

Articulated CP and Configurational Structures of Some Adverbial Clauses

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Abstract. This paper explores some subordinate clauses introduced by subordinating (elements), the CP dominating the embedded clause, and the configurational relationships between the superordinate and subordinate clauses. The standard assumption is that non-complement (adjunct) subordinate clauses are loosely attaching to main clauses. Furthermore, configurational relationships between main and subordinate structures are different from those in which subordinate structures are complements to some elements in main clauses. Therefore, one characteristic of this structure suggests some kind of flexibility in the order between the two clauses in complex structures without disturbing basic relationships. Another characteristic is that structural relationships reduce to particular structural configurations and feature matching. A third characteristic is that non-complement subordinate clauses are associated with particular adverbial meaning, e.g., purpose, conditional, temporal, etc. The analysis is based on Larson's VP-Shell Structure, Kayne's LCA theory and minor projections as proposed in Chomsky and Takano. The research investigates data from Arabic, Chinese, French, and English.

Key words: Adverbial Subordinate Clauses, cP and CP structures, COMP, Feature-matching, VP-Shell analysis, LCA-based analysis.

1. Introduction

This article explores some subordinate clauses introduced by subordinating (elements), and the CP dominating the subordinate IP clause and the configurational relationships between the superordinate and subordinate clauses. The standard assumption is that non-complement (adjunct) subordinate clauses are loosely attaching to main clauses. Furthermore, configurational relationships between main and subordinate structures are different from those in which subordinate structures are complements to some element in main clauses. Therefore, one characteristic of this structure suggests some kind of flexibility in the order between the two clauses in complex structures without disturbing basic relationships. Another characteristic is that structural relationships reduce to particular structural configurations and feature matching.

In earlier attempts in syntactic research, clauses are categorized as S-bar with the category COMP as the head. That is, S-bar dominates both COMP and S nodes.⁽¹⁾ Bresnan argues that different COMP elements, realized as the head of S-bar, subcategorise for matching subordinate clauses.⁽²⁾ Chomsky and Lasnik argue that features (such as, +/-wh) in COMP trigger matching subordinate structures.⁽³⁾ In this respect, subordinate clauses introduced by complementizers are instances of S-bar.

Emonds categorizes complementizers as belonging to the major category P, i.e., Preposition.⁽⁴⁾ As P elements, subordinating conjunctions differ from ordinary prepositions in that they select clausal complements rather than NP complements. He argues that adverbial subordinate clauses, that have the structure $_{PP}[P-S]$, seem to appear outside V-bar; complement structures appear inside V-bar. In his analysis, $_{PP}[P-S]$ structure, proposed for adverbial subordinate clauses, is equivalent to S-bar.⁽⁵⁾ The distinction between complement and non-complement structures, explained by the terms inside/outside V-bar, has been characterized by right node adjunction rule. For example, structures inside V-bar do not accept pre-posing movement, whereas those outside V-bar do move sometimes to initial position in the sentence.

The standard assumption has been that adverbial non-complement structures such as those expressing 'purpose', 'condition', 'temporal', and 'location', are loosely attaching to the predicate phrase and therefore should project as the outermost adjuncts of VP, IP, CP. For example, Radford describes non-complements 'adjunct' constituents as sister to X-bar, whereas complements project as sisters to X^o.⁽⁶⁾ This view has changed in Larson, as he introduces the VP-Shell structure.⁽⁷⁾ Based on semantic analysis of adverbs suggested in McConnell-Ginet, Larson notes that adverbs are not the outermost adjuncts of V but rather its innermost complements.⁽⁸⁾ In this structure, the verb projects at the lowest position in the VP-shell taking adverbial constituent as its intimate complement before other arguments. The correct surface order is obtained by V-raising/moving upwards in the VP-Shell.⁽⁹⁾ Consider the following basic VP-Shell structures before and after V-raising:

(1) Basic VP-Shell structure:

$_{VP}[_{spec,V} \text{ John } v=(\emptyset) \text{ } _{VP}[_{spec,V} \text{ a letter send to Mary}]]$

⁽¹⁾ This area is probably one of the most intensely scrutinised fields of syntax. Here, we would like to only acknowledge analyses relevant to the topic at hand. The interested reader is advised to consult classic books on syntactic theory.

⁽²⁾ J. Bresnan, *The Theory of Complementation in English Syntax*, unpublished Ph.D. dissertation, Massachusetts Institute of Technology, 1978.

⁽³⁾ Chomsky and Lasnik, "Filters and Control," *Linguistic Inquiry*, 8 (1977), 425-54.

⁽⁴⁾ J. Emonds, *A Unified Theory of Syntactic Categories* (Dordrecht: Foris Publications, 1985).

