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BY VIERI SAMEK-LODOVICI

AN OPTIMALITY THEORETIC ANALYSIS
CONSTRAINTS ON SUBJECTS
ABSTRACT OF THE DISSERTATION

Constraints on Subjects.
An Optimality Theoretic Analysis

by VIERI SAMEK-LODOVICI

Dissertation Director:
Professor Jane Grimshaw

This dissertation argues for an Optimality Theoretic analysis of null subjecthood, subject inversion, agreement and structural case assignment. It does so on the basis of the hypothesis that an analysis in terms of constraints and ranked features is more elegant than an analysis in terms of generative principles, while simplifying the definition of the relevant syntactic modules.

Among the most relevant results is a unified analysis of the crosslinguistic and language-internal distribution of null and inverted subjects. An initial investigation shows that subjects are null when referring to antecedents with topic status, and inverted when focused, a result formalized through the constraints DROPC andTOPIC. The interaction between these constraints and the constraint ALIGN favors subjects in preverbal subject position, determining the distribution of null subjects both language-internally and crosslinguistically, eliminating the need for an independent pro-drop parameter (Grimshaw & Samek-Lodovici 1995).

A second result concerns expletives, whose language specific inventories are shown to follow to a high degree from the interaction between the above constraints and the constraint FULL.

A third result is the analysis of agreement, which is derived by means of three general agreement constraint-schemata.

Finally, the position of subjects and their case assignment configuration in Italian declaratives, gerundives and subjunctives are derived from the interaction between CASE and a constraint requiring case assignment under proper government. Once ranked, the same constraints derive declaratives in Arabic and infinitivals with overt subjects in English and Portuguese, with no appeal to an independent parameter of abstract case assignment.

Crucially, the analysis of crosslinguistic variation consistently turns out to be closely tied with the analysis of language-internal variation, as predicted by an Optimality Theoretic approach to Syntax.
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Table of Contents
Introduction

What follows is a brief description of the content of each chapter. A more informative presentation can be found at the beginning of each chapter.

Chapter 1 provides a brief introduction to OT and lays out the main assumptions underlying the OT model of syntax presented in this dissertation.

Chapter 2 begins examining the distribution of null subjects in a variety of languages, showing that null subjects must be licensed by a discourse antecedent with topic status. On the basis of this observation, Chapter 3 begins examining the distribution of inverted subjects in Italian, claiming that they are instances of a more general phenomenon of structural focus, requiring contrastively focused constituents to be overt. In Chapter 4, an analysis of agreement in a variety of languages is developed, observing that agreement with subjects under a passive voice configuration is never richer in agreement features than agreement with subjects under a c-command configuration. In particular, which is proposed to form evidence for the universal status of EG constraints, null subjects are examined to support the analysis of agreement in a c-command configuration. In particular, which is proposed to form evidence for the universal status of EG constraints, null subjects are examined to support the analysis of agreement in a c-command configuration.

Chapter 5 develops an OT analysis of case assignment, arguing that variation in case-assignment configuration within and across languages follows from the interaction of a constraint requiring that case marks only a single head, and other constraints on head movement. Finally, constraint reranking is shown to derive the contrast between Italian, Portuguese and English infinitivals with overt subjects.

Chapter 6 recapitulates the main results of this dissertation, discussing how they support an OT perspective on syntax, and making the relevant comparisons with the Principles and Parameters and Minimalism frameworks.
1. Basic Assumptions

This chapter lays down the assumptions underlying the OT model of syntax proposed in this dissertation. The motivation and evidence in favor of this model is discussed in detail in the following chapters.

1.1. Basics of Optimality Theory

In the OT framework (Prince and Smolensky 1993), UG is modeled as a finite set of universal constraints of grammaticality. The constraints are violable and potentially in conflict with each other. The OT model is hierarchical, with grammatical structures being ranked in a constraint hierarchy. The overall schema of the OT model follows the schema below, based on Prince and Smolensky (1993) and McCarthy and Prince (1993).

\[
\begin{align*}
\text{GEN}(\text{input}_i) &= \{\text{cand}_1, \text{cand}_2, \ldots\} \\
\text{EVAL}(\{\text{cand}_1, \text{cand}_2, \ldots\}, \text{input}_i, G_m) &\rightarrow \text{cand}_k (\ldots, \text{cand}_h, \ldots).
\end{align*}
\]

The function GEN determines the set of competing candidate structures. Each candidate is an extended projection, as defined in Grimshaw (1991). The function EVAL takes each member of the candidate set and evaluates it with respect to the input and the specific ranking of UG constraints $G_m$. EVAL returns the structure or structures which is or are optimal relative to the fed input and grammar.

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\end{align*}
\]
discussed in the following sections, constituted by a small set of principles, some dependent on the input and some not, which determine the final candidate set by eliminating from $S$ any structure that violates them.

The basic component $Gen$ is formally characterized as generating the maximal set of extended projections that can be constructed by applying the following five operations zero or more times (cf. Chomsky 1992's computational system).

(i) Project($X$): this operation takes a lexical element $X$ and projects it into an $X'$-theory-abiding projection. For example, a VP headed by the lexical head run can be built out of the verbal head run. The same operation can also be applied to a functional element: for example, a determiner could be projected into a DP projection. The maximal projection being built can have one or more XP segments at its top, providing zero or more potential adjunction sites.

(ii) Compose($X,Y$): this operation composes projections together. The result must be structure-preserving (Chomsky 1986b, Emonds 1976), i.e. heads can only be head-adjoined, and maximal projections can only be parsed as complements, specifiers or adjuncts. For example, the DP John could be parsed into the specifier position of the VP headed by like. However, it could also be parsed into the complement position of V, or in VP adjoined position. The operation Compose also composes together functional and lexical projections. For example, a TP headed by Tº could take the VP projected by run as its complement. The result is an extended verbal projection in the sense of Grimshaw (1991).

(iii) Move-$\alpha$($Y$): any constituent, whether a maximal projection or a head, can be moved from one position to another, leaving a trace behind. The result must be structure-preserving.

(iv) Case-assign: the above operations may insert structural case, such as finite Tense assigning nominative case or transitive verbs affecting case, and so on. In principle, case is assigned to the closest case-assignee, as defined in section 5.2.1.

(v) Agree: I assume that syntactic heads may contain any combination of person, number, and gender features. When present, agreement features are necessarily coindexed with a nominal constituent, and hence are discharged to the closest available case-assignee, as defined in section 5.2.1.

1.2.1. Structurally Unrealized Null Subjects

An important qualification must be added concerning the availability of phonetically null subjects. In section 2.II, below, lacking a overt structural representation of the specifier of IP, I assume that a subject in IP position will turn out to have a structure like that in (2) below, lacking a overt structural representation of the specifier of IP.

\[
\begin{array}{c}
\text{IP} \\
\text{VP} \\
\text{I} \\
\text{I'} \\
\text{V'}
\end{array}
\]

The operation Compose collects together functional and lexical projections.

\[\text{(ii) Compose(\text{IP}, \text{VP})}: \text{this operation collects together IP and VP projections.}\]

\[\text{(iii) Move-$\alpha$(\text{VP})}: \text{any constituent, whether a maximal projection or a head, can be moved from one position to another, leaving a trace behind. The result must be structure-preserving.}\]

\[\text{(iv) Case-assign}: \text{the above operations may insert structural case, such as finite Tense assigning nominative case or transitive verbs assigning accusative case, and so on. In principle, case is assigned to the closest available case-assignee, as defined in section 5.2.1.}\]

\[\text{(v) Agree}: \text{I assume that syntactic heads may contain any combination of person, number, and gender features. When present, agreement features are necessarily coindexed with a nominal constituent, and hence are discharged to the closest available case-assignee, as defined in section 5.2.1.}\]
The prohibition is formalized through the following input-independent principle, the first of the filtering component of GEN, which applies to the output of Genf and filters out structures containing contentless projections.

(4) Obligatory Content: candidate structures may not contain contentless XPs.

The above principle does not rule out a projection with a contentless head when this is part of a contentful extended projection. For example, the XP projection in (5) below, though projected from a contentless head, the XP thus has content, and thus satisfies Obligatory Content.

A degenerate case occurs when all the projections of an extended projection are contentless. Then no projection is contentful since no projection is able to derive a contentful projection.

The above discussion raises the issue of whether a contentful specifier is sufficient to grant content to an otherwise contentless projection, see (6) below.

Obligatory Content diverges from Grimshaw's (1993) constraint Minimal Projection, which is violated by projections making no contribution to their extended projection, and also from Grimshaw's (1993, 1995) constraint ObHd, which is violated by a projection with a contentless head. In the same spirit, Obligatory Content is an input-output principle with contentful projections.

Notice that Obligatory Content does not rule out a candidate totally devoid of structure, like the null-structure candidate shown in (7). Since no projection is involved, the null-structure candidate satisfies Obligatory Content vacuously and is thus a legitimate candidate.
model proposed here the hypothesis that phrase-structures are associated with an explicit representation of their argument structure (a-structure in LFG, inputs in OT syntax). However, LFG also differs from OT with respect to the role of functional elements: in OT, the presence of functional elements is necessary, or whether it is inferable from a sentence's constituent- and argument-structure.

1.2.2. The Role of the Lexicon

Under the definition of Gen just provided, different lexicons give rise to distinct candidate sets languagewise. There is a trivial and a less trivial sense in which this is true. It is true trivially that the presence or absence of a lexical item will trivially affect the candidate sets of two languages. For example, English may provide a case-assigner for the subject of an infinitival complement that is unavailable in other languages.

Less trivially, the presence in one lexicon and absence in another of items with specific syntactic properties will produce significant differences in the candidate sets of two languages. For example, English may provide a case-assigner for the subject of an infinitival complement that is unavailable in other languages.

The question is whether some or all of the non-trivial differences can actually be derived from differences in the grammar (i.e. from distinct rankings of the UG constraints). While not coping with all the issues involved, I will pursue the goal of making the lexicon as universal as it can be.

As Prince and Smolensky point out in their analysis of phonological inventories, the presence or absence of an item \( \Psi \) in the lexical inventory of a grammar depends on whether there exists an input such that the optimal form for that input in that grammar involves \( \Psi \) (Prince and Smolensky, 1993:186). I will make use of this idea in the analysis of expletives and agreement.

As for expletives, following a proposal by Grimshaw in her analysis of do-support (1993, 1995) as well as developments in Grimshaw and Samek-Lodovici (1995a,b), I assume that there are no elements marked as expletives in the lexicon of any language. Instead, expletives are normal lexical items of the lexicon which are uninterpreted and whose presence in a sentence is simply due to the structure of the sentence.

Analogously, I will assume that the lexicons of different languages are identical when it comes to expressing agreement features, aside for differences in their phonological specification. In other words, I will assume that the optimal forms the latter selects will not follow from their grammar, and from the optimal forms the latter selects. How this is done is the topic of chapter 4.

1.3. Inputs

Intuitively, inputs contain all the information which is necessary for assessing the grammatical status of each competing extended projection under a given grammar. Inputs provide the lexical items out of which extended projections are built, as well as the argument-relations between them (Grimshaw 1993, 1995; cf. Chomsky's satisfaction operation 1992:20). In accord with Grimshaw and Samek (1995a,b), inputs are defined as recursive tuples made of the following fields:

(i) A lexical head L and its argument structure, identifying the lexical head heading the associated extended projection and its argument structure.
(ii) A thematic mapping, associating the theta-roles of L with the input-tuples of the corresponding argumental extended projections.
(iii) A marking of the lexical head as contrastively focused.
(iv) Tense, providing tense specification. In particular, this field specifies whether the clause tense is finite or non-finite. This field is missing in inputs of non-verb extended projections.

These are the basic fields specified throughout the OT derivations of this dissertation. However, in chapter 5, I will examine derivations involving operators and complementizers with their own semantic import, and analyze them as part of the input.

Notice that case-assigners need not be specified. Whether a head assigns case and to which argument it assigns case is determined by the head itself, not by the grammar. The case-assignee is independently determined in the way discussed in section 1.5.
The following are all examples of well-formed inputs. The one in (8a) is the input of a nominal extended projection headed by John. The one in (8b) is the input of a verbal extended projection in the present perfect headed by run and specifying that the external argument is the optimal extended projection for the input \(<John,--,--,-->\). Rules that are many candidates competing with (12) for the optimal realization

Following an informal proposal in Grimshaw (1993), the relation between inputs and competing candidates is established through the two input-dependent principles of Compatibility and Theta-Consistency, which belong to the filtering component of GEN.

Let us first consider the Compatibility principle.

(9) Compatibility: Given an input \(\alpha\) with lexical head \(L\), the only legitimate candidate structures for \(\alpha\) are those whose heads are interpretationally not distinct from \(L\). Compatibility ensures that a structure headed by Mary will never be considered a candidate structure for an input like \(<John,-,-,->\). Compatibility does not exclude the null structure, to which it applies vacuously, since no syntactic head occurs. It also allows for pronominal realizations, since pronominals are represented as intransitive D's freely generated by Gen according to a proposal by Rothstein (1995), based on Abney (1987). Since their lexical conceptual structure is restricted to their referential role, pronominals are compatible with inputs headed by referential lexical items with which they agree.

The second principle relating inputs and their realizations is Theta-Consistency, which ensures that candidate structures match the theta-assignment specification in the input.

(10) Theta-Consistency: Given an input \(\alpha\) and its lexical head \(L\), for any theta role \(\theta\) of \(L\), the assignee of \(\theta\), if structurally realized, must be the optimal realization of the input \(\beta\) into which \(\theta\) is mapped in input \(\alpha\).

Consider input (11) below and the two structures in (12) and (13). A priori, nothing rules out structure (13), with the external theta-role of run assigned to the DP Mary, as a legitimate candidate for input (11). In fact, nothing forces us to consider Mary the syntactic analysis of the sub-input \(<John,-,-,->\), and thus no appeal to Compatibility can be made to exclude structure (13). This excludes (13) as a candidate structure for the input, because the optimal realization of the input be consistent with the argument structure of the lexical head. This exclusion is in line with (12), because it excludes both the candidate structure and the Compatibility principle.

Consider input (11) below and the two structures in (12) and (13). A priori, nothing excludes the null structure \('[[]]'\), the null subject candidate \('[run]<\)\), the inversion candidates \('[run John]<\)\), as well as the candidates \('[he run]<\)\), \('[it run John]<\)\), or even the structure \('[Mary [John [run Bill]]]<\)\), provided that neither Mary nor Bill be the assignee of the external theta-role.

Finally, an interesting hypothesis which I will adopt here and leave open for future research is that both principles are just additional constraints of UG, rerankable with respect to other substantive rules of GEN.
with the other constraints. The fact that the two constraints are always satisfied could then follow from the fact that they do not conflict with any other constraints of UG.

1.4. Theta-Assignment

Following Higginbotham (1985), Grimshaw (1990), and Williams (1994), and diverging from recent proposals by Kayser and Hale (1993), theta-assignment is taken to occur in terms of theta-role assignment. Following Higginbotham (1985) and Grimshaw (1990), it involves linking the theta-role being assigned to the referential theta-role of the theta-assignee.

Structures lacking a structurally realized argument (examined in section 1.2.1) leave the corresponding theta roles unassigned. For example, while in (14a) the external theta-role of the verb is assigned and its corresponding theta-role occurs within the DP, in (14b) the external theta-role is left unassigned, since no structurally realized subject is present.

2. As the figure illustrates, I assume that in this case the theta-grid with its unsaturated role simply continues its percolation through the whole extended projection until it reaches the IP node. (The percolating grid is represented as <x>. Theta-role saturation is represented with an asterisk.)

(14a) sung
   | I
   | has
   | J
   |<x>
   |<x>
   |<x>
   |<x>

(14b) sung
   | I
   |<x>
   |<x>
   |<x>

2 For a theta-role, being unassigned does not imply being uninterpretable. For example, in the system presented in this dissertation, the structure in (14b) is optimal only if the external theta-role has a topic antecedent; its interpretation would then be that of its antecedent.

Percolation of external theta-roles throughout the clause has also been proposed by Williams (1994), to derive various linguistic facts, such as the existence and properties of external arguments. Percolation is also assumed to occur from V to IP when V is the extended projection of IP and the percolating theta-grid is not blocked by other constraints. It also follows naturally from the notion of extended projection as defined in (14b). Following Higginbotham (1985) and Grimshaw (1990), the extended projection is taken to be the extended projection of A to which it would assign theta-roles if it were to appear in the first position of VP or IP. It can therefore be seen as a projection from A to VP or IP that is extended after the theta-assignment of A, and whose extension follows naturally from the theta-assignment of A's theta-roles.
One important distinction between (16a) and (16b) made available by theta-percolation is that the theta role is locally accessible at the IP node in (16b) but not in (16a). This will play a role in the modeling of agreement and case-assignment, as it is explained in the next section.

1.5. Case-assignment and Agreement

Drawing from a similar idea concerning agreement in Williams (1994), I represent case as a relation between a case-assigner, like Iº or Vº, and the referential role intrinsic to nominal heads. Consider the input in (17), where the referential role R of the lexical head is explicitly represented, and the three candidates in (18), represented with their case coindexations.

(17) Input: \(<\text{sing}(x), x=<\text{John}(R), --, --, -->, --, \text{T=pres. perf.}>\)
(18a) Preverbal subject. (18b) SpecVP subject. (18c) Null subject.

In each structure, case relates the case-assigner \(T\) in Iº with the referential role intrinsic to \(\text{John}\). In (18a) and (18b), the referential role \(R\) is directly accessible at the DP node. In (18c), \(T\) case-relates with the displayed external theta-role of the verb \(\text{run}\), which in turn is mapped to the referential role of the argument \(\text{John}\) in the input. The well-known locality and directionality conditions on case-assignment will follow.

Case-assignment to expletives is analyzed in the same way. Though left uninterpreted, the referential role of the expletive is directly accessible at the top node of the expletive projection. Casewise, an expletive is thus identical to an overtly realized nominal argument. For example, the expletive \(\text{it}\) in the structure below is assigned nominative case by \(T\) under a spec-head configuration.

(19) \(<\text{R}, \text{seems}, \text{DP}, \text{it}, --, \text{xs}, \text{CP}, \text{that...}>\)

The well-known locality and directionality conditions on case-assignment will follow.

Case-assignment under a spec-head configuration, this explains a case-read front movement of the nominal argument for example. The expletive in the structure above is assigned nominative case by \(T\) under a spec-head configuration. Since the nominal argument is uninterpretable, the constraint that the case-assigner is determined by the position of the borne-on phrase \(\text{John}\), is met at the empty head \(\text{John}\) under a spec-head configuration. The constraint that the case-assigner is determined by the position of the borne-on phrase \(\text{John}\), is met at the empty head \(\text{John}\) under a spec-head configuration. Thus, in (18c), the referential role of the case-assigner is accessible at the surface, and the case-assigner is determined by the position of the case-assigner in the configuration under which the case-assignment occurs.

What changes in each structure is the configuration under which the case-assignment occurs. The configuration is determined by the positions of the case-assigner and of the case-assignee. Thus, in (18c), the referential role of the case-assigner is accessible at the surface, and the case-assigner is determined by the position of the case-assigner in the configuration under which the case-assignment occurs.
In order to capture the obligatoriness of case-assignment, I assume that the filtering component of GEN includes an inviolable case-filter. This filter requires any potential nominal constituent to be obligatorily case-assigned, where potential nominal constituent is intended to include overt nominal constituents, whether expletive or not, as well as structurally unrealized nominal constituents. For example, the referential role R is a potential nominal constituent. Only the structures that satisfy the Case Filter are legitimate candidates.

\[(20) \text{Case Filter: coindex the referential role } R \text{ of a potential nominal constituent with a case-assigner } H.\]

Agreement is modeled in strict parallel with case-assignment. Agreement features are generated freely by Gen, hence for every candidate showing agreement on feature φ, there is always a candidate lacking it because Gen did not generate any φ-feature in the first place. In analogy with the representation of case, agreement is represented as a coindexation between the Gen-\(\phi\)-supplied φ-features of an inflectional head and the referential role of a potential nominal constituent, which includes, as stated before, the referential role of expletives, the thematic roles of thematic expansions, and the DP in specIP position.

1.6. A Sample of Candidates Generated by GEN and their Status

Let me synthesize the model developed so far by listing a sample from the infinite set of structures generated by GEN. I will mark with an asterisk those candidates generated by GEN but excluded from the candidate set fed to EVAL by the filtering component of GEN, i.e., by virtue of one of the principles introduced in the preceding sections. The potential candidate structures are evaluated in relation to the input in (21) below.

\[(21) <\text{see}(x,y), (x=\text{John}, y=\text{Mary}), \ldots , T=\text{pres. perf.}>\]

Where not otherwise indicated, T assigns case to the thematic subject and Vº to the thematic object (see section 5.2.1). Likewise, agreement occurs with the nominative marked DP (see section 4.2.1). The structures follow below:

- Structures involving empty heads: (22b) is excluded by Obligatory Content.

\[(22a) = (22b)\]

\[\text{IP} \quad \text{VP} \quad \text{V} \quad \text{DP}\]

- Structures involving a constituent in different positions: if the external theta role is assigned, structure (23b) violates Theta-Locality, because the external role is assigned to the DP in specIP position, which is the thematic object of the thematic expansion. However, if the external theta role is not assigned, as in (23a) and (23c), the structures are legitimate candidates, because the external role is assigned to the thematic object of the thematic expansion.

\[(23a) = (23b) = (23c)\]

\[\text{IP} \quad \text{VP} \quad \text{V} \quad \text{DP}\]

- Structures involving the same constituents in different positions, including structures not realizing the specIP position:

\[(24a) = (24b) = (24c)\]

\[\text{IP} \quad \text{VP} \quad \text{V} \quad \text{DP}\]

In order to capture the obligatory nature of case-assignment, I assume that the filtering component of GEN excludes candidates that violate the Case Filter.
• The null structure:

\[
\begin{array}{c}
\text{IP} \\
\text{VP} \\
\text{V} \\
\text{I} \\
\text{has} \\
\text{DP} \\
\text{John} \\
\text{see} \\
\text{n}
\end{array}
\]

\[(25a) (25b)\]

• Structures that leave an argument structurally unrealized.

\[
\begin{array}{c}
\text{IP} \\
\text{VP} \\
\text{V} \\
\text{I} \\
\text{has} \\
\text{DP} \\
\text{Mary} \\
\text{seen} \\
\text{DP} \\
\text{it}
\end{array}
\]

\[(26a) (26b) (26c)\]

• Structures involving constituents that are not assigned a thematic role, i.e. expletives. They are represented in a box. In (26c) the external theta-role is left unassigned.

\[
\begin{array}{c}
\text{IP} \\
\text{VP} \\
\text{V} \\
\text{I} \\
\text{has} \\
\text{DP} \\
\text{John} \\
\text{Mary} \\
\text{seen} \\
\text{DP} \\
\text{it}
\end{array}
\]

\[(27a) (27b)\]

• Structures involving case-assignment to constituents in distinct positions.

\[
\begin{array}{c}
\text{IP} \\
\text{VP} \\
\text{V} \\
\text{seen} \\
\text{I} \\
\text{has} \\
\text{DP} \\
\text{John} \\
\text{DP} \\
\text{Mary} \\
\text{acc} \\
\text{nom}
\end{array}
\]

\[(28a) (28b) (28c)\]

• Structures without agreement features, or with agreement features coindexed to constituents in distinct positions.

\[
\begin{array}{c}
\text{IP} \\
\text{VP} \\
\text{V} \\
\text{seen} \\
\text{I} \\
\text{has} \\
\text{DP} \\
\text{John} \\
\text{DP} \\
\text{Mary} \\
\text{agreement}
\end{array}
\]

1.7. Universal Constraints of UG

The following is a brief summary of the main constraints argued for by this dissertation and further discussed in the following chapters. Other constraints assumed in the discussion of specific phenomena have been noted in this chapter. The constraints of UG are summarized in the following diagrams.

- SUBJECT: The highest A-specifier of a clause must be structurally realized.

- OBJECT: The highest A-specifier of a clause must be structurally realized.

- PHONO-STRUCTURAL CONSTRAINTS: The constraints SUBJECT and OBJECT have been discussed in Chapter 1.2.1. The subject of a clause must be structurally realized. The subject must be realized in the highest A-position of a clause.

- SUBJECT: The highest A-specifier of a clause must be structurally realized. The subject must be realized in the highest A-position of a clause.

- OBJECT: The highest A-specifier of a clause must be structurally realized. The object must be realized in the highest A-position of a clause.

- PHONO-STRUCTURAL CONSTRAINTS: The constraints SUBJECT and OBJECT have been discussed in Chapter 1.2.1. The subject of a clause must be structurally realized. The subject must be realized in the highest A-position of a clause.
...
The PARSE constraint, first proposed by Prince and Smolensky (1993), and adopted in Grimshaw (1993, 1995), requires that the items of the input be parsed, i.e. that they be first projected and then composed together, so that they are structurally realized in the extended projection they help to form. The constraint is failed once for each item left unrealized. For example, the structure 

\[ \text{[runs]} \]

fails PARSE once when assessed in relation to the input \(<\text{run}(x), x=\text{John}, \ldots, T=\text{pres}>\) because it does not parse the lexical item \(\text{John}\).

PARSE requires the parsing of all the input items, including the tense specification.

- PARSE: Structurally realize input items into phrase-structure. Failed by unrealized input items.

Any overt projection compatible with an input lexical head counts as parsing that head. Therefore, the thematic subject of the input \(<\text{run}(x), x=\text{John}, \ldots, T=\text{pres}>\) can be parsed as the DP \(\text{John}\) but also as the pronominal DP \(\text{he}\), as in \(\text{he runs}\), without violating PARSE (see 1.3 for the definition of compatible).

PARSE applies only to the elements in input, and therefore has no say on the material freely added by GEN. This is the domain of the FULL INTERPRETATION constraint (FULL-INT), proposed by Grimshaw (1993, 1995) and also used in Grimshaw and Samek-Lodovici (1995a, b), which penalizes any candidate involving uninterpretable overt projections, i.e. projections which have not been theta-assigned.

Following Grimshaw's analysis of do support (1993, 1995), FULL-INT is conceived as a gradient constraint whose violation is proportionate to the complexity of the lexical conceptual structure (LCS) associated with the uninterpreted projection (for the definition of gradient constraint, see also Prince and Smolensky 1993).

- FULL-INTERPRETATION: Lexical conceptual structure is parsed. Failed by uninterpreted lexical material.

FULL-INT plays an important role in the analysis of expletives, which I analyze as being the overt projections that violate FULL-INT the least, by virtue of their minimal LCS, as in Grimshaw (1993, 1995). Whenever the satisfaction of higher ranked constraints forces a violation of FULL-INT, the optimal structure will involve explicative pronouns. For example, proper names, because they provide explicit specification of the LCS, are in (Carnie, 1996’s) mind. The satisfaction of higher ranked constraints is further assessed in relation to the constraint is realized once when they are properly accounted for, so that they can be repeated (and not considered as part of the input). The same is true for other elements, like the material in Grimshaw (1993, 1997)’s Expletives.

The general goal is to predict the distribution of expletive items across languages from the interaction of FULL-INT with the other constraints of UG (see also Grimshaw 1993, 1995).

Finally, the constraint STAY, proposed in Grimshaw (1993, 1995), penalizes movement and is violated once by each trace left by constituent movement (cf. Chomsky’s shortest movement (1995)).

- STAY (Grimshaw 1993, 1995): Traces are not allowed.

FULL-INT is concerned with the interpretation of constituents which are contrastively focused or have as their antecedent a constituent with topic status (the notion of topic constituent is discussed at length in chapter 2). The first constraint, DROP, requires that arguments with a topic antecedent be left unrealized.

- DROP (Grimshaw 1993, 1997): The last group of constraints governs the realization of constituents which are contrastively focused or have as their antecedent a constituent with topic status. The constraint DROP, proposed in Grimshaw (1993, 1995), penalizes movement and is violated once by each trace left by constituent movement.

FULL-INT is concerned with the interpretation of constituents which are contrastively focused or have as their antecedent a constituent with topic status. Technically, DROP can be rephrased as follows: assume Williams’s (1994) proposal that the actual elements participating in binding and coreference relations are not the assignees of theta-roles but are rather the elements on the reference of the theta-role (chap. 6, Williams (1994)). Antecedence is then a coindexation between theta-roles. The status of a referent as topic or non-topic is a dynamic property related to the referent’s status in the ongoing discourse as well as to the syntactic means chosen for its expression (see work by ... topic status is not assigned in the input, but rather pertains to the discourse status of the antecedent (henceforth topic antecedent means antecedent with topic status)....
constraint

ROPIC checks the status of the antecedent of a theta-role \( \theta \). If the antecedent is a topic and \( \theta \) is nevertheless assigned to a realized constituent, then ROPIC is violated. If \( \theta \) is left unassigned, ROPIC is satisfied. If instead the antecedent is not a topic, then ROPIC is vacuously satisfied in either case.

- \text{ROPIC (\( \theta \))}: \text{Do not realize arguments which have topic antecedents. Failed by structurally realized arguments coindexed with antecedents with topic status. (A gradient version of ROPIC requiring topic-referring arguments to be structurally minimal, and inspired by Cardinaletti and Starke's (1994) Structural Deficiency Hypothesis and by comments by Grimshaw and Kayne on topic-related alternations in English, is explored in section 2.2.7.2.)}

Safir (p.c.) points out that under this definition, ROPIC is unlike any other of the constraints defined here, whose assessment never requires to go beyond checking a candidate structure and its input. Conceivably, ROPIC could be made as 'local' as the other constraints by marking theta-roles as topic-referring in input (this is the solution adopted in Grimshaw and Samek-Lodovici 1995a,b). However, in such cases some independent component of grammar would have to ensure that only arguments with topic antecedents will be marked as topic-referring.

The last constraint, ALIGNFOCUS, also proposed in Grimshaw and Samek-Lodovici (1995a,b) and based on the theory of generalized alignment of McCarthy and Prince (1993), requires contrastively focused constituents to align to a maximal projection. The constraint is failed whenever a focused-marked constituent occurs elsewhere in the structure.

- ALIGNFOCUS (XP, Left, YP, Right): Align the left edge of the focused constituent XP with the right edge of a verbal YP in the clausal extended projection. Failed by non-aligned focused constituents.

The constraint ALIGNFOCUS characterizes a family of constraints requiring structural alignment for different kind of foci and in different positions (cf. left alignment in Hungarian vs. right alignment in Italian). The constraint incorporates the hypothesis that focus may occur structurally, originally made by Kiss (1986) for Hungarian, and later extended in a number of studies (see work by Antinucci and Cinque (1977), Smith (1982), Chomsky (1990), Shlonsky (1987), Rochemont and Culicover (1990), Bonet (1990), Tuller (1992), Saccon (1993), Samek-Lodovici (1993, 1994), Belletti and Grimshaw (1994), while the above constraint affects only contrastive foci, the interesting hypothesis arises that ALIGNFOCUS characterizes a family of constraints requiring structural-alignment for different kind of foci and in different positions (cf. left alignment in Hungarian vs. right alignment in Italian).

1.8. Selection of the Optimal Candidate

Given a hierarchy of constraints \( H = C_1 \ldots C_n \) by decreasing rank, and a candidate set \( CS \), the optimal candidate(s) relative to \( H \) is that candidate \( S \) (or candidates \( S_1 \ldots S_m \)) in \( CS \) such that for any constraint \( C \) on which \( S \) (or \( S_1 \ldots S_m \)) does worse than another candidate \( S' \), there is a higher ranked constraint \( C_i \) in \( H \), \( i < k \), on which \( S \) (or \( S_1 \ldots S_m \)) does better than \( S' \).

The optimal candidate(s) relative to a constraint hierarchy \( H = C_1 \ldots C_n \) can be computed according to the procedure below, which eliminates leaving in \( CS \) all and only the optimal candidate(s) relative to a constraint hierarchy \( H = C \).

1. Assess the status of each candidate in \( CS \) relative to \( C \).
2. If at least one candidate in \( CS \) satisfies \( C \), eliminate from \( CS \) all the candidates that violate \( C \).
3. If all candidates violate \( C \), erase one \( C \)-violation from each candidate and repeat from step 1.
4. Let \( C \) be the next lower constraint and repeat from step 1.

Whenever a finite number of candidates can be proven to collectively outperform all other members of the candidate set, the above procedure can be used to find the optimal candidate(s) relative to a constraint hierarchy \( H = C \).

Whenever a finite number of candidates can be proven to collectively outperform all other members of the candidate set, the above procedure can be used to find the optimal candidate(s) relative to a constraint hierarchy \( H = C \).
1.9. Notation and Terminology

Tableaus are interpreted as in Prince and Smolensky (1993):

- The constraints are displayed left to right by decreasing rank.
- The optimal candidate is marked with the symbol ‘☞’.
- Candidate (a) is thus the optimal candidate in the tableau below.
- Violations are marked by stars. Fatal violations are followed by an exclamation mark.
- Shading expresses the irrelevance of a candidate’s performance on the shaded constraints. For example, candidate (a) fails the highest ranked constraint C₁, and is thus suboptimal relative to the remaining candidates (a) and (c), independently of its status on the lower constraints.

