ON DEFINING PREDICATION
IN GENERATIVE GRAMMAR

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1. Introduction

This paper discusses the syntactic aspect of linguistic predication in generative grammar. Predication is a notion of fundamental importance in philosophy, logic and linguistics. Whereas in grammatical theory predication is concerned with linguistic items, in the philosophical tradition (rooted in Aristotelian metaphysics) predication is concerned with relations between entities; it is therefore necessary to distinguish between *linguistic predication* and, what Lewis (1991) terms *metaphysical predication*:

(1)   Linguistic predication:
        A predicate (a linguistic item) is *linguistically* predicated of its subject (a grammatical item).

(2)   Metaphysical predication:
        A predicable (a metaphysical item) is *metaphysically* predicated of its subject (an item in the ontology).

In this paper I discuss the issue of defining the structural aspects of linguistic predication within the framework of generative grammar, from Standard Theory (e.g. Chomsky 1965), to the Government and Binding model of grammar (e.g. Chomsky 1981, 1986) and the Minimalist framework (e.g. Chomsky 1995).[1]

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[1]   Sections 2-6 of this paper appear also in Stalmaszczyk (in press).

2. Syntactic predication and semantic predication

For the purpose of this paper, I distinguish between two types of predication, and term them *semantic* and *syntactic* (or *structural*) predication, respectively. Within the generative paradigm, semantic predication deals with the interpretation of arguments of verbs and thematic role assignment; syntactic predication, on the other hand, deals with the structural relations between nodes defined on phrase markers.

The distinction between semantic and syntactic predication is of crucial importance. In modern generative grammar different mechanisms are responsible for realizing the two types of predication: semantic predication is associated with interpretation and thematic role assignment, and as such falls under the scope of *Theta Theory*, one of the modules in the Government and Binding model of generative grammar (Chomsky 1981, 1986). The *Theta principles* describe the semantic relations holding between arguments and predicates, syntactically implementing the lexical properties of heads. Whereas the lexicon determines (among others) the theta-marking properties of lexical heads (predicators), Theta Theory is concerned with proper assignment of semantic roles by heads to their complements. The appropriate general context for semantic predication is (3.1), realized in sample *theta grids* (3.2)[2]:

(3)   1.   Predicate: $\langle \text{Argument}_1, \text{Argument}_2, \dots \rangle$

       2.   a. *give*: <Agent, Theme, Goal>
             b. *kiss*: <Agent, Theme>
             c. *resemble*: <Theme, Goal>
             d. *faint*: <Experiencer>
             e. *see*: <Experiencer, Percept>

Semantic predication may be polyadic (i.e. it may require more than one argument for saturation), syntactic predication, on the other hand, is always monadic – it involves a predicate term and a singular referring term functioning as its argument. In sentences (4 a-c), the referring term – NP – is complete in itself (internal saturation), whereas the predicate term – VP – is incomplete and requires closure by the argument:

(4)   a. [Jenny]$_{NP}$ [fainted]$_{VP}$
       b. [Tom]$_{NP}$ [kissed Jenny]$_{VP}$
       c. [The boy]$_{NP}$ [broke the window with a stick]$_{VP}$

The general structure characterizing syntactic predication underlying the above sentences is (5), where the internal structure of the predicate is irrelevant to syntactic predication:

(5)   [Subject [Predicate]]

Syntactic predication is a structural relation, and will be discussed here in the context of generative grammar (from Standard Theory to X-bar Theory and Minimalism), first, however, I provide working definitions of the concepts used in this paper:

(6)   a. Subject: the element which refers to something about which a statement or assertion is made in the rest of the sentence
       b. Predicate: the element which asserts something about the subject
       c. Predication: the relation between the predicate and the subject
       d. Domain of predication: sentence (clause)

3. Grammatical functions in Standard Theory

The generative framework has successfully incorporated several traditional grammatical notions. Standard Theory (Chomsky 1965) used functional notions (i.e. grammatical functions) like 'Subject', 'Object' and 'Predicate' in sharp contrast to categorial notions such as 'Noun Phrase' or 'Sentence'. In this approach grammatical functions were associated with the rewriting rules, in accordance with the formalizations in (7)[3]:

(7)   Rewriting rule for grammatical functions:
       1. $A \rightarrow X$
       2.   a. [B, A]
             b. B bears a grammatical relation to A, where B is a category and X = YBZ (Y, Z possibly null)

Taking as an example one of Chomsky's favorite sentences (8), generated by the rules in (9), the relevant relations are (10)[4]:

(8)   Sincerity may frighten the boy

(9)   I.   1. S → NP⌒Aux⌒VP   II.   M → *may*

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[2] Lexical entries of predicative elements such as verbs and adjectives specify their argument structure in terms of the number of arguments and their semantic roles, also called thematic roles or theta-roles, this information is provided in the form of *theta grids*; see the discussion in Stalmaszczyk (1996).

[3] Fully elaborated in Chomsky (1965: 66-71); the formal theory of grammatical relations was developed already in Chomsky (1955: 211-215).

[4] The appropriate Phrase-marker is given in Chomsky (1965: 69).

2. VP → V⌒NP   N → *sincerity*
3. NP → Det⌒N   N → *boy*
4. NP → N   V → *frighten*
5. Det → *the*
6. Aux → M

(10)   [NP, S]   -   [*sincerity, sincerity may frighten the dog*]

       [VP, S]   -   [*frighten the boy, sincerity may frighten the boy*]

       [NP, VP]   -   [*the boy, frighten the boy*]

       [V, VP]   -   [*frighten, frighten the boy*]

In accordance with the general rules in (7) above, the following relational definitions for grammatical functions are proposed (Chomsky 1965: 71):

(11)   <u>Grammatical Functions</u>:

       Subject-of: [NP, S]

       Predicate-of: [VP, S]

       Direct-Object-of: [NP, VP]

       Main-Verb-of: [V, VP]

The relations 'Subject-of' and 'Predicate-of' are realized within the category Sentence (rule (9.1)), whereas the relations 'Direct-Object-of' and 'Main-Verb-of' within the category Verb Phrase (rule (9.2)).

4. Predication in Standard Theory

As noted already in Chomsky (1955: 226), the basic grammatical relation is *actor – action*,[5] whereas the secondary grammatical relation is *verb – object*. The base rules are further modified (relevant fragment given in (12)), crucially for this discussion, Chomsky (1965: 102) introduces the 'Predicate-Phrase', a node directly dominating the auxiliary verb, the verb phrase and relevant adverbials, and reformulates the relation 'Predicate-of', as in (13):[6]

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[5] I.e., the subject – predicate relation, or, in our terms, the relation of *predication*.

[6] Rosenbaum (1967: 1) uses similar basic rules, their internal organization, however, is slightly different – *PDP* (predicate phrase) is a sister of *Aux*, rather than dominating it, as in Chomsky (1965: 102):

     i. S → NP Aux PDP

     ii. PDP ® VP (ADV)

Note, however, that early generative literature is not consistent with respect to this terminology, for e.g. Klima (1964: 250-251) uses the term 'predicate' in the sense of Chomsky's Predicate Phrase, this is, however, merely a terminological issue, as demonstrated by the following rules (the Nominal functions as the subject):

     iii. S → Nominal Predicate

     iv. Predicate → Aux - Main Verb (Place) (Time)

(12)   1. S → NP⌒Predicate-Phrase

       2. Predicate-Phrase → Aux⌒VP (Place) (Time)

$$
3.\ \text{VP} \rightarrow \left\{ \begin{array}{l} \text{Copula} \cap \text{Predicate} \\ \text{V (NP) (Prep – Phrase) (Manner)} \\ \text{V S} \\ \text{V Predicate} \end{array} \right\}
$$

$$
4.\ \text{Predicate} \rightarrow \left\{ \begin{array}{l} \text{Adjective} \\ \text{(like) Predicate – Nominal} \end{array} \right\}
$$

(13)   Predicate-of: [Predicate-Phrase, S]