⁽⁵⁾ See Emonds, *Unified Theory*, Ch. 7.

⁽⁶⁾ A. Radford, *Transformational Grammar* (Cambridge: Cambridge Univ. Press, 1988).

⁽⁷⁾ R. Larson, "On the Double Object Construction," *Linguistic Inquiry*, 19 (1988), 335-91; and R. Larson, "Double Object Revisited: Reply to Jackendoff," *Linguistic Inquiry*, 21 (1990), 589-632.

⁽⁸⁾ McConnell-Ginet, "Adverbs and Logical Form," *Language*, 58 (1982), 144-84.

⁽⁹⁾ See Larson, "Construction," 342.

(2) VP-Shell structure after V-raising:

${}^{VP}_{[spec,V]} \text{ John send}_i \text{ } {}^{VP}_{[spec,V]} \text{ a letter V-t}_i \text{ to Mary}]^{(10)}$

Larson's analysis maintains the basic assumptions of X-bar structure, that each phrase must have only one head, and (X^0) takes one complement (XP) at most. Kayne formulates his theory 'the Linear Corresponding Axiom' (LCA), a restrictive theory of phrase structure and word order, in which a given phrase structure is mapped into a unique linear order; i.e., forcing Specifier- Head- Complement order universally, and that an XP in spec position must asymmetrically c-commands the head of the same phrase.⁽¹¹⁾

(3) LCA-based Phrase Structure: [_{spec} Specifier [_{X-bar} Head Complement]]

There are two important consequences of the LCA-based structure relevant to this discussion; first, this theory reduces ordering variation to functional categories.⁽¹²⁾ Second, it forbids right-node adjunct. The only permissible adjunction is the specifier, which is considered as a kind of left-node adjunction in a given phrase structure. This will deny generating adverbial structures via right-node adjunction.

Chomsky further develops VP-Shell structure by positing a light-verb (v) as the head of the projection vP, taking VP as its complement; based on the assumption that (v) encodes [cause (an event)/ (an event) happen] interpretations at LF.⁽¹³⁾ This will allow external arguments bearing (Agent) theta-role to project in spec,v, while arguments of unaccusatives to project as complement to (V).⁽¹⁴⁾ The main verb raises to (v) light-verb when empty, yielding the correct word order:

(4) ${}^{vP}_{[spec,v]} \text{ specifier } [{}_{v\text{-bar}} \text{ v}=(\emptyset) \text{ } {}^{VP}_{[spec,v]} \text{ specifier } [{}_{v\text{-bar}} \text{ main verb Comp}]]]$

Kayne explains how the LCA-based structure accounts for multiple complements and Adjuncts.⁽¹⁵⁾ Based on Larson, Kayne derives an analysis in which post-complement adjuncts are realized as phrases that are themselves in complement position with respect to some head.⁽¹⁶⁾ The task of this discussion is to identify the head that relates the subordinate clause to any constituent in the matrix clause. Consider the following example from Kayne and the accompanied illustration.⁽¹⁷⁾

⁽¹⁰⁾ See *ibid.*, 342.

⁽¹¹⁾ R. Kayne, *The Antisymmetry of Syntax* (Cambridge, MA: MIT Press, 1994).

⁽¹²⁾ In the Principles and Parameters Approach, ordering variations were attributed to the directionality of Case assignment, or attributed to some other parameter of grammar.

⁽¹³⁾ N. Chomsky, *The Minimalist Program* (Cambridge, MA.: MIT Press), 1995, .331.

⁽¹⁴⁾ See *ibid.*, 315-16; and Yiji Takano, "Movement and Parametric Variation in Syntax," unpublished Ph.D. dissertation 1996, 41-50. Takano argues that all major lexical categories have light heads that are both lexical and functional (Takano, 52).

⁽¹⁵⁾ See Kayne, *Antisymmetry*, Ch.7

⁽¹⁶⁾ See Larson, "Construction," and *Double Object*.

⁽¹⁷⁾ See Kayne, *Antisymmetry*, 69.

- (5)
- (i) John bought a book on Saturday.⁽¹⁸⁾
 - (ii) [A book on Saturday]
 - (iii) v^P [_{spec,v} John [_{v'} v VP [_{spec,V} a book [_{v'} buy [_{pp} on Saturday]]]]]

In sentence (5a), (*a book on Saturday*) must form a headed constituent, (5b). Structure (5c) illustrates that the adverbial adjunct projects in complement position of the main verb, and the direct object projects in spec,V. The subject 'agent' projects in spec,v. This VP-Shell structure maintains the antisymmetry requirement of LCA. Kayne extends this idea to *after*-clause, which was thought to project higher than the object in sentences like the following:

- (6)
- (i) John criticised Bill after giving a talk on syntax.⁽¹⁹⁾
 - (ii) John_i criticised Bill after [PRO_i [giving a talk on syntax]]
 - (iii) v^P [_{spec,v} John_i [_{v'} v VP [_{spec,V} Bill [_{v'} criticise [_{Adverbial Clause} after [PRO_i [giving a talk on syntax]]]]]]]

For reasons related to control, Kayne mentions that the *after*-clause should project lower than the object, allowing for both the subject and the object to anti-symmetrically c-command PRO in the subordinate clause as required by the LCA. Structures (6b and c) illustrate how both the subject and object can be the controller of PRO in the *after*-clause.⁽²⁰⁾

Later analyses have postulated that a type of functional category must project to relate adverbial adjunct constituents to the verb, while maintaining the main requirements of the Shell-based structure and the LCA.⁽²¹⁾ This is exactly what we are going to argue for in this article. Based on semantic and pragmatic factors, we will suggest that some functional categories encoding particular features must act as a link between the main verb and the projecting subordinate structures complement or non-complement. Here we will limit this discussion to structures that overtly display elements encoding these particular features, leaving other cases for future investigation.

We investigate Arabic (Non)-complement subordinate clauses associated with particular adverbial meanings: e.g., *purpose*, *conditional*, *temporal*, etc. We are going to analyse the following structures:

- I- Subordinate Purpose Clauses: introduced by Complementizers expressing 'purpose' such as: (*kai*), (*likai*), or (*li*). (Section II)
- II- Conditional Clauses: introduced by Complementizers expressing 'conditional meaning' such as: (*luw*), (*li*), (*itha*), (*in*), (*malam*).

⁽¹⁸⁾ See *ibid.*, 69.

⁽¹⁹⁾ *Ibid.*

⁽²⁰⁾ Kayne, *Antisymmetry*, 70.

⁽²¹⁾ See Alharbi, (to appear); and E. Zoerner, "Coordination: The Syntax of &P," unpublished PhD Dissertation, 1995, and E. Zoerner, "The Case of &'-Adjunction to VP," In Anna-Maria Di Sciullo, ed., *Configurations* (Somerville: Cascadilla Press, 1996), 211-28.

(Section III)

III- Temporal Clauses: introduced by Complementizers expressing ‘temporal meaning’, such as: (*baGdama*), (*qablama*), (*matama*), (*Halama*), (*bainama*), (*Gindama*). (Section IV)

Recall Chomsky’s suggestion of a minor category projection, (light verb) that takes VP as its complement. Extending Chomsky’s suggestion, Takano argues that all major lexical categories have light heads (x), with morphological properties requiring the lexical head (X) to adjoin to them.⁽²²⁾ The assumption of minor category (x) is based on grounds of intrinsic features in the general theory of functional categories, claims Takano.⁽²³⁾ What can be unambiguously understood from Larson and Kayne is the tendency to combine complements and adjuncts in their configurational structures.⁽²⁴⁾ More explicitly, both the *Shell*-based and the *LCA*-based structures exclude right-node adjunction. Kayne states that the head of the constituent in which the adverbial adjunct forms the second party can be a verb, a preposition, or it can be phonetically nil, Kayne.⁽²⁵⁾ Still, an intermediate functional link is needed to elicit the structural relation between, say, the verb and an adverbial adjunct. Suppose that the category dominating the subordinate clause encodes a feature (*F*) responsible for establishing this kind of relationship between a matrix category and a subordinate (non-complement) structure. Suppose again that a minor category encodes this feature (*F*). The feature (*F*) encoded in the minor category dominating the subordinate structure, must characterize the grammatical function of adverbial structure. Consider the following illustration:

(7) ...Y^{xP} [_{spec,x} spec [_x x=minor (+*F*)^{xP} [spec [_x X]]]]]

In the above structure, Y represents the matrix category optionally subcategorising for the ‘adjunct’ structure XP. The minor category xP takes as its complement the highest functional category in the ‘adjunct’ structure. The significance of the minor category is two folds; first, it encodes the feature (*F*) characterizing the ‘adjunct’ structure; second, it establishes the link with the matrix category Y. The feature (*F*) can be checked by either movement of X to x-minor, or by XP movement to spec,x.⁽²⁶⁾ In the following sections, we are going to implement this method of analysis to some Arabic subordinate structures. We will primarily describe data from Arabic, Chinese, French, and English.

II. Subordinate Purpose Clauses

In this section, we consider subordinate clauses introduced by complementizers expressing ‘purpose’: (*kai*), (*likai*), or (*li*); all of them have almost the same meaning.

⁽²²⁾ Takano, “Movement,” 51-52.

⁽²³⁾ *Ibid.*, 52.

⁽²⁴⁾ See Larson, “Construction” and *Double Object*; Kayne, *Antisymmetry*..