When candidates tie on higher constraints, lower constraints become relevant. For example, candidates (a) and (c) tie on C₁ and C₂. However, candidate (c) is suboptimal because it fails the lower constraint C₃, which (a) satisfies. Likewise, candidate (e) is suboptimal because it fails the lower constraint C₄, which (a) satisfies. However, candidate (e) is suboptimal because it has one more violation of C₄ than (a).

The optimal candidate depends on the ranking of the constraints. For example, if C₄ dominated C₃, (a) would lose to (c), which would be the optimal candidate.

When candidates lose on higher constraints, lower constraints become relevant. For example, candidate (d) collects the same violations as (a) plus the additional violation of C₃. It follows that (d) is suboptimal under any reranking of the constraints, because it is harmonically bound by (a) (Prince and Smolensky 1993).
This chapter argues for an Optimality Theoretic view of syntax by showing how the complementary distribution of null and overt subjects within and across languages as well as aspects of the crosslinguistic distribution of overt expletives all follow from the interaction of a fixed set of conflicting constraints.

Fundamental to the following analysis is the empirical generalization in section 2.1 stating that null subjects must be licensed by topic antecedents (where topic is intended in Strawson's (1964) sense, see section 2.1). This generalization, which is established on the base of Italian, Greek, Hebrew, and Chinese data, is also indirectly supported by Calabrese (1985), Di Eugenio (1990, 1995) and Dimitriadis (1995). The generalization just introduced motivates the proposal in section 2.2 of the constraint DROP, which requires that arguments with topic antecedents be left structurally unrealized. The inherent conflict between DROP and the constraints PARSE and SUBJECT is then shown to determine the complementary distribution of null and overt subjects within null subject languages as well as crosslinguistically. Furthermore, the interaction of the above constraints with the constraint FULL-INT will derive aspects of the crosslinguistic distribution of expletives, such as the universal ban on overt expletives in null subject languages.

The remaining two sections explore the connections between the analysis of null subjects presented here and other analyses. In particular, section 2.3 argues for a classification of null subjects at the level of syntax, within the framework of Chomsky (1995b), and Montalbetti (1984). A discussion of some problematic issues involving declarative clause topic and expletive complements concludes the chapter.

Chinese examples in this chapter:

The generalization in (i) below holds for the data from Mandarin, Cantonese, and other languages which agree with the subjectpronoun hypothesis. Chinese examples in this chapter illustrate how the distribution of null subjects is determined by the interaction of the constraints.

2.1. The Topic-referring Function of Null Subjects

The goal of this section is to show that the distribution of null subjects is determined by the interaction of the constraints.

(1) Null subjects must be licensed by topic antecedents.

Chinese examples in this chapter are:

The generalization in (i) above holds for the data from Mandarin, Cantonese, and other languages which agree with the subjectpronoun hypothesis. Chinese examples in this chapter illustrate how the distribution of null subjects is determined by the interaction of the constraints.
expression is introduced as a by-phrase of a passive, the sentence is likely to be deemed simply false, rather than uninterpretable.

(2a) The king of France visited the exhibition. ---> uninterpretable.
(2b) The exhibition was visited by the king of France. ---> false.

According to Strawson, the expression the king of France is a topic in (2a), where it is the subject of the sentence, but not in (2b), whose topic is the subject the exhibition (for the topic-status of subjects in canonical positions see also Li 1976, Givon 1986, 1983, Davison 1984, Gundel 1985, Prince 1981, Reinhart 1981). Since each sentence is interpreted in relation to its topic, (2a) is uninterpretable, because its topic, the king of France, is referenceless. Sentence (2b) instead is interpretable, because its topic, the exhibition, has reference. The truth-value of (2b) can then be established by checking the list of people who visited the exhibition in search of an individual who could be referred to as the king of France. Since none is found, (2b) is deemed false. Analogously, the sentence John spent the morning at the local swimming pool can be interpreted as false if in John's town there is no swimming-pool, while the sentence The local swimming pool was visited by John is uninterpretable under the same context (Strawson 1964:89).

A more formal rendition of the notion of topic is given in Reinhart (1981) who, following Stalnaker (1978), represents the discourse-context as the set of propositions on which the discourse is based: topics are those propositions which are relevant to the context. Topics thus function as indexing entries, as explained by Reinhart in the following terms (1981: 80):

Sentence topics, within this view, are one of the means available in language to organize, or classify the information exchanged in linguistic communication - they are signals for how to construct the context set, or under which entries to classify a new proposition.

Thus, in a sentence like The exhibition was visited by the king of France, the topic constituent the exhibition instructs the hearer to list the associated proposition under the entry-referent it denotes, giving us the intuition that the sentence is about the exhibition.

The existence of a topic in a sentence is crucial because otherwise the topic could not correspond to the information that the sentence is about. This is true if the information itself is a proposition that can be interpreted as false, but also if the information is an entity that cannot be identified with any individual. For example, if the topic is a non-entity, the sentence is interpreted as false, because the topic cannot be identified with any individual.

2.1.2. Evidence from Topic and Non-topic Antecedents in Passives

Strawson's argument provides a first test for the generalization proposed in (1).

The data described above are from a non-focused interpretation, where the pronoun is not coreferential to another noun of the same sentence. The data described below are from a focused interpretation, where the pronoun is coreferential to another noun of the same sentence.

(3) Italian.
   a. Questa mattina, la mostra é stata visitata da Gianni.
      This morning, the exhibition was visited by John.
   b. Piú tardi, egli ha visitato l’università.
      Later on, he visited the university.

(4) Greek.
   a. Stis 3 Iouliou apto to simvoleo ipograftike apo ton proedro.
      In the 3rd of July, this contract was signed by the president.
   b. Tin epomeni mera, e signed ena kenuorgio simvoleo.
      The next day, he signed a new contract.

According to Strawson, the expression the king of France is a topic in (2a), whereas the expression the exhibition was visited by the king of France in (2b) is not a topic. The presence or absence of a topic in a sentence is a crucial factor in determining whether a sentence is interpretable or not. In (2a), the topic the king of France is referenceless, and thus the sentence is uninterpretable. In (2b), the topic the exhibition is referential, and thus the sentence is interpretable.

The presence or absence of a topic in a sentence is a crucial factor in determining whether a sentence is interpretable or not. In (2a), the topic the king of France is referenceless, and thus the sentence is uninterpretable. In (2b), the topic the exhibition is referential, and thus the sentence is interpretable.
The third of July, the president signed this contract.

The contract was signed by the president on the third of July.

The contract was signed by the president on the third of July.

The contract was signed by the president on the third of July.

In Hebrew.

a. Ha-xoze ha-ze nextam al-yedey ha-nasii ba-sos be Yuli.

The contract was signed by the president third of July.

b. Lemoxorat *ei  /  hui xatam al xoze xada.

The next day (he) / he signed a new contract.

In Chinese.

a. Zuotian na yizhi beizi bei Lisii dapo le.

Yesterday, that cup was broken by Lisi.

b. Jintian *ei  /  tai dapo le linwai yizhi.

Today he broke another one.

As noted, in Hebrew and Chinese, the null subject is slightly dispreferred in these sentences, yet the informants find it grammatical (in Hebrew, increased speech speed neutralizes this slight dispreference)
The possessor DP of a noun phrase is never a topic, even when the noun phrase itself is. This can be easily seen by applying Strawson's definition of topichood. For example, in (11) below, while the sentence can be said to be about John's brother, it certainly is not about John.

(11) John's brother visited the exhibition.

This possibility of licensing without disrupting interpretation is a sufficient condition for non-topichood, but not a necessary one. Being part of the topic, a possessor contributes to the identification of the topic's reference, and therefore it cannot lack reference the way the non-topic by-phrase of the passive did in Strawson's example.

(12) Italian.

   This morning, the brother of Gianni has visited the exhibition.
   This morning John's brother visited the exhibition.

b. Nel pomeriggio *[egli / lui] ha visitato l'universitá.
   In the afternoon (he) / he has visited the university.
   In the afternoon he visited the university.

(13) Greek.

a. Stis 3 Iouliou, [o adelfos tou proedrou] ipograpse afto to simvoleo.
   In the 3 July, the president's brother signed this contract.

   The next day (he) / he signed a new contract.
   The next day he signed a new contract.

(14) Hebrew.

a. Ba-sos a-be Juli [ha-ax el ha-nasii] xatam al ha-xoze ha-ze.
   On the third of July, the president's brother signed this contract.

b. Lemoxorat *[ei / hui] xatam al xoze xada.
   The next day (he) / he signed a new contract.
   The next day he signed a new contract.

(15) Chinese.

   Yesterday, Lisi's younger-brother broke a cup.
   Yesterday Lisi broke a cup.

   Today (he) / he broke another one.
   Today he broke another one.
3.1 Evidence from Interrogatives

2.4. Evidence from Interrogatives

(20) Q: What exhibition was visited by the king of France?
The by-phrase in (20) is the only non-wh constituent of the question, and under our assumption it should be a topic.

(21a) Q: Quali mostre sono state visitate dal padre di Gianni?
 Which exhibitions were visited by John’s father?

(21b) A: Recentemente egli ha visitato la mostra di Klee e di Miró.
Recently, he has visited Klee’s and Miro’s exhibitions.

The above data are particularly striking when compared with the following data.

(22a) Q: Quali mostre sono state visitate dal padre di Gianni?
Which exhibitions were visited by John’s father?

(22b) A: Nessuna, perché lui impedisce di uscire.
None, because he prevents him from going out.

The role of topicality is further illustrated by the following data, where the same QA-pair of (21) is tested again. This time however, the antecedent is the non topic John.

(23) Q: E' partito il padre di Gianni?
Did John’s father leave?

Non-passive QA-pairs also support the previous findings. The complex subject John’s father is the topic of the question. A null subject is possible when licensed by the subject, but ungrammatical when licensed by the non-topic John, in parallel with the evidence presented so far.

Once again, we observe that a topic subject can be the antecedent of a null subject, while a non-topic cannot, forcing an overt pronominal subject.

Furthermore, and contra Calabrese (1985), it shows that subjecthood is not the correct licensing factor, since the by-phrase is not a subject.
A final piece of evidence supporting generalization (1), and further arguing for the non-centrality of subjecthood in null subject licensing, comes from left-dislocation structures. Reinhart (1981) and other constraints of XP-structure and the constraint of TOPIC suggest that the interaction of the universal constraint DROP and the constraint of SUBJECT is required. In the OT model developed here, the distribution of null subjects is captured by the following two constraints:  

**DROP**  
Non-topic arguments that have topic antecedents will not be realized.  

**SUBJECT**  
The highest A-specifier of a clause must be structurally realized.  

Failed when the highest A-specifier of a clause has an overt antecedent.

These two constraints interact in the following way: when a non-topic argument is coindexed with a topic constituent, it will be realized. This interaction is required to account for the data shown in (25a):

(25a)  
[Il padre di Gianni] conosce il motivo per cui **[egli]** è scappato.  
John's father, I know the reason why (he) ran away.

The complementary prediction is that the null subject cannot be licensed by the non-topic antecedent Gianni, forcing overt pronominal subjects. This is indeed the case, as shown in (25b):

(25b)  
[Il padre di Gianni] conosce il motivo per cui **[lui]** li' ha criticato.  
John's father, I know the reason why (he) criticized him.

In summary, we saw how a passive sentence supports generalization (1), and further strengthens the claim that the topic status of the antecedent is a necessary condition for the licensing of null subjects.

In his dissertation, Hui-chuan Lu discusses similar cases in Spanish and Chinese (Lu, 1994, section 3.2).

### 2.2. Null Subjects Crosslinguistically: the OT Analysis

In the OT model developed here, the distribution of null subjects is captured by the interaction of the universal constraint DROP and the constraint of SUBJECT. The constraint of TOPIC requires that topic-referring arguments be left structurally unrealized, and is violated every time a topic argument is realized. This interaction is captured by the following two constraints:

**DROP**  
Dropping arguments which have topic antecedents is a necessary condition for licensing of null subjects.  

**SUBJECT**  
The highest A-specifier of a clause must be structurally realized.  

Failed when the highest A-specifier of a clause is left structurally unrealized.

Notice that **DROP** is a weaker condition than the one that would arise by turning generalization (1) into a constraint. In fact, while the generalization states that null subjects must be licensed by a topic constituent, **DROP** only asserts that they can be licensed by a topic constituent. The fact that non-topic antecedents license only overt pronominal subjects, covered in the generalization, is not covered by **DROP**, and must be derived from the interaction of the constraints TOPIC and SUBJECT. This interaction is required to account for the data shown in (25a):

(25a)  
[Il padre di Gianni] conosce il motivo per cui **[egli]** è scappato.  
John's father, I know the reason why (he) ran away.

The complementary prediction is that the null subject cannot be licensed by the non-topic antecedent Gianni, forcing overt pronominal subjects. This is indeed the case, as shown in (25b):

(25b)  
[Il padre di Gianni] conosce il motivo per cui **[lui]** li' ha criticato.  
John's father, I know the reason why (he) criticized him.

The constraint of topic antecedent is that the null subject cannot be licensed by the non-topic antecedent Gianni, further strengthening the claim that the topic status of the antecedent is a necessary condition for the licensing of null subjects.
null subj: | [  --  ha cantato ]

null struct: | [ -- ]

DOPIC, (c) would dominate DOPIC. As the tableau below shows, under this ranking (c) and (d) are tied, leaving (a) as the optimal candidate. The tableau provides evidence also for the subranking DOPIC >> PNT.

The above argument thus shows that null subjects are possible only under the following conditions:

If DOPIC outranked PNT, then null subjects would be possible only under the constraint DOPIC >> PNT.

* Null subject languages:

   * null subj: | [  --  ha cantato ]
   * null struct: | [ -- ]

   Null subject languages: DOPIC >> PNT >> TROP

   Overall, the relative ranking of DOPIC with respect to PNT and TROP seems to allow for null as well as non null subjects. I do not have an analysis to offer at this time. My conjecture is that this case is a special case, possibly involving some further functional specification not yet captured by the topic vs. non-topic distinction. Like English, Italian and Greek, it is not for Hebrew and Chinese.

Let me now show that the optimal status of (c) crucially rests on the higher rank of DOPIC. As the tableau below shows, under this ranking (c) and (d) are tied, leaving (a) as the optimal candidate.

6 While this is the correct generalization for Italian and Greek, it is not for Hebrew and Chinese, which in
2.2.2. Obligatory Overt Subjects

The impossibility of having null subjects with non-topic antecedents in any language, also follows from the interaction of DTOPIC with PARSE and SUBJECT. In fact, when the underlying subject has a non-topic antecedent, DTOPIC, which only affects arguments with topic antecedents, is vacuously satisfied by all candidates. The selection of the optimal candidate is then determined by the remaining constraints, which, independently of their ranking relative to DTOPIC, always select the candidate with a realized subject as optimal. For example, in Italian DTOPIC outranks PARSE and SUBJECT, but the optimal candidate for a non-topic-referring argument is necessarily overt. In fact, the candidate with an overt preverbal subject, in (a) below, does not violate any constraint: it parses all input's heads (PARSE), it realizes the specIP position (SUBJECT), it does not realize a topic-referring argument (DTOPIC), and it does not have uninterpreted constituents (FULL-INT). Since no candidate can do better than that, (a) is necessarily optimal. The null subject structure in (c) instead fails PARSE and SUBJECT and is therefore suboptimal and ungrammatical. Subjects with non-topic antecedents are thus always overt.

T3. Italian non-topic-referring subjects.

<cantare(x), x=Gianni, --, T=pres.perf.>

| a. ☞ preverbal subj: [ lui ha cantato ] | he has sung |
| b. postverbal subj: [ -- ha cantato lui ] | *
| c. null subj: [ -- ha cantato ] | *
| d. null struct: [ -- ha cantato ] | *

More exactly, since the optimal status of (a) is independent of constraint reranking, (a) is predicted to be the optimal realization of non-topic-referring subjects across languages (caveat the effect of ... candidate in (a) is also the optimal candidate in English-like languages is thus expected, as shown in tableau T4 below.

T4. English non-topic-referring subjects.

<sing(x), x=John, --, T=pres. perf.>

| a. ☞ preverbal subj: [ he has sung ] |
| b. postverbal subj: [ -- has sung he ] | *
| c. null subj: [ -- has sung ] | *
| d. null struct: [ -- has sung ] | *

Summing up, a first argument for an optimality analysis has been given by showing how the interaction between DTOPIC and the constraints SUBJECT and PARSE predicts both the proper crosslinguistic alternation in the syntactic expression of topic-referring subjects in null-subject languages, and the crosslinguistic convergence on overt subjects as the syntactic expression of non-topic-referring subjects.

2.2.3. Expletive Subjects

A candidate which was not included in the above discussion is the expletive candidate. This candidate, shown below, realizes the specIP node with an overt DP, here represented as expl, which is left uninterpreted.

(27) The expletive candidate: [ expl. aux V]

Expletives always fail FULL-INT, therefore we expect them to be grammatical only.

T5. English non-topic-referring subjects.

| a. null subject: [ -- seems ] | *
| b. expletive subj: [ it seems ] | *
In principle, expletives could also provide a way to avoid the realization of a topic-referring subject, by satisfying \textit{Drop Topic} while simultaneously satisfying \textit{Subject}. Such a candidate violates \textit{Parse}. But \textit{Parse} was shown to outrank \textit{Drop Topic} in English, therefore the OT analysis makes the correct prediction that in English this candidate is less optimal than the preverbal subject candidate, which violates only \textit{Drop Topic}. The analysis is summarized in tableau T6.

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T6. English topic-referring subjects: \textit{Parse} \textgreater \textit{Drop Topic}

\textbf{a.} preverbal subj: \[ \textit{he} \text{ has sung} \]

\textbf{b.} expletive subj: \[ \textit{expl.} \text{ has sung} \]

The above discussion also showed that reranking is not an unconstrained operation that can derive any conceivable pattern. This fact was best illustrated by the derivation of the universal lack of null subjects,从容话的句子和null subject languages lacking overt expletives, further explored in the next subsection.

2.2.4. The Crosslinguistic Distribution of Expletives

The lack of overt expletives in Italian is an instance of a well-known universal about null subject languages stating that languages with referential null subjects lack overt expletives, that is, there is no language where sentences like

\[ \textit{she sings} \]

and

\[ \textit{it seems that} \text{ ...} \]


This universal follows as a theorem of the analysis, and more precisely, from the fact that referential null subjects and overt expletives are possible only under constraint conditions. Therefore, it is the interaction of \textit{Drop Topic} and \textit{Subject} that can affect null complementation. This was well illustrated by the derivation of tableau T7, which shows the correct behavior of null-infinitives in Italian:

\[ \text{null subj: } \text{ -- } \text{ sembra [che ...]} \]

\[ \text{expletive subj: } \text{ expl. sembra [che ...]} \]

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46

rankings which are inconsistent with each other. This is shown in the following two steps demonstration.

Step 1. Let us examine what ranking is required to have an overt expletive. Consider the case of a verb lacking an external argument and the three candidates in T9 below: thenull subject candidate, which leaves ... which realizes it through an uninterpreted pronominal, and thenull structure. Each candidate fails one constraint among PARSE, SUBJECT and FULL-INT.

The optimal candidate is the one which fails the least ranked constraint. The expletive candidate is thus optimal only if FULL-INT is ranked lowest.

T9. Expletives: {PARSE, SUBJECT} >> FULL-INT

seem(-,x), x=<...> , --, T=Pres>

DROP TOP

PARSE SUBJ.

F.I.

a. null subj: [ -- seem [that ...]]

b. ☞ expletive subj: [ expl seem [that ...]]

c. null structure: *

Therefore the ranking of any language with overt expletives requires that SUBJECT and PARSE dominate FULL-INT.

Step 2. Let us now turn to existential null subjects. We know from the discussion of Italian in the previous section that they are possible only under the ranking DROP TOP >> PARSE >> SUBJECT. If referential null subjects were compatible with overt expletives, we should be able to merge this ranking with that established in step 1 and still have referential null subjects and overt expletives as the optimal structures for the inputs in step 1 and overt expletives. If the expletive candidate wins over the null subject candidate, in (a), because it satisfies SUBJECT, which (a) does not satisfy.

The analysis does not over-predict: nothing prevents the existence of languages with overt referential subjects for topic antecedents but lacking expletives, that is languages where she sings and seems [that ...] are both grammatical. As we know from the discussion of tableau T9, repeated below, selecting the null subject candidate for a verb like seem requires the ranking {PARSE, FULL-INT} >> SUBJECT.

T9. Expletives: {PARSE, SUBJECT} >> FULL-INT

seem(-,x), x=<...> , --, T=Pres>

DROP TOP

PARSE SUBJ.

F.I.

a. null subj: [ -- seem [that ...]]

b. ☞ expletive subj: [ expl seem [that ...]]

c. null structure: *

The availability of overt referential subjects for topic-antecedents instead, requires that PARSE dominate DROP TOP (as in English, see tableau T2). Hence, all rankings that parse dominate DROP TOP are compatible with the language being sought.

The universal ban on languages with referential pro-drop and overt expletive subjects thus follows from the impossibility of satisfying FULL-INT at the expense of SUBJECT on inputs with referential subjects, while satisfying SUBJECT at the expense of FULL-INT on input with argumentless verbs.

The expletive candidate is thus optimal only if FULL-INT is ranked lowest.

The optimal candidate is the one which fails the least ranked constraint. The expletive candidate is thus optimal only if FULL-INT is ranked lowest.

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2.2.5. Expletives as Uninterpreted Pronouns

The constraint \textsc{full-int} is also responsible for selecting pronouns rather than

other \textsc{dp}s. The explanation hinges on the definition of \textsc{full-int} and is

parallel to (by comparison, \textsc{full-int} also selects pronouns over full-DPs in

the case of \textsc{null}, as shown in tableau 10.1 below. The \textsc{null} counterpart candidate is

the one that wins in tableau 10.1 below, and hence \textsc{null} is the morpho-syntactic


null expletives. See section 5.6.
Overall, it appears that the insight on the fundamental nature of expletives as uninterpreted pronouns non-distinct from pronouns themselves is jeopardized by the inviolable status of the Full Interpretation principle in Rothstein's analysis.

In conclusion, besides deriving the distribution of null subjects and overt expletives, the proposed OT model permits us to capture in a less stipulative manner the identification of expletives with pronominals proposed by Grimshaw and Rothstein.

2.2.6. Candidate-set Exhaustion and Crosslinguistic Typology

The purpose of this section is to complete the analysis presented thus far by demonstrating that all competing candidates have been taken into account; that is, that no extra candidate exists which would be an obvious candidate. In turn, this will permit us to examine the crosslinguistic typology being predicted.

Consider the input schema in (29) below, with a topic-referring thematic subject, and the four familiar candidates listed in (30).

(29) Input: \[V(x), x=N, \quad \text{TOP, } \text{-- aux V} \]

(30) Candidate: Structure: Violates:

a. null subject: \[ \quad \text{-- aux V} \]
   SUBJECT, PARS.

b. preverbal subject: \[ DP \quad \text{aux V} \]
   TOPIC.

c. expletive and no subject: \[ expl \quad \text{aux V} \]
   FULL-INT, PARS.

d. null structure: \[ \]
   PARS (three times).

These candidates are all independent of one another, as one can see by checking the constraints they violate. To prove that these candidates exhaust the set of potential optima across all rerankings, I will show that any possible ranking of any other OT candidates will yield some inadmissible constraint violations.

Proof: Let us assume that there exists a candidate \(C\) which is also a potential optima, i.e. that it is not h-bound by any of the four candidates in (30a) above. This leads to a contradiction as shown in the text below:

1. \(C\) cannot be the candidate satisfying all constraints because \(C\) fails PARS.

2. Since step 2 ignores the failure of PARS, there is no possibility of recovering the omitted constraint.

3. As a result, \(C\) would make an additional violation of PARS.

4. The unrealized subject opens the problem of what to do with \(\text{specIP}\). If \(C\) leaves it unfilled, it collects the violation of SUBJECT. Added to the PARS violation, this violation makes \(C\) fail.

5. If instead \(C\) fills \(\text{specIP}\) with an expletive, then \(C\) is indistinguishable from (a) because its PARS violation is less than or equal to the PARS violation of (a). Hence, the subject must be left unrealized. Thus, \(C\) must violate at least PARS.

6. The unrealized subject opens the problem of what to do with \(\text{specIP}\). If \(C\) leaves it unfilled, it collects the violation of SUBJECT. Added to the PARS violation, this violation makes \(C\) fail.

7. If instead \(C\) fills \(\text{specIP}\) with an expletive, then \(C\) is indistinguishable from (c).

8. If instead \(C\) could avoid parsing the verb and the tense specification, thus dissolving the problem by not creating a specIP position, this would cost additional violations of PARS, and make \(C\) indistinguishable from the null structure in (d).

In conclusion, the set of all candidate pairs exhausts the set of potential optima across all rerankings, thus proving that any possible ranking of any other OT candidates is inadmissible.
52. GEN does not supply any other structural option. It follows that Cand cannot be a potential optima, in contradiction with the initial hypothesis. A corollary of this proof is that candidates (a) through (d) are the only potential optima available, and that the 4! = 24 rerankings of the four constraints here examined converge around these four optima. Conversely, we could assume that there are insufficient cases of apparent perdurance as soon as

53. In a language like this, it should be possible to interpret a sentence like *it sings* as "she sings". More precisely, the sought language could have independent overt pronominal forms for argument with non-topic antecedents, but use an expletive form for topic-referring arguments.

8 For example, such a language would arise from the ranking below:

\[
\text{D} > \text{ROP} > \text{T} > \text{OPIC} > \text{SUBJECT} > \text{PARSE} > \text{FULL} > \text{INT}
\]

Conversely, we could assume that there are insufficient cases of apparent perdurance as soon as

Hence, the non-existence of expletive pro-drop would not per se destroy the main results of the OT analysis. Nevertheless, it would have serious consequences for the derivation of the universal ban on non-topic-expletive languages. In this case, the expletive pro-drop is predicted by the proposed model due to the assumption on optional theta-assignment. For example, if this assumption that makes possible for the external role of *run* in (31) to leave the pronoun in subject position.

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A language with such a pattern would offer clear evidence for the language typology predicted by the OT analysis presented before. I have no such example to offer yet.

There is a second less self-evident pattern which arises when the sought language, much like Chinese, does not have distinct pronominal forms for subjects referring to a non-topic. In this case, the Pron1 ... Itspattern would look like English except that its pronouns have been collapsed into one unique form, as shown in (33).

(33)

|----------------|----------------------|-----------------|

English: He/she/it sings. He/she/it sings. It seems that...

Sought L.: Pron sings. Pron sings. Pron seems that...

A language displaying this pattern exists, and is Colloquial Finnish, which descriptively is a non pro-drop version of Standard Finnish. According to Holmberg and Nikanne (1994:12), in Colloquial Finnish the expletive *se* occurs as the subject of weather and seem clauses, as in (34a,b), but it can also occur as the subject of sentences with thematic subjects, and be interpreted referentially as meaning 'he' or 'she', see (35).

(34a) Se sataa.
‘Expl. rains.’

(34b) Se vaikuttaa siltä, että rupeaa satamaan.
‘It seems that it will rain.’

(35) Se väsyy helposti.
‘He/She gets easily tired.’

This pronominal pattern is ambiguous. It could belong both to a language with the constraint ranking of English, but lacking distinctions in its pronominal inventory, as well as to a language with the ranking responsible for expletive pro-drop. We thus cannot know yet whether Colloquial Finnish is or is not the sought language. However, this conclusion makes it premature to assert that the class of languages with expletive pro-drop is empty until we determine the status of Colloquial Finnish.

2.2.7.2. English Stressed and Unstressed Pronouns

A second development concerns the syntactic role of topic antecedents in English. Grimshaw and Rosen (1990:201) argue that an unstressed English third person pronoun is fully natural only if it has a... two sentences, only the pronoun in (a) is grammatical even if unstressed, while that in sentence (b) requires stress.

(a) Mary went swimming with John.     She dived in.

(b) John went swimming with Mary. *She dived in.

The question is whether this and similar effects are due to the topic vs. non-topic status of the antecedent. Under this hypothesis, the pronoun in (a) can stay unstressed because its antecedent is a topic. ... this hypothesis would strengthen the claim that the topic status of antecedents plays an important syntactic role.

The OT model proposed here does not yet cover these cases, since DROP makes only a binary distinction between realization and non-realization of an argument.

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An analogous play on a metaphorical scale is

Mary went swimming with John.   She dived in.

(a) Mary went swimming with John.   She dived in.

(b) John went swimming with Mary.  *She dived in.

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A language with such a pattern would offer clear evidence for the English pro-drop hypothesis. The English pro-drop hypothesis is that the English pronouns have been collapsed into non-topics. In this case, the form and function distribution in (32) above can be interpreted as

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The constraint \( \text{DROP} \text{TOPIC}_{\text{rel}} \) could be a gradient constraint violated once for each immediate projection used in the extended projection that realizes the pronominal argument structurally. \( \text{DROP} \text{TOPIC}_{\text{rel}} \) would then be satisfied only when the argument is left structurally unrealized. However, whenever other higher ranked constraints impose that an argument be structurally realized, \( \text{DROP} \text{TOPIC}_{\text{rel}} \) would militate for structurally minimal realizations. \( \text{DROP} \text{TOPIC}_{\text{rel}} \) Realize arguments with topic antecedents minimally. Failed once by each immediate projection of the extended projection that realizes a topic-referring argument. The additional projection supposedly required by stressed pronouns would be penalized wherever it is unneeded. Even when ranked lower than \( \text{PARSE} \), \( \text{DROP} \text{TOPIC}_{\text{rel}} \) would favor unstressed pronouns over stressed pronouns. The derivation of English unstressed topic-referring subjects would look like T14 below: the null subject candidate in (c) satisfies \( \text{DROP} \text{TOPIC}_{\text{rel}} \), but is suboptimal because it violates the higher ranked \( \text{PARSE} \). The stressed-pronominal and the unstressed-pronominal candidates perform identically under all constraints, but the candidate with the unstressed-pronominal performs better on \( \text{DROP} \text{TOPIC}_{\text{rel}} \) and therefore wins (the actual number of marks under \( \text{DROP} \text{TOPIC}_{\text{rel}} \) would depend on the full analysis given to stressed and unstressed pronominals).

T14. English topic-referring subjects:

\[
\begin{align*}
\text{PARSE} & > > \text{DROP} \text{TOPIC}_{\text{rel}} \\
\langle \text{sing}(x), x=\text{Johntop,--}, T=\text{pres.perf.} \rangle \\
\text{PARSE} & \text{DROP} \text{TOPIC}_{\text{rel}} \\
\text{SUBJ.} & \text{F.I.} \\
\text{a.} & \text{☞ unstressed pron: [ he has sung ]} \\
\text{b.} & \text{ stressed pron: [ HE has sung ]} \\
\text{c.} & \text{ null subj: [ -- has sung ]}
\end{align*}
\]

The derivation of null subjects in Italian-type languages instead would still follow from the ranking \( \text{DROP} \text{TOPIC}_{\text{rel}} > > \text{PARSE} > > \text{SUBJECT} \), which would still favor null subjects over structurally realized subjects. One problem of this analysis arises with subjects which are non... the stressed and unstressed pronouns come out both optimal, incorrectly. I leave this proposal open to further analysis.

2.2.7.3. Licensing Through Agreement

The analysis of null subjects proposed here opens the issue of the role of agreement in the licensing of null subjects. The relevance of agreement is nicely shown by the alternation between Italian and Portuguese infinitivals. In Italian, the alternation between agreementless and agreementfull infinitivals in Spanish depends on the number of marks under agreement relative to agreementfull. Let us assume that this licensing requirement is a constraint \( \text{AGRE-LICENSE} \) which requires referential subjects to be identified through agreement.

The interaction of \( \text{DROP} \text{TOPIC}_{\text{rel}} \) and \( \text{AGRE-LICENSE} \) give rise to an interesting language typology which may account for why referential null subjects must be licensed by agreement in null subjects languages with subcategorization. One problem of this analysis arises with subjects which are non... the stressed and unstressed pronouns come out both optimal, incorrectly. I leave this proposal open to further analysis.

The additional projection supposedly required by stressed pronouns would be

\[
\begin{align*}
\text{DROP} \text{TOPIC}_{\text{prom}} & \text{ Prominence}
\end{align*}
\]
A revised version of Chomsky’s Avoid Pronoun principle would also work. (Chomsky 1981). However, it would not predict the crosslinguistic distribution of null pronouns if subject in pro-drop subjects. Hence, the pro-drop alternation is governed by a parametric difference. The universal information that would still be tied to a particular language is the presence of null subjects in pro-drop languages. Hence, the pro-drop alternation is governed by a parametric difference.