It is essential to adhere here to the distinction between the notions *predicate* and *predicate-of* the sentence. Whereas a predicate can be realized as an adjective or predicate nominal (12.4), the notion *predicate-of* is a relational one holding between a *Predicate Phrase* (obligatorily involving, but not directly dominating, a verb, see rules (12.2,3)) and a Subject. In the sentences below, the predicates are underlined, and the predicate phrases are put in brackets[7]:

(14)   a. Henry [is <u>old</u>]

       b. My dog [grew <u>old</u>]

       c. He [acts <u>like an old man</u>]

Early generative grammar concentrated primarily on phrase structure rules, transformations and appropriate levels of representation. The notion of *predication* remained outside the main currents of research, neither Chomsky (1955, 1957, 1965), nor other influential studies of that time (e.g. Katz and Postal 1964, Klima 1964, Rosenbaum 1967) provided an explicit definition of predication[8]. However, from the rules in (12) it follows that the relevant context for the relation is the following:
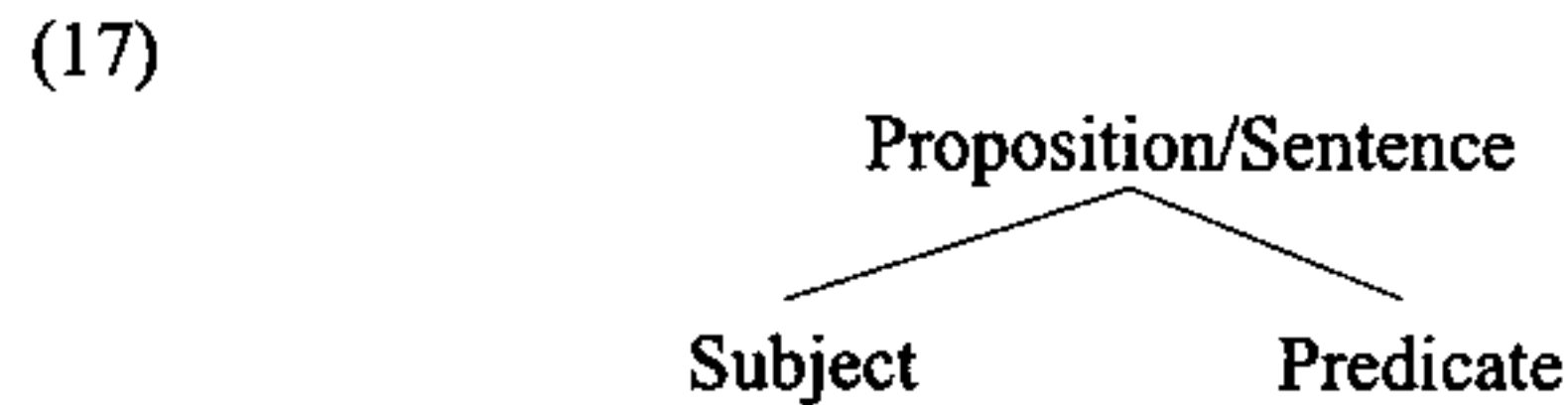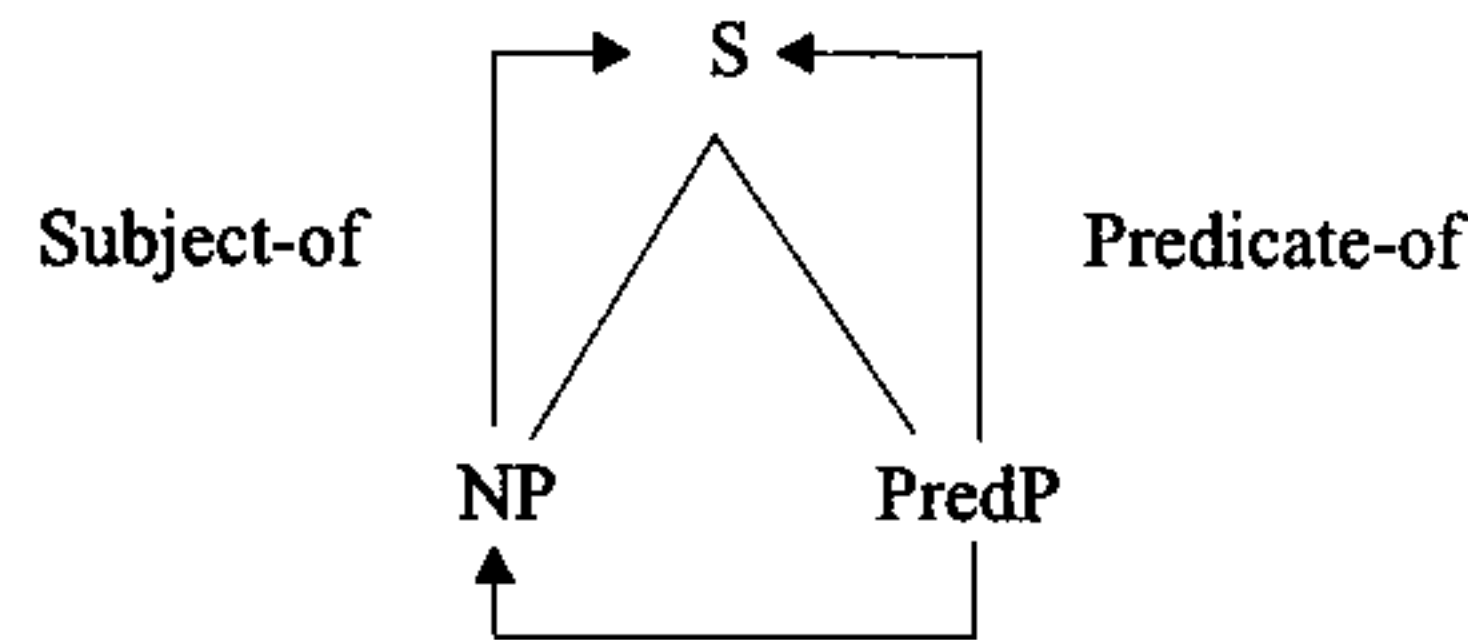
(15)   <u>Predication</u>:

       In the structure [S X, Y] generated by rule (i), with relations (ii) and (iii)

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[7] The Predicate Phrase in early generative grammar resembles the traditional notion of the predicate understood as the 'whole of a sentence minus the subject', cf. Jespersen (1937: 28), and Frege's (1891) 'unsaturated function', with the subject required for saturation (i.e. closure).

[8] As aptly observed by Kac (1976: 232): "advocates of transformational grammar have rarely if ever attempted to be fully explicit about how, within this theory, the facts of predicational structure are to be represented". Kac himself defines predication as that portion of a sentence which contains a predicate and all and only arguments of this predicate (Kac 1976: 230). Cf. the discussion in Stalmaszczyk (in press).

i. $S \rightarrow X^\frown Y$
ii.   Subject-of: $[X, S]$
iii.   Predicate-of: $[Y, S]$
Predication is the relation of $[Y, S]$ to $[X, S]$.

For $X = NP$ and $Y = PredP$ the relevant relations are presented in the following diagram, a counterpart of the traditional, stemming from Aristotelian semantics, structure (17):


(17)

The definition in (15) explicitly captures the crucial aspect of structural predication: it holds between the subject NP and the PredP node (not to be equated with the verb). It also points to the required structural configuration.