⁽²⁵⁾ Kayne, *Antisymmetry*, 69-74.

⁽²⁶⁾ We do expect languages to vary in these possibilities: adjunction movement yielding ³[X-x], or substitution movement of some XP constituent to spec,x.

Consider the following examples:

- (8)
- (a) thahaba Salih-un ila al-ghabat-i ^{CP}[*kai/likai/li-* yushahid al-Tuyur-a]
 went-3sm S-nom to the-forest-gen so that watch-3sm the-birds-obj
 “Salih went to the forest in order to watch the birds”
- (b) Labisa mlaabis-a Suufiyyat-an ^{CP}[*kai/likai* la yuSabu bilbardi]⁽²⁷⁾
 wore-3sm clothes-obj woollen-obj so that NEG get-infected with-cold
 “He wore woollen clothes, so that he does not catch colds”
- (c) thahaba Salih-un ila al-ghabat-I ^{CP}[*kai/likai/li-* *shahida al-Tuyur-a]
 went-3sm S-nom to the-forest-gen so that watched3sm the-birds-obj
 “Salih went to the jungle to (*watched) the birds”

One characteristic of the above subordinate clause, in square brackets, is that it does not function as a complement to any constituent of the matrix clause. In other words, it represents additional information; i.e., to express ‘purpose’. The second characteristic is that the main verb in the subordinate clause is in the subjunctive mood, i.e., cannot take the past (perfective) form. Notice that the verb of the subordinate clause in (8c) is ungrammatical in the past tense form. The function of the elements *kai/likai/li* in the above clauses is to relate the subordinate clause to the matrix clause. In addition to their grammatical function as clausal subordinators, encoding similar lexical meanings, i.e., they express ‘purpose’. Their meanings in English can be either glossed with (*so that*) or (*in order to*). The subordinate clause is in many ways similar to *an*-clauses functioning as complements to verbs of *want*-type in Arabic, except that these clauses are not complements but ‘adjuncts’ to the matrix VP. *An*-clauses can be replaced by the *wh*-question word (*matha*= what), whereas *kai*-clause can be replaced by the *wh*-question word (*limatha*= why).

- (9)
- (a) yuriidu Gali-un [*an yanaam*] / *matha*?. “Ali wants [to go to bed]/ *what*?”
- (b) thahaba Gali-un ila ghurfatihi [*kai/likai/li yanaam*] / *limatha*?
 “Ali went to his room in order to sleep] / *why*?”

The *wh*-word can then move to the matrix COMP in both (9a and b) as usual. There is another difference between *an*-clause and *kai*-clause; the former cannot precede the matrix clause whereas the latter can (can be pre-posed). That is to say, *kai*-clauses allow reversed order in which the subordinate clause precedes the matrix clause; *an*-clauses do not allow reversed order with the main clause (pre-posed structure). Consider the following examples:

- (10)
- (a) *[*an yanaam*] yuriidu Gali-un. “*[to go to bed] Ali wants”
- (b) [*kai/likai/li yanaam*], thahaba Gali-un ila ghurfatihi.

⁽²⁷⁾ The structure [*li-la] is blocked for purely phonological considerations; compare this to *friendlyly.

“*[In order to sleep], he went to his room”

This is typical also; in English, some subordinating conjunctions allow reversed order with the main clause; other subordinating conjunctions do not allow reverse order. The sentence in example (10b) does not sound perfect, but it is acceptable.

If the elements *kai/likai/li* are complementizer heads of CP, do they allow *wh*-question words to appear in spec position of their CP? Observe the following example:

- (11) (a) thahabat Huda ila almaTbakhi ^{CP}[*kai/likai/li* taThu alTGaama]
 went-f Huda to the kitchen in order to cook the-food
 “Huda went to the kitchen to cook some food”
 (b) *matha*_i thahabat Huda ila almaTbakhi ^{CP}[*kai/likai/li* taThu *wh-t*_i?]
 “What did Huda go to the kitchen to cook *wh-t*?”
 (c)??*thahabat Huda ila almaTbakhi ^{CP}_{[spec,C} *matha* [_{C-bar} *kai/likai/li* taThu *wh-t*]]?

The *wh*-word appears in the matrix spec,C of (11b) and the sentence is fully grammatical. The interrogative sentence (11c) is very bad in most readings, or very well be considered ill-formed because the *wh*-question word *matha* appears in spec,C of the embedded clause. The reason could be that the matrix COMP bears *wh*-features; the embedded COMP, by the presence of these elements, encodes the feature [-Q]. Therefore, the sentence in (11c) is ungrammatical because of conflicting features in the embedded COMP. In these particular clauses, the complementizers in the embedded COMP encode the feature (*purpose*) as part of their lexical meanings. The total features encoded in the embedded COMP are: [+*Purpose*, -*Root*, -*Q*]. Of course, one can assume a general feature, such as [+*adv*] for all types of adverbial adjunct clauses, see section (V) below.