The analysis also predicted the crosslinguistic convergence in the analysis of subjects in languages where there is an overt expletive. In particular, it predicted that topic-referring constituents are not realized, and that overt subjects are only possible when the antecedent is a topic.

The main motivation for representing null subjects structurally is the potential violation of Optimality Theory, and the impossibility of deriving the crosslinguistic distribution of null subjects. Therefore, the pro-drop alternation is governed by a parametric difference in languages with null subjects.

The section provided an OT analysis of the pro-drop alternation within the framework of Optimality Theory, and would have to be maintained in one form or another. What is being lost is thus only the syntactic differences between languages.

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null subjects would be accounted for independently from each other. In contrast, by assuming that null subjects are structurally unrealized, the OT analysis derives both distributions from the interaction of the independently needed DROP, SUBJECT and PARSE.

A second argument for the structural realization of null subjects comes from Safir (p.c.) and is implicitly present in Jaeggli & Safir (1989). It is based on the ungrammaticality of infinitival sentences. According to Jaeggli and Safir, it is precisely the PROexpl element that makes the sentence ungrammatical, because empty expletives must be governed in accord to the Emex Condition. According to Safir (p.c.), (37) is also an argument for the overt realization of the null subject PROexpl, since if PROexpl were not represented it would not be possible to refer to it in order to rule out (37).

It is not obvious that a condition on null expletives such as the Emex Condition could not be reformulated as a condition on the input of infinitival clauses lacking thematic subjects and thus be compatible with sentences with null subjects. However, it is not clear that the view that null subjects are structurally unrealized could be reformulated in order to derive (37) in a condition on null expletives and thus accommodate the observation that the analogous of Italian (38) shown in (40) below is marginally acceptable. Half of the native speakers I tested find the analogous of Italian (38) shown in (40) below only slightly marginal; see (40) below.

Additional evidence comes from French, where aux-to-comp movement is possible and not prohibited as in Italian. The infinitival sentence in (38) below has the structure indicated by the raising of the PROexpl subject in ungoverned position, and yet the final subject which raised a null subject in (41) below is governed and case-assigned from the verb raised into Cº position. In fact, if this were the case, the overt subject in sentence (39) should be licensed, and the sentence be grammatical. However, since (39) is ungrammatical, the subject in sentence (38) should be interpreted as PROexpl, not PROexpl.

The same speakers find the infinitival lacking a thematic subject in (41) below acceptable, and yet find the parallel sentence involving a raising overt subject in (42) unacceptable. The ungrammatical status of (42) shows that the infinitival lacking a thematic subject in (41) below is marginal, because empty expletives must be governed in accord to the Emex Condition, and thus no aux-to-comp movement is possible. The subject in sentence (39) below is interpretable as PROexpl, not PROexpl.

The above discussion indicates that the ungrammaticality of the German sentence in (37) is not related only to the presence of a PROexpl subject.

In the example that you have read, you have (both) a null subject and (a) PROexpl subject in the infinitival clause.

(40) *Au fond, [PROexpl paraitre [que vous n'êtes pas encore mariés]] ne peut que vous aider. In end, to-seem [that you not are yet married] not can that favour-you. After all, to seem that you are not married can only favour you.

(41) ?PROexpl avoir semble' que tu aies menti pourrait te faire perdre la cause. Having seemed that you lied could make you lose the lawsuit.

(42) *PROexpl avoir Jean semble' mentir pourrait te faire perdre le cause. Having seemed that John lied could make you lose the lawsuit.

The above discussion indicates that the ungrammaticality of the German sentence in (37) is not related only to the presence of a PROexpl subject.
possible in Romance. Since this was the crucial assumption underlying the argumentation in favour of structurally realized null subjects, the argumentation itself does no longer apply.

There are also some empirical arguments against the analysis of null subjects as structurally realized. These are examined in the next subsections (see also chapter 5).

2.3.1. The Null Subjects vs. Overt Clitics Split

The analyses advocating an overt representation of null subjects usually classify them with overt clitics, either as structurally realized null clitics (Safir 1985, Burzio 1986), or as proDPs licensed by a pronominal and clitic-like Iº (Rizzi 1982, Chomsky 1982). If these analyses were correct, null subjects and clitics should show a similar distribution. We would thus expect the distribution of overt clitics to match that of null subjects.

Instead, we observe an unexpected split between null subjects and overt clitics. Like null subjects, overt clitics may refer to topic-antecedents, as in the answers to (43) below, but unlike null subjects, clitics can also have non-topic antecedents, as in (44).

(43) Q: E' partita [la madre di Gianni] k?

Did John's mother leave?

A: No. Le [i] daró un passaggio io piú tardi.

Not yet, because (we) her-invited to dinner.

(44) Q: E' partita [la madre di Gianni] k?

Did John's mother leave?

A: No. Non ancora, perché li 'abbiamo invitata a cena.

Not yet, because we invited her to dinner.

A: No. Ha voluto parlare [gli] k un poco in privato, e cosí ha perso il treno!

No. She wanted to speak to him in private, and she lost the train!

A second instance of the split is shown in sentence (45), from Calabrese (1985). Once again, the clitic may take the subject as well as the object of the initial adjunct as antecedent. This behavior diverges from that of a null subject, which can only refer to the subject of the initial adjunct, which is a topic, and not to its object, a non-topic. See (46).

(45) Mentre Sandro [i] ritraeva Carlo k, Antonio lo/i k fotografava.

While Sandro was painting a portrait of Carlo, Antonio was taking a picture of him.

This behavior diverges from that of a null subject, which can only refer to the subject of the initial adjunct, which is a topic, and not to its object, a non-topic. See (46).

(46) Mentre Sandro [i] ritraeva Carlo k, ei / *ek fumava.

While Sandro was painting a portrait of Carlo, he was smoking.

The split just examined shows that identifying null subjects with clitics is incorrect.

2.3.2. Unrealized Null Subjects and Pronominal Typology

One of the properties that Cardinaletti and Starke associate with increased structural deficiency is an increased sensitivity to the status of the antecedent in particular.

Their analysis shows that pronouns are the least and clitics the most structurally deficient.

The spelling shows that identically null subjects with clitics is incorrect.
It is natural to view the proposal that null subjects are structurally unrealized as the extension of Cardinaletti and Starke’s correlation between structural deficiency and increased referential independence. Their hypothesis is that null subjects allow for only topic antecedents. Cardinaletti and Starke’s hierarchy of pronouns would then look like the following.

(47) (less structure) null <--- clitics <--- weak <--- strong <------ (more structure)

An obstacle to this extension of Cardinaletti and Starke’s hypothesis is their classification of null subjects as weak pronouns, thus structurally richer than clitics themselves. However, this classification of null subjects is misleading.

The second criterion is uninformative, because it can be argued either way depending on how null subjects are represented. If null subjects are pro’s, which are assumed to be maximal projections, then they are weak pronouns. If they are structurally null, as assumed in this work, then they are a separate class.

Cardinaletti and Starke offer two pieces of evidence to support their classification. The first piece of evidence is that null subjects and weak pronouns can undergo ATB-extraction in conjuncts, as in (48a) and (48b) respectively, whereas clitics do not.

(48a) e [ha mangiato della zuppa ed ha bevuto vino].
She / he has eaten some soup and drank wine.

(48b) Egli [ha mangiato della zuppa ed ha bevuto vino].
He has eaten some soup and drank wine.

(48c) *Marco lo ha chiamato ed ha sgridato.
Mark called and reproached him.

However, the above paradigm would follow even if null subjects were structurally unrealized.

The second piece of evidence of Cardinaletti and Starke shows that in the example below the weak pronoun egli can freely alternate with a null subject.

(50) Gianni [i partirà quando egli avrà finito il lavoro].
John will leave when he finishes the work.

Personally, I find the overt pronoun above marginal and so do the native speakers I have consulted. The pronoun egli has the same distribution as other overt pronouns: it is not possible when the antecedent is a topic, but it is obligatory when the antecedent is a non-topic. For example, when the subject is non-topic the antecedent is a non-topic, for example, when the subject is topic the antecedent is a topic pronoun. If egli is non-topic, then the antecedent is a topic pronoun. If egli is topic, then the antecedent is a non-topic pronoun. The presence of these null subjects is why egli is more structurally deficient than other pronouns.

In contrast, unrealized subjects do not need to cliticize, and this is illustrated by the following example.

(49) Marco lo ha chiamato e sgridato.
Mark called and reproached him.

Null subjects are not like clitics nor weak pronouns. Being pronouns, null subjects do not need to cliticize. However, the above paradigm would follow even if null subjects were structurally unrealized.

The first piece of evidence is that null subjects and weak pronouns can undergo ATB-extraction in conjuncts, as in (48c) and (48a) respectively, whereas clitics do not.

The second criterion is uninformative, because it can be argued either way depending on how null subjects are represented. If null subjects are pro’s, which are assumed to be maximal projections, then they are weak pronouns. If they are structurally null, as assumed in this work, then they are a separate class.

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The exhibition has been visited by the President of the Republic.

(He) / he has then moved on directed to the 'Chigi' palace.

Cardinaletti and Starke’s structural deficiency hierarchy is compatible with the hypothesis that null subjects are structurally unrealized, forming the most structurally deficient class at the core of the hierarchy. The close correlation among these three dimensions that is at the core of Cardinaletti and Starke’s proposal.

2.3.3. Unrealized Subjects in English and Irish

If the subject constraint is violable, we may expect to find it violated also in other languages, including English. In this section, I review some of the works which have argued for an unrealized specifier position.

Instances of empty specIP in English are presented in Bresnan (1994; see also the analysis of quotative inversion in Collins & Branigan, 1995). Drawing from the analyses of Higgins (1973), Emonds (1972), Bresnan (1994), and Kassem (1998), we see that the subject in (52) and (53) may be anaphoric.

(52) CP: 
[That he'll be late] is quite likely.

* Is [that he'll be late] likely? (Koster 1978)

* How likely is [that he'll be late]? (Higgins 1973)

(53) PP: Among the ruins was found a skeleton. (Bresnan 1994)

* Was among the ruins found a skeleton? (Bresnan 1994)

The above data could follow from a resistance on the part of the CPs and PPs in (52) to (56) to occur in the case-assigned position specIP (Stowell, 1981; Grimshaw 1994). Notice that under standard analyses an expletive pro is not an option available to English. Nor does it seem possible to license the pro in this particular structures by coindexing it with the subject CP or PP: such CHAIN would link together a case-resistant non-nominal element with what is considered a case-transferring nominal.

The status of specIP is problematic also under the OT analysis proposed here, which requires data to yield a case-resistant argument.

A possible argument in favor of unrealized specIP's comes from McCloskey’s study of Irish unaccusatives with prepositional subjects, like that in (57) below.

Among the ruins was found a skeleton. (Bresnan 1994)

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Among the ruins was found a skeleton. (Bresnan 1994)
McCloskey argues that if the PP in (57) were in specIP, it could only be because of the Extended Projection Principle (EPP), because PPs do not need case. But, this in turn would predict PPs to be able to occur in preverbally located SO argument form (e.g., (58)), as well, even if infinitivals do otherwise require nominal subjects to occur preverbally; compare (58) and (59).

2.3.4. Summary

This section has explored the close connection between representing null subjects as structurally unrealized and accounting for their distribution. The diminished referential independence, coupled with the prosodic and structural minimality of null subjects, provided strong evidence for Cardinaletti & Starke’s (1994) deficiency hierarchy, but only if McCloskey’s (1994) proposal that the EPP is inviolable was accepted. The status of null subjects as structurally unrealized was further supported by the studies of Bresnan and McCloskey on English and Irish constructions with unrealized specIP.

2.4. Topics and Pronouns

In this last section I will review Calabrese and Montalbetti’s analysis of null subjects in the light of the role of topichood argued for in section 2.1. The section ends with a discussion of some problematic instances of null subject clauses in section 2.4.1. The section ends with a discussion of some problematic instances of null subject clauses in section 2.1. The section ends with a discussion of some problematic instances of null subject clauses in section 2.4.1.

For our purposes, it is sufficient to say that the notion of expected referent states that null subjects must have as antecedent a theme within their T-domain, where a theme is the subject of a primary predication and the T-domain of a subject includes the clause, all clauses within its clause, and all adjacent clauses in coordination structures, including cases like (60) below.

When Antonio was beating Carlo, he was drunk.

Quando Antonio ha picchiato Carlo, e era ubriaco.

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When Antonio was beating Carlo, he was drunk.

Quando Antonio ha picchiato Carlo, e era ubriaco.
the two and show how topichood rather than subjecthood is the notion involved in the licensing of null subjects.

A first case is the QA-pair repeated below, where the antecedent of the answer's null subject is the by-phrase of the question. The alternation between the null subject and the overt subject in the answer is unexpected under Calabrese's proposal, which allows only for the following two cases: (i) the null subject, incorrectly predicting an overt pronominal, because the antecedent is not a theme. In either case, the obligatoriness of the null pronominal in (61b) is unexpected. It is instead predicted if what's required to license a null subject is only that its antecedent be a topic (for the topic status of the by-phrase, see the discussion in section 2.1).

(61a) Q: Quali mostre sono state visitate da [Gianni]?
Which exhibitions were visited by John?

Recently, (he) / he / he has visited Klee's and Miro's exhibitions.

A similar case can be made for left dislocation constructions like those in (62) below. Here, the T-domain of the null subject does not extend beyond its clause. Hence, Calabrese's proposal makes no prediction. However, as in (62a), and obligatory overt subjects when the antecedent is not the topic, as in (62b).

(62a) [Il padre di Gianni] i, Maria conosce il motivo per cui [ei / ??eglii / *luii] è scappato.
The father of John, Mary knows the reason why (he) / he / he ran away.

(62b) [Il padre di Gianni] k i, Maria conosce il motivo per cui [ek / ??eglik / luik] li' ha criticato.
The father of John, Mary knows the reason for which *(he)/he / he him has criticized.

Calabrese does propose in passing a principle classifying what he calls 'extralinguistic salient referents' as expected referents, and thus possible licensors for a null subject. If topics are ... in the model proposed by Reinhart and sketched in section 2.1, then Calabrese's latter principle is reminiscent of DROP, in that it also ties null subjects to topic antecedents. Calabrese thus does recognize that in some cases null subjects are licensed by the discourse status of their antecedent, which I here propose as the topic status of the null subject. For example, in sentence (63a), the left dislocated object Mario is not a subject, and therefore not a theme, but it is a topic. However, as Calabrese observes, the null subject of (63b) takes as antecedent the subject and theme Sandro, and not the topic Mario. It thus appears that subjecthood and not topichood is crucial to the licensing of null subjects.

(63) a. Mario i, Sandro l'ha incontrato per strada ieri.
As soon as he saw him, he... Mario, Sandro met him in the street yesterday.

b. Appena e li è arrossito.
As soon as he saw him, he blushed.

The argument relies on the hidden assumption that the topic for sentence (63a), Mario, is necessarily also the topic of (63b). The assumption is not straightforward, because sentence (63a) introduces the subject Sandro between the left dislocation phrase Mario and the null subject of (63b) and we know that subjects can have topic status from the study of passives in section 2.1. The question is thus whether Mario still counts as the topic after that (63a) has been uttered, and a new potential topic, the subject of (63a), is introduced. The issue of the question is that the model proposed by Calabrese makes no prediction. We observe the familiar alternation between obligatory overt subjects when the antecedent is a topic, as in (63b), and obligatory null subjects when the antecedent is not a topic, as in (63a), and showing obligatory null subjects when the antecedent is a topic, as in (63b), and obligatory overt subjects when the antecedent is not the topic, as in (63a).
has been introduced. A more reliable sentence to test whether theme-licensing is indeed independent from topic licensing follows in (64) below. As in (63) above, we have two potential antecedents: a non-theme topic in the left dislocated phrase Mario, and a theme in the subject of the adjunct clause Sandro. According to Calabrese's analysis, the null subject should take Sandro as antecedent, because it must be licensed by an available theme in its T-domain, when one exists, and Sandro is one. Instead, the null subject can only take as its antecedent Mario.

(64) Mario s, quando Sandro l’ha incontrato, es /??ei é arrossito. Mario, when Sandro him-has met, (he) blushed.

As for Mario, when Sandro met him, he blushed.

Since (64) could be analyzed as having Mario as the SpecIP subject of the sentence, with a parenthetical adjunct in I', the test is repeated with the left-dislocation structure in (65) below, where no such alternative analysis is available.

(65) Mario s, nessuno sa perché quando Sandro l’ha incontrato es /??ei é arrossito. Mario, nobody knows why when Sandro him-has met, (he) blushed.

As for Mario, nobody knows why when Sandro met him, he blushed.

In (64) and (65) we deal once again with a plurality of topic sources, since both the subject and the dislocated phrase are possible topic antecedents. The problem for Calabrese's analysis is that it incorrectly predicts that the available theme Sandro should be the only possible antecedent, against (64) and (65). On the other hand, if left-dislocated phrases are topics only for a discourse shift function, the problem of the null subject can be easily avoided.

In conclusion, the important results attained by Calabrese in his (1985) study seem more appropriately interpreted when cast in terms of topichood. From Calabrese's argument for the primacy of subject over topics and the comparisons made here, it also follows a non-stative view of topiclicensing which devalues utterance licensing and preserves the principle of topichood.

2.4.2. Centering-based Theories

The analysis of Di Eugenio (1995, 1993), cast within the framework of centering theory, identifies the class of discourse transitions requiring null subjects. Her main claim follows in (66) below.

(66) Typically, a null subject signals a CONTINUE [transition] and a strong pronoun a RETAIN or a SHIFT [transition]. A CONTINUE transition consists of two sentences Un-1 and Un such that the subject of Un denotes at the same time the entity most centrally concerned by Un and by Un-i. If we take most centrally concerned by Un to mean 'topic of Un', then the proposal relates null subjects to those sentences Un whose subject refers to the topic of Un-i. Instead of (66) we take most centrally concerned by Un to mean 'most salient discourse entity' of Un, and by (66) we refer to the discourse entity most salient in Un-i. If the subject of Un-i is the most salient discourse entity in Un, then the proposal of Di Eugenio's proposal is thus based on the same intuition exploited in this work, i.e. the relation between null subjects and the topic status of their antecedents.

The two analyses however are not equivalent. The statement in (66) above specifies conditions for the occurrence of null subjects as well as for the occurrence of strong pronouns. In contrast, the OT approach...
A second point worth mentioning concerning Di Eugenio’s analysis is its dependence on a two-sentence domain. This makes it difficult to apply it to single sentences, such as the left dislocation cases already examined in this chapter, and repeated below.

(67a) [Il padre di Gianni, conosco il motivo per cui \( \text{egli} \) \( \text{lui} \) \( \text{ha scappato} \).

John’s father, I know the reason why he ran away.

(67b) [Il padre di Gianni, conosco il motivo per cui \( \text{egli} \) \( \text{lui} \) \( \text{ha criticato} \).

John’s father, I know the reason why he criticized him.

The same remarks hold for Dimitriadis’s (1995) analysis of Greek pro-drop, also cast in centering theory. His analysis is similar to Di Eugenio’s. Interestingly, his main proposal defines when overt subjects are possible for the non-null pronoun in existential sentences, whereas the complementary distribution of null and overt pronouns appears to involve

{Overt Pronoun Rule}

(68) The Overt Pronoun Rule: An overt pronominal subject in Greek should not be constructed with the \( \text{Cp} \) of the previous sentence.

Once considered together, the Di Eugenio and Dimitriadis analyses appear to leave undetermined whether the complementary distribution of null and overt subjects in pro-drop languages should be formalized in a specific condition for the distribution of overt pronouns. This is not the case in the OT analysis, which cannot be reversed into its complement. The hypothetical constraint \( R_{\text{EALIZE-NON}} \) is useless in deriving the distribution of null subjects in pro-drop languages, let alone cross-linguistically. In fact, it would have the same effect as any particular condition of illicit expression of overt pronouns.

2.4.3. Huang’s Zero Topics

The role of topic antecedents in licensing null subjects in Italian shown in section 2.1 poses the interesting question whether Italian should be analyzed along the lines of Huang’s analysis of Chinese null objects, that is as a variable bound by a deleted topic operator (Huang 1984).

Left-dislocation sentences like the one below suggest that this cannot be the case. In fact, the null subject is here licensed by the sentence initial left dislocated constituent across a strong NP island, excluding an analysis where the left dislocated constituent is raised into its final position from the position of the null subject.

(68) [Il padre di Gianni, conosco il motivo per cui \( \text{egli} \) \( \text{lui} \) \( \text{ha scappato} \).

John’s father, I know the reason why he ran away.

2.4.4. Montalbetti’s Overt Pronoun Constraint

In his dissertation, Montalbetti argued for the “Overt Pronoun Constraint”, which states that overt pronouns cannot be directly bound by an operator wherever a null pronominal is possible for the Overt Pronoun Constraint, which in this dissertation, Montalbetti agreed for the Overt Pronoun Constraint, which

\[ \text{OPC} \] (Montalbetti 1984:92): overt pronouns cannot link to formal variables if the pronoun is possible.

The overt pronoun can be directly bound by an operator whenever a null pronoun is possible for the Overt Pronoun Constraint, which

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The overt pronoun can be directly bound by an operator whenever a null pronoun is possible for the Overt Pronoun Constraint.

\[ \text{OPC} \] (Montalbetti 1984:92): overt pronouns cannot link to formal variables if the pronoun is possible.

This principle accounts for the analysis in (71), involving Montalbetti’s original

\[ \text{OPC} \] (Montalbetti 1984:92): overt pronouns cannot link to formal variables if the pronoun is possible.

The overt pronoun can be directly bound by an operator whenever a null pronoun is possible for the Overt Pronoun Constraint.

\[ \text{OPC} \] (Montalbetti 1984:92): overt pronouns cannot link to formal variables if the pronoun is possible.

The overt pronoun can be directly bound by an operator whenever a null pronoun is possible for the Overt Pronoun Constraint.

\[ \text{OPC} \] (Montalbetti 1984:92): overt pronouns cannot link to formal variables if the pronoun is possible.
Many students believe that they are rich.

Many students said that (they) believe that they are rich.

The OT analysis proposed here would maintain that (71a) and (71b) compete for grammaticality with each other and that (71a) is ungrammatical because it is suboptimal (Theta-Consistency excludes (71c) ... with (71a) and (71b)). If the quantifier phrase counts as topic, the ungrammaticality of (71a) follows from its failing DROPopic. Sentence (71b) instead satisfies DROPopic, and is selected as optimal and thus grammatical.

Under this account, (71c) should also lose out to its null subject counterpart. It could be grammatical only if it involved focusing, contrasting the 'many students' of (71c) to other less fortunate students.

Preliminary evidence for an account of Montalbetti's data along the line just introduced comes from the contrast presented below, provided by an informant which otherwise agrees with Montalbetti's ... predicts that the subordinate subject, linked to the wh-variable of the main clause wh-subject, requires a null subject.

Who believes that (he)/he is rich?

No one believes that he is intelligent.

However, Montalbetti's dissertation lacks the complete paradigm, in particular it lacks the correspondent of (71c), which is crucial control for the OPC.

However, the OPC predicts that the same contrast should occur when the subordinate subject is linked to the wh-variable left by the indirect object. However, in this case the OPC does not apply.

Who said John that (he)/he is rich?

To whom did John say that (he)/he is rich?

This analysis is in contrast with data like those in (74) below, whose ungrammaticality follows only if coindexing the indirect-object with the subordinate subject violates condition C. This in turn entails that the indirect argument can bind, and thus c-command, the subordinate subject, and in turn that the OPC does apply to (72b).

18 (The Spanish equivalent of (74) is non-informative because it requires clitic-doubling, and the clitic always triggers a condition C violation when coindexed with the subordinate subject as required by the OPC. The Spanish equivalent of (74) below, Montalbetti's OPC correctly predicts that the subordinate subject linked to the indirect object is non-informative because it requires c-command of the subordinate subject, and in turn that the OPC does apply to (72b)).

Who said John that (he)/he is rich?

Mary said to him that John is rich.

Mary has told him that he is rich.

Who believes that (he)/he is rich?
Montalbetti's OPC thus does not account for the contrast between (72a) and (72b). If instead variables of subject wh-operators had topic-status while variables of indirect object wh-operators didn't, the contrast would follow from the OT analysis pursued in this work. Nevertheless, there is another issue that arises from this data.

The data in (72) suggest that subjects (and baccare) are deictic topics. Some of the wh-operators in (72) have their left or right discontinuity that is not fully captured by their antecedents in the main clause. This is the case with (72b) and (75b). The second concern is the fact that the contrast in (72) does not occur with other types of operators. The data in (75) below show that some quantifiers and wh-operators allow for a coindexed null subject in the subordinate clause.

(75a) Juan dijo a muchos estudiantes que ellos eran ricos.
     Juan said to many students that (they)/they were rich.

(75b) [A que estudiantes] dijo Juan que ellos eran ricos?
     To which students did John say that (they)/they were rich?

The contrast between (72b) and (75b) is particularly interesting in light of the distinction between D-linked and non-D-linked operators made in Pesetsky (1989), suggesting that D-linked operators could have topic status only if the subject is D-linked and non-D-linked operators made in Pesetsky (1989). The issue explored in this section is whether all instances of null subjects can be analyzed as licenced by an antecedent with topic status.

2.4.5. Topics for a Theory of Topic

On the basis of the alternations in section 2.1, it was proposed that topic antecedents require null subjects, a requirement later encoded through DROP. The issue explored in this section is whether all instances of null subjects can be analyzed as licenced by an antecedent with topic status. The same function for null subjects would have to apply if subjects as said. The second class of cases concerns null subjects deictically referring to the speaker or hearer. The last class of cases concerns null subjects deictically referring to the speaker or hearer.

The choice of the main clause verb thus appears to have some influence in determining which constituents are granted topic status in a clause. The data in (78) suggest that subjects with variable antecedents. A second problematic class concerns cases where more than one constituent in a clause can serve as antecedent of a following null subject.

(78) a. espeaker telefoneró domani. b. ehearers telefonerete domani.
     (I) call-FUT-1sg tomorrow. (You) call-FUT-2pl tomorrow.

The data in (78) suggest that speaker(s) and hearer(s) act as deictic topics. Some evidence for this hypothesis comes from the fact that like third person overt pronouns, first and second person overt pronouns are grammatical only under contrastive focus of the pronominal subject, which constitute a minimal pair with those in (78) and (75).

Montalbetti's OPC thus does not account for the contrast between (72) and (75).
sions of their argument, and the discussion of related examples...

...and very express both assumptions and the impossibility of a grammar with both overt and null subjects. As for example, the deontic constraint on the order of verbal and non-verbal arguments, the deontic constraint on the order of subjects and positions, the deontic constraint on the order of subjects and positions, the deontic constraint on the order of subjects and positions...

2.3 Conclusions

In the chapter I showed how the OT-based interaction of the four universal constraints...

For example, Finnish, which allows for null subjects only in first and second person, where null subjects are possible on possessive determinants in the possessive case. Another may give rise to the patterns found in null subject languages, another, they may give rise to the patterns found in null subject languages, another, they may give rise to the patterns found in null subject languages, another, they may give rise to the patterns found in null subject languages, another, they may give rise to the patterns found in null subject languages...

The independence of deictic topics from discourse topics leads us to the hypothesis...

John, I know the reason why John,...

The independence of deictic topics from discourse topics leads us to the hypothesis...

2.5. Conclusions

In this chapter I showed how the OT-governed interaction of the four universal constraints...

It is the underlying Optimality Theoretic framework that makes a unified analysis of these phenomena possible, and which therefore is supported by the above results. The conditions encoded by the constraints...
3.1 Structural Contrastive Focusing in Italian

Any complete account of subject inversion in Romance languages should answer the following questions:

(i) What makes subject inversion possible?
(ii) Where higher subject inversion possible?

The first question has received most attention, because of its correlation with null subjecthood and its challenge to the Extended Projection Principle; see among others work by Perlmutter (1971), Chomsky & Lasnik (1977), Taraldsen (1979), Jaeggli (1980), Rizzi (1982), Safir (1985), Burzio (1986).

By comparison, investigation of the second issue has been less systematic (but see work by Calabrese 1982, 1985, 1992; Shlonsky 1987; Diesing 1992; Saccon 1993; Levin and Rappaport 1995). In this first part of the chapter, section 3.1 argues for the existence of a universal Contrastive Focusing constraint that licenses focused constituents to get contrastive focus interpretation by raising into a VP-adjoined A'-position.

The analysis that follows is developed in adherence to the semantics for contrastive focus developed in Rooth (1985) and all the logic expressions being used in the following are compositionally derivable within Rooth's system. Contrastive focusing is here a primitive.

The next section introduces structural contrastive focusing in Italian. Section 3.1.2 distinguishes the focused VP-adjoined position from a linearly equivalent but structurally higher position. Section 3.1.3 examines the evidence for its VP-adjoined location and A'-status. A complete derivation for a specific case is given in Appendix A.
Descriptively, languages vary with respect to the way they express contrastive focus. Some languages use stress, English being one of them (among others, see Chomsky 1971, Selkirk 1984, Culicover and Rochemont 1989, Rochemont and Culicover 1992). Languages (Shuh 1982, Tuller 1992), Catalan (Bonet 1990), and in some cases even English (Rich 1976, Selkirk 1982, Culicover and Rochemont 1992, Rochemont and Culicover 1998) can express contrastive focus in other ways through stress as well as declarative sentences. 

Languages express contrastive focus in different ways through stress as well as declarative sentences. 

languages express contrastive focus in different ways through stress as well as declarative sentences.

However, contrastive focus can also be expressed structurally. For example, in (2b),

(2b) Ha urlato Gianni, Domenica scorsa.

Has screamed John, Sunday past.

John screamed last Sunday.

In the following, I will argue that the subject in (2b) is focused structurally in VP-adjoined position (3) below.

(3)  Ha urlato Gianni.

There are previous accounts by showing that contrastive focus is structurally encoded in such languages as Italian. For example, when preverbal, subjects are interpreted as contrastively focused only if associated with emphatic stress (in upper case).

(2a) GIANNI ha urlato, Domenica scorsa.

John has screamed, Sunday past.

JOHN screamed last Sunday.

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(2a) GIANNI ha urlato, Domenica scorsa.

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(2a) GIANNI ha urlato, Domenica scorsa.

John has screamed, Sunday past.

JOHN screamed last Sunday.

(i) Constituents in the focus position are interpreted as focused, while right-dislocated ones are not.

(ii) Constituents in the focus position are always inside the intonational phrase of the main sentence, while right-dislocated ones are preceded by an abrupt intonation fall and, optionally, by a pause.

(iii) Internal arguments in the focus position cannot co-occur with a clitic, while right-dislocated internal arguments can.

(iv) Quantified constituents like *ciascun ragazzo* 'each boy' may occur in the focus position but they cannot be right-dislocated.

(v) A local neg-marker in *I'º* may license a negative polarity item like *alcuno* 'anybody' or *nessuno* 'nobody' in the focus position, but not in the right-dislocated position.

Here, I will only consider examples that illustrate properties (i), (ii) and (iii); other relevant examples can be found in Antinucci and Cinque (1977), Calabrese (1992), Bonet (1990), and Samek-Lodovici (1993).

Consider the contrast between (5) and (7), which share the same word order. When the object is in the focus position, as in (5), it lies within the main intonational phrase of the sentence (property (ii)), it is interpreted as focused (property (i)), and it disallows a coindexed clitic, as (6) shows (property (iii)).

(5) *Gianni non ha presentato a nessuno Carlo.*

John didn't introduce him to anybody.

It is Carl that John did not introduce to anybody.

(6) *Gianni non loi ha presentato a nessuno Carlo.*

John didn't introduce him to anybody.

When the object is in right-dislocated position, as in (7), it lies outside the main intonational phrase of the sentence, hence it is interpreted as a double composite (property (i)) and it is not focused (property (ii)).

(7) *Gianni non (lo i) ha presentato a nessuno,, Carlo.*

John didn't introduce him to anybody,, Carl.

Strong evidence for the existence of two postverbal positions was also given in Saccon (1993) analysis of postverbal subjects in Conegliano, where presentationally-focused postverbal subjects do not show clitic agreement while preverbal and right-dislocated postverbal subjects do.

The contrast between overt and hidden presentationally-focused constituents is also shown in example (8), which illustrates property (iv). When the object is in the focus position, as in (8), it lacks agreement, as shown by the absence of the feminine subject clitic *la*.

(8) *El a ridest sol che la Maria, al cinema.* (Saccon 1993:217)

(-agr) has laughed only the Mary, at-the movie.

Only Mary laughed, at the movies.

Together, these examples show that the right-dislocated and the contrastively focused positions are distinguished semantically, phonologically, and syntactically, making it possible to study each position in isolation.
3.1.3. The Contrastive-Focus Status of the FP Position

Let me move to the core of this first section and discuss the evidence in favor of structural focus for constituents in the VP-adjoined focus position. The evidence will be based on the analysis of question-answer pairs, focusing adverbs and ergatives.

