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The Representation of Implicit and Dethematized Subjects

Ian G. Roberts



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I'd like to dedicate this book to my mother
and my brother, Paul

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Preface

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Geneva, July 1986

Background

1.1. INTRODUCTION

In this study, we take the central question for linguistic theory to be: what is knowledge of language? The question can be divided into two parts: (i) what does it mean to say of some individual that he/she knows English, French etc.? (ii) where does this knowledge come from? Chomsky (1986) answers these questions as follows: (i) knowledge of a language means the possession of a particular mental faculty, called an I(nternal) language; (ii) the I-language is assumed to be the final state in a process of development from an initial state of language which is a species characteristic of humans present at birth. In other words, the initial state is an innate endowment. The assumption that the initial state is an innate endowment accounts for the rapidity and apparent ease with which children acquire the extraordinary complexities of natural languages without formal instruction and purely on the basis of the degenerate data in the average child's environment.

If the central question of theoretical linguistics is as given above, then it is the task of linguists to characterize the properties of the I-language and the initial state. Linguists' theories of given I-languages (for example, the I-language in the mind of individuals commonly referred to as 'English speakers,' 'French speakers,' etc.) are known as grammars (of English, French etc.). The linguist's theory of the initial state is known as Universal Grammar (UG). Developing UG, one is forced to reconcile two seemingly contradictory requirements: on the one hand, UG must be 'rich,' in the sense that it must be able to explain how children develop competence in their native languages so rapidly and easily. This suggests that much of the final state is predetermined by the initial state, so UG must have much in common with the grammars of individual languages. On the other hand, the diversity of the world's languages poses a challenge for any UG; it must be sufficiently 'impoverished' to allow for the attested variation. Much of the intellectual challenge in developing UG resides in reconciling these two requirements.

This book is intended as a contribution to UG. In particular, the central question we address is that of accounting for certain realizations of the

‘semantic roles’ of lexical items. The realizations we are interested in are those where a particular semantic role does not appear to have a structural realization. The constructions in question are passive, middle, nominalization and impersonal constructions, exemplified in (1):

- (1) a. The car was washed (by John) – passive.
 b. This car washes easily – middle.
 c. The washing of the car (was a mistake) – nominalization.
 d. Si lava la macchina ogni sabato – (Italian) impersonal.
 SI washes the car every Saturday
 ‘People wash the car every Saturday.’

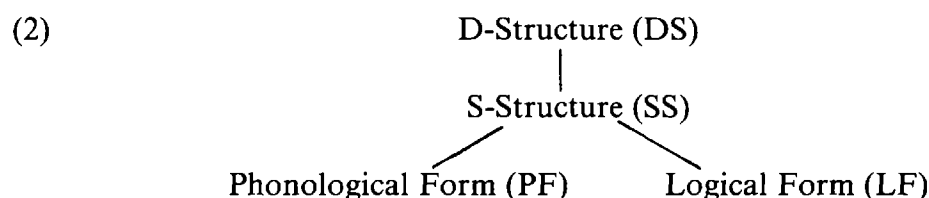
Wash/lavare is a transitive Verb, i.e. it has two arguments, a subject NP and an object NP. The simplest specification of the relationship between this particular argument structure and the structural frames in which transitive Verbs appear would be to say that transitive Verbs must always appear with their two arguments realized in phrase structure (e.g. *John washed the car*). However, in (1), *wash/lavare* – in their various forms – appear with only one argument, and so this maximally simple view cannot, it seems, be maintained.

Three things should be noted in connection with the processes in (1): (i) the processes which relate the various one-argument instances of *wash/lavare* to the two-argument instances are general, in that they are not idiosyncratic to this Verb; (ii) we can formalize these operations in terms of relations between ‘logical’ subjects and objects (semantic roles) and ‘structural’ subjects and objects (grammatical functions); in these terms, the grammatical functions of subject and object remain constant even though the argument structure changes; and (iii) most importantly for the concerns of this work, in each case the structurally ‘missing’ semantic role is semantically ‘present’; in fact, it is understood as an indefinite of some kind in each case (moreover, in passives and nominals it is optionally structurally realized as a *by*-phrase).

To sum up observations (i - iii), we could say rather simplistically that the processes illustrated in (1) ‘interfere with’ the simplest mapping from argument structure (semantic roles) to phrase structure (grammatical functions), and interfere productively. The aim of this book is to provide a characterization of the nature of this ‘interference.’ Our topic, then, is the theory of argument structure and grammatical functions, where ‘argument structure’ means the characterization of the semantic role-taking properties of lexical items, and ‘grammatical functions’ are the structural realizations of these semantic roles as subjects, objects etc. We assume, following Chomsky (1965), that the grammatical functions subject, object etc. are definable in terms of phrase-structure configurations, so we can

put our central question as follows: what is the relation between phrase structure and argument structure? Moreover, since the ‘missing’ semantic role is interpretable as an indefinite of some kind, and since indefinites generally involve quantification, the question can be extended to read: what are the relations between phrase structure, argument structure and the representation of quantification? We will see in what follows that the structures in (1) are an excellent probe into these issues.

