CHAPTER 2

THE FRAMEWORK

2.0 Introduction

The aim of the present thesis is to investigate the existence and properties of the 'third' position for a *wh*-phrase within the framework of the minimalist program. Before considering them, however, this chapter is devoted to clarification of the framework.

The minimalist program is a research program advanced by Chomsky (1993), and developed by the subsequent works such as Chomsky and Lasnik (1993) and Chomsky (1995). The minimalist program holds the following thesis:

(1) Language is an optimal solution to legibility conditions. (Chomsky (1998:9))

Given the strongest minimalist thesis above, all the linguistic devices that have been assumed in the previous studies are strictly scrutinized and inspected as to whether they are really essential to the interpretation of language, or whether they are present as an optimal device for a language design. The minimalist reductionism has hence excluded many concepts such as D-structure, S-structure, and Agr as ones that do not have to do with legibility.

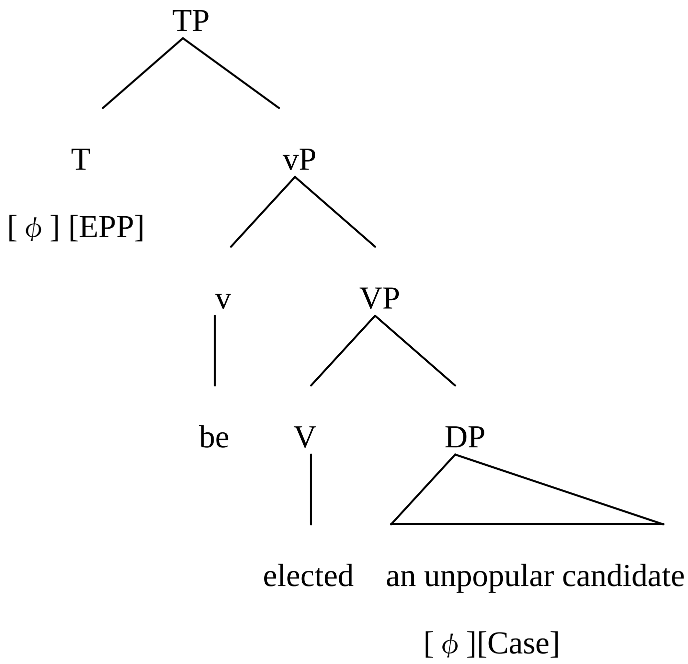
This 'minimalism' is further developed in Chomsky (1998, 1999). This chapter reviews his conception, and considers how it can be applied to real data. I do not intend to draw a full sketch of the new framework, but rather concentrate my attention on the two notions newly introduced to the framework. In section 2.1, I consider the notion of *Agree*, which takes the place of feature movement and leads to a derivation of strict one cycle. In section 2.2, I take up the other notion, i.e. a derivation by *phase*, and show how this new notion explains a syntactic derivation, especially as to locality of movement. The discussion there shows that the locality consideration of Chomsky (1995) is not sufficient to explain the wide range of locality effects, which leads to a discussion in section 2.4. In section 2.3, I refer to the notion of `occurrence'. Although it has been already suggested by Chomsky (1995), the notion becomes crucial in the present framework. In section 2.4, then, I consider how to restrict locality effects in the present framework. I propose that (most of) locality effects should be judged at an LF representation, and that Beck's (1996) quantifier-induced barrier (QUIB) analysis, modified for the present framework, can restrict locality.

2.1 Feature Checking by Agree

Here I consider how uninterpretable formal features are checked off in the framework of Chomsky (1998, 1999). In Chomsky (1995) or other minimalist studies, feature checking always requires overt/covert movement. When an attractor (or, ‘probe’ in the present terminology) bears an uninterpretable feature, it attracts a matching feature of an attractee (or, ‘goal’) to its checking domain. In Chomsky (1998), however, features are checked without movement. Suppose for instance that the derivation has reached the stage below:

(2) T be elected an unpopular candidate (Chomsky (1998:37))

(3)



T bears two kinds of uninterpretable features: [ϕ] and [EPP]. The ϕ-features can be regarded as a *probe* that seeks a *goal*, i.e. 'matching' features, where matching means feature nondistinctness. Accordingly, the (unvalued) ϕ-features on T match with the ϕ-features on *candidate*. Under matching, the relevant uninterpretable features are assigned their values and deleted. Those valued-and-deleted features are the ϕ-features of T, and the Case-feature on the goal since Case is taken to be 'a reflex of an uninterpretable ϕ-set' (Chomsky (1998:37)). A series of feature matching and deletion are called *Agree*. Since T also bears [EPP], it must be satisfied as well. According to Chomsky, it is deleted by merging with itself a phrase determined by the agreed goal. In the above case, the moved phrase is DP (*an unpopular candidate*). In consequence, Agree and Move to check off the uninterpretable features will yield the sentence *an unpopular candidate T-be elected*.

Notice that EPP has nothing to do with feature-checking between a probe and a goal under Chomsky (1998, 1999). EPP just means that it induces dislocation. Every functional head that causes movement is said to bear an EPP feature. For instance, *v* bears EPP when overt object shift takes place, and C bears EPP when overt *wh*-movement takes place. Or, v and C may also bear EPP to induce successive cyclic movement which will be discussed in the next section. Feature-checking is done by Agree, and Agree holds without movement, as long as a probe and a goal are in the c-commanding relation.[1] The presence/absence of movement of the agreed goal is another story, which depends on the presence/absence of an EPP-feature on the probe.

Since there is no feature movement any longer, there is no need for covert syntax, either. With no covert syntax, a syntactic derivation is computed in strict one cycle. If we follow the strict one cycle hypothesis, then, we will expect no covert (i.e. feature) movement of in-situ *wh*-phrases. They must mark their scope in some other way.

2.2 A Derivation by Phase

Chomsky (1998, 1999) also proposes another notion: derivation by *phase*. Let us consider how the introduction of this notion changes the account for a syntactic derivation, with a special reference to a locality effect.

Before considering it, however, let us first review how locality is accounted for under Chomsky (1995), and consider its potential problems.

2.2.1 Before Phase: Locality in Chomsky (1995) and Its Problems

As long as we follow the minimalist framework of Chomsky (1995), (at least some) locality effects can be reduced to a violation of Minimal Link Condition (MLC), which is finally incorporated into the definition of Move/Attract.

(4) K attracts F if F is the closest feature that can enter into a checking relation with a sublabel of K. (Chomsky (1995:297))

Let us take the following structure for this illustration:

(5) a. [$_{CP}$ C [$_{TP}$ you wonder [$_{CP}$ *whether* John bought *what*]]]

[strong wh] ([wh]) [wh]

b. ??*What*$_1$ do you wonder whether John bought t_1?

