the structure is therefore v_{CAUSE} selecting v_{DO}. Thus obligation obtains: "the only way to cause an agent to intentionally do something is to oblige it to" (p.212).

As for vPs lacking an external argument (hence defective), such as unaccusatives and stative verbs (e.g. *to fear, to sense*), the analysis assumes that these project a different little v, namely, v_{BECOME} and v_{BE}, which does not select an external argument:

(96) Gianni ha fatto arrivare il pacchetto

     Gianni has made arrive the package

     'Gianni made the package arrive'

(97) Gianni ha fatto avere una macchina a Maria

     Gianni has made have a car to Maria

     'Gianni made Maria have a car'

In these structures, "fare" embeds an event, hence a small clause, but there is no agent to mediate the event initiated by the subject of "fare". Again, there are no animacy restrictions on the matrix subject (see the FI counterpart of (90), "*la grandine ha fatto temere un disastro ai contadini", the hail made the farmers fear a disaster*), which suggest that the main vP can be v_{CAUSE}.

FP is the only construction in which "fare" is necessarily v_{DO}, taking an intentional and animate subject. Such analysis stems directly from the assumption that FP complements are nominal VPs. There is no room for v_{CAUSE} because causers are only "stimuli": in other words, one can be the causer of an event which has its own direct executor (an embedded subject) but not of a verbal noun (i.e. agentless VP).

Syntactic tests, however, do not seem to provide an uncontroversial answer in favour of a nominal analysis of FP complements. In fact, objects embedded in FP constructions seem to behave like unaccusative arguments of FI constructions under passivization (98 a,b). In contrast, unergative FI complements cannot be passivised (98 c):

(98) a. Marco è stato fatto cadere (da Gianni)

       Marco is been made fall (by Gianni)

       'Marco was made to fall (by Gianni)'

   b. La macchina è stata fatta riparare (dal meccanico)

      The car is been made repair (by the mechanic)

      'The car was made to repair (by the mechanic)'

   c. *Marco è stato fatto ridere (da Gianni)

      Marco is been made laugh (by Gianni)

According to Folli and Harley (2007:226-227), this is evidence that "causatives of unaccusatives may be FPs (without any embedded vP under *fare*) while causatives of unergatives may not" (p.227). Under their analysis, since unaccusative vPs lack an external argument, they can also be nominalised. In other words, it is the absence of an agent theta role in the unaccusative vP which allows this vP to appear, as a bare VP, in the FP construction; when it does, it is assumed to be no longer a vP but a nominalised VP.

We propose instead that the similarities between unaccusative FI and FP stem from the phi-defectiveness of v in both constructions. Firstly, it should be noted that the semantics of "fare" in FP can also be quite close to that of "laisser", a structure which can project even richer structure than "faire" (as will be mentioned in §5.2) . As we have seen, the relation assumed to hold between the main subject (the causer) and the argument of a defective vP (unaccusative, stative, psych verbs) – i.e. the causee – is one of "cause-X-to be/become" – in other words v_{CAUSE} selecting $v_{BE}/_{BECOME}$. Both Folli and Harley and Guasti convincingly show that the subject of FP must be animate; yet, it is not possible to exclude that its relation to the embedded event may be mediated by a causee, for example when the latter is clearly identified as a volitional character (see example 99 below).

This holds arguably in reflexive causatives, which are only possible under FP but not FI: in fact, when the subject of "fare" is at the same time the object of the infinitival, the causee must obligatorily be a by-phrase:

(99) Gianni si_e` fatto aiutare da Maria / *a Maria.

    Gianni REFL_is made help by Maria / to Maria

    'Gianni got himself helped by Maria / *Maria to help him.'

If the causer is at the same time the theme of an event, its relation to the causee seems to be one of permission, as witnessed by the potential synonimity between (99) and its counterpart with "lasciare":

(100) Gianni si è lasciato aiutare da Maria

    Gianni REFL_is let help by Maria

    'Gianni let himself be helped by Maria'

As Achard (1998) notes, subjects of infinitivals embedded under "laisser" take active volitional role in the event: "in the permission context of laisser, it is easy to construe the causee as showing some inclination towards the infinitival process. This is fully consistent with the status of the subject of laisser as a potential agent"(p.114). In other words, the

relation between a causer, a causee and an event embedded under FP does not appear to always be instrumental.

Campanini and Pitteroff (2012) also observe that "control via the *by*-phrase is possible, given a consistent pragmatic/interpretative context that makes the causee a legitimate - or even preferred – controller":

> (101) Maria$_i$ ha fatto pulire il pavimento dalla colf$_j$ senza $_{PRO\# i/j}$ usare l'aspirapolvere.
>
> M.$_i$ has made clean the floor by-the h.m.$_j$ without $_{PRO\# i/j}$ use the vacuum-cleaner
>
> 'Maria made the housemaid clean the floor without using the vacuum cleaner'

Phi-defectiveness of the unaccusative may also suffice to account for the behaviour of unaccusative vPs embedded under FI and the complements of FP in passive constructions. If vPs lacking an external argument are defective, they are not phasal, hence A-movement of the internal argument is equally possible.

We advance, therefore, that if "fare" can homogeneously embed vPs, the absence of an external argument in FP amounts to the projection of a defective, hence non-phasal, v:

(102)

```
        vP
       /  \
          v'
         /  \
       v*    vP
      fare   / \
          vdef  VP
           Ø    / \
              V'    PP
             /  \   /\
            V   DP da Maria
         aiutare Gianni
```
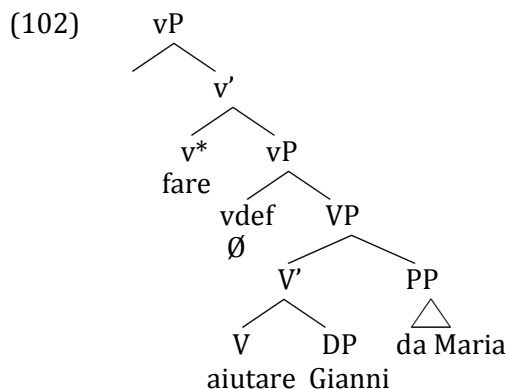
5. CROSS-LINGUISTIC PHENOMENA

5.1 LACK OF RESTRUCTURING IN FRENCH AND BRAZILIAN PORTUGUESE: ON THE PHASAL NATURE OF THE INFINITIVAL COMPLEMENT

Romance languages show quite a consistent relation between phi-defectiveness of T and restructuring phenomena. In fact, those languages which do not allow restructuring are languages in which T is phi-complete. This interestingly predicts a correlation between restructuring and the Null Subject Parameter (Roberts 1997). In modern French, long

object movement, auxiliary switch and clitic climbing are always forbidden with control verbs:

(103) *Les nouvelles maisons se commencerout à costruire
        The new houses SE will start to build

(104) *Pierre est voulu venir avec nous
        Pierre is.aux wanted to come with us

(105) *Jean le veut faire
        Jean it.cl wants to.do

As Kayne (1975:271) noted, French clitics "may not normally "move up" to a higher verb from an infinitival complement":

(106) a. Elle voudrait le manger
          She would.like it.cl to.eat
          'She would like to eat it'
      b. Je croyais la connaître
          I thought her.cl to.know
          'I thought I knew her'
      c. Je tiens à vous revoir
          I am anxious to you.cl see.again
          'I am anxious to see you again'

On the basis of diachronic evidence, Roberts (1997) correlated the loss of restructuring with the loss of the Null Subject Parameter, which happened concomitantly in the 17th century. It is also apparent that Italian infinitives move further than their French counterparts (Pollock 1989; Belletti 1990):

(107) Gianni ha deciso di non farlo più
        Gianni has decided to not do+it.cl anymore
        'Gianni decided not to do it again'

(108) Jean a décidé de ne pas le faire
        Jean has decided to not anymore it.cl do
        'Jean decided not to do it again'

Under minimalist assumptions, overt verb movement has been related to the presence of strong features of AgrS in non-finite clause. Roberts (1997) concludes that V/T incorporation cannot take place in French because this operation is contingent on prior movement to AgrS, which is blocked because the latter has weak features.

Brazilian Portuguese constitutes another exception among Romance languages in that it does not allow either the formation of complex predicates or FI constructions. Cyrino (2010) correctly predicts that the two phenomena correlate with the phasal nature of the complement and the phi-completedness of T:

a. In FI, there is no C-T
b. In restructuring, there is T but this is a deficient functional category, since it is [-phi] and hence not a phase (Cyrino 2010:11).

Diachronic data provide further support to the fact that the non-phasal nature of the complement (i.e. the defectiveness of T) is the precondition for the formation of a complex predicate and the "clause union" effect. The crucial change involved the loss of inflectional morphology both in finite and non-finite T – which only remained on the 3rd person plural –*rem*. Arguably, the levelling of finite and non-finite morphology had the consequence that such impoverished T cannot be "defective" and hence always counts as a phase, even in infinitival environments. In fact, it allows for both NOM subjects (109) and sentential negation (110):

(109) O João mandou [eu comer sopa]
     Joao ordered I eat.INF soup
     'João ordered me to eat soup'
(110) Foxy Brown parece [ter não aprendido sua lição]
     Foxy Brown seems to.have not learned his lesson

Under the assumption that both properties are derived from the phasal nature of the C complement, Cyrino (2010) concludes that complex predicates are forbidden in BP due to the (necessary) non-defectiveness of infinitival complements. The only possible causatives in BP are of ECM-type (109) although, unlike ECM, the subject surfaces in NOM position due to the non-defectiveness of T.

Cross-linguistic data, therefore, seem to suggest that the absence of restructuring is related to languages where weak T counts as phasal hence preventing the formation of a restructuring complex. In Italian, in contrast, non-finite T can be both phasal (phi-

complete) – as in control – and defective – as in raising: it is the latter possibility which allows the control/raising alternation hence the formation of a restructuring complex with certain control verbs.

5.2 Causatives and Perception verbs in Romance and English

As we have seen, in Italian causative complements the absence of T is witnessed by the impossibility of ECM for an embedded subject by the matrix external argument and by the necessary VOS order (see §4.1). Infinitival subjects under perception verbs, in contrast, can appear in preverbal position precisely because they can receive Case in [Spec,T$_{def}$] from the higher Acc Case-assigner in v*. Such difference crucially accounts for the difference between (111) and (112):

(111) Gianni vede Maria lavorare

Gianni sees Maria work

(112) *Gianni fa Maria lavorare

Gianni makes Maria work

The only adequate explanation for the ungrammaticality of (112) – which holds across all Romance languages, with the exception of those allowing tensed causative complements – is that a [spec,T] position is lacking in the causative complement, whereas it is present in (111). Burzio (1986) correctly observed that Case assignment is impossible across S-boundaries, which we can now restate in terms of phase boundaries: that is, in order to receive (special, Acc) Case from v*, the embedded subject must be in the same phase domain as the probe. While it is apparent that such complements contain more structure than vP, the analysis remains more problematic for causative complements across Romance languages, and the dissimilarities may in fact indicate that richer structure is projected above the infinitival vP embedded under causatives in some languages. The first cross-linguistic contrast concerns passivization: French causatives cannot be passivized (Kayne 1975); Zubizarreta (1985), whereas Italian causatives can, according to Guasti (2005), not only in FP (114) but also in transitive FI (113):

(113) La macchina è stata fatta riparare a Gianni

The car is.aux been made repaired to Gianni

'The car has been made repaired to Gianni'

(114) La macchina è stata fatta riparare da Gianni

The car is.aux been made repair by Gianni

'The car has been made repaired by Gianni'

(115) *La voiture a été fait reparer par Jean

'The car has been made repair by Jean'

Guasti (2005) reports that passivization and NP-movement are also grammatical in European Portuguese, but marginal in Spanish (Zubizarreta 1985).

Moreover, some languages allow a clitic to reflexive-mark the embedded infinitive. This is the case for French and Spanish causative complements, but not Italian. In fact, although the reflexive cannot appear on the lower verb, the latter is interpreted as inherently reflexive:

(116) Juan hizo lavarse las manos a Maria

Juan made wash.herself the hands to Maria

(117) Jean faisait se laver les mains à Marie

Jean made herself.cl wash the hands to Marie

(118) *Gianni faceva lavarsi le mani a Maria

*Gianni made wash.herself the hands to Maria

(119) Gianni faceva lavare le mani a Maria

Gianni made wash the hands to Maria

In European Portuguese, which allows causatives with both VOS and SVO order, reflexives are allowed only in the latter case:

(120) O João mandou barbear o Pedro

Joao ordered to.shave Pedro

(121) O João mandou o Pedro barbears-se

Joao ordered Pedro to.shave.himself

Again, this suggests that only a T projection above v can license a derived reflexive subject in these constructions. Thirdly, we have noted that reflexives are only allowed on the main verb in FP, that is, when the derived subject is the object of the embedded verb (with the logical subject optionally expressed by a by-phrase). French, like Italian, also disallows reflexives in FI when the embedded subject is overtly expressed (124), but allows them when the derived subject is in effect the embedded causee (125):

(122) *Maria si è fatta accusare a Gianni (Burzio 1986:248)

Maria SI is made blame to Gianni

(123) Maria si è fatta accusare da Gianni

    Maria SI is made blame by Gianni

    'Maria had Gianni blame her'

(124) *Pierre s'est fait embrasser à Marie (Kayne 1975)

    Pierre SE is made kiss to Marie

    'Pierre had Mary kiss him'

(125) Elle se fait vomir

    She SE makes vomit

    'She makes herself vomit'

While (122) is independently ill-formed because the reflexive fails to find the right antecedent (as originally noted in Burzio 1986), the anaphoric relation is well formed when the subject is the underlying subject of the embedded verb (125). However, the same construction is not allowed in Italian. Notice, also, that the "causee" of an unergative verb is always a FI argument and never an adjunct: in fact, it cannot be omitted (Guasti 2005:153):

(126) *Paolo ha fatto dormire

    Paolo has made sleep

    'Paolo made (someone) sleep'

Finally, it may be observed that French *laisser* can both display the VOS and the SVO order and that, in the latter case, an object clitic cannot "move up" the matrix verb across the embedded preverbal subject (Kayne 1975). In Italian, however, the SVO order in the complement of *lasciare*, although not as ungrammatical as in "fare", is very marginal:

(127) Elle laissera Jean le manger

    She will.let Jean it.cl eat

    'She will let Jean eat it'

(128) *Elle le laissera Jean manger

    She it.cl will.let Jean eat

(129) ?Maria lascerà Giovanni parlare

    Maria will.let Giovanni talk

In conclusion, the structure of Romance causatives displays open cross-linguistic

possibilities, mirrored in different word order alternations, as a reflex of Case assignment properties in the lower vP and semantic relations between the causer and the arguments of the embedded vP. It seems that Italian has reduced possibilities compared to languages like French, not only with "faire" but also with similar verbs like "laisser"; the dissimilarities seem to suggest that causative complements have more in common with perception verbs complements in French than in Italian; however, the similarities remain, as French, like other Romance languages, displays obligatory adjacency between "faire" and the infinitive and postverbal PP subject.

This is not the case for English causatives, which have the same SVO order in the embedded complement as in the complements of perceptive verbs:

(130) John makes Mary work

(131) John sees Mary work

We assume with Hornstein et al (2006) that English causative and perception complements have the same derivation, namely, a T_{def} complement in which the embedded subject values Acc Case. Under their analysis, non-finite T is phi-defective in that it can only value [number] with the goal. When the embedded subject is raised to T they both have unvalued Case: matrix v* then values Acc Case on T, which is inherited under Agree by the DP in [Spec,T]. The main point of such analysis is that the embedded subject agrees with the infinitival head in T, so that Case assignment by v* is actually mediated by previous Agree between T and v*. We will not argue for or against the details of such proposal, but we will maintain for the sake of the present analysis that English complements of causative and perception verbs are defective Ts in which the embedded subject is assigned Acc Case in spec,T_{def}.

A final point concerns the FI/FP distinction. The FP construction is impossible in English, which further supports the view that FP complements are not T_{def} but FI complements can be. In Romance, objects of the FP infinitive behave like objects of the "faire"+infinitive complex: as DPs, they occur after the complex; as clitics, they obligatorily cliticise to the finite verb. In English the same order is impossible, both with DP and pronominal objects:

(132) *John makes comb Maria

(133) *John makes comb her

The Romance FP complement must be expressed by a small clause in English (e.g. John gets Mary combed). Moreover, both a pronominal and an anaphoric element can be the subject of the infinitive complement:

(134) She makes herself vomit

The example in (134) and its French counterpart (125) seem to indicate that FI gives rise to the same binding possibilities as ECM-type clauses: namely, the subject of the embedded infinitive can be a self-anaphor (syntactically) bound by the matrix predicate.

6. CONCLUSIONS

Comparing the analyses that along the years, under different theoretical frameworks, have been proposed in the literature to explain clitic climbing and restructuring, we have argued that a biclausal approach to restructuring stands out as more adequate than a monoclausal functional analysis (Cinque 2004) to cover the variegated classes of verbs that can give rise to restructuring. The empirical evidence that some restructuring verbs behave like control verbs in non-restructured contexts, together with the observation that they seem to do it optionally, may represent a weakness for the hypothesis that all restructuring verbs are functional. As we have shown, very different analyses under different frameworks have come to this conclusion. Moreover, treating restructuring clauses as simple clauses with a modal verb makes too narrow predictions as for the properties of the verbs that are claimed to fill a rigid, universal functional skeleton in the clause.

On the other hand, treating restructuring as a biclausal configuration also requires solid argumentation because it would be an unwelcome result to postulate an ad hoc rule that transforms control structures into a single/linearly adjacent verb unit (as pre-minimalist approaches, in more or less different terms, had proposed). However, the problem may be avoided if the complement clause is analysed as a defective structure, which ultimately amounts to questioning its "clausal" status at all. The current phase-based model seems to offer an elegant explanation for the phenomenon of clitic climbing in restructuring clauses and its optionality, which only takes into account a definition of locality (and intervention) based on phase boundaries and feature specifications on phase heads (v and C).

In sum, we have pointed out that both auxiliary switch and clitic climbing are properties of restructuring, but asymmetrically correlated: auxiliary switch is dependent on matrix v_{def}, which in turn must select T_{def}. As a result, restructuring verbs undergo auxiliary switch and allow clitic climbing. The latter, however, is a less restricted phenomenon: in fact, it simply can occur when the embedded infinitival has T_{def}, whether or not the matrix v is defective. If the embedded clitic is a subject, as in ECM constructions, there is no enclisis option because there can be no agree between the lower v and its external argument.

Rather, the clitic fails to agree with T, and this is the reason why clitic climbing is obligatory. On the other hand, in order to have exceptional Case marking the presence of a T layer, albeit defective, is necessary: in fact, as we have seen, subjects of causative complements lacking T in Italian receive structural DAT Case in situ in the embedded v (or in the higher v, when cliticised). We have also related the absence of enclisis in Italian causative constructions to the absence of an AgrO (hence T) layer to host the clitic after non-finite verb movement. However, as for Case, we have distinguished several possibilities based on the properties of the embedded v: objects of transitive and unergative non-defective vPs receive ACC Case directly from the lower v*: in turn, this means that, in order to account for Clitic Climbing, we must assume that an enclisis site is not available in the infinitival complement, hence no T layer is projected. On the other hand, if "fare" selects a defective v, namely, an unaccusative or FP complement, unable to assign Case to the object, it must be phi-complete thus to license Case.

The constructions reviewed in this chapter cannot exhaust several open issues around Raising and Control. We have assumed that the defective T selected by control verbs in restructuring projects PRO, thus maintaining a non-movement analysis of control, but whether or not defective T can license PRO (and perhaps assign Null Case, as traditionally assumed) is an open question.

Likewise, the status of "fare" and the derivation of causative constructions has always been a moot topic. We have endorsed an analysis that may account for Case and the theta-role relations involved in different causative constructions based on the phi-feature specification of the vP selected by "fare", along the lines of the approached proposed by Folli and Harley (2007); however, against their analysis, we have suggested that completeness or defectiveness of v may account for the properties of all causative constructions across the board. Our analysis recognised the similarities between FP, unaccusatives and verbal passives (as defective vPs lacking an external argument) – which was originally suggested by Rouveret and Vergnaud (1980) – against a nominal analysis (Guasti 1993; 1996). Furthermore, cross-linguistic comparison as for the more or less restructuring possibilities in Romance languages reveals a complex scenario. It appears that, as the structure above the lower v* gets richer, causative constructions resemble ECM-like constructions.

Beyond the controversies, the generalised notion of defective domains allows to subsume phenomena correlated with different types of verbs under the same umbrella. In particular, we have assumed with Chomsky (2008) that phi-completeness of a phase head, hence its ability to delete Case, defines phase domains, whereas EPP does not. As we will

see, this makes interesting predictions for language acquisition: if clitic movement is A-movement, cliticization is in actual fact object movement; if this is the case, in both object shift and cliticization the semantics of specificity and definiteness is related to EPP, but Case can be dissociated from it. An analysis of children's comprehension of clitics in complex predicates, therefore, will shed light on children's treatment of defective phases and, at the same time, the relation between EPP, phi-completeness of v and Principle B for the interpretation of clitic pronouns.

CHAPTER 4

BINDING BY PHASE

1. INTRODUCTION

The major theoretical question raised by the presence of the PIP in Romance concerns the adequateness of the canonical binding theory. If we want to explain why there are syntactic contexts in which *even* clitic pronouns – which are widely assumed to be only subject to Principle B – are allowed by children to refer to an intrasentential antecedent, a better definition of the principle itself is necessary. We have pointed out that all the current accounts of Romance PIP converge towards an alternative definition of binding (Reinhart and Reuland 1993; Reuland 2001) which is defined on predicates rather than on the notion of *local domain*. These theories assume Condition B to be inoperative in ECM clauses – an hypothesis which is clearly compatible with the presence of the PIP in Romance ECM predicates and does not interfere with the claim that clitics are only interpreted via binding. We have observed, however, that once we exclude that children's PIP in ECM is not a violation of Condition B, the argument remains open. If children do not violate Condition B, they must encounter problems with something else. Ascribing the PIP to a processing immaturity of the early system, however, does not explain how children's strategies of reference assignment differ from the adults'. If the subcomponents of the early computational system have immature processing resources, it needs to be demonstrated in what direction children's "economy" strategies go. The modular view of the division of labour between syntax (constraining the interpretation of bound variables) and pragmatics (responsible for the interpretation of unbound variables) at the onset of the acquisition research on binding (Reinhart 1988; Chien and Wexler 1990; Avrutin and Wexler 1992), in contrast, accomplished important supportive evidence, demonstrating that the early system does distinguish between the two mechanisms in the relevant contexts. Under this view, children would not operate under a qualitatively different

hierarchy. It is remarkable, therefore, that pragmatic approaches to PIP which have remained faithful to the canonical binding theory still overlook the presence of PIP in Romance languages; before the long-standing problem of the local domain is addressed, Romance PIP simply remains an inexplicable phenomenon. Although generative syntactic theory has considerably moved away from the core Government and Binding assumptions, the internal problems of the binding theory have never been addressed in a coherent formulation within the new framework. As Hicks (2009) notes, however, a derivational binding theory should naturally follow from minimalism principles: "the fact that the Derivation by Phase framework provides the theoretical devices responsible for binding with only minimal depart from core assumptions provides support for the particular implementation of the Minimalism programme, which has hitherto seemed incompatible with the binding theory" (p.293). We have shown in Chapter 3 that, under a phase-based analysis, clitic climbing in Romance complex predicates displays different characteristics depending on the first merge position of the clitic and on the properties of the embedded phase heads. In this chapter, we will envisage the possibility that phases may solve the problem of the binding domain, following Hicks' (2009) derivational theory of anaphoric relations. Binding and movement are reconciled in this framework, in which narrow-syntactic operations are triggered by phase heads. Under such analysis, binding effects are not filters on the clitic representation but simply the outcome of a narrow-syntactic movement. We will show that a crucial step of this movement is the EPP position and that binding possibilities in the object and reflexive cliticization arise at completion of the vP phase.

2. BINDING IN DERIVATIONAL PERSPECTIVE

As we have seen, the most criticised part of the Government and Binding theory (Chomsky 1981) was the notion of local domain, which failed to predict the non-complementary distribution of anaphors and pronouns. Minimalism (Chomsky 1993), whilst dispensing with the notion of government, did not offer a more precise formulation of the local domain:

(1) "If α is a pronominal, interpret it as disjoint from every c-commanding phrase in D [an undefined local domain]" (Chomsky 1993:43)

Hicks (2009) observes that this definition of binding Principle B is conceptually problematic for a theory which is conceived as a "programme" in the sense that its remit is to reduce the apparent imperfections of language to a conceptual necessity, namely, to the

optimal way in which natural language interfaces with the other cognitive systems: "not only must we seek a descriptively accurate characterisation of the local binding domain, but a Minimalist analysis should be able to explain *why* that particular domain is the relevant one" (p. 62). Furthermore, he notes that this formulation of binding is still at odds with the strictly derivational architecture that Minimalism assumes: in fact, Minimalism eliminates the conceptual necessity for levels of representations, but keeps the representational constraints at LF. Hicks (2009) argues that the intuition that phases are binding domains is appealing at a conceptual level. First, conceiving binding as a semantic effect resulting from the narrow-syntactic derivation allows us to conceptualise the *phase* as the relevant "local" domain from general principles concerning the cyclicity of the derivation rather than from binding-specific principles. Secondly, if binding relations can be derived from narrow-syntax, we have a principled explanation for what counts as the local domain, with no need to resort to semantic constraints imposed by LF outside narrow syntax. In particular, there is no interface requirement imposed by LF on binding representations because narrow syntax, in a strongly derivational perspective, should ideally be "blind" to its semantic consequences.

Hicks (2009) derives anaphor binding from Agree, the operation which values features on the anaphor with the valued features on the antecedent. The tenet of this proposal is that Agree is the trigger for anaphor binding, against previous phase-based theories of binding such as Lee-Schoenfeld's (2004), which still shared Chomsky and Lasnik's (1993) assumption that binding relations are evaluated at LF. Hicks (2009) proposes that operator-variable relations are encoded as features in syntax and, in particular, that anaphors bear an unvalued [VAR] feature and thus can be interpreted only once they have found an antecedent to value the feature. According to Hicks (2009) such feature is *semanticosyntactic* and, therefore, must be read off the Conceptual-Intentional interface (C-I or LF) once valued: in fact, such Agree relation is mapped into semantics as a bound-variable relation.

Hick's (2009) approach to features is based on a fundamental distinction between the LF and PF phase. Chomsky (2005) addresses the question whether phases are mapped into the two interfaces, C-I and PF, at the same spell-out points, arguing that in the ideal scenario this should be the case. Against Chomsky (2005:9), Hicks (2009) advocates that a dissociation in spell-out points at LF and PF is not an "imperfection" in the derivation but rather a welcome result, because it allows us to conceive these two interfaces as imposing their own legibility requirements on different types of features, semantic and

morphosyntactic. Under this model, the interfaces "inspect" the derivation each dealing with the relevant features. Whereas anaphor binding under Agree is conceived as a semantic operation, which is relevant at the level of LF phases, morphosyntactic features are read off PF phases. This stipulation has important consequences for Case, which is relevant to pronominal binding relations. As we have seen in Chapter 3 §3.2.3, Chomsky (2001) assumes that uninterpretable Case on a DP is deleted under matching of phi-features with a Case-assigning probe bearing unvalued phi-features. According to Hicks (2009) this renders Case an "exceptional" feature at LF given that it has no semantic content: instead, "if Case is a purely morphosyntactic feature (i.e. interpreted only by PF), there is no expectation that it should be semantically contentful, and so we can eliminate the stipulation of the exceptional valuation of Case features" (p.52). If Case is read off the PF interface, therefore, PF phases are predicted to be the relevant binding domains for pronouns, thus explaining the non-complementarity of anaphors and pronouns as a consequence of the non-correspondence between LF and PF phases. In particular, two cases in which PF phases can be smaller than LF phases (which are, by definition, vP and CP) are PPs and the so-called picture-of DPs, which appears to answer the long-standing issue of non-complementarity in sentences like:

(2) John$_i$ found a snake [$_{PP}$ near himself$_i$/him$_i$]

(3) John$_i$ likes [$_{DP}$ pictures of himself$_i$/him$_i$]

The gist of Hick's proposal is that Condition A should be reduced to Agree, an operation which values the unvalued feature [VAR] on an anaphor in the LF phase, whereas Condition B simply requires a pronoun to be free in its PF phase, since once Case is valued the narrow-syntactic features on the pronoun are no longer active. Although vP and CP are both LF and PF phases, cases like (2) and (3) above show that PF phases can involve smaller domains, thus both Condition A and Condition B are satisfied: for the anaphor, the PP is not a binding domain, hence John is a local binder at LF; for the pronoun, instead, the PP counts as a relevant PF phase and therefore Condition B is not violated. As a consequence, the following generalisation is derived:

(4) Environments in which non-complementarity obtains (Hicks 2009:182)

[$_{LF-phase}$ ... DP$_i$ ... [$_{PF-phase}$ ... anaphor$_i$/pronoun$_i$ ...]

Such intuition has important consequences for the debate concerning binding and coreference possibilities with stressed pronouns. Clitic pronouns can never occupy an

autonomous PF phase given that they do not bear autonomous stress, and therefore it follows that the relevant binding domain for object and reflexive clitics is always the vP. Before turning to our analysis of how the derivation of object clitics in complex predicates fits a phase-based definition of binding in Romance, it is therefore worth going through some empirical facts in favour of a configurational approach which motivates binding effects at phasal spell-out points, under a revised (and conceptually motivated) formulation of local domain.

3. PHASES AS LOCAL DOMAINS

As we have underscored at the onset of this study, Reinhart and Reuland's (1993) binding theory has offered so far the most adequate alternative to a standard theory of binding based on government (i.e. a structural relation between pronominals and their antecedents). In reviewing the acquisition theories which capitalise on the Reflexivity model, we have maintained a neutral position towards the theory itself. We must therefore ask if a predicate-based notion of binding relations fares better than a configurational one, and if the two approaches equally satisfy conceptual ideals. The Reflexivity framework deals with non-coargumenthood structures positing a condition on the well-formedness of A-chains, which holds independently of Condition B in cases like Exceptional Case Marking. Indeed, we have underscored that the first explanations of PIP across languages found the most difficult obstacle in explaining children's problems with the Condition on A-chains itself. At a theoretical level, this condition has been the most criticised part of Reinhart and Reuland's proposal (see Fox 1993). According to Hicks (2009), the additional stipulation of a principle which has not to do with binding has the effect of leaving Condition B as "the left-over part of the binding theory. The fact that the Chain Condition constrains argument over predicates appears to undermine a central tenet of Reinhart and Reuland's binding theory, namely that binding constraints are defined over predicates" (p.197). The main difference between a derivational model of binding relations and a predicate-based model – which sees reflexivity as marked on a predicate where two of its arguments are coindexed – is that, in the former, binding effects arise in narrow syntax in the course of the derivation whereas, in the latter, binding conditions are in effect still conceived as an autonomous part of the grammar, constraining the well-formedness of reflexive-marking on predicates. It is somewhat paradoxical, therefore, that the Chain condition, a condition on movement, is assigned a crucial role in explaining binding phenomena where Condition B does not apply. As we noted in Chapter 1 §7.2, reconciling binding and movement is indeed an important improvement in Reinhart and Reuland's

approach from the module-specific definition of binding in the GB framework of Chomsky's (1986) *Knowledge of Language.* However, if the role of the Chain condition is demonstrated to be so much more widespread than binding Condition B itself, the conceptual motivation behind a definition of binding based on predicates loses strenght.

A second interesting argument which Hicks (2009) puts forward to defend the conceptual simplicity of a phase-based model of binding relations is that narrow-syntactic operations are not binding-specific and are furthermore subject to ample cross-linguistic variation whereas, both in Chomsky and Lasnik's (1993) and Reinhart and Reuland's (1993) models binding Condition B applies at the LF interface (the latter being a condition on semantic predicates). According to Hicks (2009), if Condition B was imposed by the interfaces it would be universally constrained across languages – because interface properties are not language-specific – and, in acquisition perspective, we should not see the well-known "delay" that certain languages display. Moreover, if the LF interface was at stake in pronoun interpretation, there would not be an explanation for the effect of stress – a phonological property – in Condition B obviations. Hicks's (2009) argument is that the different Condition B effects arising with reduced or neutrally stressed pronouns and stressed pronouns may be explained if the PF phase is the local domain for a pronoun. The Reflexivity model makes a different prediction, identifying argumenthood as the crucial property. Following Reinhart and Reuland (1993), the sentence (5) should allow covaluation of the subject and the pronoun inside the PP because such PP is within a so-called picture-of DP and therefore not an argument of the verb; however, Condition B appears to be relevant in disallowing covaluation between *John* and *him*:

(5) *John$_i$ read books about him$_i$

Moreover, as Fiengo and Higginbotham (1981) first observed, this pattern obtains when the pronoun is unstressed or reduced (as in 6a) but not when it is stressed (6b):

(6) a. *John$_i$ read books about 'im$_i$
    b. John$_i$ read books about HIM$_i$

Hicks (2009) rightly points out that only a theory which takes into consideration the PF phase can explain stress patterns, because semantic notions are irrelevant to explain the contrast. Furthermore, he observes that stress plays no role in the interpretation of anaphors, a fact which is compatible with the claim that the local domain for anaphors is always the LF phase, at which Agree is evaluated, hence stress cannot affect Condition A:

(7) a. John_i read books about 'imself_i   (from Fiengo and Higgibotham 1981:40)

   b. John$_i$ read books about himself$_i$

   c. John$_i$ read books about himSELF$_i$

This is predicted if the local domain for anaphors is the LF phase, hence no constituent smaller than vP in the typical case. Hicks (2009:146) argues that DP can also be an LF phase when it contains a subject, as in:

(8) [$_{TP}$ John$_i$ [$_{vP}$ <John$_i$> likes [$_{DP}$ Bill's$_j$ pictures of himself$_{*i/J}$]]]

If the local domain of the anaphor were vP, Both *John* and *Bill* would be possible antecedents; however, if the subject enters the derivation at a higher phase (vP) than the one containing the anaphor and its local subject (DP) and in which Agree has been satisfied, Condition A effects are explained. Whether subjectless picture-of DPs, in contrast, constitute independent LF phases, is less clear in Hick's analysis. If they are, anaphors amount to *logophors*, as in Reinhart and Reuland's (1993) analysis, since they can be non-locally bound. As we saw in Chapter 1 §7.1 this appears often to be the case, as an ambiguity between sloppy and strict reading under ellipsis can arise:

(9) Bush wouldn't show the reporters pictures of himself in a pretzel factory, but Kerry would.

   = show the reporters pictures of Kerry, or:

   = show the reporters pictures of Bush (Hicks 2009:147)

Likewise, when anaphors and pronouns are shown to be in non-complementary distribution, we can deduce that the anaphor is non-locally bound (10); however, other cases of DPs appear to require local binding – hence the complementary distribution – as in (11):

(10) John$_i$ likes pictures of himself$_i$/him$_i$

(11) John$_i$ told stories about himself$_i$/him$_{*i}$

In sum, there seems to be considerable overlap between Reinhart and Reuland's (1993) predictions based on an argumenthood notion of binding and a phase-based one; cases like subcategorised vs. non-subcategorised PPs and some picture-of DPs do in fact give rise to much variability in judgements and none of the approaches seems to provide a definite answer. However, stress patterns seem to give support to a notion of local domain based on the PF phase for pronouns, not only as shown in (6), which cannot be explained

on the grounds of coargumenthood, but also in light of other empirical considerations. Consider (12) in which the pronoun is inside a non-argument PP and which gives rise to exactly the opposite stress pattern:

(12) a. John$_i$ saw a snake [$_{PP}$ near 'im$_i$]   (Hicks 2009:189)

b. $^{??}$ John$_i$ saw a snake [$_{PP}$ near HIM$_i$]

c. John$_i$ saw a snake [$_{PP}$ near HIM$_i$] and not [$_{PP}$ near his$_i$ mother]

Reinhart and Reuland (1993) assume that cases like (12) involve neither Condition B – since the pronoun is an argument of the preposition and not of the verb – nor the Chain condition – as the pronoun is not in A-position. Indeed, it is the case that Condition B does not apply to these PPs, as the difference between (12a,b) clearly suggests that only pragmatics indicates the pronoun as a plausible deictic referent in (12b) but anaphoric in (12c). Both interpretations do not follow from a contrast with (12a), in which neutral stress does not interfere with Condition B effects indicating that such PP represent a PF local domain for the pronoun. We would expect the same to hold in (6) based on argumenthood, as the pronoun is neither selected by the verb *read* nor in A-position; in phase-based terms, however, the difference between the two types of PPs simply amounts to demonstrating that non-argument PPs such as those in (12) are always independent binding domains, and therefore always allow coindexation with any argument in the sentence, whereas PPs contained inside DPs like [$_{DP}$ books [$_{PP}$ about him]] in (6) have less clear-cut phasal status and may not be PF phases. Hicks (2009) in fact adduces cases like (6) as evidence that subjectless picture-of DPs are not always PF phases. Under an account which crucially relies on PF properties, the high variability in speaker's judgements might thus simply follow from a variability on what counts as PF phase; theta-role and semantic selection, in contrast, cannot be an arbitrary property of arguments. Another environment in which phonological "weight" is likely to give rise to a PF phase are coordinated objects:

(13) John$_i$ talked about [$_{DP}$ him$_i$ and his$_i$ mother]

In sum, "the greater the phonological "weight" (in a sense which remains to be properly clarified) appears to make a particular domain more likely to be a PF-phase, and therefore more likely to constitute a Condition B domain" (Hicks 2009:189).

Whereas it is apparent that this notion may be more arbitrary in speakers' judgments than coargumenthood, and indeed "remains to be properly clarified", the empirical data seem to go in the right direction, namely, compatibly with the evidence that a change in stress

pattern might change a DP's phonological weight and result in different Condition B effect; it is significant, moreover, that this is never the case for (non-subcategorised) PPs, and therefore such analysis opens important considerations about the status of phases at the two interfaces (C-I and PF) and the status of DP and PP as PF-phases.

