# X-BAR, DP, OCCAM'S RAZOR[1] & LOGICAL FORM IN ARABIC

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The GB theory has lately witnessed a prolifiration of heads and their equivalent projections : V/VP, N/NP, Adj/Adjp, P.PP, I/IP, C.CP, AGR.AGRP, TNS/TNSP, ASP/ASPP, NEG.NEGP, Clitic.Clp (?) , Q/QP, D.DP, .., Principles : X-bar, government, ø, Case, Projection principle, Extended Projection principle, Empty Category Principle.. and Case types : Structural Case, Inherent Case, Absolute Case, Exceptional Case, Absorbed Case.. At LF (and S-structure) there are many anaphoric relations : A and A-bar anaphors, bound variables, anaphoric Pronominals.. In a Spirit of ' economy of derivation ' Similar to the one Suggested in Chomsky (1991) , this paper will try and use the Occam's razor to reduce as much as possible the above mentioned prolifiration of heads. The Seven Parameters will be reduced to two, namely X ' and Mover alpha (Playing down Extended Projection Principle and ECP). Case types will be reduced to ( a nominative ) . And, finally A and A-bar anaphors ( both full and empty ) Will be collapsed into one instance only : bound Variable.

## 1. PARAMETERS THEORY

The aim of the GB theory is to give unified accounts of different and seemingly unrelated linguistic phenomena. This basically syntactic theory is also concerned with phonetic and logical interpretations. The complete model comprises three components : Syntax, Phonetic Form (PF)

and Logical Form (LF). It is known in the current literature as the T-model :

**(1)**

$$\frac{\text{SYNTAX}}{\text{PF} \mid \text{LF}}$$

Chomsky (1982) suggests a system of parameters as an alternative to the previous systems of rules so as to achieve a high degree of explanatory adequacy . Syntax is fixed by a system of seven parameters :

**(2)**

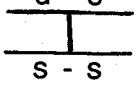
a. X-bar theory[2]
b. ø-theory
c. Case theory
d. Binding theory
e. Bounding theory
f. Control theory
g. Government theory

Besides these major principles GB assumes minor principles such as the projection principle (which we deduce from Head specification ) and the Empty Category Priciple which may be seen as part of Bounding theory, and which may prove obsolete in languages using cliticization (see below )

### 1.1. X-bar theory

X-bar theory holds primarily at d-structure yielding a set of confgurations which are mapped onto s-structure thanks to move alpha as in (3) :

**(3)**




x-Bar
move alpha
case/LF

S-structure represents essentialy case relations and

Logical Form ( see section 3).

The notion "head" plays a crucial role in x-bar theory (as well as in the rest of GB) . It is a grammatical function (GF) similar to others such as "subject", "object", "complement", etc. It enters into the assignment of ø-roles in sentences and phrases. consider (4) :

**(4)**

a. (hum) qatalu : zaid
   they killed zaid (Chomsky,1981)
b. qutila zaid t
   was-killed zaid
c. John's pictures of Bill

In (4a), we must know that zaid is the object of the head verb qatalu, which assigns the theta role "theme" (alas victim) to it. This ø-assignment takes place at d-structure. This in true also in (4b) though zaid appears in a different position. Its (original) argument position is marked by t which indeed receives the theta role theme : being the object of the verb qatala. In (4c) John is "agent" while Bill may be seen as "benefactive" (Lyons 1977).

The properties of d-structure - such as ø-roles follow from the projection principle which states that every ø-role is assigned at d-structure by a head uniquely, to some argument NP and is preserved throughout the derivation at s-structure and LF.

Chomsky (1986b) assumes a sophist icated schemata for x- bar as in (5) in which all categories are projections of a -head- , where x* stands for zero or more occurences of some category:

**(5)**

A. X' = XX"*
B. X' = X"*X'

X"* in (A) stands for the complement of X and to its specifier in (B) : if we take the example where x" is a sentence, then in (5A) it is the object of V and in (5B) the subject of S . The notions complement, specifier, object, subject, etc.. are functional, not categorial (as stated above) : The conventional symbols NP, VP, AP, PP are alternatively replaced by N" , V", A" and P" (for the maximal projections of the lexical categories : N, V, A and P). And in the case of transitive verbs, the maximum is three in Arabic (Ali, P.C.) :

**(6)**

?xbartu - hu lxabara haqqan
told - K - him the - news truth

The verb **?axbara** 'informed' seems to hold three complement NPS -hu 'him', **lxabar** 'the news' and **haqqan** 'the truth' .

Chomsky (1986b) suggests an extention of x-bar schemata to cover functional categories such as Inflecftion (I) and complementizer (c). This would turn the traditional clausal categories S and S' into I"and C", respectively, as in (7) :

**(7)**

a. I" = (NP (I' vp v ... ))
b. C" = ( .. (C' C I" ))

X-bar principles are essentially responsible for expanding lexical and functional heads (x) into first (x') and maximal projection (x") as in (8) :

**(8)**

a. x + complement = x'
b. x' + specifier = x"

Chomsky (1986a) ignored a further distinction that can be drawn between two types of postnominal phrases - viz , complements and adjuncts. One possible way of telling which is which is through nominalization in which ø-roles resurface more clearly. Consider (9) and (10) :

**(9)**

a. maliku ?inglatirra
   king England
b. l - maliku sa:hibu z-zawza : ti 8
   the - king with the - wives 8

**(10)**

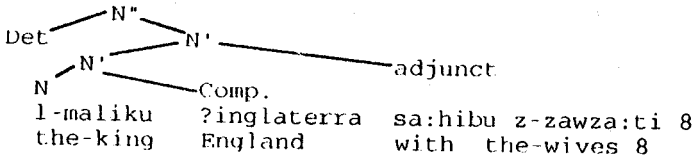
| | | |
|---|---|---|
| a. | malika | ?inglatirra |
| | ruled/owned-he | England |
| b. | * malika | Sa:hiba z-zawza:ti 8 |
| | ruled/owned-he | with the - wives 8 |

**(11)**

a. Determiners expand N-bar into N-double-bar
b. Adjuncts expand N-bar into N-bar
c. Complements expand N into N-bar (Radford 1988)

examplified in (12) :

**(12)**




Phrase structure rules can now be dispensed with entirely. We assume that x-bar structuring is responsibe for government, theta marking and ultimately case (after move alpha has applied) . The nominals however seem to have posed a problem ( cf. Chomsky 1986b, Abney 1986, Stowell 1989 and Fassi Fehri 1990) . Consider (13) :

**(13)**
(the) pictures of John

In (13) **pictures** functions as the head noun. It is expanded into N' thanks to the prepositional phrase **of John**, and **the** in turn expands N' into N" . Chomsky claims that N is the head of the noun phrase and that N' can be dispensed with when there is no determiner as in **pictures of John**. Stowell (1989) , Abney (1986) and other's have chosen D instead of N as head.