The proposals we make are developments of recent proposals made in the Government-Binding framework of Chomsky (1981), (1982), (1985), (1986), henceforth GB theory. In GB theory, sentences are taken to have representations at different levels. The levels of representation, and their relations, are shown in (2):



Formally, the mapping between levels is effected by the operation of Move-Alpha, a transformational rule. This rule operates freely, subject to a number of independent constraints which we will introduce in Chapter Two.

The leading idea of GB theory concerning the relation between argument structure and phrase structure is that this relation is minimal. The argument structures of lexical items are ‘projected’ onto a skeleton phrase structure. The ‘projection’ of argument structure is subject to two fundamental constraints: (i) the θ -criterion, which roughly requires that each argument be assigned only one thematic (θ) role (‘Theme,’ ‘Agent,’ ‘Source’ etc.) by some predicate and that each predicate assign its thematic roles to a unique argument, and (ii) the Projection Principle, which requires that lexically specified argument structures of lexical items be manifested in syntax. The configuration of the skeleton phrase-structure is determined by X-bar theory, which we will describe in the next section.

This ‘pure’ representation of thematic roles in phrase structure is DS. At SS, a further condition holds: all arguments must be ‘visible.’ In order to be visible in the required sense, an argument must be assigned abstract Case. Since the positions occupied by θ -role-bearing items are not necessarily visible in this sense, various structural changes can take place between DS and SS. So this means that Move Alpha can alter the configurations of thematic roles, and so alter the grammatical function associated with a given thematic role at SS. The passive is the prime example of this phenomenon.

In the mapping from SS to LF, structures are disambiguated in the

sense that syntactic properties relevant for interpretation can be represented at LF. One of the most important such processes is the indication of the scope of various operators: quantifiers, negation, tense, mood etc. It has been assumed since May (1977) that quantifiers such as *some* N', *every* N' etc., undergo Move Alpha in the mapping to LF, to produce structures where they bind variables, rather in the manner of standard predicate calculus. The quantifier-variable relation is constrained by the Bijection Principle, which rules out both vacuous quantification and free variables by requiring that quantifiers and variables be in a bijective relation. A further condition on variables is that they be free with respect to all arguments – this is a consequence of Principle C of the binding theory of Chomsky (1981). Another important principle that holds at LF is the Principle of Full Interpretation. This principle requires that every element must be able to be interpreted. We will consider the exact form of these principles more closely as we proceed.

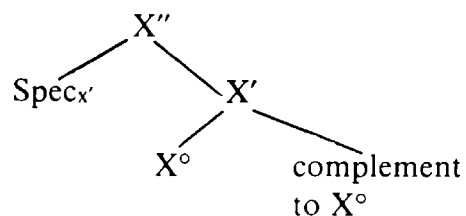
Argument structure is preserved at SS and LF by the Projection Principle. The Projection Principle requires argument-taking properties of lexical items to be satisfied at all syntactic levels. The correct formal statement of this requirement is one of the central issues we address in this work.

The above presentation gives the bare bones of current conceptions of argument structure, phrase structure and quantification. The object of this book is to put flesh on this skeleton through the study of the constructions seen in (1). In the remainder of this chapter, we will present initial formulations of the relevant principles.

1.2. X-BAR THEORY

X-bar theory provides the basic configurations of phrase structure which are relevant for the way in which lexical properties are 'projected' onto phrase structure. The basic configuration for X-bar theory is as in (3):

(3)



Complements and Specifiers may or may not be present, subject in part to other principles, so the basic requirements of X-bar theory are as in (4):

- (4) a. Categories must be headed.
 b. All X^0 must have a corresponding $X^{\max}$

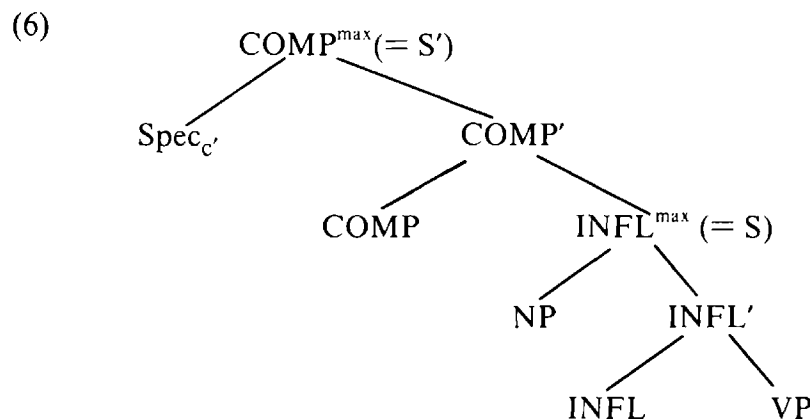
X^0 projects its categorial features up to X' , and so on. The last projection of a given X^0 is known as the 'maximal projection' of that head, written $X^{\max}$. X^0 heads X^i , X^i heads X^{i+1} , $X^{\max-1}$ heads $X^{\max}$ and so by transitivity X^0 heads $X^{\max}$.