In (5a), matrix C bears a strong *wh*-feature and attracts the closest matching feature to its SPEC. The closest candidate turns out to be *whether* in SPEC of embedded C. However, it is not suitable as an actual attractee since it has already its *wh*-feature deleted. Attraction from matrix C then skips over *whether* and applies to *what* in object position, yielding (5b). Since this attraction skips over the potential candidate, it causes a violation of the MLC and results in a highly degraded sentence.

Although explaining a locality constraint in terms of the MLC seems to work out at first glance, it is not without problems. For one thing, since the MLC is incorporated into the definition of Move/Attract, as shown in (4), a violation of the MLC is in fact impossible: in (5a), for instance, once matrix C seeks out the closest candidate, i.e. *whether*, its search domain is not extended any further. That means that object *what* is never visible to matrix C, and that hence long-distance movement of *what* as in (5b) never occurs. Apparently, this explanation is in conflict with the judgment '??' assigned to (5b).

Moreover, the MLC analysis does not explain why covert movement can move out of islands, whereas overt movement cannot. Consider the following examples:

(6) a. Who wonders [$_{\#}$ who bought *what*]? ＃: *wh*-island

b. Who met [$_{\#}$ a man that wrote *what*]? ＃: complex NP island

The bracketed phrase in each example serves as an island for overt *wh*-extraction. However, the italicized in-situ *wh*-phrase can take matrix scope over the island. If scope-marking requires covert movement of the in-situ *wh*-phrase, why can the covert movement cross the island boundary? Or, if the in-situ *wh*-phrase can mark its scope without movement, e.g. by unselective binding from matrix C, how is it possible across the island boundary? Chomsky (1995) does not make these points clear.

There have been several attempts to account for locality constraints within the minimalist framework of Chomsky (1995). Some of the previous analyses attempt to reduce locality to chain conditions. (Cf. Kitahara (1997), Ochi (1998), and Kobayashi (1999)) The attempt itself has been made since GB literature, though, e.g. by Rizzi (1990), Cinque (1990), and Manzini (1992). For instance, a distinction between argument and adjunct chains accounts for argument-adjunct asymmetry as to locality, and a distinction between overt and covert chains accounts for overt-covert asymmetry as to locality. It is not my attempt to discuss each of these previous analyses here. I just point out that these minimalist/GB analyses are not free from problems: (i) the accounts are more or less circular in that a stipulation (chain asymmetry) explains the relevant facts (locality asymmetry) and the facts in turn assure the stipulation, and (ii) the analyses cannot produce the general picture of locality. For instance, Kitahara's analysis can explain argument-adjunct asymmetry, but cannot deal with overt-covert asymmetry. Ochi's analysis can explain overt-covert asymmetry, but not argument-adjunct asymmetry. Manzini's analysis can make a correct prediction for weak-strong island asymmetry and for argument-adjunct asymmetry, but cannot say anything for overt-covert asymmetry.

2.2.2 A Phase as a Derivational Unit and a Minimality Barrier

Let us now turn to Chomsky's (1998, 1999) second major innovation, a derivation by phase. Under Chomsky's (1995) design, a syntactic derivation is processed continuously. Moreover, an attractor (or, probe) can extend its search domain any further, as long as it does not skip over its potential candidate. Under Chomsky's (1998, 1999) design, on the other hand, a derivation is divided by phases, and a phase serves as a kind of barrier to the outside phase. Let me illustrate the new derivation with example (7) below.

(7) *Who* do you think that John likes *t*?

As a first step, all lexical items (LIs) needed for forming the sentence are picked up from Lexicon and stocked in Lexical Array (LA). Suppose that LA has formed a set like (8):

(8) LA = {do, you, think, that, John, like(s), who, v*, v*, T, T}

(‘v*’ stands for a light verb with a complete set of ϕ -features.)

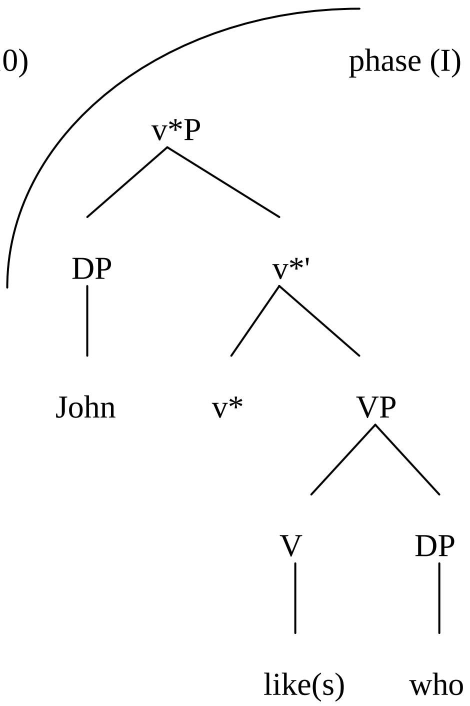
Unlike Chomsky's (1995) design, a syntactic derivation cannot have a direct access to LA. LA is divided to subarrays, each of which is large enough to form one phase. Chomsky (1999) suggests that the phases are propositional, and that v*P (proposition) and CP (force) constitutes strong phases. Then LA in (8) is divided into four subarrays as shown below:

(9)	a phase to be constructed
a. LA (I) = {v*, John, like(s), who}	embedded v*P
b. LA (II) = {that, T}	embedded CP
c. LA (III) = {v*, you, think}	matrix v*P

d. LA(IV) = {do, T}   matrix CP

A derivation has an access to a single subarray. In a bottom-up fashion, a derivation has a first access to LA (I) in (9a), which will yield the most deeply embedded phase, i.e. embedded v*P. The first derivation with LA (I) at length yields a structure like (10) below:

(10)