3.1.3.1. Evidence from Question-Answer pairs

The existence of a structural focus position is supported by the analysis of question-answer pairs within Rooth's (1985) semantics for contrastive focus, which I assume throughout this work. In particular, I assume that the constituent in the answer corresponding to the wh-phrase in the question is always contrastively focused.

(9) Central assumption: In a question-answer pair, the answer's wh-phrase counterpart is contrastively focused.

Before turning to the data let me briefly explain this assumption. Under Rooth's analysis, which draws from work by Hamblin (1973), Karttunen (1977), Chomsky (1971), and Jackendoff (1972), contrastive focus and non-contrastive focus are often associated with the same set of propositions only if the focused constituent is in the answer the same set of propositions as in the question. Since focusing of different contrastive elements is due to the focused position and not to their contents, the focused constituent is in the answer and the non-focused constituent is in the question.

(10a) Q: Chi ha gridato?
(10b) A: Ha gridato Gianni.

Sentence (10a) is grammatical, and sentence (10b) is acceptable, which is consistent with the analysis. In particular, the focused constituent in (10b) is the postverbal subject, which is in the answer.

The result is a powerful diagnostic test. Whenever a question-answer pair is judged grammatical, we can safely assume that the answer’s counterpart of the wh-phrase is contrastively focused.

Let us now turn to the data. Consider the question-answer paradigm in (11) below.

Sentence (11b), with a postverbal subject, forms a good pair with question (11a).

(11a) Q: Chi non hai presentato a nessuno?
(11b) A: Non ho presentato Gianni a nessuno.

The postverbal subject in (11b) and the object in (11c) can host the intonational pitch of the sentence. This pitch is clearly distinguished from the emphatic stress associated with focusing-by-stress, which is necessary to contrast. Thanks to Hubert Truckenbrodt for pointing out this distinction.

2 The postverbal subject in (10b) and the object in (11c) can host the intonational pitch of the sentence.
The analysis of question-answer pairs thus shows that argumental constituents can be focused structurally, by raising into a rightward focus position.

3.1.3.2. Evidence from Focusing adverbs

Independent evidence for structural focus in postverbal position comes from the analysis of focus-sensitive adverbs such as *only*. These adverbs are sensitive to any focused constituent within their scope and always require one in order to be interpreted. We may therefore insert the adverb *only* in a sentence and then check whether an object in situ and an object in focus position contrast in their focus status with respect to the focusing adverb. This will thus be true of all constituents involved in the following tests.

Consider (12) and (13) below. In (12), the direct object is in situ. As predicted, a contrastive focus interpretation of the object is unavailable (association with *only* is expressed through coindexation).

(12) Ho soltanto presentato Gianni a Maria.

*Ho soltanto i [vp presentato Giannii a Maria].

∀x [introduce' (I, x, mary) => x=john]

(13) Ho soltanto presentato a Maria Gianni.

*Ho soltanto i [vp [vp presentato  ti a Maria] Giannii].

∀x [introduce' (I, john, x) => x=mary]

(1) Ho soltanto *presentato Gianni a Maria*.

The patterns in (12) and (13) show that the object must raise to the rightward VP-adjoined focus position in order to get contrastively focused.

Although (12) displays structural focus of the object, it still allows for two other interpretations: one focusing the indirect object, and the other focusing the entire VP. They are both predicted by the availability of postverbal structural focus. The first interpretation is obtained when the indirect object is the focused object, as in (12a) below.

(12a) Ho soltanto *i [vp  [vp  presentato Gianni ti] [a Maria]]*. 

∀x  [introduced' (I, john, x) => x=mary]

It is to Mary that I introduced John.

The second reading arises when the whole VP raises into focus position, as in (12b) below.

The indirect object is focused as well.

The second reading arises when the whole VP raises into focus position, so that the indirect object is the focused object, as in (12b) below.

In (12) below, the adverb *only* focuses the whole VP, whereas in (12b) below, it focuses only the direct object.

This is best explained by the fact that the adverb *only* has sentential scope in (12). Under the interpretation in (12), the indirect object *Gianni* is the focused constituent.

The patterns in (12) and (13) show that the object must raise to the rightward VP-adjoined focus position in order to get contrastively focused.

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It is to Mary that I introduced John.

The second reading arises when the whole VP raises into focus position, as in (12b) below.

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(12a) Ho soltanto *i [vp  [vp  presentato Gianni ti] [a Maria]]*. 

∀x  [introduced' (I, john, x) => x=mary]
As for (13), its linear order excludes raising of the indirect object into focus position, predicting that (13), unlike (12), will not admit focusing of the indirect object. The prediction is borne out. The linear order of (13) is, however, compatible with focusing of the whole VP, which in fact is a possible though marginal interpretation. This case also shows a non-canonical order of the internal elements of the VP when the whole VP is focused, and itself contains a focused object. The structure follows in (13a) below.

(13a) Ho soltanto presente Gianni a Maria.

Overall, the existence of a postverbal position for structural focus was shown to strongly correlate with the asymmetric sets of interpretations associated with (12) and (13).

Postverbal structural focus also accounts for the set of readings arising when the indirect object is right-dislocated. The object can now raise into the focus position and yet remain to the left of the focus. In (14), the indirect object is right-dislocated (witness the pause introducing it, and the following sentence (14) below with (12)). In (14), the indirect object is right-dislocated. The object can now raise into the focus position and yet remain to the left of the focus. In (14), the indirect object is right-dislocated. The object can now raise into the focus position.

John has sung only yesterday. (14) John has only sung yesterday.

John has called only Mark. (5) John has only called Mark.

John has given only a cat to Mary. (6) John has only given a cat to Mary.

The lack of sentential scope in (3)-(6) excludes an analysis of (2) based on the presence of the verb trace in the scope of the adverb, because this analysis does not distinguish (2) from (3)-(6). The solution should be looked for in the specific properties of the verb mettere. The paradigm in (2)-(6) also suggests a certain caution in using mettere as the prototypical member of the class of ditransitive verbs in Italian.
The structure of (16) is shown in (16a): the subject has raised from its base-generated specVP position to the focus position, where it is assigned a contrastively focused interpretation.

(16a) Ha soltanto i [vp [vp ti camminato] Giannii].
∀x [walked' (x) => x=john]

Only John walked.

A more interesting contrast is the one between (17a) and (17b). In (17a), the subject is preverbal. Hence, nothing prevents the whole VP from moving into focus position. Since the VP contains only the verb, the interpretation focuses the verbal predicate alone.

(17a) Gianni ha soltanto camminato.
∀p [p ∧ ∃P p=P(john) => p=walked' (john)]

John only walked.

In contrast, the subject in (17b) is in focus position, which is sensitive to focused constituents. Therefore, it cannot associate with the lowest VP projection, but must associate with the focused subject. The unavailable structure, with the adverb co-indexed with the lowest VP, is shown in (17b).

(17b) Ha soltanto i [vp [vp [vp ti camminato]] Giannii].
∀p [p ∧ ∃P p=P(john) => p=walked' (john)]

John only walked.

This contrast thus follows naturally from the fact that the preverbal subject is necessarily focused.

Summarizing, the existence of a VP-adjoined focus position accounts for the interpretational symmetries and asymmetries found in sentences containing the adverb only and constituents in postverbal position.

Ergatives further support the analysis of structural focus in Italian. In her investigation of partitive case, Belletti (1988) identifies a definiteness effect on the in-situ subject of ergatives, ... analyzed as in situ because it is not introduced by the intonational fall associated with right-dislocated constituents.

(18a) * E’ entrato l’uomo dalla finestra.
It is the man that came in from the window.

Belletti observes that the definiteness effect is absent when the subject occurs to the right of the indirect locative argument. The existence of a VP-adjoined position for contrastive focus accounts for this... from this position, where they are fully grammatical and interpreted as.

(19) E’ entrato l’uomo dalla finestra, (non la donna).
It is the man that came in from the window (not the woman).

The focused interpretation of VP-adjoined subjects can be made visible through the use of focusing adverbs, as with the parallel cases involving nonergative verbs: in (20), the pre-locative subject cannot be interpreted as.

(20) E’ soltanto entrato un uomo dalla finestra.
Is only entered a man from the window.

(21a) E’ soltanto i [vp [vp entrato un uomo dalla finestra].
The only event that happened was that a man came in through the window.

The focused interpretation of VP-adjoined position.

3.1.3.3. Evidence from Ergatives

Further support for structural focus in Italian comes from the analysis of ergatives. Belletti observes that the definiteness effect is absent when the subject occurs to the right of the indirect locative argument.

(18b) * E’ entrato l’uomo dalla finestra.
It is the man that came in from the window.

Belletti observes that the definiteness effect is absent when the subject occurs to the right of the indirect locative argument. The existence of a VP-adjoined position for contrastive focus accounts for this...

(19) E’ entrato l’uomo dalla finestra, (non la donna).
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(20) E’ soltanto entrato un uomo dalla finestra.
Is only entered a man from the window.

(21a) E’ soltanto i [vp [vp entrato un uomo dalla finestra].
The only event that happened was that a man came in through the window.

The focused interpretation of VP-adjoined position.

3.1.3.3. Evidence from Ergatives

Further support for structural focus in Italian comes from the analysis of ergatives. Belletti observes that the definiteness effect is absent when the subject occurs to the right of the indirect locative argument. The existence of a VP-adjoined position for contrastive focus accounts for this...
A man entered only through the window.

However, when the subject follows the locative argument and occurs in focus position, it is interpreted as contrastively focused.

The only thing that entered through the window was a man.

The analysis of ergatives thus confirms the existence of a postverbal position for structural contrastive focus.

3.1.3.4 Rizzi’s Verb Subject Adjacency.

Before concluding this section, it is worth examining again sentences such as (23) below, where a focused postverbal subject follows an in-situ object.

(23) Q: Chí non ha fatto niente?
Who did nothing?
A: Non ha fatto niente Gianni.
JOHN did nothing.

According to Rizzi’s (1991:19) analysis of postverbal subjects, sentence (23) should be as ungrammatical as (24) below, because the intervening object prevents adjacency between the postverbal subject and the trace of Tense, blocking case-assignment.

(24) *Ha fatto questo Gianni.
Has done this John.

While I do not have a full account for the diverging grammaticality of (23) and (24),

8 According to my judgement, the indefinite object can be right-dislocated, but only when coindexed with
an object clitic, as in (1) below. I owe this interesting observation to Eric Bakovic.

(1) Li’ha soltanto scritta ti Maria,, una letterai.

Calabrese ties the contrast to the intrinsic new-information nature of the indefinite, which would prevent it from undergoing rightward emargination à la Antinucci and Cinque (1977), because the latter affects discourse referential expressions, as in (25a), or because it is a generic, as in (25b) and (25c) (in (25b), casa has the same sense found in the English expression going home.).

(25a) Ha soltanto scritto una lettera Maria.
Has only written a letter Mary.

(25b) *Ha soltanto scritto ti Maria una letterai.

(25c) Q: Chí ha lavorato almeno un poco?
Who worked at least a little?
A: Ha fatto qualcosina Gianni.
JOHN did some work.

The analysis of ergatives thus confirms the existence of a postverbal position for the inverted subject is contrastively focused, as shown by the contrast in (25a) and (25b),

which would prevent it from undergoing rightward emargination à la Antinucci and Cinque (1977), because the latter affects discourse referential expressions, as in (25a), or because it is a generic, as in (25b) and (25c) (in (25b), casa has the same sense found in the English expression going home.).

The only thing that entered through the window was a man.

However, when the subject follows the locative argument and occurs in focus
The above data call for a refined analysis of Rizzi's data, possibly along the
guidelines offered by Calabrese. For the goal of this chapter, it was sufficient to show
that focusing of the subject does not always require obligatory emargination of the
internal arguments separating the subject from the verb.

Summarizing the entire section, we have seen that the analyses of focusing adverbs,
question-answer pairs and ergatives all converge on the conclusion that constituents
can acquire a contrastively focused interpretation structurally, by raising into a
rightward focus position.

3.1.4. Syntactic Properties of the Focus Position

This section examines the syntactic properties of the focus position, i.e. its location
and its A vs. A' status. I will claim that the focus position is an A'-position located
between Iº and the lowest VP projection.

3.1.4.1. Location

Let us first look at the location of the focus position. We already saw in the previous
section that in order to get focused, the subject of an ergative must raise from its base-generated position to a position to the right of the indirect object. This suggests that the
focus position is higher than the VP-complex.

The identical behavior of objects with respect to VP-level adjuncts confirms this
hypothesis. In order to be contrastively focused, the object of (27) must shift to the right
of the VP-adjoined locative, and thus occur higher than the VP-complex.

(27) Ho cucinato in giardino le salsicce, (non la zuppa).

(28) Ho cucinato le salsicce in giardino.

a. I cooked the sausages in the garden.

b. It is in the garden that I cooked the sausages.

c. * It is the sausages that I cooked in the garden.

We can thus maintain that the lowest location for the focus position must c-command
the lowest VP projection. The result is in accord with Belletti and Shlonsky's view of
presentational focus of light ... unargued-for assumption locating contrastively
focused subjects in a rightward specVP position (Bonet 1990).

Saccon (1993) argues that presentational postverbal subjects are within the lowest VP
projection between the postverbal predicate and the main verb or the main clause.

Sentence (29a) shows that the contrastively focused subject can follow object
secondary predication. Sentence (29b) shows that the subject cannot precede secondary
predication when the predicate itself is left-adjacent to the VP.

Sentence (29a) shows that the contrastively focused subject can follow object
secondary predication. Sentence (29b) shows that the subject cannot precede secondary
predication when the predicate itself is left-adjacent to the VP.
It was not my sisters who called, but my cousins.
Non hanno chiamato le mie sorelle, ma le cugine.

Contrastive focusing in postverbal position

The question-answer pairs illustrate that when the focused subject is in the scope of the lowest VP projection, the focus is postverbal, as in (39).

(39) a. Ha soltanto cantato Gianni, ieri.
    [VP soltanto [VP [VP [VP ti cantato Giannii]]] ieri.]
    Only John sang yesterday.

b. Non hanno telefonato le mie sorelle, ma le cugine!
    They did not call my sisters, but my cousins.

The upper boundary for the location of structural focus is precisely the VP-adjoined position. Consequently, if structural focus is outside the complement of Iº, it is accessed from a lower position, as in (30).

(30) Ha soltanto cantato Giannii, ieri.
    Only John sang yesterday.

In question-answer pairs involving sentence-level adverbs, we discover that when the focused subject is in the scope of a sentence-level adverb, the focus is postverbal, as in (32).

(32) Q: Credi che Bill verra’, Domenica?
    Do you think that Bill will come on Sunday?

a. Probabilmente.
    Probably.

b. PROBABILMENTE verra’, Bill, Domenica.
    Bill, he will probably come, on Sunday.

c. Bill verra’ probabilmente.
    Bill will probably come, on Sunday.

This is precisely the expected pattern if the location of structural focus is inside the complement of Iº, thus outside the VP-adjoined position.

Second, unlike VP-level adverbs such as sempre, always, sentence-level adverbs like probabilmente, 'probably', cannot be structurally focused. This fact is predicted if structural focus is within the complement of Iº and therefore too low to be accessed by a sentence-level adverb, as in (31).

(31) Q: Quanto spesso pensi che verrá, Bill?
    How often do you think that Bill will come?

a. Sempre.
    Always.

b. SEMPRE, verrá, Bill.
    Bill, he will always come.

c. Bill verrá sempre.
    Bill will always come.

When we turn to question-answer pairs involving sentence-level adverbs, we discover that when the focused subject is in the scope of a sentence-level adverb, the focus is postverbal, as in (32).

(32) Q: Credi che Bill verra’, Domenica?
    Do you think that Bill will come on Sunday?

a. Probabilmente.
    Probably.

b. PROBABILMENTE verra’, Bill, Domenica.
    Bill, he will probably come, on Sunday.

c. * Bill verra’ probabilmente.
    Bill will probably come, on Sunday.

This is precisely the expected pattern if the location of structural focus is inside the complement of Iº, thus out of reach for sentence-level adverbs.

A third argument identifying Iº as the c-commanding boundary for the position of the focused subject is provided in Brandi and Cordin (1989:138), who notice how focused postverbal subjects are in the scope of the sentence-level adverb, which shows that the focused subject is provided in VPP and C[199-193], where notice how the focused subject is c-commanded by the upper boundary for structural focus, which is Iº.

(33) Non hanno telefonato le mie sorelle, ma le cugine!
    They did not call my sisters, but my cousins.

This is precisely the expected pattern if the location of structural focus is inside the complement of Iº, thus out of reach for sentence-level adverbs.
In conclusion, the focus position has been shown to c-command the lowest VP projection while being c-commanded by Iº. Consistent with these results, I assume it to be right-adjoined to the VP projection.

3.1.4.2. A'-status

There are two sources of evidence for the A'-status of the focus position. The first source involves the study of its anaphor-binding properties. Consider sentence (34a) below and its structure prior to anaphor-binding.

(34a) A se stesso, Gianni sembra lavorare troppo.

To himself, Johni seems to work too much.

This is not the case, in fact, the example in (35a) shows that raising verbs can license a structural focus position.

(35a) A se stesso, Gianni sembra lavorare troppo.

It was John who seemed to work too much.

The first source of evidence for the A'-status is the inability of the focus position to bind an anaphor. If the focus position were an A-position, it should be able to bind an anaphor. Consider sentence (35b) below.

(35b) *A se stesso, sembra lavorare troppo Gianni.

It was John who seemed to work too much.

Since postverbal focusing is grammatical when the topicalized indirect object is not anaphoric, as shown in (35c) below, the ungrammatical status of (35b) is due to the A'-status of the focus position.

(35c) A me, sembra lavorare troppo Gianni.

It was John who seemed to work too much to me.

There are two possible objections to this argument. The first disputes the location of the focus position in (34b). If raising verbs were unable to license a focus position, then the focus position of (34b) would be within the embedded clause and could not c-command the indirect object of the matrix clause. This is not the case, as shown in (36) below.

(36) A me, Gianni sembra lavorare troppo a se stesso.

It was John who seemed to work too much to himself.

This is not the case. In fact, the example in (37) shows that raising verbs can license a structural focus position.

(37) A me, Gianni sembra lavorare troppo.

It was John who seemed to work too much to me.

There are two possible objections to this argument. The first disputes the location of the focus position in (34b). If raising verbs were unable to license a focus position, then the focus position of (34b) would be within the embedded clause and could not c-command the indirect object of the matrix clause. This is not the case, as shown in (36) below.

(36) A me, Gianni sembra lavorare troppo a se stesso.

It was John who seemed to work too much to himself.

This is not the case. In fact, the example in (37) shows that raising verbs can license a structural focus position.

(37) A me, Gianni sembra lavorare troppo.

It was John who seemed to work too much to me.
In the absence of emphatic stress would be a mystery, and in sharp contrast with the absence of a contrastive-focus interpretation for all other nonemphatic specIP subjects.  

(36) a. Tu non sei sempre sembrato lavorare poco...
You did not always seem to work little. ...

b. ... [Lavora poco] (lo) è sempre sembrato tuo fratello. 
... It is your brother who always seemed to work little.

A second instance showing licensing of the postverbal focused subject by the matrix verb is presented in (38) below. Here, the whole embedded IP has been postposed, and occurs to the right of the focused verb. According to my intuitions, even (3) above improves greatly when the clitic is absent, and the adverb is focused.

9 Sentence (36b), which has been found grammatical by all informants I tested, raises interesting problems concerning the licensing of empty-categories. On the basis of data like (1) below, Rizzi (1990:38) argues that raising infinitivals. For example, sentence (1) would be ungrammatical because the subject trace violates the ECP.

(1) E’ [ti lavorare di più] che Giannik sembra ti.
To-work in a bad way, I do not see how I may seem it.

Rizzi also shows that the infinitival complement resists left- and right-dislocation; see the data below.

(2) * [Lavorare male] non vedo il modo in cui possa sembrar-lo. 
To-work in a bad way, I do not see how I may seem it.

(3) * Luca lo sembrava spesso, [lavorare poco]. 
Possibly, the grammaticality of sentence (36b) relies on the fact that the displaced infinitival complement is sufficiently local to its trace to reconstruct successfully. Kayne (p.c.) notes how the landing site of anaphors is especially frequent. According to my intuitions, even (3) above improves greatly when the clitic is absent, and the adverb is focused.

(38) Sembrava Bill, aver sempre cantato, (non Marco). 
It is Bill who seemed to have sung all time, (not Mark).

A second objection to the analysis of (35b), arises if the matrix VP licensed a base-generated specifier position for the raising subject to land in on its way to the matrix-focus position. As a potentially theta-marked position, this position could have an A'-status, and the trace left in this position could A-bind the reconstructed anaphor, casting doubts on the analysis of (35b).

There is a host of reasons to exclude the existence of such nonthematic base-generated specifier. To begin with, if VP-internal nonthematic positions were possible, we would expect the existence of nonthematic specVP position as possible, we would expect the existence of nonthematic specVP position as well. However, the evidence of nonthematic specVP position is explicitly denied the possibility of creating a position and leaving it unfilled (Chomsky, 1992:30-32). In conclusion, the ungrammatical status of (35b) shows that the rightward VP-adjoined structural focus position has A'-status. Additional evidence comes from the examination of Weak Cross-Over effects.
The phrase "Ai suoi genitori, ogni bambino è sembrato mangiar poco." [Ai suoi genitori]k [ogni bambino]i e' [VP sembrato [IP ti mangiare poco]]

To his.m.pl parents.m.pl, each child is seemed to eat little.

Each child seemed to eat too little to his parents.

Compare (40a) to (40b) below. In (40b) the same quantified subject has raised to the matrix focus position. If the focus position were an A-position, sentence (40b) would be indistinguishable from (40a) binding-wise and should be grammatical under the same operator-variable interpretation. Instead, (40b) is ungrammatical.

(40b)


EACH child seemed to eat too little to his parents.

The ungrammaticality follows from the A'-status of the focus position. In fact, being in an A'-position, the quantified subject cannot bind the pronoun at s-structure. Reconstruction of the quantified phrase and successive QR past the reconstructed indirect object determines the WCO-violation.

Summarizing, in raising structures, binding of anaphors and pronouns in the indirect object is either grammatical or ungrammatical depending on whether the subject has raised into specIP or into...

3.1.5. Summary

We have seen that in Italian any VP-level constituent can be structurally focused by raising to a rightward VP-adjoined A'-position. The main evidence came from the analysis of question-answer pairs, the analysis of raising constructions involving binding by a focused subject...

Together with the results on postverbal presentational focus of Calabrese (1982, 1985, 1992), Saccon (1993) and Belletti and Shlonsky (1994), the results on structural contrastive focus attained here show that a focused constituent should be aligned to the right edge of the verbal projection of the sentence. This is modeled through the constraint ALIGNFOCUS below, which specifies that a focused constituent should be aligned to the right edge of the verbal projection of the sentence. In more general terms, the constraint ALIGNFOCUS below specifies that a focused constituent should be aligned to the right edge of the verbal projection of the sentence.

3.2. Subject Inversion: a Conflict between SUBJECT and ALIGNFOCUS

I assume that structural focus in peripheral position is in principle available to all languages. This is modeled through the constraint ALIGNFOCUS below, which specifies that a focused constituent should be aligned to the right edge of the verbal projection of the sentence.

Together with the results on presentational focus of Calabrese (1993), and Bellofatto and Siloni (1994), the results on structural presentational focus of Calabrese (1993, 1988, 1986), and Bellofatto and Siloni (1994), together with the results on presentational focus of Calabrese (1993, 1988, 1986),
A. ALIGN FOCUS (XP, Left, VP, Right): Align the left edge of the focused constituent XP with the right edge of VP. Failed by non-aligned focused constituents.

The constraint is cast in terms of alignment to emphasize the parallel with Phonology, where the notion of alignment is pervasive (McCarthy and Prince, 1993). The constraint can thus be seen as an instance of a more general schema below, which closely parallels the definition of generalized alignment found in McCarthy and Prince (1993).

\[ \text{ALIGN FOCUS (XP, Edge1, YP, Edge2):} \quad \forall \text{XP}, \exists \text{YP} \text{ such that Edge1 of XP and Edge2 of YP coincide, where XP is a focused XP, YP is a verbal projection of the extended projection, and Edge1 and Edge2 are members of the set \{Left, Right\}.} \]

Ideally, which edges align and which projection functions as target are eventually determined by the interaction of ALIGN FOCUS with other constraints. Alternatively, one could hypothesize the simultaneous existence of distinct ALIGN FOCUS constraints differentiated by the value assigned to the variables of (42). In other words, the fact that Italian has rightward alignments suggests that the leftward ALIGN FOCUS constraint is not present in that language, but rather that a rightward instance of the ALIGN FOCUS constraint, both present in UG, and thus present in the grammar of any language, with one ranked higher than the other. I will come back to this issue in section 3.2.1 of the Chadic language Kanakuru as evidence for the simultaneous existence of a rightward and a leftward instance of the ALIGN FOCUS constraint.

In the following analysis, I will assume that the parameters of ALIGN FOCUS are specified as in its first definition, in (41) above.

There is considerable evidence in favor of a universal constraint such as ALIGN FOCUS. This includes Kiss's argument for the existence of a left-peripheral focus position in the exact location (1986) of the focused constituent, such as

\[ (1) \text{Q: What did John purchase for his wife?} \]

\[ \text{A: John purchased for his wife [a brand new fur coat].} \]

In the following analysis, I will assume that the parameters of ALIGN FOCUS are specified as in its first definition, in (41) above.

3.2.1. Structural focus in English and the design of UG

In English, structural focus is a property of focus position in English projected by a focused constituent. Culicover and Rochemont (1992) show how, in accord with the universal nature of ALIGN FOCUS, structural focus is present in English as well.

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The existence of the universal constraint ALIGN FOCUS does not entail that focused phrases occur in peripheral position in all languages. The constraint is in fact going to be violated in all those languages where structural focus is not allowed. For example, in languages like Hungarian, or in languages where the subject is the focus of the sentence, structural focus is not allowed. In such languages, the focused constituent is not allowed to be in peripheral position in English, as in French or Spanish. This is because the focused constituent is not allowed to be in peripheral position in English, as in French or Spanish.

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3.2.1. Structural focus in English and the design of UG

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Their evidence is based on the QA-pairs in (43) and (44) which contain two distinct questions, but a unique answer with the direct object following the indirect object. This answer is appropriate for the question in (44), but inappropriate for the question in (44), and hence appropriate for the question in (44). Since the answer in (44) is appropriate only where the object is focused, and since the answer in (44) is appropriate only where the object is focused, Culicover and Rochemont conclude that focusing is a crucial factor licensing its VP-adjoined position.

(43) Q: What did John purchase for his wife?

A: John purchased for his wife [a brand new fur coat].

(44) Q: What did John purchase for his wife?

A: John purchased for his wife [a brand new fur coat].
For whom did John purchase a brand new fur coat?

John purchased a brand new fur coat for his wife.

Additional evidence comes from the study of focusing adverbs. Rochemont (1986) provides the following example, where the contrastive focusing adverb *also* is associated with the right-adjoined constituent *a new girlfriend*.

A: Sam just came back from England, and brought me a new bracelet.
B: Well I don’t know if you know this yet, but Sam also brought back from England a new girlfriend.

Moreover, Culicover and Rochemont point out that in the following sentences, the constituent associated with the contrastive focusing adverb *only* is always to the right edge of the VP; see the underlined constituents in (45a) through (45f).

(45a) I only gave a book about linguistics to Mary.
(45b) I only gave a book about linguistics to Mary.
(45c) *I only gave a book about linguistics to Mary.
(45d) I only gave to Mary a book about linguistics.
(45e) ?I only gave to Mary a book about linguistics.
(45f) *I only gave to Mary a book about linguistics.

This distribution, which matches a similar distribution in Italian, is accounted for if focusing occurs in VP-adjoined position, like in the Italian case. English is thus like Italian with regard to contrastively focused objects and indirect objects, but diverges from Italian with respect to contrastively focused subjects.

Consequently, it is natural to seek an explanation for the divergent behavior of subjects. This can be done by appealing to other, independent factors.

3.2.2. Focused and Unfocused Subjects in Italian and English

The goal of the OT analysis presented here is to derive both (i) the absence of postverbal unfocused subjects in Italian, and (ii) the absence of postverbal focused subjects in English and Italian.

### 3.2.2.1. Postverbal Unfocused Subjects in Italian

Focusing occurs in VP-final position in Italian. This distribution, which matches a similar distribution in Italian, is accounted for if focusing occurs in VP-final position. This is shown in T1 below. The preverbal-subject candidate (a), with the subject in specIP, violates ALIGN, while the structural-focusing candidate (b), with a VP-adjoined subject, violates SUBJECT. Since ALIGN outranks SUBJECT, with a VP-adjoined subject, (b) beats the null subject candidate (c), since both violate SUBJECT, but (c) also violates PARSE. The ranking of ALIGN is irrelevant in this case, since (b) and (c) are equivalent on all other constraints, and parsetype violations are fatal in this case, since (b) and (c) both assign the same parsetype resulting in the same prosody and interpretation. The highest A-prefix of a clause must be structurally realized.

Inverted structures exhaust the set of potential structures. Failed when the highest A-prefix of a clause is not structurally realized.

### 3.2.2.2. Postverbal Focused Subjects in English

Inversion of focused subjects in Italian is due to the higher ranking of ALIGN over SUBJECT. This is shown in T1 below. The preverbal-subject candidate (a), with the subject in specIP, violates ALIGN, while the structural-focusing candidate (b), with a VP-adjoined subject, violates SUBJECT. Since ALIGN outranks SUBJECT, (b) beats the null subject candidate (c), since both violate SUBJECT, but (c) also violates PARSE. The ranking of PARSE is irrelevant in this case, since (b) and (c) are equivalent on all other constraints (nevertheless, we know that PARSE dominates SUBJECT from the analysis of topic-related null subjects).
1. Italian focused subjects:

**ALIGN FOCUS**

SUBJECT

sing

**F.I. PARSE**

a. preverbal subj: 

\[ G. \text{ ha cantato} \]

b. postverbal subj: 

\[ -- \text{ ha cantato } G. \]

c. null subj: 

\[ -- \text{ ha cantato} \]

In English, on the other hand, **SUBJECT outranks ALIGN FOCUS**, making the preverbal-subject candidate (a) the optimal candidate, see T2 below. In fact, both (b) and (c) violate **SUBJECT**, which now constitutes a worse violation than violating **ALIGN FOCUS**.

The new ranking thus derives the preverbal position of English focused subjects.

2. English focused subjects:

**SUBJECT**

**ALIGN FOCUS**

sing

**F.I. PARSE**

a. preverbal subj: 

\[ M. \text{ ha cantato} \]

b. postverbal subj: 

\[ -- \text{ ha cantato } M. \]

c. null subj: 

\[ -- \text{ ha cantato} \]

The ranking between **SUBJECT** and **ALIGN FOCUS** thus determines whether focused subjects occur preverbally in specIP position, as in English, or postverbally, focused structurally in peripheral position, as in Italian.

3.2.4. Unfocused Subjects and Focused Objects

When subjects are not focus-marked, **ALIGN FOCUS** is vacuously satisfied, dissolving the conflict with **SUBJECT**. The ranking of the two constraints is uninfluential, and the two grammars are correctly predicted to converge on the same optimal form. This is shown in tableau T3 for the Italian ...

... in both tableaus, the optimal candidate is the preverbal subject candidate in (a), which satisfies all constraints.

The vacuous satisfaction of **ALIGN FOCUS** thus explains why English and Italian converge in parsing unfocused subjects in specIP. In fact, since the preverbal candidate in (a) violates no constraints, it is equivalent to saying that other constraints notwithstanding, unfocused subjects will always occur in specIP position.

Convergence also occurs when the focused constituent is not the subject. **SUBJECT** can then be satisfied by parsing the subject in specIP. In the tableaus below, the focused constituent is the object, which is parsed in focus position in both languages, satisfying **ALIGN FOCUS**. This is shown in T5 for Italian and T6 for English (see also section 3.2.1).

Convergence between **SUBJECT** and **ALIGN FOCUS** thus determines whether focused subjects occur preverbally in specIP position, as in English, or postverbally, focused structurally in peripheral position, as in Italian.

The new ranking thus derives the preverbal position of English focused subjects.
The null candidate
other constraints as well. All other constraints being equal, these languages should also

In English, on the other hand, the suboptimal status of the null-structure follows

from the higher ranking of ALIGN and SUBJECT, respectively. In English, the null-structure follows

Also, assume the existence of a candidate C that harmonically bound (d) above, and thus can never be optimal. A brief proof follows below.

(47) Proof: assume the existence of a candidate C that harmonically bound (d) above, and thus can never be optimal. A brief proof follows below.