4. IMPLICATIONS FOR ECM UNDER ALTERNATIVE APPROACHES TO BINDING

In order to overcome the empirical problems in the GB definition of binding Principle B, a phase-based analysis must be able to capture the special status of ECM constructions: firstly, the distributional properties of SELF-anaphors, long-distance SE anaphors and pronouns in languages with a tripartite system; but also, most importantly, the cross-linguistic acquisition facts which show that this construction allows apparent Principle B "violations" with all classes of pronouns. Indeed, based on the observation that the embedded vP is the local domain for both anaphors and pronouns – as it is both an LF and a PF phase – it appears the ECM complex predicates pose different locality conditions on the interpretation of pronouns, because at least one phase (the embedded vP) must be completed before the matrix subject is merged in the higher vP phase. If the lower copy of the pronoun is free in its local domain, two questions must be addressed:

(i) firstly, why pronouns are still ruled out in an anaphoric interpretation – i.e. coindexed with the subject;

(ii) secondly, why PIP shows up in these structures in languages with clitic pronouns – and extra PIP in languages with non-clitic pronouns.

As we have underscored, the second fact is one of the strongest empirical evidence for the "special" status of ECM for binding relations because we want to maintain that children's knowledge of binding domains cannot be *learned*. We will first consider whether Hick's (2009) derivational account of binding relations in ECM sentences offers an adequate answer to (i), and whether it entails different predictions from the supporters of Reinhart and Reuland's (1993) alternative binding theory. Consequently we will introduce our account of binding effects with clitic pronouns in simple and complex sentences in the following paragraphs, in which we will show that the most natural way to account for (ii) is to assume that, in the derivation, the fact that the lower copy of the pronoun is free renders Condition B inoperative, and at the highest phase it is a pragmatic principle constraining local *coreference* which bars pronouns in place of reflexives. Hicks (2009) rightly points out that the pronoun in (14) is free at the end of the lower vP phase;

however, he assumes that its pronounced copy is subject to Condition B once the antecedent – the matrix subject – is merged in the higher vP phase:

(14) a. *John$_i$ believes him$_i$ to love Mary (Hicks 2009:171)

b. [$_{TP}$ John$_i$ [$_{vP}$ <John$_i$> believes [$_{TP}$ him$_i$ to [$_{vP}$ <him$_i$> love [$_{vP}$ Mary]]]]]

In brief, Hicks (2009) assumes that Condition B should be reduced to an economy principle which makes an anaphoric relation encoded in narrow-syntax (i.e. via Agree) more economical: as the lower copy of the pronoun is free inside the vP, Hicks (2009) therefore maintains that the ungrammaticality of (14a) amounts to an economy violation. Thus, in effect, Hicks (2009) assumes Condition B to be operative in ECM, against Reinhart and Reuland (1993) who explain the ungrammaticality of the pronoun as a violation of the Chain condition. In contrast, we will argue in Chapter 8 that cases like (14a) are banned by a pragmatic constraint on local coreference which arises as a scalar implicature favouring reflexives over non-bound pronouns, following Levinson (2000) and Verbuk (2006).

The reason why Hicks (2009) assumes the higher vP phase to be a relevant PF/LF domain for the pronoun is that, under the author's analysis, Condition B is ultimately reduced to an economy principle: Maximise featural economy.

(15) *Maximise featural economy*: (Hicks 2009:204)

Establish dependencies via syntactic operations where possible.

It is easy to see that the economy argument in (15) is close to Reuland's (2001) Primitives of binding framework, which indicates anaphor binding as a more economical option than pronoun binding as the former dependency is established in narrow syntax. Similarly, the reason why Condition B – and the apparent complementarity between anaphors and pronouns – arises, according to Hicks (2009) has to do with the fact that anaphors bear an unvalued [VAR] feature, as we have seen, which is valued upon Agree with the antecedent. In contrast, pronouns enter the derivation with a value for this feature, namely the same value on the antecedent. The first observation adduced is that Agree cannot be involved in the pronoun-antecedent relation: in fact, the opposite of Agree seems to be required by Condition B, namely, that the pronoun do not bear the same value as an antecedent in a local (i.e. phasal) configuration. Economy therefore dictates that a derivation with two valued occurrences of the same feature is ruled out as less economical than a derivation in which the relation is obtained via Agree: "the intuition that we aim to capture is that when a pronoun is bound in its PF-phase by a c-commanding antecedent, Agree *could* have

applied in order to establish the dependency, and the fact that the Agree option is not taken results in an economy violation" (p.169). However, Hicks (2009) does not conceive economy as the choice of the anaphor in competition with a pronoun; in this sense, featural economy does not involve reference-set computations: firstly, in his analysis, pronouns can never bear an unvalued [VAR] feature and therefore the possibility that pronouns may compete with anaphors – in the sense that they are inserted in the derivation *as* anaphors – does not even arise (except in the selection of the numeration); secondly, pronouns are conceived as uneconomical in a local domain – in a similar vein to Hornstein (2006) – because featural economy is ultimately derived from the very economical nature of Merge, which applies everywhere in the course of the derivation: "the only possibility is that Condition B reduces to Merge, since Merge is (practically by definition) the only operation that applies at every step of the derivation. Furthermore, it is not necessary to weaken the theory by letting in comparison of derivations arising from different numerations. Condition B effects arise when the narrow syntactic computation does not select the optimal manner of supplying PF and LF with a particular interpretation for each" (Hicks 2009:215).

In sum, Hick's approach differs from Reuland's (2001) in the assumption that binding does not apply at the interfaces and does not involve the comparison of anaphoric dependencies at multiple levels – but only in narrow syntax. However, it ultimately predicts that a derivation like (14b) is barred as uneconomical in narrow-syntax because it involves a numeration which violates featural economy, making use of a pronominal category which enters the derivation already with a valued [VAR] feature where the optimal way to establish the relation would have been via Agree – i.e. inserting a category with an unvalued [VAR] feature. According to Hicks (2009) this analysis of Condition B follows more naturally on Minimalist grounds than Reinhart and Reuland's (1993) hypothesis that Condition B and the Chain condition can be dissociated in non-argumenthood cases like ECM. Under this analysis, in fact, Condition B applies *everywhere* because, as we have noted, it follows from the very economical nature of Merge, a non-binding-specific operation. However, this appears problematic for two reasons: firstly, Hicks (2009) points out that in ECM the subject is outside the pronoun's local domain at the bottom of the derivation, but maintains that the ungrammaticality of a referential dependency between the matrix subject and the pronounced copy of the pronoun nevertheless falls under Condition B; secondly, should the uneconomical nature of pronouns be rooted in narrow syntax as a case of a non-optimal numeration, there would

be no pragmatic competence involved in this computation, hence no competition between binding and local coreference. In fact, local coreference does not even arise because it is intended in this analysis as a Condition B violation, i.e. as the selection of an uneconomical derivation. Furthermore, it follows from this that the Condition B effects in simple and ECM sentences follow from the same principle: since English pronouns are not bound variables (in the typical case), in both cases pronouns are ruled out because inserting an anaphor in the derivation would accomplish coindexing via Agree hence in a more economical way.

In acquisition perspective this amounts to saying that, whenever children accept a sentence like (14a), they have chosen an uneconomical numeration. Whereas the acquisition theories which follow Reinhart and Reuland's (1993) and Reuland's (2001) frameworks take into consideration the different syntax of ECM to explain the well-known cross-linguistic data, under Hicks' (2009) analysis non-adultlike interpretations in simple and ECM sentences should follow from the same violation. In Baauw et al. (2011) who follow Reuland's framework, the PIP must be justified with the additional stipulation that the narrow-syntactic component in children's grammar is not the cheapest option (Avrutin 2006): in other words, if the competition between anaphors and pronouns is placed at the *interface*, as a choice between a dependency established in narrow syntax (A-binding), semantics (A'-binding) or pragmatics (coreference), the only way to explain why children do not choose the most economical representation is to assume that they do not abide by the same economy hierarchy as adults; however, since this hierarchy is intended to be evaluated only at an interface level – i.e. as a comparison between multiple levels of representation – the nature of narrow-syntactic knowledge itself is not qualitatively different in children. We believe with Hicks that reducing binding effects to a derivational output of narrow-syntactic operations is a considerable advantage in order to reconcile the binding theory with a Minimalist ideal, but the idea that Condition B effects arise as a violation of economy of the numeration is unsatisfactory when we look at the acquisition data, because it would presuppose that the operation Merge itself is uneconomical in children's grammar. Furthermore, the derivation of a pronoun in different syntactic contexts would be irrelevant, insofar as the pronounced copy falls under Condition B. In phase perspective, ECM complex sentences and simple transitive sentences are different because only in the former the subject is merged in a different phase from the pronoun: this can predict different patterns in acquisition perspective, but only if a fundamental competition between binding and coreference is maintained in the revised notion of local

domain. The fundamental idea is that different derivations can result not only in different Condition B effects but also in different Condition B obviations, the latter to be intended as a result of the interplay between binding and coreference. This makes an even stronger predictions for clitic pronouns as we will show in the discussion that follows that, in complex predicates, the position from which an object clitic is extracted is crucial and may result in different coreference possibilities in the child grammar. In contrast, if Condition B effects followed from a violation of economy, this would entail that children's narrow-syntactic component is not "optimal" in minimalist sense and interpretation problems follow from the selection of an uneconomical numeration; furthermore, we could not explain why the different locality configurations result in different rates of anaphoric interpretation in ECM and simple sentences in languages with non-clitic pronouns, and finally we should conclude that children do violate the syntactic economy principle behind Condition B in the interpretation of clitics in ECM. In order to avoid this unwarranted conclusion, therefore, we propose that Condition B is not at stake in ECM and that the non-local position of the antecedent in these structures allows us to place children's behaviour outside narrow syntax, by identifying it with a pragmatic non-adultlike strategy.

5. CONDITION B IN THE DERIVATION OF CLITIC PRONOUNS

5.1 INTRODUCTION

In Chapter 3 §3.2.2, we have defined cliticization as phi-feature inheritance from a verbal head following Chomsky (2008). We have described the syntactic derivation of object clitics as movement to the outer spec,vP – a position assigned the EPP feature on v. In the transitive vP, v is phi-complete: hence, v*. It triggers movement of the object clitic to the EPP position in the outer spec,vP and Agree results in assignment of ACC Case: in fact, we have maintained from Roberts's (2010) analysis the assumption that clitics are defective goals with respect to their verbal probe and after Agree they move out of vP incorporated to their verbal host – enclisis and proclisis thus resulting from different patterns of head-movement. This allows us to maintain that v* is the head responsible for assignment of ACC Case both in Romance languages and languages with strong pronouns. In the latter case, Agree is simply at a distance, as non-clitic objects do not count as defective goals; in the case of clitic pronouns, in contrast, Agree results in incorporation hence overt head movement. Furthermore, our analysis of cliticization in complex predicates has also led us to conclude that EPP-driven movement need not be motivated by Case, i.e. that also defective, phi-incomplete vPs have an EPP feature. In particular, this holds in restructuring configurations in which cliticization amounts to long-distance agreement (Boeckx and

Gallego 2008) and gives rise to one A-domain between the higher and the lower v (Gallego 2011). In ECM, phi-completeness of the embedded v* does not result in Agree between the clitic and v* because the embedded clitic is in fact a subject, therefore its "exceptional" ACC Case results from failure to delete Nom Case with the T_{def} head of the embedded clause. Finally, in causative constructions the absence of a T complement results in an iteration of vPs: the vP headed by *fare* and the embedded vP, which is able to assign structural ACC Case (and DAT Case to a subject where ACC Case is absorbed by an object) in FI, but not in FP. In the latter case, the embedded vP is defective and ACC Case on the clitic is assigned in the matrix vP.

In the following discussion, we will explore the semantic consequences of the clitic derivation in the transitive vP and in different types of complex predicates, in order to capture two important acquisition facts and make predictions regarding a hitherto under-studied structure:

(i) the Clitic Exemption Effect, i.e. the absence of Condition B violations in children's interpretation of clitics in simple transitive sentences. As we have underscored, this must be taken as evidence that syntactic binding and no other strategy (i.e. coreference) constrains the interpretation of clitics in these syntactic configurations: our phase-based analysis must therefore be able to answer why;

(ii) the PIP in Romance ECM predicates: if these structures contain at least one phase – the embedded vP – in which the trace of the clitic is free, we must explain which step in the child's syntactic derivation of the clitic results in a Condition B obviation thus making possible a non-syntactic strategy of clitic resolution;

(iii) the derivation of an object clitic in FP: this structure – which has not yet received attention in the Romance PIP literature – should give rise to the same Condition B configuration in the child and the adult grammar. Under our analysis (see Chapter 3 §4.4) *fare* selects no T complement, but only a defective, i.e. non-phasal, vP, which therefore counts as one binding domain. However, the question will also be addressed whether children's derivation of defective phases is adult-like at the age under consideration. If the child processes the FP complements as phasal, we predict a different semantic evaluation of the binding configuration.

5.2 THE SEMANTICS OF VARIABLE BINDING

As we have seen, Hicks (2009) conceives anaphoric relations to be read off the semantic components as features: a variable binder bears a [VAR] feature which matches the same

feature on the anaphor and corresponds, in the semantic interpretation, to a lambda operator. The approach we adopt is more strictly configurational as in Heim (1998) and Heim and Kratzer (1998, ch.10) in that it posits "articulate S-structures that already show semantic relations" (Heim 2005): in other words, a one-to-one correspondence between syntactic and semantic binding. Heim and Kratzer (1998) formulated a rule of semantic composition necessary for the interpretation of variables, called Predicate Abstraction. This rule adjoins a phrase up in the tree thus that the node below is turned into a predicate, i.e. a function defined in lambda notation. It has the consequence that the trace/pronoun in that subtree is bound, which means that it "has a fixed semantic value, which stays the same under all assignments. [...] Predicate Abstraction is in fact the only rule that accomplishes variable binding in this sense" (Heim and Kratzer 1998:117). All the configurations which can be represented by Predicate Abstraction share the same semantics: there is an element which is dislocated, singled out, and some property predicated about it.

(16) Let α be a branching node with daughters β and γ, where β dominates only a numerical index i. Then, for any variable assignment a, $[[\alpha]]^a = \lambda x. [[\gamma]]^x$ (p.186)

This relation is configurational in the sense that it holds in the syntactic structure and is derived via movement.

(17)
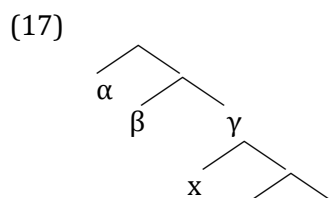
The structure is illustrated in (17): movement of a constituent α leaves a variable x in the subtree γ which is bound by the lambda operator encoded by the numerical index on α, formally represented as its daughter node β. Adjoining α – and its daughter β – to a node γ turns the latter into a predicate, i.e a function which is interpreted under any assignment for the variable it contains. This configuration provides a solution to a conundrum in compositional semantics, namely, how to interpret variables: since a variable does denote an individual, but only relative an assignment, syntactic structures containing a variable cannot be interpreted via semantic composition. The major intuition of the rule is that it applies to both traces and bound pronouns, because both are referentially-dependent elements: as we have seen, the parallel between traces and pronouns is also at the heart of

Reinhart and Reuland's (1993) Chain condition. In its original formulation, in fact, the Predicate Abstraction rule is intended to capture the semantic representation of relative clauses, i.e. how to interpret the trace of a relative head.

The head of a relative clause is α in in the definition (16), whose sister node β is the relative pronoun *which*. In this configuration, adjunction to IP – the root node dominating the relative clause – gives rise to a predicate, defined by lambda notation. which denotes the function λx. [Mary saw x] (18):

```
(18)       XP
        ╱      ╲
     DP          CP
  the movie    ╱    ╲
          which₁     C'
                  ╱     ╲
                C        IP
              (that)   ╱    ╲
                    Mary     VP
                          ╱     ╲
                        V        t₁
                       saw
```
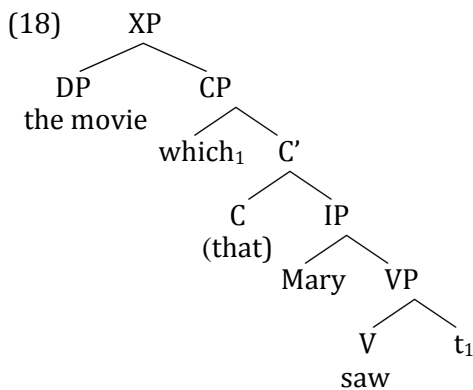
The complementiser "that" is treated as semantically vacuous: by the rules of semantic composition, it simply inherits the denotation of the IP node below it. Furthermore, Heim and Kratzer (1998) argue that the variable binder for the trace is the relative pronoun itself, i.e. the index, rather than the relative head. The definition in (16) assumes binder indices to fill their own projection, different from the one targeted by the constituent that moves; this "makes it possible to streamline the Predicate Abstraction rule so that it no longer mentions lexical material" (Kratzer 2007).

It is apparent that variables inside relative clauses can be both traces and resumptive pronouns. "Such-that" clauses (eg. "such that Mary saw it") appear to have the same semantics of other relatives, yet they require a pronoun to resume the head of the relative. As first noted by Quine: "the responsibility of standing in a singular-term position within the clause is delegated to "it", and the responsibility of signalling the beginning of the clause is discharged by "such that". Thus "which I bought" becomes "such that I bought it"; "for whom the bell tolls" becomes "such that the bell tolls for him" (1960:112). Therefore, relative pronouns are variable binders for the relative gap just like "such" is the variable binder for the pronoun in a gapless relative clause.

The advantage of defining variable binding configurationally is that it extends to any other structure which can be captured by (16): in fact, *any* movement operation which adjoins a DP to *any* node can give rise to predicate abstraction. In Heim and Kratzer (1998), DP movement which accomplishes predicate abstraction amounts to Quantifier Raising: when a DP and a pronoun are covalued via variable binding, the antecedent behaves like a quantifier, QR giving rise to the variable chain constituted by the DP, its index, and the bound variable. This is the only possible derivation for quantifiers binding pronouns, since under this analysis if a quantifier was not raised it could only corefer with the pronoun, resulting in an impossible interpretation. Referential DPs, in contrast, may also corefer: Heim and Kratzer (1998) thus derive the difference between a binding and a coreference representation at the level of S-structure, i.e. as different syntactic representations. In a sentence like (19), for instance, it is assumed that the bound-variable relation between *John* and the possessive pronoun *his* is created in syntax raising the subject DP – to a node adjoined to IP. This movement is by definition optional, in fact if it did not take place the pronoun would be free, hence able to pick the same index as that on the DP via "accidental" coreference or a different index from the context.

(19)

XP
├─ DP
│ John 1
└─ IP
   ├─ t_1
   └─ VP
      ├─ V
      │ hates
      └─ DP
         his_1 father
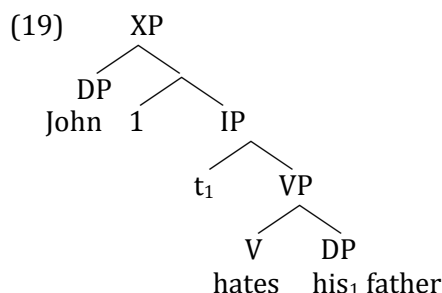
In this binding configuration the DP [John] does not differ, semantically, from the head of a relative clause. The semantics of "$John_1$ hates his_1 father" is not different from "$John_1$ who_1 hates his_1 father" or "$John_1$ $such_1$ that he_1 hates his_1 father". The index, which has no overt syntactic form in the QR configuration, plays exactly the same role as "who" and "such": in other words, it is the index itself that the Predicate abstraction rule sees. In the semantic analysis offered by Heim and Kratzer, indices do not appear on the DP (α in the definition) but on its sister node β: in semantics, therefore, the difference is substantial (p.188), as structures like these would not be interpretable by simple composition rules and this is what led to the formulation of the Predicate Abstraction rule in the first place. In the syntax of QR, the moved constituent α and its index β are not dissociated, therefore we can maintain (20) as a simpler syntactic representation of variable binding:

(20)

```
          XP
         /  \
       DP    IP
     John₁  /  \
          t₁    VP
               /  \
              V    DP
            hates  his₁ father
```
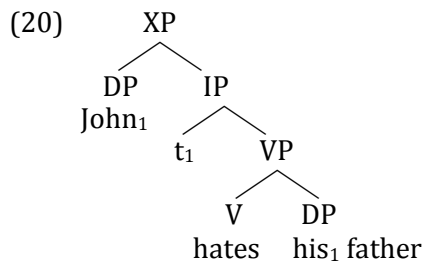
In current semantics, indices – which are no longer conceivable as syntactic entities under minimalist principles – are assimilated to phi-features. According to Delfitto (2002), QR creates an AGR chain, where the agreement features on the element dislocated in A'-position create a lambda abstract to bind the tail of the chain: "let us assume that the role played by indexes is taken over by φ-features, in accordance with minimalist guidelines (cf. Chomsky 1995): a pronoun is in the domain of a variable assignment function not because of the fact that it is endowed with the index i but because of the fact that it is endowed with φ-features" (Delfitto 2002: 43). The most logical way to capture variable assignment is therefore to assume that indices, both under coreference and under variable binding, are represented by phi-features. This is the direction taken by Heim (2005) who develops an analysis of phi-features as "presupposition triggers", which constrain the interpretation of both deictic and anaphoric pronouns: in pragmatics, the phi-feature specification on the pronoun constrains the choice of its referent in the context; in syntax, features are transmitted via binding from the antecedent to the variable it binds. In the following paragraph, we will show that this configuration also applies to moved object clitics: cliticization thus creates a lambda abstract represented by the features on the clitic which bind the VP-internal trace; however, we will maintain that a dissociation in syntax can be overtly seen in certain structures: not only in relative clauses, in which the chain between the head DP and its trace is mediated by the relative pronoun (the binder), but – it will be argued below – in reflexive cliticization.

5.3 THE OBJECT CLITIC DERIVATION

The Clitic Exemption Effect shows that a very clear Condition B effect surfaces in simple transitive sentences which prohibits covaluation of an object clitic and a vP-internal subject. As we have discussed in Chapter 1§5.2, this has been captured by Baauw (1999) under the generalisation that clitics do not allow local coreference. Following Delfitto (2002), Baauw and Cuetos (2003) argue that the syntactic configuration in which the clitic and its trace end up after movement has the crucial effect to turn the VP-internal trace of

the clitic into a bound variable, thus no representation involving coreference can compete with a binding representation.

In phase-based perspective, we maintain that the semantic consequences of this movement are evaluated at the phase level, hence the syntactic derivation of an object clitic gives rise to a predicate abstraction configuration at the vP phase. This requires a modification of the analysis assumed in Baauw and Cuetos (2003: 232): in (21) – the semantic representation of object cliticization assumed in Baauw and Cuetos (2003) – movement of the subject turns the external argument x into a bound variable; consequently, movement of the clitic turns ClP into the lambda abstract λy saturating the internal argument: this has the consequence, according to the authors, that allowing x and y to refer to the same individual (x=y) results in a Principle B violation.

(21)   ClP (λx λy . x señala y)
        /\
       y   Cl'
           /\
          la   VP (λx . x señala y)
              /\
             V   t
          señala
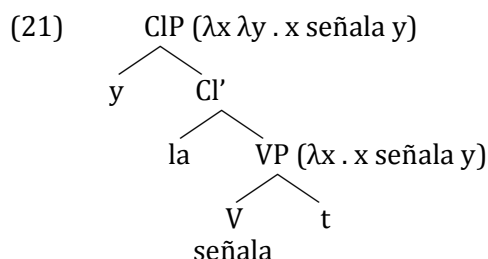
In contrast, we want to maintain that the obligatorily contraindexed interpretation between the trace of the subject and the trace of the clitic follows from the syntactic configuration to which clitic movement gives rise at the vP level, pursuing the hypothesis that semantic effects are the output of syntactic configurations.

The first point of departure from Baauw and Cuetos' (2003) analysis concerns the adjunction site of the clitic. In a phase model of the syntactic derivation, it is unlikely – in actual fact, impossible – that movement targets ClP directly. As movement has to proceed in a cyclic fashion, there must be an intermediate step of movement, which is what Chomsky (2001) identified in the outer spec,vP, namely, the projection assigned the (optional) EPP feature. When an object is moved to the outer spec,vP, it creates a configuration in which its trace becomes a bound variable. What forms the lambda abstract is the coindexation between the clitic and its trace.

(22)   vP
      /\
   le₁   vP
        /\
     Jean VP
          /\
       voit t₁
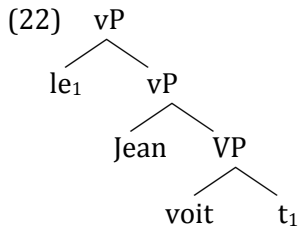
Following Delfitto (2002), we maintain that the lambda abstract is represented by the agreement features on the clitic, which are transmitted to the trace forming a variable chain. It is also true, as Delfitto (2002) notes, that clitics are nothing but bunches of phi-features: despite the similarities between QR and object cliticization, a clitic, lacking a nominal complement, cannot saturate the lambda abstract: in QR, "the QP itself provides the argument of the λ-abstract created by the abstract AGR-chain. The difference with respect to clitic-movement is that the D-head has no semantic content (by hypothesis, it is nothing else than AGR): it simply contributes to encoding formal objects of the sort λx (…x…), without providing an argument for the λ-abstract, that is, without saturating the predicate" (p.44). This can arguably capture the reason why clitic pronouns need a discourse or linguistic antecedent in order to saturate the internal argument position, while QR'd subjects can semantically saturate the predicate below them; at the same time, the fact that a clitic is nothing but AGR suffices to create a variable chain inside the vP in which, crucially, the trace of the clitic, and not the clitic itself, is a bound variable. The A'-chain created by clitic movement forms an unsaturated expression that corresponds to a one-place predicate:

(23) λ(x) [Marcello reads x]

This unsaturated function becomes a proposition (i.e. an expression with a truth value) only when it combines with an empty topic. This topic takes scope over the whole clause and saturates the predicate created by the lambda-abstract. In other words, a clitic expression like "Marcello lo legge" (Marcello reads it) is interpreted as a proposition only when an empty topic saturates the open position created by the clitic:

(24) [Top ₑ] [λ(x) [Marcello reads x]

According to the author, this is the reason why clitics are interpreted as referring to given, familiar entities in the discourse. This semantic property is actually part of the semantics of cliticization, which requires the lambda-abstract encoded by the syntax of cliticization

to combine with a referential entity (of the logical type <e>) in order to yield a proposition.

The second major consequence of this analysis is that if the vP – and not ClP – is the first subtree which clitic movement turns into a predicate, the vP-internal subject is *free* in such configuration – against Baauw and Cuetos (2003). Cyclicity implies that it is unlikely that movement across phases can create a lambda abstract. Since phases are sent to spell-out for interpretation after completion (with the exception of their edges), we contend that a bound-variable relation can hold between α_1 and a trace t_1 iff: (i) α_1 and t_1 are situated in the same phase; (ii) t is in an edge position, hence visible to the higher phase. We will therefore assume that QR (in the broadest sense) targets only phase edges, namely the outer specifiers of vP and CP. When the vP is sent to spell-out, the trace of the internal argument is a bound variable but the trace of the external argument is free. Following Heim and Kratzer (1998), we maintain that an LF phase cannot contain a free and a bound occurrence of the same variable: therefore, covaluation between the trace of the subject and the bound trace of the object is prohibited by the configuration itself rather than by an independent Principle B constraint.

5.4 SURFACE SEMANTIC EFFECTS OF OBJECT CLITICIZATION AND OBJECT SHIFT

Under an analysis of object movement as predicate abstraction, the semantic effects of cliticization, including properties like familiarity, specificity etc., follow from the properties of the lambda abstract encoded by the agreement features on the clitic itself after movement. We have maintained, firstly, that overt object movement to spec,vP is narrow-syntactic and obligatory, because the object clitic is a defective goal for v* (Roberts 2010); secondly, that the Condition B effect arising from cliticization is an interpretive consequence of the derivation (consisting in contraindexing between the vP-internal trace of the subject and the trace of the clitic) alongside the other semantic properties of cliticization. As for the last point, we may crucially observe that these interpretive properties are assumed in the current framework to be associated with the EPP feature on v, the position targeted by the lambda abstract in the vP phase. In fact, this interpretive complex – which Chomsky (2001) labels "Int" – is not exclusive to cliticization but universally associated with the EPP position on v. Discussing the semantic properties of Object Shift Chomsky (2001:32) points out that:

"Sometimes the operation is described as driven by the interpretive properties of Obj that bear the interpretation Int. That is a questionable formulation,

however. A "dumb" computational system shouldn't have access to considerations of that kind, typically involving discourse situations and the like. These are best understood as properties of the resulting configuration […]. One might also say informally that in [1], the phrase *the men* is raised in order to bind the anaphor:

[1] the men seem to each other to be intelligent

But the mechanisms are blind to their consequences, and it would make no sense to assign the feature "binder" to *the men* with principles requiring that it raise to be able to accommodate this feature […].The computational system presumably treats it as an option, feature-driven by the properties of v*, with the option expressed as an optional choice of an EPP feature."

Chomsky (2001) maintains that the vP phase has two universal properties:

a. v* is assigned an EPP feature only if it has an effect on outcome
b. The EPP position of v* is assigned Int

The parametric property, which is observed only in OS languages, is:

c. At the phonological border of v*P, XP is assigned Int'

The "phonological border" is a broader concept than "phonological edge": in fact, it comprises any element not c-commanded by phonological material. This means that, if the head V has evacuated vP, its complement (the internal argument) occupies the phonological border. The crucial point of this analysis is that it is not the internal semantics of the shifted object that drives the application of the rule, just as raising of the subject is not driven by the interpretive consequence of binding the anaphor. This is a fundamental reversal of the original account of Object Shift proposed by Holmberg (1999), who suggested that the rule was triggered by features encoded on the object. Under Chomsky's account, the semantic effects of object shift result from the configuration which OS creates:

(25) [$_{vP}$ XP [$_{vP}$ Subj v* [V Obj]]]

The (first merge) position of the internal argument Obj is its thematic position. Movement of the argument creates an A'-chain, where the head of the chain in the EPP position of v* determines its "surface semantic" interpretation Int (definiteness, specificity etc.). Whether OS applies or not, crucially, is not determined on the basis of the semantic

properties of Obj itself, as the rule is structurally defined and therefore "blind" to its semantic output. If Obj is a definite pronoun, failure to apply OS will lead to a deviant outcome: since the OS parameter assigns (structurally) Int' to Obj at the phonological border, a pronoun must escape that position and move to the EPP position of v*. But "the choice is optional. If object resists Int' (say, a definite pronoun), failure to exercise this option will lead to deviance; if Obj resists Int, exercising the same option has the same effect. But the internal semantic properties of Obj are not part of the mechanism of the rule, just as the intention of binding an anaphor is not part of the mechanism of raising" (Chomsky 2001:35).

In non-OS languages, interpretation is assigned freely to the internal object position, since the parameter does not hold. Therefore, spec, vP will be assigned EPP to attract the Obj only if there is another effect of outcome, for example, to permit A'-movement. A "new outcome" is, for instance, a wh-question: then v* is assigned the EPP feature and the object raises to it, whereby it becomes accessible to C, and cyclic A'-movement is thus permitted.

Such "new outcome" intuition is based on an economy principle proposed by Reinhart (1993), namely, that "optional operations apply only if they have an effect on outcome" (see also Miyagawa 2011). In non-OS languages, a VP-internal object can be freely interpreted as specific, definite etc. even if it sits at the phonological border: in other words, Int-assignment is already free without the EPP feature (Chomsky 2001). In object cliticization, movement is driven by Agree and the semantic effects associated with this movement arise from the derived configuration itself. This gives support to the syntactic implementation of the Predicate Abstraction rule we assume for object clitic pronouns and has the welcome result of reinterpreting Condition B effects in object cliticization as a semantic output of the syntactic derivation, in the spirit of a derivational approach to binding relations.

5.5 THE SEMANTICS OF REFLEXIVE CLITICIZATION

Finally, we suggest that the above analysis makes the right predictions regarding reflexive cliticization. The reflexive vP involves a movement chain linking a DP in the EPP spec,vP and a VP-internal trace. The crucial link in this configuration is represented by the reflexive clitic itself, which we assume to be a non-referential external argument following McGinnis (1999).

The exact derivation of reflexive clitics has always been much debated. Roughly put, the unaccusative analysis and the unergative analysis defend opposite views on the nature of the syntactic subject in reflexive clitic constructions. Under the unaccusative analysis, the syntactic subject is the underlying logical object, which raises to the surface subject position, while the external argument is the reflexive marker (Kayne 1988; Pesetsky 1995). Under the unergative analysis, the syntactic subject is generated in the logical subject position and the reflexive marker is in fact associated with the internal theta-role (Chierchia 1989; Reinhart 1996).

McGinnis (1999) is an advocate of the unaccusative analysis. She argues that reflexive clitics are external arguments of caseless vPs. The syntactic subject is the logical object which raises to the outer spec,vP and binds the clitic itself, creating a binding configuration involving the DP, the anaphor and the VP-internal trace.

(26)
$$
\begin{array}{l}
\text{TP} \\
\quad \diagdown \\
\text{Jean}_i \quad \text{T}' \\
\qquad \diagdown \\
\qquad \text{vP} \\
\qquad \diagdown \\
\text{t}_i \quad \text{vP} \\
\qquad \diagdown \\
\text{se}_i \quad \text{VP} \\
\qquad \diagdown \\
\text{voit} \quad \text{t}_i
\end{array}
$$
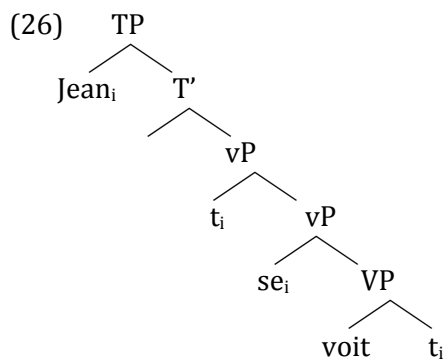
The reason why reflexive clitics are external arguments of a caseless vP has to do, according to McGinnis, with their underspecification for phi-features. This explains why they "are invisible for EPP attraction" (p.150) and do not block raising of the object to T to check Case.

McGinnis points out that the difference between the object clitic derivation and the reflexive clitic derivation resides in the nature of v* in these two constructions. Several syntactic considerations lead the author to claim that movement to spec,vP does not need to be motivated by Case. In other words, caseless vPs can involve movement to the outer spec,vP solely triggered by the EPP feature. She offers evidence that a dissociation between Case and EPP exhists and that some constructions do in fact involve cyclic movement trough spec,vP triggered by EPP. This is somewhat controversial if we assume with Chomsky (1995) that v* is present when: (i) it assigns a theta-role to an external

argument; (ii) it checks Case on the object. However, there is some indication that cyclic movement through spec,vP is involved in caseless vP.

If this intuition is correct, caseless vPs can also have an EPP feature, even when a Case feature is missing. Two cases in point are the passive and the reflexive derivation. In the passive vP, there is evidence of EPP-driven movement: first, if derived subjects trigger participial agreement (Kayne 1989) this might indicate that movement finds an intermediate step in spec,vP, under the assumption that agreement is triggered by Case/EPP feature checking (27a). In fact, when the object does not move, no participial agreement surfaces (27b). Second, expletive constructions in English appear to require obligatory movement of the object to a position above the verb (see 27c vs. 27d).

(27) a. La lettre est [$_{vP}$ t [$_{VP}$ écri**te** t]] (McGinnis 1999:145-146)

    b. Marie a [$_{vP}$ [$_{VP}$ ecrit la lettre]]

    c. There was [$_{vP}$ a proof [$_{VP}$ discovered t]]

    d. *There was [$_{vP}$ [$_{VP}$ discovered a proof]]

The first observation, therefore, is that movement through spec,vP is not always motivated by Case checking. Passive and reflexive constructions involve movement through spec,vP solely motivated by EPP checking. Object scrambling and object cliticization, in contrast, are examples of movement through spec,vP motivated by both Case and EPP.