5. X-bar Theory and grammatical functions

The *Government and Binding* (GB) model of grammar (e.g. Chomsky 1981, 1986, Burzio 1986) pursues the relational approach to grammatical functions. In GB, functions such as Subject and Object are not considered to be primitives of grammar, instead they are defined in structural terms (Subject-of – the relation of an NP to a sentence, Object-of – the relation of an NP to a VP, etc.). Now, however, phrase structure rules of the type referred to in section 3 (cf. (18) below), are subsumed within the category-neutral rewrite rules of the X-bar Theory (19), yielding structure (20):

(18)   <u>PS-rules</u>:
       1. $S \rightarrow NP^\frown Aux^\frown VP$
       2. $VP \rightarrow V^\frown NP$

(19)   <u>X-bar rules</u>:
       $XP \rightarrow (YP)\ X'$
       $X' \rightarrow X^0\ (ZP)$

(20)
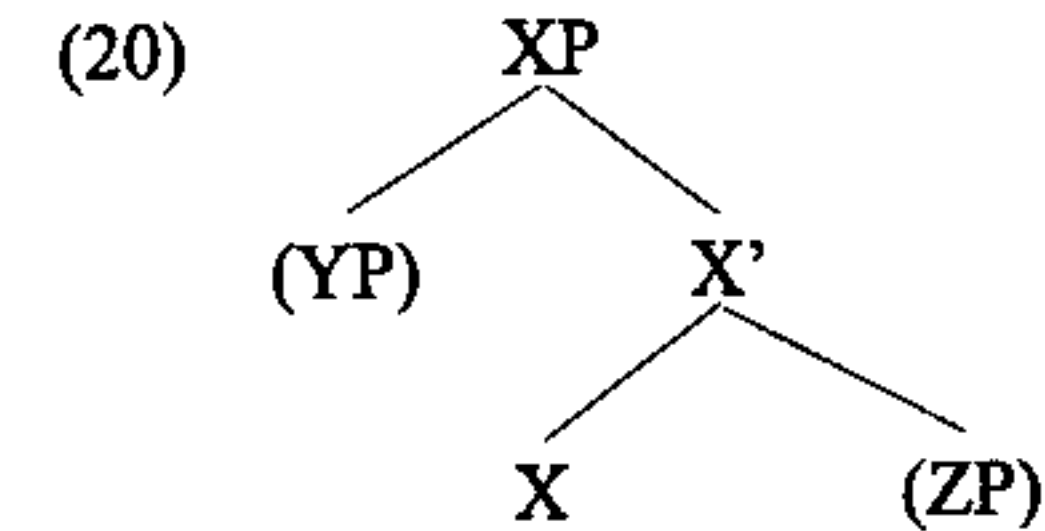
XP (=X") above is the *maximal projection* of the *head* X, YP is its *specifier*, and ZP its *complement*. Rules of X-bar theory (as earlier PS-rules) decompose phrases into smaller units.

One of the crucial points of GB is that principles of grammar do not refer explicitly to the labels of grammatical functions, but rather they apply to the structural positions defined on appropriate nodes. This move allows for redefining grammatical functions in terms of X-bar theory[9]:

(21)   <u>Grammatical Functions</u>:
       Subject-of: $[NP, XP]$ (*Spec* position of XP)
       Object-of: $[NP, X']$ (*Complement* position of X)

Also the relational definition (13), repeated below as (22), can be reformulated now as (23), in line with the demands of X-bar theory:

(22)   Predicate-of: $[\text{Predicate-Phrase}, S]$
(23)   Predicate-of: $[X', XP]$

6. X-bar Theory and predication

It follows from the above reformulations that the relation of predication holds between $[X', XP]$ and $[Spec, XP]$, i.e. between X' and the (subject) NP in the Spec position, as diagrammed in (24):

(24)

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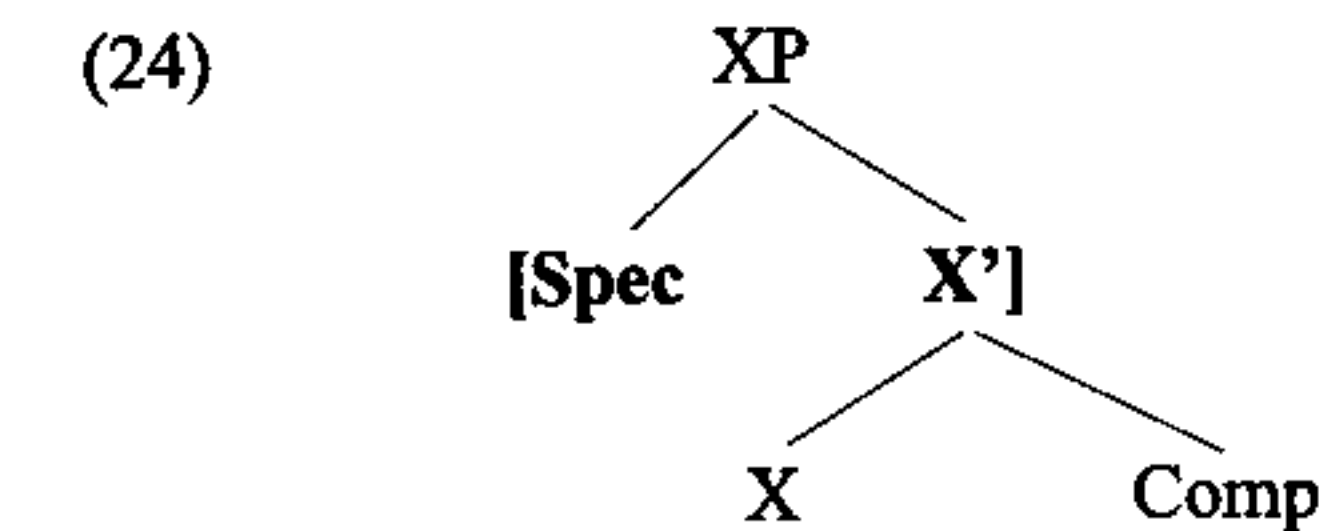
[9]   For relations between phrase structure, s-selection, θ–marking, and grammatical functions see Chomsky (1986: 160–161).

After taking into consideration the principles of X-bar theory, the definition of predication can be reformulated now as (25):

(25) Predication:
  In the structure [$_{XP}$ Spec, X'] generated by rule (i), with relations (ii) and (iii):
  i. XP → Spec X'
  ii. Subject-of: [Spec, XP]
  iii. Predicate-of: [X', XP]
  Predication is the relation of [X', XP] to [Spec, XP]

This definition provides an X-bar theoretic description of predication in generative grammar. A different approach – involving indexing – has been worked out by Williams (1980, and subsequent work).

7. Predication and indexing

In the framework developed in Williams (1980), predication is the relation between argument and non-argument maximal projections, and a syntactic predicate is defined as a non-argument maximal projection. In diagram (26) XP is a maximal projection of any lexical category, the value of Σ depends on X, and the argument NP is the subject of predication[10]:

(26)
```
        Σ
       / \
     NP    XP
   └────────┘
    predication
```
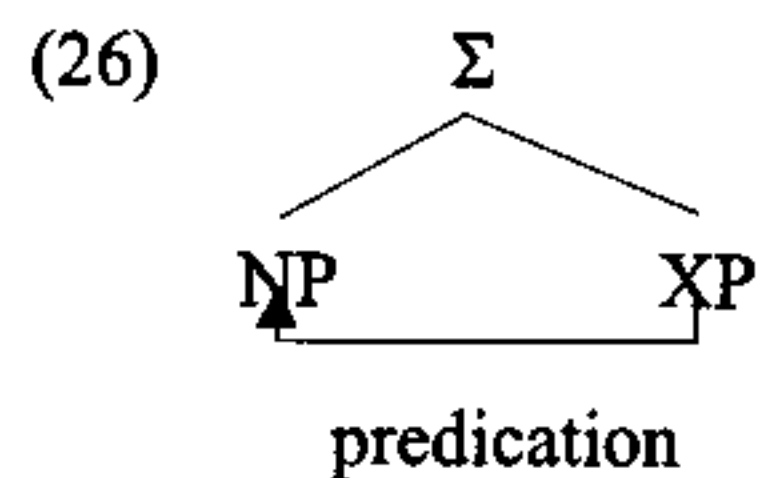
The (indexing) rule of predication assumes the following form[11]:

(27) Rule of Predication:
  1. In the structure [$_Σ$ NP XP] coindex the predicate with its argument:
      (i) ... NP ... XP ... → ... NP$_i$ ... XP$_i$ ...
  2. NP must c-command XP or a variable bound to XP.