We have mentioned that the main clause is very well grammatical even without *kai*-clause. The reason could be that ‘adjunct’ clauses are not obligatorily subcategorised for like complement clauses. One of the characteristics of *kai*-clauses is that they occur after *place* and *time* expressions. Consider the following example:

- (12)
 (a) thahabat Huda ila alHadiiqati mubakkiran ^{CP}[*kai/likai/li* talGab maGa al?aTfaal]
 went-3sf H to the-park early in order to play-3sf with the-children
 “Huda went to the park early to play with the children”
 (b) thahabat Huda ila alHadiiqati ^{CP}[*kai/likai/li* talGab maGa al?aTfaal] **mubakkiran*
 went-3sf H to the-park in order to play-3sf with the children early
 “Huda went to the park to play with the children **early*”
 (c) thahabat Huda ^{CP}[*kai/likai/li* talGab maGa al?aTfaal] **ila alHadiiqati mubakkiran*
 went-3sf H in order to play-3sf with the children to the-park early
 “Huda went to play with the children **to the park *early*”

Notice that *kai*-clause (*purpose*-clause) cannot occur before *time* expression, which

is supposed to be within the matrix VP (12b). The same is true even more clearly when *kai*-clause preceding *place* expression (12c).

According to Chomsky, adverbials cannot be adjoined (by Merge) to phrases that are theta-related like V/ VPs and arguments.⁽²⁸⁾ They can be base generated as adjunct to V' level, to vP, or to a functional category.⁽²⁹⁾ The ungrammaticality of (12b and c) above vindicates Chomsky's intuitions; as *place* and *time* expressions, (and probably some other adverbs) adjoin to spec positions within vP/ VP, or to V', these positions are not available for adverbial clause of *purpose*, for example. Adjunction to V' is to be barred if we wish to maintain the LCA-based analysis. Following Larson, we will assume that the subordinate clause (*pur*-CP) is optionally "base-generated" as the innermost 'complements' of the matrix V.⁽³⁰⁾ This structure explains why reversed order with the main clause is accessible to *kai*-clause; the position spec,C of the matrix CP is a possible landing site for such inversion movement.⁽³¹⁾ The configurational structure of the matrix and subordinate clause will be realized as in (13) below:

- (13)
- (i) $CP_{[spec,C]} e_{[C-bar]} C_{[IP]} IP_{[IP]} Matrix-IP^{pur-CP} [_{spec,C} e_{[C-bar]} kai-clause.]]]]]$
 - (ii) $CP_{[spec,C]}^{pur-CP} [kai-clause] [_{C-bar} C_{[IP]} IP_{[IP]} Matrix-IP^{pur-CP} [CP-trace]]]]]$

Let us now turn to the internal structure of *kai*-clauses and the features encoded in the embedded COMP. As it is generally assumed, the properties of a clause are most likely to be encoded as features in the head-COMP. Adopting a split-COMP hypothesis, a minor projection cP will precede CP, where c-minor takes *kai*-COMPs as complement. This hypothesis also requires that the split-features hypothesis. That is, the features are split into two parties: feature(s) in c-minor and feature(s) in C. Let us assume again that the feature [+*purpose*] is to be encoded in the c-minor, and the features [-*Root*, -*Q*] are encoded in c-minor as well as properties of the lexical element that usually projects in C-node and move there before Spell-Out. This assumption can be justified on semantic grounds, as it represents the feature required by the matrix verb; it should be encoded in a category closer to the matrix clause; and it represents the grammatical characterization of the subordinate clause. Therefore, we expect COMP in *kai*-clauses to encode such features in the following manner:

- (14)
- (i) $cP_{[spec,c]} e_{[c-bar]} c=[+purpose] CP_{[spec,C]} e_{[C-bar]} kai/likai/li [-Root, -Q] IP]]$
 - (ii) $cP_{[spec,c]} e_{[c-bar]} c=(kai/likai/li_i [+pur, -R, -Q]) CP_{[spec,C]} e_{[C-bar]} C-t_i$

⁽²⁸⁾ See Chomsky, *Minimalist Program*, 330.

⁽²⁹⁾ Ibid.

⁽³⁰⁾ See Larson, "Construction" and *Double Object*.

⁽³¹⁾ Some theories assume spec, TopP, or spec, FocP as target for this movement, or fronting operation; we do not discuss such issues here.