The major syntactic categories are Noun (N), Verb (V), Adjective/Adverb (A) and Preposition/Postposition (P). The categories result from the combination of the two categorial features $[\pm V, \pm N]$, as follows:

- (5) $N = [+N, -V]$
 $V = [-N, +V]$
 $A = [+N, +V]$
 $P = [-N, -V]$

The insertion of lexical items into tree structures is free. X-bar theory simply requires all projections of N^0 to be N^n , of V^0 to be V^n etc.

All lexical items are members of one of the above four categories. These are the lexical categories. There are also two non-lexical categories: Infl and Comp. The projections of these heads make up the 'S-system,' illustrated in (6):



We will use the symbols CP and IP for $\text{Comp}^{\max}$ and $\text{Infl}^{\max}$, following Chomsky (1985). Comp contains complementizers of various kinds and its specifier is the landing-site for *wh*-movement. Infl contains Tense, Agr – a bundle of features which specify agreement – and modals.

The notion of maximal projection allows us to define a relation R, as follows:

- (7) $R(x,y)$ iff $(\forall P)$, P a maximal projection, if P dominates x , then P dominates y .

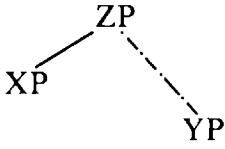
(Aoun & Sportiche (1983:228)).

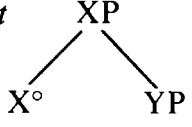
In terms of R , we can define the relations of government, c-command and R-modification:¹

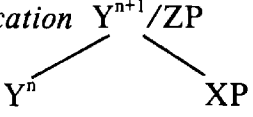
- (8)
- a. x c-commands y iff x and y are maximal projections and $x \neq y$ and $R(x,y)$;
 - b. x governs y iff x is P° , y a maximal projection and $(R(x,y) \ \& \ R(y,x))$;
 - c. x R-modifies y iff x is a maximal projection, x does not head P and $(R(x,y) \ \& \ R(y,x))$.

We make the standard assumption that R is category-neutral, therefore the structural relations in (8) are category-neutral.

The structural relations are illustrated in (9):

- (9)
- a. *C-command*


XP c-commands YP
 - b. *Government*


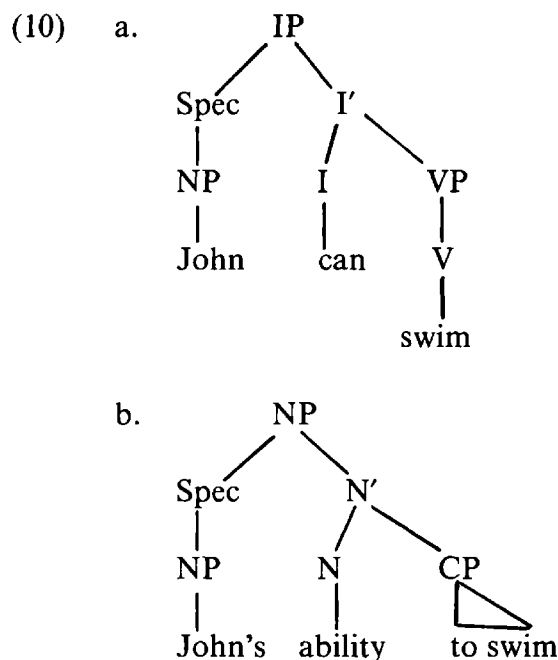
X governs YP
 - c. *R-modification*


XP modifies Y^n, Y^{n+1}

It is important to stress that we are using the term 'R-modification' here in the same way as the terms 'c-command' and 'government.' It denotes a purely structural relation of a particular kind, rather than a semantic relation. In fact, we could consider R-modification as defined here to be the complementary relation to government: the case where R holds between a non-head and a head.

We said that the position and presence of complements and Specifiers is forced, at least in part, by principles other than X-bar theory. The

complementation properties of a head are a function of lexical properties of that head, and so the presence of complements is forced by the Projection Principle (although their position is forced by Case Theory, as we shall see in the next two sections). Specifiers, on the other hand, do not seem to appear as a consequence of lexical properties of a head. The most important thing about Specifier position for our purposes is that it is the subject position. This is most clearly seen with IP and NP:



We will develop a proposal about the principles which force subject positions to appear during the course of this work.

1.3 PRINCIPLES OF THEMATIC STRUCTURE

It is clear that a very important aspect of argument structure is the distribution of θ -roles in a clause, or the 'thematic structure' of a clause. In this section we introduce the principles governing thematic structure in detail. The subtheories in question are Case Theory and θ -theory. The notion which unifies these subtheories is that of θ -chain.

1.3.1. θ -Theory and the Projection Principle

In this section, we will give the assumptions that we adopt regarding θ -theory: the representation and assignment of θ -roles. Most of the assumptions we make initially are fairly standard.