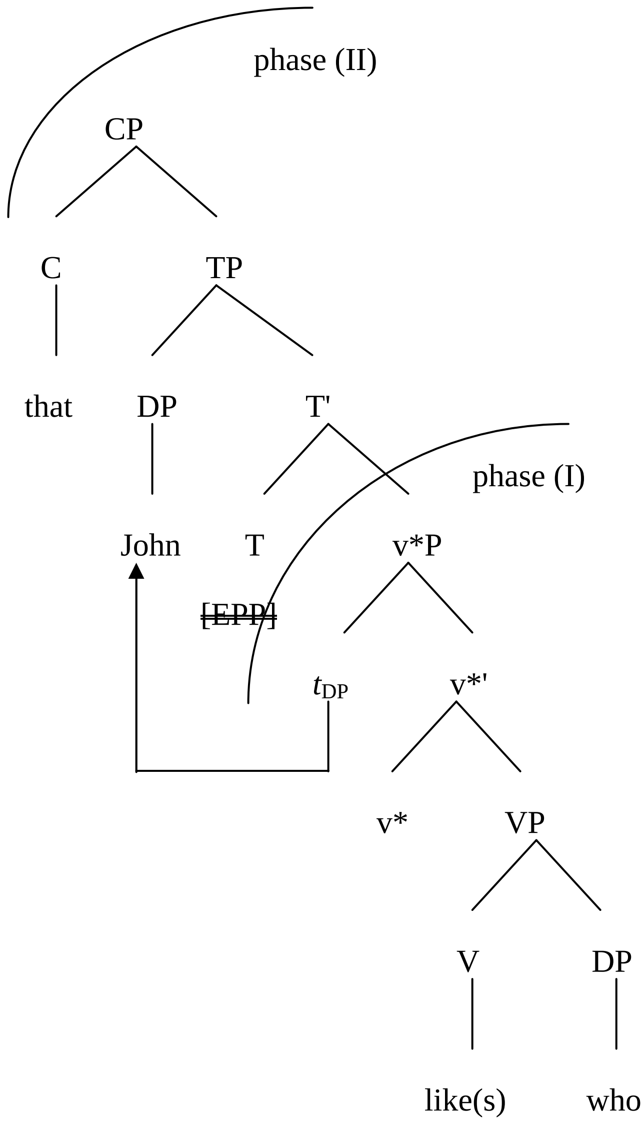


LA (I) = {   }

When the derivation has used up the content of LA (I) and all possible Agree/Move operations have been finished, the first derivation is completed, and yields a phase v*P.

Subsequently, the derivation has an access to the second subarray, LA (II) in (9b). The derivation then continues with LA (II), and at length yields another phase CP, as demonstrated in (11) below:

(11)

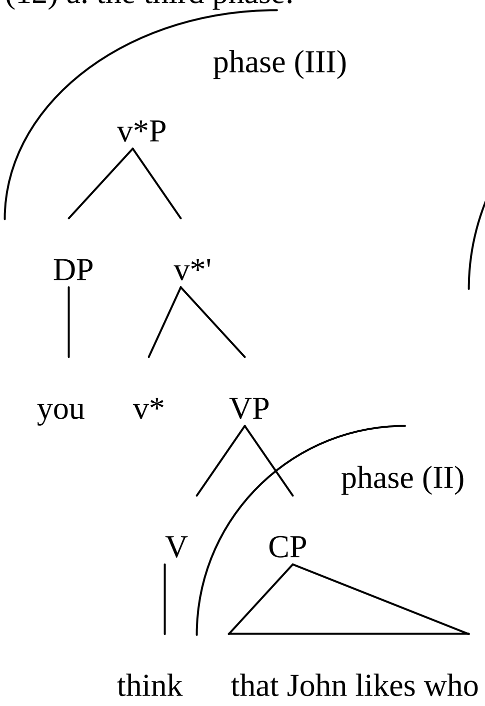


LA (II) = { }

The second derivation involves Move: when T is merged, DP in SPEC-v* is moved to subject position to delete the EPP feature on T. (I do not consider locality of movement over phases here, which will be discussed shortly.) Having finished all possible Merge and Move operations, then, the second derivation is completed, and results in the second phase, embedded CP.

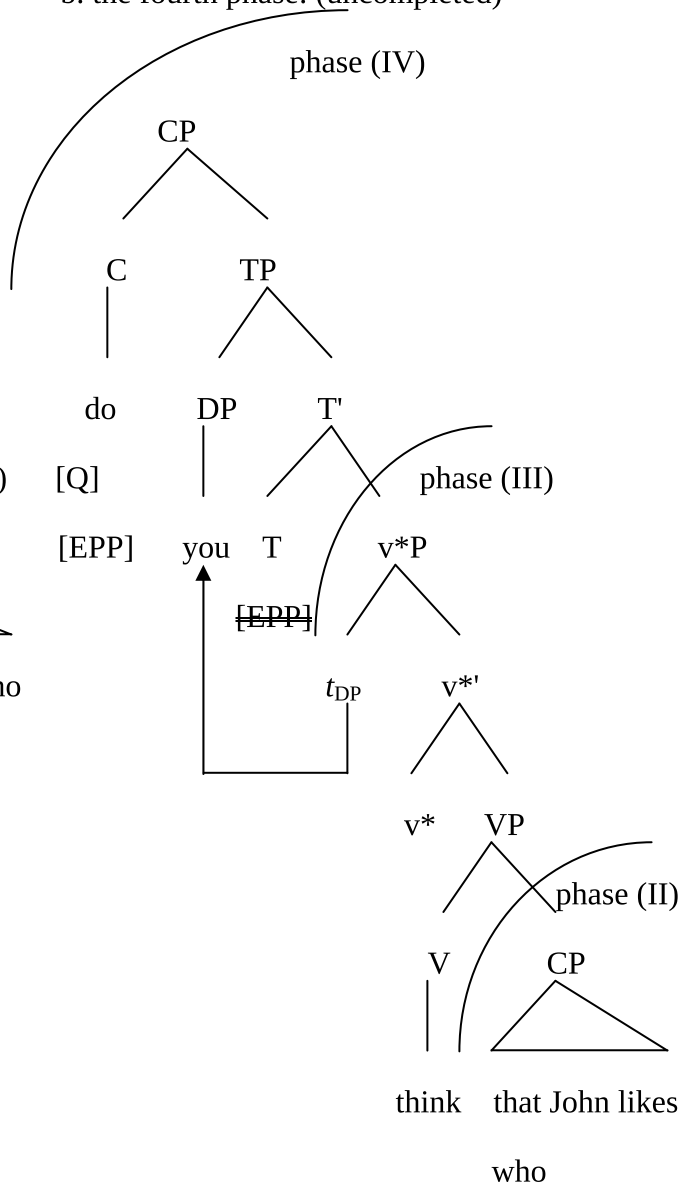
In a similar fashion, LA (III) in (9c) yields the third phase, matrix v*P, and LA (IV) in (9d) yields the fourth phase, matrix CP. The resultant structures are demonstrated as (12a) and (12b), respectively.

(12) a. the third phase:



LA (III) = { }

b. the fourth phase: (uncompleted)



LA (IV) = { }

The fourth phase CP is yet to be completed, since uninterpretable features [Q] and [EPP] on matrix C are not deleted yet, which will be discussed shortly.

The introduction of phase is motivated by the strongest minimalist thesis (1), which seeks for an optimal language design. Part of optimality is that derivational complexity should be avoided as far as possible. If a syntactic derivation has an access to a phasal subarray (each of ((9a-d)), instead of the whole LA ((8)), then complexity is highly reduced.

A notion of phase has to do with another reduction of derivational complexity: if we assume that (the complement domain of) a phase forms a kind of minimality barrier, a probe will not need to undertake an endless inquiry in search of the matching feature. Chomsky (1999) formulates the boundary by the condition (13), when a structure like (14) is assigned:

(13) The domain of H is not accessible to operations at ZP, but only H and its edge.