All other competing candidates are harmonically bound by one of the structures

(46) Optimal Candidate Structure Violated Constraint

a. preverbal subject \[DP aux V\] 

b. inverted subject \[-- aux V DP\] 

c. expletive subject \[expl. aux V DP\] 

d. null structure \[

3.2.7. Candidate Set Exhaustion and Cross-linguistic Variation

The candidates examined in the preceding tableaus and listed below exhaust the cross-linguistic variation attainable through reranking of the four constraints considered in this chapter for an input involving a focused subject.

(46) Optimal Candidate Structure Violated Constraint

a. preverbal subject \[DP aux V\] 

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(46) Optimal Candidate Structure Violated Constraint

a. preverbal subject \[DP aux V\] 

b. inverted subject \[-- aux V DP\] 

c. expletive subject \[expl. aux V DP\] 

d. null structure \[

show a split between focused subjects and focused internal arguments, objects in particular, which are not being subject to the SUBJECT constraint, and are thus free to respond to the demands of ALIGN-FOCUS.

A second group of languages is identified by candidate (b), which stands for languages where ALIGN-FOCUS affects subjects as well. In these languages, focused subjects pattern with other focused arguments, and the split occurs between the position of focused subjects and that of unfocused, canonical subjects.

The final group is represented by the expletive candidate in (c), and contains languages that resemble those in the previous group, with focused subjects patterning with other focused arguments, but with the difference that the SPEC Position is filled by an expletive.

The first and second language-group are exemplified by English and Italian respectively. I have no representative for the third group yet. Notice however that the optimal structure exemplifying the third group is familiar, being like English constructions. Indeed, English presentational focus could be analyzed along the same lines as contrastive focusing, through a constraint ALIGN-RES-FOCUS requiring constituents marked as presentationally focused to occur in rightward VP-adjoined position. The higher ranking of ALIGN-RES-FOCUS relative to SUBJECT selects postverbal presentational focus as optimal. The obligatory expletive there then follows necessarily from the independently established higher ranking of SUBJECT relative to FULL-INT.

Under this analysis of presentational focus, English would be an instance of a

| Subject | Parsed | Focus
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>b.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>c.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>d.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>e.</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

3.2.8. Focused Null Subjects

A language which the analysis predicts to be impossible is one with focused null subjects. This result follows necessarily from the analysis given here because the candidate leaving the subject unparsed is h-bound by the candidate realizing the subject in focus position.

As the following tableau shows, the null subject candidate in (b) violates SUBJECT and PARSE, while candidate (a) violates only SUBJECT. Thus (a) h-bounds (b), making (b) suboptimal universally, under any ranking.

The possibility of a focused null subject is usually rejected on the basis of the fact that an English example like (46c) is impossible. It is important to notice that the same result does not necessarily follow if we represent null subjects structurally, as pro. Nothing in fact prevents the possibility of focusing pro. For example, in Italian, pro could occur in focus position, being case-licensed the same way as overt subjects. Yet, it obviously does not, as the example below shows, and as independently argued for by Cardinaletti (1994) in her study of pro.

(48) Q: Chí ha gridato?
Who screamed?

A: Ha gridato lui [deictic]!
HE screamed!

A: * Ha gridato pro [deictic]!
(He) screamed!

The possibility of a focused null subject is usually rejected on the basis of the belief that focusing always requires stress, which null subjects evidently cannot support. However, it was argued in section 3.1 that focused subjects need not be explicitly marked as such. The position of focused subjects, and that of intonational, canonical subjects, is determined by the Cyrano bundle, which includes the subject position along with focused subjects and the syllable between the subject and its complement. This allows for the possibility of focused subjects without stress, as well as the possibility of focused pro subjects without stress, as in (48).
null subjects are optimal when there is a topic-referring antecedent and the constraint DOPRIORITY outranks SUBJECT and PARSE. They cannot be optimal in focused contexts because they are h-bound by the candidate with the overt subject in focus position.

We can now see a difference between the conception of structural deficiency adopted here and that proposed in Cardinaletti and Starke (1994). In Cardinaletti and Starke's analysis, the restricted referential range of null subjects and their unfocused nature follow from specific assumptions on the representation of pro, which is conceived of as a deficient pronoun lacking its own case projection, which in turn is an essential part of full noun phrases. This missing projection forces pro to occur only in case-assignment positions, thus ruling out its occurrence in focus position.

In the proposal defended here, on the other hand, leaving subjects unrealized is just one of the many things GEN can do with a subject in the input. Constraints outlined in chapter 2 are optimal whenever they are activated in focused contexts but not otherwise. The universal absence of focused null subjects is thus a strong prediction of the analysis presented here, and constitutes evidence for the view of null subjects as unrealized, on which it is crucially based.

3.2.9 Summary

Summing up, the interaction of the four constraints ALIGN, FOCUS, FULL-INT, and PARSE accounts for the language-internal alternation between focused and unfocused subjects in Italian, as well as for the crosslinguistic alternation between Italian and English in the analysis of null subjects in English. Otherwise, unrealized null subjects are optimal only under pressure of DOPRIORITY, their referential range is limited to topic antecedents, and they are less optimal than overt subjects in focused contexts because they are less optimal than overt subjects in topic position and because they never occur as focused.

The universal absence of focused null subjects follows directly from the view that pronouns supporting their occurrence is not possible, because they are delexicalized where overt pronouns do supply information, yet they are obligatory when overt pronouns are focused.
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How is this opposition in the direction of structural focus to be captured? The importance of this question lies in the distinction it brings out between the OptimalityTheoretic and the Principles and ... each other. Therefore, once the value of an hypothetical parameter specifying the direction of focus-alignment as either leftward or rightward is set, the opposite value becomes inaccessible.

In the Optimality Theoretic perspective, on the other hand, all constraints are universal, and therefore they are present in the grammar of every language. Thus, if there exist a leftward and a rightward version of the abstract ALIGN constraint, they should both be part of each language's grammar (a similar perspective is adopted in Grimshaw (1995) in her discussion of the position of a head relative to its complement in different languages).

The crucial question is whether there are empirical consequences distinguishing among these two perspectives. The answer is yes, as the following analysis of the mixed focusing pattern of Kanakuru will show.

3.3.1. Mixed Focusing Pattern in Kanakuru

The focus data reported in Tuller (1992) for the Chadic language Kanakuru can be classified into the following three basic patterns. (Similar data are also found in Southern Bade, Tangale, and Ngizim; see Tuller, 1992).

(i) Pattern 1 - Clauses. When the main verb takes a clausal complement, the focused constituent follows the main verb and precedes the clause, as in (51) below. This is shown by the examples in (52), where the distribution of wh-phrases matches that of other focused constituents and should thus also be analyzed as focused.

(51) Clausal Complements: V FocusXP CP.

(52a) Yimb [ka bome wat g Billiri]. (Tuller, 1992, p.321)

Think who that Bome went Billiri.

Who thinks that Bome went to Billiri?

(52b) Neigon [ka Aish wat g Billiri]. (Tuller, 1992, p.321)

Said who that Aisha went to Billiri.

Who said that Aisha went to Billiri?
I follow Tuller (1992) in analyzing patterns (i) and (ii) as involving leftward VP-adjunction of the focused phrase. As Tuller proposes, the two patterns arise from the requirement that the DP complement is a [+focus]. I also assume that in (57ii) what incorporates is the complex Determiner+Noun, as Tuller's glosses suggest.

3.3.2. Opposite Alignment Constraints

In the next section, I will claim that Tuller's case-dependent is a case-sensitive case adjacency constraint, requiring linear adjacency between the verb and the DP it assigns case to. Second, I assume that Tuller's case adjacency is a case-sensitive case-adjacency constraint. In order to derive the patterns of Kanakuru, I make the following assumptions.

First, I assume that Tuller's case dependency is a case-sensitive case-adjacency constraint. Second, I assume that Tuller's case adjacency is a case-sensitive case-adjacency constraint. In order to derive the patterns of Kanakuru, I make the following assumptions.

The problematic pattern for Tuller's analysis is the third one, as she herself points out (see her discussion in footnote 16, page 320). In these cases, a whole DP precedes the focused phrase, and therefore an even greater amount of information needs to be satisfied by the focused phrase. Tuller's assumption that head-incorporation is not possible in these cases is not valid.

In order to derive the patterns of Kanakuru, I make the following assumptions.

1. The focus is not given in the original paper, but can be deduced.
2. The gloss is not given in the original paper, but can be deduced.
The ranking did not hold, unfocused subjects could not move to specIP position, as they do.

A possible incorporation candidate could involve incorporation of the verbal head of the complement. This candidate would fail otherwise (b) would win over (d).

The pattern of Kanakuru is determined by the interaction of the constraints S, DJ, and A. The constraint S is satisfied, and so is the constraint A as the focused phrase intervenes between the verb and the complement DP, but violates DJ, left dominates right, which dominates A, and so the ranking is left >> {ubj} >> A >> S.

For completeness, I also include in the analysis the constraints AF, CP, and E, which are external and adjoined to the DP-node, and therefore do not interfere with head-movement nor antecedent-government.

The second pattern is that of DPs with adjoined modifiers, but no possessive or genitive case-marking.

Let us start with the simple case of clausal complements. Consider first candidates (b) and (c) where the focused phrase intervenes between the verb and the complement DP, but violates DJ, left dominates right, and so the ranking is left >> {ubj} >> A >> S.

Finally, candidate (c) fails both focus constraints, and thus fails the analysis of the previous tableau. It also violates AF, which dominates DJ.

All other candidates violate one or the other of these two high ranked constraints.

Finally, I assume that GEN is extended so as to allow for noun-incorporation, and therefore it is violated every time a focused constituent aligns, and when a head incorporates. The role of GEN is extended so as to allow for noun-incorporation, and therefore it is violated every time a focused constituent aligns, and when a head incorporates.

The constraint S is satisfied, and so is the constraint A as the focused phrase intervenes between the verb and the complement DP, but violates DJ, left dominates right, which dominates A, and so the ranking is left >> {ubj} >> A >> S.

The pattern of Kanakuru follows when CP, and the two opposite versions of DJ and AF are considered. The pattern of Kanakuru is determined by the interaction of the constraints S, DJ, and A.

The pattern of Kanakuru is determined by the interaction of the constraints S, DJ, and A. The constraint S is satisfied, and so is the constraint A as the focused phrase intervenes between the verb and the complement DP, but violates DJ, left dominates right, which dominates A, and so the ranking is left >> {ubj} >> A >> S.
Class of languages have it, another lacks it completely. By contrast, in the OT analysis, case-assignment by a verb trace is missing. Why? Under Tuller's analysis, the verb trace of these languages can assign case to its complement, making noun incorporation unnecessary. The solution is thus cast in parametric terms: the specific device of left.

Patterns 2 and 3, of noun incorporation and rightward focusing are also AF TAY, but this constraint was already shown to be lower ranked than Patterns 2 and 3 of Kanakuru, i.e. noun incorporation and rightward focusing. The suboptimal status of (b) shows that violating case adjacency is worse than failing AF.

Finally, let us consider the noun-incorporation candidate in (d), which according to

When the input involves a DP complement with number and possessive projections, there is no way to satisfy both AF, DJ and 

The pattern of Kanakuru is thus derived in terms of the interaction of the focus constraint RERANKING: Western Bade, Podoko and Aghem.

The suboptimal status of (a) also shows that 

The optimal status of (c) thus shows that 

Finally, let us derive the diverging pattern involving DPs containing possessive and

The pattern of Kanakuru is derived in terms of the interaction of the focus constraint RERANKING: Western Bade, Podoko and Aghem.

The suboptimal status of (a) also shows that 

The optimal status of (c) thus shows that 

Finally, let us derive the diverging pattern involving DPs containing possessive and
Under the Principles and Parameters framework, a language would have to set a parameter determining the direction of alignment on one or the other value. Mixed focusing patterns would be unexpected, as attested by Tuller's difficulties with the analysis of DPs with possessive and number specifications. In Podoko, rightward focusing would win over leftward focusing, as in (c).

In closing this section, let me turn again to the original argument that the analysis is optimal. Consider instead the case of DP complements with adjoined modifiers. As ... and no incorporation. In fact, (b) now wins over the incorporation candidate (d), because incorporation adds violations of (c) which is now ranked lower than (b), and (c) still does not outrank (a) and (b) under the Principles and Parameters framework. The reranking of the focusing pattern of Western Bade, Podoko, and Aghem thus follows from the same constraints used in the analysis of the mixed pattern of Kanakuru. Once this is done, the reranking of (c) is optimal because it satisfies (d), which (c) and (b) fail. The order of focusing in (c) is now lower than in (b) and (d), which is now ranked lower than (a) and (b) under the Principles and Parameters framework. Therefore, the analysis is analogous to that given for Kanakuru. Consider instead the case of DP complements with adjoined modifiers. As (b) satisfies, and which outranks both (c) and (d), which (a) satisfies, (b) is the constraint to beat. If (b) were lower ranked than (d), which (a) and (c) satisfy, (b) would be eliminated. But (b) is now lower ranked than (d), which (a) and (c) satisfy.

The reranking of (c) is optimal because it satisfies (d), which is now ranked lower than (a) and (b) under the Principles and Parameters framework. Therefore, the analysis is analogous to that given for Kanakuru. Consider instead the case of DP complements with adjoined modifiers. As (b) satisfies, and which outranks both (c) and (d), which (a) satisfies, (b) is the constraint to beat. If (b) were lower ranked than (d), which (a) and (c) satisfy, (b) would be eliminated. But (b) is now lower ranked than (d), which (a) and (c) satisfy.

The reranking of (c) is optimal because it satisfies (d), which (a) and (c) satisfy. However, the constraint to beat is (b) which (c) and (d) satisfy. Therefore, the analysis is analogous to that given for Kanakuru. Consider instead the case of DP complements with adjoined modifiers. As (b) satisfies, and which outranks both (c) and (d), which (a) satisfies, (b) is the constraint to beat. If (b) were lower ranked than (d), which (a) and (c) satisfy, (b) would be eliminated. But (b) is now lower ranked than (d), which (a) and (c) satisfy.

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Under the OT framework, languages with consistent alignment in one or the other direction are derived by the interaction of UG constraints with AF right or AF left, depending on which is ranked highest in the grammar of each specific language. This was shown in the analysis of leftward focusing in Western Bade, Podoko, and Aghem, where the lower ranked AF right has no opportunity to select the optimal candidate. The opposite situation occurs in Italian, where the higher-ranked focus constraint is AF right, leaving AF left no opportunity to show its effects (the reader may check for him/herself by adding the constraint AF left at the bottom of the tableaus in section 3.2).

However, since the constraints are universal, the OT framework predicts that under specific rankings, both constraints will affect the selection of the optimal structure, giving rise to mixed patterns. This is precisely what occurs in Kanakuru, where the relatively high ranking of ECP and CASE forces a violation of AF left when the DP complement has number or possessive specifications, giving AF right an opportunity to determine the optimal form.

Put differently, not only does the OT analysis account in a principled way for the problematic pattern of Kanakuru, but this pattern constitutes precisely the kind of case one expects to find under an Optimality Theoretic view of Syntax.

3.4. Conclusions

Like the preceding chapter, this chapter too shows how linguistic variation within and across languages is accounted for in a unified manner under an OT approach to syntax. In particular, I first showed how subject inversion and its absence in languages like English both follow from the interaction of the constraint ALIGN with the constraints SUBJECT, PARSE, and FULL INT, which in the previous chapter were already shown to govern together with PROJECT. The language-specific ranking of these constraints in English both follow from the interaction of the constraint VERS, with the English both follow from the interaction of the constraint VERS with the language-specific ranking of these constraints. Then I showed how the existence of mixed patterns is contingent on particular constraint rankings, accounting for why in most languages focusing alignment is attested only in one direction. 

Kanakuru

That subjects receive to the hierarchy of LC constraints also indicates the grammar of Kanakuru is evidence for the OT framework, where both leftward and rightward focus alignment is attested only in one direction. However, since the constraints are universal, the OT framework predicts the kind of case one expects to find under a principled way for the problematic pattern of Kanakuru, but this pattern constitutes precisely the kind of case one expects to find under an Optimality Theoretic view of Syntax.

The last section turned to the issue of parametrization, contrasting the mutually exclusive parameter values of the Principles and Parameters perspective with the coexistence of opposite constraints in OT. I claimed that the focusing pattern of Kanakuru is evidence for the latter view, since both leftward and rightward focus alignment is attested only in one direction. However, since the constraints are universal, the OT framework predicts the kind of case one expects to find under a principled way for the problematic pattern of Kanakuru, but this pattern constitutes precisely the kind of case one expects to find under an Optimality Theoretic view of Syntax.
4. Optimal Agreement

This chapter proposes an Optimality Theoretic analysis of agreement. As in the analyses of null and focused subjects, the O.T. approach permits us to account for crosslinguistic variation in terms of...too a property like agreement, which has been classically conceived as lexically determined is instead derived by grammar.

In particular, reranking of agreement-related constraints will account for presence vs. absence of agreement on distinct structures across languages. At the same time, the analysis derives the universal implication that if an inflectional head agrees on feature $\phi$ with a subject in its c-commanding domain, it will also agree on feature $\phi$ with a subject in its specifier, while the opposite does not hold true.

Additional and important support for modeling agreement in terms of violable constraints will also come from the discussion of case in chapter 5, where a variety of syntactic paradigms within and across languages...andrecapitulating the analysis of agreement with postverbal and null subjects. Section 4.6 concludes the chapter.

4.1. Crosslinguistic Typology

The study of agreement shows evidence for the universal implication on non spec-head and spec-head agreement.

This chapter is organized as follows. Section 4.1 shows evidence for the universal implication of agreement with postverbal and null subjects. Section 4.2 introduces the agreement constraints and shows how they derive the universal implication of section 4.3. Section 4.4 relates the agreement constraints and shows how they derive the universal implication of section 4.5. Section 4.6 concludes the chapter and recapitulates the analysis of agreement with postverbal and null subjects.

4. Crosslinguistic Typology

The evidence for the above universal implication is summarized in table (2). The first

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Agreement in gender (gen), number (num) and person (ps) between Iº and a subject under a spec-head and a c-command configurations.

Language: spec-head agreement under c-command

References

Moroccan Arabic, Italian, Spanish, Chinese.

Fassi Fehri (1993)

Standard Arabic, French.

Fassi Fehri (1993)

Fassan, Genoese, Ampezzan, Romagnol.

Haiman & Benincá (1992)

Conegliano, Trentino, Fiorentino.


The relevant data are listed in appendix B. However, to clarify the interpretation of the table, the agreement patterns of Italian, Standard Arabic, and Conegliano are presented below. These involve instances of features allowing for unrestricted agreement, i.e. agreement under spec-head as well as under c-command configuration.

Unrestricted agreement is exemplified by Italian. In this language, specIP subjects agree with Iº in number and person, as shown in (3a). An equally rich pattern holds with the postverbal focused subjects...

(3a) Io ho/*ha/*abbiamo [vp camminato].
I have.1s/*3s/*1pl walked.
I walked.

(3b) Ho/*ha/*abbiamo [vp [vp camminato] io].
Have.1s/*3s/*1pl walked I.
The person who walked is me.

Unrestricted agreement coexists with agreement loss in Standard Arabic. Fassi Fehri (1993) shows that although subjects in specIP are possible, as in (4a), the position of pragmatically neutral subjects is restricted to the spec-head configuration of (4a). Agreement is also possible under both agreement configurations, number agreement is.

(4a) L-banaat-u Darab-na/*-at [vp tsubj tverb l-?awlaad-a].
The-girls-Nom hit-pst-3Fpl/*-3Fs the-boys-Acc.
The girls hit the boys.

(4b) Darab-at/*-na [vp al-banaat-u tverbZayd-an].
Hit-pst-3Fs/*-3Fpl the-girls-Nom Zayd-Acc.
The girls hit Zayd.

Agreement loss, this time in number and gender, is also attested in Conegliano. Agreement loss, this time in number and gender, is also attested in Conegliano.

3 For the status of subject clitics as agreement markers see Rizzi (1986). Notice moreover, that it is important to distinguish among distinct postverbal subjects, as was done in the study of Italian postverbal subjects in (5a) and (5b). The latter subjects, which are commonly assumed to c-command Iº, cannot omit the subject clitics.

The relevant data are listed in appendix B. However, to clarify the interpretation of

<table>
<thead>
<tr>
<th>Language</th>
<th>Agreement patterns</th>
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<tbody>
<tr>
<td>Standard Arabic</td>
<td>Unrestricted agreement</td>
</tr>
<tr>
<td>French</td>
<td>Agreement loss</td>
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</tbody>
</table>

Haiman & Benincá (1992) notice in passing that while loss in number agreement does not affect masculine subjects, it can affect feminine subjects: plural feminine subjects in postverbal position can occur with singular third person morphology.


The effect of the correspondence between case-assigned and agreement features is illustrated in the following example: when a head-complex hosts a case-assigner, the agreement features on any head of the complex are by assumption coindexed with the correspondent case-assignee.

(9) *Es ist / sind drei Igel im Garten.
Expl is.3s / are.3pl three hedgehogs in the garden.
There are three hedgehogs in the garden.

(10) Es gibt / *geben drei Igel im Garten.
Expl gives.3s / give.3pl three hedgehogs in the garden.
There are three hedgehogs in the garden.

When we examine the corresponding sentences with a singular indefinite DP, where the nominative case is overtly marked on the DP determiner, we observe that the agreeing Iº assigns nominative case to the lower subject, while the agreementless Iº does not, in which case the DP surfaces in the accusative case (for direct case-assignment from Iº to the lower DP see the analysis of case in chapter 5).

(11) Es ist ein.NOM / *einem.ACC Igel im Garten.
Expl is a hedgehog in the garden.
There is a hedgehog in the garden.

(12) Es gibt*ein.NOM / einem.ACC Igel im Garten.
Expl gives a hedgehog in the garden.
There is a hedgehog in the garden.

The effect of this correlation between case-assignment and agreement for the languages examined here is that the agreement features on a nominative-assigning Iº are always coindexed with the nominative-assigned subject.
The constraints AGR $\phi$, LOOSE AGR $\phi$, and NO $\phi$-FTS set the stage for determining the agreement patterns observed in section 4.1. Intuitively, the first two constraints, AGR $\phi$ and LOOSE AGR $\phi$, state that structures with sufficiently local agreement are preferred over those with less local agreement. The constraint AGR $\phi$ requires a head to host spec-head agreement with the referential role of a potential nominal constituent.

\(\text{AGR } \phi\): A head $H$ should host spec-head agreement between an agreement feature $\phi$ and the referential role of a potential nominal constituent.

Failed when no spec-head agreement occurs on $H$ relative to $\phi$.

In the next few sections, I will restrict the discussion to agreement with realized subjects. In this case, AGR $\phi$ is satisfied only if the subject occurs in the specifier of the head carrying the agreement feature. For example, agreement between Iº and a subject in specIP satisfies AGR $\phi$, but agreement between Iº and a subject in a lower position fails it. Section 4.4.2 will examine agreement with unrealized subjects, showing why they always satisfy AGR $\phi$.

Like AGR $\phi$, the constraint LOOSE AGR $\phi$ favors candidates hosting agreement. But LOOSE AGR $\phi$ imposes a looser condition on the configuration of agreement, only requiring that the relation hold within the clause, intended as the extended projection of the head carrying the agreement feature, or because the coindexed referential role is in another clause (this latter case is addressed in section 4.4.1).

\(\text{LOOSE AGR } \phi\): A head $H$ should host clause-bound agreement between an agreement feature $\phi$ and the referential role of a potential nominal constituent.

Failed when no clause-bound agreement occurs on $H$ relative to $\phi$.

The fact that languages differ in the set of agreement features that they realize leads to design the above constraints as constraint-families, relativizing them through a variable $\phi$ which can vary over features of person, number and gender (on constraint families see also Prince & Smolensky 1993, McCarthy & Prince 1993). For the sake of simplicity, I will initially leave such evaluation in the background, and make full use of examples from Proto-Indo-European (PrCE 1992, Prince 1997) for the sake of readability. However, it is crucial to keep in mind that the languages differ in the set of agreement features that they realize.

Both constraints above conflict with a third constraint, NO $\phi$-FTS, which militates against agreement features.

\(\text{NO } \phi$-FTS: Avoid agreement features.

Failed once by each agreement feature.

As I will show, these constraints predict precisely the kind of linguistic variations examined in the previous sections. In fact, their reranking establishes a partition of three language groups:

- **(i)** languages with unrestricted agreement, i.e. languages preserving agreement on feature $\phi$ when moving from a spec-head to a c-command agreement configuration. Italian belongs to this group with respect to person and number agreement, and Standard Arabic relative to gender agreement;
- **(ii)** languages with agreement loss, i.e. languages which show agreement on feature $\phi$ under the spec-head configuration but not under the c-command configuration, such as Standard Arabic on number, and Conegliano on number and gender agreement;
- **(iii)** languages with no agreement, i.e. languages lacking feature $\phi$, hence lacking $\phi$-agreement under any configuration, such as Italian on gender agreement or Chinese on any agreement feature.

In order to derive the partition from the constraints, it is important to keep in mind that for any specific head $H$ and feature $\phi$, grammars always have a choice between two structures: one where $H$ hosts $\phi$ and hence $\phi$-agreement, and one where $H$ does not host $\phi$, and thus lacks $\phi$-agreement. The ranking of AGR, LOOSE AGR and NO $\phi$-FTS drives the choice within these two structures in the manner examined below.

- **Unrestricted agreement** occurs when LOOSE AGR dominates NO $\phi$-FTS, as in the tableau below. As far as spec-head agreement is concerned, the structure with agreement, in (a), wins over the one lacking it, in (a'), because it satisfies LOOSE AGR, which the no-agreement alternative fails.

Failed when no-agreement occurs on $H$ relative to $\phi$.

In the next few sections, I will restrict the discussion to agreement with realized subjects. In this case, AGR $\phi$ is satisfied only if the subject occurs in the specifier of the head carrying the agreement feature, or because the coindexed referential role is in another clause (this latter case is addressed in section 4.4.1).
Concerned, the structure with agreement, in (b) wins over the one lacking agreement, in (b') for the same reason. This ranking thus determines languages with unrestricted agreement.

<table>
<thead>
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<th></th>
<th>Preserved agreement</th>
<th>Spec-head agreement</th>
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<tr>
<td></td>
<td>NO-FTS &gt;&gt; AGR &gt; OOSE</td>
<td>AGR &gt; NO Φ</td>
</tr>
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</table>

Competitions: a vs. a' and b vs. b'

A synthesis of the results illustrated by the above tableaus is shown in the table below. Remember that the agreement constraints are relativized with respect to agreement features. Therefore, a language may show the agreement on features under a specific or under a non-specific configuration, as in (a), (b), (a'), and (b'). However, when agreement occurs under a non-specific configuration, as in (b), (b'), it depends on the actual rank taken by the agreement features AGR, which is therefore irrelevant for the characterization of the ranking conditions yielding unrestricted agreement.

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</tr>
</tbody>
</table>

Based on the results illustrated by the above tableaus, the language...
Any possible grammar created by the three agreement constraints falls into one region of the tripartition. Any grammar will in fact either rank \textsc{LooseAg} over \textsc{Nof-FTS}, and fall into the first group, or rank them in the reverse order. In this latter case, a grammar will either rank \textsc{LooseAg} over \textsc{Nof-FTS}, and fall into the second group, or do the reverse, and fall into the third group. No other agreement pattern is thus possible. In particular, what is excluded from ... a spec-head configuration. Hence the analysis entails the universal implication on the primacy of spec-head agreement.

4.3. Instances of Mixed Agreement Configurations

One issue that deserves further discussion concerns how languages can belong to a certain class with respect to one agreement-feature and to another with respect to another agreement-feature. If the agreement constraints are relativized with respect to features, such distribution follows automatically. For example, a grammar with \textsc{LooseAgnum} dominating \textsc{Nof-FTS} falls into the class of unrestricted agreement relative to agreement in number. The same grammar may simultaneously rank \textsc{Nof-FTS} higher than both \textsc{LooseAggen} and \textsc{Aggen}, and therefore lack agreement in gender, thus belonging to the no-agreement class with respect to gender agreement.

The expression of this analysis in tableau-format requires a brief digression about the representation of the competing candidates. I will represent the competing candidates in the abstract terms proposed in (14) below, i.e. as the list of possible combinations of the person, gender and number features.

(14) Candidate-set of agreement features.

\begin{itemize}
\item \text{ps c. num e. ps, num g. ps, gen, num h. none}
\end{itemize}

Each abstract candidate in (14) represents all structures with a particular combination of these abstract features. For example, candidate (f), represents any candidate where agreement is restricted to gender and number, but no agreement in person. Candidate (g), represents any candidate where agreement is restricted to person and number, but no agreement in gender. Candidate (h), represents any candidate where agreement is restricted to none, i.e. it represents a grammar with no agreement in person, number or gender.

In Italian indicative finite-tense clauses, Iº shows unrestricted agreement with subjects in person and number, but shows no-agreement relative to gender (for past-participle agreement in gender see ... in (15) and (16), which have overt agreement in person and number for spec-IP and postverbal VP-adjoined subjects.

(15) Le auto funzionano/no/*{o, i, a,iamo, te} bene.  
The.Fpl car.Fpl work.3pl/*{1s, 2s, 3s, 1pl, 2pl} well.

(16) Funziona-no/*{o, i, a,iamo, te} bene le auto.  
Work.3pl/*{1s, 2s, 3s, 1pl, 2pl} well the.Fpl car.Fpl.  
It is the cars that work fine.

The overall pattern can be seen as the merging of three subpatterns characterizing unrestricted agreement in person, unrestricted agreement in number and lack of agreement in gender. As we know from the previous discussion, these three subpatterns are characterized by the ranking conditions shown in (17) below.

(17) Italian agreement-pattern.

- Unrestricted agreement in number: \textsc{LooseAgnum} >> \textsc{Nof-FTS}
- Unrestricted agreement in person: \textsc{LooseAgps} >> \textsc{Nof-FTS}
- No agreement in gender: \textsc{Nof-FTS} >> \{\textsc{LooseAggen}, \textsc{Aggen}\}

Any total ranking compatible with all the above ranking conditions will derive the overall agreement pattern of Italian. This is shown for spec-IP subjects in tableau T4, and for postverbal subjects in tableau T5 below. Notice that the constraints \textsc{Agps} and \textsc{Agnum} are not present in (17), because their ranking was shown influential in the previous discussion.

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determining unrestricted agreement (see the discussion of T1 in section 4.2). To improve readability, I omit them from the tableaus below.

In T4, the competition between the optimal candidate (e), representing agreement in person and number, and the no–agreement candidate in (h), motivates the higher rank of $L_{GRnum}$ and $L_{GRps}$ over $N_{Φ}-FTS$: were $N_{Φ}-FTS$ ranked highest rather than lowest, candidate (e) would be suboptimal relative to (h) and thus ungrammatical, contrary to observation. The same ranking is also responsible for the suboptimal status of all other candidates except for the full agreement candidate (g). However, by expressing gender agreement, which (e) lacks, (g) violates $N_{Φ}-FTS$ one time more than (e). Since $N_{Φ}-FTS$ is ranked higher than $L_{GRgen}$ and $L_{GRgen}$, the violation is fatal to (g), and the optimal status of (e) is successfully determined.

T4. Spec-head agreement in person and number in Italian.

| a. ps | *! | * | * |
| b. gen | *! | * | * |
| c. num | *! | * | * |
| d. ps, gen | *! | * | * |
| e. ps, num | ☞ | * | * |
| f. gen, num | *! | * | * |
| g. ps, gen, num | *! | * | * |
| h. none | *! | * | * |

The analysis can also be extended to any language showing unrestricted agreement on one or more ꞌend features. The same ranking hierarchy determines unrestricted agreement in person and number on postverbal subjects, as shown in tableau T5. The only change in the tableau concerns $A_{GRgen}$, which is now always violated, because the subject is never in a spec–head relation with Iº. The discussion proposed for the former tableau applies to this tableau as well, and shows that under this ranking agreement in person and number is preserved under c-command configurations.

T5. Agreement in person and number under c-command in Italian.

| a. ps | *! | * | * |
| b. gen | *! | * | * |
| c. num | *! | * | * |
| d. ps, gen | *! | * | * |
| e. ps, num | ☞ | * | * |
| f. gen, num | *! | * | * |
| g. ps, gen, num | *! | * | * |
| h. none | *! | * | * |

Summing up, we have seen how combining the proper ranking conditions from table (13) predicts the unrestricted agreement in person and number found in Italian. By changing the agreement feature index at the root of each configuration, the spec–head agreement in Italian (g) predicts the unrestricted agreement in person and number found in Italian (e). The analysis can also be extended to any language showing unrestricted agreement on one or more features, while lacking agreement on one or more different features.