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The features encoded in the complementizers (*kai/likai/li*) are compatible with the grammatical characterization of the subordinate clause. These complementizers also impose a restriction on the embedded TNS by functional selection, i.e.; they select subjunctive TNS as a functional property. It may be the case that the feature (subjunctive) is also encoded in COMP, if we assume that these complementizers determine subjunctive-TNS by selection.⁽³²⁾ The split-features analysis is further justified on grounds pertaining to facts based on linguistic variations. For example, in both English and French, complex complementizers introduce equivalent clauses, as (*so that*) and (*afin que*) respectively. Compare the following examples from French, English and Arabic respectively:

(15)

- (i) J'ai brûlé la lettre [*afin que* personne ne la lise]
- (ii) I burnt the letter [*so that* no one should read it]
- (iii) AHraqt-t al-risalata [*kai/likai* la yaqraha aHad]
 Burnt-I the letter [kai/ likai Neg read-it one] "equivalent to (a) and (b)"

We argue that the elements (*kai/ likai/li*) project as heads of the C-node, while c-minor is empty in Arabic. Prior to Spell-Out, these C-elements move to c-node to check the feature [+purpose] and to establish the link with the dominating V°. This step is also required in both French and English as the first elements (*so&afin*) of (*so that*) and (*afin que*) project as C-heads, whereas the second elements (*that&que*) are c-heads. Prior to Spell-Out, the C-elements (*so&afin*) move to the left-hand side of the c-element in c-node. This analysis is further confirmed by the fact that each of the elements, (*that*) in English and (*que*) in French, independently marks (-Q COMP) in subordinate clauses.⁽³³⁾ Compare the following examples:⁽³⁴⁾

(16) Examples from Byrne and Churchill.⁽³⁵⁾

- (i) *Qu'il soit mécontent est certain.* "That he is pleased is certain"
- (ii) *Je veux qu'il parte.* "I want him to leave"

The following illustrations represent cP and CP structure in English and French *purpose* clauses, after Spell-Out:

(17)

- (i) $c^P_{[spec,c]} e [c\text{-bar } c = (that/que [+pur]) c^P_{[spec,C]} e [c\text{-bar } ([so/afin] [-Root, -Q]) IP]]$

⁽³²⁾ Some complementizers select finite TNS, such as *that*.

⁽³³⁾ The (*que*) may have other functions in sub clauses as relative pronoun/ in main clauses as interrogative word (what); see footnote 56 below.

⁽³⁴⁾ On *que*-clauses see Byrne and Churchill, *A Comprehensive French Grammar*, 4th ed. (Oxford: Blackwell, 1997), 362-74.

⁽³⁵⁾ See Byrne and Churchill, *French Grammar*, 363-64.

- (ii) ${}^{cP}_{[spec,c]} e_{[c\text{-bar } c = (so\ that_i /afin\ que_i [+pur, -R, -Q])]} {}^{cP}_{[spec,C]} e_{[C\text{-bar } (C\text{-}t_i) IP]}$

Let us consider the method by which subordinate (*purpose*) clauses are linked to a matrix structure. We have already excluded right-node adjunction because it is incompatible with the LCA-based analysis. At the same time, we wish to implement Larson's remark about some adverbials as the innermost 'complements' of the verb. Therefore, a sentence like (12a) above that exhibits *place*, *time*, and *purpose* expressions, repeated below as (18a), will have a structure like (18b and c) below: (some irrelevant details are omitted)

(18)

- (i) thahabat Huda ila alHadiiqati mubakkiran ${}^{cP}_{[kai/likai/li\ talGab\ maGa\ al\text{-}?\text{aTfaal}]}$
- (ii) ${}^{VP}_{[v\text{-bar } V^o = +temp]} spec_{[v\text{-bar } V^o = +loc]} {}^{VP}_{[v\text{-bar } V^o = +pur]} spec_{[v\text{-bar } V^o = +pur]} AdvP_{[mubakkiran]}$
 ${}^{VP}_{[v\text{-bar } V^o = +temp]} spec_{[v\text{-bar } V^o = +pur]} e_{[v\text{-bar } V^o = +pur]} thahaba {}^{cP}_{[kai/likai/li\ talGab\ maGa\ al\text{-}?\text{aTfaal}]}$ "Prior to Spell-Out"
- (iii) $V = thahaba_i$ ${}^{VP}_{[v\text{-bar } V^o = t_i]} spec_{[v\text{-bar } V^o = t_i]} {}^{VP}_{[v\text{-bar } V^o = t_i]} spec_{[v\text{-bar } V^o = t_i]} AdvP_{[mubakkiran]}$
 ${}^{VP}_{[v\text{-bar } V^o = t_i]} spec_{[v\text{-bar } V^o = t_i]} e_{[v\text{-bar } V^o = t_i]} {}^{cP}_{[kai/likai/li\ talGab\ maGa\ al\text{-}?\text{aTfaal}]}$ "After Spell-Out"