McGinnis (1999) points out that, in fact, the reflexive derivation resembles object scrambling in that the logical object moves to spec,vP. However, differently from the latter, the reflexive vP does not involve Case checking and this is the reason why the logical object is eligible for further movement to spec,TP (as illustrated in 26). Under our hypothesis, in order to explain how binding constrains the interpretation of reflexive clitics and object clitics, all we need to do is to look at the nature of v in these two derivations. In the transitive vP, clitic movement to the outer edge of vP creates a variable chain; the φ-features on the moved clitic – which were simply "indices" in the original formulation of the Predicate Abstraction rule (Heim and Kratzer 1998) – are interpreted in semantics as a lambda abstract, which makes the vP tree below the clitic interpreted as a predicate, i.e. a function P(x). We have furthermore observed that this suffices to turn the object trace into a bound variable, but not to saturate the argument, because object clitics lack nominal content. Reflexive clitics lack Case and are also underspecified for phi-features. Following Dechaine and Wiltschko's (2002) categorization of pronouns, these

elements may be viewed as nothing but Φs. We propose therefore that the configuration to which object DP movement gives rise in the reflexive vP not only satisfies the semantics of Predicate Abstraction in (16), but also exibits an overt dissociation between the element that is dislocated (α), the lambda abstract (β) and the bound trace of α. Originally, as we have seen, this was the configuration which Heim and Kratzer (1998) applied to relative clauses introduced by a relative pronoun or "such" (Heim and Kratzer 1998: 107), whose definition was:

(28) If α is a branching node and β and γ its daughters, when β is a relative pronoun or
β = "such," then $[[α]] = λx .[[γ]]^x$

When the same structure is represented at the vP level in the reflexive clitic derivation, it yelds the same semantic effect, namely a variable chain containing the dislocated object DP, the reflexive marker and the trace inside the VP:

(29) (a)

```
        α
       / \
      β   γ
         / \
        x   ...
```

(b)

```
          /\
       DP    CP
    the movie / \
         which₁  C'
                / \
               C   T
             (that) / \
                 Mary  vP
                      / \
                     t₁  vP
```

(c)

```
            vP
           /  \
        Jeanᵢ   vP
               /  \
             seᵢ   v'
                  /  \
                v*    VP
                     /  \
                  voit  <Jeanᵢ>
```
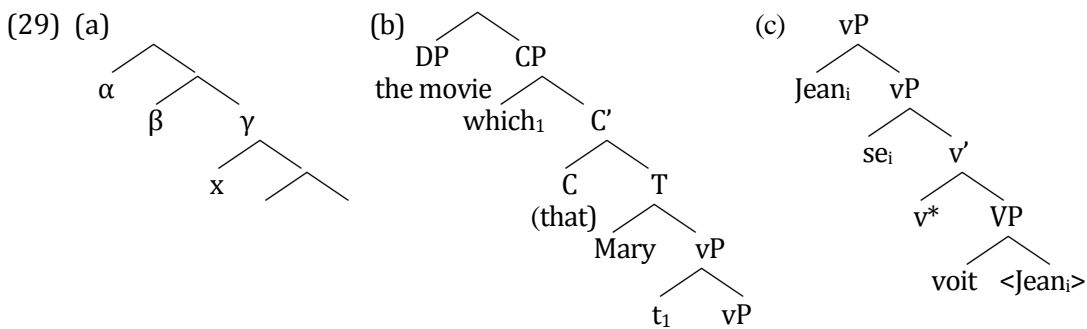
In the phasal derivation, Predicate Abstraction is accomplished in a relative clause as the relative head moves cyclically through the outer spec,vP: its trace is therefore visible to the relative pronoun in spec,CP which binds it. No further modification is required therefore for Heim and Kratzer's (1998) analysis of relative clauses under a phase-based representation; in (c), a reflexive vP, the lambda abstract appears on the vP node – here identified with the reflexive clitic itself by virtue of being nothing else than Φ – and the surface subject is derived from the underlying object position attracted from the EPP spec,vP of the reflexive Caseless vP. The lambda abstract in the reflexive vP, differently from the transitive vP, turns the VP itself into a one-place predicate:

(30) λx. see (x)

SELF- anaphors bear both Case and theta role: in fact, they are arguments in all respects. Binding of an anaphor in English requires QR applied on the subject of the sentence:

(31)

```
            XP
          /    \
        DP      IP
      John₁    /  \
             t₁    VP
                  /  \
                 V    DP
               sees  himself₁
```
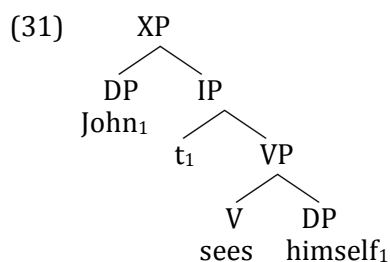
This configuration has a different LF, as the lambda abstract turns the predicate below into a two-place predicate, in which the QR'd subject binds both its trace and the SELF-anaphor in object position:

(32) λx. x see x

Conversely, if we follow McGinnis (1999), what is QR'd in the Romance reflexive vP is the underlying object itself. QR of the object DP in the reflexive clitic derivation sees nothing else than the trace inside VP – a one-place predicate.

In sum, the present analysis postulates that the semantics of variable binding can be captured in derivational perspective, as a result of movement which adjoins a constituent to the edge of a phase (C or v) and creates a lambda abstract λx. P(x). The semantics of cliticization differs crucially from the semantics of bound variables which do not leave the vP. Full pronouns and SELF-anaphors can only be interpreted as bound if the subject of the sentence is QR'd (as in 31).This movement is *optional*, as there is no requirement in narrow syntax to impose QR: in fact, we maintain with (Chomsky 2001:33) that "optional operations can apply only if they have an effect on the outcome". In the case of both object and reflexive cliticization, in contrast, movement to the edge of vP is never optional: object clitics move to delete Case and incorporate with v*; object DPs in the (unaccusative-like, caseless) reflexive vP move to the same position triggered by the EPP feature on v. Although this movement is not motivated by Case, it is necessary in order for the DP to move to T and delete NOM Case. Crucially, at the semantic level, these derivations give rise to an interpretive outcome which allows for no optionality in binding relations: obligatory contraindexing in the object clitic vP; obligatory coindexing in the reflexive clitic vP. The comparison between the transitive and the reflexive clitic derivation is enlightening to understand the properties of edge operations at the vP phase. Despite the differences, both vPs bear an EPP feature. We maintain that the EPP feature is universally the trigger of the "new outcome" movement (Chomsky 2001) and that even binding relations are in fact, under this view, a semantic new outcome.

6. CONCLUSIONS

In this chapter we approached the question of the local domain in a derivational perspective as the key to understanding the empirical facts left unsolved by the Standard Binding Theory (Chomsky 1981). Our argument proceeded at two levels: at the empirical level, we showed that the *phase* is a good candidate for a notion of binding domain in which the structural configuration containing the pronoun and its antecedent feeds the interfaces, and not vice versa. Specifically, following Hicks (2009) we observed that the effect of stress on the interpretation of a pronominal can be best captured if the relevant domain is a PF object. At the conceptual level, we defended the simplicity of a theory which unifies binding effects and narrow-syntactic movement; in fact, the most notable attempt to define semantic binding as an articulate configuration at the level of S-structure goes back to Heim and Kratzer (1998). To support the relevance of the vP phase in determining binding effects in cliticization, we observed that the abstract configuration which the Predicate Abstraction rule sees is critical to binding effects in both the object and the reflexive clitic derivation. In these derivations, the relevant adjunction site is the outer spec,vP endowed with the EPP feature; since movement to this position is driven by narrow syntax, the lack of optionality in binding effects follows. In acquisition perspective, we have argued that the Clitic Exemption Effect is important evidence that no strategy of pronoun interpretation outside narrow syntax is allowed in simple object cliticization. The Clitic Exemption Effect further witnesses that binding relations are already determined in the derivation at the completion of the vP phase.

If nothing but the configuration itself forces an object clitic to be interpreted as a bound variable, what are the semantic consequences of object clitic movement in derivations that involve two vPs, hence two binding domains? In the following chapter, we will show that some complex predicates provide a case for the availability of a different interpretive strategy of clitic resolution, namely, coreference. Concretely, coreference becomes an option in ECM and FP predicates because, by virtue of the properties of the embedded vP, clitic movement fails to create a lambda abstract, thus leaving the vP-internal copy unbound.

CHAPTER 5

ROMANCE PIP AND PHASES

1. INTRODUCTION

Under a phase-based derivational approach to binding and cliticization, Condition B effects are among the interpretive consequences of the narrow-syntactic derivation of the clitic across the vP phase. We have argued that movement of an object clitic to the outer spec,vP creates a variable chain, where the phi-features on the pronoun are copied onto the bound variable in VP-internal position: in semantics, these are interpreted as a lambda abstract, and the vP containing the bound trace of the clitic is interpreted as a predicate, i.e. a function which is true for any assignment to the variable it contains. We have also observed that the outer spec,vP is the position associated with the EPP feature on v (Chomsky 2001): in fact, according to Chomsky (2001) this position is universally assigned Int, a complex of interpretive properties such as specificity, definiteness, familiarity etc.

This hypothesis maintains that the binding effects of object cliticization are the output of the narrow-syntactic derivation – in that there is no interpretation determined a priori in the C-I interface to drive the movement; in fact, we have assumed that overt clitic movement is probed by v* after Agree. This is a further development in the minimalist idea that predicts surface semantic effects to be "restricted to the narrow syntax" (Chomsky 2001) and embraces Hicks' (2009) idea of binding effects as determined in the narrow syntax rather than imposed by the interfaces. Implementing this idea in our account of cliticization, however, we have departed from Hicks' (2009) assumption that anaphoric relations are created in narrow syntax when a constituent (by definition, an anaphor) values a semanticosyntactic [VAR] feature under matching with its antecedent. Hicks' (2009) analysis makes the prediction that anaphors are not placed in competition with pronouns in the anaphoric relation because a pronoun simply cannot be inserted in a derivation with the same feature specification of an anaphor; Condition B effects arise,

rather, if a non-optimal derivation is chosen, leading to a violation of economy. We have contended that bound variable relations arise configurationally as a result of a movement operation which gives rise to Predicate Abstraction and that, under the current minimalist model, all – and only – the configurations created by movement to phase edges (spec, CP and the outer spec,vP) share this semantics. In short, this means that a lambda abstract can occupy either spec,CP or spec,vP and only the trees below C or v can be predicates of the form λx. P(x). Since C and v are LF phases, this is also compatible with Hick's idea that variable binding is evaluated at the LF phase; note, however, that this analysis does not look at the feature specification of the variable itself in the numeration. At an empirical level, it is able to capture a much broader range of phenomena, simply because the skeleton of this configuration appears in syntactic structures (such as relative clauses, QR and cliticization) which would not seem to share the same semantics at a first glance. This is possible only if we maintain a fundamental parallel between traces and pronouns, as in Heim and Kratzer's (1998) compositional semantics analysis of variable binding: in fact, in the case of object cliticization, the variable itself is the trace of the pronoun.

As we have underscored, Reinhart and Reuland's (1993) analysis of binding crucially solves most of the problems left open by the Standard Binding Theory because it endorses an interaction between movement and binding; however, as the opponents of this model observe (see the discussion in Hicks 2009:197) it does so at the cost of postulating not only two types of predicates to which reflexive-marking is relevant (i.e. syntactic and semantic predicates), but also an additional constraint – the A-chain condition – which applies to arguments and not to predicates. We have shown that the interaction between binding and movement finds conceptual support in the minimalist framework and the *phase* makes a good candidate to define binding domains where bound variable relations are created out of narrow syntactic movement with no additional stipulation.

2. PHASES AND ECM

We have argued that a phase-based derivational model of variable binding allows us to account for the consequences of object cliticization in simple sentences: since the object trace is interpreted inside the vP as a bound variable, coreference is not possible. Contraindexing between the clitic and the subject obtains because the trace of the subject is a free variable inside the vP and cannot be part of the variable chain headed by the clitic itself; the Clitic Exemption Effect is evidence that such computation is internal to narrow syntax and cannot fail in the child derivation. By the same reasoning, the presence of PIP with clitic pronouns in ECM sentences must find an explanation in children's derivation of

the clitic across phases. In Chapter 3 §3.2.5, we have described clitic climbing in ECM as triggered by the matrix v* to delete unvalued Case on the clitic. In the embedded v*, the clitic is merged in the subject external argument position, spec vP. Since phi-complete, phasal v* agrees with objects, and not with subjects, the clitic does not agree with v*, and is probed by T, which is defective and cannot delete Nom Case; the derivation thus proceeds to the matrix v*, which agrees with the clitic and deletes Acc Case via EPP-driven movement of the pronoun to the outer spec,vP. To illustrate:

(1) a. La niña la ve bailar

  b. [La niña T la [$_{vP[EPP]}$ <la> [$_{vP[EA]}$ <la niña> ve [T$_{def}$ <la> [$_{vP[EA]}$ <la> bailar]]]]]

The derivation in (1b) looks like a true exception to the derivation of object cliticization. Since the object clitic is in fact an underlying subject, it does not occupy the VP-complement position in the embedded vP but is already merged in an edge position accessible to the probe T in the next phase. The embedded v* does not need to be assigned an EPP feature to probe the clitic, which is already in an "escape hatch". EPP-movement is the syntactic operation which we have identified as the crucial condition on the creation of a lambda abstract to turn the clitic trace into a bound variable: therefore, we conclude that the ECM derivation yields a different semantic outcome, namely, the clitic is interpreted, inside the embedded vP, as a free variable. At the higher strong phase vP of the matrix clause, the configuration permits the external argument of the matrix verb to corefer with the clitic lacking a lambda abstract. This analysis makes a strong statement about the child's computational system, namely, that the internal syntactic mechanisms are not affected in children's computation; rather, what yields a deviant semantic outcome is the resulting configuration of clitic movement when this is not triggered by the optional EPP feature at the outer edge of vP. What the "blind" computational system knows is that the clitic must escape vP: such mechanism automatically turns the clitic into a bound variable in the case of extraction from object position, but does not do so automatically in the case of extraction from the subject position.

In the reflexive clitic derivation, binding is the only possible configuration even in ECM sentences. Given that reflexive clitics do not bear theta role, the derivation of a reflexive ECM sentence can be captured by an unaccusative analysis à la McGinnis (1999), which assumes the object DP to move and the reflexive clitic to be base generated. In ECM, the DP starts in the embedded subject position to be probed by T$_{def}$, and finally to the outer

spec,vP of the matrix vP, which contains the reflexive marker in the external argument spec,vP:

(2) a. La niña se ve bailar

   b. [La niña T se [$_{vP[EPP]}$ <la niña> [$_{vP[EA]}$ <se> ve [T$_{def}$ <la niña> [$_{vP[EA]}$ <la niña> bailar]]]]]

This analysis may provide an answer as to why apparent Condition B violations show up in the acquisition of object clitic pronouns in ECM constructions. In typical object cliticization, the clitic is forced to be interpreted as a bound variable at the bottom of the derivation, and this excludes the possibility to resolve an intrasentential anaphoric relation with the antecedent via coreference. If the clitic is interpreted in its thematic position in the embedded vP, the matrix subject may be covalued with it before EPP-driven movement takes place in the matrix vP. At that point, in fact, the trace of the clitic would become a bound variable as a consequence of movement to the outer edge of the matrix vP. This opens up a crucial question about children's interpretation of bound variables across phases. If Condition B applies to all copies of a pronoun in the derivation, ECM constitutes an exceptional case, in which the lower copy of the clitic is free, but the higher – in spec,T$_{def}$ – is bound. If only the copy in theta position is relevant to interpreting an argument as a bound variable, we can recover Reinhart and Reuland's (1993) intuition that Condition B applies to semantic predicates and thus conclude that Condition B does not apply to clitics – as well as to full pronouns – in ECM constructions. This is not to say that Condition B effects do not apply to the pronounced copy of the pronoun in the exceptional case marked position; in such case, however, what bans the covaluation between the subject and the clitic is a pragmatic constraint on local coreference. This explains why there is only an "effect" rather than a syntactic violation of Condition B. As coreference becomes a syntactically possible strategy in the matrix vP, the deviancy of an interpretation in which the subject and the pronoun bear the same index is due to the fact that it is indistinguishable from a representation in which the subject would bind the clitic in spec,T$_{def}$. This is confirmed by the fact that also Romance children distinguish between ECM sentences with referential and quantified antecedents (Baauw et al 1997).

We can only leave at a speculative level the question whether the copy in theta position – in the external argument spec,vP in the case of ECM – is responsible for the interpretation of the variable as free or bound throughout the derivation. Adult data would contribute enlightening evidence if on-line resolution of clitic pronouns were tested in ECM sentences. As will be shown in Chapter 8, processing studies using eye-tracking techniques

have already shown that adults may temporarily consider a local antecedent for a free pronoun in absence of other linguistic antecedents; hence, if a difference could be found in adults' on-line resolution of clitics in simple and complex ECM predicates, it would suggest that the clitic's merge position results in interpreting the pronoun as non-bound, thus open to coreference.

3. Full Pronouns and ECM

Full pronouns are never lambda abstracts, hence we expect all the copies in an ECM derivation to be potentially free for coreference. This makes ECM an interesting test for the hypothesis that vP is a local domain. Again, we have the peculiar case in which the copy of the subject is in the domain of the pronounced copy of the pronoun (the matrix vP), but outside the local domain of the unpronounced copy.

(3) a. *John$_i$ believes him$_i$ to love Mary   (Hicks 2009:171)

b. [$_{TP}$ John$_i$ [$_{vP}$ <John$_i$> believes [$_{TP}$ him$_i$ to [$_{vP}$ <him$_i$> love [$_{vP}$ Mary]]]]]

Hicks' (2009) explains the ungrammaticality of (3b) arguing that Condition B applies to the pronounced copy in the matrix vP phase. The first copy of *him*, free in its local domain. moves directly from the embedded subject spec,vP to T for Case reasons. As we have discussed, the embedded T does not define a phase and is unable to delete Nom Case. Therefore, *him* is exceptionally Acc Case marked by the matrix v*, the higher strong phase head. At this point, the matrix subject is also merged in the derivation: "we must assume, therefore, that it is the phonologically realised copy of *him* in (3b) that induces a Condition B effect, since only that copy occupies the same LF-phase as the copy of its antecedent, *John*". (Hicks 2009:171).

We have already argued that this analysis is not convincing for full pronouns: firstly, if binding applies to the pronounced copy, coindexing between the matrix subject and an embedded ECM subject is ruled out by the same binding principle which rules out local binding in a simple sentence. This is a step back from Reinhart and Reuland's (1993) hypothesis that Condition B does not apply to ECM, and not an advantage; in fact, it does not predict a difference between ECM and simple sentences in acquisition. Secondly, all the copies of *him* are potentially free, because full pronouns, unlike clitic pronouns, are never derived like bound variables (see Chapter 4 §5.2); thus coindexing between *him* and the copy of *John* in (3a) can obtain via local coreference – a possibility which Hicks' (2009) model does not consider, because anaphoric relations are created in narrow syntax under

matching of a syntacticosemantic [VAR] feature. Child data indicate not only that children can discriminate between free and bound variables, allowing coindexing with a local antecedent only with non-bound pronouns, but also that they do so more in ECM, a construction where binding domains are different from simple sentences, given the phase definition of binding domains we assume. In a language like English, both the pronounced and the unpronounced copy of the pronoun can be covalued with the matrix subject via coreference; however, only in the matrix vP coreference is local, hence pragmatically deviant. The higher rate of anaphoric interpretations allowed by children in this construction therefore must indicate that it is the copy in the embedded vP, which is not in the domain of the subject, that allows PIP to arise at higher rates than simple sentences.

4. DO CHILDREN KNOW ECM AFTER ALL?

In an analysis which focuses on phases in acquisition, children's problems with the interpretation of object pronouns can also be important evidence that children's derivations of certain structures contain non-adult-like phase points. If binding relations are determined at the output of the phase, it is clear that different binding possibilities would arise if the child interpreted a defective domain as a phase.

In fact, Roeper and de Villiers (1992) tested children's knowledge of barriers by observing whether children allow long distance extraction of wh- words in different types of wh-questions. The data suggested that the acquisition of ECM might be delayed. Roeper and de Villiers' (1992) results bring strong support in favour of the cyclic nature of the syntactic derivation and of its innateness. Not only long distance extraction was found to emerge very early in sentences with an overt complementiser, but children also showed sensitivity to the argument/adjunct distinction. In other words, children know very early that extraction over an argument is prohibited but extraction over an adjunct is possible:

(4) a. How did the mother learn t what to bake *t? (- LD)
b. What did the mother learn t how to bake t? (+ LD)
(Roeper and de Villiers 1992:205)

Long distance extraction of the adjunct in (4a) is blocked by successive-cyclicity: wh-arguments are barriers because C° is a maximal projection, in Chomsky's (1981) framework. Therefore, only an interpretation in which the wh- adjunct is extracted from the upper clause is allowed. The children in Roeper and de Villiers' (1992) study blocked

extraction of adjuncts over arguments (5) 92% of the time, of adjuncts over adjuncts (6) 94% of the time, and of arguments over arguments (7) 98% of the time:

(5) How did Kermit ask t who to help *t?   (Roeper and De Villiers 1992:209-210)

(6) When did the boy know t how he hurt himself *t?

(7) Who did the girl ask t what to throw *t?

The power of these data is not only to show that children as young as 3 know that C defines a phase; since they are able to discriminate between arguments and adjuncts in the interpretation of long-distance questions, they also know that successive-cyclicity, currently defined by the Phase Impenetrability Condition, requires an 'escape hatch' spec,CP in the embedded complementiser in order to permit successive-cyclic movement. At the same time, when children were tested in the interpretation of wh-questions in ECM environments, the results were not adult-like. In fact, long-distance extraction from an ECM clause appeared to be delayed. The experimental setting was the following (Roeper and de Villiers 1992:225):

(8) CONTEXT: The little boy went for his first ride on a horse. His mother saw him in the distance and looked through a telescope. What a surprise she got – he was on the horse backwards!

TEST SENTENCE: How did the mother see him riding?

In a sentence like (8), extraction from the lower clause is allowed because the medial T_{def} is not a phase – hence, in Chomsky (1981), there is no barrier. If there is no phase boundary – i.e. no C – in the embedded clause, the matrix v* can be exceptionally Case-mark the embedded pronoun. In turn, this means that the adjunct wh- word in (8) can either interpreted in the lower clause (*backwards*) or in the upper clause (*with a telescope*). This is precisely what the adults' responses indicated: in fact, long and short-distance interpretations were allowed freely (46% and 54% respectively). Children, however, allowed long-distance extraction only 18% of the time. Since they know how long-distance extraction works, this can be taken as evidence that "children's small clauses are initially generated without any subcategorization from a higher verb" (Roeper and de Villiers 1992:219) in which case they are analysed as maximal projections. Roeper and de Villiers (1992) point out that positive evidence is ambiguous to help the child identify the class of ECM verbs:

(9) a. John saw me running

b. John enjoys me running

Despite the apparent identical structure, Case marking obtains very differently in (9a) and (9b). In (9a) *me* is exceptionally Case-marked by the subject, whereas *me running* in (9b) is a so-called ACC-ing construction, in which Case is assigned by the gerundive inflection. Such structural difference yields opposite extraction possibilities, because exceptional Case marking involves the elimination of a maximal projection in the complement clause, whereas the ACC-ing construction is a barrier in traditional terms:

(10) a. How did he see t me running t? (Roeper and De Villiers 1992:222)
    b. *How did he enjoy me running t?

The literature about children's production of small clauses offers good indication that children's small clauses may involve default Case marking. Lebeaux (1988) speculated that Case is structurally-assigned by a maximal projection when it is not lexically-assigned by a verb. This accounts for default Case marking not only in child language but also in the adult language:

(11) me give you money, no sir! (Roeper and De Villiers 1992:220)

Often, default Case appears to be the genitive, as originally showed by Vainikka (1986):

(12) "Help my eat it" (Roeper and De Villiers 1992:221)
    "See my ride it"
    "See my do it backwards"

Genitive Case, clearly, never appears in children's speech when the object is lexically-assigned Case by a verb. Therefore, Roeper and De Villiers (1992) conclude that the Accusative on children's ECM is not assigned by the matrix verb but is a default Case structurally assigned by the maximal projection intervening between the matrix verb and the small clause. It is the presence of a phase boundary in the ECM complement, under this analysis, which results in a more restricted interpretation in the child's derivation of wh-questions with respect to the adult's interpretation; until the child acquires lexical marking from the higher verb to the embedded ECM subject – in other words, the non-phasal status of T_{def} in ECM – she will not be able to access a lower clause interpretation for wh-adjuncts.

If this analysis is correct, it predicts that English children initially analyse the default Case marked pronoun as belonging to a different binding domain from the domain of the matrix subject. The presence of a phase in the ECM complement would have the effect that both the pronounced and the unpronounced copy of the pronoun are outside the domain of the matrix subject and therefore Condition B would not be violated in children's interpretations. In Italian, however, similar evidence is more difficult to find. If default structural Case were assigned in spec,T, the clitic would be "frozen" and therefore unable to climb onto the matrix clause. This is precisely what happened in Romance languages like modern French or Brazilian Portuguese when the inflectional morphology in T changed. As we have seen in Chapter 3 §5.1, the loss of clitic climbing in Brazilian Portuguese was concomitant with the loss of finite morphology in T. Since T always defines a phase in BP, non-ECM subjects can appear in the lower clause with NOM structural Case and clitic climbing is impossible because non-defective T blocks incorporation between the clitic and the matrix v. In fact, if T_{def} were able to assign default Case to a clitic in the child grammar, Italian children would produce ECM structures like (12) very early like their English peers[1] and, most importantly, they would misplace the clitic. Guasti (1993/1994) strongly argues that this is not the case: from an analysis of the CHILDES longitudinal corpora of three monolingual children, she found that during the second year of life Italian children are able to distinguish finite and non-finite morphology and do not misplace clitics, although omissions are abundant. Thus a morphologically rich language like Italian is shown to be incompatible with Lebeaux' (1988) hypothesis: "in no way can early Italian verbs be viewed as a pure instantiation of the lexical category V: they are always accompanied by agreement morphemes and the choice of these morphemes is not arbitrary" (Guasti 1993/1994:3). For instance, although children younger than 3 produce less non-finite form overall, they can produce clitic climbing with aspectual and modal verbs:

(13) mi vieni _ prendere? (Guasti 1993/1994:14-15)

　　 me-cl you.come to.pick up?

　　 'do (you) come (to) pick me up?'

---

[1] The Italian counterpart of the English ECM with perception verbs is:
(12') a. Guardami guidarla.
　　 b. Guardami farlo all'indietro.
As Burzio (1986) notes, these structures are less common in Italian; typically, perception verbs appear with pseudo-clefts, i.e. an NP followed by a complementiser (e.g. *Guardami che la guido*).

(Guglielmo, 2;3)

(14) lo devi mettere qua sopra

   it-cl you.must put here up

'you must put it up here'

(Guglielmo, 2;7)

Interestingly, ECM complex predicates with perceptual verbs do not appear in the corpora and presumably emerge later than restructuring. As Roeper and De Villiers (1992) point out, if lexical Case-marking across clauses is acquired late, the very early appearance of ECM-like structures in the speech of English children suggests that ACC Case is not assigned by the matrix verb, but simply instantiates default Case. In Italian, where clitic climbing out of ECM clauses requires a defective phase, the presence of a maximal projection T assigning default Case would result in clitic misplacement. Since these structures are very infrequent in the early speech, there is no empirical confirmation that children *can* produce clitic climbing in ECM; this opens up the possibility that, in comprehension, the clitic is interpreted in the lower clause, from which coreference would become an option. At the same time, the absence of overt misplacement errors cannot give us a definite answer.

5. DEFECTIVE v IN THE CHILD GRAMMAR

A second type of structures which allow us to test whether defective domains are interpreted by young children in an adult-like fashion are those containing defective vPs. The discussion in Chapter 3 §4.4 has led us to conclude that Italian Faire-Par complements are defective vPs. Our analysis was based on the observation that different types of causative complements can be accounted for based on the properties of the embedded v, and that, once we look at these properties, FP objects display many similarities with the objects of unaccusative complements embedded under Faire-Infinitif. Firstly, we have observed that both in FP complements and in unaccusatives embedded under FI, the object is assigned ACC Case by the main verb, and not by the infinitival; secondly, FP and unaccusatives behave similarly under passivization – i.e. in both cases, the object can be passivised. As a generalisation, we have captured these properties under defectiveness of the embedded v (see Chapter 3 §3.2). Following Chomsky (2001:43), we assume that defective v: (i) lacks an external argument; (ii) cannot assign ACC Case to its internal argument; (iii) is not a phase. Our question, therefore, is whether a non-adultlike derivation of defective vPs in child grammar may lead to different binding effects.

Wexler (2004) has advanced the hypothesis that the child grammar abides by an Universal Phase Requirement:

(15) Universal Phase Requirement (UPR) (Wexler 2004:164)

(holds of pre-mature children, until around age 5)

v defines a phase, whether v is defective or not

According to Wexler (2004), the UPR explains why children's grammar is initially delayed on structures with defective v. Defective v does not define a phase precisely because it is unable to assign ACC CASE: hence it is required in order for an internal argument in its complement to be in the domain of the higher strong phase head. In the child grammar, phasal, defective v – henceforth, v*def – has the same properties (i) and (ii) above which define v_{def} in the adult grammar. Due to the UPR, however, this vP is a phase:

(16) v*def: (Wexler 2004:169)

    a.   does not assign an external argument to its spec

    b.   does not have Acc Case

    c.   heads a phase

If v defines a phase, passives, unaccusatives and raising constructions without expletive become uninterpretable due to PIC, which renders the internal argument inaccessible to further computations. The effect of the PIC in a derivation containing phasal, defective v is illustrated in a raising structure:

(17) Bert T $v*_{def}$ seems to Ernie [t T_{def} to be t v* wearing a hat] (Wexler 2004:169)

In constructions with raising *seem*, such as (17), the subject is unable to delete uninterpretable Case in the embedded T. Therefore, it is still an active goal for the matrix T, which implements raising. However, if the matrix v defined a phase, the subject in the embedded spec,T_{def} would be inside an opaque domain, thus inaccessible to further operations, and the derivation would crash:

(18) T v*def seems to Ernie [Bert T_{def} to be t v* wearing a hat]

In passives and unaccusatives, v_{def} cannot delete Acc Case therefore the underlying object is raised to T to delete Nom Case. Wexler (2004) argues that the UPR can explain why children are delayed on postverbal passives (Pierce 1992): since v_{def} defines a phase, its internal argument cannot be agree with T, unless it moves to an edge position. Only

movement to the edge allows a derivation containing a phasal, defective v to proceed in a successive-cyclic manner. In other words, the crucial property which "saves" a derivation containing v*def is the presence of an EPP feature. In Chomsky (2001), the EPP feature is optional – i.e. it is assigned only if there is an effect of outcome. A'-movement, for example, requires the assignment of an EPP feature on v* in order to permit movement via the outer edge of vP, an "escape hatch" for successive-cyclic movement. This makes an important prediction: if phasal, defective v has an EPP feature to attract an internal argument to its edge, the derivation does not crash; therefore, we expect children perform better with unaccusatives and passives when A'-movement (i.e. semantically-motivated movement through the edge of vP) is involved. Although much research is needed – and, as we will underscore below, important evidence might come from cliticization by virtue of being an EPP-driven phenomenon – the claim that derivations involving the EPP feature are not delayed appears to be confirmed by cross-linguistic evidence.

For example, Harada and Furuta (1999) showed that Japanese children develop gapless passives involving A'-movement before gapped passives involving A-chains:

(19) Kuma-san-wa usage-san-ni t tatak-are-ta

   Bear-topic rabbit-by hit-past

   'The bear [topic] was hit by the rabbit'

Whereas phasal v_{def} blocks extraction of the subject in A-passives, extraction via the "escape hatch" EPP position on v allows the object to reach the higher phase: "since the object is going to be topicalised, that is, since it is going to undergo A' (semantically-motivated) movement, the child's grammar adds an EPP feature to v. The object with *wa* thus moves to spec,v, from where it moves to spec,T (assuming no ban on improper movement) from where it moves to topic position" (Wexler 2004:182). According to Wexler (2004) there is ample evidence that five-year-old children know the EPP feature of v* because this is an internal syntactic computation. In the case of scrambling, children at the same age when they show DPBE/PIP appear to know the semantics of scrambled objects perfectly (Schaeffer 2000): they never perform scrambling on the object in Int' (i.e. indefinite) contexts and they perform it as much as adults in Int contexts. The conclusion, therefore, is that children have no difficulties in comparing the two semantic representations of an object, with Int and Int' interpretation, and consequently assign the EPP feature that induces OS.

Wexler's (2004) hypothesis maintains that the initial state of the grammar reflects an "optimal" design. In actual fact, defective phases are an imperfection: they render the computation heavier; having a one-to-one relation between vPs and phases would be a perfection. However, defective phases are an imperfection that adds expressivity, because some derivations would crash if all vPs were phasal (e.g. raising, passive, unaccusative derivations). So the change occurs – around age 5 – precisely because the compromise between the ease of computation (of having all vPs to correspond to phases) and expressivity must be solved in favour of the latter.

6. BINDING EFFECTS IN CHILDREN'S DERIVATION OF FAIR-PAR

We assume that object clitics – with the exception of exceptional Case-marked clitics – always target the EPP position on v*; assignment of the EPP feature to v* is an internal computation which, in the case of object clitic movement, is driven by the clitic's narrow syntax. As Roberts (2010) observes:

> "if we follow Chomsky (2001:15) in assuming that "surface semantic effects are restricted to narrow syntax, and take the specificity effect associated with clitic movement and object shift to be such a surface semantic effect, then this movement must take place in the narrow syntax. The specificity effect is associated with a kind of "defocusing", as the contrast between *lo conosco* ('I know him') and *conosco lui* ('I know HIM'), observed by Adam Ledgeway, suggests. [...] If the specific interpretation of the shifted object/clitic arises at the left edge of v* in virtue of v*'s EPP feature, then we want clitic movement to target this position" (Roberts 2010:48).

We can thus draw the following generalisation:

(20) In the object clitic derivation, v is assigned an EPP feature (whether v is defective or not)

According to Roberts (2010) the EPP feature in Romance languages is sensitive to the X° status of the clitic; this ensures that only clitic objects move in Romance, and they do so because they "m-merge" with v* by virtue of being defective goals. Scandinavian OS, as we have discussed in Chapter 4 §5.4, is triggered by a parametric property associated with the "phonological border" of vP: if an element is at the phonological border of vP, it is interpreted as Int' – i.e. indefinite, non-specific etc.; hence, in order for a definite object to

escape that position, v* is assigned an EPP feature and the new interpretation Int is created.

Despite the language-specific properties, therefore, object clitics and shifted objects are arguments associated with a specific interpretation by virtue of moving to the outer edge of vP because v is assigned an EPP feature. As Wexler (2004:181, ft.18) speculates, this may crucially predict that children acquiring an OS language will perform better on structures with a defective v, such as unaccusatives, when the object bears a definite interpretation:

> "In an OS language, when the child takes an unaccusative verb as nevertheless having a phasal v, if the object has INT features, an EPP is added to v, and the object can be attracted to spec,v. Thus definite (+INT) objects of unaccusatives should be able to move to spec,v [...] yielding a convergent derivation, even though indefinite objects of unaccusatives will continue to yield nonconvergent structures because movement or case-checking is not allowed into the complement of the phasal v".

We believe that clitics embedded under the defective FP vP may provide a crucial test for this prediction. If the object clitic by virtue of its narrow syntax always triggers the assignment of an EPP feature on v, object cliticization should always result in a convergent derivation, regardless of the complete or defective nature of v. However, there is another way to test if the child takes the defective vP of FP to be a phase: namely, a binding test. If the child processes FP constructions with two phasal vPs, the matrix subject merged in the vP headed by *fare* is outside the binding domain where the clitic is merged as an internal argument of the embedded infinitival. The "deviant" semantic outcome of the child derivation, in such case, would not be a non-convergent derivation but, rather, a non-adultlike binding interpretation resulting from interpreting the FP complement as a phase, hence as a binding domain.

In the adult derivation of FP we assume from Chapter 3 §4.4, the vP complement embedded under FP is defective: it lacks an external argument and it does not assign Acc Case. By our definition, it has an empty spec,v – i.e. is not a bare VP. Since v_{def} cannot assign Case, all Agree relations are probed by the matric v*. The clitic is in the same domain as the matrix subject in spec,v* and the derivation is like a simple transitive sentence:

(21) La mamma la fa pettinare dalla nonna

the mum her.makes combed by.the grandmother

'Mum has her combed by the grandmother'

```
                    TP
                   /  \
            la mamma   T'
                      / \
                 T[+fin]  \
                    |      vP
                  la fa   / \
                      <la>   vP
                            /  \
                    <la mamma>  v'
                               / \
                             v*   vP
                          < fare> / \
                              v_def  VP
                               Ø    / \
                                  V'   PP
                                 / \    △
                                V   cl  dalla nonna
                           pettinare <la>
```
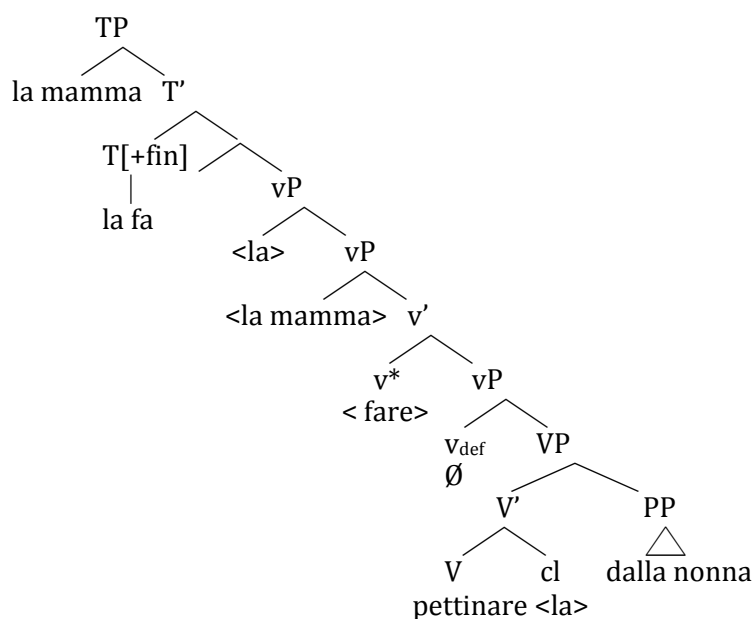
For the child who takes the embedded v to be phasal, this derivation can converge only if the clitic moves to spec,vP of the embedded v_{def}. From a narrow-syntactic viewpoint, if this defective vP is sent to spell out without an external argument, with the clitic in its spec, the derivation may proceed cyclically and the clitic may receive Case in the next v* headed by *fare*, but from a semantic viewpoint the infinitival verb in the phasal defective v cannot be saturated by predicate abstraction. In fact, the embedded predicate has a transitive verb, which needs two argument slots to be filled (subject and object); unlike the transitive vP, however, this v does not select an external argument, as the subject theta role is filled by the subject of *fare*. Therefore, under the UPR, the child takes the defective, phasal v to be a binding domain, in which the trace of the clitic is free. If we assume that the object of a transitive verb can undergo predicate abstraction only if the theta grid of the verb is complete (i.e. the verb assigns an external argument to its spec), we can capture the structures affected by PIP in Romance as follows:

(22) The PIP shows up in Romance complex predicates where the embedded vP:
   a. has no EPP feature, or
   b. has no external argument in spec,v

The first is the case of ECM complex predicates, in which a clitic is base-generated in the external argument spec,v*P, an edge position accessible to the higher phase and, therefore,

an "escape hatch" per se. In such case the embedded v* does not need to be assigned an EPP feature to trigger movement and the trace of the clitic in the argument position remains free. If the variable is interpreted as free, we predict that the child will allow coreference with the matrix subject in the higher phase. The second part of our generalisation holds that extraction of the clitic from a defective vP does not turn the VP-internal trace into a bound variable, because the verb embedded in the defective v, unlike a transitive v*, cannot be interpreted as a two-place predicate in semantics. In fact, since the external argument position is empty (see example 21), it cannot be interpreted as a one place predicate either, such as:

(23) $\lambda x.\ comb\ (x)$

Under our analysis, such interpretation would arise only if the external argument position were filled by a reflexive clitic. Finally, such hypothesis provides a test for different syntactic analyses of the complement of FP, namely, a v_{def} complement or a bare nominalised VP (Folli and Harley 2007). Under a bare VP analysis, no PIP is predicted, as the latter does not define a phase. Therefore, regardless of the UPR – which would be irrelevant in such case – the matrix subject and the clitic would be interpreted in the same binding domain; the trace of the clitic, interpreted as bound by the lambda abstract at the edge of the matrix vP, would thus be obligatorily subject to Principle B.