(Chomsky (1999:10))

(14) [$_{ZP}$ Z ... [$_{HP}$ α [H YP]]]

(ZP and HP are phases, and α (SPEC or adjunct of HP) is an edge of H.)

If Z is a probe, its searching stops at H, and never enters into YP: even if there is a matching goal in YP, the probe just cannot see it. (Compare it with Chomsky's (1995) attraction, in which a probe must seek unboundedly until it seeks out its matching feature.) In this way, a barrier-like property of a phase reduces the complexity of a search domain.

Notice that subject-raising shown in (11) and (12b) observes the locality constraint (13). A probe T has access to DP in SPEC-v*, which is an edge position of the lower phase v*P. Therefore subject raising takes place legitimately.

A question arises as to *wh*-movement. In (12b), for example, matrix C bears Q- and EPP features and hence requires overt movement of a *wh*-phrase in the embedded clause. However, matrix C cannot see *who*, since the *wh*-phrase is far below C's possible search domain:

PH(IV) **PH(III)** **PH(II)**

(15) $[_{CP}$ C $[_{TP}$ you T $[_{v*P}$ t_{SUBJ} v* $[_{VP}$ think $[_{CP}$ that John likes *who*]]]]

[Q][EPP] [Q]

←possible search domain for C →

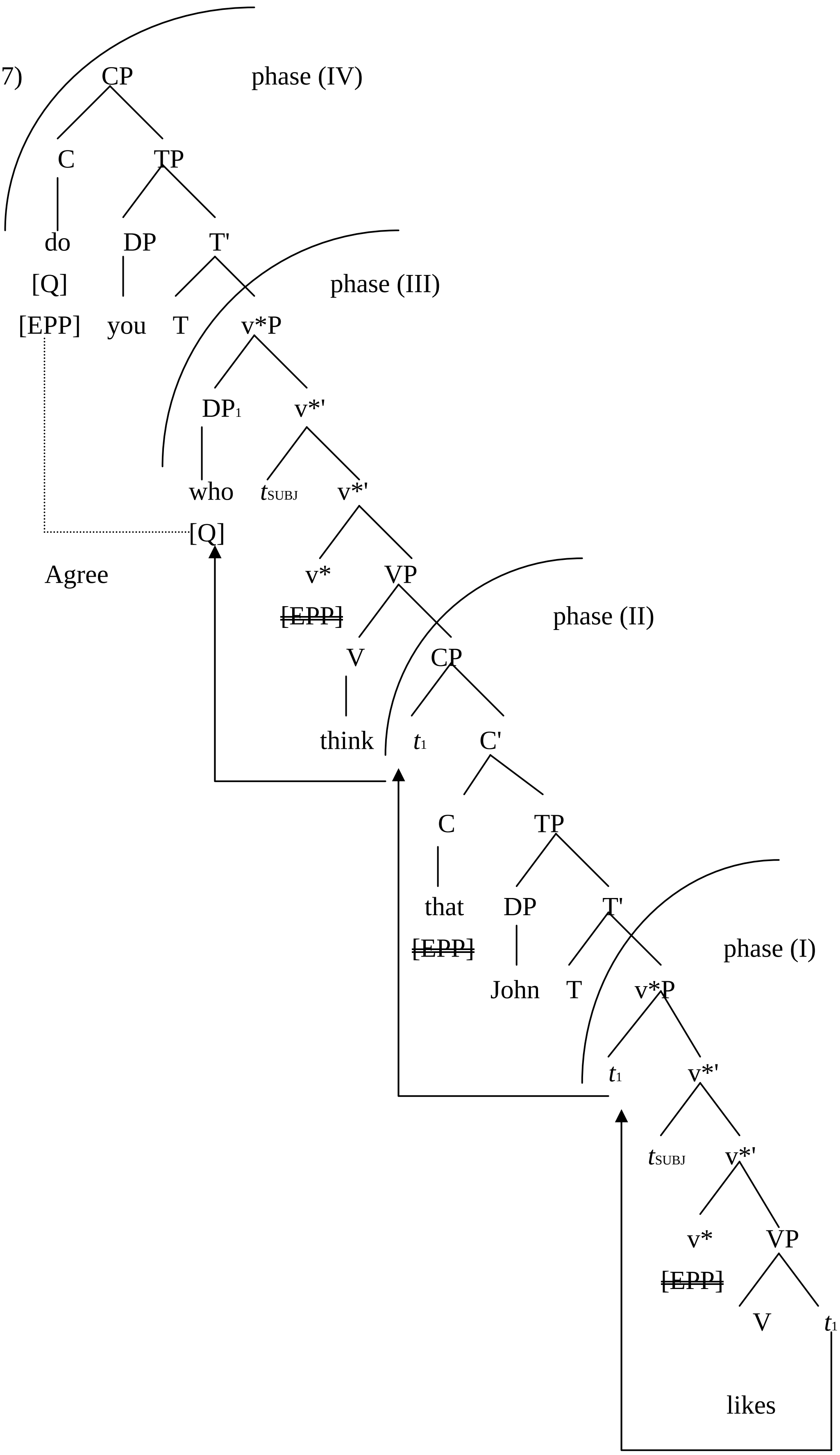
In (15), since matrix C cannot have access to *who*, it would be incorrectly predicted that long-distance movement of *who* is impossible. To avoid the problem, then, we need to assume that a phase is not an absolute barrier but there is a way to move out of it. Chomsky (1998, 1999) proposes that v* and C bear an optional EPP feature so that they can attract a *wh*-phrase to their edge position. Optionality of EPP-assignment is constrained by the following condition:

(16) Optional operations can apply only if they have an effect on outcome: .... v* may be assigned an EPP-feature to permit successive-cyclic A'-movement ...

(Chomsky (1999:28))

To make possible successive-cyclic movement of *who* to SPEC of matrix C in (7), each phasal head in (10)-(12) should have had an optional EPP-feature and attracted *who* to its edge position. If the derivation proceeds with such optional EPP-features, then, the derivation yields the following structure instead of (12b):

(17)


CP
phase (IV)
C
TP
do
DP
T'
[Q]
phase (III)
[EPP]
you
T
v*P
DP1
v*'
who
tSUBJ
v*'
[Q]
Agree
v*
VP
[EPP]
phase (II)
V
CP
think
t1
C'
C
TP
that
DP
T'
[EPP]
phase (I)
John
T
v*P
t1
v*'
tSUBJ
v*'
v*
VP
[EPP]
V
t1
likes

At this point of the derivation, the matrix C can 'see' its goal *who*, which occupies the edge position of the immediately lower phase. Therefore Agree between matrix C and *who* observes locality, and so does the succeeding *wh*-movement to SPEC-C to delete the EPP-feature on matrix C.

