X-bar syntax

Universal inventory:

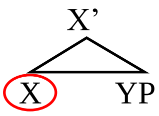
CAT is a set of possible categories.

TRIANGLE is the set of possible triangles.

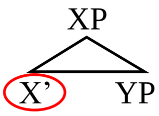
TRIANGLE = {COMP[X,Y], SPEC[X,Y], MOD[X,Y]: X, Y ∈ CAT}

where:

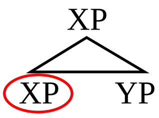
COMP[X,Y] =



SPEC[X,Y] =



MOD[X,Y] =



(Encircled is the head)

BASE = {<α,*l* >, <α,*r*>: α ∈ TRIANGLE}

A grammar for language L is a pair $<C_L, S_L>$,
where C_L is a catagory assignment to the lexical items of L (a relation between LEX_L and CAT)
and S_L is a syntax for L.

A syntax S_L for language L is a subset of BASE.

We define, for α ∈ TRIANGLE, β ∈ {COMP, SPEC, MOD}

$\alpha =_L l$ iff $<\alpha, l> \in S_L$ and $<\alpha, r> \notin S_L$
$\alpha =_L r$ iff $<\alpha, r> \in S_L$ and $<\alpha, l> \notin S_L$
$\alpha =_L \perp$ iff $<\alpha, l> \in S_L$ and $<\alpha, r> \in S_L$
$\alpha =_L 0$ iff $<\alpha, l> \notin S_L$ and $<\alpha, r> \notin S_L$

$\beta_L = \{<X,Y>: \beta[X,Y] \neq_L 0\}$

Grammar G_L for language L determines T_{G_L}, the tree set of G_L.

1. $\alpha \in LEX_L$ and $<\alpha,C> \in C_L$ iff

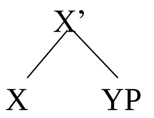
$\in T_{G_L}$


$\in T_{G_L}$

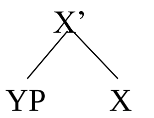

$\in T_{G_L}$

Plus pruning conditions: we can prune unary branches up to the highest node.

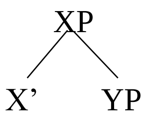
2.

$<COMP[X,Y], l> \in S_L$ iff =


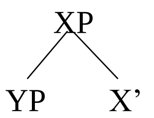
$\in T_{G_L}$

$<COMP[X,Y], l> \in S_L$ iff =


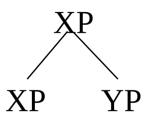
$\in T_{G_L}$

$<SPEC[X,Y], l> \in S_L$ iff =


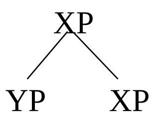
$\in T_{G_L}$

$<SPEC[X,Y], l> \in S_L$ iff =


$\in T_{G_L}$

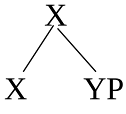
$<MOD[X,Y], l> \in S_L$ iff =


$\in T_{G_L}$

$<MOD[X,Y], l> \in S_L$ iff =


$\in T_{G_L}$

With this the specification
$COMP[X,Y] =_L l$ means that $<COMP[X,Y], l> \in S_L$ and $<COMP[X,Y], r> \notin S_L$, and this means that the tree set T_{G_L} contains the tree, with the head X left of its compement YP



With this the grammar constraints of, say, English are specified in a simple way:

$<V,D> \in COMP_{ENGLISH}$	V takes DP complements
$<I,V> \in COMP_{ENGLISH}$	I takes VP complements
$<I,D> \in SPEC_{ENGLISH}$	I' takes DP specifiers
$<C,I> \in COMP_{ENGLISH}$	C takes IP complements
$<D,N> \in COMP_{ENGLISH}$	D takes NP complements
$<N,A> \in MOD_{ENGLISH}$	NP takes AP modifiers
$<N,C> \in MOD_{ENGLISH}$	NP takes CP modifiers
$COMP[V,D] =_{ENGLISH} l$	The head V is left of its DP complement
$COMP[I,V] =_{ENGLISH} l$	The head I is left of its VP complement
$SPEC[I,D] =_{ENGLISH} r$	The head I' is right of its DP specifier
$COMP[C,I] =_{ENGLISH} l$	The head C is left of its IP complement
$COMP[D,N] =_{ENGLISH} l$	The head D is left of its NP complement
$MOD[N,A] =_{ENGLISH} r$	The head NP is right of its AP modifier
$MOD[N,C] =_{ENGLISH} l$	The head NP is left of its CP modifier