7. CONCLUSIONS AND RESIDUAL PREDICTIONS

In this chapter, we have analysed the exceptions to the Clitic Exemption Effect under a phase model in which coreference possibilities arise in the steps of the derivation of the clitic in different complex predicates. We have identified ECM predicates, well-known to give rise to PIP in early Romance, as atypical instances of object cliticization. Under a phase definition of binding domains (Hicks 2009), we have proposed that the theta position in which the clitic is merged is interpreted as a free variable. If this approach is correct, it may lead to a unified analysis of PIP across languages: PIP is simply a pragmatic phenomenon, which shows up in Romance ECM constructions simply because in those clitics are, like full pronouns, free variables. Furthermore, if binding interpretations in complex predicates are a by-product of the derivation of the clitic across phases, they open a window into the interpretation of phases in the child grammar. Analysing binding as a semantic effect of the syntactic computation rather than a separate module of the grammar is not only conceptually desirable but also theoretically enlightening.

Under a model of binding relations in which the phase – possibly, the PF phase – is the binding domain for the pronoun, non-adultlike or "deviant" interpretations provided by Romance children in certain syntactic configurations thus become evidence that those configurations are not derived in an adult-like fashion. In particular, since children more than adults tend to allow "local" relations in which a pronoun picks the referent of an intrasentential antecedent, it is plausible that children's derivations simply contain more phases. We have asked whether the problem resides in interpreting defective domains as phases; in fact, based on the independent evidence that children appear to be delayed on structures involving unaccusatives, raising and passives, Wexler (2004) has recently proposed the hypothesis that defective vP is processed as a phase in the child grammar. This would offer an elegant solution to the previous proposals advanced in the years – for instance, that children have problems with A-chains (Borer and Wexler 1987) or with structures lacking an external argument (Babyonyshev, Ganger, Pesetsky and Wexler 2001). Children's interpretation of clitics in Romance Faire-Par constructions is therefore an important test for both acquisition and syntactic theories. Given the apparent similarities between FP and the passive, a similar pattern as the one observed in the acquisition of passives should be observed in children's comprehension of causatives; children's delay on verbal but not on adjectival passives (Borer and Wexler 1987; Fox and Grodzinsky 1998; Terzi and Wexler 2002) would predict very early adult-like comprehension of FP complements under a nominal analysis and delay under a v_{def} analysis. In cliticization, not only would atypical interpretations support the hypothesis that children interpret the infinitival complement as a phase, but it would also provide empirical evidence that the internal structure of causative complements in Italian FP may be more complex of that of a bare VP and thus involve a different clitic derivation from a simple transitive sentence.

CHAPTER 6

HYPOTHESES AND PREDICTIONS

1. INTRODUCTION

In this chapter, we will address the experimental predictions that our theory makes for children's interpretation of object clitics in Romance complex predicates and we will outline how the predictions of our model differ from the accounts of the Romance PIP we have discussed in Chapters 1 and 2.

All the theories of Romance PIP converge on the assumptions that: (i) binding is the only strategy available to children in simple cliticization; (ii) knowledge of binding is innate and early in place; (iii) Romance PIP (just as non-Romance PIP) does not qualify as a "delay of Principle B" and must have an extra-syntactic cause. In Chapter 4, we have provided a principled explanation for the assumption (i), and we reduced it to the semantic outcome of the object clitic derivation in the transitive non-defective vP. In Chapter 5, we have applied our analysis of binding to syntactic structures – complements of perception verbs and causative FP constructions – in which the object clitic derivation encounters different triggers, concluding that different binding effects may arise. In the present discussion, we look at the empirically testable predictions of our analysis in acquisition perspective, in order to assess the adequateness of the present theory against the theories advanced so far. Our hypothesis departs from previous analyses of Romance PIP positing that the cause of this phenomenon is pragmatic and does not reside in the availability of multiple semantic representations for comparison at the interface. Such hypothesis is empirically testable by looking at children's performance in a task which does not provide an alternative semantic representation prior to the linguistic stimulus, namely, the Act Out task. The second part of our hypothesis maintains that the PIP concerns the interpretation of pronouns which are handled by the pragmatic component, namely, unbound pronouns. In light of our phase-based analysis of binding effects in

object cliticization, we outline our predictions regarding the syntactic contexts in which the PIP is expected to surface; finally, we provide an overview of the syntactic contexts in which the "critical factor" involved in the PIP is predicted to be at play under alternative models.

2. A MODULAR HYPOTHESIS FOR ROMANCE PIP

We maintain, with early pragmatic accounts of the DPBE (Chien and Wexler 1990; Avrutin and Wexler 1992, Thornton and Wexler 1999), that the PIP is evidence of the modularity of syntax (the component responsible for the interpretation of bound pronouns) and pragmatics (the component responsible for the interpretation of unbound pronouns). Under this account, the cause of the PIP is children's difficulty with local coreference. This is a vast concept, which can be pinned down to different factors. As we have seen, according to the early pragmatic view, children's problems relate to a general immature awareness of the context and, specifically, immature pragmatic knowledge of the deictic uses of pronouns; Thornton and Wexler (1999) have formalised this hypothesis under Heim's (1998) theory of *guises*, which accounts for the semantic properties of local coreference in the adult grammar. As discussed in Chapter 1 §5.1, this accounts predicts that: (i) clitics are always exempt from the PIP, regardless of the syntactic context, because they cannot create guises; (ii) children's problems with local coreference do not involve a Rule I computation, because children create pragmatic interpretations which are not equivalent to binding interpretations. We have advanced that, under a derivational analysis of binding effects in object cliticization, local coreference is excluded to clitics due to the configuration in which the clitic and its antecedent end up after the clitic moves to the left edge of the vP phase. Under our analysis, local coreference is not prevented by lexical factors *per se* – i.e. clitics' impoverished feature specification, which explains their inability to introduce new guises; as we have pointed out in Chapter 3, clitics' feature specification causes them to be deficient goals for the probing v, hence obligatory movement (Roberts 2010). If such movement turns the trace of the clitic into a bound variable, local coreference is prevented by the derivation itself; on the other hand, if clitic movement, under different triggers, does not leave a bound variable – as in the case of ECM – the local coreference option is available. In other words, we argue that the CEE and the PIP are two sides of the same coin.

In fact, we maintain that the PIP has the same underlying cause across languages, namely, children's problems with local coreference, which constrains the covaluation of a referential antecedent and an unbound pronoun in the local domain. As we will discuss in

Chapters 8 and 9, such knowledge resides in the pragmatic component but crucially interfaces with grammatical knowledge of the local domain. The prediction of such analysis is that local coreference interpretations may surface in a task which prompts the child to construe her own representation of the linguistic stimulus in absence of alternative semantic representations in the experimental setting, such as the act out task. In our experimental study, we will test whether this task yields different rates of non-adultlike interpretations from those reported by Baauw and colleagues in tasks which make available multiple semantic representations in the experimental setting (the Truth Value Judgment Task and the Picture Selection Task).

3. SYNTACTIC FACTORS BEHIND THE ROMANCE PIP

Under the analysis sketched in Chapter 5 §5, the syntactic condition for local coreference is that the clitic be extracted from a vP in which it leaves a free variable. We have maintained that binding effects in the object clitic derivation are the semantic output of movement of the clitic to the left edge of the transitive non-defective v*P, endowed with the EPP feature. This movement turns the vP into a predicate, which is interpreted under any assignment for the variable in object position. The trace of the subject is always free inside the vP, therefore it cannot be part of the variable chain headed by the clitic pronoun. Such analysis predicts that exceptional case-marked clitics are free variables inside the lower vP phase. In fact, in the ECM derivation, the clitic leaves the lower vP from the external argument position. This movement does not need an "escape hatch", because the external argument position is already accessible to successive cyclic movement; therefore, the vP is not assigned an EPP feature – under the assumption that v* is assigned the EPP only when this yields a "new outcome" and permits successive cyclic movement. In Chapter 5 §2, we speculated that this copy remains free throughout the derivation, i.e. that binding applies to the copy in theta position. At the higher vP, the matrix subject and the clitic are inside the same strong phase – a local domain; covaluation under coreference, therefore, although possible, yields a non-adultlike interpretation.

The second structure predicted to give rise to PIP is Italian FP. We have assumed that the clitic is merged in the internal object position of a defective vP lacking an external argument. The matrix subject of the causative complex is merged in the higher non-defective vP headed by *fare*. If the child interprets the infinitival complement as phasal, under Wexler's UPR hypothesis, the lower trace of the clitic is outside the subject's domain. In Chapter 5 §6, we posited that assignment of the EPP feature in object cliticization is independent of Case, hence of the complete or defective nature of v. This

predicts that object cliticization in the embedded FP complement yields a convergent derivation; however, the derivation contains a phase point – the embedded vP – in which the trace of the clitic is free. Under such analysis, we expect the same error pattern as in ECM constructions. Furthermore, this pattern is only compatible with the UPR under the present analysis: in fact, if such defective vP is not interpreted as a phase, the matrix vP is the first spell-out point in the derivation and movement of the clitic to the left edge creates a variable chain preventing coreference with the local antecedent. Likewise, adultlike binding effects are predicted to arise in the clitic derivation if the FP construction contains a bare VP, as proposed by Folli and Harley (2007).

This hypothesis does not predict PIP in restructuring and non-restructuring subject control sentences. In restructuring sentences with clitic climbing, the clitic does not leave a free variable at any spell-out point. We have maintained, with Boeckx and Gallego (2009) that restructuring creates one A-domain and that clitic climbing results when the clitic is an "active" goal for the matrix verb, because it fails to delete uninterpretable Case in the lower vP. In non-restructuring subject control sentences, clitic climbing is not possible because the complement clause is a strong phase (C). Thus, enclisis results from the clitic checking ACC Case in the embedded vP. Under our analysis, Case is not assumed to play a role in Predicate Abstraction. We have in fact maintained that the presence of an EPP feature and an external argument suffices to create a Predicate Abstraction configuration – and we have shown that this is indeed the case for reflexive clitics (Chapter 4 §5.5). Therefore, we maintain that, regardless of the position in which the clitic deletes Case, in both restructuring and control movement out of the embedded vP leaves a bound variable. As a result, we do not predict PIP to be an effect of a proclisis/enclisis alternation.

4. TASK-RELATED PREDICTED EFFECTS UNDER ALTERNATIVE ACCOUNTS OF ROMANCE PIP

Although the Romance PIP has traditionally been accounted for as a processing problem, several hypotheses have been advanced around the nature of the computation involved in the emergence of the PIP. As we have discussed in Chapter 1, the first study to ascribe the Romance PIP to a processing problem is Baauw and Cuetos (2003). Under the Reflexivity framework, the authors maintain that children's non-adultlike interpretations consist in the creation of an A-chain, but depart from previous maturational assumptions (Baauw et al. 1997) positing that children optionally fail to retrieve the feature specification on object clitics due to an immature processing system. As we have observed, this is not a reference-set computation: in fact, Baauw and Cuetos (2003) do not predict task effects. Under Baauw et al.'s (2011) approach, in contrast, children's performance is predicted to

be directly influenced by task effects. In such account, the economy hierarchy goes beyond the dichotomy that Rule I posits between A-binding and coreference: even in languages which do not have a coreference option, there is a competition between two representations, one with the anaphor (narrow-syntactic binding) and one with the pronoun (bound-variable construal). The child hearing an ECM sentence in Romance, therefore, has to know that that sentence is ungrammatical in a bound-variable meaning because the same meaning could be conveyed by an anaphor – which is cheaper because it does not involve anything else than narrow syntax. She fails because her narrow syntactic component is weak (Avrutin 2006) and she is not able to block the bound variable construal.

One of the main arguments of this processing theory is that the PIP emerges in comprehension tasks that "force" the child to consider multiple meanings. The TVJT is predicted to give rise to the most severe PIP because it does not measure children's preferred interpretation. It provides one interpretation and forces the child to come up with the derivation that leads to the meaning given in the picture. According to Baauw et al. (2011), the different performance in "yes" and "no" conditions is indeed an effect of the availability of competing representations. Only the "no" condition is costly because the PIP is not a problem with the pronoun per se, but a processing difficulty with comparing binding representations. The Picture-Selection task, arguably, yields milder PIP because it allows the child to choose the non-costly representation in the picture that matches the sentence. In such task one picture (the one depicting a reflexive action) requires a heavier computation than the one depicting a transitive action. As a consequence, the latter is more frequently preferred – although the frequency at which children should take into account the "costly" reading, and the reason why they should do so, is not clearly explained. The authors also predict that no PIP should emerge in production: "in production the child is not forced to consider the possibility of local coreference/binding reading (as in Truth Value Judgment); she is not even "invited" to do so (as in Picture Selection tasks)" (p.16). It should follow from their argument that the Act out task is not expected to cause interpretation problems. In this task, there is no meaning prior to the linguistic stimulus: the child manipulates the contextual setting to represent her own interpretation of the sentence. In the authors' hypothesis, only the (forced) comparison of multiple levels of binding causes PIP, whereas tasks that allow the child to "avoid" such computations should not give rise to PIP.

Finally, under Di Sciullo and Agüero-Bautista's (2008) hypothesis, the Romance PIP is expected to not be influenced by task effects. Since clitics are scopeless elements, reconstruction gives rise to an interpretation that is truth-conditionally equivalent to the surface interpretation; however, Scope Economy, which requires the comparison of structures for equivalence, is claimed to be too burdening for the child's processing system. As a consequence, the child cannot decide which binding representation to choose: in the surface position, the clitic and the subject are in the same local domain and Principle B applies; in the vP-internal position, however, the reconstructed clitic can be bound by the subject. These two semantic representations should arguably be available whether or not the child is presented with a picture depicting the "reconstructed" interpretation. Reconstruction belongs to the derivation itself, hence the vP-internal trace of the clitic should be accessible to the interpretive component under any task.

5. SYNTACTIC PREDICTIONS UNDER ALTERNATIVE APPROACHES TO ROMANCE PIP

Under our phase-based analysis, the presence of an external argument in the vP from which the clitic is extracted has been taken to be a crucial factor in determining disjoint reference between the object and the subject. In fact, we have rejected Hicks' (2009) hypothesis that Condition B applies to all the copies of a pronoun and we have pointed out that our position is closer to Reinhart and Reuland's (1993), who predict Condition B to not be at stake outside coargumenthood. We therefore make the same predictions as Baauw and Cuetos (2003) and Baauw et al. (2011) with regard to the syntactic contexts in which the PIP is expected to surface. Baauw and Cuetos (2003) maintain that children's problems are visible only when Condition B does not apply, hence in syntactic structures in which the pronoun and the matrix subject are coarguments of different semantic predicates. Under Reflexivity, Condition B applies to both restructuring constructions with clitic climbing on the matrix predicate (proclisis) and subject control clauses without restructuring (enclisis). In restructuring, the subject is in coargumenthood with the clitic in the embedded predicate, before it raises to the matrix clause. In control, PRO, which is controlled by the matrix argument, is coargument of the object clitic in the embedded predicate.

Baauw and Cuetos (2003) predict the PIP to emerge in ECM contexts, in which the matrix subject and the clitic are coargument only at the syntactic level, because the clitic is assigned Case by the matrix predicate. Whether PIP is expected in FP contexts, depends on the exact analysis of the infinitival complement. Reuland (p.c.) points out that the embedded predicate expresses a semantic relation between the object clitic and the by-

phrase, hence it qualifies as a semantic predicate. For example, a clitic and a pronoun contained in the by-phrase cannot be covalued in:

(1) L'ho fatto lavare _ da PRON

Him.I have made wash _ by PRON

'I had him washed by PRON'

Since the matrix subject and the clitic are not semantic coarguments, we assume that Condition B does not rule out the pronoun under a reflexive interpretation, but only the A-Chain condition does. Therefore, such construction is predicted to yield PIP. Under Baauw et al.'s (2011) hypothesis, if the clitic and the matrix subject are not theta-arguments of the same semantic predicate, Condition B cannot apply and a bound variable dependency can be formed between them. Therefore, the same syntactic predictions are retained.

On the other hand, our account crucially makes different predictions from Di Sciullo and Agüero-Bautista's (2008) analysis. The semantic premise of the Scope Economy hypothesis for Romance PIP is that clitics cannot reconstruct in object position because they have the denotation of generalised quantifiers. Therefore, PIP emerges only in complex predicates where the clitic is reconstructed in subject position (as this is the only case in which it *can* be reconstructed). In Italian complex predicates, this is the case only for ECM sentences. The PIP is not predicted to arise in any complex predicate where the clitic is extracted from the object position, as this position does not allow for reconstruction. If children's trouble has to do with Scope Economy and optional reconstruction, simple transitive clauses, restructuring and subject control clauses, as well as FP constructions, should be exempted from PIP to the same extent.

6. SUMMARY: PREDICTIONS

Based on the three hypotheses reviewed so far (Baauw and Cuetos 2003; Baauw et al. 2011; Di Sciullo and Agüero-Bautista 2008) and the account proposed here, we have drawn very clear predictions as for:

(i) the comprehension tasks in which the phenomenon is predicted to be enhanced or, on the contrary, neutralised;

(ii) the syntactic contexts in which PIP is predicted to occur.

The table below summarises the theories which have been proposed so far to account for the phenomenon and their empirical predictions, which will be addressed in the experimental study.

Hypothesis	Critical factor in Romance PIP	Task Effects	Predicted PIP in Italian complex predicates
Morphological (Baauw and Cuetos 2003)	A-chain Condition	No	ECM; FP
Primitives of binding/Weak Syntax (Baauw et al. 2011)	Availability of semantic binding	Yes: no PIP in act-out	ECM; FP
Scope Economy (Di Sciullo and Agüero-Bautista 2008)	Reconstruction	No	ECM
Modularity of coreference and bound anaphora	Local coreference	No	ECM; FP

In sum, the present theory aligns with early pragmatic accounts of the PIP in positing that children's interpretation problems are limited to syntactic contexts which allow coreference; we depart from those accounts, however, in maintaining that intrasentential coreference in the child grammar is not limited to pronouns which can bear autonomous stress and reference. In particular, we have argued that:

a. Clitic pronouns are *not* bound variables as such; the clitic's narrow syntax, forcing the clitic to evacuate the vP via the EPP edge, results in a binding interpretation at the C-I interface which structurally prohibits covaluation with between the bound copy of the clitic in VP-complement position and the vP-internal (free) copy of the subject.

b. The Clitic Exemption Effect shows up in syntactic contexts where the clitic is extracted from the object position of a transitive, non-subjectless (i.e. non-defective) v*P – i.e. where coreference is not an option.

c. If the clitic is extracted from subject position, as in ECM complex sentences, it leaves a free copy inside the lower vP – a phase, hence a binding domain for semantic interpretation. Since this copy is not bound, it may corefer. The PIP in ECM sentences, therefore, is a case of "local" coreference.

d. If the clitic is extracted from the object position of a subjectless (i.e. defective) vP, such movement cannot create a lambda abstract to bind the object position; in other words, defective vPs cannot be predicates. In fact, in the case of Italian FP, the matrix vP is the first phase point at which the clitic is interpreted as bound and the whole *fare*+infinitival complex as a predicate. We predict that, if the child interprets the lower defective vP as a phase, i.e. v*def, the merge copy of the clitic is free and PIP may arise. Otherwise, the construction will be exempted from PIP.

e. Finally, the present hypothesis holds, with Reinhart (1983) and Levinson (1985), that the "inhibition" of local coreference requires mastery of a specific kind of pragmatic inference, i.e. an inference regarding the grade of informativeness of pronouns and reflexives in a scale of *local* dependencies – as we will discuss in detail in Chapter 8. In other words, we maintain that Rule I (as in its first pragmatic formulation in Reinhart (1983)) may not be innate, hence that children's problems with local coreference reside in the linguistic knowledge behind the rule itself rather than in the processing resources required for its implementation. If children's PIP reflects a grammatical stage, namely, a stage before knowledge of the scalar opposition between pronouns and reflexives *within the local domain* is in place, the phenomenon is not influenced by task effects; specifically, we predict that non-adultlike interpretations may be entertained by the child in an experimental setting which allows her to act out her own interpretation of the pronoun.

CHAPTER 7

THE EXPERIMENTAL STUDY

1. INTRODUCTION

The present study looks at Italian children's interpretation of object and reflexive clitics in four types of complex environments: restructuring; non-restructuring; ECM constructions with a perception verb (*see*); causative Faire-Par. We administer an act-out task – never adopted in acquisition studies on Romance PIP before – in order to test Baauw et al.'s (2011) hypothesis that the PIP is driven by tasks which force the child to compare multiple semantic representations for equivalence. The main goal of the experiment is to test whether ECM sentences give rise to PIP in Romance under a different kind of task; moreover, we ask whether other types of complex predicates may give rise to PIP. Given the very different syntactic derivations involved in the four types of constructions, we want to explore the interpretive consequences of the clitic derivation in different complex predicates. Furthermore, we include in the age range children as young as 3;0. The reason is two-fold: firstly, this group provides a comprehensive picture of the early syntactic knowledge of Romance complex predicates in children younger than 4;0. By testing the same verbs in restructuring and non-restructuring configurations, we look at the early comprehension of cliticization in transparent and opaque domains. Moreover, we intend to provide new evidence about the age at which the causative construction FP is mastered. Secondly, we want to look at the PIP as a developmental phenomenon, since most studies have looked at the PIP as a characteristic of the early grammar at the age 4 to 5. In doing so, we will build a linear mixed effects model to assess the effect of age in months in our observations as a *linear predictor* of children's accuracy in the interpretation of object clitics.

1.1 THE EXPERIMENTAL CONDITIONS

The experiment looked at the interpretation of object and reflexive clitics in four types of complex sentences: restructuring constructions with clitic climbing (1); subject control with enclisis (2); faire-par with (obligatory) clitic climbing (3); ECM with (obligatory) clitic climbing (4).

(1) L'elefante lo può coprire con la coperta
  The elephant him.can cover with the blanket
  'The elephant can cover him with the blanket'

(2) La pecora ha il compito di togliersi dal recinto
  The sheep has the task to move.herself out.of.the enclosure
  'The sheep has the task to move out of the enclosure'

(3) Papà lo fa abbracciare dalla scimmia
  Dad him.makes hug by the monkey
  'Dad has him hugged by the monkey'

(4) La giraffa la vede saltare la staccionata
  The giraffe her.sees jump the fence
  'The giraffe sees her jump the fence'

Some of the structures tested in the present experiment, to our knowledge, had not been previously tested in the literature. The acquisition of control has always been a lively topic and there is a certain consensus about the early acquisition of subject control in English (Wexler 1992; Sherman and Lust 1993; Landau and Thornton 2011), by age 3. Moreover, the act-out task lends itself well to this type of construction (Goodluck 1996). To our knowledge, however, the structural difference between restructuring and non-restructuring control in Romance has never been a topic of research from an acquisition perspective. Adult-like performance on the comprehension of clitics in subject control restructuring sentences is reported in a study by Escobar and Gavarrò (1999) on Catalan. They tested 16 children aged 4.0 to 4.11 using a TVJT in order to compare performance on infinitival complements of perception verbs, aspectual verbs and modal verbs. Quite strikingly, children scored 31% in the ECM contexts (in the "no" condition) and 100% with both aspectual and modal restructuring verbs. Therefore, that study suggests that restructuring sentences are exempt from PIP. The effect of clitic placement on PIP – namely, the proclisis/enclisis alternation in (2) – has not been previously addressed in the literature.

As for ECM structures, these are at the heart of the Romance PIP literature (Philip and Coopmans 1996; Baauw, Escobar and Philip 1997; Escobar and Gavarrò 1999; Baauw and Cuetos 2003), although studies have generally looked to children as old as 4. Finally, we know of no study which has looked at the comprehension of clitics in faire-par constructions in acquisition.

Children's comprehension of clitics in subject control sentences was tested in restructuring (1) and non-restructuring (2) contexts. The former involved proclisis, the latter enclisis. We know that enclisis is not a conclusive piece of evidence that a construction does not involve restructuring (Wurmbrandt 2004; Solà 2002): in fact, clitic climbing is optional in restructuring, although restructuring is a precondition for it. Therefore, control sentences with enclisis were constructed such that the infinitival complement was an opaque domain for clitic climbing, in other words a strong phase C. Four tokens included a complex DP – a "barrier" in traditional terms (Chomsky 1986); one token included a non-restructuring control verb, *decidere* (to decide). In fact, clitic climbing is ungrammatical in all the sentences which comprised the non-restructuring control condition:

(5) *[Il coniglio lo ha la possibilità [di mettere _ sull'albero]]
   The rabbit him.has the chance to put :_ on the tree
   'The rabbit has the chance to put him on the tree'

(6) *[La giraffa la decide [di togliere _ dal recinto]]
   The giraffe her.decides to remove _ from.the enclosure
   'The giraffe decides to move her out of the enclosure'

(7) *[L'uccello lo ha intenzione [di buttare _ in acqua]]
   The bird him.has intention to throw _ in water
   'The bird has the intention to push him in the water'

(8) *[La zebra la trova il modo [di coprire _ con la coperta]]
   The zebra her.finds the way to cover _ with the blanket
   'The zebra finds a way to cover her with the blanket'

(9) *[L'uccello lo ha il compito [di nascondere _ dietro la panchina]]
   The bird him.has the task to hide _ behind the bench
   'The bird has the task to hide him behind the bench

Clitic climbing is obligatory in the last two conditions, ECM and FP. In ECM, the clitic is in fact a subject at argument-structure level, which is forced to climb on the matrix v* due to

the defectivity of the complement T, unable to assign it case and "inactivate" it in the derivation. In faire-par constructions, however, there is no ACC Case available for the object clitic in the infinitival complement. Therefore, we have assumed, in line with Guasti (2005), that the absence of AgrO in causative complements explains why the clitic is forced to move to the matrix v*:

> (3') *Papà fa abbracciarlo dalla scimmia
> *Dad makes comb.him by the monkey*

To sum up, all the structures involving clitic climbing do not embed a strong C phase but only a defective T. Only the non-restructuring control condition involves a strong phase boundary between the matrix and the embedded clause. Restructuring, non-Restructuring and ECM sentences have non-defective embedded v* with full argument structure; FP has a defective embedded v lacking an external argument (and ACC Case).

1.2 METHODOLOGY: THE ACT-OUT TASK

Children's interpretation of the sentences under examination was tested via an act-out task. The reasoning behind the choice of such methodology was experimental in a strict sense and directly addressed two questions:

a. Is Romance PIP influenced by task effects?
b. From the viewpoint of processing accounts, which overtly capitalise on the processing load involved in choosing from alternative semantic representations, what performance is expected on a task which supposedly "allows the subjects to volunteer their interpretations of the sentences" (Goodluck 1996: 147)?

Baauw et al (2011) explicitly consider a positive answer to the first question to be supportive of their account. When they compared the findings from a TVJT and a Picture-Matching task, they found that:

a. In TVJTs, children have no trouble with the interpretation of object pronouns in the "yes" condition, that is, when the semantic representation of the picture matches the prompt sentence (in which case there are no alternative binding interpretations to take into consideration);
b. In the "no" condition, when the task is to reject a local binding interpretation, children perform at chance level. Differently from the "yes" condition, the "no" condition involves comparing the same meaning as obtained via syntactic and semantic binding and blocking semantic binding. This operation is too costly.

c. Children perform better on a Picture-Matching task, where both the "costly" interpretation and the non-problematic one are accessible, so that, presumably, the children's tendency is to "avoid" taking into consideration the problematic picture altogether.

If this argument is correct, it should hold even more for the Act-Out task, so that we would expect similar figures to the "yes" condition of the TVJT. If the child tries to avoid costly reference-set computations, she should act-out only the most easily accessible interpretation, namely, one that does not even invoke alternative less economical binding representations. This is indeed generally described as one of the advantages of the act-out task, namely, the fact that it reveals the preferred interpretation available to the subject. At the same time, it should be noted that this expectation relies on the assumption that children only attempt the cheapest computation whenever the context/task allows it. Behavioural data alone cannot prove that this is the case.

1.3 THE SUBJECTS

The data were contributed by 74 children recruited from a primary school in Trapani, Italy. All children were monolingual native speakers of Italian of similar socioeconomic status. More children participated in the study, but only those who completed two experimental sessions were included in the data. Children's age ranged from 3.0 to 5.10. This allowed us to distinguish three age groups in the ANOVA analyses: 24 children aged 3.0 to 3.10 (mean age 3.6); 26 children aged 4.0 to 4.11 (mean age 4.6); 24 children aged 5.0 to 5.10 (mean age 5.4). For the mixed-effects analysis, age was used as a continuous variable (see §2.3).

PIP is commonly defined as a phenomenon which is visible in child grammar around age 5. At that stage, children who optionally interpret object clitics inside ECM clauses as reflexives are well beyond the clitic omission/null object stage in production. With specific reference to Italian, object omissions in production undergo a massive drop (from around 60% to 14%) at age 3 – as Schaeffer (2000) reports – and virtually disappear at age 4. The general consensus is that PIP across languages falls under a different developmental stage from the omission stage (see Chillier-Zesiger et al. 2010). In the youngest group under consideration it is therefore not excluded that the two stages may overlap.

Given the nature of task, the precondition on the target-like acting out of the sentence is that the syntactic representation of the constructions under examination is present in the child's grammar. Therefore, as we have pointed out, the youngest group provides some

insights far beyond the PIP question, namely, (i) whether subject control and restructuring constructions are mastered simultaneously; (ii) the age at which the causative FP construction is mastered.

1.4 THE ITEMS AND THE EXPERIMENTAL PROCEDURE

Children were tested individually in a quiet room where the experiment was set up. The props used were playmobils depicting zoo animals and were controlled for gender: feminine (monkey, giraffe, sheep, zebra) and masculine (rabbit, kangaroo, horse, donkey, bird, elephant). Restructuring, non-restructuring and ECM test sentences all involved animals, whereas FP sentences were constructed such as to involve two human characters and one animal introduced as the volitional character (expressed as a by-phrase).

The four constructions represented our test conditions. The transitive and reflexive constructions represented our condition types. Each test condition included ten tokens – five per type. In total, eight conditions were tested and the number of test items amounted to 40: five restructuring sentences with reflexive clitics (R-ref); five restructuring sentences with object clitics (R-tr); five non-restructuring (i.e. subject control) sentences with reflexive clitics (C-ref); five non-restructuring sentences with object clitics (C-tr); five FP sentences with reflexive clitics (FP-ref); five FP sentences with object clitics (FP-tr); five ECM sentences with reflexive clitics (ECM-ref); five ECM sentences with object clitics (ECM-tr):

Factor	Levels								
Condition	4	Restructuring		Non-Restructuring		ECM		FP	
Transitivity	2	True	False	True	False	True	False	True	False
Items	40	x5	x5	x5	x5	x5	x5	x5	x5

Table 1: Factors and test items.

Given the high number of items, each child was tested in two sessions. The children included in the study are only those who completed both sessions. In order to neutralise possible effects related to the order of administration of each session, the conditions were counterbalanced.

1.4.1 THE RESTRUCTURING AND NON-RESTRUCTURING CONDITIONS

Restructuring and non-restructuring sentences were tested together and using the same contextual setting. In the first session, the experimenter introduced the zoo with its animals to the child and explained that she was going to show her how the animals play together. Before starting the experimental session, the experimenter assessed that the child knew the names of the animals and could act-out the actions depicted by the verbs in their finite form using referential DPs for both the subject and the object. For example:

(10) La scimmia copre la zebra con la coperta

   'The monkey covers the zebra with the blanket'

The verbs used in the infinitival form were: *buttare in acqua* (to push in the water); *coprire* (to cover); *nascondere* (to hide); *mettere* (to put); *togliere* (to move). These verbs were used in the complements of both in restructuring and control constructions. The restructuring verbs were both modals and aspectual verbs: *potere* (can), *dovere* (must), *cominciare a* (start to); *andare a* (go to); *provare a* (try to).

Four tokens in the non-restructuring condition were introduced by *avere* (have) + a complex NP in order to create an infinitival complement that was opaque to restructuring. The complex NPs were semantically similar (but not identical) to their restructuring counterpart: *ha il compito di* (has the task to); *trova il modo di* (finds a way to); *ha la possibilità di* (has the chance to); *ha intenzione di* (intends to). The last token included the non-restructuring verb *decide di* (decides to). Restructuring and control sentences were counterbalanced such to include 5 reflexive and 5 transitive items in each session (i.e. the restructuring reflexive condition was tested together with the control transitive condition and viceversa, for a total of 10 items per session).

1.4.2 THE FP CONDITION

FP constructions involved a different setting. The experimenter introduced a family formed of four human characters matched in gender (mum and daughter, dad and uncle). The child's ability to recognise the characters was preliminarily assessed. The child was told that they had come to the zoo to see the animals. In the target sentence, the animal was introduced by a by-phrase, that is, as the character who wanted to do the action. The causer was always salient in the immediate linguistic context:

(11) Exp.: Prima la mamma porta la bimba piccola a vedere la scimmia. Adesso, la mamma la fa abbracciare dalla scimmia.

First, mum takes the little girl to see the monkey. And now, mum has her hugged by the monkey.

The verbs tested in the FP condition were: *baciare* (to kiss); *annusare* (to sniff); *portare sulla schiena* (to take on the back); *abbracciare* (to hug); *leccare* (to lick).

1.4.3 THE ECM CONDITION

Finally, ECM constructions were set up such as to involve animals performing an action in front of a mirror. Interestingly, children at all ages had no problem understanding the perception verb "to see" with the use of a mirror. In the training session, the experimenter assessed that the child was able to act out the sentence "X sees Y in the mirror". In order to do so, two characters were positioned on the sides of the mirror and the child's task was to correctly identify the character Y whose image was seen by X reflected in the mirror. Children were given as many trials as needed before it was ascertained that the task was understood. The test sentences involved pairs of animals positioned in front of the mirror. The actions performed were: jump high; walk backwards; walk upside down; jump the fence; turn around. A zoo keeper showed the animals how to do these exercises, so that the child did not find it hard to act out the actions. Consequently, the animals were requested to "practise" in front of the mirror in pairs.

(12) Prompt: Adesso gli animali devono saltare in alto. Tocca all'asino e al cavallo.
   Now the animals have to jump high. It's the donkey and the horse's turn.
   Test sentence: L'asino lo vede saltare in alto.
          The donkey sees him jump high.

To our knowledge, ECM sentences have not been previously tested using an act-out task. This task aimed to exclude that non-linguistic factors, such as picture literacy, the depicted (i.e. indirect) use of mirrors etc., were involved in children's problems with the interpretation of ECM constructions. As Baauw and Cuetos (2003) pointed out, there might actually be some concern in the use of mirrors, namely, that the child might not recognize the person reflected in the mirror as the same individual as the person in front of the mirror. They rightly pointed out that "children as young as 24 months, when looking at a mirror, are aware that the image in the mirror is the reflection of themselves and not another individual (Mitchell (1997))"(p.249). When mirrors are reproduced in pictures, one may still object that the problem might be with picture literacy itself rather than with children's world-knowledge of mirrors. In the present experimental setting, it was

confirmed that "real" mirrors are not a problem for children at any of the ages tested. Children familiarised with the task easily and it was successfully ascertained that they had no difficulties manipulating the characters in front of the mirror during the warm-up procedure.

1.4.4 THE EXPERIMENTAL SESSIONS

In the first session, children were tested on 5 restructuring and 5 non-restructuring sentences (first experimental setting) and 10 FP sentences (second setting); in the second session, the first setting was presented in the same form, with the restructuring and non-restructuring conditions interchanged as for reflexivity/transitivity and the second setting consisted of 10 ECM sentences acted out with a mirror (third setting). The different settings also helped engaging the child in an active and lively task and prevented repetitivity. This was essential given the nature of the act-out task, whose major challenge is to keep the child interested and willing to manipulate the props following the experimenter's instructions.

1.5 CODING THE DATA

Individual responses were recorded on a score sheet. Given two possible referents in each test sentence, responses in the transitive conditions were coded as correct if the child acted out the action denoted by the infinitival on the extrasentential antecedent; incorrect if the child acted out the verb reflexively, i.e. on the intrasentential antecedent. In case of hesitations during the test, the final response was coded as the true response; in fact, not only hesitations but even clarification requests were frequent – as will be discussed in §5. In such case, the experimenter reintroduced the characters and repeated the target sentence. Finally, as far as transitive sentences were concerned, in the conditions in which subjects bore agent theta role (restructuring and non-restructuring) responses were coded as correct if the correct object was chosen even when the child did not manipulate the character representing the agent.

2 RESULTS

2.1 GROUP RESULTS AND DESCRIPTIVE STATISTICS

If we first look at the results across age groups, it is apparent that a strong developmental effect is at play in children's interpretation of object clitics from age 3 to 5, more so than in the interpretation of reflexives.

Table2: Correct responses per Age Group (N=74)				
	Transitive			
	Restructuring	Control	FP	ECM
3 y.o. (24 chi)	48% (57/120)	43% (51/120)	47% (56/120)	45% (54/120)
4 y.o. (26 chi)	58% (76/130)	58% (76/130)	58% (75/130)	42% (55/130)
5 y.o. (24 chi)	75% (90/120)	78% (93/120)	60% (72/120)	59% (71/120)
	Reflexive			
	Restructuring	Control	FP	ECM
3 y.o. (24 chi)	87% (104/120)	88% (105/120)	72% (86/120)	92% (110/120)
4 y.o. (26 chi)	99% (129/130)	92% (119/130)	95% (124/130)	95% (124/130)
5 y.o. (24 chi)	99% (119/120)	98% (118/120)	98% 118/120)	95% (114/120)

Answers in the transitive condition were counted as erroneous if the child did not pick the referent denoted by the clitic in the context given. The context never provided more than two characters, so that errors always consisted in acting out the action denoted by the predicate on the subject of the sentence.