In Standard Arabic, Iº agrees in person, number and gender with specIP subjects but only in person and gender with specVP subjects (see section 4.1). Standard Arabic thus shows unrestricted agreement in person and number, but agreement loss with respect to gender. Drawing from table (13), we combine the following ranking conditions:

4.3.2. Standard Arabic

In Standard Arabic, many of the ranking constraints in Table 1.4 and 1.7 exclude gender agreement, while the ranking of $N_{Φ}-FTS$ higher than the relevant $A_{GRφ}$ and $L_{OOSE A_{GRφ}}$ constraints, much like the ranking of $N_{Φ}-FTS$ in T4 and T5 excludes gender agreement, can also be extended to any language showing unrestricted agreement on one or more ꞌend features. The same ranking hierarchy determines unrestricted agreement in person and number under c-command in Italian (e). The analysis can also be extended to any language showing unrestricted agreement on one or more features, while lacking agreement on one or more different features.
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Unrestricted agreement in person:

Unrestricted agreement in gender:

Agreement loss in number:

Lose any total ranking, consistent with these conditions, produces the sought agreement pattern. This is shown in the two tableaus below. Once again, for reasons of readability I omit from the tableaus the in influential constraints $AGGR_{gen}$ and $AGGR_{ps}$.

Consider agreement in specIP first, in T6. The higher ranking of $L\text{OOSE}AGGR_{ps}$ and $L\text{OOSE}AGGR_{gen}$ relative to $N\Phi -FTS$ is sufficient to exclude from the competition all candidates that violate one or both constraints, leaving only (d) and (g) as potential optima. Violation of $AGGR_{num}$, crucially ranked higher than $N\Phi -FTS$, is fatal to (d), leaving the full-agreement candidate (g) as the optimal.


A major change occurs when turning to specVP subjects, which are no longer in a spec-head configuration with Iº. All the $AGGR$ constraints are now violated by all candidates. This has no effect on gender and person agreement, which is motivated by the same reasoning applied before. However, the change affects number agreement, which becomes suboptimal. In fact, $AGGR_{num}$ is now violated by all candidates, and the responsibility of determining the most harmonic form between the number-deficient (d) and the full-agreement candidate (g) now falls onto $N\Phi -FTS$. But $N\Phi -FTS$ selects (d) as optimal by virtue of its minor number of violations. Hence, the optimal candidate is (d).

T7. Agreement in person, number and gender under c-command in Standard Arabic.

In summary, the Standard Arabic case has shown how the reranking of agreement constraints can account for loss of number agreement while preserving person and gender agreement.

4.4. Issues in the Theory of Agreement

Section 4.4 discusses past partitive agreement.

Section 4.4.1 examines agreement with subjects in separate clauses. Sections 4.4.2 and 4.4.3 address agreement with null subjects and with expletives, respectively.

This section is devoted to some issues that have been left open in the preceding discussion: Section 4.4.1 deals with subjects of separate clauses. Agreement with subjects of separate clauses can be accounted for in terms of the agreement constraints at hand. Where generally any agreement pattern involving loss of preservation of any agreement features can account for loss of number agreement while preserving person and gender agreement, the phenomenon of agreement in specVP subjects when the matrix clause lacks a subject, the matrix verb cannot agree with the lower subject, and surfaces with agreement to the matrix verb can only occur when the matrix clause configuration agrees with agreement constraints (see (13)).

Section 4.4.2 addresses agreement with null subjects. Agreement with null subjects remains an open issue. Proposed solutions are ambiguous, and the evidence for the said ambiguities is not complete.

Section 4.4.3 examines agreement with expletives. Agreement with expletives is a well-studied phenomenon. Issues left open are the role of expletives in determining the agreement pattern, and whether expletives themselves have agreement features.

4.4.4 discusses past participle agreement.

In the remainder of the section, focus will be on the agreement patterns that are found in Standard Arabic. Agreement patterns that are found in Standard Arabic include the following:

- Standard Arabic agreement pattern
- Null subject agreement pattern
- Expletive agreement pattern
- Past participle agreement pattern

These patterns are consistent with the agreement constraints proposed in the previous sections.
what I assume to be a default morphology associated with the absence of agreement.

(19) Sembra / *sembranono che abbiano votato pochi elettori.
Seem-(3s)default /seem-3pl that have.3pl voted few voters.

It seems that few voters voted.

The two verb forms in (19) compete with each other and are evaluated in accord to the ranking of Italian identified in section 4.3.1. As shown in T8 below, both the candidate lacking agreement, in (a), and the one with agreement with the lower clause subject, in (b), violate the high ranked constraints $L_OOOSE_A^{GRnum}$ and $L_OOOSE_A^{GRps}$, because neither candidate hosts a clause-bound agreement coindexation. Candidate (a) does not because it lacks agreement, and candidate (b) because the coindexation spans over two clauses. However, candidate (a) satisfies the next lower constraint, $N_OΦ-FTS$, while candidate (b) violates it twice, and is therefore suboptimal, deriving the correct result. Notice that if $L_OOOSE_A^{GR}$ had no conditions on the domain of the agreement relation, candidate (b) would satisfy the higher ranked $L_OOOSE_A^{GRnum}$ and $L_OOOSE_A^{GRps}$, and incorrectly surface as optimal. (The lower constraints $L_OOOSE_A^{GRgen}$ as well as the constraints $A^{GRps}$, $A^{GRnum}$ are all held by Polish and languages with conflation.

In conclusion, we have seen how the condition on the domain of agreement imposed by WOOSE/A currently accounts for the lack of agreement with subjects of lower clauses. When seem takes an infinitival IP as complement, I will assume that it forms a unique extended projection with it as the availability of subject raising seems to confirm (for a proposal explaining this possibility in terms of the intrinsic syntactic and semantic properties of seem and of CPs see Williams 1994). In this later case, the agreement coindexation between seem and the lower clause subject is restricted to the projection of seem, and the lower clause subject is restricted to the projection of seem.

4.4.2. Agreement with Null Subjects

If null subjects are not represented through an overt projection, how can agreement with null subjects occur? The answer relies on the assumption that agreement between $X^º$ and a DP in specIP actually ... of their heads. Under this view, spec-head agreement with an overt DP is actually a relation of direct domination between the projected agreement features on the XP node and the referential role of the DP in specIP. By contrast, when the DP is a non-local relation. This is illustrated by the following figures,

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where X is Iº, \( \phi \) is an agreement feature, and DP represents a subject in specIP and in VP-adjoined position respectively.

The question is how agreement comes about in (29), given that it refers to Iº.

\[
\text{Spec-head agreement. Agreement under c-command.}
\]

The case of standard Arabic is particularly interesting because this language allows agreement with an unrealized subject; agreement with the referential role of the lexical head of the unparsed subject in input. The lexical head is associated with a thematic role in the input which is left unexpressed in the phrase marker. The thematic role in the input which is left unexpressed in the phrase marker is associated with a thematic role in agreement with the referential role of the lexical head of the unrealized subject.

The core of this analysis is that agreement with an unrealized subject is agreement with the referential role of the lexical head of the unparsed subject in input. The lexical head is associated with a thematic role in the input which is left unexpressed in the phrase marker. This agreement with the referential role of the lexical head of the unrealized subject qualifies as a spec-head configuration and thus satisfies both AGR and LOOSE.

A prediction of this analysis is that null subjects will always pattern with overt specIP subjects in languages carrying Iº-agreement. Null subjects should thus always show the fullest agreement paradigm available in the language, even when the language allows for agreement loss.

To the best of my knowledge, the prediction is correct and no language with null subjects shows instances of null subjects with poorer agreement than that available to overt specIP subjects.

The case of Standard Arabic is particularly interesting, because this language places canonical, i.e. pragmatically neutral, subjects in specVP, where number agreement is lost. Yet, and as predicted by the above assumptions, Standard Arabic null subjects show the same agreement pattern as their overt counterparts in specVP.

(21a) Jaa?-at l-banaatu. (21b) L-banaat-u ji?-na.

Came-3Fs the girls.Fpl. The girls.Fpl came-3Fpl.

The girls came. The girls came.

(22) Ji?-na.

They (f) came.

4.4.2.1. Evidence for Agreement through Thematic Assignment

Support for the analysis of agreement just proposed comes from the fact that agreement with null subjects is sensitive to information which can only be encoded lexically. Access to this information thus requires access to the unrealized item in input, as predicted by the above analysis.

Consider (23) below. The past participle agrees in number and gender with the subject.

\[
\text{La tazza é cadut-a.} \quad \text{The Fs cup Fs is.3s fallen Fs.} \quad \text{The cup has fallen.}
\]

Crucially, the fact that the word for \textit{cup} is feminine is an idiosyncrasy of Italian, unrelated to any property of the referent denoted by \textit{tazza} which being inanimate, has no inherent gender. What increases us is that the null subject counterpart of (23) in (24) below, does show obligatory gender agreement.


Is.3s fallen Fs.

(The cup) has fallen.

The question is how agreement comes about in (24), given that it relates to a lexical property of the Italian noun \textit{tazza}.

Notice that no appeal to a previously mentioned discourse antecedent can be made, because (24) can be uttered in isolation, getting a

A prediction of this analysis is that null subjects will always pattern with overt specIP subjects.

Both AGR and LOOSE predict that agreement will be governed by a spec-IP construction and this is borne out by the facts.

In agreement with the analyses above, a null subject and a head X (formally identical). If X is an Iº the agreement between a null subject and a head X is identical to that in (23).

In \textit{E’ cadut-a}, the position of the pronoun \textit{E} is genitive, hence agreement between the subject \textit{E} and the pronoun \textit{E} holds. The agreement between the subject and the pronoun is controlled by the accusative projection and indeed agrees with a lexical head of the antecedent subject in input. The lexical head is associated with a thematic role in agreement with the referential role of the lexical head of the unspecified subject.

Agreement with an unspecified subject is agreement with the referential role of the lexical head of the unspecified subject.
In summary, concerning agreement with null subjects as agreement with the referential role of the unrealized subject in input explains why null subjects are immune to agreement loss and also how lexical-based features are accessed in the case of agreement loss. It also shows the local argument in the input is accessible as a deictic feature of the thematic theta-role assigned to the lexical item in the input. Thus, the theory of inputs should be refined in order to distinguish the root form ("tazza") which comes with its gender specification from the singular agreement marker ("-a") in "tazz-a".

The analysis just given provides a simple answer to the above question. As (25) shows, the lexical element in the input is directly accessible through the thematic theta-role assigned to it, making it possible to refer to the referential role of a noun encodes all the syntactic properties of the lexical item, including its syntactic gender.

\[(25) \text{cadere}(x), x=\text{tazza}, \text{T=pres.perfect} \]

Further evidence for the role played by inputs in null subject agreement comes from the study of agreement with honorific pronouns. In many languages, including Italian, French, German, Hungarian, Tigrinya, a single hearer can be honorifically addressed with the second plural form ("Voi") as well as the third feminine singular form ("Lei"). For example, in Italian, a single hearer can be honorifically addressed with the second singular form ("Tu").

The corresponding three sentences are listed below. Notice that 'Iº always agrees in person and number with the pronominal subject, rather than with the actual referent.

\[(26a) \text{parler-ai ?} \quad \text{You.2s speak.Fut.2s?} \]
\[(26b) \text{parler-ete?} \quad \text{You.2pl speak.Fut.2pl?} \]
\[(26c) \text{parler-á?} \quad \text{She.3Fs speak.Fut.3s?} \]

Each of the sentences above has a subject less counterpart, which can also be used to address a single hearer. The agreement pattern is unchanged.

\[(27a) \text{parler-ai ?} \quad \text{You.2s speak.Fut.2s?} \]
\[(27b) \text{parler-ete?} \quad \text{You.2pl speak.Fut.2pl?} \]
\[(27c) \text{parler-á?} \quad \text{She.3Fs speak.Fut.3s?} \]

How does the perfect match in agreement between the cases in (27) and those in (26) occur? If the subject of the examples in (27a) through (27c) were "pro", the perfect match between (27) and (26) would be accidental. Even if "pro" were listed in the lexicon with all possible agreement specifications, what would warrant that precisely those "pro" with the same specifications of overt honorific pronouns can be used honorifically and not others? And if "pro" were instead licensed and interpreted through agreement-identification, as in Rizzi (1986), why is the honorific interpretation possible only when the agreement specifications match those of the overt honorific pronouns? The analysis proposed here provides a straightforward answer to this: the idiosyncratic forms of honorific pronouns count as lexical elements and must therefore be specified in the input.

\[(28a) \text{parlare}(x), x=\text{Voi, \text{T=future}} \]
\[(28b) \text{parlare}(x), x=\text{Voi.topic, \text{T=future}} \]

In summary, conceiving agreement with null subjects as agreement with the referential role of the unrealized subject in input explains why null subjects are immune to agreement loss and also how lexical-based features are accessed in the case of agreement loss. It also shows the local argument in the input is accessible as a deictic feature of the thematic theta-role assigned to the lexical item in the input. Thus, the theory of inputs should be refined in order to distinguish the root form ("tazza") which comes with its gender specification from the singular agreement marker ("-a") in "tazz-a".

Each of the sentences above has a subject less counterpart, which can also be used to address a single hearer. The agreement pattern is unchanged.
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accessibility permits us to account for the properties of agreement just observed, which are either unaccounted for or at best accidental in the approaches favoring an independent pro

4.4.3. Agreement with Expletives

Agreement with expletives occurs in some structures and not in others. For example, while the verb agrees with the English expletive it in the English sentence (29), in (30) it clearly agrees with the postverbal subject rather than with the expletive there.

(29) It seems that ....
(30a) There is a man in the garden.
(30b) There are three men in the garden.

The asymmetry does not depend on specific properties of there, and in fact can be replicated in German, where the expletive is invariant.

(31) Es scheint dass ....
(32) Es ist ein Mann im Garten. vs. Es sind drei Männer im Garten.

There is a man in the garden.

vs.

There are three men in the garden.

The analysis of this asymmetry relies on the analysis of case-assignment, which is explained in detail in chapter 5. As I will show there, the difference between (29) and (30) concerns the assignment of nominative case, which is assigned to it in (29), but directly to a man in (30). Agreement thus occurs under c-command configuration, analogous to that between Iº and postverbal subjects in Italian. Therefore, the same ranking conditions deriving unrestricted person and number agreement in Italian apply here, ranking Loose AGRps and Loose AGRnum above NΦ-FTS. Tableau T10 illustrates the derivation of (29). I assume that the morpheme is encodes person and number agreement at the same time. Candidate (a) hosts person and number agreement under a spec-head configuration between the verb and the referential role of the expletive pronoun, while candidate (b) lacks agreement.

The agreement candidate (a) is optimal because it satisfies the higher ranked constraints LOOSE AGRnum, and LOOSE AGRps which (b) fails. Ranking of AGRnum and AGRps in any position does not change the outcome, since their pattern of failures matches that of the LOOSE AGR constraints. Since I assume that the auxiliary form is encodes third person plural agreement,6 the low position of the subject is assumed to be determined by a high ranked constraint targeting presentationally focused ... A' VP-adjoined position, in which case nominative case would be assigned to its trace in specVP position (see chapter 7). Let us now consider the derivation of the there-clause in (30), shown in T11. I will assume that the auxiliary form are encodes person agreement. The low position of the subject is assumed to be determined by a high ranked constraint targeting presentationally focused ... A' VP-adjoined position, in which case nominative case would be assigned to its trace in specVP position (see chapter 7). Let us now consider the derivation of the there-clause in (30), shown in T11.

The agreement does not depend on specific properties of there, and in fact can be replicated in German, where the expletive is invariant.

4.4.3. Agreement with Expletives

Independent expletives are either unaccounted for or best accounted for in the approaches favoring an accessibility principle to account for the properties of agreement just observed. With
As is well known, there are varieties of English where agreement in there-insertion structures does not occur (Baker 1989:359), and which would reject (30) in favor of (33) below:

(33) There is three men in the garden.

These varieties of English provide the English equivalent of loss of number agreement under c-command. Their agreement pattern follows from the reranking of the constraints $\Phi$-FTS on top of $\text{LOSE}_A\text{GR}_\text{num}$ and $\text{LOSE}_A\text{GR}_\text{ps}$ on top of $\Phi$-FTS (see table (13)). This is shown in T12, which lists the same candidates of T11, but has reranked the constraints. The candidate with no agreement is still blocked by the high-ranked $\text{LOSE}_A\text{GR}_\text{ps}$. The remaining competitors, (a) and (b), fail the next constraint, $\text{GR}_\text{num}$, because their agreement relation is not sufficiently local. The next constraint, $\Phi$-FTS, is violated by both once, but one additional time by (a), leaving (b) as the optimal structure.

In conclusion, once coupled with the analysis of case developed in chapter 5, the analysis of agreement developed in this chapter straightforwardly accounts for a number of agreement phenomena. In particular, no appeal is made to transmission of agreement features, which is instead necessary in a theory where agreement occurs only under a spec-head configuration ... would not require agreement transmission, but it is unclear how it would account for the case lacking agreement in (33).

4.4.4 Simultaneous Agreement on Multiple Heads

The theory of agreement presented so far is not specific to the Iº head, and extends to other instances of agreement. However, some adjustments are necessary, because simultaneous agreement on different heads ... in gender, as shown in (34a) and (34b), the opposite holds for the past participle of passives and unaccusatives ... in number but lacks agreement in person, as shown in (34c) and (34d).

(34a) Luca.3Ms é.3s arrivat-o.Ms. (34b) Maria.3Fs é.3s arrivat-a.Fs.
Luca has arrived. Maria has arrived.

An important issue that I leave open to further research is why parallelism between a pronominal subject and an object in a non-finite clause is allowed under c-command. The analysis of agreement follows from the blocking of the next constraint. This shows that $\text{LOSE}_A\text{GR}_\text{num}$ and $\text{LOSE}_A\text{GR}_\text{ps}$ on top of $\Phi$-FTS account for a number of agreement phenomena. In particular, no appeal is made to transmission of number agreement features.

As well known, there are varieties of English where agreement in there-insertion structures does not occur (Baker 1989:359), and which would reject (30) in favor of (33).
The proposal expressed here is a further relativization of the agreement constraints:

![Diagram of agreement constraints]

The analysis also predicts that the initial generalization motivating this theory of agreement, i.e. the primacy of spec-head agreement is not specific to agreement in Iº, and extends to any instance of agreement. To the best of my knowledge the prediction holds in number and elements in Czech, involving the following constraints:

![Diagram of agreement constraints in Czech]

While the number of generated constraints may seem large, the way they are generated is fully systematic. The actual primitives of the analysis of agreement are limited in number and elements in Czech, involving the following constraints:

![Diagram of agreement constraints in Czech]

Relativization accounts for the independent patterns of agreement on different and number of Voskovec (1988) and elements in Czech, involving the following constraints:

![Diagram of agreement constraints in Czech]

The proposal expressed here is a further relativization of the agreement constraints:

![Diagram of agreement constraints]

We boys have arrived. You (pl) have arrived.

The proposal expressed here is a further relativization of the agreement constraints:

![Diagram of agreement constraints]

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![Diagram of agreement constraints]

While the number of generated constraints may seem large, the way they are generated is fully systematic. The actual primitives of the analysis of agreement are limited in number and elements in Czech, involving the following constraints:

![Diagram of agreement constraints in Czech]

Relativization accounts for the independent patterns of agreement on different and number of Voskovec (1988) and elements in Czech, involving the following constraints:

![Diagram of agreement constraints in Czech]
Some girls entered from the window.

There entered from the window some girls.

Past participle agreement loss in gender and number occurs in Conegliano (Saccon 1989). In (38a), the past participle agrees in gender and number with the trace left by the subject in the past participle specifier. However, when the subject remains in the lower object position, as in (38b), the past participle no longer agrees.

In (38a) Na tosa la e rivada.

A girl has arrived.

In (38b) El-e rivá na tosa.

There arrived a girl.

In Summary, we saw how relativizing the agreement constraints for the available agreement heads permits us to account for variation in the set of agreement features active on distinct heads within the theory of agreement. The analysis also derives the fact that the Primacy of Spec-Head Agreement is not specific to Iº.

4.5. Interaction between Agreement Constraints and Other UG Constraints

In previous sections, we have examined reranking of the basic agreement constraints relative to each other. However, the agreement constraint \( \text{AGR} \) also interacts with the \( \text{LIGN} \) constraint discussed in chapter 3, and is thus relevant for the analysis of the subject position. In particular, the interaction among these two constraints determines whether inversion is possible in languages with unrestricted agreement and/or agreement loss. Hence, I will first examine in abstract terms each of the three agreement constraints and how they interact. In a later section, I will then present the data from Italian and draw conclusions on the results arrived at abstractly.

4.5.1. Languages with Unrestricted Agreement

In languages with unrestricted agreement, i.e. with \( \text{LOSE} \), \( \text{AGR} \) dominating \( \text{NO-FTS} \), the agreement component as a whole favors candidates with the subject in spec IP position or unrealized. This is shown below. The tableau on the left lists candidates with the subject in different positions, with and without agreement. The column for \( \text{AGR} \) is provided separately, to represent the fact that \( \text{AGR} \) selects (a) and (b) as optimal independently of its ranking. If ranked highest, it does so directly, since all other forms violate it. If ranked lower, it selects (a) and (b) as optimal because (e) and (d) the only additional candidates satisfying this condition. If ranked lowest, it prefers (c) and (d) to (e) and (f) since all forms of agreement are impossible in the lower subject position. This is shown below. The tableau on the right lists only the heads with agreement, together with the additional candidates which lose agreement.

**Table:**

<table>
<thead>
<tr>
<th>Candidate</th>
<th>Subject Position</th>
<th>Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>Spec IP</td>
<td>+</td>
</tr>
<tr>
<td>(b)</td>
<td>Spec IP</td>
<td>+</td>
</tr>
<tr>
<td>(c)</td>
<td>Lower</td>
<td>-</td>
</tr>
<tr>
<td>(d)</td>
<td>Lower</td>
<td>-</td>
</tr>
<tr>
<td>(e)</td>
<td>Spec IP</td>
<td>-</td>
</tr>
<tr>
<td>(f)</td>
<td>Spec IP</td>
<td>-</td>
</tr>
</tbody>
</table>

It follows that in this group of languages, focused relativized inversion can occur only if agreement is not specific to the subject itself. The analysis above shows the extent to which the presence or absence of agreement is determined by the structural arrangement of the sentence. For example, in (38a), the subject is in the lower object position, and agreement is lost. In (38b), the subject is in the spec IP position, and agreement is retained.

4.5.2. Languages with Agreement Loss

In languages with agreement loss, the subject is in the lower object position, and agreement is lost. The analysis above shows the extent to which the presence or absence of agreement is determined by the structural arrangement of the sentence. For example, in (38a), the subject is in the lower object position, and agreement is lost. In (38b), the subject is in the spec IP position, and agreement is retained.
Focus-related inversion in languages with unrestricted agreement.

If ALIGN-FOCUS and DROP-TOPIC have no bearing on the availability of inversion or the ranking of NO-Φ-FTS and the other agreement constraints, then: 

**Hence, among languages with unrestricted agreement, only those where ALIGN-FOCUS dominates ALIGN will show focus-related inversion. This is characterized in the condition below:**

\[(39) \text{Focus-related inversion in languages with unrestricted agreement:}\]

\[\text{ALIGN-FOCUS} \gg \text{ALIGN} \]

As for null subjects, the ranking of NO-Φ-FTS relative to DROP-TOPIC does not determine whether null subjects are possible or not, because null subjects are indistinguishable from overt subjects. For all subjects, the ranking of NO-Φ-FTS relative to DROP-TOPIC does not determine whether they are possible or not, because null subjects are indistinguishable from overt subjects. Hence, among languages with unrestricted agreement, null subjects are allowed in languages where ALIGN-FOCUS dominates ALIGN, but this is not possible in languages where ALIGN-FOCUS dominates ALIGN.

**4.5.2. Languages with Agreement Loss**

Languages with agreement loss have ALIGN as the highest ranked constraint in the agreement system (see table (13) in section 4.2). Therefore, the situation is identical to that just examined for languages with unrestricted agreement. Taken collectively, the agreement constraints favor candidates with the subject in specIP or left unrealized.

**4.5.3. Languages Lacking Agreement**

Languages with no agreement show no interaction between the agreement constraints and the constraints ALIGN-FOCUS and DROP-TOPIC. In fact, the high ranking constraints and the constraints ALIGN-FOCUS and DROP-TOPIC in the high ranking constraints have no bearing on the availability of inversion or the ranking of NO-Φ-FTS relative to the other agreement constraints. This is shown in the tableau below.

<table>
<thead>
<tr>
<th>Languages with no agreement were not examined in this section.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Languages with unrestricted agreement were examined in this section.</td>
<td></td>
</tr>
</tbody>
</table>

**4.5.4. Languages with Agreement Inversion**

Languages with agreement inversion show no interaction between the agreement constraints and the constraints ALIGN-FOCUS and DROP-TOPIC. In fact, the high ranking constraints have no bearing on the availability of inversion or the ranking of NO-Φ-FTS relative to the other agreement constraints. This is shown in the tableau below.

<table>
<thead>
<tr>
<th>Languages with agreement inversion were not examined in this section.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Languages with unrestricted agreement were examined in this section.</td>
<td></td>
</tr>
</tbody>
</table>

**Hence, among languages with unrestricted agreement:**

\[\text{ALIGN-FOCUS} \gg \text{ALIGN} \]

These languages show focus-related inversion in languages where ALIGN-FOCUS dominates ALIGN, but this is not possible in languages where ALIGN-FOCUS dominates ALIGN.

\[\text{Hence, among languages with unrestricted agreement, only those where ALIGN-FOCUS dominates ALIGN allow focus-related inversion.}\]

**Note:** The tableaux are not fully transcribed here due to space constraints.
As we know from the previous sections, languages belong to one or another agreement class only relative to specific features. For example, Italian has unrestricted agreement relative to person and number, but no-agreement relative to gender. The conditions on the interaction between AGR and ALIGN FOCUS must then be relativized to agreement features. Hence, the fact that Italian allows focus-triggered inversion translates into the requirement that AGRnum and AGRps are ranked lower than ALIGN FOCUS, while no ranking condition is set on AGRgen in accord to what was said about languages with no-agreement.

(41) Conditions on the availability of focus-related inversion in Italian:

ALIGN FOCUS >> { AGRnum, AGRps }

The effects of (41) are illustrated in the following tableau T17, showing a total ranking compatible with the above condition in (41) as well as with the ranking conditions responsible for the agreement pattern of Italian, repeated in (42) below.

(42) Italian agreement-pattern.
- Unrestricted agreement in number:
  NOφ >> NOFTS
- Unrestricted agreement in person:
  NOφ >> NOFTS
- No agreement in gender:
  NOφ >> { LOOSE AGRgen, AGRgen }

For the sake of simplicity, the tableau is restricted to candidates with the subject in preverbal position and in postverbal position, each is split into the 8 possible agreement combinations. The candidates prefixed with Inv, represent the inversion candidate [ aux VP DP ]; the candidates prefixed with preV, represent the preverbal candidate [DP aux VP]. To improve legibility, the candidates are rearranged with the optimal one on top, with increasing divergence going downward from the optimal candidate.

In summary, this section has shown how the system of agreeing constraints coupled with the topic and focus related constraints identified in the previous sections, accurately predicts the position of the subject in different agreement patterns. It was also shown that languages with unrestricted agreement or agreement loss with respect to some feature allow for focus-triggered inversion only if the constraint ALIGN FOCUS is ranked above AGRφ, whereas languages that do not allow for focus-triggered inversion rank ALIGN FOCUS higher than AGRφ.

4.6. Conclusions

In this chapter we have seen how the presence and lack of agreement in different languages and under different agreement configurations follow from the O.T. interaction of three simple constraints, one against agreement, and two requiring it, one under a narrower and one under a broader domain. This investigation thus confirmed
agreement such as that developed on independent grounds in this chapter. That they make possible are among the best evidence in support of an O.T. approach to crosslinguistically, in many ways, those analyses and the implication of case-dependence in case-assignment found both linguistically and as well as variation in case-assignment found both linguistically and. The position of focused subjects in the next chapter will demonstrate the interaction between the agreement constraints and the focus conditions and their role in determining patterns of agreement constraints of UC. We have already briefly examined the interaction with the other constraints of UC. Last but not least, the agreement constraints identified here are expected to interact with the same constraints responsible for crosslinguistic variation in agreement.

Chapter provided an analysis of agreement with null subjects which makes no reference to agreement transmission, and thus no need to posit a null expletive to null subject agreement. Instead, agreement with expletives which makes no reference to agreement transmission.

Other results provided in this chapter concerned an analysis of agreement with null subjects.

Parameters from the same constraints responsible for crosslinguistic variation in agreement residual agreement loss in non-speech conditions, which was shown to allow agreement.

The analysis has also shown how deriving residual variation through specific agreement lexical properties by way of grammar rather than through lexical
5. Optimal Case

This chapter develops a unified analysis of abstract case-assignment, which is reduced to a single constraint, \( \text{CASEGOV} \), requiring that case be assigned under proper government. Linguistic variation in case-assignment configurations within and between languages will be shown to follow directly from the interaction between \( \text{CASEGOV} \) and the other constraints of UG, with no need to parametrize case theory, as in Koopman and Sportiche (1991), nor to stipulate special case-assignment configurations as in Rizzi’s account of Italian aux-to-comp infinitivals (Rizzi, 1982).

Other important results in line with the claims made in previous chapters concern the status of subjects and expletives. The analysis of case-assignment will confirm that there is no universal default subject position, but only optimal subject positions relative to an input and a grammar. This will be shown true even for canonical subjects, which for example take different positions in Italian and Standard Arabic in relation to the reranking of \( \text{AGR} \) relative to \( \text{CASEGOV} \) and \( \text{STAY} \).

The chapter is organized as follows. Section 5.1 argues for the need for a unified theory of case-assignment. Section 5.2 introduces the \( \text{CASEGOV} \) constraint, which is central to the analysis developed here. Section 5.3 derives case-assignment variation within Italian, accounting for ... alternations contrasting gerundive aux-to-comp structures with declarative clauses and conditional subjunctives. Section 5.4 addresses cross-linguistic variation in finite clauses, contrasting Italian and Standard Arabic with respect to ... overt subjects, showing how in these structures Italian aux-to-comp, Portuguese agreement, and English case-assignment by a preposition in \( \text{Cº} \) are all determined through constraint reranking. Finally, section 5.6 examines the evidence against analyses of case-assignment involving case and agreement transmission through a null expletive \( \text{pro} \) element. Section 5.7 presents the conclusions.

5.1. The Need of a Unified Analysis of Case Assignment

The need for a unified analysis of case-assignment is effectively illustrated by the following three Italian sentences, which according to the linguistic literature assign nominative case to the overt subject in three distinct ways.

(1) Marco ha vinto.
Mark has won.

(2) Ha vinto Marco pro expl,i [ha vinto Marco].
It is Mark who won.

(4) Avendo Marco vinto,
Having Mark won,

(5) Avendoi [Marco ti [ vinto]], ...
Mark having won,...

In particular, in sentence (1) case is assigned under a spec-head configuration.

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Mark has won...

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In particular, in sentence (1) case is assigned under a spec-head configuration.

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Avendoi [Marco ti [ vinto]], ...
Having Mark won,...
will see in section 5.6, undesirable. Moreover, the minimalist analysis doesn’t directly relate the analysis of (1) to that of (4). For example, a recent proposal by Longobardi (1996) which explains aux-to-comp ... auxiliary in Cº, must then rely on the additional option of checking case through agreement in order to derive (1).

The data in (1), (2) and (4) seem problematic also for Bittner and Hale’s (1996) analysis of case. For example, in Bittner and Hale’s model nominative subjects are required to be governed by Cº or a chain headed in Cº (their Case-Filter). In (1), this requirement triggers raising of the subject into specIP position. It is unclear, however, how the same requirement can be satisfied by the inverted subject in (2) without appealing once again to a pro expl element, with all the associated problems (see section 5.6). Analyzing the aux-to-comp construction in (4) is technically less problematic, given that the auxiliary in Cº does govern the subject, but there is no obvious way to connect this analysis with that of (1) and (2).

Finally, Rizzi (1990) avoids the problems associated with the pro expl-analysis of (2) by assuming that Tº assigns case directly to the VP-adjoined subject. However, this solution does not extend to a case like (6) below, where the lower subject nessuno (nobody) is licensed by the subordinate neg-marker non of the subordinate clause, and is therefore too low to receive case directly from the matrix Tº, forcing us back to case-transmission by a raising pro expl.

In contrast, viewing variation in case-assignment configurations in terms of constraint interaction will make it possible to reduce the theory of case-assignment to one universal simple constraint requiring that the case-assigner properly governs the case-assignee. This constraint is introduced in the next section.

5.2. Abstract Case Assignment in OT: the Case-Filter and CASEGO

In analogy with the analysis of agreement developed in chapter 4, I will consider structural case a relation holding between a case-assigning head and the referential role of a potential nominal constituent, where the latter term refers to expletives and nominal arguments, whether parsed as overt DPs or left unparsed. I will represent case-assignment as a coindexation between the case-assigner and the case-assignee. For expletive and overt argumental DPs, the case-assigner is the nominal argument in input, in parallel with the analysis of agreement with the pro expl-arguments of (2).