Stowell (1989) deals with two related questions : the relationship between the subject position and the specifier position in terms of X-bar theory, and the relationship between the determiner and the noun in what he calls Common Noun phrase (CNP in neutral terms). The crucial point is centered around the choice of the head of the CNP : is it N or D ? ( see below ) .

In Ouhalla (1988) , we witness another type of prolifiration of functional heads which are linked to v-movement. This is postulated so as to account for (VSO) Sentential structure. His purpose is to reanaylyse the structure of sentential clauses in Romance and (Hamito) semitic languages. The main argument is that the infectional elements AGR, TNS and NEG which belong under the I (Cf. chomsky 1986b) should be given a full-fledged "head" status and should expand according to the principles of x-bar theory. These categories should be organised in in a structural hierarchy so as to show the precedence relations attested in different language families (Romance vs semitic). This approach is claimed to account quite naturaly for the vso/svo variation parameter.

In SVO languages AGR precedes TNS, while in vso languages AGR follows TNS. These two options are given below along with examples from French (14ac), and Arabic

(14bd):

**(14)**

a. (CP C (TNSP TNS (AGRP spec (AGR' AGR (VP V ... )))))
b. (CP C (AGRP Spec (AGR' AGR ( TNS ( VP V ... )))))
c. Les enfants arriv-er-ont demain
   the children arrive-will(TNS) - 3p (AGR) tomorrow
   (Ouhalla 1989)
d. Sa-ja- Stari : cali sajjaratan Rodan
   will - 3msbuy Ali car-a tomorrow

In the French example the TNS element clearly preceds the AGR element, while in the Arabic example the order is reversed .

ASP is another head assumed for semitic languages in Ouhalla (1989) following Maccarthy (1979) . This is because verbal roots consist of only consonant clusters which are mapped onto vocalic melodies that constitute independent functional morphemes with various grammatical functions (cf. Ben Rochd 1994) , Among these melodies is the one that conveys aspectual information and which is assumed to be an independent syntactic head, viz. ASP. Consonantal roots and vocalic melodies, affixes, need to be mapped onto a host category to form a complete word. Assuming this option to be viable the only change needed will be the substitution of ASP for TNS as in (15) :

**(15)**

... V ( CP C ( ASP spec ( ASP{' ASP (VP V (NP) PP) )))))
Movement of the verb to ASP is obligatory for the same reason as movement of the verb to I is in chomsky (1986a).

Chomsky (1981) suggests a sort of link between different levels of derivation s-s, d-s and LF: called projection Principle which assures that verbs, for

instance, ø-mark their complement's (as heads do) as can be seen in passives or nominals :

**(16)**
a. John was killed
b. John's refusal of the offer

The subject position is not ø-marked by v (chomsky calls this indirect ø-marking by vp).

We also notice that nonarguments such as pleonastic dummies (cf. Bennis1990) can occupy the subject position :

**(17)**
il pleut
There are also languages that allow a " null subject " such as Romance languages (Spanish & Italian) and Semitic languages :

**(18)**
e parla
( he ) spoke
a. e za : ? a
b. ( he ) came
c. * saw Mary

The projection principle and the requirement that clauses have subjects (18c) are quite closely related ( cf. headship) . Chomsky (1982) believes the two priciples may be reduced to one general principle which he calls the Extended projection principle. We consider the latter as deducible from Head-complement and Head-specifier, in terms of X-bar (chomsky 1986b) .

Among the various types of relations holding between syntactic elements such as heads and complement phrases,

three appear to be crucial in determining barrierhood : (i) the relation between a head and the complement phrases to which it assigns case, ø-role (or both ideally), (iooi) agreement such as the one between a head and its specifier and (iii) the coindexing relation known as "chain" . The first relation is referred to as " head marking" and the last as "chain coindexing. "when a head happens to be lexical such as N, V, p or Adj, head marking is referred to as "lexical marking . "The latter relation holds particularly when defining barrierhood. A barricr is a non L marked maximal projection, as in (19)

**(19)**

a. ...that ( Ip...)
b. ? acrifu zaid - an
   I - know zaid - obj.
c. ? acrifu ?anna ( Ip zaid-an ... )
   I - know that zaid - obj .

In (19b) the matrix verb ?acrifu assigns objective case to zaid : being its object. In (19c) Ip is not L-marked (by the complementizer ?anna) therefore it functions as a barrier for the government of the matrix verb .

L-marking enters also, crucially in the definition of proper government (the ECP) . A trace will be properly governed (at S-structre or LF) if it is L-marked by N, V, P or Adj :

**(20)**

a. Who did you say that he saw t
b. * who did you say that t saw him

The crucial difference between (20a) and (20b) is that the trace t in the first sentence is L-marked by the verb see, while in the second it is not (that being functional).

ø-marking has to meet the condition of "sisterhood"

which is expressible in terms of X-bar theory (not independently of government (as assumed in chomsky 1986b) ). A head A ø-marks B only if B is the complement of A in the sense of X-bar theory (m-command holding). It is also assumed here that the specifier is also head marked (m-commanded). Note that "sisterhood" is defined here in terms of head-marking which makes both complement and specifier subject to head government (case-government, see below)

**1.2. Move Alpha ( Bounding theory )**

It is assumed that there are two types of movement : substitution and adjunction. The former has the following constraints :

**(21)**

a. There is no movement to complement position.
b. Only $X^o$ can move to the head position.
c. Only a maximal projection can move to the specifier position.
d. Only minimal and maximal projections ($X^o$ and X") are visible for Move alpha.

**(22)**

a. * $t_i$ was destroyed (the enemy) $_i$
b. C' ka : nai rrazulu $l_i$ ja?kulu
c. ( CP ?ajju huku : matin (IP t qarrarat ha : da )) (Fassi Fehri forthcoming)
d. * Whose did you read (NP t book)

These can be seen as input constraints together with subjacency (Barrierhood ) :

**(23)**

* Mary seems (John to want ( t to win) )

No item can cross more than one bounding node in a swoop fashion (where bounding node is taken to be a maximal

projection X" )

There are also output constraints on movement such as ECP:

**(24)**

a. trace must be properly governed at S-structure and L F
*man$_i$ llajii qulta ?inna $t_i$ mari : d
who that said - you that Sick
b. mani llaji : qulta ti mari:d
who that said-uou Sick

Chomsky (1986b) dicusses the (exceptional) Case government of the subject of small causes from the matrix clause, and their connection to the ECP filter (on Move Alpha).