2.3 From a Chain to an Occurrence List

In this section I clarify the notion of chain/occurrence proposed by Chomsky (1999). Chomsky (1998) proposes that a lexical item is merged in the syntax only once, and that its 'movement' is just put down on its 'occurrence list'. LI's occurrence positions are expressed in an occurrence list, which is a new notion of chain. He assumes that an occurrence of K should be its sister. Consider the following example for the illustration:

(18) a. *John*$_1$ was killed t_1.

b. $\{K_1, K_2\}$ (Chomsky (1999:32))

When we consider an occurrence list of K=*John*, the tail of the list, K_2, is a sister of K in a merged position, which is *kill*. Similarly, the head is a sister of K in a 'moved' position, which is T', or *T-be killed John*. In Chomsky (1999), however, it is proposed that occurrence can be made into an asymmetric notion. That is, an occurrence of K is its 'mother'. This alternative is introduced to avoid using a bar-level constituent as a syntactic unit. If we follow this alternative, then K_2 corresponds to VP *kill John* and K_1 to the whole TP.

I follow this new notion of occurrence, and describe an occurrence list for *John* in (19) as following:

(19) {<u>TP</u>, <u>VP</u>}

Underlining an occurrence is my invention. It indicates that the underlined occurrence is 'overt'. It is a merged, or a moved position. I utilize underlining to make distinction between a merged/moved occurrence and the other kind of occurrence, i.e. one created by Agree, which is argued for below.

At a glance, the introduction of an occurrence list seems to be a minor change of a conventional notion of chain. However, there arise two questions as to this new notion. One is concerned with 'feature movement' or, to put it in the present terminology, a relation established through Agree. The other question is concerned with intermediate occurrences. I consider each question in turn.

The first question concerns how to maintain 'feature chain' effects under the Agree system. If an occurrence list only contained moved positions, a probe-goal relation made by Agree would not be reflected in the occurrence list. This gives rise to a few problems. Below I point out two of these empirical problems that should arise under the 'Move-only' occurrence notion.

First, it has been argued that the landing site of a 'feature' functions as a binder. Observe the following examples:

(20) a. The DA [proved [the defendants to be guilty] during each other's trials].

b. *The DA [proved [that the defendants were guilty] during each other's trials].

(Chomsky (1995:272))

In each example, the anaphor *each other* should be bound by its antecedent, *the defendants*. The contrast in grammaticality between (20a) and (20b) has been attributed to the fact that whereas the antecedent in (20a) makes a relation to the matrix element for a Case reason, that in (20b) does not. In the framework of Chomsky (1995), the relation is reflected in a feature chain. (A set of) formal features of *the defendants* are moved and adjoins to matrix Vb (v plus V), and from the landing position it binds *each other*. This kind of explanation is no longer possible in the present framework, since there is no such thing as 'feature movement'. In (20a), a Case relation between the matrix verb and the ECM object is established by Agree, with no movement involved. If Agree caused no change in an occurrence list of an object, the object could not bind *each other*.[2]

The second empirical problem concerns 'partial' *wh*-movement observed in many languages such as German, Hindi, Iraqi Arabic, Ancash Quechua, Slave, and Romani (Gypsy). Here I take up German examples. (For the relevant data in the other languages, see McDaniel (1989), Dayal (1994), Müller (1996), and Basilico (1998).) Consider the following sentences:

(21) a. *Mit wem* $_1$ glaubt Hans [$_{CP}$ t_1 dass Jakob jetzt t_1 spricht]?
with whom think Hans that Jakob now is-talking
'With whom does Hans think that Jakob is now talking?'

b. *Was* $_1$ glaubt Hans [$_{CP}$ *mit wem* $_1$ Jakob jetzt t_1 spricht]?
WHAT think Hans with whom Jakob now is-talking
'With whom does Hans think Jakob is now talking?' (McDaniel (1989:569))

When a *wh*-phrase in an embedded clause has to mark wide scope, it can do it by successive-cyclic A'-movement to its scope position, as in (21a). Alternatively, it just undergoes a partial movement to SPEC of embedded C which is [-wh] and marks its scope by making some relation with a scope marker *was* in its scope position, as shown in (21b). The present framework will explain the derivation of (21b) in the following fashion. Matrix C bears a *wh*-feature and an EPP-feature. To delete the former feature, C agrees with *mit wem* which is moved to the edge position of the embedded clause.[3] To delete the latter feature, there are two possible options. One is to move *mit wem* to SPEC-C and the other is to merge *wh*-expletive *was* with C' (if a lexical array contains it). Since the latter option is simpler and hence more preferable, the latter option is taken in (21b).

Therefore, in the partial *wh*-movement construction (21b), matrix C and the partially-moved *wh*-phrase establish an Agree relation but no Move relation. Again, if an occurrence list contained 'Move-only' occurrences, what other mechanism would interpret the partially-moved *wh*-phrase to take matrix scope at the LF representation?

To avoid these possible problems which arise from a notion of 'Move-only' occurrence list, I propose that an occurrence list should contain a history of Agree as well as that of Move. Let us take (21b) for example and consider how the *wh*-phrase forms an occurrence list. For simplicity's sake I ignore v*P phases here. See footnote 3 for a precise derivation with v*P phases.

Before Agree with matrix C takes place, *mit wem* has moved to SPEC of embedded C to be accessible to the probe outside the phase, as demonstrated in (22a) below:

(22) a. [$_{CP}$ mit wem$_1$ C [$_{TP}$ Jakob jetzt t_1 spricht]?

~~[EPP]~~

b. {<u>CP</u>, <u>VP</u>}

This movement adds an occurrence CP to the occurrence list of *mit wem*, which yields an occurrence list like (22b). (Note the underline on CP to express an 'overt' occurrence.) Suppose that the derivation continues and forms a matrix CP structure as in (23a) below:

(23) a. [$_{CP}$ C .... [$_{CP}$ mit wem C .....]]

[Q] [Q]

Agree

b. {CP, $\underline{\text{CP}}$, $\underline{\text{VP}}$}

Matrix C agrees with *mit wem* in the edge of the lower phase. Since the EPP-feature of matrix C is to be deleted by merging A'-expletive *was*, *mit wem* undergoes no further movement. However, the relation of Agree with matrix C adds information to the occurrence list of *mit wem*, as shown in (23b).[4] (The occurrence is not underlined since it does not involve movement.) With (23b), the *wh*-phrase can take matrix scope at LF.