Children as young as 3 performed fairly well in all the reflexive conditions. This is an interesting result, which indicates that there is no "delay of Principle A" – to use traditional terminology – at any age. Insofar as the three-year-olds in the present study performed with an accuracy close to 90% in restructuring, non-restructuring and ECM reflexive clauses, we take the result as an indication of early acquisition of these structures in Romance. A less clear-cut result is the 72% correct performance with FP reflexive sentences.

2.2 ANOVAs

All the four conditions yielded a significant effect of transitivity in all age groups: each construction caused significantly more interpretation problems if it contained an object clitic rather than a reflexive. A within-subjects analysis of variance conducted on the data

showed that the effect of transitivity was significant (p<0.001) and so was the effect of type per condition (p=0.031); the effect of type per age was not significant (p=0.150) which indicates that all the age groups performed much better in the reflexive than in the transitive conditions. The gap between the adult-like comprehension of reflexive and pronominal clitics is wider at age 4 (mean correct answers in the reflexive conditions 4.8 vs. 2.7 in the transitive conditions), but it tends to reduce at age 5 (4.9 vs. 3.4). Overall, there is a significant effect of age between age 3 and age 4 (p=0.03) and also between age 4 and 5 (p=0.026).

At age 3, the reflexive conditions pattern together above 85% (mean correct responses in restructuring, non-restructuring and ECM were 4.33, 4.38 and 4.58 respectively) but FP yields only 72% correct responses (mean 3.50). From age four, children's accuracy is above 4.4 out of 5 tokens in all the reflexive conditions.

Children's performance with object clitics, however, was more troublesome across all age groups. At age 3, all the transitive conditions are below chance level (FP=mean 2.42; restructuring=mean 2.21; ECM= mean 2.25; non-restructuring=mean 2.12). A post-hoc Newman-Keuls test showed that the difference between all the transitive and reflexive conditions was significant (all p<.01) and, on the contrary, none of the transitive conditions differed significantly from the others (all p>.05).

At age 4, a visible shift occurs in the transitive conditions: whereas accuracy does not progress in the ECM condition (only 42% correct responses, mean 2.12), the other three conditions develop linearly (58%, means around 2.90 out of 5). Therefore, at age 4 it appears ECM is the most problematic condition. Still, the only significant difference is between transitive and reflexive conditions. Pairwise comparison between transitive conditions showed no statistical difference, although p values are much higher between the Restructuring, non-restructuring and FP conditions (all p>0.9) than between those and the ECM condition (all p=0.1), which indicates that the former three patterned much more similarly.

However, at age 5 children's accuracy with object clitics in restructuring and non-restructuring sentences continues to develop linearly whereas their accuracy in the FP condition remains above-chance and is reached by ECM. The first two yield around 3.8 correct mean responses out of 5; the last two only 3. This is the first age group in which we find statistical significance not only between transitive and reflexive conditions but also, in the transitive conditions, between Restructuring and FP (p=0.03), Restructuring and ECM

(p=0.04), Control and FP (p=0.02) and Control and ECM (p=0.02). There is no significant difference between Restructuring and Control (p=0.07) nor between FP and ECM (p=0.8).

2.2.1 GROUP HETEROGENEITY AND RESIDUALS PLOTS

It should be noted that a great deal of group-internal variability was found in the transitive conditions. If we look at the residual plots for each condition, it is apparent that the individual performances for the four conditions were not equally distributed around the mean. Residuals measure the difference between the observed values and the predicted value. In both the Restructuring condition and the non-restructuring conditions, the frequency of the above-mean performances was much higher than the frequency of below-mean performances: this indicates that mean values do not reflect individual performances.

The following graphs illustrate the residuals for the total of the children examined (N=74). In the Restructuring condition, performance above and below chance was clearly not homogeneously distributed. Children above the mean (2.96 correct) were, in the majority of cases, close to the mean (i.e. three or four correct answers out of five); at-ceiling performances were rare. However, the number of cases below the mean was more homogeneously distributed (i.e. the number of children who scored only one or two correct answers was similar, and not high).
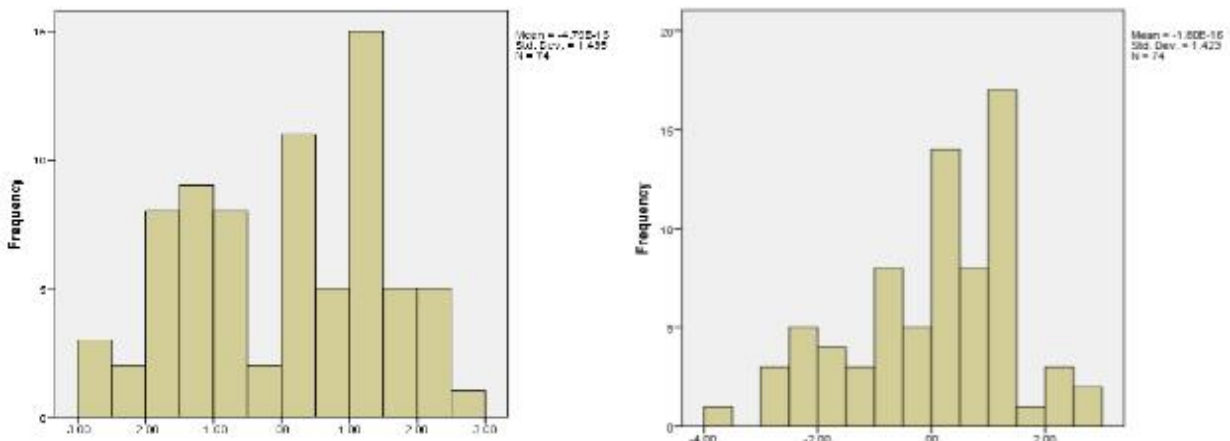
Figure 1: Deviance residuals in the restructuring and non-restructuring condition

In the Control condition, the group mean was the same (2.96 correct) yet the distribution of individual cases was not homogeneous: individual performances had two peaks of frequency at the mean (three correct answers) and above (four correct answers). Performances below the mean were more rare but homogeneously distributed, with no

clear trend (i.e. a mean performance <2.96 was rare and distributed at similar frequencies in the interval between 1 and 2.96).

The mean correct performance in the FP and ECM transitive conditions was 2.767 and 2.441 respectively. However, looking at the frequency of residual distributions, it emerges that these mean value are much more representative of the individual cases: in other words, children really tended to respond at chance in these two conditions, and performances above and below the mean were homogeneously distributed.
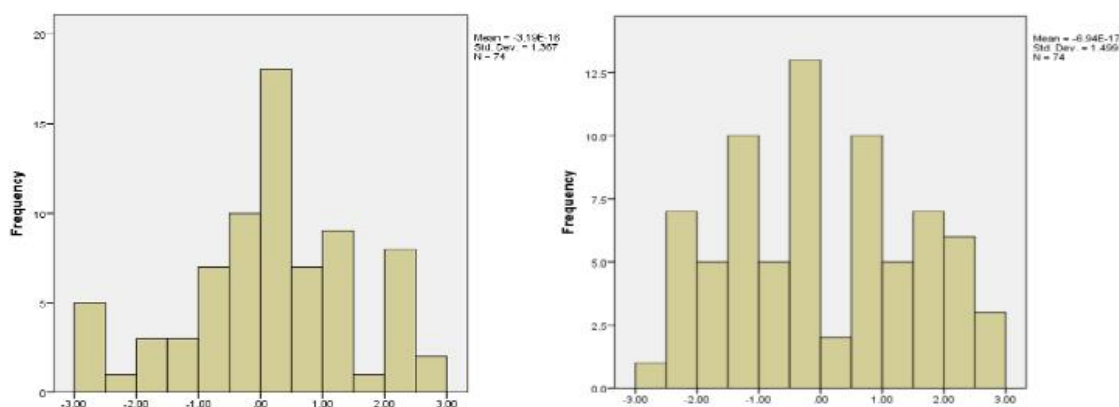
Figure 2: Deviance residuals in the FP and ECM condition.

In the FP condition, the only peak of frequency coincides with the mean. The remaining cases are equally distributed around the mean, and very rare. In the ECM condition, there is even less heterogeneity and a trend towards a normal distribution.

The heterogeneity in the restructuring and non-restructuring conditions suggests that the small number of cases below the mean may obscure the real trend indicated by the frequency peak above the mean (four correct answers). This is not the case for the FP condition, where the individual performances did not depart much from the mean, and the ECM condition, were individual performances departed from the mean homogeneously.

2.2.2 SUBSET ANALYSIS

This finding raises the question whether it would not be better advised to run a conservative analysis and look at the children who performed above average (i.e. at least three correct answers out of five) in both Restructuring and Control. This subgroup loses statistical power (N=38) but appears to reveal a neater pattern.

In the three age groups, group-internal heterogeneity decreases. Children who performed above chance in the restructuring and non-restructuring conditions were thus distributed: 8 in the youngest group (33% of their group); 13 in the four-year-old group (50% of their group); 17 in the oldest group (71% of their group). This means that, at age 5, above-chance performances in these two conditions occurred at much higher frequency. A within-subject analysis shows that, for this subset, there is a significant effect of condition (p<0.001), transitivity (p<0.001) and condition*type (p<0.001). There is no significant effect of condition*age (p=0.215), of type*age (p=0.792) and of condition*type*age (p=0.895). This indicates that there is more homogeneity across age groups in regard to their performance in the different conditions and condition types (reflexive vs. transitive).

In developmental perspective, a Bonferroni post-hoc test showed no significant difference between age 3 and 4 (p=0.141) and between age 4 and 5 (p=0.230), but only between age 3 and 5 (p=0.003). Again, this suggests that there is more homogeneity in this subset regardless of the age of the subjects. If this subgroup is more representative of a syntactic trend (restructuring and non-restructuring vs. FP and ECM) overall, this means that five-year-old is the developmental point where homogeneity prevails and the vast majority of children (17 out of 24) align to the pattern. In fact, recall that this is the age at which the difference between restructuring and non-restructuring and FP and ECM emerged as significant in the group as a whole. In other words, five-year-old appears to be the critical age to ascertain the syntactic regularities behind the PIP phenomenon.

Let us look at how the children in the conservative subgroup (i.e. above-mean performance in restructuring and non-restructuring) performed in the other two conditions:

Table3: Correct responses for children performing above chance in both restructuring and control (N=38)				
	Transitive			
	Restructuring	Control	FP	ECM
3 y.o. (8/24 chi)	80 % (32/40)	73 % (29/40)	50 % (20%40)	60 % (24/40)
4 y.o. (13/26 chi)	83 % (54/65)	80 % (52/65)	65 % (42/65)	49 % (32/65)
5 y.o. (17/24 chi)	88 % (75/85)	91 % (77/85)	66 % (56/85)	63 % (54/85)

	Reflexive			
	Restructuring	Control	FP	ECM
3 y.o. (8/24 chi)	90 % (36/40)	83 % (33/40)	78 % (31/40)	90 % (36/40)
4 y.o. (13/26 chi)	98 % (64/65)	88 % (57/65)	98 % (64/65)	97 % (62/65)
5 y.o. (17/24 chi)	99 % (84/85)	99 % (84/85)	100 % (85/85)	95 % (81/85)

These results are very interesting for a number of reasons. In developmental perspective, it appears that a minority of the youngest group is anticipating the syntactic pattern which emerges clearly in the older two groups. A post-hoc Bonferroni test for the total number of subjects in the subset (N=38) shows that there is a clear pattern distinguishing restructuring and non-restructuring on the one hand, and FP and ECM on the other. Overall, the restructuring condition did not differ from the non-restructuring condition (p=0.724) but differed significantly from both FP (p<0.001) and ECM (p=0.001). The performance in the non-restructuring condition was also significantly different from the performance in FP (p=0.005) and ECM (p=0.027). Finally, there was no difference at all between FP and ECM (p=1.000).
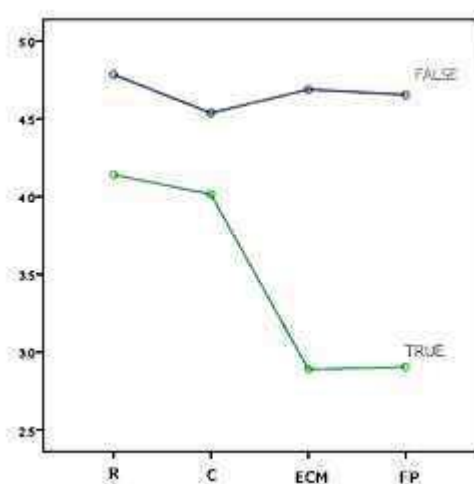
Figure 3: Effect sizes for the interaction of Condition and Transitivity.

The four reflexive conditions were very close to ceiling, ranging between 4.62 (the lowest value, in the Control condition) and 4.86 (the highest value, in the Restructuring condition).

In the transitive conditions we can clearly see the trend that the residual plots seemed to suggest: those children who scored approximately 4 correct answers out of five in restructuring and control (the "most frequent" residual in the group results) performed above-chance in the other two conditions (3.05 in FP; 2.92 in ECM), which

is just above the mean (2.77 in FP; 2.43 in ECM) reported in the group results and also coincides with the frequency peaks that we found in those conditions above the mean.

As for the relative developmental trend of FP and ECM, this partly reproduces the group findings. At age 3, performance is better in ECM than in FP (60% vs. 50%) but at age 4 there seems to be the opposite trend: performance in ECM is at chance and performance in FP approaches 65%. At age 5, FP undergoes no development and ECM reaches the same level as this latter. Therefore, the subgroup, despite the much better performance in the restructuring and non-restructuring condition, replicates the same developmental trend found overall in the other two conditions. This confirms that there was a more homogeneous response in the FP and ECM conditions than in restructuring and non-restructuring, and further suggests that the heterogeneity in the latter two might have a different explanation. This issue can be addressed by treating age as a continuous variable, and by incorporating any effect of subjects (i.e. participants) into the analysis.

2.3 MIXED EFFECTS LOGISTIC REGRESSION ANALYSIS

We used R (R Development Core Team 2009) and the R package lme4 (Bates and Maechler 2009) to conduct a linear mixed effects analysis. The purpose of such analysis was to fit a model capturing the role played by both random and fixed effects in explaining the patterns in our data. As random effects – i.e. the effects which may cause random variation in the data – we included subjects and items, since the participants, the verbs and the props used in our experiment displayed characteristics that could not be controlled for. Our data set consisted of 6 variables: subject; age; response (correct or incorrect); condition (restructuring, control, ECM and FP); transitivity (true or false); item. The fixed effects were the predictors in our experiment, i.e. age, condition and condition type. Our condition variable consisted of 4 levels, which we labelled R, C, ECM and FP; our condition type consisted of 2 levels, which we labelled IsTrans=TRUE; IsTrans=FALSE. To make the model interpretable in terms of age, we took the cloud of data points to centre it around 0, i.e. the intercept that is characteristic for the most typical value of age in the data (median: 4;06); we labelled this variable AgeMonthsCentered. We used children's response as the dependent measure – i.e. the value our model wanted to predict with respect to the fixed effect of condition, transitivity and age in months, and the random effect of items and subjects. We thus analyzed the data by using linear mixed effects models, ensuring that each variable added to the model improved its fit to the data significantly. An inspection of the deviance residuals showed that the data are not normally distributed but, rather, tend to follow a bimodal distribution.
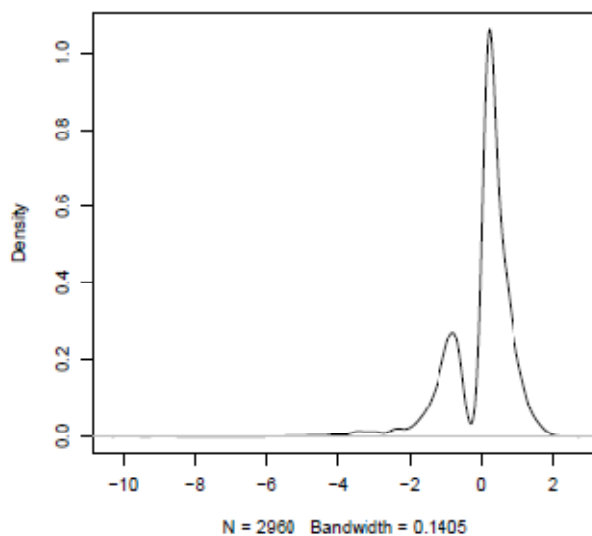
Figure 4: Estimated density of the deviance residuals of the model.

We identified the observations which fall outside the density of the data – i.e the atypical data points – as outliers (those <2.5), which constituted 2.5% of the data. An analysis of the outliers showed no correlation with subjects – as most subjects had only 1 or 2 data points in the outliers – and we thus refitted the model after removing those observations from the data set. We evaluated our model with the two-way interaction comparing the log likelihood (logLik=-1026.1) and the number of parameters (Df=17) with the larger three-way interaction model (logLik=-1025.7, Df=20). Bonferroni-corrected evaluation of the p-value (0.8458) supported the solidity of the smaller model.

The following table lists the coefficients of the fixed effects. The intercept in our data corresponds to the default values for our fixed effects, namely, Condition, transitivity and age. As a baseline, we take the mean of all the data points in the non-Restructuring condition; the coefficients of the effects (Condition ECM, FP and R; transitivity=false; median age) and the two-way interactions (Condition by reflexivity; Condition by median age; reflexivity by median age) are the modified group means obtained adding (or subtracting) the estimate values from the intercept:

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	0.5663	0.2179	2.5984	0.0094
ConditionECM	-0.6166	0.2661	-2.3178	0.0205
ConditionFP	-0.2907	0.2665	-1.0910	0.2753
ConditionR	0.0114	0.2692	0.0424	0.9662
IsTransFALSE	6.8504	0.9113	7.5171	0.0000
AgeMonthsCentered	0.0856	0.0177	4.8390	0.0000
ConditionECM:IsTransFALSE	14.6086	519.6265	0.0281	0.9776
ConditionFP:IsTransFALSE	-2.2828	0.5928	-3.8511	0.0001
ConditionR:IsTransFALSE	1.2079	0.8422	1.4342	0.1515
ConditionECM:AgeMonthsCentered	-0.0540	0.0182	-2.9701	0.0030
ConditionFP:AgeMonthsCentered	-0.0647	0.0181	-3.5712	0.0004
ConditionR:AgeMonthsCentered	0.0000	0.0189	0.0000	1.0000
IsTransFALSE:AgeMonthsCentered	0.2966	0.0667	4.4466	0.0000

Table 4: Coefficients.

Consequently, we plotted the model to visualise the effects of the predictors:
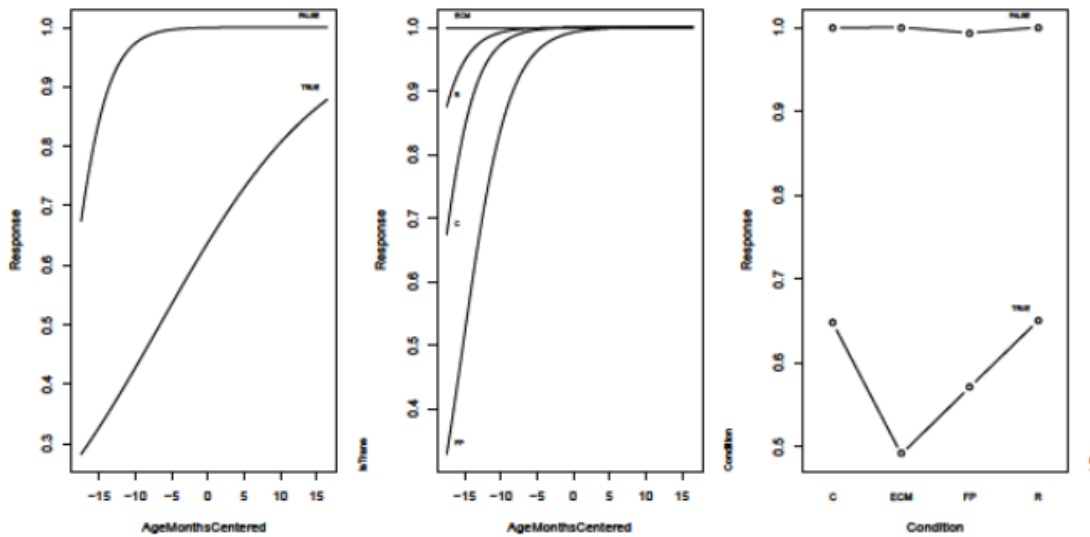
Figure 5: Partial effects. Curves are position for the median of numeric predictors and for the reference levels of factors.

The first graph shows the effect for age in months as a predictor of the child's response in the transitive (IsTrans=TRUE) and reflexive (IsTrans=FALSE) conditions. The 0 point indicates the median value of age in the data, which corresponded to 4;06 – hence -15 corresponds to 3;00 and +15 corresponds to 5;10 (the lowest and highest values in the data). Whereas the response in the reflexive condition reaches ceiling accuracy from at least age 3;05, the effect of transitivity appears to correlate strongly with age; at the

median age value, accuracy is predicted to be above-chance, and adult-like comprehension is not reached even in the oldest children.

In the second graph, the partial effect of age is visualised as a predictor of accuracy in the four conditions, calibrated for reflexivity. As we have seen, restructuring and ECM sentences with reflexive clitics were interpreted in an adult-like fashion from very early on. Children's accuracy in non-restructuring sentences appears to develop more slowly, although it can be considered adult-like in the whole range tested; differently, children's interpretation of reflexive clitics in the FP condition undergoes a major development before age 4.

In the third graph the four conditions were plotted for the median value of age, which consistently predicts adult-like accuracy in all the reflexive conditions and different levels of accuracy in the transitive conditions. In developmental perspective, the results in the transitive conditions reveal an even neater patter. The model predicts a virtually identical path for restructuring and non-restructuring sentences, which will deserve theoretical consideration; children's accuracy with object clitics in both ECM and FP develops very slowly, although ECM appears to be harder than FP. However, the two conditions are predicted to converge towards age 6;0 – assuming linear development, which might not be the case if there is a step-change in their grammar – lingering above chance-level, when the interpretation of object clitics in restructuring and non-restructuring sentences has already become fully adultlike.
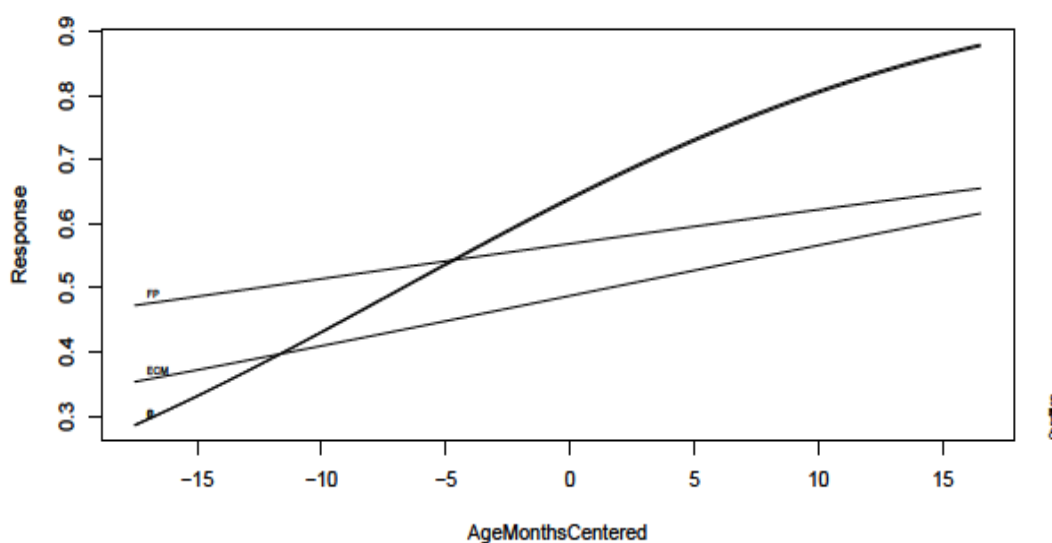
Figure 6: Proportion of correct responses by age (centred on median: 4;06) and by clause-type, in the transitive condition only.

Finally, we looked at the random-effects structure for subject in the transitive condition. In the scatterplot, each dot represents a subject. Subjects with a negative adjustment for the intercept (on the left of the graph) were less accurate, subjects with a positive adjustment for the intercept (on the right) were more accurate. Although there is not a strong correlation for most subjects between general accuracy and accuracy in the transitive
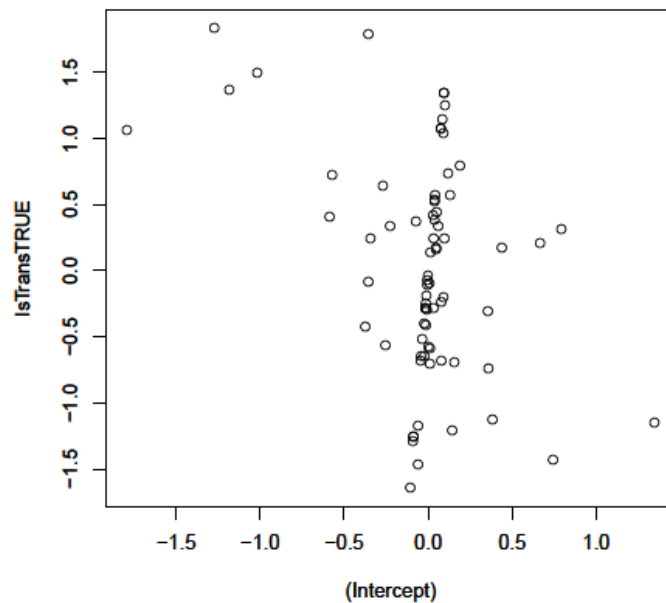
Figure 7: Partial effects by subject.

condition, less accurate children have positive adjustments for transitivity, whereas more accurate children have negative adjustments for transitivity – i.e. there seems to be a trade-off between accuracy in the transitive condition and general accuracy.

3 DISCUSSION OF THE RESULTS: SYNTACTIC FACTORS INVOLVED IN ROMANCE PIP

In the following sections, we will analyse the results with regard to the syntactic predictions of our hypothesis and the competing accounts. The first environment we are going to look at is the proclisis (clitic climbing) vs. enclisis alternation in control structures with or without restructuring. Consequently, we will come back to the predictions previously outlined which each accounts of Romance PIP made with regard to the structures examined in order to see which syntactic analyses are compatible with our findings.

3.1 PROCLISIS VS. ENCLISIS

The ANOVA findings show that there was no significant difference between Restructuring and Control, neither in the overall group (N=74; p=1,000) nor in the subset analysed (N=38; p=0.724). The two conditions were not completely aligned in the youngest group; however, this difference – which still was not statistically significant (p=0.7) disappeared completely from age four (p=1,00). In the mixed effects modelling analysis, which takes random effects into account and does not rely on central measures of tendency, the two

conditions do not differ significantly at any stage and are even perfectly aligned in the model (fig. 6).

Overall, the three-year-olds performed better in the Restructuring (i.e. proclisis) condition than in the non-restructuring (i.e. enclisis) condition, but only in the transitive contexts (mean correct answers 2.12 vs. 2.21, i.e. 48% vs. 43%). In the reflexive contexts there was the opposite trend (means 4.33 vs. 4.38, i.e. 88% vs. 87%). Those children who were included in the conservative analysis – for scoring above average in both conditions – also performed better in the restructuring than in the non-restructuring condition, both in transitive contexts (80% vs. 73%) and in reflexive contexts (90% vs. 83%).

We analysed the difference between restructuring (+clitic climbing) and non-restructuring (-clitic climbing) in terms of phase boundaries between the first merge position of the clitic and the final (Case-checking) position. If a cost was involved in such operation, we would have expected the opposite trend, with enclisis being "easier" to compute. However, the developmental trend and the type of errors (role reversals) which were more often found in the enclisis contexts suggest that the relevant factor was not to do with the clitic itself but rather with the distance between the overt subject in the matrix sentence and the clitic in the embedded sentence. Thus it could be a processing effect, which explains its minimal impact and – arguably – a strong subject effect, captured as such in the mixed effects modelling. We will come back to the interpretation of the subject PRO in control non-restructuring sentences at the end of the discussion (§5). A remarkable finding in our linear mixed effects analysis is that the development of children's accuracy in the restructuring and non-restructuring condition with object clitic pronouns is predicted to follow strikingly tallying trajectories. This finding lends support to Wurmbrand's (2004) and Gallego's (2011) analyses of restructuring constructions as biclausal yet transparent domains. Under a functional analysis of restructuring verbs, it would be less obvious to explain why the verbs tested in our experiments in restructuring and non-restructuring environments generated identical effects in developmental perspective.

3.2 PIP IN ECM AND FP CONSTRUCTIONS

The present study confirmed the existence of PIP in ECM clauses in languages with clitic pronouns. It brought about new evidence from a task which had not been employed before to test this construction, namely, the Act-Out task, and indicated that children interpret a clitic as the subject of the sentence around 50% of the time at age 4 and around 40% of the time at age 5 in the transitive conditions. By looking at age as a continuum – i.e. calculating

the variable age for each subject as the adjustments for the median value of age in months – we inspected the path of this effect as a predictor of accuracy in the comprehension of exceptional case marked object clitics. The curve clearly revealed a difficulty in all the range tested and a slow development, confirming that the strategy of reference-assignment to clitic pronouns in ECM constructions is predicted to be non-adultlike until at least age 6;0.

All the accounts which have been proposed so far in the literature have advanced a syntactic explanation for the existence of PIP in ECM contexts: according to both Baauw and Cuetos (2003) and Baauw et al. (2011) ECM sentences are special because Condition B does not apply; in contrast, according to Di Sciullo and Agüero-Bautista (2008) these sentences allow reconstruction of the clitic in the embedded vP-internal subject position. Under the present hypothesis, ECM clauses are special because they contain a free variable (the trace of the clitic) in the embedded vP-internal subject position. The reason why this derivational point has critical importance is because it is the first point at which the clitic configuration is sent to the interface for interpretation.

The ECM condition in the present experiment caused interpretation problems at all ages – a finding which fits nicely with all the syntactic analyses. What is problematic for the argument advanced by Baauw and colleagues is, rather, the existence of PIP in a task which does not seem to involve multiple comparisons for equivalence. This will be discussed in depth in §4. As for Di Sciullo and Aguero-Bautista's (2008) analysis, the identification of the syntactic factor involved in PIP with the clitic's first-merge subject position fails to account for the presence of PIP in FP constructions, where the clitic is merged in object position.

As we have highlighted, the ambition of an experimental study on children's comprehension of pronouns in FP constructions is high in both theoretical and acquisition perspective. In acquisition perspective, this construction may allow us to test further the syntactic factors behind Romance PIP. In fact, FP displays different characteristics from ECM contexts: firstly, the clitic is generated in the internal argument position in the embedded vP; secondly, the lower v* of ECM constructions is phi-complete, whereas the complement of *fare* – under our analysis, see Chapter 3 §4.4) – is defective and does not contain an external argument. In Chapter 2 §5, we have discussed Di Sciullo and Agüero-Bautista's (2008) argument that clitics are generalised quantifiers from a semantic viewpoint. That hypothesis is not compatible with the finding that our children showed

approximately the same rate of PIP in the interpretation of ECM and FP constructions at age 5: if the clitic cannot reconstruct in object position and reconstruction is what causes PIP, the "scope economy" hypothesis cannot thus explain the PIP in FP sentences.

The existence of PIP in FP contexts, however, is compatible with Reinhart and Reuland's (1993) Reflexivity model on which Baauw and colleagues' analysis capitalises. In fact, it is apparent that the infinitival complement of *fare* is not a syntactic predicate. As in ECM, the clitic is a syntactic argument of the matrix verb, since it is assigned Case by it, but it is a semantic argument of the infinitival verb. Under Reflexivity, covaluation is not ruled out by Condition B, which applies to semantic predicates, but is still ruled out by the Chain Condition. Reinhart and Reuland's (1993) analysis converges with the present one in acknowledging the inadequateness of the canonical binding theory (Chomsky 1981). Their definition of semantic predicates and Condition B, if applied to FP constructions, does not fail to capture from a syntactic viewpoint why both ECM and FP are special environments for Romance object clitics. In the present analysis, the crucial syntactic characteristic of FP was identified in the defectivity of the embedded v and its lack of an external argument. At the bottom of the derivation, the trace of the clitic is free until probed by *fare*. In the adult derivation, this is predicted to be the first point of spell-out, if the infinitival vP is a defective phase.

The only way in which coargumenthood could obtain between the matrix subject and the embedded clitic would be by positing a restructuring operation which gives rise to a complex head (e.g. an incorporation process, as assumed by Roberts 2006). The present findings speak against this analysis, at least in Italian. If FP involved a complex head, hence coargumenthood between the subject and the object, we would have not expected PIP. In other words, we would have expected the same adult-like interpretation of the clitic as in simple transitive sentences. The same prediction would hold if FP involved a nominal, i.e. non-phasal, VP (Folli and Harley 2007). The FP structure hypothesised by Folli and Harley (2007) appears to resemble *get*-passives, which contain a small clause instead of a vP complement:

    (13) John got [t pushed t by Mary]

These passives have been shown to be acquired early (Crain, Thornton, and Murasugi 1987; Crain and Fodor 1989; Crain 1991). The status of these constructions is still a topic of much debate, particularly with regard to the functional status of *get* (see Fox and Grodzinsky 1998; Bowers 2002 for opposite views), however its early acquisition

suggests that the complement is not phasal, whereas the non-adultlike comprehension of clitics in our experiment suggests that, in Italian FP, v is present. This construction therefore provides a test for a further important theoretical investigation, namely, children's interpretation of defective vPs under Wexler's (2004) Universal Phase Requirement hypothesis.

3.3 INTERPRETATION OF FP UNDER UPR

At the onset of the present analysis we raised the following questions: do children interpret the defective complement of *fare* as phasal – thus abiding an Universal Phase Requirement, as Wexler (2004) suggested? If they do, does this derivation converge or does it crash (because the object clitic cannot be extracted from an opaque domain and fails to check its uninterpretable features)? Finally, if it converges – i.e. if we have experimental evidence that the child can interpret the construction – does the interpretation allow coindexing between the clitic and the subject or not?

The first evidence that this experiment brought about is that children do not have problems with the construction *per se* at least from age 4;0, that is, they can interpret the sentence and act it out. Figures in the present experiment show that the FP construction is not uninterpretable at age 5;0 – the critical age for UPR. Test sentences with a reflexive clitic were acted out correctly more than 95% of the time. In order to act out the sentence, the child needs to recognise the causer and the causee and to assign the agent role to the by-phrase. In:

> (14) La mamma si fa abbracciare dalla scimmia
>
>   Mum has herself hugged by the monkey

The correct act-out of the sentence involves the mother hugged by the monkey, not viceversa. Remarkably, this was always the case, in that children never moved the mother towards the animal but always assigned the syntactic subject the role of the logical object.

It follows from the discussion above that the reflexive clitic in (14) must be merged in the matrix vP – as we have assumed that the infinitival does not have an external argument. If this is the case, the matrix syntactic subject corresponds to the logical object of the infinitival, raised to the matrix position directly given the non-phasal nature of the causative complement:

> (15) La mamma$_i$ [$_{vP}$ si$_i$ [$_{VP}$ fa [$_{VP}$ abbracciare t$_i$]]]

If [$_{VP}$ abbracciare t]] were phasal, the object DP [la mamma] could not be moved to its surface position, it could not check NOM Case and the anaphor could not be bound. Insofar as children's performance in reflexive conditions tells us whether they master the structures or not, adult-like accuracy in the reflexive FP sentences could indicate that the FP infinitival complement is non-phasal for the 4-5-year-old as well as for the adult. However, in that case, the interpretation problems that arise with object clitics more or less 40% of the time would be inexplicable. The construction is mastered (although not very early, as errors are visible at age 3) and the sentence is interpretable: the deviancy consists in allowing the object clitic to be interpreted as coreferential with the subject.

We have evidence that the FP construction is interpretable at age 5, yet it gives rise to PIP. Had it not given rise to PIP, we would have concluded that the child's derivation is completely adult-like. In fact – under the present analysis – extraction of the clitic from a defective phase would lead to the same (adult-like) interpretation as in a simple transitive sentence, with the relation between the clitic and the subject evaluated at the matrix CP phase. We take the presence of PIP in children's interpretation of FP as evidence that the complement is derived as phasal and assigned an EPP feature for the derivation to converge. In the reflexive derivation, assignment of the EPP feature to the defective phasal vP allows the logical object to raise to the matrix position in a cyclic fashion, thus that the child derivation is not as in (15) but rather as in (16):

(16) La mamma$_i$ [$_{vP}$ si$_i$ [$_{VP}$ fa [$_{vdef}$ t$_i$ [$_{VP}$ abbracciare t$_i$]]]]

In the transitive derivation, since the clitic is extracted from a vP lacking an external argument, its movement does not leave a bound trace in the internal argument position and PIP arises, as our analysis predicted.

If this analysis is correct, it provides further evidence in support of Chomsky's (2001) intuition that assignment of the optional EPP feature to v* – the feature which yields the "new outcome" – is not a semantic or discourse-driven operation but an internal computation, narrow-syntactic in nature. Just like, in Object Shift languages, it is the narrow-syntactic movement to the outer edge of vP which gives rise to the well-known semantic effects associated with this operation, in the case of clitic languages EPP-driven movement is also an automatic operation which has semantic consequences. And children as young as – at least – four can carry out narrow-syntactic operations effortlessly.

4 DISCUSSION: TASK EFFECTS IN ROMANCE PIP

Another question that drove the present study was whether – and to what extent – the type of task administered to the children has an impact on their performance. If we look at group figures, the children in the present study interpreted pronouns in ECM and FP sentences below chance level at age 3, around chance level at age 4 and above chance level at age 5. These mean results, in a cross-sectional perspective, suggest that PIP is a phenomenon that improves but lingers up until age 5 – at least – in ECM and FP constructions. If three-year-olds perform below chance across all transitive conditions, by age five the interpretation of pronouns in control/restructuring structures improves significantly whilst development in ECM and FP proceeds in an almost flat direction. The asymmetry indicates that there are syntactic regularities behind the phenomenon and that interpretation problems are still very visible at age five, also among those children who perform at ceiling in the interpretation of pronouns inside *some* complex predicates. When we just take into consideration those children (17 out of 24) who performed at ceiling in restructuring and non-restructuring control sentences, we observe 65% correct answers in the FP condition and 63% correct answers in the ECM condition. As said, this sample is an idealisation: at this age, in fact, there are still some chances to find non-adult-like performance in control structures. However, these chances decrease considerably compared to the younger two groups, in which heterogeneity is much higher. In fact, a conservative analysis is not needed to find statistical significance in the five-year-old group between the restructuring and non-restructuring conditions, on the one hand, and FP and ECM on the other. In the whole group, this difference is already meaningful from a syntactic viewpoint. Our conservative sample, however, allows us to compare our figures against other studies (Escobar and Gavarró 1999; Baauw and Cuetos 2003) which already assume in their hypothesis that comprehension of control structures is adult-like by age 4.