Taking AP, NP, VP, and PP as paradigm cases of predicates, the environments of predication can be further divided into two kinds: *external* and *internal*.[12] External predication is a relation between the external argument and the whole predicate. External predication occurs in the following configurations:

(28) i. NP$_i$ VP$_i$
      a. John$_i$ [died]$_i$
      b. John$_i$ [kissed Mary]$_i$
    ii. NP$_i$ VP X$_i$
      c. John$_i$ [left] [nude]$_i$
    iii. NP$_i$ be X$_i$
      d. John$_i$ is [sick]$_i$ (X = AP)
      e. John$_i$ is [a teacher]$_i$ (X = NP)
      f. John$_i$ is [over there]$_i$ (X = PP)

If, however, X (the predicate) is within the VP and the predication is of the theme of the verb (its internal argument) then the predication is *internal*, as below (antecedents and predicates of internal predication coindexed), with an appropriate diagram in (30):

(29) a. John gave Bill the dog$_i$ dead$_i$
    b. John made Bill$_i$ sick$_i$
    c. John kept it$_i$ [near him]$_i$
    d. John considers Chomsky$_i$ a genius$_i$

(30)
```
           Σ
          / \
        NP   VP
             / \
          NP_i  XP_i
```
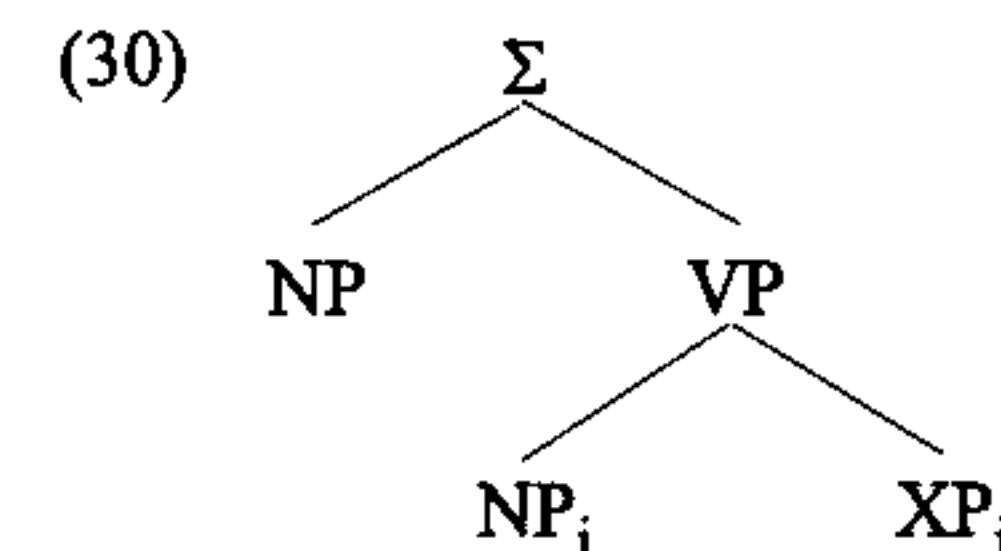
The sentences in (29) exhibit the co-occurence of the two kinds of predication, for example in (29 b) the AP *sick* modifies the NP *Bill*, the theme of *make*, and the whole VP is predicated of the subject:

(31) John$_i$ [made [Bill$_j$ sick$_j$]]$_i$

Syntactic predicates, being monadic functions, can have no more than one argument position to be filled (saturated). There are, however, no such restrictions on the

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[10] This approach is fully developed by Williams (1980, and subsequent work), cf. also Rothstein (1985) and Higginbotham (1985). In certain cases X can be also realized as IP and CP, see the discussion in Hornstein and Lightfoot (1987: 23).

[11] Rule (27.1) is an abbreviation for the following operations:
  a. ... NP ... XP ... → ... NP$_i$ ... XP$_i$ ...
  b. ... NP$_i$ ... XP ... → ... NP$_i$ ... XP$_i$ ...
  c. ... NP ... XP$_i$ ... → ... NP$_i$ ... XP$_i$ ...
 d. ... NP$_i$ ... XP$_i$ ... → ... NP$_j$ ... XP$_j$ ...
  See Williams (1980) and Rothstein (1985) for reformulations and detailed analyses. For the appropriate indexing mechanism see Chomsky (1980).

[12] Williams (1980) refers to these types of predication as *grammatically governed* and *thematically governed*, respectively. Williams' notions are not to be identified with Frege's *grammatical* predication.

subject, and in consequence one subject can have two (possibly more) different predicates, as illustrated by the following simplified structures (where double indexing represents respective predication processes):

(32) a. John$_{i,j}$ [left$_i$] nude$_j$
      b. John$_i$ [gave Bill the [dog$_j$ dead$_j$]]$_i$
      c. John$_i$ [kept it$_j$ near him$_j$]$_i$
      d. John$_i$ [made [Bill$_j$ sick$_j$]]$_i$

In the model of grammar postulated by Williams the rules of predication derive *predicate structure* – a level of representation intermediate between S-structure and Logical Form (Williams 1980: 237):

(33)
D-Structure → S-Structure → P-Structure → LF
       ↑   ↑   ↑
  transformations rules of predication interpretative rules
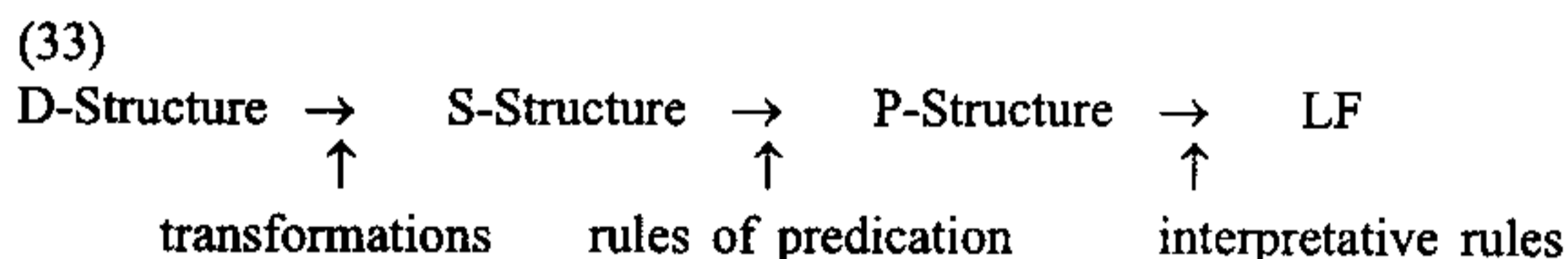
PS is a level of representation at which the subject-predicate relation is indicated by indexing (Williams 1980: 203).

A major problem with the above approach is its failure to successfully identify the node dominating the small clause constituent in sentences like (29b), repeated below[13]:

(34) a. John$_i$ [made [Bill$_j$ sick$_j$]]$_i$

      b.

```
              S
            /   \
          NP_i   VP_i
           |     /  \
          John  V    ?
                |    / \
             made Bill_j  sick_j
```

Additionally, two different processes have to be evoked to account for both instances of predication (i.e. external and internal), also the proliferation of levels of representation does not seem adequately justified (this is especially true within the Minimalist Program). Nevertheless, the distinction between the two types of predication re-

mains to be accounted for in a coherent manner. A unified (though simplified) structural configuration for external and internal predication has the following form:

(35)