The structures in (18b & c) represent the configurational analysis of (18a) prior and after Spell-Out. Complex constituents in the VP require recursive projections of VP to accommodate *place*, *time* and *purpose* expressions. The main verb (*thahaba*) projects at the bottom of the VP-Shell with *purpose*-clause as its complement. The *time* expression adverb (*mubakkiran*) is base-generated in spec,V, of the second VP projection from below the Shell. This VP has an empty V^o -node. *Locative* PP expression is likewise projects at spec of the third VP in the Shell-structure from below, which also has an empty V^o -node. At the top of the VP-Shell structure is the minor projection vP, which we have already discussed, not illustrated here. According to Larson, the main verb climbs upwards using, as a landing site, the empty V^o -node through the v-minor category to TNS and AGR-s nodes.⁽³⁶⁾ Notice that the V-nodes display the features ($+pur / +temp / +loc$) encoded in each V^o -head to characterize structural relations between adverbial elements in spec/complement with that head. The movement of the main verb through these empty V^o -nodes is triggered by the presence of these features, as illustrated in (18c) above.⁽³⁷⁾

In structure (18b), the verb (V^o) must optionally encode the feature (*+purpose*) to prompt a matching cP structure in its 'complement' position, (with *+purpose* feature encoded in c-minor). The feature (*+purpose*) encoded in head V^o is similar to the feature (*+transitive*) that generate direct object in transitive verbs.

⁽³⁶⁾ See Larson, "Construction" and *Double Object*.

⁽³⁷⁾ The VP structure we assume here violates the antisymmetry structure of the LCA. We agree with Chomsky and others that the LCA is too strong as it stands; it needs certain amendments and modification.

A supportive piece of evidence for this analysis would be to supply some examples from human language showing lexicalised instances of the features (^{+pur} / ^{+temp} / ^{+loc}). In such cases, when the verb moves through the V^o-nodes the lexicalised elements will appear within the verb morphology. Famous instances in the field of linguistic research are the analyses based on incorporation theory such as those proposed in Baker.⁽³⁸⁾ Incorporation processes are common features of agglutinative languages/ languages displaying polysynthetic morphology. Baker illustrates examples in which locative/ applicative/ benefactive elements appear as affixes within the verb morphology.⁽³⁹⁾

III. Conditional Clauses

The grammar of conditional sentences can be fairly extended, with a wide range of language variations in this matter, particularly in English. Conditional sentences can also be expressed by using other complex structures, by interactions with notions like, MOD, NEG, and TNS... Here, we will be concerned with Arabic conditional constructions introduced by complementizer elements, such as, (*luw*, *itha*, *in*, *malam*). Our main concern will be the features encoded in conditional COMP and related properties of complementizer elements, and configurational relations between the main clause and what is commonly known as *if*-clause, i.e., the clause bearing the conditional complementizer in its COMP position.⁽⁴⁰⁾

(19) The internal structure of *if*-clause: ^{CP}[e[C= *luw/ itha/ in/ malam* + IP (finite)]]

According to the traditional description of Arabic, there are four main conditional elements, i.e., (*luw*, *itha*, *in*, *malam*).⁽⁴¹⁾ They express the 'likely/ unlike conditions). For example, (*luw*) always expresses the unlikely condition. The following sentence occurs after showing bad examination results:

⁽³⁸⁾ M. Baker, *Incorporation* (Chicago: University of Chicago Press, 1988).

⁽³⁹⁾ Baker, *Incorporation*, 160-61 admits that he does not know any clear cases in which a matrix verb hosting an affix functioning as head (verb) of an adverbial clause. Hypothetical example below:

(a) *John [AGR-*insult-left-Asp*] Mary (to) his mother. "John left [because Mary insulted his mother.

(b) *I [AGR-*hit-throw-Asp* a snowball (to) my roommate. "I throw the snowball [^{clause} in order to hit my roommate"

This confirms the analysis presented here, as the place, time expressions are in spec positions that is impossible to incorporate into the head verb (due to ECP requirements; the head of subordinate adverbial clause projects below the matrix head V; as downwards movement of the matrix verb is prohibited (by ECP). The head of the embedded adverbial clause is barred from incorporating into the matrix verb for the same reason, ECP. The analysis we adopt here also vindicates Baker's intuitions concerning the prohibition of incorporation out of a subject position and out of sentential adjuncts (ibid., 161).

⁽⁴⁰⁾ Emonds (*Unified Theory*, 286) analyses *if* (both the conditional and that introducing embedded yes/no questions as instance of P subcategorising for clausal complement. In his analysis, *if*-clause has PP[P-S] structure that generates outside V-bar of the main clause.