θ -roles are listed in the θ -grids associated with lexical items in the lexicon, as in (11):

- (11) donate [$\theta_1, \theta_2, \theta_3$]
 kiss [θ_1, θ_2]
 smile [θ_1]

Also, Verbs have subcategorization frames, as proposed in Chomsky (1965: Chapter Two). Some sample subcategorization frames are given in (12):

- (12) donate [__NP PP]
 kiss [__NP]
 smile [__]

θ -grids are closely related to subcategorization frames. In fact, every θ -role except at most one in the grid is associated with a subcategorization frame (the θ -role not associated with a subcategorized position is usually assigned to the subject position – for more on the relation between subject arguments, subject position and subcategorization, cf. 2.2.2.). These θ -roles correspond to notions such as ‘goal-of-action,’ ‘agent-of-action,’ etc. The nature of these notions is unclear, as is their connection with subcategorization. We will not try to shed light on these issues at this point (but cf. 2.2.2. and 4.3.); for the moment we take θ -roles as given by lexical semantics and consider only their formal properties.

θ -roles are assigned to arguments under government. θ -roles are assigned directly by V to complements occupying subcategorized positions in VP, and indirectly by VP to the subject. The θ -criterion is the main well-formedness condition on the assignment of θ -roles:

- (13) Each argument bears one and only one θ -role, and each θ -role is assigned to one and only one argument.

θ -role assignment is technically optional, but forced in many instances by the Projection Principle. The Projection Principle can be stated informally as follows:

- (14) Representations at every syntactic level (D-Structure, S-Structure, Logical Form) are projected from the lexicon, in that they observe subcategorization properties of lexical items.

(Chomsky (1981:29)).

We stated above that subcategorization entails θ -marking. This has two consequences, given (14): (i) that subcategorized positions must be present

at all levels, and (ii) subcategorized arguments are obligatorily θ -marked.

It also follows from (ii) that a subcategorized position will 'count as' a θ -marked position at every level. This is of particular importance where Move-Alpha applies and moves material out of that position. A simple case of NP-movement will serve as illustration:

(15) John_i was seen t_i.

Here the Projection Principle and the θ -criterion require that an empty category of some kind occupy the DS position of *John*, namely the object position. This category receives the θ -role assigned to the position. Clearly, the moved NP, *John*, also receives this θ -role. The mechanism which allows this 'sharing' of a θ -role between two positions is chain formation. Chain-formation is defined as follows:

(16) $C = (a_1 \dots a_n)$ is a chain iff a_i is the local binder of a_{i+1} .

This definition is adopted from Rizzi (1983:2). We now need to define local binding:

- (17) a. a *locally binds* b iff a binds b and there is no c such that c binds b without binding a .
 b. a *binds* b iff a c -commands b and a is coindexed with b .

The informal statement of the θ -criterion in (13) can now be replaced with (18):²

- (18) Each argument appears in a unique θ -chain containing a unique θ -position P , and each θ -position P is in a unique θ -chain containing a unique argument.

θ -chains are those chains for which (18) is a well-formedness condition. The Projection Principle entails that each subcategorized position will be a member of a θ -chain; this, combined with (18) as a condition on θ -chains, has the consequence that movement into subcategorized positions is impossible, as the result will be a θ -chain containing two θ -positions.

Subjects are not subcategorized positions (cf. Chomsky (1965:92 - 94) and the fact noted in the previous section that subject positions *qua* Specifiers do not appear as a consequence of lexical properties of a head), so subjects are not included under (14) as it stands. However, (14) can be restated so as to include selected positions (cf. 2.2.3). In that case, whenever an argument in subject position is selected, i.e. θ -marked, it will fall under (14). As a result, θ -marked subject positions are not possible landing sites for movement.

A distinction is made between A-positions and non-A positions. A-positions are positions which correspond to the grammatical functions subject-of, object-of etc. We define subject-of and object-of as in Chomsky (1965:71):

- (19) subject-of: NP/S (“the NP immediately dominated by S”)
 object-of: NP/VP
 object-of-Preposition: NP/PP

All other positions in clauses are non-A-positions, or A'-positions (on A-positions in NP, see 4.5.). All A-positions except the subject appear purely as a function of θ -marking and subcategorization. Hence the θ -criterion and the Projection Principle are enough to guarantee their presence, and to take the place of a theory of lexical insertion of the kind proposed in Chomsky (1965, Chapter Two). The subject, however, seems always to appear, even when not filled with an argument of the predicate (in such cases it may be a landing site for movement; if not, it is filled by an expletive element, i.e. *it* or *there*). In order to force the presence of subjects independently of θ -marking and selection, Chomsky (1982) proposes the Extended Projection Principle, which adds the statement in (20) to that in (14):

- (20) Every clause must have a subject.

In this way, subject positions must always be present but can be landing sites for movement when they are not θ -marked. In general, subjects are the only A-positions that need not also be θ -positions. This is because the status of subjects with respect to the (Extended) Projection Principle is different to that of complements; subjects must be present even when not θ -marked.