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           Σ
          / \
    [NP1_i   XP_i]  ------------ external predication
            /  \
       [NP2_j   YP_j]  ------- internal predication
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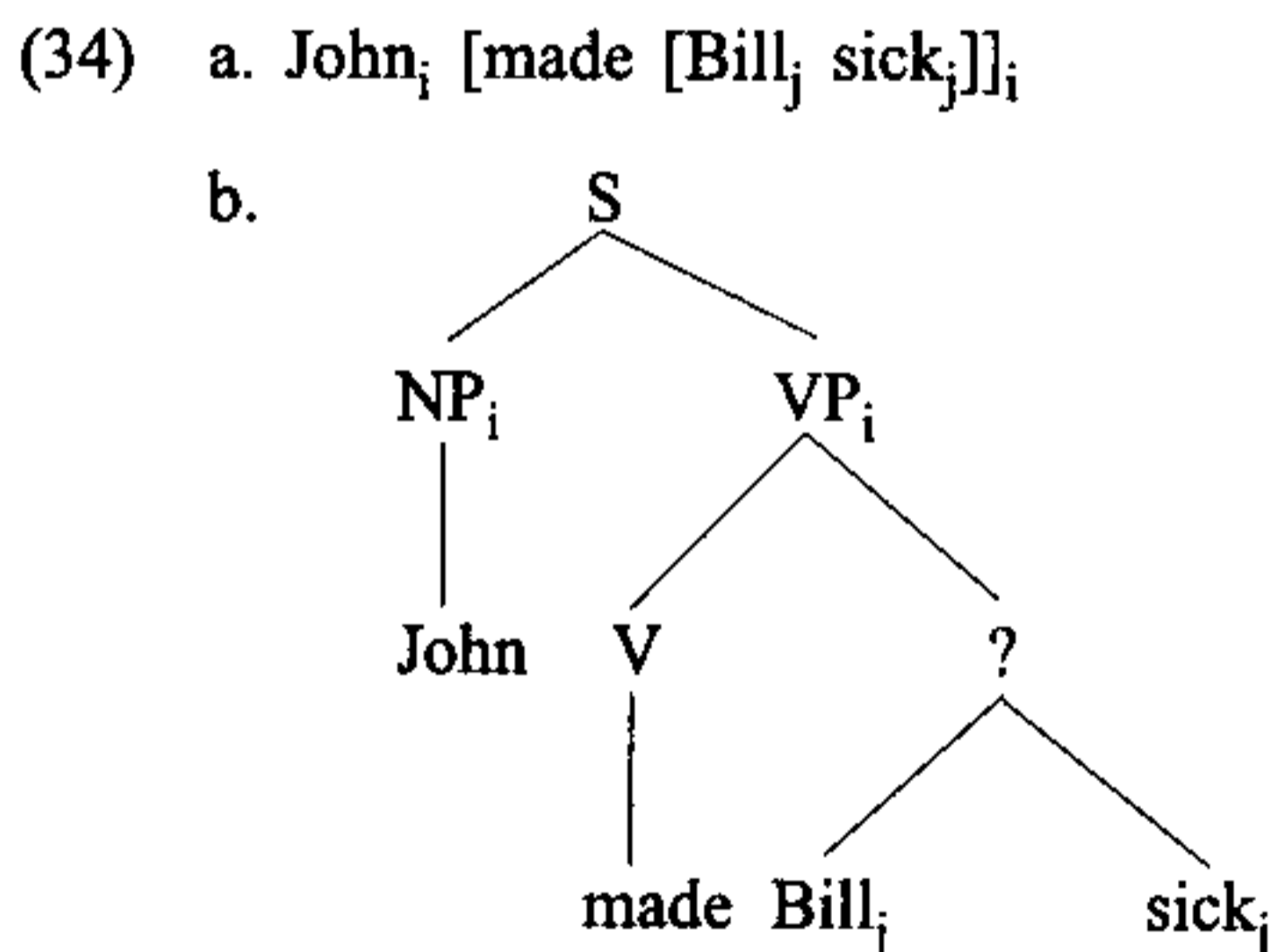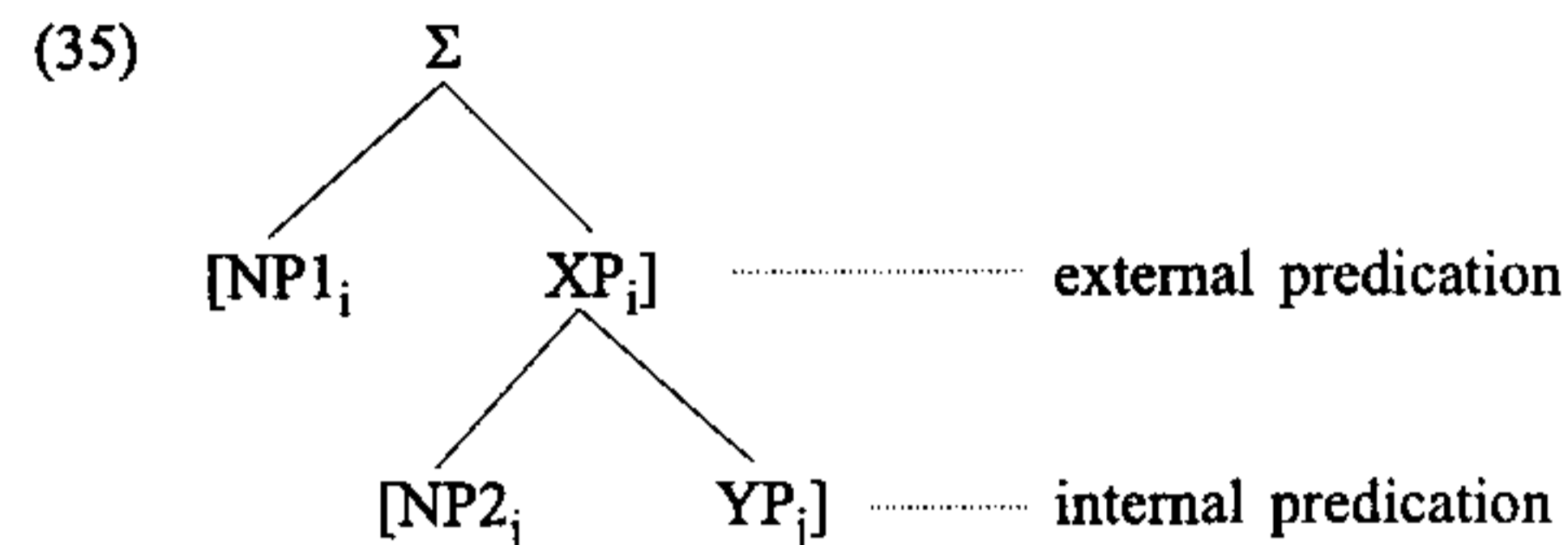The Rule of Predication (27), repeated below as (36), together with (37), the reformulated version of the Theta Criterion (Williams 1994: 28), may be seen as an attempt at integrating semantic predication (theta role assignment, semantic interpretation) with syntactic predication[14]:

(36) Rule of Predication:
      1. In the structure [$_\Sigma$ NP XP] coindex the predicate with its argument:
         (i) ... NP ... XP ... → ... NP$_i$ ... XP$_i$ ...
      2. NP must c-command XP or a variable bound to XP.

(37) Revised Theta Criterion:
      1. Every NP must obtain some sort of interpretation in the sentence.
      2. The 'subject argument' of every verb must be assigned to some NP.

The indexing approach to predication has been further modified and applied to thematic structure in Napoli (1989).

8. Functional categories and clause structure

The GB framework distinguishes two types of elements: *lexical* (i.e. contentful) and *functional* (non-lexical). X-bar theory is based on two categories of traditional grammar: substantive ([+N]), including nouns and adjectives, and predicate ([+V]), including verbs and adjectives. The basic rule for lexical categories (i.e. substantives and predicates) is (38)[15]:

(38) X' → ... X ... (X = [+N, ±V] or [+V, ±N])