Now let us turn to the second question. Should intermediate occurrences be maintained in an occurrence list? Theoretically speaking, it is preferable to assume that an occurrence list does not contain intermediate positions. They are needed only for a mechanical reason, i.e. to cross over a phase. Information on intermediate positions is not necessary for an LF interpretation. In fact, intermediate occurrences might pose a problem for a proper interpretation of the occurrence list. An occurrence list with intermediate occurrences can tell *how* the lexical item has moved/agreed, but not necessarily *why* the lexical item has moved/agreed. Let me illustrate the point with the following example of improper movement:[5]

(24) a. * [$_{CP}$ Who$_1$ C [$_{TP}$ t_1 T-thought [$_{CP}$ t_1 that [$_{TP}$ there arrived t_1]]]

~~[EPP]~~ ~~[EPP]~~ ~~[EPP]~~

b. The occurrence list of *who* with an intermediate occurrence:

{CP, TP, CP, VP}

c. The occurrence list of *who* without an intermediate occurrence:

*{CP, TP, VP}

The movement paths of *who* in (24a) are fully legitimate in syntax. It bears two uninterpretable features, i.e. [Case] and [Q]. When embedded CP is closing as a phase, the *wh*-phrase undergoes movement to its edge position in order to be accessible to the outer probe. The subsequent Agree/Move operations hence observe locality. Therefore, illegitimacy by improper movement is to be excluded at LF representation, not in syntax.

If an occurrence list contained an intermediate occurrence of *who*, i.e. an occurrence in SPEC of the embedded C, the list would be (24b). With this kind of list, we cannot tell what causes illegitimacy to the list. If the intermediate movement to SPEC of embedded C were thought of as an instance of A'-movement, the movement would not violate any locality constraints. In other words, the presence of an intermediate occurrence in the list blurs illegitimacy of A-movement over a clause.

On the other hand, let us assume that an occurrence list does not contain intermediate occurrences made by the optional EPP-feature of a probe. In that case, we will obtain an occurrence list of *who* like (24c). Notice that an intermediate occurrence in SPEC of embedded C is deleted from the list. Given this list, we can tell what causes illegitimacy to the list. From VP occurrence, the immediate higher occurrence is TP. Accordingly, it is interpreted as A-dependency between TP and VP. Since A-dependency can never cross over a clause, the occurrence list (24c) is judged illegitimate, and hence (24a) is correctly excluded.

Therefore, to interpret legitimacy of a given dependency, there should not be an intermediate occurrence that blurs the type of a dependency. The discussion below adopts this conclusion and assumes that at an LF representation, intermediate occurrences are deleted from the occurrence list. For example, in (24b), the occurrence of embedded CP is deleted at the LF representation although it is the position where pronunciation of *mit wem* is applied at the PF representation.

To sum up the discussion in this section, an occurrence list is formed in the following way:

(25) a. An occurrence of K is written down as a mother of K in an occurrence list.

b. An 'occurrence' involves both mother positions created by Move and by Agree.

c. Intermediate occurrences are deleted at an LF representation.

d. Syntax forms an occurrence list, and a resultant LF representation evaluates its legitimacy, e.g. as to its locality.

e. To distinguish an occurrence of Move from that of Agree, the former type of occurrence is expressed with an underline.

Now that I have suggested the definition of an occurrence list, let us then consider how to constrain locality of an occurrence list.

2.4 Subjacency in the Minimalist Framework

2.4.1 Phase Does Not Regulate Subjacency

In section 2.2.2, I have shown how Chomsky's (1998, 1999) new framework explains locality of Agree/Move. Here I show that derivational locality itself is not sufficient to deal with 'island' effects. Moreover, an attempt to reduce all locality effects to a syntactic derivation bears a conceptual problem, too. I argue that what Chomsky has shown is a mere derivational, or mechanical locality, and the other locality constraint should be needed for LF objects, i.e. occurrence lists.

Firstly, let us consider how ill-suited Chomsky's locality is for the explanation of island effects. Consider the following sentence involving an *wh*-island violation:

(26) ??*What*$_1$ do you wonder whether John bought t_1?

It is clear that degradation in grammaticality is due to the movement of *what* which has skipped over its potential landing site, i.e. SPEC of embedded C already occupied by *whether*. However, under Chomsky's framework, it would be predicted that the long-distance movement of *what* causes no locality violation. Suppose that the derivation has constructed the embedded CP phase like (27) below:

(27) [$_{CP}$ whether C [$_{TP}$ John T [$_{v*P}$ *what* v* [$_{VP}$ bought (*what*)]]

[Q]

Suppose that the *wh*-phrase bears an uninterpretable feature [Q]. Then, *what* in (27) above needs to have the feature deleted. If *what* remained at SPEC-v* and the phase CP were completed, the *wh*-phrase would no longer be accessible to operations outside CP. Since there would no longer be possible operations to delete the uninterpretable feature of *what*, the derivation crashes. To avoid the situation, an optional EPP is assigned to the phasal head C, and attracts *what* to the outer SPEC-C, which is possible under the bare phrase structure hypothesis. Then the final structure of the phase CP will be (28):

(28) [$_{CP}$ *what* whether C [$_{TP}$ John T [$_{v*P}$ (*what*) v* [$_{VP}$ bought (*what*)]]

~~[EPP]~~

Since this movement is indispensable to a well-formed derivation, the optional assignment of an EPP-feature on C observes the condition (16). Moreover, movement over *whether* causes no locality violation since inner SPEC and outer SPEC are equidistant.

In this way, given an optional EPP feature and a multiple-SPEC hypothesis, *wh*-phrases can move out of a *wh*-island in a successive-cyclic fashion. Therefore, if we follow the new minimalist framework of Chomsky (1998, 1999) there is no way to explain island effects by means of syntactic constraints.

That does not mean that Chomsky's new design does not work well. The notion of phase is theoretically well-motivated. It might be that locality should not be constrained by phasal minimality, but by some interface condition(s). In fact, it is required on another empirical ground. It is well known that an island-violating step charges different penalties on the sentence. Movement out of a *wh*-island leads to degradation like '??', whereas movement out of a 'strong' island leads to total ungrammaticality ('*'). The subtlety of judgment is not suitable to a derivational mechanism. It can judge the derivation as 'convergent' or 'crashing', but not as 'degraded but convergent' or 'slightly degraded': such a mechanism would increase the complexity of computation. Therefore, I would like to argue that locality is a condition on an LF representation, constraining LF objects.

An attempt to constrain locality by a syntactic condition is given a conceptual criticism, too. In the minimalist framework, there are two kinds of constraints, derivational constraints which regulate the application of derivational operations, and representational constraints which decide the well-formedness of the LF representation. As Brody (1995) criticizes, if a well-formed derivation necessarily led to a well-formed representation, or, more specifically, if a legitimate movement necessarily led to a legitimate chain, legitimacy of a derivation and legitimacy of a representation would be highly redundant. It would be far from an optimal language design. Several previous linguists have tried to get rid of redundancy by excluding either a derivation or a representation. Brody (1995) claims that there should only be a representation, with no preceding derivations, whereas Epstein et al. (1998) claim that there should only be a syntactic derivation, with no resultant representations.

The present thesis follows the conventional assumption that there should be both a derivation and a representation, and in this design tries to reduce redundant notions. Specifically, I assume that well-formedness constraints on the derivation are substantially distinct from well-formedness constraints on the (LF) representation. I illustrate this point utilizing a *wh*-island situation shown above.