**(25)**

They consider ( John (AP intelligent ))

Notice that consider does not ø-mark the subject of the small clause, John , in (25) . Nevertheless, the subject of a small clause can be extracted from a wh-island as in (26) (as it satisfies ECP) :

**(26)**

man ?ara:du: ?an jactabiru : ( t (I) dakijjan)
who wanted - they to consider ( t ( to be ) inteligent

The same problem arises with Exceptional Case-marking constructions. Consider (27) :

**(27)**

* Jabdu : Zajdun ?anna-hu muctabarun (t (I) dakijjun)
seems zaid that - he considered (t (to be) intelligent )

(27) is assumed to be an ECP violation. The trace t has no internal governor. The (abstract) Inflection (I) is not a lexical item. Notice, here, crucially, that the (adjectival) passive participle muctabarun is not an L-marker either

(cf. Ben Rochd 1982). But in (26) we are bound to conclude that t is in fact externally governed by the matrix verb iactabiru. One obvious difference between the two constructions lies in case assignment : in (26) jactabiru : assigns case to the trace t ( under government) but in (27) t does not receive case. Chomsky assumes that in this case, it is "absorbed by passive" . There is however an alternative option that assumes successive cyclic movement of man 'who' to Vp in (26) , then to its position in the matrix cp. This would yield the substructure (28) :

**(28)**

( Vp t' ( Vp jactabiru : ( t ... )))
Consider - they

1.3. Case theory

Chomsky (1981) defines the principles of Case theory as in (29) :

**(29)**

a. NP is nominative if governed by AGR
b. NP is objective if governed by v with the subcategorization feature : - NP (ie., transitive)
c. NP is oblique if governed by p
d. NP is genitive in (NP - X' )
e. NP is inherently Case - marked as determined by properties of its (-N) governor (referred to as 'inherent Case'

These can be illustrated in (30) :

**(30)**

a. Zajd-un ka : na jaqra?u l-kita:b-a bi lba:-bi
Zaid-nom. was reading the - book - obj by the-door-obl
b. ba : bu dda: r-i
door the - house - gen.
c. ?actajtu zajd-an kita:b-an

gave - I zaid-obj. book - obj.

In (30a) Zaid is assigned nominative by being governed by the (inflectional) AGR marker -a. The NP l-kita:ba is assigned objective case by its verb governor jaqra?u. The NP l-ba:bi is assigned oblique case by its preposional governor bi. In (30b) we assume that the NP dda:ri is assigned genitive case by the noun ba:bu while chomsky assumes the structure in (29d). In (29d), Chomsky (1981) would suggest that Zaid is assigned structural case as in (29b) and that kitaban receives inherent case, as it is ø-marked by the verb ?actajtu.

Developing chomsk's dichotomy inherent / structural cases further, Haegeman (1991) suggests that structural case assignment depends solely on government (and is a configurational proprty) while inherent case depends on both theta role and government . consider ( 31) :

**(31)**

a . ?actaqidu (?anna) zajd-an faxu: run
believe-I (that) zaid-obj. proud

b. ?ictiqa : di : (?anna) zajd-an faxu : ran
belief-my (that) zaid-obj . proud

c. Ali faxu : run bi farasihi
Ali proud of horse-his

d. *Ali faxu : run farasi-hi
Ali proud horse-obl-his

Inherent case is defined as in (32)

**(32)**

A is an inherent case assigner if A assigns case and a theta role to an NP.

we notice once again adjectives as in (31d) are unable to case-govern or ø- mark their complements .

There is a further complication concerning genitive case . In Chomsky ( 1986a ) nouns (like ditransitive verbs ) are assumed to assign genitive case inherrently rather than structurally . It is further assumed that in English intherent genitive is realized by means of a preposition . There is thus an asymmetry between the abstract genitive case assigned inherently by the noun , and the concrete prepositional genitive case ( Haegeman 1991 ) .

Inherent case condition (32) entails that nouns as ?ictiqa : di and adjectives such as faxu:r will assign inherent genitive case to NPS which they theta-mark. So in (31c), for instance, the NP faras will be assigned inherent case.

So, inherent case goes hand in hand with theta-marking in contrast to structural case which depends on the strctural properties of head government.

### 1.3. Binding theory

In chomsky (1981) the principles of Binding Theory are defined as follows :

**(33)**
(A) An anaphor is bound in its governing category
(B) A pronominal is free in its governing category
(C) An R-expression is free

A is the governing category for B if and only if A is the minimal category containing B and a governor of B, where A=NP or S (add pp). consider (34) :

**(34)**
a. ra?a : Zaidun nafsahu
saw zaid himself

b. ra?a : Zaidun camran
Saw Zaid Amr
c. ra?a : -hu EC
Saw-him (he)
d. daxala Zaidun (pp maktaba - hu) (Fassi - Fehri 1988)
enter Zaid ( office - his )

**1.5. Control theory :**

Control theory is the module of the grammar concerned with the assignment of reference to null subjects in ijnfinitive and gerundive complement and adjunct clauses :

**(35)**

a. Zaidun ha : wala (1 PRO lfira : ra )
Zaid tried the leave
b. Zidun fakkra fi (1 PRO lfira : ri )
Zaid considered in the leaving ( Stowell 1989, Borer 1991)
c. ( Wa huwai jaqtacu ttari : qa) Zaidi ra?a : marjama and he crossing the street Zaid saw Mary
d. ( Kawnu-hui janzahu fi 1? imtiha:ni) jufrihu zajdi be- he he-succeed in exams it-please Zaid

Arabic hardly allows ungoverned anaphoric pronominal PRO (see below). In (35a), in fact, the embedded clause could contain a genitive postnominal clitic such <u>as. fira : ru-hu</u> ' leaving -his' or else we could have governed nominative pro. In (355b) the agent argument would be again a post nominal oblique clitic such as <u>fira:ri-hi</u> 'leaving-his' . In (35c) PRO is simply impossible : the overt nominative pronoun <u>huwwa</u> is oligatory. And likewise in (35d) a cliticized nominative pronoun shows up. Coreference relations, however, still hold between those (clitic) pronouns and their antecedents, and hence the (co) indexing.

## 2. OCCAM'S RAZOR

In this section, we will consider case - government (CG, henceforth) as a crucial criterion for headship. This will help in reducing the heads N, D and Q (with their respective phrases to N (and NP) only . DP will be rejected for the failure of its head to case govern its NP specifier (Souali (1990) , and the failure of the PRO distribution suggested in stowell (1989) . Syntactically, it is obvious that Q has the distribution of N and so we will consider it to be. Demonstratives will be considered as full - fledged NPS because of their distribution ( in typical GF positions ) . Genitive will be straightforward in our analysis: it is assigned by a governing N ( m-commander) rather than pseud-of (chomsky 1986a), traditional Arab grammarians annexation ( N+N) or chomsky's (1981) N' (inherent) government.

### 2.1. DP Hypothesis

#### 2.1.1. Stowell (1989)

Stowell (1989) deals with two related issues : the relationship between the subject position and the specifier in terms of X- bar theory, and the relationship between the determiner and N in what he calls common Noun Phrase (CNP), in neutral terms. He raises the problem of the choice of the head of CNP : is it N or D ? ( as seen above ) .