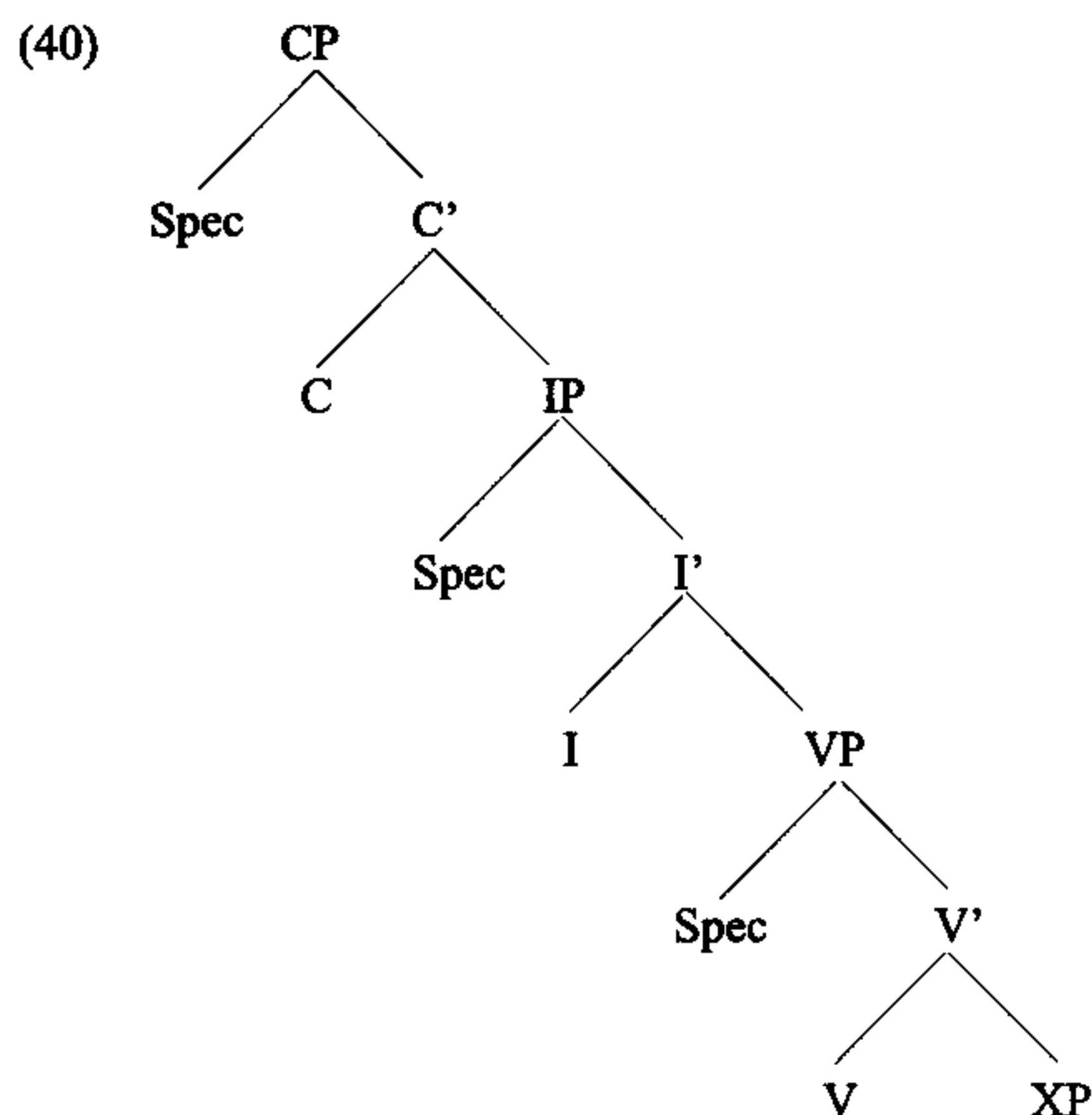[13] See, however, Williams (1994) for further developments and reformulations.

[14] In terms of theta-roles this criterion can be formulated as (i):
   (i) a. Every NP must receive a θ–role.
       b. Every external q-role must be assigned.

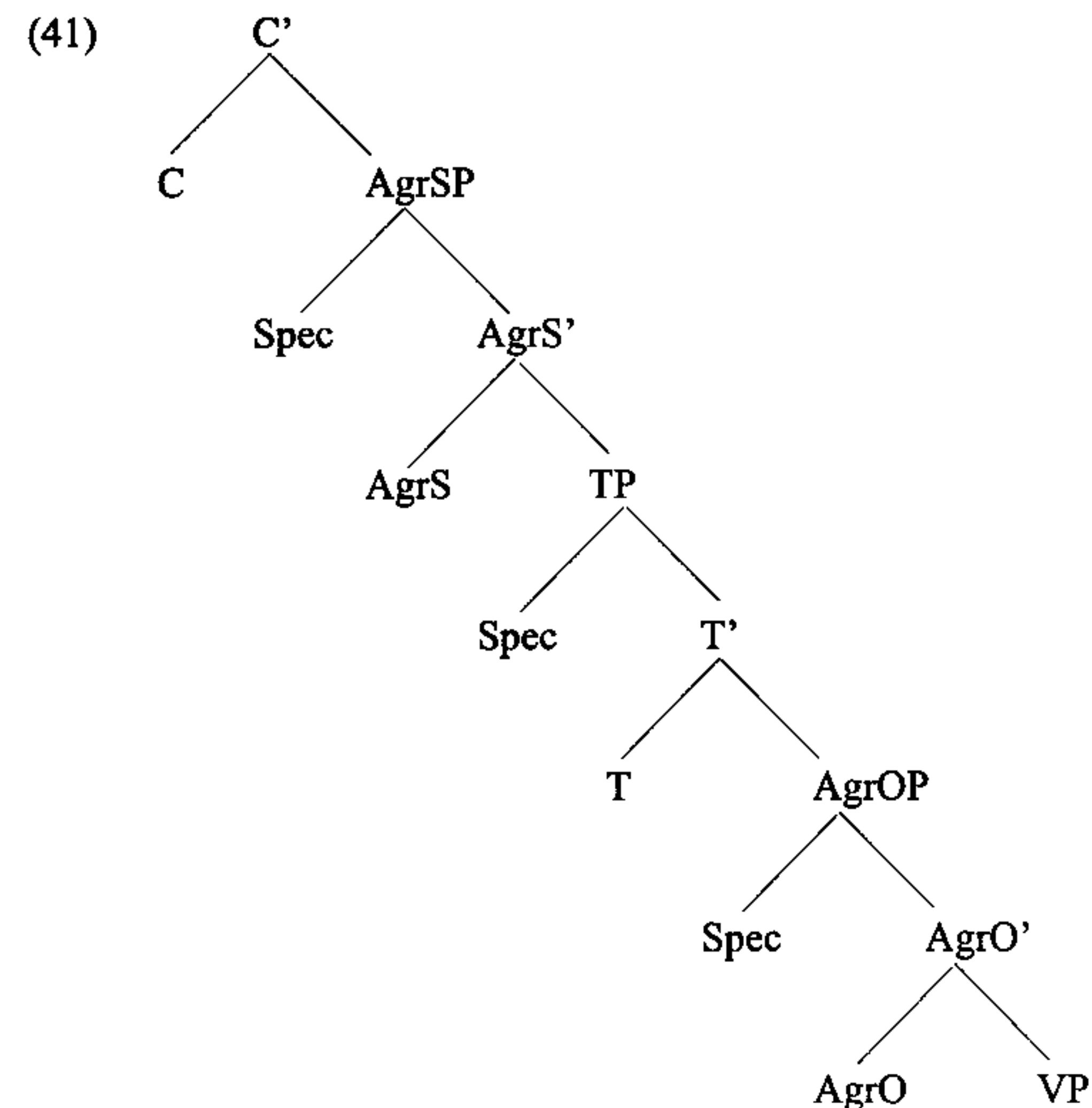[15] See the discussion in Chomsky (1981: 48-52), and (1986: 160-161).

Additionally, two non-lexical categories are introduced: INFL – the inflectional node – composed of Tense ([±finite]) and Agreement features, and COMP – the complementizer node – the specifier of which is the landing site for *wh*-movement. The architecture of clause structure is governed by X-bar rules in (19), repeated as (39), yielding the following sentence structure:

(39)   XP → (YP) X'
       X' → X⁰ (ZP)

(40)

```
          CP
         /  \
      Spec    C'
             /  \
            C    IP
                /  \
             Spec   I'
                   /  \
                  I    VP
                      /  \
                   Spec   V'
                         /  \
                        V    XP
```

Functional elements are generated as heads of independent phrasal projections and they are situated on top (and outside) of the lexical projections. In figure (28) CP and IP are maximal functional projections of the functional heads C and I, whereas VP is the maximal projection of the lexical head V (where XP stands for the complement). More recent research, initiated by Pollock (1989), proposes further additions to the inventory of functional categories. Pollock (1989) claimed that it is necessary to reconsider IP as composed of a Tense Phrase (the inflectional morpheme Tense is generated separate from the lexical stem and heads its own projection – TP) and its complement – Agreement Phrase (with Agreement heading its own projection – AgrP). Pollock also postulated the existence of Negative Phrase (with AgrP as its possible complement). Chomsky (1993) further refined this approach and distinguished two agreement nodes (AgrS – subject agreement, and AgrO – object agree-

ment), each associated with an appropriate maximal projection (the 'split IP' hypothesis). Agr is a collection of features (gender, number, person – the φ–*features*) common to the systems of subject and object agreement. AgrS enters into a checking relationship with the subject, and AgrO plays a corresponding role in object checking. The structure associated with the reformulations introduced in Chomsky (1993) is given below:[16]

(41)

```
          C'
         /  \
        C    AgrSP
             /  \
          Spec   AgrS'
                /  \
             AgrS   TP
                   /  \
                Spec   T'
                      /  \
                     T    AgrOP
                         /  \
                      Spec   AgrO'
                            /  \
                          AgrO  VP
```

CP, AgrSP, TP, and AgrOP constitute together the *functional domain* of a syntactic structure, whereas VP constitutes the *lexical domain*. The stems, generated in V, move (by the transformational process of adjunction) in order to be united with the inflectional morphemes in the functional heads.