1.3.2. Case Theory

Rizzi (1985) distinguishes conditions on the form of categories from conditions on their content. The θ -criterion is a condition on the content of θ -chains, since it requires a biunique relation between θ -roles and θ -role-assigners. Moreover, θ -roles are ultimately semantic entities. The formal condition on θ -chains is the Visibility Condition:

- (21) For any θ -chain C, C is visible iff C is Case-marked.

We can in fact incorporate (21) into the θ -criterion, by restating the θ -criterion as follows:

- (22) Each argument appears in a unique chain containing a unique visible θ -position P, and each θ -position P is visible in a chain containing a unique argument.³

Case is assigned to positions in chains under government. Any head may assign Case. Typical Case-assignments are as follows:

- (23) a. I assigns NOM(inative).
 b. V,P assign ACC(usative) or DAT(ive).
 c. N,A assign GEN(itive).

Case-assigning properties are a function of various features. Infl only assigns Case when it has the feature [+Tense]. For Verbs and Prepositions, Case-assignment depends largely on subcategorization: transitive Verbs and Prepositions have an ACC feature (in languages other than English this may be DAT – see below); ditransitive Verbs, we may assume, have two ACC features; intransitives have no Case feature (this is true also for unaccusative, which may subcategorize for objects – on this class of Verbs, see Belletti (1986)).

Chomsky (1986:270-1) makes a distinction between inherent and structural Case. Structural Case is assigned at SS subject only to the structural requirement of government. Inherent Case is assigned at DS, and realized at SS, subject both to the government requirement and to the Uniformity Condition, which is stated as follows:

- (24) If X is an inherent Case-assigner then X Case-marks NP iff X θ -marks the chain headed by NP.

Thus inherent Case is tied to thematic properties of the Case assigner, while structural Case is purely structural. In English, GEN is inherent, while NOM and ACC are structural.

Both the Visibility Condition and the requirement that Case is assigned under government are requirements imposed by UG. However, it is possible that in individual languages, the particular inventory of Cases and the direction in which Case is assigned may be specified in particular ways. For example, English lacks a DAT Case and assigns Case rightward, while German has DAT and assigns Case leftward.⁴ The direction of Case assignment is an important determinant of word-order in a language (although almost certainly not the only one) – cf. Travis (1984), Coopmans (1985), Koopmann (1985) and Li (1985) on the general issue of word-order variation from a GB perspective. Also, the specification of which Cases are inherent varies from language to language (cf. 5.3.). Such extra specifications of UG principles in the grammars of individual languages

are known as parameters. So we say that the UG requirement that Case be assigned under government has an associated parameter of directionality. Also, the listing of Cases is subject to parametric variation. Parameters are fixed, it is assumed, during the course of acquisition, either on the basis of direct evidence or through interaction with other parameters which are determined on the basis of direct evidence. The question of parametric variation in passive-like constructions will be broached in Chapter Five.

1.4. PRINCIPLES OF QUANTIFICATION

The central principles of quantification concern the representation of quantifiers and variables and the relations between them. As in the previous section, the principles we will adopt initially are fairly standard.

Scope relations among quantifiers and other elements (e.g. negation) are represented at LF. In the mapping from SS to LF, Move-Alpha can apply. In one form, this operation moves a quantified NP to an A'-position, from which it binds a variable in the A-position vacated. The A'-position in question is the position adjoined to IP or VP (although there is also movement-to-Comp – *wh*-movement – at LF). This variant of Move-Alpha is known as Quantifier Raising, or QR (see May (1977), (1985)).

Scope is determined as follows:

(25) X is in the scope of Y iff X is c-commanded by Y.

Consider a sentence containing two quantified NPs, like (26):

(26) Every man loves some woman.

QR can apply to the two NPs here in either order, so a sentence like (26) corresponds to the two LF representations in (27):

- (27) a. [every man_i [some woman_j [t_i loves t_j].
b. [some woman_j [every man_i [t_i loves t_j].

(27a) corresponds to the reading with a wide-scope universal, and so it can be true if every man loves a different woman, while (27b) corresponds to the reading with a wide-scope existential and so is true only where the same woman is loved by every man.

QR is a form of extraction, and extraction involves operator-variable relations. We adopt the theory of these relations of Koopmann & Sportiche (1982). In particular, we adopt their Bijection Principle:

(28) There is a bijective correspondence between variables and operators.

We take this principle to hold both at SS and LF. It holds in slightly different forms at the two levels; at SS, it is a condition on representations, while at LF it is a semantic condition on variables. The two forms of the principle are:

- (29) a. SS: Every variable must be bound from an A'-position.
 b. LF: Every variable must be bound by an operator, and every operator must bind a unique variable or chain of variables.

By “chain of variables” here we mean a sequence of ($a_1 \dots a_n$) of variables, such that a_i locally binds a_{i+1} . Note that it follows from Principle C that each member of the variable chain except the “coda” of the chain must be in an A'-position (if that variable is an empty category; for the case where the variable is a pronoun, see below).