He notes that there is a clear difference betwen adjectives and nouns in English (at least). Adjectives are predicates with their specific internal argument structure (ø-grid), whereas, nouns may function as predicates or as referring expressions.

**(36)**

a. Zaid sahlu lza:nibi (idiom)
' Zaid is easy to live with'

Another difference between nouns and adjectives is that the former but not the latter needs a determiner (in English, at least):

**(37)**

a. John is a teacher
b. John is (quite) daft

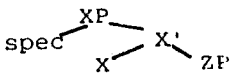
**(38)**

a. the man read one book
b. * man read book

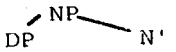
There is a further ( and crucial) question which concerns the position of the determiner. There are different options suggested in chomsky (1986b), Jackendoff (1977) and Abney (1986), (39a), (39b) and (39c) respectively :

**(39)**

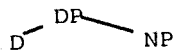
a.




b.




c.




Notice that the spec. node in (39a) is not specified. The aim of stowell (19989) is to review chomsk's (1986b) X-bar principle B) so as to make it more consistent by

exteding it across syntactic categories so as to achieve perfect symmetry between c, I and D :

**(40)**
B) X" = X " * X'
stowell (1989) defends his generalization by postulating a subject (specifier) hypothesis as follows :

**(41)**
every xp must contain a specifer position
He then tries to defend the DP hypothesis by noting that the distribution of PRO is crucial in this respect. PRO occurs in subject of infinitival IPS in so called control structures (the subject position of which is ungoverned) . It also occurs in NP structures as in (42) :

**(42)**
Bill resented (NP the PRO destruction of the city (IP PRO to prove a point ))

The second issue concerns the head of the CNP : ie .. are nominals better handled as NPS or DPS ? In other words, are they headed by N or D ? stowell refers to Jackedoff's (1977) and Abney's (1986) approaches respectively (43a) and (43b) :

**(43)**
a. (NP DP N' )
b. (DP D NP)

**(44)**
a. ( NP the pictures )
b. ( DP the pictures )

Stowell defends Abney's hypothesis rather than Jackendoff's. His arguments are as follows : first, NPS are

consistently used as predicates of small clauses (SCS), second, nouns (mass nouns, bare plurals, generic nouns and adjectives) are consistently predicative whereas Determiners are consistenly referential :

**(45)**

a. zajdun razulun
zaid man-a
b. za : ? a ha : da :
came that

Third, PRO occurs in NPS as it occurs in IPS and small clauses. Stowell fails, however, to illustrate its distribution in CP and faces also wh-extraction which is (some times) blocked, in spite of the vacant DP specifier which is assumed to be a scape-hatch for wh-extraction :

**(46)**

a. I Consider ( John fascinating )
b. * I consider (PRO fascinating )
c. * who did Bill shoot (DP (NP t's father ))

Note that (Arabic) quantification and demonstratives seem to pose a problem of double specification (see below). consider (47) :

**(47)**

| | | |
|---|---|---|
| a | ∂ da : ka | l-walad |
| | Det | Det |
| | *that | the boy |
| b. | Kullu | l-?awla : di |
| | all | the - boys |
| c. | tout les enfants | |

The first hypothesis of stowell's is self-refuted as it does not specify the kind of specifier needed for NP/DP (x"

or $X^{o}$ ? ) . : The second argument based on the distribution of PRO is even less appealing as stowell fails to show PRO's distribution in CP. There is also an obvious c-government of the PRO position in his own example :

**(48)**

a. ... the enemy's destruction ...

b. ... * the PRO destruction >>>

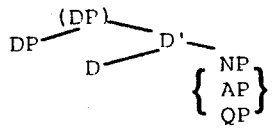
when we substitute an overt NP for PRO, (genitive) case does show up, and consequently, we have to admit that that position is c - governed and therefore PRO cannot fit in . Borer (1989) has similarly refuted the very existence of PRO - the so - called ungoverned empty category - reducing it to pro (see below) .

### 2.1.2. Souali (1990)

In Souali (1990) it is suggested that Det has a system of complements (NP, AP and QP) expanding it into D' and an XP specifier which expands D'into DP, as in (49)

**(49)**

a.

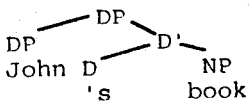



b. tilka t - ta:wila :t
those the - tables

c. ?al- ?awlaad kullu-hum
the - boys all - them

Souali, further assumes that English determiner head D (governs ? and ) discharges genitive case to its DP specifier, as in (50) :

**(50)**

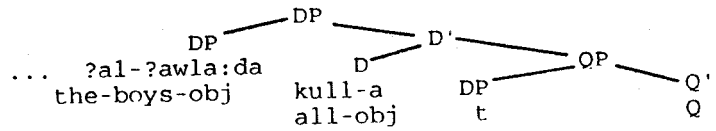



This solution of his , however, seems to me to present a serious epistemogical mistake of mixing cause and effect. The genitive mark 's is (alas) the last case mark left in English (cf. Haegeman 1991). We see it as the effect of case-government (by N) and not the other way round. It cannot be the cause and the effect at the same time, either.

Souali then quickly refutesx his own solution (?) above when it comes to Arabic. He states that "Det in Arabic is not a Caseassigner and hence can never discharge a case in any direction" (Souali 1990 : 21 ) .

This we assume to be true in both languages ( if not part of UG). Consider (51) :

**(51)**




### 2.1.3. Fassi Fehri (1990)

Fassi Fehri (1990) also relies on Abney's (19986) DP hypothesis and tries to make the parallel between nominals and clausal IP structures in Arabic. He gives examples of NPS that are headed by 'normal' N that assigns no government to them (see below) :

**(52)**

a. daxaltu d-da : r

enter-I the - house

b. daxaltu da:ra ? al - razuli

enter - I house the - man

He considers also (complex) genitive and/or gerundive constructions as in (53) :

**(53)**

a. ? aqlqani : darbu r-razuli l - walada

it - annoyed - me hitting the - man the - boy

b. ?aqlqahi : darbu r-razuli li l-waladi

it - annoyed - me hitting the - man to the - boy

The problem is two fold : is S the projection of ASP, TNS and AGR? If we choose the last option we would then be able to parallel NP with S ? Fassi Fehri suggests that NP is the projection of Det ( or alternatively AGR/Clitic in derived nominals). We turn now to his DP hypothesis .