The major difference between the GB and Minimalist Program (MP) approach concerns the content of lexical and functional heads. In the MP, a strong lexicalist

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[16] This diagram omits a phrase headed by the functional element *negation* (between AgrOP and VP), and a possible "category that includes an affirmation marker" (Chomsky 1993: 7), see also Pollock (1989: 421, n. 51) on the possibility of postulating *Assertion Phrase*.

approach to inflectional morphology is postulated: words emerge from the lexicon fully inflected (stems plus inflectional affixes). Licensing inflected elements consists in moving the elements from the lexical domain to positions in the functional domain, and checking whether the appropriate features of lexical categories match the features present in the functional heads (i.e. morphological features of lexical elements are checked against matching features of functional heads in the syntactic structure). Matching is checked under strict locality requirements.

In the MP there are no top-down phrase structure rules and therefore the structure in (41) results from the licensing requirements on inflected elements. The structure is built bottom-up in the process of moving elements from the lexical domain into the functional domain. Any movement that is not triggered by a requirement of morphological feature checking is excluded, further on, elements once licensed are immobile.

Recent research in post-GB comparative syntax devotes considerable attention to the issue of functional categories. Numerous studies postulate broadening the spectrum of functional categories, assuming that every morphological alternation should be reflected by an appropriate functional category. Potentially, this approach may lead to an 'explosion' of categories (see Iatridou 1990: 552), since, in accordance with the principles of Universal Grammar, every functional category discovered in studying the languages of the world should be present in the grammar of every single language of the world. This strong hypothesis would have very far reaching consequences for the theory of language acquisition, it is possible, however, to assume that what is universal is rather the presence of certain positions and the mechanism of movement (and word order) triggered by functional categories. Chomsky (1995: 240) observes that postulation of a functional category has to be justified by output conditions (phonetic and/or semantic interpretation), or by theory-internal arguments. Thráinsson (1996) further ties this requirement with principles governing language acquisition. He claims that a child acquiring a given language L will not assume that a functional category F_x is present in L unless (s)he finds evidence that it is, which means that the child is guided by the following principle (Thráinsson 1996: 261):

(42)   The Real Minimalist Principle:
        Assume only those functional categories that you have evidence for.

A recent proposal by Solà (1996) strengthens the link between features and morphology: features are present in an inflected word *only if* they are observable in the morphological alternations of the paradigm the word belongs to, where a paradigm is the set of all forms that contrast for a feature value. Accordingly, the English sentence involves at least the following functional paradigms with appropriate functional projections (Solà 1996: 227):

(43)   Functional projections in English:
        a. Complementizer (CP): *if, that*

b. Mood (MoodP): *can, may, will,* etc.
c. Tense (TP): [± Past]
d. Relative tense (ReltP): auxiliary *have*
e. Aspect (AspP): participial morphemes *-ed, -ing*
f. Telicity (Aktionsart) (TelP): delimiting particles *up, down*

The above paradigm results in the following structure (specifiers omitted), where the order of constituents is fixed (Solà 1996: 228):

(44)
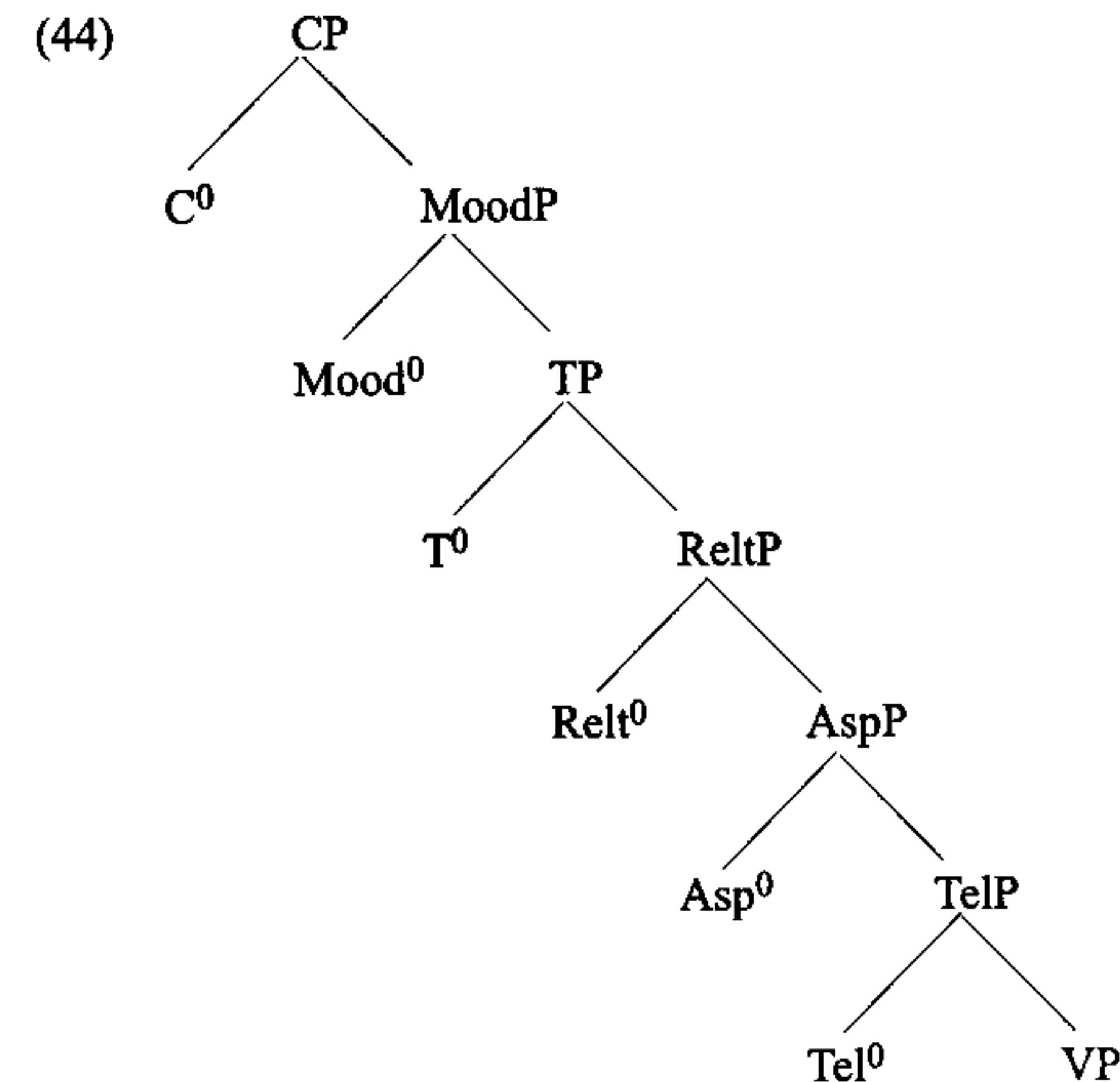
Recent studies add further items to the inventory of functional categories and their projections, e.g.: Voice Phrase (Fujita 1994), various aspectual projections (Borer 1994, Arad 1996), and, crucially for this discussion, Predication Phrase (Bowers 1993).