The discussion in section 2.2.2 above has shown that a *wh*-island no longer serves as an ‘island’ in a syntactic derivation: as demonstrated in (17), a *wh*-phrase can undergo a legitimate long-distance movement out of a *wh*-island, by way of outer SPEC of embedded C, which is an edge of the phase CP. Therefore, *wh*-extraction out of a *wh*-island observes a well-formedness condition on a syntactic derivation.

However, since I assume that syntactic constraints are different from representational constraints, the syntactically-legitimate *wh*-movement in (17) does not necessarily lead to a representationally-legitimate LF representation. In other words, *wh*-movement out of a *wh*-island should be judged illegitimate at the LF representation. I show how to exclude it in detail below, adapting Beck's (1996) QUIB analysis.

2.4.2 QUIB as an LF Constraint: Beck (1996) and Miyagawa (1999b)

Chomsky (1995) suggests that Relativized Minimality effects are reduced to a derivation principle, i.e. the Minimal Link Condition (MLC). In fact, locality on A- and head-movement is well accounted for in terms of the MLC. However, A'-dependencies created by *wh*-movement do not seem to obey the MLC, as shown in the discussion in section 2.2.1. Let us see the point again with the following example:

(29) ??*What*$_1$ do you wonder whether John bought t_1?

What has undergone a long-distance movement over *whether*. The resultant sentence is less perfect, but not completely ungrammatical. The degraded grammaticality is not predicted from the MLC, since the MLC is a derivational condition a violation of which smashes the derivation.[6] Therefore, the less grammatical status of example (29) should be attributed not to a derivational deviance, which automatically excludes the derivation, but to a representational condition which is relevant to the interpretation and thus likely to allow a 'degree' of acceptability.

Several recent works have suggested that Relativized Minimality or some condition like that should be maintained independently of the MLC in the minimalist framework. For example, Kobayashi (1998, 1999) proposes that whereas the violation of the MLC makes the sentence crash, the violation of Relativized Minimality just prevents the sentence from forming an LF object, i.e. an occurrence list. If a failed chain-formation is somehow recovered at the LF representation, the sentence converges (cf. Kitahara (1997)). Tanaka (1999) also assumes that Relativized Minimality should be maintained in order to account for the locality constraint observed in Japanese. Miyagawa (1999b) proposes a more sophisticated condition than Relativized Minimality, i.e. a quantifier-induced barrier (QUIB).

The notion of QUIB was originally proposed by Beck (1996). She argues that there is a barrier that blocks only covert movements. Consider the following German examples:

(30) a. **Wen* hat *niemand* *wo* gesehen?

whom has nobody where seen

‘Where did nobody see whom?’ (Beck (1996:1))

b. *Wo* hat *niemand* Karl gesehen?

where has nobody Karl seen

‘Where did nobody see Karl?’ (Ibid. p.5)

c. *Wen* hat *jeder* *wo* gesehen?

whom has everyone where seen

‘Where did everyone see whom?’ (Ibid. p.19)

If we assume that in-situ *wh*-phrases must move to their scope position in the covert syntax, (30a) indicates that the *wh*-in-situ cannot move over the negative quantifier *niemand* ‘nobody’. The contrast in grammaticality between (30a) and (30b) indicates that the negative quantifier only blocks covert *wh*-movement. Overt *wh*-movement over the negative quantifier in (30b) is fully acceptable. Moreover, the contrast in grammaticality between (30a) and (30c) indicates that not every quantifier induces a barrier. A universal quantifier such as *jeder* ‘everyone’ does not block covert *wh*-movement.[7]

Although Beck's findings are in fact interesting, her reasoning depends on the assumption that a *wh*-in-situ moves in the covert syntax. It is not tenable since there is no covert syntax in the present framework. However, the contrast between (30a) and (30c) bears an important implication: barrierhood is more relative than Relativized Minimality. Since QR in the covert syntax is no longer available, the negative quantifier in (30a, c) cannot relate itself to an A'-position. Still, the quantifier can induce a barrier for A'-dependencies. However, that potential barrier does not always serve as actual barriers. It depends on the relation between the potential barrier and the A'-dependency. The A'-dependency relevant here is that of *wh*-in-situ. Although an in-situ *wh*-phrase does not undergo covert movement, it creates another kind of covert relation with C, i.e. Agree or unselective binding. For this A'-dependency, *niemand* in (30a) serves as an actual barrier, whereas *jeder* in (30c) does not.

How is this difference induced? Miyagawa (1999b) argues that a quantifier blocks movement of a quantifier *of the same semantic type*. His argument is based on the following example of long-distance *wh*-movement.

(31) *Which book*$_1$ does the public wonder [*whether every* person likes t_1]?

(Miyagawa (1999b:7))

According to Miyagawa, example (31) is unacceptable when it takes a pair-list (PL) reading with *every*, which will be answered by (32a). On the other hand, example (31) is acceptable when it takes a functional interpretation with *every*, which will be answered by (32b).[8]

(32) a. The public wonders whether John likes a book by Chomsky, whether Mary likes a book by Samuelson, whether Bill likes a book by Krugman, ...

b. His own book.

Miyagawa argues that the semantic type of *which book* in (31) is different depending on whether it contributes to a PL reading or a functional interpretation. In a PL interpretation, a single-order quantifier, Wh(x), is moved over a QUIB induced by *whether*, and is blocked by the QUIB. On the other hand, in a functional interpretation, what is moved is a ‘choice function’ (see section 1.4.2 for the property and interpretation of a choice function). Since it is a higher-order quantification, it is not blocked by a QUIB, which is a single-ordered quantifier. The possible semantic relations in (31) are therefore schematized as follows:

(33) a. Pair-list: *Wh(x) .... Wh(y) $\forall$(z), z likes *t*

QUIB *

b. Functional: Wh(f) .... Wh(y) $\forall$(z), z likes f(z).

(QUIB) OK

If this line of argument is on the right track, *whether* is a relative barrier which blocks only *wh*-movement of the same type of quantification.

In Miyagawa's analysis, the 'same type' means the same order of quantification. (There is another way to define the 'same type'. Szabolcsi and Zwarts (1993) argue that quantificational relations are interpreted in Boolean algebraic relations, and that conflicts between quantifiers are accounted for in algebraic terms.) Following his discussion, I propose the following informal condition of a QUIB:

(34) The quantificational dependency in an occurrence list is not legitimate over a QUIB of the same type, where 'the same type' means the same order of quantification.

Given (34), A'-dependency of *wo* in (30a) is blocked by *niemand*, since they are of the same kind of quantification. On the other hand, A'-dependency of *wo* in (30c) is not blocked by *jeder*, since they are of distinct type of quantifiers.