Det cooccurs with N and the latter carries the features Det coccurs with N and the latter carries the features number, gender and diminutive as shown in (54) :

**(54)**

| N | { ? al |
|---|---|
| number | - un |
| gender | N |
| dimunitive | ADJ } |

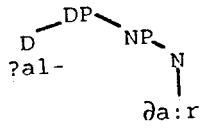
We can note further that there is a complemnetary distribution between Det and annexed NP (NX) :

**(55)**

| ?al - N | / | N - un |
|---|---|---|
| hada : __ __ | / | NNP |

Following Abeny (1986), Fassi - Fehri assumes that the head of NP (sic) is Det rather than N as in :

**(56)**



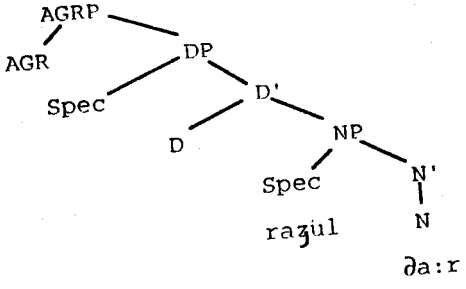

Det is considered as specifier of NP because of the complementary distribution between articles and annexed NPS (as above ) . Det and the annexed NP (?) can function as noun subjects, the specifier position can be filled by one or the other, but and not both at the same time :

**(57)**

a. d - da : r
   the - house
b. da : ru zajdin
   house zaid
c. *d - da : ru zajdin
   the - house zaid

Fassi Fehri then moves to defend the second option, which shows a clear symmetry between nominals and S when they are both considered as projections of AGR :

**(58)**



The notion 'head' as described in the present paper is based on case - government (CG) . And Case in return is considered as the effect of Head government.

**2.2. Headship**

In Chomsky (1981) the notion 'head' seems quite confusing as it fluctuates between four heads : N, V, Adj and P which are expanded thanks to complement arguments (ø-positions) into X" (chomsky 1981 : 47 ) and three heads : 'The lexical categories are ( +N, - v ) ie. noun, ( - N, + v ) ie., verb and ( +N, +V ) ie ., adjective " (Chomsky 1981 : 48 ) . Notice here that (-N, -V ) ie. Preposition is excluded.

AGR has an even worse fate. It is once considered as a (head ? ) governor of empty categories in pro-drop languages (Chomsky 1981 : 250), and on another occasion it is exlicitly specified, for the requirements of the ECP, that an empty category is properly governed if its governor is different from AGR ( a = AGR ) . AGR is further assumed to assign nominative case to the subject of tensed clauses as in :

**(59)**

a. zajdun judannu ( ? anna - hu) dakij
b. John is considered ( t foolish) (Chomsky 1981)

In Chomsky (1986b) the things seem much more tidy concerning 'headship' . X-bar theory is based on the lexical notion 'head' which can be further split into a binary system of features (aN, aV) yielding the categories : noun, verb, adjective and pre/postposition. Each head $X^{o}$ has its specific projections X' and X" (see above) :

**(60)**

a. za : ?a : NP ___

came

b. ?akal : NP ___ **NP**

ate

c. ?acta : NP ___ **NP** **NP**

gave

d. ?axbara : NP ___ **NP** **NP** **NP** (Ali, p.c. )

inform

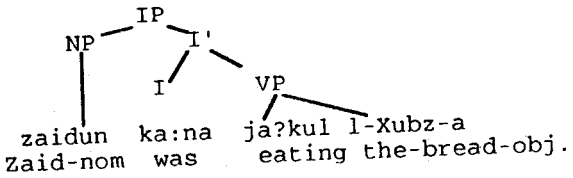
e. d anna NP ___ **CP**

think

In (60a) the lexical head za:?a projects thanks to its specifier NP subject . In (60b) the lexical head ?akala projects to V' thanks to its complement NP and to V" thanks to its specifier NP subject. In (60c) ?acta: needs two complement NPS to project into V' and a specifier NP subject to yield V". In (60d) ?axbara needs three N~P complements (which is the maximum number allowed in Arabic ) , In (60e) danna needs a CP complement and an NP subject :

Chomsky (1986a) considers three relations as being crucial to GB : L-marking, agreement and Chain. consider (61) :

**(61)**




L-marking is concerned with (head) ø-marking, the condition of which is that the (head) ø-marker and the recipient of the ø-role may be sisters, where the ø-marker

may be a head or a maximal projection. Note that when chomsky defines "sisterhood" in terms of heads, and maximal projection, it follows that the NP l-xubz-a is directly ø-marked by the head verb ja?kulu, while the subject NP Zaid is indirectly ø-marked by the verb ja?kulu or directly ø-marked by VP. Generally speaking, the specifier is either indirectly L-marked by its head or directly L-marked by a projection of the head (X' or X") as in (62) :

**(62)**

a. Zaidun ( I' (vp ja?kulu l-xubz-a ) )
AGENT THEME

b. Pro/PRO7 ?inza:zu l-maqa:lati
AGENT Working the-paper

c. John's (N' refusal of the offer)
AGENT

L- marking is a subsection of Government . The latter notion is defined in chomsky (1986b) as in (63) :

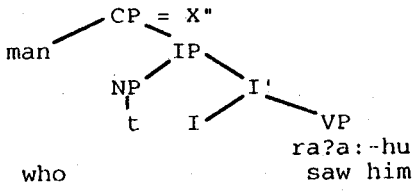
**(63)**

A governs B iff A m-commands B and there is no c, such that c a barrier for B and c excludes A.

This definition encompases substitution as well as adjunction structures. It uses notions such as 'm-command', 'barrier' and 'exclude' .

The notion " m-command " can be defined as sisterhood ( aunthood ) under a common maximal projection x " ( mother ) . In ( 64 ) man ' who ' m-commands t - being both dominated by the maximal projection CP :

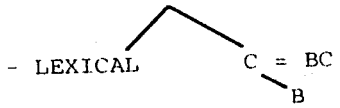
**(64)**



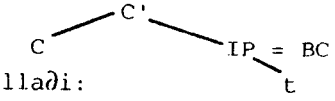

The notion "barrier" is alternatively defined as a maximal projection X " (inherently) or a category which inherits barrierhood from a Blocing Category (BC) it dominates - a BC being a node which is not lexically marked as in (65) :

**(65)**

a.




b.

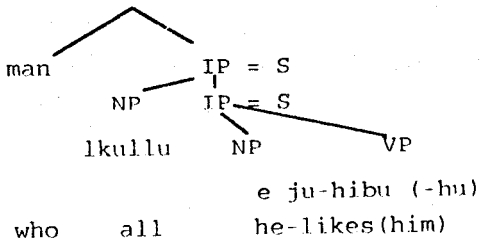



c. *... llaðiː (IP t Xaːs)
that special

c. *... lladi : ( IP t xa:s)
that special

Tinally, the notion "exclusion" is found in adjunction structures such as those of LF interpretation as in (66) :

**(66)**



In (66) IP consists of two segments, non of which dominates man. We say that man is excuded by IP.

If we rather defined "sisterhood" in terms of head-marking by an m-commander $X^{o}$, then we would have direct ø-marking in both cases : the specifier and the complement would be both governed by their head :

**(67)**

A governs B iff A m-commands (ø-governs and/or Case marks) B. govern t in (68a) but not in (68b) :

**(68)**

a. man jactabiru:na ( (-hu) t dakijjun )
   Who consider-they (him) t intelligent)
b. *zaidun jabdu : ?anna muctabarun ( t dakijjan )
   Zaid seems that considred t intelligent

In (b) the reason for the non c-governments of trace, and ultimately the ungrammaticality of the sentence, is the fact that the adjectival participle muctabarun does not have the power to c-govern.