Escobar and Gavarró (1999) tested object clitics and reflexives in restructuring sentences using a TVJT. Their subjects were 16 Catalan children aged 4. Remarkably, these children provided 100% correct responses in the transitive "no" condition. The same children, tested in ECM sentences, performed extremely poorly in the "no" condition (only 31% correct) and better in the "yes" condition (75% correct). The act-out task, in the present experiment, yielded much worse performance with control structures at the same age (less than 60% correct) and below chance-level performance (only 42%) on ECM. Exactly half of the children (N=13/26) in the four-year-old group performed above 80% in restructuring and non-restructuring control sentences. If we just consider those children –

who, however, cannot be considered at ceiling yet – their performance on ECM was still at chance (49%).

In a previous experiment, Escobar and Gavarró (1999) tested 12 four-year-olds and 16 five-year-olds on other types of constructions, also including ECM sentences. In the "no" condition, both groups performed only 32% correct. However, it should be noted that the "yes" condition did not show adult-like accuracy: the five-year-olds performed just above chance level (55% correct); the younger group, surprisingly, gave 75% correct responses.

Baauw and Cuetos (2003) do not provide figures for the "yes" condition in their experiment, but the children in Baauw, Escobar and Philip (1997) performed 84% correct (vs. 63% in the "no" condition). The results in Escobar and Gavarró (1999) are not so clear-cut: as we have just seen, children in the five-year-old group performed poorly in both conditions. Although we cannot claim with absolute certainty that PIP is absent in ECM yes-conditions, however, we should bear in mind that interpreting children's responses in this condition requires caution for methodological reasons; in fact, the "yes" condition of a TVJT is inherently constricted by methodological biases which cannot make it a faithful measure of children's competence.

The act-out task administered in the present study yielded approximately the same rates of PIP as the "no" condition of previous TVJTs. Thus, if PIP is influenced by task effects, these are not in the direction that Baauw et al. (2011) would predict. Rather, the similar rates of PIP suggest that a pragmatic strategy – i.e. coreference – is available to the child regardless of the presence of a mismatching visual representation.

This task has indeed some limitations: for example, it may not reveal all the interpretations available to the child, simply because she may decide to act-out only one interpretation (Goodluck 1996). But even more so, the relatively comparable levels of PIP yielded by very different tasks such as the TVJT and the act-out task are an interesting finding. In fact, it may suggest that the local covaluation of a pronoun and its antecedent is more than a "guessing strategy" – i.e. a "non-choice" – under an excessively high processing demand.

5 INTERPRETATION OF CHILDREN'S RESPONSES IN THE ACT-OUT TASK

We made a very different prediction from all the accounts presented so far in the Romance PIP literature in regard to the type of interpretation which PIP gives rise to. Baauw and Cuetos (2003) assumed that children's problem consisted in the creation of an A-chain, i.e.

in treating the pronoun as non-referential – in a nutshell, an anaphor. Baauw et al. assume that the pronoun undergoes A'-binding, i.e. it is in a bound-variable relation with the subject. Bound variables, like anaphors, do not refer: in other words, the index they inherit (in syntax and in semantics) is autonomous from the context. We do not need to look outside the sentence to assign an index to a bound variable.

According to our account, the variable is free, hence referential. The nature of the error consists in the fact that the clitic corefers with the subject of the sentence rather than with the sentence-external referent. If the assignment of reference is done in pragmatics, in the utterance context, children are expected to be very sensitive to the latter.

It should be noted that the problematic ECM clauses under analysis – either tested with pictures as in Baauw and Cuetos (2003) or acted-out as in the present study – are in fact complements of a perception verb. A perceiver is not an agent, therefore there is no way to tell from the child's answer whether the covaluation between subject and clitic is an A-chain or not. The same holds for the FP condition: the relation between the causer and the causee is mediated by the volitional character introduced by the by-phrase. If X causes Y to be, say, hugged by the monkey, she does so only indirectly. In other words, it is not possible to tell from the child's error whether the causer was at the same time the causee (as in a reflexive interpretation) or not, because the role of the subject in causing the action to happen is not direct. Only a tiny number of children acted out the three thematic roles, for example moving the subject towards the animal and then making the latter perform the action on the object, and they all belonged to the oldest group. In sum, both the ECM and the FP conditions cannot help us tease out a reflexive interpretation of the clitic (as A-bound by the matrix subject) and a coreferential interpretation.

However, in the other two experimental conditions, namely, those involving restructuring and non-restructuring sentences, children across all age groups responded to the transitive sentences acting out a transitive action in the vast majority of cases. In fact, we identified two kinds of errors: the first type, a missed attempt at a transitive, was scored when the child simply manipulated the wrong referent, without performing a transitive action; the second type, a role-reversal, was scored when the child acted out the action as transitive however reversed the thematic roles. Errors of the first type were rare; in the second case, although the answer was scored as wrong – because the child made the clitic refer to the subject of the sentence – in actual fact the act-out was not reflexive, because she represented the other character as the agent of the action. This raises an important

question, namely, whether the interpretation problem in these conditions is a problem with the interpretation of the clitic or rather the (null) subject of the embedded sentence.

Differently from simple transitive sentences, in complex predicates both the subject and the clitic involve multiple occurrences of a trace. The child must construct the following LF for the sentence:

(17) L'uccello ha intenzione [$_{CP}$ di PRO [$_{TP}$ buttarlo [$_{vP}$ t$_{obj}$ [$_{vP}$ t$_{sub}$ [$_{VP}$ t$_V$ t$_{obj}$][$_{PP}$ in acqua]]]
     The bird has intention [to PRO throw.him in water] (*lo*=the rabbit)
     "The bird intends to push him into the water"

This might raise the question whether interpretation errors concerned the identification of the object or, rather, the subject – or both. Very interestingly, wrong answers consisted in performing a role-reversal interpretation – e.g. in (17) the rabbit pushing the bird. This did not occur when the prompt sentence contained a reflexive clitic: in fact, in such case the children only manipulated one character. This arguably indicates that the apparent PIP with these constructions did not consist in a reflexive interpretation. Another interesting behaviour was observed in the older two groups: several children asked the experimenter to "disambiguate" the subject and the object in question:

(18) Prompt: L'elefante lo può coprire con la coperta (lo = il cavallo)
            "The elephant can cover him with the blanket" (him = the horse)
       Child: Chi? L'elefante a lui? (Alessia, 5.0)
            Who? The elephant to him?[1]

(19) Prompt: L'uccello ha intenzione di buttarlo in acqua (lo = il coniglio)
            "The bird intends to push him into the water" (him = the rabbit)
       Child: Chi butta, questo o questo? (Noemi, 4.10)
            Who pushes/Who does (he) push? This one or this one?

(20) Prompt: Il canguro lo va a nascondere dietro la panchina (lo = il coniglio)
            "The kangaroo goes to hide him behind the bench" (him = the rabbit)
       Child: Il coniglietto lo va a nascondere? (Antonino, 4.10)
            The little rabbit goes to hide him?

Questions like the above are indication that the structure was clearly understood as "X doing something to Y", the confusion rather following from some kind of contextual ambiguity about who was X and who was Y. In the test sentences, the subject was always

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[1] Southern Italian spoken in Sicily, where the experiment was run, allows Spanish-like [+animate] objects to be introduced by "a", at a very informal spoken level.

salient in the linguistic context. The context was indeed very simple and consisted in introducing X as the character who was playing with Y. As a continuous topic, it may be hypothesised that the child did not expect it to be repeated overtly, but simply as a pro. In such case, it may be that children's interpretation consisted in a CLLD construction with a subject pro, and that the deviant interpretation resulted from choosing the wrong subject, rather than the wrong object. If questions like (18) and (19) indeed revolved around the subject, the sentence may have been understood as ambiguous between the reading in (17) and the one in (21) – although the latter would not have identical prosody:

> (21) [$_{CP}$ L'uccello [$_{TP}$ pro ha intenzione [$_{CP}$ di PRO buttarlo [$_{vP}$ t$_{obj}$ [$_{vP}$ t$_{sub}$ [$_{VP}$ t$_V$ t$_{obj}$][$_{PP}$ in acqua]]
> The.bird.TOP pro has the.intention. to PRO push.him in the.water
> 'The bird, (he) intends to push him in the water'

As previous studies on the acquisition of control suggest, it is very unlikely that children's problems in the interpretation of the embedded subject consisted in assigning PRO a sentence-external referent. These errors, in fact, are very rare already at age 3 and much evidence seems to indicate that subject control is mastered very early (Goodluck et al. 2001). At the same time, it is unlikely that the problem consisted in interpreting the predicate as reflexive, that is, in allowing the clitic to refer to the subject. Both under the present analysis and the other analyses, no possibility is envisaged for the vP-internal trace of the clitic to be interpreted as not bound in this configuration. In fact, there was much indication – at least in the older two groups – that the object was interpreted in disjoint reference from the subject. If the clitic was coindexed with the DP, therefore, the children's representation may have left a subject position available for the second character, filled by a null pro.

On the other hand, "disambiguating" questions were also frequent in the other conditions, as well as hesitations and self-corrections:

> (22) Prompt: Lo zio lo fa annusare dall'elefante (lo = papà)
>   Uncle him.makes sniff by the elephant (him = dad)
>   "Uncle has him sniffed by the elephant"
>   Child: Allo zio? (Giada, 5.3)
>   To.the uncle?
> (23) Prompt: L'elefante lo vede girare in tondo (lo = l'asino)
>   "The elephant sees him turn around" (him = the donkey)
>   Child: L'elefante? (Angela, 5.4)

The elephant?

(24) Prompt: La pecora la vede camminare all'indietro (la = la zebra)

"The sheep sees her walk backwards" (her = the zebra)

Child: (picks the sheep) No, questa. (Michele, 5.1)

No, this one.

At a first glance, these questions appear to have a pragmatic flavour and look more like a conscious request to the experimenter to make the referent unambiguous, rather than a "guessing strategy" caused by processing breakdown. The second observation is that the questions exemplified in 18-20, differently from 22-24, seem to revolve around the object. In (22), the prepositional (dialectal) phrase is uncontroversially an object. At a deeper inspection, the children who eventually failed to respond correctly in the ECM and FP conditions seem to simply take into consideration the subject DP in the sentence. If this was the case, such behaviour might consist in treating the clitic and the subject DP as coreferential; very much differently, in the examples 2-4 the child clearly assigns two disjoint referents to the subject and the object theta roles.

6 CONCLUSIONS

Our study confirmed the prediction that children's PIP is syntactically constrained, following a non-homogeneous developmental path in different syntactic environments. Our theoretical analysis predicted that ECM and FP constitute special environments for cliticization under a phase-based model of the clitic derivation. Children's lower rates of accuracy with these two conditions indicates that the clitic exemption effect is suspended in syntactic derivation which contain an unbound occurrence of the pronoun at the bottom of the derivation. We hypothesised that blocking covaluation between the clitic and the matrix antecedent in these contexts is a pragmatic computation, rather than an interface computation that the child cannot afford to carry out. The nature of the task – eliciting the child's intended meaning – and our analysis of children's errors in the task reinforced this hypothesis, suggesting that comprehension of a pronoun (as opposed to a reflexive) involves a process of contextual disambiguation. From the viewpoint of processing hypotheses, the act-out task does not force the child to evaluate the cost of different semantic representations in different submodules of the grammar. Such computation is argued to be required in the TVJT when the child has to compare a reflexive meaning – depicted in the picture – with the meaning of a sentence containing a pronoun. In the act-out task, there is no meaning a priori of the linguistic stimulus; however, the context provides two possible referents, which means that a choice *is* required by this task. The

latter is not an interface computation between different levels of representation, but is internal to the pragmatic module. We observed that the ambiguity between the two possible pragmatic referents showed up in some of children's responses and we interpreted them as true pragmatic moves. At the same time, we noted that children's requests to disambiguate in the restructuring and non-restructuring conditions appeared to revolve around the subject – as the responses reported in (18) and (20) show – but in the ECM and FP conditions the ambiguous referent seemed to be the object – in some cases overtly signalled by a (dialectal) preposition (22). We speculated that a different type of ambiguity led the children to pick the wrong referent in the restructuring/non-restructuring conditions: perhaps analysing the sentence as a CLLD structure, the errors consisted in a role reversal, whereby the subject was interpreted as a dislocated topic and a null subject (ambiguous because pragmatically equivocal as a continuous topic) inserted in the representation of the sentence. In fact, the advantage of the task was to allow us to see, from the children's responses, that such predicates were interpreted and acted out as transitive. With perception verbs and causative FP, there being no "agents", the act-out necessarily involved only one character; however, we adduce three good reasons to believe that these errors consisted in the covaluation of subject and object in children's interpretations, i.e. "true" PIP errors: firstly, as we have just mentioned, children's responses suggest that they interpreted the object (and not the subject) as ambiguous; moreover, our residuals in §2.2.1 indicated that children's performance was evenly distributed in those conditions above chance-level whereas the mean values in the restructuring/non-restructuring conditions did not reflect individual performances; finally, even those children who performed well in these conditions made errors in the ECM and FP conditions. In future direction, we aim to tease out the factors behind children's errors by controlling for the response observed in the task.

Our conclusion is that children's errors are pragmatic in nature and stem from their acceptance of local coreference. In the following chapter, we will explore the nature of such pragmatic knowledge and the development of the linguistic abilities involved in the interpretation of local coreference.

CHAPTER 8

AN ALTERNATIVE PRAGMATIC ACCOUNT

1. INTRODUCTION

In the previous analysis, we have advanced the hypothesis that PIP in Romance and non-Romance languages can be accounted for under a unified pragmatic explanation, namely, that children around age 5 allow an unbound pronoun to be covalued with its antecedent via local coreference. In order to give the phenomenon a coherent pragmatic frame, however, we have to clarify what is the pragmatic "deviancy" involved in a local coreference interpretation. So far, this is the first attempt to reduce PIP with clitic pronouns to a local coreference strategy. The pragmatic approach endorsed in Chien and Wexler (1990), Avrutin and Wexler (1992) and Thornton and Wexler (1999) assumes an explanation which is limited in its cross-linguistic applicability, in that it is predicted to not apply in languages with clitic pronouns. Such hypothesis assumes that children overextend the pragmatic contexts that allow local coreference in the adult grammar. We will start describing the properties of these discourse contexts (§2) as they were originally analysed by Heim (1998) and, consequently, we will look in detail at the explanation proposed by Thornton and Wexler (1999) to account of child local coreference (§3). In §3.2 we provide experimental evidence from a recent study, conducted by Verbuk and Roeper (2010), that Thornton and Wexler's (1999) prediction about children's early mastery of "Exceptional Coreference" contexts is not borne out, which suggests that guise-creation might not be a default property of local coreference.

Section 4 presents an alternative pragmatic explanation which capitalises on Levinson's (2000) analysis of pronouns and reflexives as scalar terms (§4.1). Under this hypothesis, when we interpret a pronoun in disjoint reference from the antecedent, a pragmatic computation is involved: namely, we have to produce the scalar implicature that the use of a pronoun implies the negation of a reflexive – the stronger and more informative term.

This inference, arguably, is required only from the hearer's perspective. Foppolo and Guasti (2005) have provided evidence of a dissociation between comprehension and production of scalar terms: in production, children never use scalar terms in an underinformative way (§4.2). This is consistent with the assumption that PIP is absent in production.

Assuming that children's pragmatic problem with local coreference has to do with the production of scalar implicatures, it is predicted to occur when local coreference yields an undistinguishable interpretation from an anaphoric one, and there is no need to assume that children interpret local coreference as a two-guises dependency: if this is the case, clitics (but only in syntactic contexts where their vP-internal trace is not bound) do not differ from strong pronouns. In Chapter 4 we have made an even stronger point, namely, that the impossibility of the clitic to undergo local coreference is best captured as a semantic effect of the derivation rather than as a semantic property of the clitic itself.

From a processing viewpoint, we will ask where Levinson's (2000) and Reinhart's (2004) accounts meet and where they depart (§6.1). Both accounts, crucially, assume a processing cost in comparing semantic representations. However, whether a scalar implicature gets through or not seems to be significantly dependent on pragmatic factors – the parser's ability to compare semantic representations is not under question. In contrast, the reference-set computation involved in Rule I crucially posits a qualitative difference between the early computational system, for which it involves an unbearable processing burden, and the adult system. To test these predictions, we will look at adult processing studies which show that adults, in on-line tasks of pronoun resolution, may also take into account local coreference when the context fails to provide a salient deictic referent for the pronoun. Finally, in section 7, we will integrate our pragmatic account with experimental evidence. In particular, we will look at two recent studies which have questioned the reality of PIP and suggested that non-adult-like findings have emerged when the experimental paradigms failed to meet important discourse requirements (Elbourne 2005; Conroy et al. 2009). The relevance of these studies is to have indicated how important a role is played by the context. This is predicted by a pragmatic theory of local coreference according to which ruling out a local antecedent is an inferential process. However, our position maintains that reducing PIP to an experimental artefact implies disregarding important aspects of the phenomenon, namely, its cross-linguistic distribution and the classes of pronouns which fall under it, the syntactic environments in which local coreference is an option, as well as the relation between the two. Overgrowing

cross-linguistic evidence of PIP suggests that children's interpretations cannot solely be explained by salience. Rather, exploring the complexity of the acquisition scenario is a major step towards a theoretical understanding of the syntax-pragmatics interface.

2. THE PRAGMATICS OF LOCAL COREFERENCE IN THE ADULT GRAMMAR

Since the first pragmatic explanation for PIP was proposed (Chien and Wexler 1990), one point was made clear: namely, that a tight relation holds between PIP in simple sentences and the form of the pronoun (strong/weak/clitic). The reason behind the cross-linguistic distribution of the phenomenon was explained syntactically and pragmatically: as deficient elements (Cardinaletti and Starke 1999), clitics cannot refer deictically (Avrutin and Wexler 1992). The ability to refer deictically, hence to pick a referent from the extralinguistic context, was identified as the key factor in the coreferential reading allowed by children who acquire languages with strong pronouns or with pronominal forms ambiguous between the strong and the weak form.

The reason why strong pronouns can give rise to local coreference is that local coreference, at least in the adult grammar, consists in the creation of a "new guise", under which an individual in the context is presented. The use of a pronoun in a local coreference reading – amply described by Heim (1998), who develops Reinhart's original argument – creates the pragmatic inference that the individual referred to, by the pronoun, is presented under a different guise – usually, an unexpected or unusual one. Heim specifically described two types of contexts in which local coreference is pragmatically licit: identity debates and structured-meaning contexts. The first type of context applies to situations in which an individual X in the shared context is introduced as the character in flesh and blood who corresponds to the proper noun or definite description in the linguistic discourse (from Heim 1998):

(1) Speaker A: Is this speaker Zelda?

Speaker B: How can you doubt it? She is praising her to the sky. No competing candidate would do that.

In these contexts, adult speakers can very easily infer that the individual in the common knowledge of A and B is at the same time the individual who is doing the praising, but such interpretation crucially involves recognising the two "guises" as different; only in this way can we accomplish an interpretation which is semantically different from an anaphoric one, as Rule I demands.

Structured-meaning contexts are those in which the previous linguistic context creates what Verbuk and Roeper (2010) call an "open proposition". For example (from Verbuk and Roeper 2010:59):

(2) It's not true that no one voted for John. John voted for him.

Here the crucial step for creating the "new guise" coreference reading is to compute, in the common ground shared by the speakers, the open proposition "X voted for John". In such case, the DP [John] simply is the individual who fulfils the open proposition, not the individual who voted for himself. The very fact that the proposition "X voted for John" is salient makes the pronoun refer most naturally to *John*.

On the other hand, run-of-the-mill Principle B contexts do not as easily give rise to a local coreference reading in the adult grammar. As Thornton and Wexler (1999) note, at least some focal stress on the pronoun is required to convey the interpretation that the pronoun is referring to the local antecedent in an "unusual" way, for example if "the individual being referred to is engaging in uncharacteristic behaviour" (Thornton and Wexler 1999:94).

3. THORNTON AND WEXLER'S (1999) PRAGMATIC ACCOUNT

3.1 CHILD LOCAL COREFERENCE AS EXTENDED GUISE CREATION

Crucially, the effect of "surprise" in the experimental paradigm is one of the arguments which Thornton and Wexler (1999) appeal to in order to explain children's performance in their TVJT. They posit that children's pragmatic problems are not to do with lack of adherence to the Cooperative Principle (Grice 1975) and its maxims but, rather, with more general knowledge of the common ground, which includes recognising speakers' perspectives, intentions, and so on. Numerous factors might be pertinent to account for children's non-target-like pragmatic behaviour: at a very general real-world-knowledge level, they may simply need to learn from experience what are the contexts (and cues) that signal a local coreference reading in the adult grammar; moreover, they may not be able to recognise stress marking as a necessary cue for local coreference. At the level of the experimental paradigm which they adopted, the fact that the most salient interpretation coincided with the local coreference interpretation, as well as the way in which the stories may have contributed an expectation of "surprise", were identified as potential explanations for children's responses.

Whatever the factors which contributed to the coreferential readings in Thornton and Wexler's (1999) experiments, however, the hypothesis stated clearly that children not only "overextend" guise creation, i.e. generate more exceptional coreference contexts than adults but, also, that they do so because they create interpretations not supported by the context. In the case of a proposition like "Mama Bear washed her", uttered in a Principle B context, and in which the pronoun was not signalled by any stress or element of surprise, children created a "role-reversal guise": in other words, given the predicate [x washed y] – roughly meaning that there is an individual who washed somebody – Mama Bear was identified as the individual who washed "the individual who washed somebody".

In sum, children's local coreference readings, under Thornton and Wexler's (1999) pragmatic account, arise in the same way as in the adult grammar, as a pragmatic process of "creation of guises". What "deviates" from the adult use is simply the world-knowledge of the appropriate contexts to licence this pragmatic inference. According to the authors, children overextend this use to run-of-the-mill Principle B contexts.

It is underscored that children's interpretation is *not* undistinguishable from an anaphoric one: "from this perspective, then, all cases of local coreference involve different guises of the same individual" (p.95). This makes Rule I redundant, according to the authors: "if all the cases in which local coreference is felicitous are circumstances in which the pronoun has a different guise than the antecedent, then Rule I can be dispensed with entirely" (p.104). Rule I dictates that, in the case of undistinguishable interpretations obtained via binding and local coreference, binding should demand precedence, but, in actual fact, such situation does not seem to ever arise. If a pronoun is not pragmatically allowed to pick a new guise, it is subject to Principle B; if it picks a new guise, on the other hand, it yields a distinguishable interpretation so the computation required by Rule I is unnecessary.

3.2 PREDICTIONS AND PROBLEMS

We have seen that the pragmatic explanation proposed by Thornton and Wexler (1999) does not allow for local coreference to yield an undistinguishable interpretation from an anaphoric one. Child local coreference, under this view, simply consists in an "overextension" of Exceptional Coreference Contexts, caused by immature pragmatic real-world-knowledge. This hypothesis predicts: firstly, that children are good at generating the correct pragmatic inferences in contexts where local coreference is allowed in the adult grammar; secondly, in cross-linguistic perspective, that children acquiring clitic languages will never misinterpret pronouns, as clitics are referentially too "deficient" (Cardinaletti and Starke 1999) to introduce new guises. And, in fact, the Exceptional

Coreference contexts described by Heim (1998) are generally assumed not to arise when a clitic pronoun is used – although speakers' judgments are not unanimous (see Baauw and Cuetos (2003) and Hamann (2011) for a discussion).

The cross-linguistic prediction has clearly been contradicted by experimental data – including ours – which have shown that in limited syntactic contexts PIP can arise in Romance languages. Whatever structural explanation one may assume to account for the syntactic distribution of the phenomenon, it cannot be consistent with the "guise-creation" argument.

What about the first prediction? The hypothesis that children are as good as adults at interpreting pronouns in a local coreference reading in the appropriate pragmatic contexts had not been investigated until recently (Verbuk and Roeper 2010). However, the findings so far speak against Thornton and Wexler's (1999) account.

Verbuk and Roeper (2010) set up an experiment involving two kinds of scenarios: a "Principle B" scenario, in which the pronoun could not pragmatically refer to the local antecedent (3), and an Exceptional Coreference or "structured-meaning" scenario, in which the pronoun would be appropriately interpreted in a local coreference reading, as in (4) (Verbuk and Roeper 2010:56):

(3) B-context: One day, Mermaid, Pirate, and Cowboy were building sand castles on the beach. The wind started to blow, and the three of them felt cold. Cowboy covered Mermaid with a blanket. Then Cowboy gave Pirate a blanket, so Pirate covered him. Who did Pirate cover?

(4) ECC: One morning, Mermaid, Pirate, and Cowboy were going to take a bath. Mermaid had a yellow rubber duck, Pirate had a blue one, and Cowboy a green one. Pirate washed Mermaid. Mermaid didn't wash Cowboy, so Cowboy washed him. Who did Cowboy wash?

Four age groups were examined: four, five, six and seven year-olds. The findings show a very interesting developmental path: at age four, children provided 4,5 (out of five tokens) disjoint-reference (i.e. pragmatically incorrect) responses in the exceptional coreference contexts and 3,2 correct disjoint reference responses in the "Principle B" contexts. At age five, children also allowed a disjoint reference reading for the pronoun more frequently in exceptional coreference contexts than in "Principle B" contexts (3,50 vs. 2,70). In other words, not only did four and five-year-olds not easily detect two guises in a sentence like

"Cowboy washed him"; they also preferred a local coreference reading in the (pragmatically inappropriate) Principle B contexts, in which they performed just above chance.

It is not until age seven that Verbuk and Roeper (2010) found a significant difference between the two contexts: in fact, seven-year-olds accepted a pragmatically felicitous local-coreference reading in exceptional coreference contexts more than half of the time (2,60 out of 5 tokens) and much less in Principle B contexts (1,10 out of 5). These findings raise a number of interesting observations from a pragmatic viewpoint. What they suggest is that interpreting local coreference in an adult-like fashion involves very complex pragmatic inferences which children at younger ages are reluctant to draw: therefore, Thornton and Wexler's (1999) prediction that children allow local coreference readings when the context presents an individual under two guises is not borne out. At the same time, young children allow more coreferential readings in contexts in which two guises are not involved: this suggests that children's local coreference may have not to do with the creation of new guises.

It is furthermore interesting that seven-year-old is the age at which children really appear to master the pragmatic difference between "two-guises" contexts, in which adult-like local coreference is felicitous, and Principle B contexts. In the latter, local coreference is not felicitous because the pronoun and its lexical antecedent refer to the same individual under the same guise, yielding an undistinguishable interpretation from an anaphoric one. Children at this age are clearly aware of the impossibility of local coreference in these contexts: in other words, they apply Rule I successfully. Children at younger ages, however, much often do not seem to abide by Rule I. If the reason behind that behaviour was that they allow local coreference when they create a two-guises reading not supported by the context, they should have accepted a two-guises reading even more when it *was* supported by the context. We have to conclude that they may in fact have a problem with Rule I: in other words, their non-adult-like local coreference might simply consist in covaluing a pronoun and the local referential antecedent under the same guise.

4. NON-LOCAL COREFERENCE AS A SCALAR IMPLICATURE

4.1 REFLEXIVES AND PRONOUNS AS SCALAR TERMS

Verbuk and Roeper (2010) showed that young children, around age 4-5, are less likely than older children to interpret a pronoun in an Exceptional Coreference context like the one in (4) as referring to a local antecedent under a different guise. At the same time, they

replicated previous findings that, in Principle B contexts, children accept a local coreference reading around 50-40% of the time.

Adult local coreference, therefore, appears to involve quite a complex pragmatic process, which is not correctly mastered until age 7 – an older age than the one involved in the PIP. This might be an indication that creating a new guise does not come "by default" in local coreference interpretations. If guise creation comes from some process of pragmatic enrichment, what are the operations in question?

Verbuk and Roper (2010) follow Levinson (1985) proposing that reflexives and pronouns are scalar terms. The concept of *scale* dates back to Horn (1984) and has fed a lively debate in both theoretical and experimental semantics and pragmatics. Indefinites (<some, all>), conjunctions (<or, and>) and numerals are examples of scales, in which terms are ranked in order of informativeness. From a pragmatic viewpoint, the use of the weaker or less informative term implies the negation of the stronger or more informative element in the scale: for example, if I use "some" to refer to a set of objects, the "pragmatic" hearer draws the inference that I am not referring to "all" the objects in the set . This implicature is not part of the logical meaning of "some"; rather, it is a "pragmatic enrichment" which we apply on the basis of a generalised expectation of cooperation (Grice 1975).

The component responsible for this computation is outside narrow-syntax but must interface with linguistic knowledge. Reinhart (1983) conceived it as an instantiation of the maxim of manner: "when syntactically permitted, bound anaphora, whether of R-pronouns or of non-R-pronouns, is the most explicit way available in the language to express coreference, as it involves referential dependency. So, when coreference is desired, this should be the preferred way to express it" (Reinhart 1983:76). Levinson (1985), developing Reinhart's (1983) idea, observed that the maxim in question is the maxim of Quantity, specifically its second axiom ('do not make your contribution more informative than required'). Reflexives are stronger terms than pronouns because they obligatorily pick a local antecedent. If the speaker uses a pronoun, therefore, the hearer infers that the antecedent is not local: if it were, the stronger term in the scale would have been used. Such implicatures apply to the linguistic domain and, therefore, become early automatised once the scale is acquired; from (5), for example, speakers are able to produce the implicature that 'Felix did not touch himself':

(5) a. Felix touched him (him= not Felix)   (Grodzinsky, Wexler, Reinhart 1990)

b. Felix touched himself (himself=Felix)

Note that the opposition in the scale is between two different categories – reflexive (anaphor) and non-reflexive (pronoun) – rather than between different binding representations. Neo-gricean theories of conversational implicatures have developed the study of scalar implicatures within the linguistic architecture. Conversational implicatures are conceived by Sperber and Wilson (2002) as a submodule of the Theory of Mind module, which comprises the cognitive ability to recognise other people's beliefs, mental states, and the intention behind a communicative act; most importantly, as a linguistic submodule, conversational implicatures are encapsulated between the other components of the grammar. It has been abundantly shown that the development of Theory of Mind is a fundamental prerequisite for the acquisition of scalar implicatures – in fact, this may be an important predictor of linguistic development in autism (Baron-Cohen 2001; Bloom 2002). According to Verbuk and Shultz (2010) what renders the acquisition of scalar implicatures a complex cognitive process is precisely the fact that "the language-oriented submodule of the Theory of Mind module interfaces, on the one hand, with UG, and, on the other hand, with more general cognitive competences" (Verbuk and Shultz 2010:2300).

Verbuk and Roeper (2010) propose that Exceptional Coreference contexts involve a more complex computation. In such contexts, the hearer has to compute an open proposition (e.g. "X washed Cowboy") which makes the coreferential reading different from an anaphoric reading; consequently, the implicature based on the maxim of quantity must be suppressed; finally, another implicature must be drawn to arrive at the correct coreferential reading. The implicature in question follows from Levinson's (2000: 114) I-Principle:

(6) Avoid interpretations that multiply entities referred to (assume referential parsimony); specifically, prefer coreferential readings of reduced NPs (pronouns or zeroes).

Such account allows the authors to explain why children are not better at coreference readings in two-guises contexts than in "Principle B" contexts. This theory also makes an important point: blocking a reflexive reading is a pragmatic inference – specifically, it is a scalar implicature generated by the fact that reflexives and pronouns are hierarchically ordered in the scale of informativeness of local dependencies. As such, it does not come for free but, rather, must involve some processing cost. In fact, it is interesting that the age at which Verbuk and Roeper (2010) found that children were able to accept local

coreference in Exceptional Coreference contexts was 7 year-old. This is the same age at which Pouscoulous et al. (2007) found that children were able to produce scalar implicatures with "some" under negation ("some Xs are not" > "at least one X is"). These implicatures are much more difficult to process because they involve a double inference, namely, the negation of the negation of the stronger term (i.e. "not none"). It is reasonable, therefore, that the similarities in the developmental pattern of Exceptional Coreference contexts found by Verbuk and Roeper (2010) may be linked to the fact that they involve multiple inferential steps.

However, young children are not unable to generate scalar implicatures at age 4-5: they simply appear to produce them less frequently than adults. This might suggest that Rule I – or simply the ability to compare two semantic representations – is not inoperative at this age. A growing body of experimental studies on children's interpretations of scalar implicatures indicates that not only the ability to draw scalar implicatures is not absent in children as young as four (Papafragou and Musolino 2003), but also this ability varies considerably depending on the scalar term under question (for example, Papafragou and Musolino showed that scalar implicatures are produced much earlier with numerals than with "some") and the experimental paradigm (Pouscoulous et al. 2007). As will be discussed, the experimental paradigms adopted in PIP studies have recently been subject to very deep inspection by studies (Elbourne 2005; Conroy et al. 2009) which have questioned the reality of the PIP. Regardless of the arguments behind those studies, which will be discussed in detail in §7, the very clear evidence that they bring about is that different experimental paradigms can really have an impact on children's performance. This is not too surprising, if the contextual setting is part of the pragmatic information on which the child has to work; it is more problematic, however, if children's local coreference readings are expected to stem from an internal computation (or its breakdown).

Verbuk and Roeper (2010) also justly point out that Reinhart's (2004) account would not predict more difficulties with Exceptional Coreference contexts than with Principle B contexts: in fact, Reinhart simply predicts a processing difficulty in comparing the binding and the coreference representations for equivalence. According to Verbuk and Roeper (2010) this is only part of the computation which Exceptional Coreference contexts and Principle B contexts share: "in order to construct the scales in question, the child must reason that pronouns and reflexives are identical in their meaning and share the same features with one exception – reflexives differ from pronouns in terms of being necessarily

referentially dependent" (p.60). Only when this scale is operative, can children compare binding and coreference representations and thus give precedence to reflexives as referentially dependent on a local antecedent: this is one point where Levinson's scale and Reinhart's Rule I converge. However, Verbuk and Roeper's (2010) account predicts an exceptional difficulty with Exceptional Coreference contexts because they assume additional steps (computing an open proposition and suppressing the scalar implicature) which Rule I does not take into consideration.

What should be also underscored is that the processing cost involved in Reinhart's (2004) Rule I results in a breakdown during the comparison of two semantic representations: this is not what an argument based on scalar implicatures predicts. In such case, it is predicted that drawing an implicature generates an additional cost – and such prediction has been experimentally proved true for other scales (Noveck 2001; Papafragou and Musolino 2003; Pouscoulous et al. 2007). What has never been found, however, is that comparing two semantic representations is *impossible* for children at the age of 4 or 5, i.e. that they cannot carry out the computation in question and thus resort to guessing. Many other variables have been showed to influence how and when the child is more prone to be "pragmatic" and enrich the meaning of a scalar term with an inference.

4.2 ASYMMETRY IN THE PRODUCTION AND COMPREHENSION OF SCALES

We have assumed that pronouns which are not in a semantic-binding configuration with a referential antecedent in the syntactic derivation are free, i.e. are interpreted via coreference under an assignment. In most cases – i.e. in Principle B cases – however, reference assignment via local coreference is pragmatically inappropriate. What makes it inappropriate from the hearer's perspective is that a local dependency established with a reflexive is unambiguous hence more informative, whereas a local dependency established with a pronoun is ambiguous (as the pronoun could potentially corefer inside and outside the local domain) and underinformative: in other words, the most informative way to encode a local dependency is A-binding.

For the child whose processing capacities are less mature than the adult's – let's say, up until around age 7 – the pragmatic inference associated with the <pronoun, reflexive> scale has a cost. It certainly has a cost for the adults too, as much adult processing literature on scalar implicatures shows. Children at younger ages are more reluctant to perform costly pragmatic inferences: they do so, under the right triggers, but more

frequently than adults they allow the weaker term in the scale (the pronoun) to encode a local dependency.

The first thing to note is that children's difficulties with scales only appear in comprehension – when they resolve the referential dependency – but not in production – when they encode the referential dependency. From a pragmatic viewpoint, this is not surprising. For the speaker, the choice of a reflexive to encode a local dependency is the most economical and unambiguous choice. Speakers – and even young speakers – do not use weak scalar terms to mean strong scalar terms, e.g. "some" to refer to "all". The task of solving scalar implicatures is clearly up to the hearer. From the hearer's point of view, solving pronominal reference involves two crucial abilities: the first step, which is also involved in production, is the acquisition of the scalar items and their distribution; the second step is the ability to order them in the scale, i.e. to form a paradigm. Foppolo and Guasti (2005:9) precisely predict such production/comprehension asymmetry based on their Lexical Hypothesis, which is articulated in two points:

(7) (i) two separate steps are involved in the lexicalization of the scalar items, and both must be completed in order to derive the scalar implicatures. One preliminary step is the acquisition of each lexical scalar item separately, with its restrictions on use in felicitous contexts. This step is the first to be acquired. Subsequently, and at a further separate step, the scale itself needs to be lexicalized, i.e. the scalar items should be linked to form an ordered scale (a sort of paradigm). This step can be acquired as a separated step, and can take a while to be completed after the first step is acquired, depending on the kind of scale.

(ii) different scales may be lexicalized at different stages in development.

Foppolo and Guasti (2005) indeed replicated the finding that children aged 5 accept underinformative statements with "some" but, in an elicited production task, they found adult-like production of both "all" and "some" to refer to the entities of a set. Even though children produced morphological errors – for instance, overgeneralising the plural morphology on uncountable indefinites (e.g. "uni", "qualcuni") – they never used "some" to refer to each of the entities of a set. Thus, these findings are compatible with the absence of the PIP in production, which Baauw et al. (2011) also predict.