To sum up the discussion, a QUIB is a representational constraint which determines the well-formedness of LF objects. A quantificational dependency formed by Move/Agree is not well-formed if there is another quantifier (QUIB) of the same kind between them.

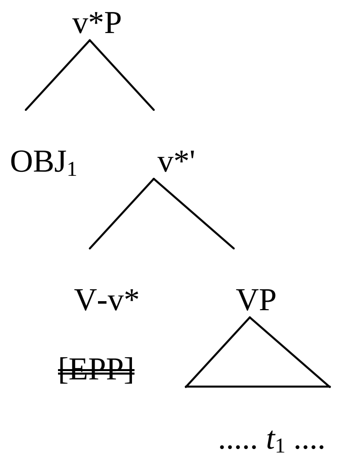
2.5 Summary

In this chapter, I have shown the notions crucial to the discussion in the present thesis. Firstly, I have discussed two notions proposed by Chomsky (1998, 1999), i.e. Agree and a derivation by phase. Second, I have modified the treatment of 'occurrence' to enable it to account for real data. An occurrence list does include tacit relations made by Agree as well as an overt relation made by Move. Moreover, an occurrence list includes no intermediate occurrences made by the optional EPP-feature of a phasal head. In the last section, having shown that Subjacency cannot be accounted for as a syntactic constraint, I have proposed that an LF constraint should be assumed to regulate various Subjacency effects. Following Miyagawa (1999b), I have assumed that a QUIB, modified for the minimalist framework, works out for the purpose.

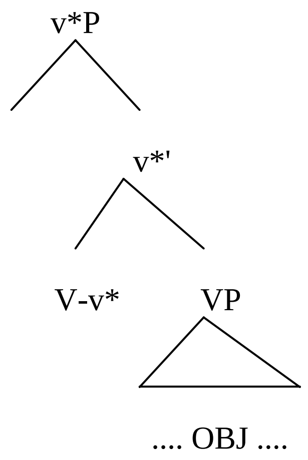
NOTES

1. As a matter of course, moved and non-moved derivations will result in different LF representations. Consider the following structures for instance:

(i)



(ii)



If v* bears an EPP-feature and attracts an object, the object will be interpreted at SPEC-v* ((i)). On the other hand, if v* bears no EPP-feature, the object will be interpreted in its merged position ((ii)). Chomsky (1999) states that the difference is a ‘result’ of an optional EPP-assignment on v*, but not a ‘motivation’. That is, optional assignment of [EPP] on v* in syntax does not count on the semantic effect to be achieved. An optional feature is literally optional but is checked as to whether the option yields an effect on output later at the LF representation. See condition (16).

2. There is a construction in which an Agree relation should not be reflected in an occurrence list. It is an existential construction exemplified below:

(i) There T-seems to be *a man* in the garden.

Matrix T agrees with *a man*. However, if this relation were written down in an occurrence list of *a man*, its head occurrence would be T' or TP. It contradicts with the scopal relation between *seem(s)* and *a man*: i.e. *seem* > *a man*. At present I have no idea how to account for the exceptionality of an existential construction.

3. To be precise, *mit wem* has to occupy SPEC of matrix v* to establish a legitimate Agree relation with matrix C, since the embedded clause is in the domain of v*P and hence invisible to matrix C.

(i) *$[_{CP}$ C $[_{TP}$ SUBJ T $[_{v*P}$ v* $[_{VP}$ V $[_{CP}$ *mit wem* C ...]]]

← search domain for C →

(ii) $[_{CP}$ C $[_{TP}$ SUBJ T $[_{v*P}$ *mit wem* v* $[_{VP}$ V CP ...]]]

OK

If derivation (ii) above were succeeded not by movement of *mit wem* but by merger of the scope marker *was*, then the partially-moved *wh*-phrase would remain in the matrix clause, which does not generate the correct word order observed in (21b). Therefore, we have to both admit the structure like (ii) above and at the same time prohibit *mit wem* to remain in SPEC-v* and undergo some kind of reconstruction or undoing to SPEC of embedded C. Chomsky (1999) stipulates that in all languages an element should not remain in SPEC-v* unless it has a special reason to remain there. If the stipulation is correct, then *mit wem* in (ii) above should not remain there after Agree is established. In this way, the present framework may explain a precise derivation of a partial *wh*-movement construction. A partially-moved *wh*-phrase is in fact moved to SPEC-v* where Agree with C takes place. After Agree, since SPEC-v* does not allow any element to remain without reason, it should be undone to the former occurrence, i.e.

SPEC of embedded C.

For the convenience for discussion I ignore the complicated derivation like this and just explain that matrix C in (21b) agrees with *mit wem* in SPEC of embedded C.

4. The head occurrence 'CP' might be changed to 'C'' after merger of *was* to SPEC-C. I do not consider this possibility and continue to use 'CP'.

5. An occurrence list I propose does not distinguish A- and A'-chains. In (24b) and (24c), both A'- (CP) and A- (TP) positions are contained in a single occurrence list. It is because the distinction seems hard and/or useless under the present framework. I have mixed both dependencies into one list since it is simpler and since I do not know any particular reason to distinguish them. However, I am not quite sure whether the unification is in fact correct or not. I leave this issue open here.

6. It is possible that the deviance of (29) is attributed to the violation of the MLC of a modified definition. Kitahara (1997), for example, assumes that the MLC is a relative condition, a violation of which cumulatively worsens the acceptability of the sentence. Or, Chomsky (1998 1999) (tacitly) suggests that a derivation can tolerate an MLC-violating step, and the step is evaluated afterwards, when the phase completes its derivation. If we follow either of their assumptions, the violation of the MLC may not crash the derivation directly, but just degrade the acceptability.

I do not follow their assumptions here, since Kitahara's analysis does not fit into the present framework, and since it is unclear how Chomsky's new treatment of the MLC can account for the relevant facts.

7. Rizzi (1990) observes a similar phenomenon in English. According to him, 'affective' operators (e.g. negative quantifiers) undergo A'-movement at LF, hence serving as A'-barriers. On the other hand, 'nonaffective' operators (e.g. universal quantifiers) do not serve as A'-barriers since they do not undergo movement at LF. This line of discussion is just a stipulation unless the distinction of quantifiers is

supported by independent grounds.

8. Precisely, Miyagawa does not regard a QUIB as a well-formedness condition at an LF representation, but as a derivational condition a violation of which deletes a copy of a moved element. For instance, when *wh*-phrase moves over *whether*, it cannot leave its copy in a variable position. The failure to leave a copy is not a problem during the derivation, but it poses a problem at the LF representation since the moved *wh*-phrase cannot bind a variable. I do not follow Miyagawa in this respect, and assume that a QUIB is a well-formedness condition at an LF representation. A copy cannot be deleted since it would change the internal structure of a tree. Any operation that affects the internal structure is prohibited in the minimalist framework.