In a structure such as (69) below :

**(69)**

a. Zaid V ( NP )
b. Zajdun jadunnu ( Camrun .... )
   Zaid he-thinks ( Amr .. )

The NP in (69) takes eventually the status of the object of the matrix V as far as c-government and extraction are concerned. It behaves like an object, and is therefore c-governed by the matrix V (although not ø-marked by it ) , C-government is straightforward and naturally defined in terms of x-bar.

The notion "barrier" itself could be challenge on these grounds (ie., C-government) . Maximal projections such as NP, IP and CP (Unless C is filled by its proper head) cease to be barriers as they can be transparent to c-government by external heads, such as the matrix verb in complex sentences.

**(70)**

a. ra?ajtu (NP lwalad-a t- tawi : l-a )
   saw-I the-boy-obj the - tall - obj
b. zacaltu (IP lfaras-a jalrabu)
   made - I the - horse-obj drink
c. ?acrifu ( CP ?anna Zaid - an ... )
   I - Know that Zaid - obj

DP is also a defective maximal projection (if not a redundant one ) as it permits external c-government of its specifier (cf: Souali, above). The DP hypothesis was challenged on its own grounds (see above).

We will use the notion 'government - more specifically 'case-government' as the criterion for headship. A head will be a case governor. Head-Marking is considered as responsible for assigning case (and/or ø-role ) to complements. Consider (71) :

**(71)**

a. suwwaru ( NP lwalad - i )
   pictures the - boy - gen
b. Zaid - un ra?a : film-an
   Zaid - nom saw movie-a-obj
c. Zaid-un juri:du (CP ? isla:h-a ssajjarat-i)
   Zaid-nom wants fixing-gen the-car-gen
d. * (hijja) Ka:nat munhadimatun l-madi : natu
   it was destroyed the city
e. fawqa ( NP l-ma : >idat - i )

on the - table - obj

f. ?inna-hu qa:?imun
that - he - obj standing

g. Zaid - un ka : na qa : ?im - an
Zaid - nom was standing - obj

From (71) above, we can deduce that the lexical vs non-lexical dichotomy as established in chomsky (1986b) requires some revision so as to cope with Arabic. Adjective should be eliminated form the lexical set. The reason for this is that it does not licence the full NP l-madi:nati 'the city' in (71d). It is actually the reason behind passive NP preposing in the first place .
We suggest to consider case-goernors as "heads" - excluding adjective (17d) and including I and C ((71F) and (71g) respectively ) . The headship of AGR will be superseded be supersedrd by that of I .We also suggest the elimination of exotic case assignment such as the one concerning genitive and inherent case concerning dative. These will be replaced by N-government (CG) and P-government (CG) respectively. Consider (72) :

**(72)**

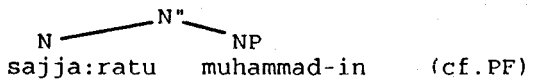
a. ?al-razul-u ?al-sa:lih-u
the - man - nom the - good - nom

b. sajjaratu muhammad - in
car (of) muhammad-gen

c. I gave a book to Bill

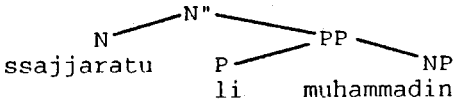
In (72b) muhammadin is assigned genitive case by being governed (m-commanded) by saiiaratu rather than by Poss (abstractly) or N' (oddly) as in chomsky (1980_ and (1981). Consider (73) :

**(73)**



There is another option, explored in the literature, which claims that there is a preposition which "is not a genuine preposition" (Ouhalla 1988) but rather a genitive case-marker. This would suggest the following d-structure for the above NP :

**(74)**




This Option could be used to eliminate (exotic) inherent case by suggesteing the same solution for dative- namely Preposition - government (CG) . Consider (75) :

**(75)**

John gave a book to Bill

Bill is now assigned case by the preposition before pp preposing takes place (see below) :

**(76)**

a. John gave a book to Bill — GOVERNMENT

John gave Bill a book t — MOVEMENT

The arrows in (76a) stand for c-government of a book by gave and c-government of Bill by to . While the arrow in (76b) stands for pp movement (not structure preserving).

Case could further be simplified by keeping only two Outputs : (+Nominative) and (-Nominative). The latter would collapse objective, oblique, genitive, and dative. Consider the following data from Arabic :

**(77)**

a. Safaha zaid-an/-hu
   shook-he (hands with) Zaid-obj/-him
b. li/la zaid-in/-hu
   to Zaid-obl/him
c. Kita : bu zaid - in/-hu
   Book Zaid-gen/his

The clitic is a good diagnosis for c-government. We notice that objective, oblique and genitive clitics are one and the same, namely -hu (Cf. Fassi Fehri (1989)).

**2.3.Case**

Al - Shorafat (1991) reviews case/government proposed in chomsky (1981) and (1986b). The latter suggests that "if the category A assigns a case, then it may assign it to an element that it governs" also A and its governee must be adjacent. consider (78) :

**(78)**

a. I put the book on the table
b. * on the table the book I put

There is further a distinction between inherent case (as seen above ) assigned by P and N (oblique and genitive) and structural case assigned at s-structure under government by I and V (nominative and objective):

**(79)**

a. Kita:bu zajd-in / li zajd-in
   book Zaid-gen / to Zaid-obl
b. Ka : na zajd-un jadribu camr-an
   Was Zaid - nom hitting Amr-obj
c. Kataba zajd-un risa :lat-a Lukr-in li sa:hibi-hi

Wrote Zaid -nom letter-obj thanking-gen to friend-obl-his-gen.

Al-shorfat notes the inadequacy of case as found in

Chomsky (1981) and (1986b) to handle the Arabic data.

Furthermore Arabic being a flat language (Cf. Chomsky 1986a) both Infl and V c-command NP1 (subject) and NP2 (object) and render the explanation of case unclear. Add to this that adjacency is not always satisfied.

Government explains case (in English at least) since case filter (80) would reject overt NPs Such as John when found in ungoverned positions as subject of an infinitival :

**(80)**

* NP without case

**(81)**

a. *___ seems John to be sick
b. John seems t to be sick

John is forced to move[6] to the initial position where it receives government-case. This does not seem to be the case in Arabic in which case is assigned at d-structure and is preserved throughout :

**(82)**

a. ?akala zajdun ruzan
   ate Zaid rice-obj
b. ruzan ?aakala zajdun
   rice-obj ate Zaid
c. ?akala ru:zan zajdun
   ate rice-obj Zaid

Al - Shorafat (1991) further presents minor categories such as Particles and complementizers as capable of case-governing just as major lexical categories are (cf. Chomsky (1981) and (1986b) :

**(83)**

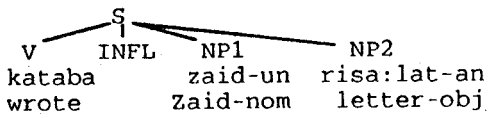
a/ Ka:na l-zaww-u ba:rid-an

Was the - weather-nom cold-obj

b. ?nna l-zaww-a ba:rid-un
that the - weather-obj. cold-nom.