4.3 SUMMARY

We have maintained, with Thornton and Wexler (1999) that children's problems with the interpretation of pronouns reside in the pragmatic component and are not caused by a

processing breakdown. Against T&W, however, we have argued that this strategy does not consist in the creation of new guises. The first objection we have adduced is that creating a two-guises interpretation in Exceptional Coreference contexts involves even more pragmatic effort, as it requires the suppression of an inference (i.e. the scalar implicature associated with the pronoun), in order to allow the pronoun to fill the open proposition which these types of contexts give rise to. Experimental evidence by Verbuk and Roeper (2010) suggests that this is the case, because children are not as good as T&W would predict at creating new guises.

The second observation was that, in Principle B contexts, child local coreference in actual fact gives rise to an undistinguishable interpretation from an anaphoric one. Unlike T&W, we have maintained that child local coreference consists in mapping the index on the pronoun to the index on the local antecedent *under the same guise*: in other words, it consists in exactly the same mechanism which accomplishes extrasentential coreference; conversely, guise-creation is a much more complex pragmatic process. Creating a representation which does not differ in meaning from a local binding dependency, however, raises a pragmatic problem: just like the scalar term "some", the pronoun "him" is underinformative in a local referential dependency because the anaphor "himself" is unambiguously locally-dependent, hence more informative. Following Levinson (2000) and Verbuk and Roeper (2010), therefore, we have assumed that anaphors are strong scalar terms in a scale of local dependencies. This is very compatible with the situation which Rule I, conceived by Reinhart (1983) as an innate pragmatic rule, captures: in fact, Rule also posits that a dependency established via A-binding should take precedence over local coreference when the two interpretations are equal. However, we have pointed out that, unlike Reinhart 's (2004) reference-set argument, a processing account based on scalar implicatures does not assume that children cannot compare semantic representations for equivalence. It does assume a cost, but such cost is predicted to only "reduce" the amount of scalar implicatures that children draw, compared to adults.

It is very difficult to pin down the factors which render scalar implicatures costly from a processing viewpoint. A series of experiments from Pouscoulous et al (2007) attempted to measure the role of "facilitating" features which help children interpret scalar terms pragmatically. This study could not tease out the role of each factor in isolation, but overall it showed that both linguistic (the choice of the scalar term) and experimental (the paradigm, the type of stories, the task, the effect of training) features have a significant impact on children's interpretations. It is also likely, as Foppolo and Guasti (2005) suggest,

that different scales are lexicalised at different ages: thus, the "local dependency" scale on which reflexives and pronouns are ranked, is probably acquired much earlier than the <some, all> and the <or, and> (Gualmini et al. 2001; Chierchia et al. 2004) scale – i.e. before age 6.

It has been suggested (Pouscoulous et al. 2007) that external factors which inhibit the production of a pragmatic inference in young children may have to do with the task, the expectations and the intentions attributed to the experimenter (for instance, Pouscoulous et al. (2007) found dramatic improvement when a puppet's instructions to the children were offered in the form "I wish some of the boxes..."). Whatever the nature of the factors which can enhance or, on the contrary, inhibit pragmatic enrichment in children's interpretations, however, it is clear that these factors are *external* to children's computations. The comparison of multiple semantic representations for equivalence is not an inaccessible operation to the five-year-old. Scalar implicatures involve the mastery of a *paradigm* – to borrow Foppolo and Guasti's (2005) term. What defines the paradigm is the opposition between the pronoun and the reflexive in the local domain – i.e the relation which holds between the two terms by substitution, or *in absentia*. Therefore, they do involve the comparison of semantic representations for equivalence. However, the capacity to carry out this computation is in place, and has been brought to light in children as young as four both using experimental training (Papafragou and Musolino 2003) and spontaneously (Pouscoulous et al. 2007). Finally, against Reinhart's (2004) we have underscored Verbuk and Roeper's (2010) observation that the special difficulties children face with Exceptional Coreference contexts are not predicted by Rule I. This is strengthening evidence for a pragmatic account of two-guises local coreference based on the processing cost of suppressing a scalar implicature. At the same time, we have endorsed the argument that even young children can compare semantic representations, because even four-year-olds can produce scalar implicatures spontaneously (Pouscoulous et al. 2007) in the right experimental setting.

5. CLITICS AND LOCAL COREFERENCE

The second problem which we have identified in Thornton and Wexler's (1999) argument was the fact that it could not apply to clitic pronouns, i.e. pronouns which are referentially too deficient to have their own guise. They stated clearly that "children should misinterpret pronouns only in languages with pronominal systems quite similar to English

– that is, only in languages in which local coreference interpretations are possible in the adult grammar" (p.105).

It is generally accepted that clitic pronouns cannot give rise to local coreference in adult grammar. Hamann (2011:271) objects that Romance speakers are not unanimous in rejecting a two-guises reading in the so-called structured-meaning contexts like the English (2). According to her, most French speakers accept a local coreference reading in:

(8) Tout le monde aime Oscar. Marie l'aime, Chantal l'aime et Oscar l'aime.
Everybody loves Oscar. Marie loves him, Chantal loves him and Oscar loves him.

Baauw and Cuetos (2003) have an opposite view, which we believe to be much less controversial. In their discussion of the semantic properties of clitics, they argue that the same type of sentences discussed by Heim (1998) are rejected by Spanish adult speakers in a local-coreference reading:

(9) a. ¿Sabes lo que María y Juan tienen en común? María lo admira y Juan también lo admira.
'Do you know what Mary and John have in common? Mary admires him and John admires him too.'

   b. A. ¿Esta conferenciante es Zelda?
   B. ¿Cómo lo puedes dudar? Ella la pone en el cielo. Ningún otro candidato haría eso.'
   A. *Is this speaker Zelda?* B. *How can you doubt it. She praises her to the sky. No competing candidate would do that.'*

   a. Todo el mundo odia a Lucifer. Hasta él (mismo) lo odia.
   'Everybody hates Lucifer. Even he (himself) hates him.'

It is apparent that these sentences do not have the pragmatic felicity of their English counterparts. It is very easy for an adult speaker to detect an "open proposition" in these contexts, but the choice of a clitic to fill the proposition and hence enter a two-guises coreference relation with the referential antecedent sounds quite unnatural.

Thornton and Wexler's (1999) reasoning that PIP should not arise in languages with clitic pronouns is correct only insofar as children's PIP consists in an overextension of adult local-coreference contexts: in fact, clitics are overall felt very marginal in Exceptional Coreference contexts. Thus, from the very fact that PIP can occur in clitic languages, in which it cannot consist in a two-guises local coreference, we must conclude that PIP across languages cannot be accounted for as a two-guises construal. Such argument integrates

Verbuk and Roeper's (2010) first objection to T&W, namely, the fact that Exceptional Coreference contexts are not interpreted in an adult-like fashion at least until age 7.

Differently from Baauw and Cuetos (2003) and Di Sciullo and Bautista (2008), we have assumed that clitics are not *inherently* bound variables. In Chapter 4, we have argued that binding effects in the transitive v*P are due to the semantic output of clitic movement, which creates a variable chain at this spell-out point. In light of such phase-based analysis, there is a derivational reason why clitics cannot undergo –even under special pragmatic contexts – local coreference: since the trace of the clitic is bound in the vP and the trace of the subject is free inside the same domain, they must obligatorily be disjoint. Even "accidental coreference" is excluded.

In Chapter 5, we have argued that a binding configuration does not arise in complex predicates such as ECM and FP. Given the properties of the vPs in question, the clitic leaves a free variable in the argument position. As a consequence, the trace of the clitic in the embedded vP can be covalued with a matrix subject in the higher phase. Under this analysis, covaluation of the pronoun and the antecedent does not create a new interpretation – as in Thornton and Wexler's (1999) account. Following Verbuk and Roeper (2010), we have shown that the "immature" pragmatic behaviour in question cannot consist in creating an interpretation not supported by the context (i.e. a new guise in a Principle B context). Under a scalar analysis, the inference involved in rejecting coreference inside a local domain is dependent on the availability of bound anaphora in the same domain. In order for a scalar opposition <pronoun, reflexive> to be acquired, therefore, it must be linguistically constrained within a syntactic notion of local domain, which is where the obligatory referential dependency of reflexives is observed.

6. THE PROCESSING COST OF REFERENCE-SET COMPUTATIONS

6.1 SCALAR IMPLICATURES VS. RULE I

What does this pragmatic account have to say about Rule I? Thornton and Wexler (1999) argued that Rule I might be dispensed with: when binding and coreference yield an undistinguishable interpretation, barring the pronoun is a matter of binding; in contrast, when the interpretation is different, it is because local coreference has applied. This is because, according to them, local coreference consists "by default" in a two-guises reading. Conversely, we have assumed that local coreference as a two-guises reading is accessible only to speakers who are pragmatically mature enough to be able to first produce an open proposition and then cancel an implicature.

If local coreference, in actual fact, can yield the same interpretation as binding of an anaphor, Rule I is invoked in the computation. However, differently from Reinhart (2004), we contend that reference-set computations do not overload the processing capacities of 4-5-year-olds. The key assumption behind Reinhart's later version of Rule I is that anaphoric binding and local coreference are ranked in order of processing economy. Levinson's (2000) scales do not make this assumption: they only indicate that reflexives and pronouns are ranked in order of "informativeness" with respect to the local domain. Under this view, the interpretation of a pronoun via local coreference witnesses pragmatic immaturity but does not violate featural economy (against Hicks 2009). There is also a crucial difference between the present account and Baauw et al.'s (2011) account, which assumes that the child solves referential dependencies in pragmatics because narrow-syntactic dependencies are costly for the early processing system. We have assumed that interpreting free pronouns in disjoint reference has a cost, namely, the cost of producing a scalar implicature – negating a reflexive reading; this cost is associated with a pragmatic inference, is less and less visible during the course of development, when pronoun interpretation becomes adult-like, but is not an atypical feature of the child processing system. Adult processing literature clearly shows that scalar implicatures involve a processing cost at all ages, because even adults tend to interpret scalar terms in their "logical" meaning, refraining from pragmatic enrichment, in experimental situations of increased processing demand (for example, in self-paced reading tasks). Under this view, there is no qualitative difference between the child and the adult processing system.

The pragmatic account proposed by Thornton and Wexler (1999) made an important point, which the present analysis has maintained: positing that the parser's capacity is different at the early stages is not a warranted assumption: "on Grodzinsky and Reinhart's account, the processing bottleneck that children encounter is "of the sort known to diminish with age" (1993, 91). Thus, they do not share the assumption that children have access to a universal parser (see Crain and Wexler 1999; Crain and Thornton 1998). Rather, the child's processing system has different properties from the adult's, and Rule I remains problematic until this system matures" (Thornton and Wexler 1999:47). We have endorsed Thornton and Wexler's (1999) assumption that local coreference is a (non-adult-like) pragmatic strategy of reference resolution, and not a "guessing" strategy caused by a breakdown in a processing system unable to keep two representations in memory at the same time. The problem in the "extended guise creation" argument, however, is that it localises such "pragmatic" inconsistency in children's recognition of

speaker's intentions, attribution of mental states and so on. These are pragmatic abilities which touch on Theory of Mind, and are unlikely to not be in place at age 5: for example, four-year-olds can solve false-belief tasks, hence they have the concept "belief" (Scholl and Leslie 1999). We have maintained with Sperber and Wilson (2002) and Verbuk and Shultz (2010) that Scalar implicatures are a *linguistic-oriented* submodule of Theory of Mind. The pragmatic process involved in the production of scalar implicatures is situated within the grammar, and therefore involves also mastery of linguistic knowledge, specifically, for the scale <reflexive, pronoun>, knowledge of the local domain. Verbuk and Shultz (2010) show that the linguistic component involved in scalar implicatures makes these implicatures more challenging than non-linguistic implicatures; this suggests that the challenge behind local coreference has to do with more than general cognitive abilities such as the attribution of mental states. Finally, pragmatic inferences are external to the syntactic computation, whereas the economy hierarchy of referential dependencies on which children and adults diverge – in Baauw et al. (2011) – calls into question internal computations ("weak syntax") and posits qualitatively different processing systems.

The argument that comparing semantic outcomes involves a processing cost that the child cannot afford goes even beyond the comparison of binding strategies in Di Sciullo and Agüero-Bautista (2008). Any comparison of semantic representations for equivalence, for instance a semantic shifting operations like reconstruction, would be too demanding for the child. If this hypothesis were true, it would have radical consequences: as already noted by Wexler (2004) the assumption that children at age 5 are not able to compare two semantic representations is not only clearly unwarranted on minimalist grounds, but also contradicted by acquisition data. Comparing the new semantic outcome of a certain configuration with its input is the gist of Chomsky's (2001) "guiding intuition", which follows precisely by Fox's and Reinhart's works. The "new oucome" is what determines assignment of the EPP feature on v* and permits successive cyclic movement. In fact, as Wexler (2004:196) points out, not even a *wh-* question could be asked if the computational system could not "see" a new outcome, which means that these internal computations are at the heart of the expressive potential of language.

6.2 PROCESSING STUDIES OF ADULT PRONOUN RESOLUTION

One important testing ground for Reinhart's (2004) and the present account of pronoun processing is the adult literature. Rule I assumes that children's difficulties in dealing with two semantic representations will fade once maturation will set in. It is not stated clearly

when and how such maturation is expected to take place: probably gradually – in fact, Thornton and Wexler (1999) object that five-year-olds should be beyond (what at least is their concept of) "maturation". In other words, the processing difficulties which Reinhart expects children to experience pertain uniquely to the early parser.

In contrast, the processing resources involved in inferential computations or "pragmatic enrichment" processes are not expected to be demanding only in infancy. Scalar implicatures have received much attention also in the adult literature. Adult processing studies have indicated that the production of a pragmatic inference has a processing cost, which has been detected in online tasks such as categorization tasks (Bott and Noveck 2004) or self-paced reading tasks (Breheny et al. 2006). Underinformative sentences with scalar terms such as "some elephants have trucks" are more likely to be interpreted as true (i.e. logically, but not pragmatically) by adult subjects if the response time is limited to 900 ms (Bott and Novek 2004). Self-paced reading tasks also indicate that reading times are longer when the context of an utterance makes the "enriched" pragmatic reading felicitous, as in the following test by Breheny et al. (2006):

(10) Upper-bound context (felicitous pragmatic reading: OR= A or B but not A and B)
     John was taking a university course / and working at the same time. / For the exams / he had to study / from short and comprehensive sources. / Depending on the course, / he decided to read / the class notes **or** the summary.

In (10), the reader has to draw the scalar implicature (i.e. *not both*) in order to arrive at a felicitous interpretation of the context. This inference results in longer reading times than when the scalar term is felicitous in its logical meaning. Not only are these findings important in indicating that pragmatic inferences come at a cost, but also they crucially show how important the role of the context is for the production of an implicature.

Several studies have recently addressed the problem of anaphor/pronoun resolution in online tasks from the adult perspective. Overall, they provide interesting evidence that the processing of a pronoun is strongly influenced by both phi-features (number and gender) of the local antecedent and the contextual availability of a deictic referent. The main theoretical question of processing studies is whether the canonical Binding Theory (Chomsky 1981) has psychological reality in online pronoun resolution: in other words, does Principle B really constrain our processing of pronouns' antecedents? Or do we also take into account structurally illicit antecedents during on-line sentence processing? Some

studies using self-paced reading tasks and eye-tracking have indicated that a local antecedent can be temporarily considered as a potential antecedent.

Badeker and Straub (2002) showed that processing times were higher when the only linguistic antecedent for the pronoun was local (as in 12) than when it was in a non-local position (as in 11). This is because, in the absence of a deictic referent for *him* in (12), the parser first had to take into account the local antecedent, and consequently solved the reference having to infer that the pronoun referred to an unmentioned character.

(11) *accessible match*

    John thought that Beth owed him another chance to solve the problem.

(12) *inaccessible match*

    Jane thought that Bill owed him another chance to solve the problem.

They thus concluded that "the processing-load differences observed between the accessible-match and inaccessible-match conditions suggest that the structural status of the inaccessible candidate begins to influence the evaluation process very soon after the pronoun is encountered, perhaps as soon as gender information comes into play"(p.754). Kenninson (2003) also found longer reading times for sentences like (13b) in which the pronoun matched in gender the local antecedent. However, when there was number mismatch, as in (13c), the reading time was the shortest among the three conditions.

(13) *NP conditions* (p.343):

    a. Susan *watched *him *yesterday *during *the open rehearsals *of the *school play.*

    b. Carl *watched *him *yesterday *during *the open rehearsals *of the *school play.*

    c. They *watched *him *yesterday *during *the open rehearsals *of the *school play.*

The explanation advanced is that the set of available antecedents is not simply the one that includes gender-matching entities – as in Badecker and Straub's hypothesis. She argues that two factors are at play: first, readers have to make the inference that the pronoun refers (deictically) to an unmentioned character – which arguably does not satisfy the pragmatic condition on a felicitous use of the pronoun; in this search for a referent, reading times are influenced by the interference of a gender-matching local antecedent. In fact, longer times occurred when the local antecedent satisfied the phi-feature presuppositions on the pronoun as for gender: this, according to the author, made the search for a "structurally licit" antecedent longer.

Similar findings have also been obtained using eye-tracking to detect adults' preferential look during sentence processing. For example, Runner et al. (2003, 2004) tested "picture of N" sentences containing pronouns and reflexives. Subjects had to manipulate three male dolls touching a screen in which the pictures of the aforementioned characters were displayed. The test sentences contained instructions such as:

(14) Pick up Joe. Have Joe touch Ken's picture of him/himself.

Figure 1: Eye-tracking in Runner et al. (2003)

Responses were consistently target-like in the pronoun condition. More than 20% "errors" occurred in the reflexive condition, consisting in interpreting *himself* as referring to *Joe*. This is not surprising under Reinhart and Reuland's (1993) treatment of "picture of N" phrases because, under their account, logophoric anaphors in these contexts are not ruled out by Condition A. Focussing on subjects' looks during the pronoun condition, it is very interesting to note that, before 1000 ms, subjects who eventually gave the target-like response took into account both the non-local and the local antecedent at the onset of sentence processing. In actual fact, briefly after 1000 ms, they looked more often at the local antecedent, before finally resolving the pronoun's reference "pragmatically".
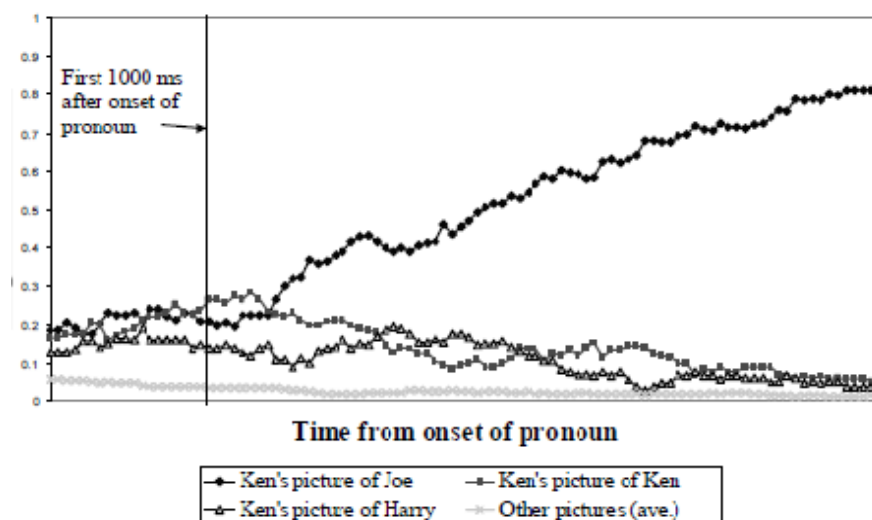
Figure 2: Proportion of looks to the antecedents from the onset of the pronoun (Runner et al. 2003)

In sum, these experiments appear to confirm the hypothesis that, for full pronouns, reference resolution via local coreference is temporarily entertained by the adult parser. If assignment of a non-local antecedent to a free variable is a pragmatic process, not constrained by (the canonical) Principle B, it might arguably work as an inferential process, whose temporal course is detectable in adults' processing. Conroy et al. (2009) point out that, even though children's errors occur in off-line tasks whereas the adults' "deviant" resolutions are only visible in real time and only temporarily, the two types of performance might be related: "a recurring finding in studies of children's language processing is that children show greater difficulty than adults in inhibiting and recovering from incorrect initial interpretations of sentences (e.g., Hamburger and Crain 1984, Trueswell et al. 1999). Therefore, what appears in adults as transient effects of ungrammatical antecedents might appear in children as ungrammatical interpretations that persist" (p.479). After all, the same patterns may be found in studies which looked at the production of scalar implicatures in children and adults and, given the processing costs involved, they might simply indicate how adults are more "ready" than children to carry out such pragmatic processes.

We do not know of adult processing studies which have looked at on-line clitic resolution. According to the present analysis, the derivation of the clitic out of the vP-phase would structurally prohibit local coreference at any stage of sentence processing. Since "off-line" acquisition studies consistently report the absence of PIP in simple sentences, there is good reason to believe that adults as well would never consider a local antecedent in real-time processing for clitic resolution. However, the most important piece of evidence would come from on-line processing of ECM predicates. In a bottom-up model of sentence processing, this hypothesis predicts that temporary selection of a sentence-internal antecedent for a clitic should be possible, when the clitic is still free at the end of the embedded vP phase. We leave this question open for future research.

7. THE REFERENCE HYPOTHESIS AND THE ROLE OF THE UTTERANCE CONTEXT

7.1 BINDING VS. COREFERENCE IN AMBIGUOUS SENTENCES

If children's local coreference interpretations are pragmatically driven, rather than the result of a processing breakdown, we expect the experimental paradigm to play a very important role in children's responses. One of the tenets of Thornton and Wexler's (1999) pragmatic hypothesis is that children have a generalised preference for a coreference construal. We have justified this assumption in Chapter 2 §5, observing that a VP-internal

pronoun can only be bound if the subject undergoes QR, the movement operation which accomplishes Predicate Abstraction in logical syntax. Object clitic movement, which gives rise to a Predicate Abstraction configuration at the vP level, in contrast, is narrow-syntactically driven; in fact, we have pointed out that not only do adult-like Principle B interpretations come at no cost for the child (as witnessed by the Clitic Exemption Effect) but, most importantly, that Principle B does not constrain the interpretation of these pronouns and full pronouns in the same way: it is not QR of the antecedent which turns the clitic into a bound variable, but movement of the clitic itself. Since coreference is an option for full pronouns, covaluation with a local antecedent in children's interpretations must not be obtained via a bound variable construal, as the latter involves a more complex configuration. Elbourne (2005:338) admits that this hypothesis, which he calls the Reference Hypothesis, is reasonable: "it is arguable that a bound reading of the pronoun is more complex than a referential one. A referential reading has the pronoun's index mapped to something in an assignment. The bound reading has this mapping; and, in addition, the thing to which the index is mapped (a variable in this case) is bound. So there is an extra-structural relationship".

A corollary of this hypothesis is that, when pronouns are not subject to Principle B – as when they are inside PPs or in spec position (eg. *his*) – the parser's preference for coreference rather than binding should be visible, at least if no contextual information supports the binding construal. Conroy et al's (2009) Experiment 2 tested something similar, and yielded mixed results. 16 children aged 4 and 5 and 16 adult controls were tested on two types of potentially ambiguous sentences containing a possessive. Conditions with referential and quantified antecedents were compared:

(15) Grumpy painted his costume
(16) Every dwarf painted his costume

The aim of the test was to see whether children can interpret pronouns via binding (in the licit conditions). This question was positively answered: in fact, children consistently accepted an anaphoric interpretation both in the referential (80%) and in the quantificational (73%) conditions. Whilst, in the referential condition (as in 15), covaluation may be obtained via coreference, in the quantificational condition (16) it can only be accomplished via binding. However, adults interpreted the pronoun as covalued with the subject more in the referential (83%) than in the quantificational (67%) condition, and such difference was statistically significant. It should be noted that the

experimental stories were designed such that the anaphoric interpretation elicited a yes-response, whereas the deictic interpretation (equally available and plausible) elicited a no-response. In other words, neither response was infelicitous or ungrammatical, but only the anaphoric interpretation was true in the yes-condition. This factor should not be underestimated and, in fact, the authors admit that children's consistent preference for a yes-response may have been biased by the well-known Principle of Charity (Crain and Thornton 1998), that is, children's tendency to give positive answers in tasks that elicit yes/no responses. More reliable should be the finding that adults, in the quantified condition, provided significantly less anaphoric responses than in the referential condition – unequivocally obtained via binding.

In sum, the aim of this experiment was to provide evidence for children's ability to interpret pronouns as bound variables – even in optional contexts. From the viewpoint of the present account, we would have expected to see a preference for deictic responses in the quantificational contexts (i.e. absence of QR) but not an inability to perform QR given that such interpretation was supported by the context. Since the binding construal resulted in interpreting the sentences as true, this factor may have favoured binding over coreference for independent methodological reasons.

7.2 PRONOUN INTERPRETATION UNDER VP-ELLIPSIS

If unbound pronouns are interpreted pragmatically, it is not the case that children necessarily have a preference for *local* coreference: rather, they might simply choose to covalue the pronoun with the antecedent which the context indicates as salient – either in the local or non-local domain. According to Elbourne (2005) these two factors, namely, children's preference for referential interpretations on the one hand, and sensitivity to salience, on the other, should be kept clearly separated. It is obvious that, in experimental stories with quantified antecedents in which salience would point to a bound reading, the Reference and the Salience hypothesis make different predictions in quantificational contexts: the former predicts rejection of the bound reading because, despite its salience, it is barred by Principle B (and preference for coreference); the latter, however, predicts that children would respond according to the salience of the quantified antecedent and allow a binding representation that violates Principle B. Elbourne's (2005) point is that the Quantificational Asymmetry is an experimental artefact, because experiments which yielded adult-like performance in quantified contexts masked lack of underlying grammatical knowledge making the deictic interpretation simply more salient.

Elbourne (2005) discusses several test stories in Thornton and Wexler (1999) in which the strength of the Referential hypothesis seems unequivocal. These experiments clearly showed that children consistently interpreted pronouns via coreference under ellipsis under the appropriate truth-conditions. In order to understand the implications of Thornton and Wexler's (1999) findings, let us start with a brief overview of how the interpretation of pronouns under VP ellipsis works. One of the sentences tested by Thornton and Wexler (1999:149) was:

(17) The Incredible Hulk brushed his hair and every troll did too.

Under the LF Identity Condition, the elided VP must be a copy of the VP in the first conjunct (Sag 1976, Williams 1977). The LF of this structure, therefore, looks like:

(18) [The Incredible Hulk T PAST [$_{VP}$ brush his hair]] and [every troll T did [$_{VP}$ brush his hair] too].

But how does the Identity Condition constrain the interpretation of the anaphor inside the VP – and its elided copy? It poses one requirement: namely, if the pronoun in the first conjunct is a free variable x, it must refer to the same individual x in the second conjunct (strict reading); if it is bound in the first conjunct, it must be interpreted as a bound variable also in the second conjunct (sloppy reading). Note that, also in the case of VP ellipsis, the identity condition ensures that the prohibition against free and bound occurrences of the same index in an LF (i.e. for us, the VP complement of the vP phase) is respected. Under the strict reading, there is no need to QR the subject, as the pronoun is assigned an index from the context – which must be identical to the index in the elided VP copy. However, under the sloppy reading, the subjects in both conjuncts must be QR'd and coindexed with their traces.

(19) Strict reading:

(20) Sloppy reading:

```
        Hulk                              Every troll
              1    TP                              1    TP
                 t₁    T'                             t₁    T'
                    PAST    VP                           did    VP
                          V    DP                             V    DP
                       brush  his₁ hair                    brush  his₁ hair
```
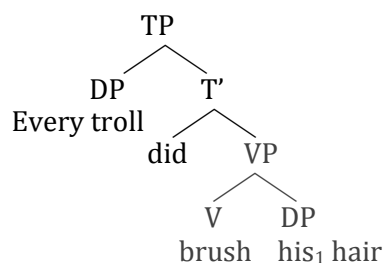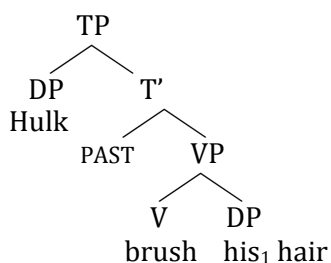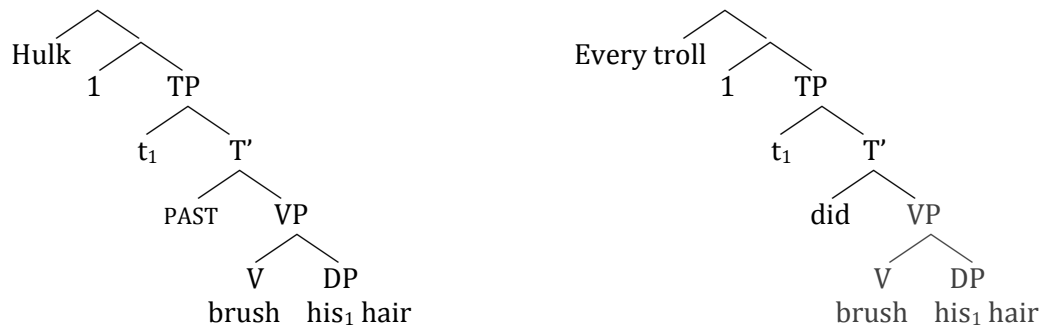
Children's interpretations under VP ellipsis, therefore, can tell us whether they interpret the pronoun as referential or bound in the first conjunct. Under the strict reading, (17) is true iff the Incredible Hulk brushed x's hair and every troll brushed x's hair too – with x a free variable whose reference is contributed by the utterance contexts (i.e. the rock star). In the story, Hulk brushed the rock star's hair but the trolls didn't, in fact they brushed their own hair. Therefore, the sentence is false in the referential reading. Children, quite strikingly, unanimously judged it false (97%). Here, differently from Conroy et al.'s experiment, only the referential interpretation was true in the context, therefore children's answers do not indicate their preferred interpretation but, rather, the one that they judged grammatical. The fact that they consistently gave the target-like no-response, regardless of the Principle of Charity, is undisputable evidence that they do not have difficulties interpreting pronouns via (extra-sentential) coreference.

However, Elbourne (2005) argues that a general preference for coreference alone cannot explain children's responses, because in the following story (Thornton and Wexler 1999:170), children gave a (correct) bound interpretation 50% of the time:

(21) Every Cabbage Patch boy said Superman likes him.

In this story, the context made the sentence true if the pronoun was construed as bound by the quantifier, false if the pronoun was interpreted as referential (referring to a third character, Pokey). Both interpretations were equally plausible. According to Elbourne (2005) this example shows that salience has more explanatory power than coreference: since the QP and the deictic referent were equally salient, children showed no preference for one reading over another. Again, our objection is that, given the nature of the TVJT and the bias towards Charity, yes- and no-responses under ambiguous truth-conditions should never be attributed equal weight.

In sum, there seems to be little controversy that, under the right contextual conditions, children resolve the pronoun's interpretation via coreference. When the task supports unambiguously the referential interpretation as true, they never take into consideration a binding interpretation. Ambiguous test stories give us more controversial results. Elbourne's objection that children's answers are guided by contextual information, such as the salience and plausibility of the chosen antecedent, is reasonable: in fact, figures differ considerably when the context indicates the bound reading as equally plausible. Still, we should not draw definite conclusions from ambiguous sentences using this kind of methodology, because yes and no answers are never equal in the TVJT. The fact that children accept a bound reading when a yes answer makes the sentence true is not as a meaningful result as the fact that children interpret the pronoun via coreference when a no answer makes the sentence true. In a context that supports both the binding and the referential interpretation – i.e. those in which QR is optional – the present hypothesis predicts a preference for a coreference construal of the pronoun. The studies reviewed do not provide much evidence in favour of this prediction: in Conroy et al. (2009) children consistently accepted a binding interpretation; in the example (19) from Thornton and Wexler, they accepted both readings at the same rate. However, in these stories the binding reading was supported by the context and also satisfied the Principle of Charity: it is legitimate to argue that, as long as we cannot compare these results with stories in which the yes-response is true in a referential reading, the referential hypothesis is not weakened. To test the optionality of QR, more appropriate would be to adopt a methodology that really allows the child to entertain her preferred interpretation, such as the act-out task.

8. METHODOLOGICAL ARTEFACTS

Finally, our hypothesis claims that local coreference, just like external coreference, accomplishes reference resolution of the pronoun via assignment of the index on a salient referential DP contributed by the utterance context. In the case of a local coreference interpretation, it assigns the pronoun and the subject the same index; in the case of deictic/extrasentential coreference, the index is recovered from the utterance context – which, in all the experimental paradigms, is the preceding linguistic context. In other words, once it is excluded that the child's anaphoric interpretation is not the result of a binding configuration, a major factor in explaining the choice of a local or non-local/deictic antecedent is the context. If inferring that a non-bound pronoun must not refer inside the sentence is a pragmatic process, it must be by definition context-dependent. Children, more than adults, need the support of the context to make this inference. It might be argued that adults have internalised this implicature so much it seems automatic. The

"pragmatic" adult speaker almost automatically thinks that the meaning of "some" is "not all" – although it is not the semantic meaning, but the result of a pragmatic enrichment. Likewise, the adult does not need much contextual information to know that the pronoun must refer outside the sentence. The inference is generated almost automatically that:

(22) If the pronoun referred to the referential DP inside the sentence, it would be underinformative compared to an anaphor → therefore, it must refer outside the sentence.

But, as we have seen, if the context provides no available antecedents outside the sentence and, conversely, provides a potential candidate inside the sentence, it takes longer to draw the inference in (22). It takes longer simply because, being a pragmatic inference, it must be supported by the context.

Let us assume, therefore, that the child is less concerned than the adult with the underinformativeness of local coreference and, therefore, differently from the adult, is more reluctant to produce the implicature when the context fails to provide a plausible deictic referent and, at the same time, provides a plausible and salient antecedent inside the local domain. If so, the effect of saliency on the choice of the antecedent is not a surprise.

Conroy et al. (2009) capitalise on this argument to claim that PIP is an experimental artefact. Following Elbourne (2005) they raise the objection that the most influential studies on PIP – since Chien and Wexler (1990) – fail to meet important methodological desiderata. First, the availability of the antecedent: if the deictic antecedent is not available as a potential antecedent, but the local antecedent is, "the child might be "coerced " into choosing the anaphoric antecedent because that is the only discourse-accessible antecedent" (p.455). Secondly, the plausibility of the event in the story. In order to score a target-like deictic answer, the child has to reject a sentence which describes the event in question. However, if the event in question has not even been taken into consideration in the deictic reading, it is not "disputable", in their words. These methodological remarks are legitimate, and in fact they showed that, when all these pragmatic criteria are met, PIP almost disappears (11% interpretation in the referential condition in their experiment 1).

The crucial question to ask is: why does the experimental paradigm (in terms of saliency of a deictic antecedent and plausibility) matter? It is clear that the evidence provided by these studies cannot be the end of the story. It is true that, under the adequate discourse conditions, children can very easily recruit the appropriate sentence-external antecedent. But it is also true that, when the context renders more salient the local-coreference interpretation, children choose it (and adults don't). Finally, the methodological concerns

of Conroy et al. (2009) have little to say about why, using exactly the same experimental paradigms, children acquiring Romance languages do not allow local coreference (in simple sentences). Even less do they say about the syntactic distribution of the phenomenon in Romance languages. It is clear that there is a much more complex scenario behind the phenomenon, which calls into question the form of the pronoun, its narrow-syntactic derivation, the point at which evaluation of argument structure takes place in different complex predicates: without a fine-grained theory of how binding is accomplished during the derivation, we cannot have any coherent account of coreference. A variable is free when it is not bound, so the conditions on coreference are crucially parasitic on the conditions on binding. That said, it is true that saliency plays a crucial role in the huge experimental discrepancies which have been found regarding children's coreferential interpretations (local/anaphoric vs. non-local/deictic). But an extra-explanation is required to have a precise account of how the child and the adult's pragmatic knowledge differ. Do children differ in the knowledge of the pragmatic contexts that support adult local coreference (Thornton and Wexler 1999)? We have claimed that this is unlikely: firstly, because creating an interpretation not supported by the context would imply immaturity of pragmatic abilities (e.g. recognising speakers' communicative intentions) that should be already in place at this age (Scholl and Leslie 1999); secondly, because experimental evidence shows that adult "exceptional coreference" might in fact involve more complex computations, given that children do not comprehend these contexts in a target-like fashion until at least age 7 (Verbuk and Roeper 2011). The second question we asked, therefore, was: do the child and the adult parsers differ (Grodzinsky and Reinhart 1993)? We discarded this hypothesis on the basis of some adult processing studies of on-line pronoun resolution which showed that not only is the local antecedent temporarily as "active" as the non-local one (at 1000 ms in eye-tracking studies by Runner et al.) but also that, in self-paced reading tasks, processing times are longer when a local antecedent is a (morphologically) appropriate antecedent for the pronoun, especially when the context fails to provide an external referent. We have therefore argued that the child does not have a qualitatively different computational system but, rather, is less "ready" than the adult to produce a pragmatic implicature when she hears a pronoun in a context that does not support a deictic reading. The implicature in question has to do with the acquisition of the distributional properties of reflexives and pronouns (first, the child has to know that reflexives are obligatorily locally-dependent, in order to know that pronouns are weak terms in the scale and therefore underinformative); however, this inference (as any pragmatic process) is situated in the utterance context, it is not an intrinsic semantic property of the pronoun and it is outside narrow-syntax. This is why, before drawing the inference in question, we really need a context which supports it,

providing an accessible deictic referent. Otherwise, we are caught in the middle: the cooperative principle – specifically, the maxim of quantity – tells us to expect the speaker to use a pronoun only if it does not refer to the local antecedent; on the other hand, the utterance context tells us to search for a referent that satisfies the assignment function in the context. When the only available or salient or plausible antecedent is in the local domain, what does the system do? The adult faces a processing cost in this situation: searching the context, she first selects the salient underinformative antecedent at the onset of sentence processing; then, based on the scale, draws the inference that the speaker is abiding the maxim of quantity therefore the pronoun must refer to a non-mentioned or non-salient deictic antecedent. The child, on the other hand, may simply give precedence to the context and thus avoid producing the implicature in question if not supported by it.