What has been said so far leaves the case-relation unconstrained with respect to two important aspects. The first concerns the existence of case-assignment: so far, nothing prevents the case coindexation ... concerns the existence of linguistic constraints on the syntactic configuration of the case-assignment coindexation.

Absence vs. presence of case-assignment, and configuration of case-assignment are here separate issues. The first issue is regulated by the inviolable Case-Filter, defined below, which rejects as ungrammatical any structure where the referential role of a potential nominal constituent is not case-marked. The Case-Filter belongs to the filtering component of GEN: any structure violating the Case-Filter is excluded from the candidate set.

As for the second issue, I propose that case coindexation is governed by CASEGO, a constraint requiring a case-assignee to be locally properly governed by its case-assigner.

(7) Case Filter: Coindex the referential role R of a potential nominal constituent with a case-assigner H.

The Case-Filter is introduced in the next section.
Case-assignment configurations:

\[ XP \rightarrow UP \leftarrow X' \rightarrow YP \rightarrow ZP \rightarrow Y' \rightarrow WP \rightarrow WP' \rightarrow VP \]

The idea that case-assignment occurs under government dates back to Rouveret & Vergnaud (1980), Chomsky (1981) and Aoun & Sportiche (1983). Case-assignment under proper government has also been proposed by Koopman and Sportiche (1996), and various authors (1983) have shown that there are two independent parameters for case-assignment configurations:

(i) assignment-through-spec-head-agreement.
(ii) assignment-under-proper-government.

Languages, and even specific structures within a language, are marked for one or the other value with respect to each parameter. The analysis proposed here simplifies the theory of case assignment, proposing proper government as the only condition governing case-assignment. All linguistic variation follows from the interaction between CASEGOV and the other constraints.

Finally, the proposal is complementary to and can thus be seen as an integration of Legendre, Raymond, and Smolensky's analysis of case-typology, which does not examine the issue of case-assignment configurations.

5.2.1. Generating Case Assignment Coindexations

How do competing case-coindexations come about? Non-controversially, I assume that only Tense, Verbs, and Prepositions are case-assigners, and that the case they assign is specified in the lexicon; in particular, finite tense can assign nominative case and transitive verbs can assign accusative case.

As stated before, the configuration of the case coindexation is determined by the final positions of the case-assigner and of the case-assignee. However, the mapping between case-assigners and case-assignees is determined by the final positions of the case-assigner and of the case-assignee. Moreover, the mapping between case-assigners and case-assignees is determined by the final position of the case-assigner and of the case-assignee. Therefore, the only legitimate coindexation for this structure is the one in (12a) below. In fact, the case-assigner whose chain-foot c-commands and therefore Iº contains at once the nominative and the accusative case-assigners.

(10) < meet(x,y), (x=John, y=Mary), T=present>

(11) IP Johni metv,nom,acc [ti tv Mary]

The only legitimate coindexation of this structure is the one in (12a) below. In fact, the case-assigner whose chain-foot c-commands and therefore Iº contains at once the nominative and the accusative case-assigners.

(12a) IP Johni metv,nom,acc [ti tv Mary]

(12b) IP Johni metv,acc,acc [ti tv Mary]
since neither the object nor the subject is coindexed with the closest case-assigner in the sense specified above.

(12a) [IP Johni,nom metv,nom,acc [ti tv Maryacc]].

(12b) [IP Johni,acc metv,nom,acc [ti tv Marynom]].

Since the foot of the object always selects the verb as its closer case-assigner, the above definition ensures that in transitive structures, nominative case will always be coindexed with the thematic subject, and accusative case with the thematic object.

Intransitives, passives and unaccusatives structures involve only one case-assigner and one case-assignee. Therefore the mapping is trivial, since there is only one possible case-coindexation relating the case-assigner and the case-assignee.

The assumption on the case-coindexation mapping just discussed does not prevent GEN from building distinct candidates with respect to the syntactic configuration under which a specific coindexation is assumed to hold. This is shown in (13) below. While candidate (13a) satisfies CASEGOV, candidate (13b) does not, because the specIP subject is not properly governed by Iº.

(13a) [IP -- hasnom [Johni,nom metacc Maryacc]].

(13b) [IP Johni,nom hasnom [ti metacc Maryacc]].

5.2.2. Candidates with specVP Subjects and with Expletives

I am assuming a simplified version of clause structure, distinguishing only between the VP, IP and CP projections. In particular, I treat the tense operator always as part of the Iº head, and therefore able to proper govern a subject in specVP. Therefore, in a candidate like (14) below, the tense operator is part of the auxiliary has and assigns case to the specVP subject under proper government, thus satisfying CASEGOV.

(14) [IP -- has [VP John sung]].

An alternative view of clause structure would decompose the VP into two parts (15a) and (15b), one containing the tense operator and the other the infinitive.

(15a) [AgrP -- hasi [TP Johnk [ti [VP tk sung]]]].

(15b) [AgrP -- hasi [TP -- [ti [VP John sung]]]].

Which representation to choose depends among other things on whether inflectional features such as tense are independent syntactic nodes to which the verb must move, as in Pollock (1989) and Belletti (1990) or if they are dependent on the lexical entry, as in my own formulation (1996). The latter view is more in line with the assumption that finite verbs are derived from a base form, as in Pollock (1989), and also consistent with the observations on the position of the subject in specVP (1996). Nevertheless, the former view is more in line with the assumption that inflectional features are independent syntactic nodes.

The assumption on the case-coindexation mapping just discussed also prevents the generation of candidates like (15a) and (15b) in (14), where the tense operator in specVP does not properly govern the subject.

A second class of candidates generated by GEN deserve some clarification. They are those where the tense operator is followed by a lower subject DP, like for example that in (16) below.

(16) There are three men in the garden.

2 This holds also for the various "versions" of (14) and (15) whose invariant characteristic is to have the subject following Iº but preceding the object in transitives constructions. These "versions" may involve a finite verb in specVP or infinitival auxiliary, or the presence vs. lack of agreement features on Iº, or finally an expletive subject in specIP.
Here, we have two DPs and one case-assigner: how is the case-filter satisfied?

Faithfulness to an O.T. perspective would suggest that the case filter itself is a violable constraint, and that this is a ... This coindexation applies only to overt expletives, since in the analysis developed here no null expletive is possible.

Notice also that in (16) case is directly assigned to the DP

three men,

which is the nominal constituent properly governed by the case-assigner Tº, and then shared with the coindexed expletive there. Since the agreement features are coindexed with the nominative case-assignee, agreement occurs directly with the subject DP

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explaining why agreement occurs with the lower subject in these constructions (see also chapter 4, section 4.4.3).

5.2.3. Inputs with Non-finite Tense

Descriptively speaking, there are two types of structures involving non-finite tense.

The first type allows for an overt subject, as in Italian aux-to-comp gerundives and infinitivals, and in English infinitivals involving a prepositional case-assigner, as in for John to go. To account for these cases, I assume that GEN can freely generate candidates with case-assigning auxiliaries, as in the Italian case, or case-assigning prepositions, as in the English case. These ... is grammar is determined by the constraint hierarchy of each language. A detailed analysis is given in section 5.5.

The second type of infinitival structures has no overt subject, and includes all structures traditionally analyzed as involving a PRO subject. I will not provide an analysis of this second type of infinitivals, since the investigation of the related phenomena of control and impersonal PRO would take me too far afield. Let me however briefly suggest two possible lines of analysis within the framework developed so far.

The first analysis views infinitivals as topic-referring subjects. Ideally, the analysis of null subjects in finite and non-finite clauses should be fully parallel, possibly building on the analyses and intuitions laid out either in Borer (1989) or in Huang (1989). A more modest solution would assume the existence of a constraint \( \text{CONTROL} \) requiring that a subject be left unrealized whenever the conditions for control obtain, including for example the presence of non-finite tense as well as coreference between a controller and the controllee. Languages with \( \text{CONTROL} \) sufficiently high in the constraint hierarchy would show infinitivals of this kind. A problematic aspect of this analysis is that the subject of the infinitivals would have to be assigned case, against the standard analysis of infinitivals as non-case-assigning syntactic contexts (but see Sigurdsson 1991 for evidence for a case marked PRO).

Alternatively, subjectless infinitivals could be treated as lacking an input specification for their subject. The input for the clause to go would then look like <go(x), x=--, --, T=non finite>.

The thematic role for the subject would still require an interpretation, but this would have to be attained either through a controlling antecedent or impersonally, through context. Since no subject is specified, no referential role is associated to the theta role, and therefore the theta role is unfilled. However, concerns the newly introduced possibility of leaving the theta roles unassigned also in inputs with finite tense.

5.2.4. Constraints Conflicting with CASE-ASSIGNMENT

Before concluding this section, let us consider the constraints that may directly conflict with CASE-GOV. These include any constraint that requires a case-assigned argument to occur elsewhere than in the position required by CASE-GOV, as for example SUBJECT, which may force raising of a constituent to the specIP position. The constraint AGR also belongs to this list:

\[ \text{AGR} \]  because it favors the occurrence of an overt subject in the specifier of IP, where it is not properly governed by the nominative case-assigner. The constraint STAY also opposes to the occurrence of overt arguments in specIP, because it requires the occurrence of overt arguments in specIP to be properly governed by the nominative case-assigner. The constraint \( \text{CHECK} \) is violated whenever an overt argument in specIP is not properly governed by the nominative case-assigner.

The definitions of these constraint follow below.

Before concluding this section, we consider the constraints that may directly conflict with CASE-GOV.

2.4. Constraints Conflicting with CASE-GOV

At the top of the hierarchy of constraints, there are two constraints that will be referred to in specific derivations: FULL-INT and ALIGN. Other constraints that will be referred to in specific derivations are also introduced in previous sections. Details on the nature of these constraints and their interaction with CASE-GOV are provided in previous sections.

[542x451]177

[526x741]Here, we have two DPs and one case-assigner: how is the case-filter satisfied?

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Alternatively, subjectless infinitivals could be treated as lacking an input specification for their subject. The input for the clause to go would then look like <go(x), x=--, --, T=non finite>.

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The definitions of these constraint follow below.

Before concluding this section, we consider the constraints that may directly conflict with CASE-GOV.
chapters. I also assume the existence of a constraint $-T/A^{GR}$ which penalizes the occurrence of agreement on a head hosting non-finite tense, as in infinitivals and gerundives. This constraint captures the fact that agreement on a head hosting non-finite tense is not allowed. Principles and Parameters analysis is assumed to be a lexical specification of UG. The relevant candidates are represented by the structures in (a)-(d) below: (a) has the subject in spec-IP, (b) has the subject in spec-VP, (c) has the subject in spec-IP and the auxiliary moved to Cº. Candidate (d), with the subject in the rightward VP-adjoined A'-position, is case-equivalent to candidate (b), with nominative case assigned to the trace in spec-VP, as explained in (c). Other specific candidates will be introduced where relevant, always listed under a letter different from (a)-(d).

(18) Competing candidates. Case-assigner and case-assignee are in bold.

a. Luca ha [tk riso]
   Luca has    laughed.
b. [tk riso] Luca
   [tk riso] Luca

c. ha [ti [tk riso] Luca]
d. [tk riso] Luca ha

For reasons of space and clarity of exposition, I will often refer to only specific examples.
Declaratives with neutral subjects:

A GR > CASE

Luca ha riso [tk riso]

The same constraint ranking selects the aux-to-comp structure in (c) as optimal when tense is non finite, provided that the non finite auxiliary is the assigner of nominative case (this is here simply assumed, but is later derived in section 5.5).

Tableau T2 provides the analysis for gerundives with canonical subjects (aux-to-comp in non-gerundive infinitivals is fully analogous). Since T is non-finite, -T / -A GR is now violated by any structure with agreement. Its higher rank relative to A GR, shown by the comparison between (e) and (a) which tie on all other constraints, makes structures with agreement such as the one in (c) suboptimal, while (a) is optimal. The optimal status of (c) vs. (a) shows that CASE GOV outranks SUBJECT, else (a) would surface as optimal. Similarly, the suboptimal status of (c) shows that SUBJECT outranks SUBJECT, else (b) and not (c) would be the optimal structure.

Gerundive aux-to-comp with neutral subjects:

-A GR >> A GR, {CASE GOV, SUBJECT} >> SUBJECT

Luca ha avendo [tk riso]

3 I am assuming that the specifier of CP is not an A-position even when Cº is filled by a raising auxiliary.

Therefore SUBJECT is sensitive only to the filling of the specIP position, which is filled in (a), (c) and (d).

The O.T. analysis achieves a unification of the analysis of declaratives and aux-to-comp structures. Aux-to-comp occurs in order to satisfy CASE GOV whenever A GR does not block it. Rather than being governed by completely independent case-assignment requirements, as in Rizzi (1982), the constraints of the optimal candidate are passed on to the lower constraints, and to the lack of agreement. The O.T. framework allows for a number of declaratives not allowed in Rizzi's account.

A second result of the analysis in T2 above concerns the distinction between the structures in (b) and (c), which have the same linear order. This distinction was not relevant at the time of Rizzi's original argument for aux-to-comp structures under discussion the subject occupies the specVP position. Rizzi's original argument for aux-to-comp
The analysis of non-finite aux-to-comp in the previous section would not be complete without addressing the analysis of aux-to-comp in conditional subjunctive clauses, examined by Rizzi (1982). The OT analysis of English conditional inversion then extends to the Italian case. We have only to take into consideration the constraints introduced by Grimshaw (1993, 1995) in her analysis of English inversion, which include O B H D (Obligatory Heads), violated by non-overt heads, and O P - S P E C, requiring operators to occur in specifier position. These two constraints are vacuously satisfied by the candidates of all the analyses seen so far, and their omission from the preceding tableaus is thus unproblematic.

The derivation of conditional subjunctives is given in tableaus T3 and T4. Tableau T3 contains the candidates (a)-(d), each parsing the conditional operator just examined in its highest available specifier position: in specCP in (a) and (b), and in specIP in (c) and (d). All candidates thus satisfy both P F A R S E and C G. Subjects are filled by a subject or by the operator. These two constraints are therefore omitted from the tableau.

Candidate (a) is suboptimal because the head of the CP is left empty, violating O B H D. This violation is fatal to (a), showing that O B H D outranks A G R. Otherwise (a) would be optimal. Of the remaining candidates, (b) satisfies all constraints except O B H D. This constraint is satisfied by all three candidates and omitted. As tableau T4 shows (c) and (d) are suboptimal relative to (b), because they violate S T A Y, which (b) satisfies. Candidate (b) is thus optimal.

T3. Conditional Subjunctive with neutral subject: O B H D >> A G R

% (rid(x), x=L., -, T=compound subjunctive, Op)

<table>
<thead>
<tr>
<th>i</th>
<th>O B H D</th>
<th>A G R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>false</td>
<td>true</td>
</tr>
<tr>
<td>b</td>
<td>true</td>
<td>true</td>
</tr>
<tr>
<td>c</td>
<td>false</td>
<td>true</td>
</tr>
<tr>
<td>d</td>
<td>false</td>
<td>true</td>
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</tbody>
</table>


% (rid(x), x=L., -, T=compound subjunctive, Op)

<table>
<thead>
<tr>
<th>i</th>
<th>O F A R S E</th>
<th>O P - S P E C</th>
<th>A G R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>false</td>
<td>true</td>
<td>true</td>
</tr>
<tr>
<td>b</td>
<td>true</td>
<td>true</td>
<td>true</td>
</tr>
<tr>
<td>c</td>
<td>false</td>
<td>true</td>
<td>true</td>
</tr>
<tr>
<td>d</td>
<td>false</td>
<td>true</td>
<td>true</td>
</tr>
</tbody>
</table>

4 Remember that agreement coindexes the agreement features to the nominative assignee. Candidate (b) thus fails A G R even if the subject is in specIP, because its agreement coindexation occurs under c-command.
The optimal candidate (b) has no aux-to-comp. How are then the alternations between the auxiliary and the complementizer if that motivated Rizzi's original proposal accounted for? We only need to assume that the complementizer if is part of the input, and the optimal candidate changes accordingly. This assumption is plausible, since if is associated with a specific lexical conceptual structure, and therefore cannot be the kind of semantically empty complementizer freely generated by GEN discussed by Grimshaw in her work (1993, 1995).

Consider tableau T5 below. The complementizer is now overt, therefore O is no longer violated. The ranking AGR >> CASE GOV, motivated in the previous section, now selects structure (a) as optimal, because AGR is violated by (b), (c) and (d) but not by (a).

(The tableau does not contain PARSE, and O-P-SEP, whose role in the analysis is identical to that they had in the previous case. The constraint -T/AGR is also omitted because it is always vacuously satisfied).

5.3.1.2. Lack of Complementizers in Gerundives

As mentioned earlier, unlike conditional subjunctives, gerundives and infinitivals do not show an alternation between aux-to-comp and an overt complementizer. This follows from the analysis presented here. But first let me summarize the relevant facts.

Conditional subjunctives allow for the complementizer alternation illustrated in (21) below and just analyzed in tableaus T3, T4 and T5 above.

(21a) With Cº: Se Luca avesse riso,...
If Luca had laughed,...

(21b) Without Cº: Avesse Luca riso,...
Had Luca laughed,...

In contrast, under no syntactic context an infinitive or gerundive complement with an overt subject may be introduced by an overt complementizer, independently of the position of the subject. In particular, gerundives can introduce subjectless infinitive complements, as shown in (22).

(22) Ritengo [aver Luca parlato abbastanza].
I believe Luca spoke enough.

In particular, an overt complementizer such as di 'of' is ungrammatical independently of the position of the subject, as shown in (23a) and (23b), although the same complementizer can introduce subjectless infinitive complements, as shown in (24).

(23a)*Ritengo di aver Luca parlato abbastanza.
I believe of to-have spoken enough.

(23b)*Ritengo di Luca aver parlato abbastanza.
I believe I spoke enough.

(24)Ritengo di aver parlato abbastanza.
I believe of to-have spoken enough.

Following a similar proposal in Grimshaw (1993, 1999), I maintain that the difference between conditional subjunctives and gerundives and infinitivals with overt subjects follows from the role of the complementizer: the complementizer se 'if' used in the conditional subjunctive has its own semantic import, and is thus part of the input. The subjunctive conditionals in (30a) and (30b), repeated below, are therefore optimal.

(30a) inputs without Cº: Avesse Luca riso.
Had Luca laughed.

(30b) inputs with Cº = se: Se Luca avesse riso.
If Luca had laughed.

In contrast, the complementizer di contributes no semantic content and is freely supplied by GEN. Structures with di are thus in competition with structures without di.

In the tableau below, structures (a)-(c) lacking the complementizer di, are contrasted with those in (a') and (b'), with the complementizer di. No such correspondent exists for...
The optimal candidate is the aux-to-comp structure, because though it violates STAY the most, it satisfies the higher ranked constraints CASE, failed by (a) and (a'), and SUBJECT, failed by (b) and (b'). The lack of a complementizer alternation for gerundives and infinitivals with subjects is thus derived.

5.3.2. Subject Inversion

Finally, let us look at subject inversion. As we know from preceding chapters, when the subject is focus-marked, it occurs in a rightward VP-adjoined A' position, as in candidate (d) below. Nominative case is assigned to the subject trace in specVP. We already know that the availability of structural focus in Italian is due to the higher rank of ALIGN FOCUS relative to SUBJECT, which is also sufficient to account for the suboptimal status of the aux-to-comp structure in (c) below, since on all other constraints (c) performs like or worse than (d).

The suboptimal status of (b) tells us that ALIGN FOCUS also outranks SUBJECT, otherwise (b) would win over (d), because these are the constraints on which (b) and (d) conflict. The supragrammatic nature of the aux-to-comp structure, which is also subject to account for the alignment of ALIGN FOCUS to SUBJECT, which is also subject to account for the alignment of SUBJECT to STAY, is also consistent with and confirms on independent grounds the higher ranking of ALIGN FOCUS over SUBJECT and of SUBJECT over STAY, which by transitivity entails precisely the higher ranking of ALIGN FOCUS over STAY.

The suboptimal status of (a) tells us that ALIGN FOCUS also outranks AG, in fact, were AG to outrank ALIGN FOCUS, (d) would lose to (a), given that we already know that the remaining constraints CASE and STAY, violated by (a), are ranked below AG.

5.3.3. Transitives

All the tableaus analyzed so far extend straightforwardly to inputs with transitive verbs, where the verb assigns accusative case to the object. If the object is raised to an A'-position, the case-assignee is no longer the object but the subject, which is assigned nominative case. This candidate, listed always under (e) in the following tableaus, is always suboptimal.
The first case concerns declaratives. As we know from the derivation of intransitives, the optimal candidate is the one with a specIP subject in (a). In (e), agreement occurs with the nominative subject in specVP, under a non-spec-head configuration. Therefore, candidate (e) fails the higher ranked constraint \( AGR \), and is thus suboptimal.

**T8. Transitive declaratives:**

\[ \text{AGR} >> \text{CASE} \text{GOV} \]

\[ \langle \text{ved}(x,y),(x=Luca,y=Ugo),--,T=pres\.perf.> \]

\[ \text{AGR} \]

\[ \text{CASE} \]

\[ \text{GOV} \]

\[ a. \] ☞ 

\[ \text{Luca} \text{nom,kha}[[\text{tk visto Ugo}\text{acc}]] \]

\[ \text{Luca} \text{have seen Ugo} \]

\[ e. \] ☞ 

\[ \text{Ugoacc,kha}[[\text{Luca}\text{nom visto tk}]] \]

\[ \text{Ugo} \text{have seen Luca} \]*

Candidate (e) loses also against the aux-to-comp optimal structure of gerundives and infinitivals. Here \( AGR \) is not a factor, since it is violated by both structures by pressure from -T/AGR. However, while the aux-to-comp structure satisfies \( CASE \text{GOV} \), the competitor in (e) fails it, because the accusative case is not assigned under proper government, and given the higher rank of \( CASE \text{GOV} \) with respect to \( STAY \), (e) is suboptimal. Nor can the violation of \( CASE \text{GOV} \) be eliminated by raising the past participle on top of the object, as in (f), since this movement would move through the Iº head, and thus violate the \( ECP \) constraint introduced in chapter 3. This violation is in addition to the violations of \( AGR \) and \( STAY \), which (f) shares with (c), and therefore is sufficient to make (f) suboptimal independently of the ranking of the \( ECP \) constraint.

**T9. Transitive gerundives:**

\[ \text{CASE} \text{GOV} >> \text{STAY} \]

\[ \langle \text{ved}(x,y),(x=Luca,y=Ugo),--,T=comp.\text{gerundive} \rangle \]

\[ \text{-T/AGR} \]

\[ \text{CASE} \]

\[ \text{GOV} \]

\[ \text{STAY} \]

\[ \text{ECP} \]

\[ c. \] ☞ 

\[ \text{avendo}[[\text{Luca}\text{nom visto tk}]] \]

\[ \text{having seen Luca} \]

\[ e. \] ☞ 

\[ \text{avendo}[[\text{Luca}\text{nom visto tk}]] \]

\[ \text{having seen Luca} \]

\[ f. \]

\[ \text{vistos}[[\text{Ugoacc}\text{nom visto tk}]] \]

\[ \text{seen Ugo} \]

Finally, we have to consider the competition between (e) and the optimal structure of postverbal focused subjects, shown in (d) below. Here the competing candidate (e) provides a filler for the specIP position, satisfying \( SUBJECT \), but the raised object no longer gets case under proper government, failing \( CASE \text{GOV} \). The higher rank of \( CASE \text{GOV} \) vs. \( SUBJECT \) thus accounts for the suboptimal status of (e).

**T10. Focused subjects in transitive declaratives:**

\[ \text{CASE} \text{GOV} >> \text{SUBJECT} \]

\[ \langle \text{ved}(x,y),(x=Luca,y=Ugo),--,T=pres\.perf.> \]

\[ \text{AGR} \]

\[ \text{CASE} \]

\[ \text{GOV} \]

\[ \text{STAY} \]

\[ d. \] ☞ 

\[ [\text{ha}\text{nom,k}\text{visto Ugo}\text{acc}] \]

\[ \text{have seen Ugo} \]

\[ e. \]

\[ [\text{Ugoacc,i}\text{ha}\text{nom visto}\text{tk}] \]

\[ \text{have seen Ugo} \]

The above analyses can easily be extended to the conditional subjunctive structures previously examined, with no change in the suboptimal status of candidate (e).

**5.3.4. Null Subjects**

The above analyses did not consider candidates with null subjects. Their analysis casewise is parallel to their agreement analysis, provided in section 4.4.2. The thematic role associated with the verb is determined in the same manner as with overt preverbal subjects, with the raised object assigned case and thematic roles as appropriate. However, as explained in section 2, the thematic role associated with the Agent is not assigned to the Agent itself, but rather to the Agent role in the Iº position. As a result, the revised agent analysis is necessary in order to account for the differences in the Agent role.

**T11. Declaratives with neutral subjects:**

\[ \text{DEP} \text{PRESE} \text{AVC, C, STAY} \]

\[ \langle \text{ved}(x), x=Lucato,--,T=pres. \text{perf.} \rangle \]

\[ \text{DEP} \]

\[ \text{PRESE} \]

\[ \text{AVC} \]

\[ \text{C} \]

\[ \text{STAY} \]

\[ a. \]

\[ \text{luca k ha [tk riso]} \]

\[ \text{Luca has laughed} \]

\[ b. \] ☞ 

\[ [\text{ha [tk riso]}] \]

\[ \text{has laughed} \]

Candidate (e) loses also against the aux-to-comp optimal structure of gerundives and infinitivals.
5.3.5. Summary

This section provided a unified analysis for the complex pattern of case-assignment configurations displayed by Italian, thus addressing one of the goals of this chapter. The analysis appeals to very simple binary languages, such as Grimshaw (1993, 1995) for contentful and contentless complementizers in English and for the alternations they give rise to. More importantly, this analysis showed how the position of the subject is a function of the overall harmony of the clause relative to the constraint-hierarchy of the language, depending on the ranking of specific constraints relative to each other, as well as the particular input at issue.

The final ranking emerging from the analyses in this and the previous chapter identifying (a portion of) the grammar of Italian follows below:

(27) Italian.

Aalign-Focus
Parse
Case
Gov
Stay
Subject

-Topic
Ah
Drop</p>

5.4. Case Assignment in Arabic Declaratives

Under Optimality Theory, crosslinguistic typology arises from constraint-reranking. This section shows how the Arabic basic pattern of nominative and accusative assignment follows from the reranking of AGR and STAY and from their interaction with CASEGov and FULL-Int. AGR and STAY are always in Spec, first person and gender agreement with preverbal-subjects and only in person and gender with preverbal-subjects and only in position. Agreement in person, number, and gender with preverbal-subjects and only in position.

In matrix clauses, the subject is always nominative, regardless of the position of the subject in the clause. Agreeement is in person, number, and gender with preverbal-subjects and only in position.

In complement clauses introduced by the complementizer ?anna, preverbal subjects are in the accusative, preverbal subjects are in the nominative, and an obligatory expletive hu occurs in preverbal position. As in matrix clauses, agreement is in person, number, and gender with preverbal-subjects and only in position.

Arabic shows a complex pattern of case-assignment to subjects which depends on the location of the subject relative to the verb, and on the matrix vs. complement status of the clause. The basic pattern is as follows:


Hit-pst-3fs/3fp the-girls-Nom Zayd-Acc.

The girls hit Zayd.


The-girls-Nom hit-pst-3fs/3fp the-boys-Acc.

The girls hit the boys.

In complement clauses introduced by the complementizer, preverbal subjects are in the accusative, postverbal subjects are in the nominative and an obligatory expletive hu occurs in preverbal position. As in matrix clauses, agreement is in person, number, and gender with preverbal-subjects and only in position.


That it-3ms hit-pst-3fs the-girls-Nom the-boys-Acc....

That the girls hit the boys.


That the-girls-Acc hit-pst-3fs/3fp the-boys-Acc....

That the girls hit the boys.
In nominative contexts, see chapter 2 of Fessi Fehri's book. For a rare example of expletive

5 Arabic expletives inflect for number and gender, but not for case. For the expletive

OV. In the following discussion I

GR and

A

relative to

S

NT outranks

I

ULL-

F

OV and

G

ASE

C

realizes specIP by raising the object into this position (the letters indexing the candidates are the same as for the corresponding candidates considered in the analysis of Italian). All candidates violate

STAY relative to

S

NT. In fact, we

I

ULL-

F

OV over

G

ASE

C

They will be shown to follow from the higher rank taken by

OV, and the agreement pattern of Standard Arabic was already analyzed in chapter 4. What

will fulfill preferences in this violation, which is nevertheless represented in the labeling.

because "in position" is a relation to the object, which resources cases under proper government

assignment by Vº to the object, which resources cases under proper government -

C

reranked lower than

TAY. Moreover, Standard Arabic assigns high on the rank of

FULL-IN. In

C

ASSIGN Vº are lower ranked than either

S

OV or

G

ASE

C

Moreover, Standard Arabic assigns high on the rank of

FULL-IN with respect to

subject.

The optimal candidate analyses of matrix nominal subjects in (a) are shown in Tableau T12, which is vacuously

-GRA and

A

therefore need not be coindexed with the subject).

The comparison of (c) with (a) shows that

GR and

A

cannot be the cause of the suboptimal status of (a). The only

-D-1/Tº will be shown to be the optimal candidate; the rank of

FULL-IN" with respect to

subject.

Candidate (a) has the subject in specVP and

C

already know from the analysis in T12 that

-S

subject cannot be coindexed with the subject in specVP and thus does not assign its case under proper government (I am assuming that stacked case-assignment is

Candidate (b) raises the subject into specIP. Candidate (c) realizes specIP through the expletive element

5.4.1. Arabic Nominative Postverbal Subjects

Consider the candidates in T12 below. Candidate (a) has the subject in specVP and

C

 furthermore may be excluded for reasons of

C

omitting references to this violation, which is nevertheless represented in the tableus.

Under proper government (I am assuming that stacked case-assignment is

under proper government, I am assuming that stacked case-assignment is

And the constraint

G

ASE

C

is necessarily coindexed with the subject in specVP and thus does not assign its case under proper government (I am assuming that stacked case-assignment is

C

reranked lower than

TAY. In fact, we

I

ULL-

F

OV over

G

ASE

C

Moreover, Standard Arabic assigns high on the rank of

FULL-IN with respect to

subject.

The optimal candidate analyses of matrix nominal subjects in (a) are shown in Tableau T12, which is vacuously

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A

therefore need not be coindexed with the subject).

The comparison of (c) with (a) shows that

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A

cannot be the cause of the suboptimal status of (a). The only

-D-1/Tº will be shown to be the optimal candidate; the rank of

FULL-IN" with respect to

subject.

Candidate (a) has the subject in specVP and

C

already know from the analysis in T12 that

-S

subject cannot be coindexed with the subject in specVP and thus does not assign its case under proper government (I am assuming that stacked case-assignment is

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5.4.1. Arabic Nominative Postverbal Subjects

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C

already know from the analysis in T12 that

-S

subject cannot be the cause of the suboptimal status of (a). The only

-D-1/Tº will be shown to be the optimal candidate; the rank of

FULL-IN" with respect to

subject.

Candidate (a) has the subject in specVP and

C

already know from the analysis in T12 that

-S

subject cannot be the cause of the suboptimal status of (a). The only

-D-1/Tº will be shown to be the optimal candidate; the rank of

FULL-IN" with respect to

subject.

Candidate (a) has the subject in specVP and

C

already know from the analysis in T12 that

-S

subject cannot be the cause of the suboptimal status of (a). The only

-D-1/Tº will be shown to be the optimal candidate; the rank of

FULL-IN" with respect to

subject.
unproblematic: the morphologically realized case is the one assigned from the closest case-assigner. The suboptimal status of (a) then shows that CASE outranks FULL-INT, which is violated by (c) but satisfied by (a). Moreover, since FULL-INT outranks SUBJECT, SUBJECT must outrank CASE as well, confirming the previously anticipated lower rank of SUBJECT relative to both CASE and STAY.

The higher rank of CASE relative to FULL-INT is also sufficient to derive the suboptimal status of (e), leaving undetermined the rank of STAY relative to FULL-INT.

The same ranking, together with the lower rank of ARG relative to one or both of the constraints CASE and STAY, also explains the suboptimal status of (b), which violates both CASE and STAY.

A candidate not considered in tableau T14 is the one with an expletive in specVP:

(30) Cº Sacc [V-Iº]i [vp hu ti Oacc].

However, (30) is not a legitimate candidate because it violates Local Theta-Assigment. In fact, specVP should be occupied by the trace of the subject. Substituting the trace with the expletive amounts to preventing theta-assignment to the subject DP.

Before turning to preverbal subjects, it's worth examining complement-clauses introduced by the complementizer "that," which unlike "which" does not assign accusative case. As expected, no expletive occurs, confirming the analysis just given.