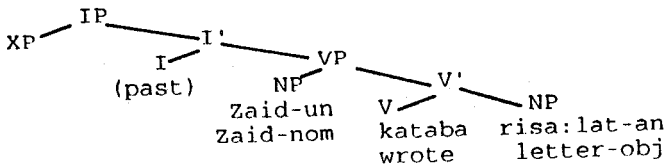
In an approach based on c-government by an m-commanding head, in terms of x-bar, the problems in Al-Shorafat (1991) simply evaporate. Consider (84) :

**(84)**




Al Shorafat (1991) notes the confusion of government in such a tree, and in terms of c-command. He wonders which is which: ie. which NP does v govern and which NP does INFL govern. In terms of x-bar and m-command we sugggest (85) :

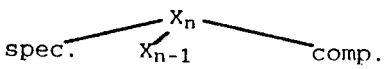
**(85)**




2.4. Noun Phrase or Small Clause ?[5]

Dealing with Arabic, Fassi Fehri (1985) suggests the x-bar represenation (86) :

**(86)**

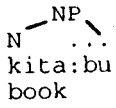



He assumes that Arabic is a head-first Language.

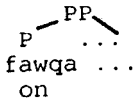
Supposedly a noun phrase would begin with a noun, a prepositional phrase would begin with a preposition, a sentence would begin with a verb, and so on and so forth...

**(87)**

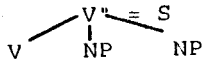
a.




b.

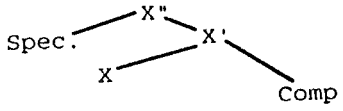



c.




Fassi Fehri's (1985) and (1990) X-bar branchings go against the main stream of most generat ive grammarians, who have adopted the binary branching framework as in (88) :

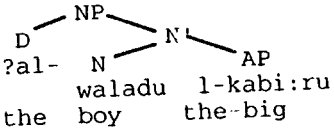
**(88)**



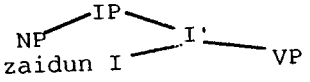

This can be illustrated in (89) :

**(89)**

a.




b.



There is another area of confusion concerning (Arabic) nominals. Chomsky (1986a) assumes that typical small Clauses (SCs) have a structure of the form (90) :

**(90)**

They consider (xp John (AP intelligent ))

Here XP is a projection of intelligent (so it is some sort of Adjectival phrase). Its specifier is John . It receives its ø-role from the head intelligent .

Dealing with Arabic SCs, Chouata (1992) suggests an X-bar approach based on lexical subcategorization of 'embedded propositions' (sic) :

**(91)**

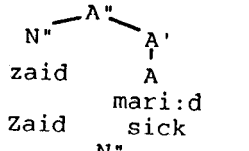
a. mari : d, Adj : NP (ADJ' ___)
sick +ø

b. ?usta:d, N : NP ( N'___)
teacher + ø

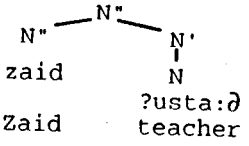
These would have the following configurations

**(92)**

a.




b.

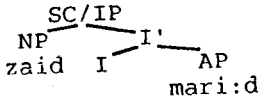



There are many loopholes in Chouatta (1992) . But we will focus on one only. A discrepancy which seems to be shared by many linguists (cf. Haegeman 1991), Chomsky (19988886a) and others) namely the mixing of NPs and

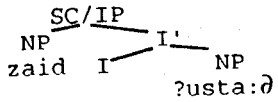
SCs. We consider both (92a) and (92b) above as SCs - eventually IPS ( Cf. Fassi Fehri 1990) :

**(93)**

a.



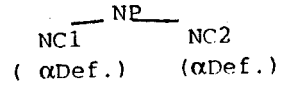

b.



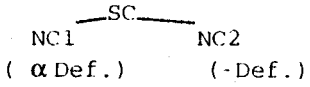

The solution we suggest, to clear away the confusion between NPs and SCs is to postulate the following diagram (94) for both constructions - the criterion being definitenese :

**(94)**

a.




b.



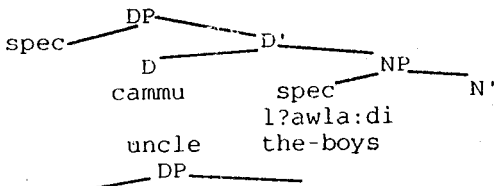

Both NPs and SCs consist of two nominal constructs NC1 and NC2. The crucial difference between them is that the second nominal construct (NC2) of an SC is always indefinite while in an NP the two nominal constructs must agree in (in) definiteness. An NP will have the feature (a Def.) shared between its nominal constructs (NC1 and NC2).

## 2.5. QP hypotheeie (and demonstratives)

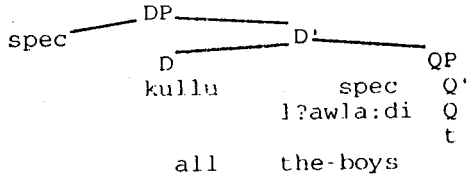
Another redundancy affecting nominal structures is the Qp phrase usually attached to the right (or left) of NPs. consider the following configuration from Benmamoun (1993) :

**(95)**

a.




b.




Benmamoun considers cammu + NP and Kullu+QP as construct states (CSs) following Aoun 1978) and others ) . The head noun carries the case assigned to the whole projection NP (?) and in turn assigns genitive case to the NP following it. In (95a) cammu carries the nominative case of the whole DP and in turn assigns genitive case to its complement NP. Similary Kullu carries nominative case of the whole DP and assigns genitive case to its complement QP.

In both cases Benmamoun assumes Head - to - Head movement (?), but fails to determine the nature of the specifier of NP, QP or even DP (this, recall was done to justify stowell's specifier hypothesis, alias, Chomsk's X-bar principle (B) ) .

We assume a much simpler option which consists of considering Q as a c-governing noun (96b), and eliminating DP for the above stated reasons :

**(96)**

a. Kullu n-na:s-i
   all the - people - gen
b. za : ?a 1-kullll-u/1 - walad-u/da : lika
   came the - all-nom/the - boy - nom / that-nom

QPs and DPs have the GF of NPs and will be considered so.