There are two kinds of variable: (i) empty categories of a particular type and (ii) pronouns. The empty categories allowed by the theory exhaust the possible values of the features [$\pm$ anaphor, $\pm$ pronominal], as follows:

- (30) a. [+anaphor, +pronominal]: *PRO*, as in
 He tried *ec* to leave.
 b. [+anaphor, -pronominal]: anaphor, as in
 He seems *ec* to be smart.
 c. [-anaphor, +pronominal]: *pro*, as in
 ec viene “(He) comes.”
 d. [-anaphor, -pronominal]: variable, as in
 Who did you see *ec*?

The features [$\pm$ anaphor, $\pm$ pronominal] encode which principle of the binding theory a given empty category is subject to. The binding principles are as follows (where “A-bound/free” means bound/free with respect to A-positions):

- (31) A. Anaphors must be A-bound in their binding domain.
 B. Pronominals must be A-free in their binding domain.
 C. Names must be A-free.

A [+anaphor] element obeys Principle A, e.g. NP-trace and *PRO*, and a [+pronominal], e.g. *pro* or *PRO*, obeys Principle B. The contradictory requirements on *PRO* prevent this element from having a binding domain. Since the definition of binding domain involves government (cf. Chomsky (1981)), it follows that *PRO* must appear in an ungoverned position.⁵

Variables, being [-anaphor, -pronominal], are subject to Principle C. Hence variables cannot be bound by an element in an A-position. This is what rules out classic cases of strong crossover, like (32):

(32) *Who_i does he_i love t_i.

Here the variable, *t_i*, is A-bound by *he_i* in violation of Principle C, so the sentence is impossible with this reading.

Pronouns can be interpreted as variables. This happens where a pronoun is coindexed with an inherent quantifier – a quantifier such as *every* or *no*; NPs headed by or specified by inherent quantifiers are “not satisfiable by one or more objects in the domain of discourse” (Haïk (1984:189)). For example, no object satisfies the description *no girl, every man, anything* etc. For interpretation of the pronoun to be possible, the quantifier must structurally bind the pronoun, i.e. c-command it as well as be coindexed with it. (33) is an example of a pronoun acting as a bound variable:

(33) Everyone_i loves his_i mother.

The interpretation of (33) is roughly “every *x* loves *x*’s mother,” and not “the entity *everyone* loves its own mother.” Note that in the LF for this sentence the pronoun is also bound by the variable bound by *everyone*, as *everyone* undergoes QR. This variable occupies an A-position, but the sentence is grammatical, so Principle C does not hold for pronouns as variables. It is precisely because of this that the pronoun and the variable here can form a variable chain. On the other hand, the Bijection Principle does hold for pronouns as bound variables; this is what underlies Koopmann & Sportiche’s account of weak crossover:

(34) Who_i does his_i mother love t_i?

Here both *his_i* and *t_i* are variables bound by *who*. Since they do not c-command each other, they do not form a variable chain, and hence *who* binds two variables, violating (29b). Hence (34) is ungrammatical on the interpretation represented.

The above sections sketch the principles we adopt initially. Many of them will be refined in the light of data from passive and related constructions that we will consider in the chapters to follow.

NOTES

1. (8a,b) are adapted from Aoun & Sportiche (*ibid*:228). (8c) is based on the definitions of modification in Zubizarreta (1982) and Marantz (1984). Chomsky (1985:7) introduces “m-command” for Aoun & Sportiche’s “R.” This paper also introduces a rather different concept of government, relying on m-command and the notion of “barrier.” Barriers are introduced in order to unify government and bounding. This is not a central concern here (but cf. 3.3.), so we retain the Aoun/Sportiche definitions.

2. This formulation of the θ -criterion differs from that in Chomsky (1986) in certain important respects. First, we add the word “unique” before the first occurrence of the word “ θ -chain.” This rules out double θ -marking of a single chain, as in (i):

- (i) *John seems t to be raining angry.

In fact, we also do not propose that *angry* θ -marks *John* in (ii), leading us to an account of predicative Adjectives which is different to Chomsky’s (cf. 3.2.3.):

- (ii) John left angry.

Secondly, we do not incorporate the Visibility Condition into the statement. This is done in the next section. Third, we explicitly refer to θ -chains, as we allow other kinds of chains for which the θ -criterion does not hold.

3. A major problem for both (21) and (22) is the existence of θ -chains headed by PRO. As PRO must be ungoverned (see 1.4. and fn. 5), it cannot be Case-marked. However, it clearly heads chains:

- (i) PRO_{*i*} to appear t_i to have been killed t_i would be useful.
 (ii) John tried PRO_{*i*} to get t_i signed up t_i for the part.