Wanted-3fs Y.-Nom that 3fs-hit-subj the-girls-NomZ.-Acc.

Yasmin wanted that the girls hit Zayd.

The subordinate clause of (31) is analyzed in tableau T14 below, which parallels that of matrix clauses in T12 above. Here too, the lower rank of SUBJECT and ARG relative to CASE explains the suboptimal status of (b) and (e), while the lower rank of SUBJECT relative to FULL-INT explains the suboptimal status of (c).

T14. Complement postverbal subjects with "that":

{STAY, FULL-INT} >> SUBJECT,

\[ \text{CASE or STAY} >> \text{STAY} \]

The complement postverbal subjects with "that" are subject to the same restrictions of (6), (7), and (8) that govern preverbal subjects. However, the contrastive focus examples given above show that the same restrictions do not apply to postverbal subjects.

5.4.1.1. Arabic Preverbal Subjects

How do structures with preverbal subjects come about? I maintain that Standard Arabic preverbal subjects are functionally marked, and are required to occur in preverbal position by a constraint ALIGN-F demanding leftward alignment of functionally marked constituents. This is in line with the observation by Fassi Fehri (1993) and by traditional Arabic Grammarian(Shaddad P.) (that) preverbal subjects are optional and are licensed by verbal focus.

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Wanted-3fs Y.-Nom that 3fs-hit-subj the-girls-NomZ.-Acc.

Yasmin wanted that the girls hit Zayd.
(ii) Specific Interpretation. Unlike postverbal subjects, preverbal subjects cannot be pure non-specific indefinites. Thus, the following preverbal subject must refer to a specific cow (Fassi Fehri (1993), ex31 p28):

\[(33)\text{Baqarat-un takallam-at.}\]

Cow-nom spoke-3sf.

A cow has spoken.

I will simply assume that arguments marked as \(f\) are required by \(ALIGN-F\) to fill the \(\text{specIP}\) position, where \(f\) stand for a marker for specificity or contrastive focus. This analysis of the preverbal/postverbal asymmetry is in line with the analysis of Italian-focused postverbal subjects ... to be associated to distinct discourse functions in order to account for the preverbal/postverbal subject alternation.

Let us start the analysis of preverbal subjects with matrix clauses. The optimal candidate (b) in T15 below, the only one with the subject in \(\text{specIP}\), satisfies \(ALIGN-F\), but violates \(CASE\) and \(STAY\) twice, because both the subject and the object are not case assigned under proper government. Moreover, it violates \(STAY\) twice, because both the subject and the verb move. It follows that \(ALIGN-F\) outranks both \(CASE\) and \(STAY\), because candidate (a) would be optimal, since it violates \(CASE\) and \(STAY\) only once. The same ranking is sufficient to explain the suboptimal status of candidates (c) and (e) as well. (The status of \(SUBJECT\) and \(AGR\) is irrelevant in the comparison, since they have been shown to be lower ranked than one or both of the constraints \(CASE\) and \(STAY\)).

T15. Matrix preverbal subjects:

\[ALIGN-F >> \{CASE, STAY\}\]

\[\text{drb(x,y), (x=banaat, y=Zayd), -- , T=past}\]

a. \[\text{[V-Iº]i [vp Snom ti Oacc]}\]

b. \[\text{[V-Iº]i [vp tk ti Oacc]}\]

c. \[hu [V-Iº]i [vp Snom ti Oacc] \]

e. \[Os,acc [V-Tº]i [vp Snom ti ts] \]

Turning to clauses introduced by the accusative-assigner Cº ?anna, once again structures (a), (c), and (e) are suboptimal because they violate the constraints \(CASE\) and \(STAY\) only once. Moreover, it violates \(STAY\) twice, because both the subject and the verb move. It follows that \(ALIGN-F\) outranks both \(CASE\) and \(STAY\), because candidate (b) violates the higher ranked constraint \(ALIGN-F\). Likewise, (a) fares better than (b) relative to \(STAY\), but it too violates the higher ranked constraint \(ALIGN-F\). Finally, (e) fares better than (b) on \(STAY\), but it too violates the higher ranked constraint \(ALIGN-F\). The following candidates (b) in T16 below have the subject in the specIP slot with the optimal candidate Aº-\(FC\)\(G\)\(STAY\)F\(I\)\(SUBJ\)\(AGR\) and the suboptimal candidates (c) and (e) have the subject in the \(\text{specIP}\) slot with \(\text{drb(x,y)}\), (x=banaat, y=Zayd), -- , T=past.

T16. Complement preverbal subjects:

\[ALIGN-F >> CASE\]

\[\text{drb(x,y), (x=banaat, y=Zayd), -- , T=past}\]

a. Cº \[\text{[V-Iº]i [vp Snom,acc ti Oacc]}\]

c. Cº \[\text{[V-Iº]i [vp Snom ti Oacc]}\]

e. Cº \[\text{[V-Tº]i [vp Snom ti ts]}\]

The ranking relations deriving the pattern of Standard Arabic are summarized in the following chart.

(34) Standard Arabic:

<table>
<thead>
<tr>
<th>Subject</th>
<th>AGR</th>
<th>Align-F</th>
<th>Stay</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td></td>
<td>++</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td>++</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td>+*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td>+*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

5.4.2. Summary

Concluding the analysis of postverbal subjects in Arabic, let me stress its most interesting aspects. First of all it provides another case where crosslinguistic variation follows from the reranking of independently motivated UG constraints. In particular, the reranking of \(CASE\) and \(STAY\) relative to \(ALIGN-F\) and \(STAY\) affects the position of canonical subjects in matrix and subordinate clauses in Italian and Standard Arabic. The analysis
also supports the constraint on case-assignment proposed in this chapter. In particular, CASEGOV determines the specVP expletive of complements introduced by ?anna in Standard Arabic and, possibly, also the specVP position of Standard Arabic subjects, in case STAY were eventually shown to be lower ranked than AGN.

The analysis also provides us with a case where expletives are motivated by case-assignment requirements rather than by the need to structurally realize the subject position on pressure of SUBJECT. In fact, this latter kind of expletive is ungrammatical in Arabic, as shows the suboptimal status of the expletive candidate (c) in matrix clauses (see tableau T12). This difference is due to the fact that expletives are possible whenever a constraint that can be satisfied through an expletive element is ranked higher than FULL-INT, and more harmonic structures are not available. The crosslinguistic distribution of expletives is thus governed by the grammar of each language. Predictably, languages where FULL-INT is dominated by different constraints use expletives in different syntactic contexts.

5.5. Infinitival Clauses with Overt Subjects

In the previous two sections, we saw how differences in the syntax of declarative structures in Italian and Standard Arabic follow from the reranking of UG constraints. The goal of this section is to compare the crosslinguistic behavior of infinitival clauses in Italian and Standard Arabic.

6 I am here abstracting from issues of productivity, which distinguish the less productive Portuguese and Italian structures from the English one. On this issue, see the insights of Raposo (1987) and Rizzi (1982).

(35a) Ritengo [aver Gianni già approvato la proposta].
I believe [to-have John already approved the proposal].
I believe John to have already approved the proposal.

(35b) E impossibile [o João ter aprovado essa proposta].
(It) is impossible the John to-have-3sg approved that proposal.
It is impossible that John has approved that proposal.

(35c) [For John to have approved the proposal] would have been insane.

The input shared by the above infinitival structures specifies that T is non-finite. In the analysis of Italian I assumed that non-finite T of gerundives and infinitivals could assign nominative case. Here, I do not examine the comparison of Italian expletives with Standard Arabic, though the results are informative.

7 Here, I do not examine the comparison of Italian expletives with the output in (35) and (36).
What structure is eventually selected as optimal should follow from the grammar of each specific language, where each grammar is a reranking of the same UG constraints. In particular, the grammar of English should select (38e), with case assigned to the specIP subject from a preposition in Cº.

Let us start with Italian, whose derivation is shown in tableau T17. The suboptimal status of candidates (a) and (b) in relation to the optimal candidate aux-to-comp structure in (c) has been examined in section 5.3, and follows from the higher rank of CASE over SUBJECT vs. SUBJECT. The agreement full counterparts of (a)-(c) in (f)-(h) are suboptimal because they violate -T/-A GR, which (c) satisfies. In fact, -T/-A GR is ranked higher than SUBJECT, as was shown already in section 5.3, and SUBJECT is the highest constraint violated by (c). In particular, it is this ranking that determines whether agreement is represented by an overt preposition or not.

The intrinsic lexical conceptual structure of the preposition is not interpreted, violating FULL-INT. While the suboptimal status of (d), (i) and (j) could be due to their other violations, failing FULL-INT is the only violation responsible for the suboptimal status of (e). Precisely, a comparison between (e) and (c) shows that FULL-INT is ranked higher than SUBJECT, else (e) would beat (c), which violates FULL-INT is the only violation responsible for the suboptimal status of (e).

The remaining suboptimal candidates (d), (i) and (j) involve a preposition in Cº. This preposition is acting as an expletive, providing a head for an otherwise empty position, much like "do" does in Grimshaw's (1995) analysis of English do-support (see also Brisson (1994) for an analysis of of-insertion based on comparable assumptions). The intrinsic lexical conceptual structure of the preposition is not interpreted, violating FULL-INT. While the suboptimal status of (d), (i) and (j) could be due to their other violations, failing FULL-INT is the only violation responsible for the suboptimal status of (e). Precisely, a comparison between (e) and (c) shows that FULL-INT is ranked higher than SUBJECT, else (e) would beat (c), which violates FULL-INT is the only violation responsible for the suboptimal status of (e).

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follow by reranking.

This concludes the discussion of Portuguese, whose optimal candidate was shown to be infinitival over tensed declaratives.

Let us now turn to English, whose grammar selects the P-in-Cº candidate in (e).
This shows that the preposition of infinitivals is indeed pleonastic. The presence of the ECM verb makes it possible to assign case to the subject without violating FULL-INT, making the candidate with the preposition suboptimal. As the tableau below shows, in this case the structure with the DP suboptimal. In fact, even if case-assignment by an ECM verb were optional and therefore (e) did not violate CASE-GOV by long distance case-assignment by the ECM-verb, (e) would in any case violate FULL-INT, which (k) satisfies, and thus (e) ends up harmonically bound by (k).

T20. Infinitivals with overt subjects as complements of ECM verbs in English.

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<td>(a)</td>
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<td>(c)</td>
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Summing up, we see now how reranking of FULL-INT below STAY accounts for the structure of English infinitivals with overt nominals. We have seen how reranking of a finite set of universal constraints independently motivated by the previous chapters, as well as in Grimshaw (1993, 1995), and in Grimshaw and Samek-Lodovici (1995a,b).

5.6. Evidence against proexpl

An account of case-assignment to inverted subjects that has gained significant attention in the linguistic literature is the proexpl-analysis, variants of which have been proposed in Rizzi (1982), Chomsky's (1982, 1986), Safir (1985) and Burzio (1986)8. Here I will refer to Chomsky's original proexpl-analysis where the phonetically null expletive forms a chain with the lower subject. The proexpl element is assigned case in specIP and then transmits it to the lower subject through the chain, as in (39) below. (39)

proexpl, i ha parlato Giannii.
has spoken John.
It is John who spoke.

Besides constituting an alternative proposal to the one developed in this chapter, the proexpl-analysis deserves attention because it constitutes the main motivation for the proexpl element, whose existence would call into question the violations of the SUBJECT constraint relevant for the analysis of null subjects given in chapter 2 and 3 (see for example section 2.3). In this section I will therefore concentrate on the proexpl-analysis, considering the evidence against it and showing how the same problems do not apply to the OT analysis of infinitival constructions involving overt subjects, which constitutes the main motivation for the proexpl-analysis, considering the evidence against it and showing how the same problems do not apply.

Problem 1: Broken Binding Primes

In the OT analysis of infinitival constructions involving overt subjects, which constitutes the main motivation for the proexpl-analysis, considering the evidence against it and showing how the same problems do not apply, it is assumed that the CHAIN relation in proexplstructures, which allows case to be transmitted from proexpl to the lower DP, is a constraint on the proexpl element, which is assigned case in specIP and then transmits it to the lower subject through the chain, as in (39) above. This shows that the position of infinitivals is indeed pleonastic.
In contrast, when the subject is itself in the matrix subject position it is able to bind the anaphoric argument, as shown in (41) (the omission of the neg-marker in (41) is necessary to keep the interpretation with the anaphoric trace under the negation in (41) but is harmful if we consider the basic facts about binding in the matrix position; see (42)). Zanuttini (1991) shows that negative polarity items do not neg-concord with a neg-marker in Iº when occurring in specIP position.

Notice that once the anaphor is omitted from sentence (40), we get a perfectly grammatical structure, as shown in (42) below. This confirms that the problem with (40) is indeed related to failure of anaphoric binding on the part of the hypothetical pro expl.

To rescue the pro expl-analysis, it could be claimed that pro expl is always incapable of binding, due to an intrinsic impossibility of bearing \( \phi \)-features and, therefore, referentiality, as proposed by Burzio (1986). The pro expl-chain would then be headed by the lower DP, with the c-commanding domain of the lower DP as its binding scope, thus deriving the ungrammaticality of (40).

There are two strong reasons to doubt of the adequacy of this analysis. To begin with, it contradicts the tenet that traces left behind by NP-movement are anaphoric: how can the raising pro expl successfully bind its own anaphoric trace in (42), if it cannot function as a binder? Moreover, it appears incompatible with the function played by pro expl with respect to agreement. As Burzio (1986) and Chomsky (1982) note, the \( \phi \)-features of the lower DP should be transmitted to the pro expl in specIP position in order to trigger lower DP agreement. In contrast, Zanuttini (1991) shows that negative polarity items do not neg-concord with a neg-marker in Iº when occurring in specIP position.

Notice that once the anaphor is omitted from sentence (40), we get a perfectly grammatical structure, as shown in (42) below. This confirms that the problem with (40) is indeed related to failure of anaphoric binding on the part of the hypothetical pro expl.
time, the case and agreement coindexations relate directly to the lower DP of (43), with no need of a mediating proexpl element; see for example the analyses of inverted subjects with respect to agreement in section 4.2 and 4.4.1 in chapter 4, and with respect to case in this chapter, in section 5.3.2.

5.6.2. Problem 2: Unexpected Binding Non-Failures

The former section uncovered the problems caused by pro expl in its capacity of anaphoric-binder. A more well known binding problem is created by the coindexing between pro expl and the lower inverted subject, which if left unqualified would violate condition C of Binding Theory. This problem is solved in different ways by different authors, but all solutions involve a modification on case-transmission, which he assimilates to binding relations by stating that binding by non-argumental binders (e.g. pro expl) must occur within the governing category of the bindee.

The central problem of all these analyses is that the pro expl-analysis leads to a qualification of Binding Theory which would otherwise be unnecessary. Furthermore, all these characterizations of the pro expl-analysis don't rescue it from the problems discussed in the preceding section. Once again, since the OT analysis developed here lacks a pro expl element, no comparable violation of condition C arises in connection with inverted subjects.

5.6.3. Problem 3: Crosslinguistic Inertia of pro expl

The last argument against the pro expl-analysis, due to Weerman (1989:212), disputes the very existence of pro expl by noticing its incapability of participating in V2 structures. Weerman notices how in Icelandic the same hypothetical pro expl filling the subject position of the subordinate clause in (45) should also trigger V2-movement into Cº in a sentence like (46), by moving into specCP in matrix clauses. In contrast, (46) is ungrammatical, while overt expletives are grammatical, as in (47).

(45)... a pro expl snjóar.  

...that is-snowing.

...that it is snowing.

(46) * pro expl snjóar.  

is-snowing.

It is snowing.

(47) Φ a pro expl snjóar.  

It    is-snowing.

It is snowing.

Weerman notices that this failure on the part of pro expl is all the more unexpected in a language like Icelandic, where "virtually any subject, even subject-clitics, can be preposed [into specCP]". His conclusion, in line with the arguments presented in this section and the assumptions made in this dissertation, is that there is no pro expl in (45), and that something that doesn't exist cannot be preposed.

Notice that while the data in (45)-(47) are problematic for the pro expl-analysis, they are compatible with an OT account under an OT perspective (of) (45) follows from the higher ranking of FULL-INT over SUBJECT, which makes placing an overt expletive in specIP position a worse violation than leaving the position unrealized (see section 2.2.3 in chapter 2). Under an OT perspective, (45) follows from the higher ranking of FULL-INT over SUBJECT, which makes placing an overt expletive in specIP position a worse violation than leaving the position unrealized (see section 2.2.3 in chapter 2). Under an OT perspective, (45) follows from the higher ranking of FULL-INT over SUBJECT, which makes placing an overt expletive in specIP position a worse violation than leaving the position unrealized (see section 2.2.3 in chapter 2).
Summary

This section started by considering the evidence against the existence of a proexpl element, because such an element calls into question the assumption that structures with null subjects lack a structural realization of the subject position, which in turn underlies an effective use of the SUBJECT constraint in the analyses of topic-referring and focused subjects developed in chapters 2 and 3. The above discussion showed how positing proexpl is problematic in relation to binding theory, because proexpl would have to be at once “intrinsically non-referential” as to not qualify as a binder for coindexed anaphors and referential ... coindexed referential subjects. By contrast, the above discussion showed how all these problems disappear as soon as no proexpl element is posited, with the position occupied by proexpl analyzed as structurally unrealized, and case and agreement direct coindexed with the relevant subject. The discussion thus strengthened the hypothesis that null subjects have no structural realization.

A second result of the above discussion concerns the grammatical status of chains connecting overt expletive and referential subjects, such as the one in (48) below.

(48) There seemed to ti to be three men in the garden.

With respect to binding, these chains suffer from the same problems just examined in connection with proexpl-chains, as shown by the contrast between (49) and (50), parallel to that between (40) and (41) above.

(49) *There seemed to each other to be two men in the garden (at the same time).

(50) Two men seemed to each other to be in the garden (at the same time).

It would thus be desirable to achieve an analysis of case and agreement in (48) with no reference to an expletive-DP chain, even so now that we know that such an analysis is needed to account for reception in an example like (49), where no reference to an expletive-DP chain was made.

Two men seemed to each other to be in the garden (at the same time).

5.7. Conclusions

The analysis of abstract case-assignment developed in this chapter confirmed and extended many of the general results of the previous chapters, all related to the OT perspective on syntax at the core of this work.

To begin with, using constraint-violability, it was possible to formulate a unified theory of abstract case-assignment, shifting the burden of linguistic variation to the interaction between the higher-ranked abstract case constraints and the lower-ranked abstract case projections. As a result, the higher-ranked abstract case constraints, which are assumed to control the assignment of case in natural languages, are violated whenever the lower-ranked abstract case projections are not satisfied.

Second, as in the OT analyses of previous chapters we saw how the same constraints responsible for linguistic variation within a specific language also determine variation across languages, favoring a parameter whose values are valid only within specific language groups. In particular, we saw how the interaction between CASE,G, AG,-T/-A,G,S, STAY, FULL-INT, just to mention some of the most relevant constraints, determines the structural paradigms of declaratives, declaratives with null subjects, case-related expletives in Standard Arabic...
subordinate clauses introduced by ?anna, as well as the distinct paradigms of infinitival constructions with overt subjects found in Italian, Portuguese and English. The above analyses also contributed to our understanding of the syntax of subjects, which turns out to be affected by a variety of UG constraints. In particular, the ranking of CASE, Government and Agreement determines whether the canonical subject of a declarative will remain in spec VP and follow the verb or raise into spec IP and precede it. At the same time, the relative ranking of CASE, Agreement, -T/Agr and FULL determines whether overt subjects of infinitival constructions are assigned case under proper government or provide case under the appropriate configuration. These analyses confirm the extension of the notion of expletives to any uninterpreted epenthetic element inserted only to satisfy a linguistic constraint ranked higher than FULL. The array of expletive elements is as varied as the constraints that may conflict with FULL. This is particularly visible in English, where FULL is ranked low in the hierarchy, as shown in section 5.5. Consequently, we find a variety of expletive elements in section 5.5. Complete clauses, such as the (Grimshaw 1993, 1995).
The hypothesis at the core of this dissertation is that deriving cross-linguistic variation from the interaction of violable conflicting constraints through an OT approach to syntax would add to the deductive structure of linguistic explanations and simplify the analysis of specific syntactic modules.

The OT analysis of the syntax of subjects met these expectations. The interaction between a small set of universal constraints was shown to determine major aspects of the language-internal and external case-assignment configurations, in finite and non-finite clauses, and associated or not associated with agreement.

In line with the above hypothesis, the analysis also led to a unified theory of case-assignment encoded in the universal constraint CASE. It also brought forth a new account of null subjecthood and subject inversion, eliminating the need for a lexically based prodrop parameter. Moreover, it led to a unified account of the crosslinguistic distribution of null and inverted subjects, which will also include a limited comparison between OT and the Principles and Parameters and Minimalist frameworks.

6.1. Null Subjecthood and Subject Inversion

The OT analysis of null and inverted subjects presented in this work was triggered by an empirical investigation of the role of topichood and structural contrastive focus. In particular, null subjects were shown to be required whenever the subject antecedent has topic status. This requirement joins and refines previous findings in Calabrese (1982, 1985, 1990), Di Eugenio (1990, 1995), Cardinaletti and Starke (1994), and Montalbetti (1984). Moreover, the data from Italian, Greek, Hebrew and Chinese suggest that this constraint is sensitive to the crosslinguistic distribution of null and inverted subjects, and that the OT approach to null inversion is more adequate than previous approaches based on nominal and pronominal co-indexation or on the interaction of various parameters.

These results showed that null and inverted subjects are not in free variation with their overt preverbal counterparts, and therefore that the notion of null subjects as optional and the related notion of free inversion are misleading generalizations.

Capitalizing on this observation, null subjecthood and subject inversion have been analyzed as dictated by grammar, depending on the interaction between the constraints DROP and TOPIC with the independently needed constraints SUBJECT and ALIGN. The details of this analysis are in chapter 2 and 3 (see also Grimshaw and Samek-Lodovici 1995a,b).

What interests us here is the manner in which the constraint hierarchy of each language univocally determines what kind of subject —null, overt or inverted— is optimal in each given case. These results shed light on the nature of OT’s approach to sentence structure and grammar, and provide a new perspective on the crosslinguistic distribution of null and inverted subjects.

As discussed in section 2.3, the same is not true for classical analyses of the Principles and Parameters approach, where the crosslinguistic distribution of null subjecthood and subject inversion is explained by a lexically based prodrop parameter. Moreover, it led to a unified account of null and inverted subjects, and the OT approach to null inversion is more adequate than previous approaches based on nominal and pronominal co-indexation or on the interaction of various parameters.
In OT, crosslinguistic variation occurs when two conflicting constraints are reranked relative to each other. This analysis makes an interesting prediction: given two conflicting constraints C1 and C2, there may be variation within a language when C1 outranks C2, and within a language between the languages when C2 outranks C1. Languages and within a single language mirror each other, and are determined by the satisfaction of the same constraints.

This prediction was repeatedly confirmed by the analyses in this dissertation. A particularly clear example is given by the overt structural realization of thematic subjects required by the constraint PARSE. As we saw in chapter 2, overt subjects are obligatory in English, where PARSE outranks DOP. As expected, they are obligatory also in Italian where the reverse ranking holds. However, in Italian they are obligatory only when DOP is vacuously satisfied, i.e. only for subjects which are not topic-referring. The alternation between null and overt subjects that we find between Italian and English and caused by constraint reranking is thus also found within Italian itself between topic-referring and non topic-referring subjects.

Other cases examined in this work and illustrating this prediction are the following:

(i) As seen in chapter 3, in Italian ALIGN is ranked higher than SUBJECT, and therefore structural focus in VP-adjoined position affects subjects and objects. English has the reverse ranking, and therefore structural focus can affect only objects of transitive verbs, which escape the SUBJECT requirement because they are optional.

The typological prediction just examined relating together linguistic variation on the crosslinguistic and language-internal dimensions, is not available in the Principles and Parameters model, where the value X and the value Y need not be related with each other, and therefore the prediction that variation within a language mirrors variation across languages is not possible. However, X and Y need not be related with each other, and therefore the prediction that variation within a language mirrors variation across languages is possible.
intrinsic to the OT analysis just examined does not follow as inevitably from the Principles and Parameters approach.

6.3. Language Universals

If on one hand language variation is decomposed in its universal components through constraint-reranking, on the other hand OT is geared to predict linguistic universals in all areas where Universal Grammar constraints do not conflict.

For example, the analysis proposed in this dissertation predicts that on a cross-linguistic perspective the set of syntactic structures involving canonical subjects is a subset of that involving non-canonical subjects. Therefore, their syntax is determined by a smaller set of constraints, which in turn reduces the degree of syntactic variation determined through constraint reranking. Indeed, the availability of null subjects is restricted to their occurring in spec-VP or in spec-IP depending on the ranking of SUBJECT and AGREE relative to CASE or STAY. In contrast, non-canonical subjects can occur in the above positions, but can also be left unrealized, as with Italian topic-referring subjects, or forced into specific positions, as focused subjects in Italian.

Language universals may also arise from the language partition determined by the possible rankings of a set of constraints. This was the case with the agreement constraints, whose possible rankings account for the implication examined in chapter 4 that agreement under c-command always implies spec-head agreement.

Other universals arise from the identification of language grammars with constraint hierarchies, and from the corollary that constraint hierarchies are invariant across the distinct syntactic structures of languages. This was the case with the constraint of avoiding overt expletives in null subject languages examined in section 2.2.4. Indeed, null subjects are possible only if FULL-INT is ranked above SUBJECT, else the subject position would be realized by an expletive. But, once this ranking is established, it must hold throughout the entire structure of the language, thus imposing an upper bound on the occurrence of overt expletives.

6.4. Constraint Violability and Ranking in Minimalism

A full comparison between the Minimalist Program (Chomsky 1995, 1993) and OT goes beyond the goals of this work. The more limited goal of this section is to facilitate such comparison by identifying the shared transderivational nature of both systems. Consider the economy principle Last Resort, which states that "a step in the derivation is legitimate only if it is consistent with the principle of economy."

In OT, the principle of economy is expressed in terms of the minimization of restructuring, which is achieved by the minimization of the number of moves that are necessary to achieve the desired output. In Minimalism, the principle of economy is expressed in terms of the minimization of the number of steps that are necessary to achieve the desired output. The two systems share the same principle of economy, although they express it differently.

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necessary to convergence” (Chomsky 1993:32). An important application of this principle concerns movement. Movement is costly, and Last Resort ensures that it cannot occur freely. However, if it is necessary to feature checking, and therefore to convergence, it can occur nevertheless. This insight can be formalized by stating that the constraint against movement \( S \) is ranked lower than the constraint on convergence Feature Checking. Consider for example the three derivations in the first column of the tableau below: in (a) the subject moves from spec VP to the left of the verb; in (b) the verb moves to the right of the subject; in (c) the verb moves to the left of the subject. When too little movement occurs, as in (b), the higher Feature Checking constraint is violated, and the derivation is once again excluded by the existence of the more economical derivation (a), which constitutes a more economical derivation because it satisfies the higher ranked Feature Checking constraint.

Contrary to what is said in Minimalism, the ungrammatical status of the structures in (b) and (c) follows from the same cause: the existence of the less costly optimal derivation in (a). In Minimalism, on the other hand, only derivation (c) is excluded through Last Resort on the basis of the existence of the more economical derivation (a). In fact, derivation (b) is ungrammatical only because its unchecked features make it a non convergent derivation. The existence of the economy principles of Minimalism that makes constraint ranking conceivable even within Minimalism.

Cardinaletti and Starke choose to avoid constraint ranking, and apply the principle of economy of representation at a syntactic level prior to that of Last Resort. In other words, they use serial ordering through syntactic levels to get the same result that would be achieved with constraint ranking. There are, however, two open issues related to the serial ordering solution. The first is whether this solution is general enough to solve any problem. The second is whether the constraint of economy of representation can be considered a syntactic constraint or a semantic constraint, as in the case of feature checking. Finally, still looking at minimalism through OT glasses, we can also identify a clear difference between the two frameworks with respect to the availability of constraint ranking. In OT, constraint ranking is a natural part of the framework, whereas in Minimalism it is a separate issue. Thus, in Minimalism, the constraint of economy of representation is a syntactic constraint, whereas in OT it is a semantic constraint.
Appendix A

The following is a semantic derivation for a sentence involving the focus sensitive adverb *only*. The derivation is based on a Cresswellian intensional logic, where intension is built-in in the denotation of all logic constants. It also assumes the truth-conditional meaning of sentential *only* shown below (see Rooth 1985).

\[ \lambda p \ [ \forall q \ (q \land C(q)) \rightarrow q = p ] \] - type: \<t,t>\n
The denotation of *only* is a function from propositions to truth-values, such that given a proposition \( p \), the function yields true just in case for any proposition \( q \) which is true and is a member of the focus denotation of the scope of *only*, it is true that proposition \( q \) is equal to \( p \). In other words, no proposition other than \( p \) can be under consideration and true, where \( p \) is eventually the proposition truth-conditionally denoted by the VP node. The variable \( C \) in (1) is assigned to the focus denotation of the sister VP node. In this way, the focus denotation of the VP node is brought to the foreground and affects the entire truth-conditional meaning of the sentence (see Rooth 1985, 1992 for a detailed discussion of the system and its formalization).

Derivation (4) derives the interpretation of (2), for which I assume the syntactic structure in (3). The main simplification concerns the subject VP-internal trace, which is not considered in the semantic derivation. Its inclusion would not affect the derivation in any relevant way.

(2) Ha soltanto cantato Bill.
Has.3s only sung Bill.

*It was only Bill who sang.*
Node: Truth-conditional denotation
Focus-denotation:
1. sing'
λ P [P=sing']
2. bill
λ x [x=x]
3. sing'(bill)
λ u [∃ y [ u= sing'(y) ]]
4. (a)
λ p [∀ q (( q & C(q)) => q=p )] ( sing'(bill));
where C=
λ u [∃ y [ u= sing'(y) ]]
(b)
∀ q (( q & λ u [∃ y [ u= sing'(y) ]] q ) => q=sing'(bill) )
(c)
∀ q (( q & ∃ y [ q= sing'(y) ] ) => q=sing'(bill) )
5. ∀ q (( q & ∃ y [ q= sing'(y) ] ) => q=sing'(bill) )

For any proposition q, if q is true and for some individual y in the context q asserts
the singing of y, then q is the proposition sing'(bill), i.e. the proposition that Bill sang.

Notice that contrastive focus of the subject in focus position is essential for a formal
semantic derivation of the interpretation of (2).

Appendix B

For the agreement patterns of Italian, Standard Arabic and Conegliano, see the
detailed descriptions in sections 4.1.

For Moroccan Arabic, see sections 4.1.

For the agreement patterns of Italian, Standard Arabic and Conegliano, see the

French

The following example shows loss of number agreement with inverted subjects.

l'école-les-sept
The boys

l'école-les-cinq
The boys

l'école-les-six
The boys

...
The agreement clitic is obligatorily missing when the subject is in postverbal VP-adjoined position. Compare (3b) with (3c).

(3b) Gl'é venuto la Maria
There is.3s come.3Ms te.3Fs Mary.3Fs.
Mary arrived.

(3c) *L’é venuta la Maria.
cl.3Fs is.3s come.3Fs The.3Fs Mary.3Fs.
Mary arrived.

The loss in number and gender agreement is particularly clear when the inverted subject is plural and marked Feminine: only person agreement is maintained in (4a), while number and gender agreement is not possible, as shown in (4b).

(4a)  Gl’é venuto delle ragazze.
There is.3s come.3Ms some.3Fpl girls.3Fpl.
There arrived some girls.

(4b) *Le son venute delle ragazze.
cl.3Fpl are.3pl come.3Fpl some.3Fpl girls.3Fpl.
There arrived some girls.

The agreement-pattern of Trentino closely resembles that of Fiorentino, except for the absence of the overt locative clitic gli in inversion structures. See Brandi and Cordin (1989:138, fn8).

The following examples from Haiman and Benincà (1992) show loss of gender agreement.

(6a) Fassan: L e venu la vivano.
He.Ms is come.Ms the witch.Fs.
The witch has arrived.

(6b) Genoese: U vene a Katajning.
He.Ms come.3s the Catherine.
Catherine arrives.

(6c) Ampezzan: Agnere l e sta ra sagra inz el nosc paes.
Yesterday he.Ms is been the feast.Fs in the our county.
Yesterday, there was a party in our county.

(6d) Romagnol: E chenta una turtureina.
He.Ms singsa turtledove.Fs.
A turtledove is singing.

The following examples from Haiman and Benincà (1992) show loss of number agreement.

(7) Zhe xueqi lai le sange xin laoshi.
This semester come ASP three-CL new teacher.
Three new teachers came (to this school) this semester.

(8) Nabian you sange ren.
There have three man.
There are three men.
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Types of A’-Dependencies. 

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