## 3. LOGICAL FORM ( Bound Variables)

The general organization of the GB moder is taken to be as in (97) :

**(97)**

d-s ___ s-s ___ LF

Where d-s is deep structure, s-s is surface structure, and LF is logical form. The interpretation of arguments' reference is fixed according to Chomsky's (1980)'s indexing principle (98) :

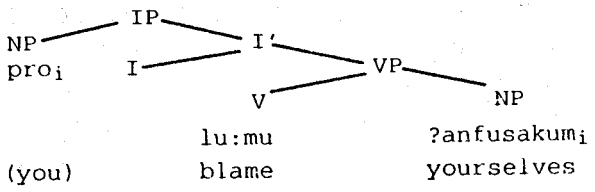
**(98)**

Every anaphor (ie. element requiring an antecedent ) must be referentially coindexed at (LF and / or ) s-s with an element that c-commands it. As in (99) :

**(99)**

a. Zaidi ra?a : nafsa-hui
Zaid saw himself

b.




In chomsky (1981) a governing category (NP or S) is postulated as a domain for (co) indexing (see above). Binding principle (B) is concerned with overt pronominals, essentially. The latter are necessarily case marked and hence assigned to a governing category in which they have a disjoint reference :

**(100)**

a. daxala Zaidun (maktaba - hu )
entered Zaid office - his

b. Jadunnu zaid (cp ? anna-hu dakiij)
thinks Zaid that - he clever

c. *jatawaqqacu Zaid ? an (pro jara:-hu camr)
excepted Zaid see - him Amr

In each case the clitic - hu cannot be coindexed in its governing category (NP, s, ...) A sSubstitution of nafsihi 'himself' for the clitic would not work either.

In Chomsky (1982) the following table is suggested to deal with (full and empty) arguments' (co) reference (100):

**(101)**

| EC | ANAPHORIC | PRONOMINAL | FULL |
|---|---|---|---|
| wt - trace | - | + | R-expression |
| Np trace | + | - | anaphor |
| Pro | - | + | pronoun |
| PRO | + | + | |

This table expresses a basically semantic approach to the categorization of empty categories : "suppose that the EC is locally bound by an element in a ø bar position. Then it is (-pronominal), either (-anaphor) if the local binder is A-bar position or (+anaphor) if the local binder is A-bar position. Suppose that the EC is free or locally bound by an element in a ø-position. Then it is (+pronominal), just in case of an overt category with these properties" (Chomsky 1982), illustrated in (102) :

**(102)**

a. mani ra?a : - hu Zaid ti
who saw-him Zaid

b. hudimati 1-madi : natui ti
destroyed the city
c. Pro za : ?a
(he) came
d. they wanted (PRO to live for ever )
e. Kulla laj ? in (zacalna : - hu x ) mina 1-ma : ?
every thing made - we - it from the - water

The ECs in (102a) and (102e) are A-bar anaphors while the others are A-anaphors. Using standard logic, Aoun (1986) tries to collapse A - and A - bar anaphors. He notes that x in (102e) for instance, is a variable bound by the wh-word kulla "all" just like t, bound by man "who" . The two can be assimilatted to one instance of bound variable. This move does indeed embody a strong empirical claim : it unifies two classes of elements which exhibit similar properties. Consider (103) :

**(103)**

a. man tuhibbu - hu ?ammuu-hu
who she-love-him mother - his
b. ?ummu-hu tu - hibbu Kulla wa:hid
mother-his she-loves every one

In (103a) the clitic pronoun -hu can be bound (in one reading) by man 'who' but cannot be bound (except in inclusion, perhaps) by the quantifier kullu in (103b).

Borer (1989) similarly claims to unify pro and PRO : reducing the latter to the former and defends Manzini's (1983) claim of unity between A- and A-bar anaphors.

**NOTES**

1. William of Occam : English nominalist philosopher who stood against the Pope in the 14 c. He defended that entities should not be multiplied beyond necessity.

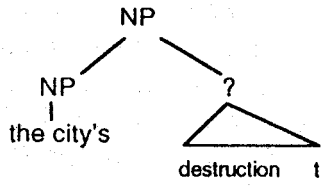
2. Thanks to X-bar theory, lexical categories can be limited to the minimum and phrase structure rules can be dispensed with entirely (Chomsky 1986b) vs Fassi-Fehri (1990, p.48) :

a. I"" -- D" I'
b. D" D" D'
c. I' I V"

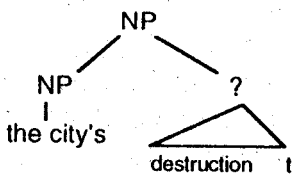
... etc ...

3. For Binding theory the mother should be taken to be any branching node otherwise NPs a) and b) would violate Binding conditions :

a)

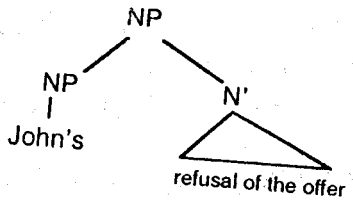



b)




a) Violates condition C)
b) Violates Conditions B (Chomsky,p.8)
c) an R-expression is free B) a pronominal is free in its GC (A is the governing category for B if A is the minimal category containing B and a governor of B, where A = NP or S (Chomsky1981, p.188)

4. Chomsky 1986b does refer to genitive when dealing with the following NP:




He assumes that if sisterhood is defined in terms of lexical projections, the subject will be indirectly ø marked by the head of a nominal (or a gerundive) such as refusal.

5. Small Clause seems to be a constellation of phrase categories :

a) I thought (AP John unhappy )
b) I thought ( NP John a great friend )
c) I expect ( pp John leave )
d) I saw ( VP John leave )

( Haegeman 1991, P.481)

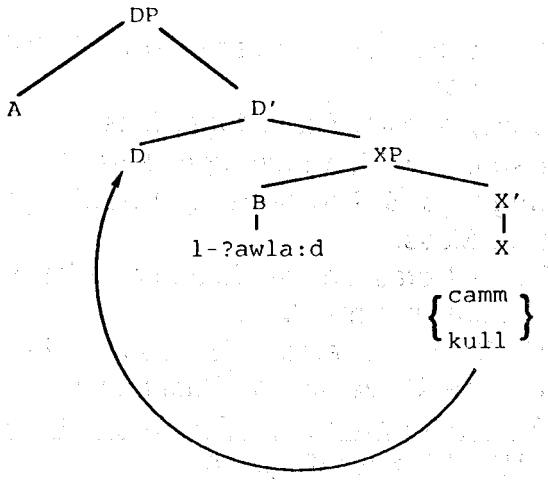
6. No movement transformation can downgrade constituents because every moved constituent must c-command each one of its traces at s-structure

(Radford 1988,p.564)

7. Stowell (1989, p. 240) noted that the pocessor role may not be assigned to PRO :

* John bought (PRO's book)

8. Benmamoun assumes that the CS (in Arabic) is basically a DP the C-governor of which is base generated as complement of D- namely NP and then gets moved up to D as follows :



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