To account for these examples, we could exploit the fact that PRO always needs an antecedent (*John* in (ii) and some arbitrary element in (i)) and say that PRO forms an extended chain with its antecedent (where an extended chain is defined following Chomsky (1985) as “ $C = (a_1 \dots a_n, b)$ is an extended chain if (a_1, a_n) is a chain with index i and b has index i). The extended chain has two θ -roles, so this approach necessitates keeping (18) and (21) as separate conditions, rather than combining them as in (22). In this way, a θ -chain headed by PRO can meet the Visibility Condition. In cases like (ii), the antecedent will always clearly be Case-marked as it is an argument, hence the Visibility Condition is met through obligatory control. Cases of “arbitrary PRO” like (i) seem to pose more of a problem; however, we will see in 3.2.4. that in at least an important subclass of these cases PRO has an antecedent whose properties are predicted by principles needed to account for the syntax of adjuncts. This antecedent must also be visible, so again the Visibility Condition will be met. On why PRO is able to appear in a chain with two θ -roles, see fn. 5.

4. Cf. Kayne (1984) for the proposal that English lacks DAT while French has this Case, and an investigation of the consequences of this proposal, and Roberts (1985) for an analysis of how DAT was lost in the history of English. In general, it seems that Case Theory is the locus of considerable parametric variation.

5. This is the conclusion of Chomsky (1981). However, it has not gone unchallenged, cf. in particular Bouchard (1984), who argues that the correct generalization is that PRO cannot be Case-marked. More recently, Chomsky (1986) has defined binding domain in terms of Complete Functional Complex (CFC). A CFC for a head is the domain containing chains to which all that head’s θ -roles are assigned (cf. 2.2.3.(106)). In these terms, the contradictory requirement on PRO might amount to the requirement that PRO not be part of a single CFC, i.e. in the case of obligatory control that it form a chain with some θ -marked element outside the CFC it structurally appears in (there is a further locality requirement at work here – cf. Manzini (1983a)). Hence PRO must appear in a chain which has two θ -roles. Since each chain must be uniquely Case-marked, it follows, given the remarks in fn. 3, that PRO must appear in a non-Case-marked position. If we are to maintain such an approach to control theory, we must add that the head of each chain and no other position be Case-marked in order to rule out sentences like (i):

- (i) It was persuaded John_i that PRO_i left.

The suggestions here and in fn. 3 are perhaps candidates for the beginnings of a chain-based theory of control. However, more must clearly be said about deriving the PRO theorem for non-obligatory-control – cf. 3.3. In this matter we follow Clark (1985) in proposing that non-obligatory-control PRO is really a kind of empty operator. Clark proposes that these operators move into the nearest Comp. He also points out that empty operators cannot appear with Case in a Case-marked Comp. We can derive this result if we say that PRO forms an extended chain with the nearest Comp, and this Comp is Case-marked. Hence PRO cannot appear in a Case-marked position. Furthermore, if the links of this chain are subject to a government requirement (cf. 2.2.4. on chains formed by heads), then PRO must appear in subject position as this is the only A-position governed by Comp. Note that in fact non-obligatory-control PRO always appears in a Case-marked domain:

- (ii) a. *[[PRO to shave/shaving each other] to be frowned upon] struck me as old-fashioned.
 b. *[[For[PRO to shave/shaving each other] to be frowned upon] struck me as old-fashioned.

Passive and Argument Structure

We begin this chapter by discussing certain central properties of passives. We then illustrate the explanation in Chomsky (1981:2.7.) for the relation between active and passive clauses. This explanation is inadequate in three main respects: in terms of the categorial, Case and θ -properties of passives. We then propose a new analysis of passives which overcomes these inadequacies. This proposal, whose central claim is that the “understood” subject of a passive is structurally present, has a number of empirical and theoretical consequences. Chapter Three considers the empirical consequences of the proposal at length, while the second part of this Chapter deals with the theoretical aspect.

2.1. PASSIVE IN GB THEORY

2.1.1. *The Core Passive*

Example (1) is an instance of a “core” passive/active alternation with a transitive Verb:

- (1) a. John kissed Mary.
 b. Mary was kissed (by John).

Kiss is a transitive Verb. Transitive Verbs are two-argument Verbs; therefore they can appear at S-Structure with both a subject and an object. Comparing (1) with (2), we can then see that, while *kiss* is a transitive Verb, none of the Verbs in (2) are transitive:

- (2) a. *John danced Mary.
 b. *John seemed Mary.
 c. *John arrived Mary.

These Verbs are intransitives, i.e. they are unable to appear with an object.

The passivized form of *kiss*, as in (1b), seems to pattern like an intransitive Verb in not being able to appear with an object:

- (3) a. *Mary was kissed John.
 b. *John was kissed Mary.

So we can conclude that passivizing a Verb has the effect of rendering it intransitive.

Not only does passivizing a Verb make it intransitive, the subject of a passive Verb corresponds to the object of an active Verb. This can be seen from examples of Verbs which impose differing selection restrictions on their objects and subjects:¹

- (4) a. John admires sincerity.
 b. Sincerity is admired (by John).
 c. *John is admired (by sincerity).
- (5) a. John built a house.
 b. A house was built (by John).
 c. *John was built (by a house).
- (6) a. John saw the mountains.
 b. The mountains were seen (by John).
 c. *John was seen (by the mountains).
- (7) a. John learned Spanish.
 b. Spanish was learned (by John).
 c. *John was learned (by Spanish).