CHAPTER 9

FINAL REMARKS

1. LOCALITY, COREFERENCE AND BOUND ANAPHORA

This study intended to make a contribution to the experimental program which, since at least Wexler and Chien (1985), sought to gather evidence for the modular division of labour between syntax and pragmatics from the acquisition data. The first result which this line of acquisition research accomplished was the evidence that children have innate knowledge of the structural – i.e. syntactic – conditions on variable binding, compatibly with Reinhart's (1983) theory of coreference and bound anaphora. The distinction between coreference and bound anaphora is empirically testable and has found consistent support. The experimental program of Chien and Wexler (1988), Grodzinsky and Reinhart (1989) and Grodzinsky, Wexler, Chien and Marowitz (1989) aimed to demonstrate that, if the two strategies are handled by separate modules – pragmatics and syntax respectively – acquisition data could bring to light a difference between structures falling under syntactic and under pragmatic principles. Thus Condition B of binding was claimed to be innate, under a restrictive definition which excluded from its domain all unbound pronouns:

> "If this condition is stated such that its scope is restricted to pronouns having a bound-variable interpretation, then, too, it is innate. The rest of the pronouns fall under Rule I – a special case of scalar implicature (Reinhart 1988; Levinson 1985). If this view is correct, then one would expect to find that children's performance on structures that fall under the binding conditions would be good, whereas their performance on cases that are governed by the Scalar Implicature would be poor" (Grodzinsky, Wexler, Reinhart 1990:6).

Indeed, Reinhart's (1983) "pragmatic" version of Rule I could provide an explanation for the following phenomena:

a. Children's PIP with full pronouns with referential antecedents;

    b.   Children's good performance with full pronouns with quantified antecedents;

    c.   Children's good performance with clitic pronouns in simple sentences.

As discussed in Chapter 8, Thornton and Wexler's (1999) pragmatic hypothesis abandoned the idea that a computation evaluating local coreference against a bound interpretation is involved in children's poor performance and suggested instead that children's local coreference never competes with binding – as it creates a different representation altogether. It has not been until recently that the pragmatic scale in question – <pronoun, reflexive> – has been tested experimentally in acquisition perspective by Verbuk and Roeper (2010). Under a neo-gricean approach, the pragmatic knowledge required to master the scalar implicature is "encapsulated" between the grammatical knowledge of the local domain, where the scale is relevant, and the cognitive capacity to attribute mental states and recognising communicative intentions – the locus of children's problems in Thornton and Wexler's (1999) account. Verbuk and Roeper's (2010) approach makes the correct predictions not only for the phenomena above but also for the following, more recently revealed by acquisition research:

    d.   Children's PIP with clitic pronouns in ECM constructions;

    e.   Children's extra-strong PIP with full pronouns in ECM constructions;

    f.   Children's PIP with full pronouns in exceptional coreference contexts.

Both the special status of ECM and the late mastery of exceptional coreference recently discovered by Verbuk and Roeper (2010) point to the conclusion that the pragmatic knowledge involved in the interpretation of a pronoun rests on the syntactic notion of binding domain. Our goal was to seek a structural explanation for the presence of PIP in the interpretation of exceptional case marked clitics, thus we tested the hypothesis that different derivations in Romance complex predicates can lead to different semantic effects; if the derivations which give rise to PIP are those in which the lowest copy of the clitic is not a bound variable, the pragmatic nature of PIP is cross-linguistically supported, because the phenomenon appears to concern only the interpretations of pronouns which are handled by the pragmatic component. In fact, our study provided evidence that:

    g.   Italian children show PIP in two types of complex predicates: ECM predicates with perception verbs and causative Faire-Par predicates.

The latter structure had never been shown to be affected by PIP before. We showed that, while clitic pronouns are inherently incompatible with Heim's (1998) definition of *guises*, the different derivation which ECM complex predicates involve can result in unbound interpretation and thus introduce the pragmatic context into the equation. Thus we put

the traditional claim that clitics *are* bound variables to examination and we offered a principled explanation for the reasons why, and in what contexts, clitics are obligatorily subject to Condition B. The results our study confirmed that children admit a degree of *ambiguity* in ECM clitic pronouns allowing covaluation with the matrix subject around 40% of the cases. They did so in a task which did not involve picture verification – i.e. an a priori reflexive semantic representation – and did not impose a forced choice. Children *construed* an anaphoric semantic representation from the sentence they heard. We observed that the importance of such evidence is twofold: firstly, it suggests that the phenomenon is – at a universal level – a stage of the child's pragmatic development; secondly, it urges us to reconsider the syntactic definition of local domain hence of Condition B effects in syntax and pragmatics, because it suggests that binding and coreference effects are a by-product of the clitic's narrow-syntactic derivation. It has been stressed in the literature and throughout these pages that object clitic interpretation problems in the early grammar cannot be accommodated by any theory under a standard definition of Principle B. Conceptually, the Standard Binding Theory assumes a "primitive" notion of binding domain which does not exhaustively explain: (i) *what* counts as a binding domain; (ii) *why* it counts as a binding domain. We observed with Hicks (2009) that the phasal model of the syntactic derivations sketched in Chomsky (2001 ff.) by its own nature can only admit the phase as a conceptually motivated binding domain, although Chomsky's binding theory itself has not so far received a systematic revision in latest work. Our data support at least the hypothesis that the vP phase is a local domain and, for clitic pronouns, the level at which clitic movement has a semantic outcome on binding relations. The clitic exemption effect in simple transitive sentences and restructuring/control predicates follows directly from this derivational model with no need to postulate a lexical factor – i.e. clitics inability to refer deictically – as a reason why clitics *are* bound variables. If object cliticization in the phasal, non-defective transitive vP is translated at the conceptual interface as a two-place predicate containing a bound variable in the internal argument position, coreference with the trace of the external argument is not a possible option. At the same time, our data indicate that different derivations may result in different binding effects. Children do discriminate between different types of complex predicates showing that interpretation problems are confined to vPs where the trace of the clitic in theta position is not bound. This raises the question whether binding Condition B ultimately applies to semantic predicates, as originally suggested by Reinhart and Reuland (1993). Our position is distant from the Reflexivity model because we maintain that there cannot be any representational notion of Condition B which satisfies minimalist ideals: binding conditions, as conditions on the well-formedness of reflexive predicates, were in effect still conceived as primitive notions in

that model; we believe, rather, that the syntactic properties of the derivations which give rise to Romance PIP – and of those which do not – constitute important evidence that Condition B is a narrow-syntactic by-product of the clitic derivation and not a condition imposed by the interfaces.

We identified a crucial link between the assignment of an EPP feature to v and the consequences for the interpretation of the argument position left open by the clitic; assignment of the "new outcome" EPP is an internal computation which cannot be imposed by a system external to the narrow-syntactic component and follows from Chomsky's definition of surface semantic effects. Given that the children in our study acted out the sentences demonstrating no interpretation problems with the structures per se, our conclusion is that children do know the EPP. Thus the present comprehension data in object cliticization contexts go in the direction surmised by Wexler (2004) with regard to the EPP-related phenomena, such as Object Shift and A' movement, i.e. that children have no problem with the comprehension of structures which involve a "new outcome".

The presence of PIP in Italian fair-par constructions adds important syntactic evidence to the puzzle. If *fare* formed a complex restructuring head with the infinitival, the clitic would be obligatorily interpreted as disjoint from the matrix subject, as in simple or restructuring sentences. If the children in our study interpreted the trace of the clitic in a different phase from the one headed by *fare*, the results follow from the same idea of vP phases as local domains. Covaluation between the clitic and a subject, therefore, can obtain given that the latter is merged in a higher domain than the one containing the theta copy of the pronoun. We have also observed, however, that PIP effects in Italian can be explained only if causative constructions in this language do not form a complex verbal head (containing *fare* and the infinitival). Other syntactic possibilities cannot be excluded, in fact much cross-linguistic research is still needed to investigate the relation between early anaphoric interpretations and locality in different causative constructions. A cross-linguistic study of children's pronoun interpretations in complex predicates under a phase model of binding relations can open important consideration for linguistic theory and syntactic variation.

2. IMPLICATIONS FOR THE PHASE THEORY

A major conclusion of this study is that children's problems in reference assignment to a pronoun are syntactically constrained. A theory of binding relations must be compatible with the cross-linguistic patterns in the acquisition data and, in turn, a theory of children's anaphoric interpretations must be compatible with the innateness of UG knowledge. The syntactic factor behind the absence of PIP in languages with clitic pronouns – in terms of

the different distributional properties of this class of pronouns – was early recognised (McKee 1992), but undermined by the fact that such analysis did not assume at the time the vP-internal subject hypothesis (Koopman and Sportiche 1991). Furthermore, a representational theory of binding relations which constrains the distribution of anaphors and pronouns within a separate module of the grammar cannot account for the behaviour of clitic pronouns with respect to binding and coreference. We have observed that, despite the general consensus that "clitics cannot be interpreted via coreference" no principled explanation has been yet convincingly proposed for why this is so. At a morphosyntactic level, feature deficiency has often been translated into the claim that clitics need to be bound either in syntax or in the discourse. The correlation between morphosyntactic richness and pragmatic use of a pronoun (the possibility to refer deictically, to introduce *guises* and so on) is hardly deniable, but it cannot explain why the context option crucially reappears in certain syntactic environments. Looking at the derivation of a pronoun offers a more principled viewpoint to analyse the distribution of PIP for classes of pronouns. We have supported Baauw's (1999) observation that a syntactic property must be at stake beyond feature specification; clitics and weak pronoun share much lexical underspecification, but in narrow syntax only the former undergo head movement. In Chapter 4 §5.4 we have noted with Roberts (2010) that the narrow syntactic triggers of cliticization and object shift are of a different nature, despite the similar pragmatic behaviour. Clitics have the same feature specification in simple sentences and in complex predicates, but the probes encountered in the course of the derivation can have a different status – i.e. defective or complete. We have concluded that, when a bound variable configuration does not arise in the clitic's merge position, coreference is an option; the data do not only confirm this prediction but are also compatible with the hypothesis that the semantic output is strictly derivational and cannot be determined a priori based on the clitic's feature specification.

Weak and unstressed pronouns are an area which still deserves much attention in the literature on children's PIP. As we have seen, Dutch weak pronouns in Baauw's (1999) experiment were not exempted from PIP. However, stress does appear to play a role, as a preliminary study by Sudo, Hartman and Wexler (forthcoming) in English indicates that the use of unstressed pronouns constrains coreference at a large extent. Sudo et al. reviewed Conroy et al.'s (2009) methodology finding that the absence of PIP – which the authors attributed to the pragmatic felicity of their task – was due to the fact that the pronouns were largely presented to the child in unstressed form in the experimental stimuli. If so, the improved performance becomes less surprising: in fact, replicating the same experimental design as in Conroy et al.'s (2009), Sudo et al. found a strong effect of

stress, with non-reduced pronouns yielding higher rates of anaphoric interpretations (37.5%) than reduced pronouns (7.5%). If we look at the English exemption effect, the pattern goes in the direction of other languages without generalised OS, in which weak pronouns are exempt from PIP (Norwegian, Hestvik and Philip 1999), and in the opposite direction of languages with the OS parameter (Dutch, Baauw 1999). Both English (Nevis et al. 1994; Spencer 1991) and Norwegian pronouns (Hestvik and Philip 1997) have been analysed as clitics. It is rather plausible, as Roberts (2010) suggests, that clitic movement differs from OS in involving incorporation. Roberts (2010) points out that in a language like Italian lacking OS, the only categories which obligatorily move are heads, which m-merge with the verb in v* before moving through the outer spec,vP; shifted object move to spec,vP as XPs and do not incorporate. The consequences of these types of movement for binding relations inside the vP would deserve much investigation outside the scope of this work; if such analysis is correct, however, the exemption effect of unstressed/weak pronouns in languages to which the OS parameter does not apply is a good indication that these pronouns are analysed as clitics.

Such results are interesting in light of Hicks' (2009) proposal that PF phases are Condition B domains. If this is the case, cross-linguistic variation in the distribution of pronouns and anaphors is related to language-specific properties; in fact, "PF phases can have no relevance at LF: they can only play a part if Condition B applies during narrow-syntax or at PF" (Hicks 2009: 191). As we have discussed in Chapter 4 §3, the "heavier" the phonological status of a constituent the higher the acceptability of coreference: Hicks (2009) therefore suggested that "for many speakers, a subject-less picture-DP containing a pronoun which fails to bear stress does not constitute a PF-phase" (Hicks 2009:184) – as the contrast repeated in (1) shows:

(1) a. *John$_i$ read books about 'im$_i$ (Hicks 2009:188)
    b. John$_i$ read books about HIM$_i$

In such case, the Condition B effect results from the pronoun being interpreted inside the same PF phase containing the subject *John*- i.e. the vP. Yet the phonological richness itself plays a role within a specified definition of local domain, otherwise it would remain unexplained why the contrast goes in the opposite direction in adjunct PPs, which are local domains by definition:

(2) a. John$_i$ put a hat next to 'im$_i$
    b. ??John$_i$ put a hat next to HIM$_i$

Not only does this analysis capture the same facts as a *guise* analysis – as stress is necessary to indicate a different guise in (1b) – but is superior, because it derives the role of stress in determining coreference possibilities directly from the identity of PF phases and binding domains, which explains the marginality of stress in (2b). How "local" the subject is for the pronoun appears to be determined both by the phonological weight of the pronoun (its ability to be interpreted as a PF phase) and the phasal status of the domain containing the pronoun. If the pronoun is already in a separate binding domain – e.g. a subcategorised PP – stress rather indicates that coreference is "exceptional" (e.g. *John saw a snake near HIM, not near his mother*, Hicks 2009:189), because in the unstressed form coreference is the unmarked interpretation. Conversely, if the pronoun is selected by the verb, either as a direct object or a non-subcategorised PP, the local domain is the vP, where the subject also belongs:

(3) a. *Mama Bear$_i$ touched her$_i$
    b. *Mama Bear$_i$ pointed at her$_i$

Children's difficulties with structures like (3a,b) have been shown to be even more severe when these sentences are uttered in a context that forces exceptional coreference (Verbuk and Roeper 2010); any account denying the pragmatic nature of the computation involved in interpreting *her* as disjoint from *Mama Bear* in a "Principle B context" and coreferring with it in an exceptional context – under the same locality – cannot explain the asymmetry. This is very strong evidence that the pragmatic inference in question is entangled within the grammatical knowledge of the local domain. Under different locality conditions, "exceptional" coreference ceases to be felt as exceptional because the (suppressed) implicature generated by the use of the pronoun is relevant only to a domain where the scale <pronoun, reflexive> is operative. Such idea has striking consequences for a theoretical understanding of the contexts in which the complementarity of reflexives and pronouns does not hold and its predictions for language acquisition are very intriguing. If children consistently prefer coreferential readings in ECM sentences, they should even more do so in contrastive contexts which support such reading; since the scale is only relevant to a local domain, the complex pragmatic inference required to suppress the implicature would not be required for pronouns outside the phasal domain of the matrix antecedent.

Logophoric contexts are another domain in which the scale is different, since the reflexive is interpreted accessing the context outside the local domain. We believe that new important insights on coreference can be revealed from an investigation of the role of the pragmatic context in different syntactic domains.

3. LEARNING PRINCIPLE B

A PF-phase analysis of binding domains does not only imply that binding is an area subject to ample cross-linguistic variation; it also captures the fact that speakers' perception of some syntactic domains as binding domains may not be uniform, since PF phases – when smaller than vP – are not univocally defined; finally, they also vary consistently in the input which the child receives. Hicks (2009) argues that the hypothesis that binding effects are narrow-syntactic, hence language-specific, receives confirmation from the acquisition data: "the evidence indicates that Condition B has to be learned: it is well-known, for example, that even at a nearly adult-like stage of syntactic development, children often fail to apply Condition B appropriately in certain syntactic environments" (Hicks 2009:191). According to Verbuk and Roeper (2010), the task for the child to acquire the implicature associated with the use of a pronoun is not an easy one because it requires, first, syntactic knowledge of the level at which the opposition between the terms in the scale apply: "it is not until the opposition expressed by the Horn scale is established that the child can grasp the opposition between reflexives and pronouns, and is able to compute the target disjoint reference reading in B-contexts. What triggers the construction of the <reflexive, pronoun> scales is the generalization that the locus of the contrast between pronouns and reflexives is exclusively referential dependence and not other semantic distinctions" (Verbuk and Roeper 2010:60). The English child is abundantly exposed to sentences like (2a) in which the distribution of reflexives and pronouns is not complementary, and in order to acquire the relevant scale she must know that Principle B applies to arguments and not to PPs. The acquisition literature shows that children's knowledge of the <pronoun, reflexive> opposition in a local domain is delayed, which has led us to conclude, in the first instance, that the local domain cannot be the sentence (Chomsky 1981), but has more complex properties, which make phases – and possibly, PF-phases – good candidates for the opposition. The possibility is envisaged in Verbuk and Roeper (2010) that, until knowledge of the local domain is in place, a pre-parametric state holds in the grammar, in which a pronoun can corefer anywhere: "the child treats all pronouns as potentially "free" until the binding domain is fixed. The Binding Domain remains unfixed until pronouns and reflexives exhibit no contrast other than the choice of the local domain" (Verbuk and Roeper 2010:62). Our theoretical considerations suggest that this observation might be on the right track, if binding domains are phases, hence syntactic objects.

3. PRINCIPLE B AND THE DIVISION OF LABOUR BETWEEN SYNTAX AND PRAGMATICS

The final consideration raised by this study concerned the division of labour between syntax and pragmatics in the interpretation of a pronoun. As we have underscored,

theoretical linguistics and acquisition research have worked in parallel offering each other important insights about the architecture of the linguistic subsystems. Much theoretical effort has been invested in the recent years into the search for a principled explanation for the binding conditions. Rethinking Principle B in the minimalist framework, the idea of a "constraint" on a syntactic representation has been abandoned as no longer appealing; on the one hand, reference assignment to a referentially dependent element in narrow syntax must be an unconscious, automatic process triggered by internal computations and, ideally, non-binding-specific ones; on the other hand, reference assignment outside narrow syntax appears to involve more complex computations. In the hierarchy proposed by Reuland (2001), establishing coreference in the pragmatic component is the costliest operation because "the task of establishing a referent for some pronoun on the basis of preceding context requires processes that involve conscious access to various data structures, and hence may be slowed by nonlinguistic factors" (Reuland 2001:472). An on-growing body of studies, however, indicates that the pragmatic felicity of the tasks used to test children's interpretation of non-bound pronouns is a crucial factor in determining children's performance. Even more remarkably, manipulating the role of the context does not always help the child, as witnessed by the difficulties experienced by 5 year-old children with contexts forcing exceptional coreference (Verbuk and Roeper 2010). If the computation required to decode a pronoun is the global evaluation of the cost involved in the different components of the grammar, the comparison of two LFs in Principle B and exceptional coreference contexts should not be harder in the latter case. It is apparent that recognising the role of the context in children's interpretation of coreference "is not just throwing the problems into the "pragmatic waste-basket" (Reinhart 1983:79). The pragmatic computation involved in the exclusion of a *local* coreference reading is a fundamental linguistic computation, which requires mastery of syntactic knowledge.

A pragmatic approach finds support in the syntactic distribution of children's coreference problems, given the striking universal asymmetry between exceptional case marking environments and simple domains. In languages like English, in which coreference is always an option, ECM clauses, in which at least one of the copies of the pronoun is outside the local domain of the subject, generate more intrasentential coreference readings, in actual fact yielding a preference for the matrix subject rather than a 50-50 choice; we have advanced that the syntactic factor in question is the pronoun's local domain, an observation which led us to ask whether children's exceptional case marked object may be assigned default case in a separate phase (Roeper and De Villiers 1992). In Italian, the exceptional presence of PIP in ECM and defective causative complements which the results of this study have indicated is even neater evidence for a derivational account of

the Condition B effect – and its exception – in object cliticization; we have hypothesised that children's problems reside in the pragmatic interpretation of unbound pronouns, given that Romance PIP appears to be limited to contexts in which the embedded copy of the clitic is *not* a bound variable. Children do not have problems with structures that contain bound variables because these are entirely interpreted by narrow-syntactic computations; the presence of PIP in certain complex environments is indication that the context option reappears where syntax does not constrain the interpretation of the pronoun. We therefore contend that children's task is not to measure the processing cost of alternative binding strategies – which they would fail to do, according to Avrutin (2006) and Baauw et al. (2011). For an unbound pronoun, a binding representation can only be obtained in logical syntax, with the pronoun bound by the lambda operator binding the trace of the subject. There is little controversy that this is a more complex computation – as Reuland (2001) notes, structures involving complex quantificational structures require higher processing cost even to adults speakers. For a theory which relates adults' strategies of reference assignment to a principle of global economy ranking the processing costs involved in each component – rather than to the components themselves – the choice of a local dependency established in logical syntax remains an unexplained violation of economy. In deriving the semantic effects of cliticization from the narrow-syntactic derivation of the clitic, we have also provided an account of the interpretive strategies available to children in complex predicates without postulating independent semantic properties to constrain the coreference option for clitic pronouns; under our view, children's non-adultlike pragmatic competence of the scalar implicature conveyed by an unbound pronoun holds universally.

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APPENDIX

SCENARIOS ACT OUT EXPERIMENT

1. TRAINING:

CONTEXT: Every morning, the animals of the zoo play together. They like playing hide and seek, making jokes, moving around the zoo. I will show you who they are and things that they like doing.

(1) TRAINING 1: simple transitive + object DP

TOYS:	Cavallo, Uccello
	Horse, Bird
GENDER:	Masculine
VERB:	Buttare
	Throw
SENTENCE:	Il cavallo butta l'uccellino in piscina
	The horse throws the bird in the pool

(2) TRAINING 2: simple transitive + object DP

TOYS:	Pecora, Scimmia
	Sheep, Monkey
GENDER:	feminine
VERB:	Coprire
	Cover
SENTENCE:	La pecora copre la scimmia con la coperta
	The sheep covers the monkey with the blanket

(3) TRAINING 3: simple transitive + object DP

TOYS:	Coniglio, Uccellino
	Rabbit, Bird
GENDER:	masculine

VERB: Nascondere

Hide

SENTENCE: Il coniglio nasconde l'uccellino dietro la panchina

The rabbit hides the bird behind the bench

(4) TRAINING 4: simple transitive + object DP

TOYS: Scimmia, Giraffa

Monkey, Giraffe

GENDER: Feminine

VERB: Mettere sull'albero

Put on the tree

SENTENCE: La scimmia mette la giraffa sull'albero

The monkey puts the giraffe on the tree

(5) TRAINING 5: simple transitive + object DP

TOYS: Asino, Cavallo

Donkey, Horse

GENDER: Masculine

VERB: Togliere

Move out

SENTENCE: L'asino toglie il cavallo dal recinto

The donkey moves the horse out of the enclosure

1. SESSION 1

CONTEXT 1: RESTRUCTURING AND NON-RESTRUCTURING SENTENCES

(1) R-tr1: restructuring verb + object clitic

TOYS: Zebra, Pecora

Zebra, Sheep

GENDER: Feminine

VERB: Togliere

Move out

SENTENCE: La zebra la comincia a togliere dal recinto

The zebra her.starts to move out of the bench

(2) R-tr2: restructuring verb + object clitic

TOYS: Elefante, Cavallo
Elephant, Horse

GENDER: Masculine

VERB: Coprire
Cover

SENTENCE: L'elefante lo può coprire tutto con la coperta
The elephant him.can cover all with the blanket

(3) C-ref1: non-restructuring verb + reflexive clitic

TOYS: Pecora, Scimmia
Sheep, Monkey

GENDER: Feminine

VERB: Nascondere
Hide

SENTENCE: La pecora trova il modo di nascondersi dietro la panchina
The sheep finds the way to hide herself behind the bench

(4) R-tr3: restructuring verb + object clitic

TOYS: Uccellino, Coniglio
Bird, Rabbit

GENDER: Masculine

VERB: Mettere sull'albero
Put on the tree

SENTENCE: L'uccellino lo prova a mettere sopra l'albero
The bird him.tries to put on the tree

(5) C-ref2: non-restructuring verb + reflexive clitic

TOYS: Zebra, Giraffa
Zebra, Giraffe

GENDER: Feminine

VERB: Buttare
Throw

SENTENCE: La giraffa ha intenzione di buttarsi in piscina
The giraffe intends to throw herself in the pool

(6) C-ref3: non-restructuring verb + reflexive clitic

TOYS: Scimmia, Giraffa
   Monkey, Giraffe

GENDER: Feminine

VERB: Mettere sull'albero
   Put on the tree

SENTENCE: La scimmia decide di mettersi sull'albero
   The monkey decides to put herself on the tree

(7) R-tr4: restructuring verb + object clitic

TOYS: Coniglio, Asino
   Rabbit, Donkey

GENDER: Masculine

VERB: Nascondere
   Hide

SENTENCE: Il coniglio lo va a nascondere dietro la panchina
   The rabbit him.goes to hide behind the bench

(8) C-ref4: non-restructuring verb + reflexive clitic

TOYS: Zebra, Pecora
   Zebra, Sheep

GENDER: Feminine

VERB: Coprire
   Cover

SENTENCE: La zebra ha la possibilità di coprirsi con la coperta
   The zebra has the chance to cover herself with the blanket

(9) C-ref5: non-restructuring verb + reflexive clitic

TOYS: Pecora, Giraffa
   Sheep, Giraffe

GENDER: Feminine

VERB: Togliere
   Move out

SENTENCE: La pecora ha il compito di togliersi dal recinto

The sheep has the task to put herself out of the enclosure

(10) R-tr5: restructuring verb + object clitic

TOYS:	Cavallo, Coniglio
	Horse, Rabbit
GENDER:	Masculine
VERB:	Buttare
	Throw
SENTENCE:	Il cavallo lo deve buttare in acqua
	The horse him.must throw in the water

CONTEXT 2: Look! The family have come to the zoo to see the animals. This is mum, this is dad, this is uncle and this is the little girl. The animals are very friendly and want to make friends with them.

(11) FP-ref1: fair-par + reflexive clitic

TOYS:	Mamma, bimba, scimmia
	Mum, girl, monkey
GENDER:	Feminine
VERB:	Abbracciare
	Hug
SENTENCE:	La mamma si fa abbracciare dalla scimmia
	Mum has herself hugged by the monkey

(12) FP-tr1: fair-par + object clitic

TOYS:	Papà, Zio, Scimmia
	Dad, Uncle, Monkey
GENDER:	Masculine
VERB:	Abbracciare
	Hug
SENTENCE:	Papà lo fa abbracciare dalla scimmia
	Dad has him hugged by the monkey

(13) FP-tr2: fair-par + object clitic

	Toys:	Zio, Papà, Elefante
		Uncle, Dad, Elephant
	Gender:	Masculine
	Verb:	Annusare
		Sniff
	Sentence:	Lo zio lo fa annusare dall'elefante
		Uncle has him sniffed by the elephant

(14) FP-ref2: fair-par + reflexive clitic

	Toys:	Mamma, Bimba, Elefante
		Mum, Girl, Elephant
	Gender:	Feminine
	Verb:	Annusare
		Sniff
	Sentence:	La bimba si fa annusare dall'elefante
		The girl has herself sniffed by the elephant

(15) FP-tr3: faire-par + object clitic

	Toys:	Papà, Zio, Cavallo
		Dad, Uncle, Elephant
	Gender:	Masculine
	Verb:	Portare
		Carry
	Sentence:	Papà lo fa portare sulla schiena dal cavallo
		Dad has him carried on the back by the horse

(16) FP-ref3: faire-par + reflexive clitic

	Toys:	Bimba, Mamma, Cavallo
		Girl, Mum, Horse
	Gender:	Feminine
	Verb:	Portare
		Carry
	Sentence:	La bimba si fa portare sulla schiena dal cavallo
		The girl has herself carried on the back by the horse

(17) FP-tr4: faire-par + object clitic

      TOYS: Mamma, Bimba, Uccellino
              Mum, Girl, Bird

   GENDER: Feminine

     VERB: Baciare
              Kiss

 SENTENCE: La mamma la fa baciare dall'uccellino
              Mum has her kissed by the bird

(18) FP-ref4: faire-par + reflexive clitic

      TOYS: Zio, Papà, Uccellino
              Uncle, Dad, Bird

   GENDER: Masculine

     VERB: Baciare
              Kiss

 SENTENCE: Lo zio si fa baciare dall'uccellino
              Uncle has himself kissed by the bird

(19) FP-ref5: faire-par + reflexive clitic

      TOYS: Papà, Zio, Pecora
              Dad, Uncle, Sheep

   GENDER: Masculine

     VERB: Leccare
              Lick

 SENTENCE: Papà si fa leccare dalla pecora
              Dad has himself licked by the sheep

(20) FP-tr5: faire-par + object clitic

      TOYS: Mamma, Bimba, Pecora
               Mum, Girl, Sheep

   GENDER: Feminine

     VERB: Leccare
              Lick

 SENTENCE: La mamma la fa leccare dalla pecora

Mum has her licked by the sheep

2.   SESSION 2

CONTEXT 1: RESTRUCTURING AND NON-RESTRUCTURING SENTENCES

(1) C-tr1: non-restructuring verb + object clitic

TOYS:	Coniglio, Uccellino
	Rabbit, Bird
GENDER:	Masculine
VERB:	Mettere sull'albero
	Put on the tree
SENTENCE:	Il coniglio ha la possibilità di metterlo sull'albero
	The rabbit has the possibility to put him on the tree

(2) R-ref1: restructuring verb + reflexive clitic

TOYS:	Scimmia, Pecora
	Monkey, Sheep
GENDER:	Feminine
VERB:	Nascondere
	Hide
SENTENCE:	La scimmia si comincia a nascondere dietro la panchina
	The monkey herself.starts to hide behind the bench

(3) R-ref2: restructuring verb + reflexive clitic

TOYS:	Elefante, Cavallo
	Elephant, Horse
GENDER:	Masculine
VERB:	Coprire
	Cover
SENTENCE:	L'elefante si prova a coprire con la coperta
	The elephant himself.tries to cover with the blanket

(4) C-tr2: non-restructuring verb + object clitic

TOYS:	Giraffa, Zebra

Giraffe, Zebra

GENDER: Feminine

VERB: Togliere

Move out

SENTENCE: La giraffa decide di toglierla dal recinto

The giraffe decides to move her out of the enclosure

(5) R-ref3: restructuring verb + reflexive clitic

TOYS: Pecora, Scimmia

Sheep, Monkey

GENDER: Feminine

VERB: Mettere sull'albero

Put on the tree

SENTENCE: La pecora si va a mettere sull'albero

The pecora herself.goes to put on the tree

(6) C-tr3: non-restructuring verb + object clitic

TOYS: Uccellino, Coniglio

Bird, Rabbit

GENDER: Masculine

VERB: Buttare

Throw

SENTENCE: L'uccellino ha intenzione di buttarlo in piscina

The bird intends to throw him in the pool

(7) C-tr4: non-restructuring verb + object clitic

TOYS: Zebra, Pecora

Zebra, Sheep

GENDER: Feminine

VERB: Coprire

Cover

SENTENCE: La zebra trova il modo di coprirla con la coperta

The zebra finds the way to cover her with the blanket

(8) R-ref4: restructuring verb + reflexive clitic

TOYS:	Cavallo, Elefante
	Horse, Elephant
GENDER:	Masculine
VERB:	Togliere
	Move out
SENTENCE:	Il cavallo si può togliere dal recinto
	The horse himself.can move out from the enclosure

(9) R-ref5: restructuring verb + reflexive clitic

TOYS:	Giraffa, Zebra
	Giraffe, Zebra
GENDER:	Feminine
VERB:	Buttare
	Throw
SENTENCE:	La giraffa si deve buttare in piscina
	The giraffe herself.must throw in the pool

(10) C-tr5: non-restructuring verb + object clitic

TOYS:	Uccellino, Coniglio
	Bird, Rabbit
GENDER:	Masculine
VERB:	Nascondere
	Hide
SENTENCE:	L'uccellino ha il compito di nasconderlo dietro la panchina
	The bird has the task to hide him behind the bench

CONTEXT 3: EXCEPTIONAL CASE MARKING

Look! The zookeeper is here to teach the animals new things. They have to go in pairs in front of the mirror to see if they do the exercises right.

(1) Training1: perception verb + object DP

TOYS:	Asino, Elefante
	Donkey, Elephant
SENTENCE:	L' asino vede l'elefante allo specchio

The donkey sees the elephant in the mirror

(2) Training2: perception verb + reflexive

Toys: Giraffa, Scimmia

Giraffe, Monkey

Sentence: La giraffa si vede allo specchio

The giraffe sees herself in the mirror

(3) Training3: perception verb + object DP

Toys: Pecora, Zebra

Sheep, Zebra

Sentence: La pecora guarda la zebra allo specchio

The sheep watches the zebra in the mirror

(4) Training4: perception verb + reflexive

Toys: Cavallo, Asino

Horse, Donkey

Sentence: Il cavallo si vede allo specchio

The horse sees himself in the mirror

ECM Test Sentences

(1) ECM-ref1: ECM predicate + reflexive clitic

Toys: Coniglio, Uccellino

Rabbit ,Bird

Gender: Masculine

Verb: Saltare

Jump

Sentence: Il coniglio si vede saltare in alto

The rabbit sees himself jump high

(2) ECM-tr1: ECM predicate + object clitic

Toys: Asino, Cavallo

Donkey, Horse

Gender: Masculine

VERB:	Saltare
	Jump
SENTENCE:	L'asinello lo vede saltare in alto
	The donkey sees him jump high

(3) ECM-tr2: ECM predicate + object clitic

TOYS:	Pecora, Zebra
	Sheep, Zebra
GENDER:	Feminine
VERB:	Camminare all'indietro
	Walk backwards
SENTENCE:	La pecora la vede camminare all'indietro
	The sheep sees her walk backwards

(4) ECM-ref2: ECM predicate + reflexive clitic

TOYS:	Elefante, Asino
	Elephant, Donkey
GENDER:	Masculine
VERB:	Camminare all'indietro
	Walk backwards
SENTENCE:	L'elefante si vede camminare all'indietro
	The elephant sees himself walk backwards

(5) ECM-tr3: ECM predicate + object clitic

TOYS:	Scimmia, Pecora
	Monkey, Sheep
GENDER:	Feminine
VERB:	Camminare a testa in giù
	Walk upside down
SENTENCE:	La scimmia la vede camminare a testa in giù
	The monkey sees her walk upside down

(6) ECM-ref3: ECM predicate + reflexive clitic

TOYS: Coniglio, Uccellino

Rabbit, Bird

GENDER: Masculine

VERB: Nascondere

Hide

SENTENCE: Il coniglio si vede camminare a testa in giù

The rabbit sees himself walk upside down

(7) ECM-ref4: ECM predicate + reflexive clitic

TOYS: Giraffa, Zebra

Giraffe, Zebra

GENDER: Feminine

VERB: Saltare

Jump

SENTENCE: La giraffa si vede saltare la staccionata

The giraffe sees herself jump the fence

(8) ECM-tr4: ECM predicate + object clitic

TOYS: Cavallo, Asino

Horse, Donkey

GENDER: Masculine

VERB: Saltare

Jump

SENTENCE: Il cavallo lo guarda saltare la staccionata

The horse sees him jump the fence

(9) ECM-tr5: ECM predicate + object clitic

TOYS: Elefante, Asino

Elephant, Donkey

GENDER: Masculine

VERB: Girare in tondo

Turn round

SENTENCE: L'elefante lo vede girare in tondo

The elephant sees him turn round

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(10) ECM-ref5: ECM predicate + reflexive clitic

      TOYS: Uccellino, Coniglio

              Bird, Rabbit
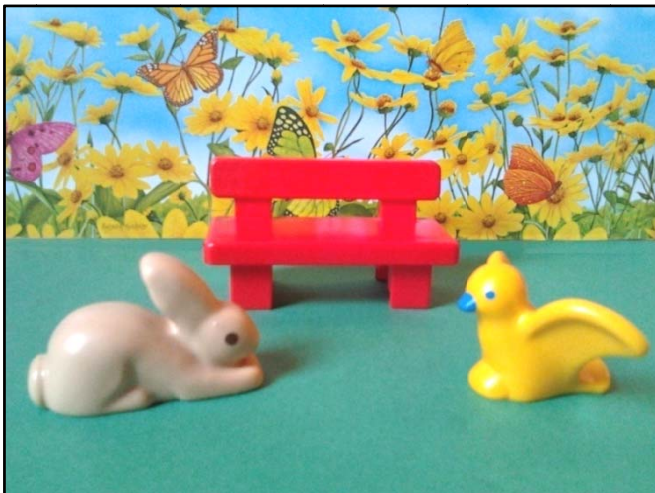
   GENDER: Masculine

     VERB: Girare in tondo

              Turn round

 SENTENCE: L'uccellino si vede girare in tondo

              The bird sees himself turn round

3.   SAMPLE PICTURES

   (1) RESTRUCTURING/NON-RESTRUCTURING CONTEXTS

     R-tr: Restructuring verb+ object clitic

     Sentence: Il coniglio lo va a nascondere dietro la panchina

         The rabbit goes to hide him behind the bench

     C-ref: non-restructuring verb + reflexive clitic

     Sentence: L'uccellino decide di nascondersi dietro la panchina

         The bird decides to hide himself behind the bench

R-ref: restructuring verb + reflexive clitic

Sentence: La pecora trova il modo di nascondersi dietro la panchina

The sheep finds the way to hide herself behind the bench

C-tr: non-restructuring verb + object clitic

Sentence: La scimmia ha intenzione di nasconderla dietro la panchina

The monkey has the intention to hide her behind the bench

(2) FP CONTEXTS

FP-tr faire-par + object clitic

Sentence: La mamma si fa abbracciare dalla scimmia

Mum has her hugged by the monkey

FP-ref: faire-par + reflexive clitic

Sentence: La mamma la fa abbracciare dalla scimmia

Mum has herself hugged by the monkey

(3) ECM CONTEXTS

ECM-tr: ECM predicate + object clitic

Sentence: Il cavallo lo vede saltare la staccionata

The horse sees him jump the fence

ECM-ref: ECM predicate + reflexive clitic

Sentence: Il cavallo si vede saltare la staccionata

The horse sees himself jump the fence