9. The structure of VP and the functional category Predication

The MP adopts the by now standard assumption that the subject is generated in the specifier position of VP (the 'VP-internal subject hypothesis') and moves (overtly or covertly) to the specifier position of a higher, functional, projection:

(45)   VP
           /   \
      Subject   V'
               /   \
              V   Object

The subject, after being merged with V', has to move out from the VP into its derived position. This is achieved by movement, however, under the principle of Greed,[17] movement can only be triggered by some morphological feature checking on the part of the moved category. Taking as an example the subject of a transitive verb, the relevant feature is $[Case_{[+nominative]}]$ checked in the Spec position of AgrSP – (46 b) shows the result of Merge, and (46 c) is a simplified representation of the relevant structure after Move:

(46)   a. Jenny killed the spider
        b. $[_{VP}$ Jenny $[_{V'}$ killed the spider $]]$
        c. $[_{AgrSP}$ Jenny$_{[+nom]}$ AgrS' ... $[_{VP}$ t $[_{V'}$ ... $]$ $]$ $]$

The VP-internal subject hypothesis has far reaching consequences for the theory of predication: predication takes place within the VP (i.e. before movement). Applying once more the X-bar theoretic mechanism invoked in definition (25) above, predication holds between [V', VP] (i.e. V'), and [Spec, VP] (i.e. subject).

A further reformulation of the concept of predication in generative grammar comes with the proposal made by Bowers (1993). According to him, there exists a functional category *Predication* (Pr), confronting to the requirements of X-bar theory, and whose semantic function is predication (expressed in terms of property theory). Bowers (1993: 595) provides the following representations for main clause predication and predication in a small clause (both structures are considerably simplified):

(47)   a. John will laugh.
        b. $[_{IP}$ e $[_{I'}$ will $[_{PrP}$ John $[_{Pr'}$ e $[_{VP}$ laugh $]]]]]$

(48)   a. They consider John crazy.
        b. $[_{IP}$ they consider $[_{PrP}$ John $[_{Pr'}$ $[_{Pr}$ e $]$ $[_{AP}$ crazy $]]]]$

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[17] The principle of Greed assumes that a category moves only to check its own features.

Further on, Bowers provides extensive empirical support for his claim, based upon analyses of numerous English constructions: conjoined structures, raising to object, quantifier floating, dative arguments, and double object constructions.

The general structure of a sentence involving a transitive verb has now the following underlying form (relevant portion only):

(49)   PrP
              /   \
          NP$_1$ Pr'
                    /   \
                  Pr   VP
                        /   \
                       V   NP$_2$

Bowers (1993: 596) claims that predication relation holds between the argument in [Spec, Pr] and the complement of Pr. However, employing, once again, the X-bar theoretic approach worked out earlier in this paper, it is necessary to make precise this claim: predication holds between [Spec, PrP] and [Pr', PrP], i.e. it is the relation in (50 a), rather than (50 b), where indexing stresses the difference:

(50)   a.   Pr   b.   Pr
               /   \   /   \
           NP$_i$ Pr'$_i$ NP$_i$ Pr'
                    /   \   /   \
                  Pr   XP   Pr   XP$_i$

The difference is crucial as it stresses the existence of an independent predicative element (Pr), obligatorily present in the relation.[18]

The postulation of a new functional category has to be tested against Thráinsson's *Real Minimalist Principle*, repeated below:

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[18] The consequences of this move are investigated in Eide and Afarli (1997) and Stalmaszczyk (in progress).

(51) Assume only those functional categories that you have evidence for.

What is the evidence for the functional category Predication? Is this category ever expressed overtly? The answer is positive, and I claim that the evidence comes from the existence of predicative particles in, among others, English, Welsh, and Norwegian. Below I provide only examples and a tentative sketch, details are worked out in work in progress.

As well known, English verbs like *consider, choose, elect, crown*, etc., may occur in constructions where the direct object is followed by either a bare noun or as an 'as phrase', e.g.[19]:

(52)   a. Everybody considers him (as) crazy.
        b. The president appointed Valerie (as) his personal adviser.

According to Quirk et al. (1985: 1200) this usage of "the preposition *as* designates a copular relation", however, I prefer to call *as* a 'predicative particle', and following Bowers (1993: 596), I assume that in small clauses it is a direct lexical realization of Pr[20]. In constructions with non-alternating verbs (e.g. *accept, characterize, define, regard*, etc.), the particle is always obligatorily present and the (simplified) underlying form is the following:

(53)   a. I regard John as crazy / an idiot
        b. I regard [$_{PrP}$ John [$_{Pr'}$ [$_{Pr}$ as] [$_{AP}$ crazy] / [$_{NP}$ an idiot]]]

In small clause constructions with optional *as*, the head *Pr* is left unrealized:

(54)   a. I consider John crazy
        b. I consider [$_{PrP}$ John [$_{Pr'}$ [$_{Pr}$ e] [$_{AP}$ crazy]]]

A similar example of lexically realized Pr comes from Norwegian. In Norwegian, a nominal small clause predicate forces the presence of the particle *som*, a counterpart of the English particle *as* (Eide and Afarli 1997: 36):

(55)   a. Vi fant Marit som nervervrak.
           we found Mary *som* nervous wreck
           'We found Mary a nervous wreck'
        b. Hun levde og døde som eneboer.
           she lived and died *som* hermit
           'She lived and died a hermit'

Further evidence comes from Welsh. In a footnote, Bowers (1993: 597, fn. 4) tentatively assumes that also the Welsh particle *yn* "may well be a direct lexical realization of the category Pr". Below I provide some additional support for this claim. Welsh grammar distinguishes between predicative *yn*, which precedes a noun or adjective (56), and *yn* as a verbal adjunct in periphrastic verbal constructions (57):

(56)   a. Roedd y caffe'n wag   (Thorne 1993: 28)
           was café+*yn* empty
           'The café was empty'
        b. Rwy'n ddyn rhesymol   (Thorne 1993: 28)
           be+*yn* man reasonable
           'I am a reasonable man'

(57)   a. Mae'r glaw yn dod   (Thorne 1993: 251)
           is rain *yn* coming
           'The rain is coming'
        b. Yr wyt ti'n dysgu   (Thorne 1993: 267)
           particle be you *yn* learn
           'You are learning'

Nouns and adjectives following the predicate *yn* mutate, i.e. *wag* in (56a) is the mutated form of *gwag* 'empty', and *ddyn* in (56b) is the mutated form of *dyn* 'man'. Most interestingly, the predicate *yn* is frequently omitted but the initial consonant of the complement still selects mutation, see (58), where *ddieithr* is the mutated form of *dieithr* 'stranger' (Thorne 1993: 368):

(58)   bûm yn ddieithr
        bûm ddieithr
        'I had been a stranger'

The presence of mutation, even when the particle *yn* is absent, may be considered as explicit manifestation of the underlying functional category Predication.

In the case of English, Norwegian and Welsh constructions involving respective predicative particles the underlying structure is (59), where NP is the subject of predication (and also possible direct object of the higher verb), **p** the appropriate particle (or *e* – empty position, unrealized head), and XP the relevant predicate (complement):

(59)   ... [$_{PrP}$ NP [$_{Pr'}$ [$_{Pr}$ **p**/*e*] [$_{XP}$ ...]]]

Predication takes place between Pr' and NP, crucially Pr' involves the predicative element (particle or abstract operator).

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[19] For a discussion of this complementation pattern, see Quirk et al. (1985: 1200), cf. also Levin (1993, section 2.14) on the '*as* alternation'.

[20] In this paper I refrain from analyzing the copula as another, perhaps canonical, manifestation of the functional category Predication.

10. Conclusion

Predication is a fundamental concept of linguistic theory. In this paper I have discussed its place within the generative framework. I distinguished between structural and semantic predication, where the latter is connected with Theta theory and interpretation of arguments. Structural predication, on the other hand, is a relation between nodes defined on phrase markers. I discussed this relation against the background of Standard Theory, X-bar Theory and the theory of indexing proposed by Williams.

In the recent Minimalist Program structural predication is reanalyzed as a relation triggered by the functional head Predication. This functional category is present as an abstract head in every structure involving predication, and manifests itself lexically in constructions involving predicative particles, such as, for instance *as*-small clauses in English.

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