The subject of the active is optionally realized in a *by*-phrase, as shown in the (b)-examples here. It can also be apparently unrealized.

A third feature of passives is that active and passive instances of the same Verb differ in their form. There is considerable variation in the exact form this difference takes, but in general it consists in the attachment of an affix, usually an allomorph of /ed/, as in the examples given so far. In some cases, the affixation is accompanied by a change of stem vowel: *buy/bought*, *sing/sung* etc. We will gloss over these morphophonemic differences for the most part, and refer to all of these variants as the result of the attachment of the affix *en* to the Verb-stem.

Fourth, the auxiliary *be* appears in passives. This auxiliary carries tense and agreement information. A common view in generative grammar has been to regard *be...en* as a discontinuous passive morpheme (cf. Chomsky (1957)), with *en* attached to the main Verb by means of a rule of Affix Hopping. No account of the *be...en* relation is offered in GB theory, so we will have little to say about this until section 2.2., where our alternative is developed.

In fact, *en* also attaches to a much wider class of Verbs than just the class of transitives. The possibilities are illustrated in (8):

- (8) a. John was given a book/A book was given (to) John.
 b. John was believed to be a genius.
 c. John was considered smart.
 d. John was spoken about.

(8a) shows that ditransitives can passivize, (8b,c) that Verbs without thematic NP objects which Case-mark the subject of their complement clauses (Exceptional Case-marking (ECM) Verbs) can passivize, and (8d) shows that objects of subcategorized PPs can passivize. The generalization which unites these examples is that the first NP Case-marked by an active V_i cannot appear following V_i+en . (This means that *spoken* and *about* must be considered as a morphologically “complex Verb” in (8d) – we return to this point in 3.3.2. Cf. also Kayne (1984).)

So, we have established that passive Verbs have three properties that distinguish them from their active counterparts:

- (9) a. Passive Verbs are Case-intransitive, i.e. they cannot be followed by the NP Case-marked by their active counterparts.
 b. The subject of a passive Verb is the Case object of the corresponding active; the subject of the corresponding active is either absent or appears in a *by*-phrase.
 c. Passive Verbs are formed from actives by affixation of *en*.

We next give Chomsky’s account of what underlies these three properties.

2.1.2. *Categorial Properties of Passives*

The properties in (9) are all accounted for in the *LGB* analysis in terms of Case Theory and θ -theory. Chomsky’s proposal in *LGB* (pp. 124 - 7) correlates the properties of passive constructions with the following claims about Case- and θ -role assignment in passives:

- (10) a. NP/S is not a θ -position in passives.
 b. NP/VP is not assigned Case in passives, for some choice of NP in VP.

Given (10), consider a D-Structure like (11):

- (11) e (was) kiss+en Mary.

D-Structure is a pure representation of argument structure. We will refer to property (10a) as “subject dethematization.” Because of this property, the subject position is not occupied by an argument NP at DS.

It is a consequence of (10b) that the NP *Mary* in (11) is in a position which is not Case-marked by the Verb, although it is governed and θ -marked by the Verb. The S-Structure in (1b) is derived from (11) by Move-Alpha, forced by the Visibility Condition. If movement does not take place, the S-Structure will be (12):

(12) *It was kissed Mary.

(12), however, violates the Visibility Condition, since the chain (*Mary*) does not contain a Case-marked position.. In this way, movement to NP/S position is “forced,” yielding the S-Structure in (13):

(13) $Mary_i$ was kissed t_i .

We can see, then, that the properties in (10) are enough to derive the core cases of passives. Two questions naturally arise at this point: (i) what exactly are the properties in (10) properties *of*? (ii) Are they related?

The answer to the first of these questions is that the properties in (10) are taken to be properties of passive morphology, the *en* morpheme which attaches to passive Verbs. This answer also provides us with an account of the role played by the passive morphology *en*. More precisely, *en* is taken to be of category [+V], i.e. neutralized between Verb and Adjective (this idea originates in Rouveret & Vergnaud (1980) – on Adjectival passives see 4.4.). It is commonly assumed in work on morphology that the categorial status of a complex word [Stem + Af] is determined by the categorial status of the affix, which is therefore said to head the word (cf. Lieber (1980), Williams (1981)). So, if *en* is [+V], the derived category of a passive participle, i.e. of [V + *en*], will be [+V] also.² This was related to Case-assignment in earlier versions of the theory by the following statement (cf. Chomsky (1980)):

(14) Case assigners are [–N].

Since we allow all categories to assign Case (cf. 1.3.2.(23)) (14) is inconsistent with our assumptions. However, we could retain the spirit of the proposal by saying that structural Case assigners must be [–N]. Adjectives and Nouns are [+N], and these categories assign inherent Case. On the other hand, a transitive Verb is [+V, –N] and therefore able to assign structural Case. Their passive participles, however, do not have the feature [–N] if *en* is [+V] only, i.e. unspecified for [–N] (cf. fn. 2). So the assumption that *en* is [+V] derives (10b).