⁽⁴¹⁾ For example see, J.A. Haywood and H. M. Nahmad, *A New Arabic Grammar of the Written Language* (London: Lund Humphries, 1984), 35, 290.

(20) *luw* thaakara Salih-un druusa-hu, *le-najaHa* fi al-ikhtibaar
con studied-3sm Salih-nom lessons-his *adv(=then)*-passed in the-exam
 “Salih would have passed the exam, *if* he had studied his lessons”

(21) There are four main conditional elements in Arabic:

- (i) *luw* (*con*), *luw anna* (=con +Comp *anna*), *luw la* (*con*+Neg), *luw lam* (*con*+Neg past) = the unlikely condition.
- (b) *in* (=con) / *illa* (*in*+la) *if* not / *in lam* (*if* not past), = the likely condition.
- (ii) *itha* (*if*) = the likely condition.
- (iii) *malam* (=unless) negative condition (opposite of *if*)

As shown in (21a), the complementizer (*anna*) and some negative particles may follow the element (*luw*), which there expresses the unlikely condition. In (21b and c), the conditional elements that express likely condition may be followed by negative particles but not by complementizers. The element *malam* (=unless) represents a negative conditional element (opposite of *if*).⁽⁴²⁾ Consider the following examples:

(22) *luw* (*anna* Salih-an) thaakara druusa-hu, *le-najaHa* fi al-ikhtibaar
con comp Salih-obj studied-3sm lessons-his *mod*-passed in the-exam
 “Salih would have passed the exam *if* he had studied his lessons”

(23) *yanjaHu* SaliH-un fi al-?ikhtibaar *luw* (*anna*-hu) thaakara druusa-hu (as in 22)

(24) *in* ijtahada SaliH-un, sa-yanjaHu / sa-yanjaHu SaliH-un *in* ijtahada
con work-hard-3sm S-nom, fut-pass-3sm / fut-pass-3sm S-nom *con* work-hard-3sm
 “Salih will pass *if* he works hard”/ “*If* Salih works hard, he will pass”

(25) *in* ijtahada Salih-un, / yajtahid yanjaH/ sa-yanjaH
con he-worked hard S./ he-works hard/ he-passes/ will-pass
 “As in 24”

(26) sa-yanjahu Salih-un *itha* ijtahada “As in 24”
 fut-pass-3sm Salih-nom *con* work-hard-3sm

(27) *itha* ijtahada Salih-un, sa-yanjaHu “As in 24”

(28) *malam* ya-jtahid (SaliH), *lan* ya-njaH/ *lan* ya-njaH (SaliH) *malam* ya-jtahid.
 “*Unless* he works hard, Saleh *will not* pass his exams.

Following the same line of description proposed in Larson, we assume that *if*-clause is a CP ‘base-generated’ as ‘optional complement’ of the main verb of the

⁽⁴²⁾ The element (ma-lam) seems to be morphologically complex, consisting of (ma-) and the negative element (lam), but it functions as one unit.

superordinate clause.⁽⁴³⁾ The conditional elements such as (*luw, itha, in, malam*) in the above examples, serve as subordinators introducing conditional clauses. In order to generate this structure, we must allow the matrix verb to optionally encode the feature [+con], and this will establish a similar feature in c-minor category in the manner described in the previous section. When these two features match, *if*-clause will appear in a position following the main clause. *If*-clause may optionally appear in initial position preceding the main IP, due to the feature (+focus) in the matrix COMP, (free pre-posing).⁽⁴⁴⁾ This also explains the fact that in English when *if*-clause appears initially in the sentence, the *if*-clause and main clause are separated by a coma. The following structures explain these assumptions:

(29)

- (a) ...V^[+con] cP_[spec,C] e [c-bar c=minor (+con) CP_[spec,C] [C-bar *luw/ itha/ in/ malam* [IP]]]
 (b) CP_[spec,C] [*if*-CP]_i [C-bar C (+focus) IP[[CP-trace]_i]]] 'Pre-posed Structure'

In (29a), the main verb in the superordinate clause encodes the feature (+con) matching a similar feature encoded in the following cP-structure. Adopting a split-CP hypothesis, the c-minor category encodes the feature (+con) and the lexical complementizers (*luw, itha, in, malam*) project at the C-node. Prior to Spell-Out, the lexical complementizer moves to c-minor triggering match-features process with the main verb. The matching of the features of V and c-minor leads to successful interpretation at LF (Convergence), and satisfies the 'selectional requirements' of both the verb and lexical complementizer. Assuming *if*-clause to be 'base-generated' as 'optional complement' of the main verb of the superordinate clause (29a), and in order to derive the alternative (29b), we need to explain the movement of *if*-clause to spec,C position. We can of course legitimately attribute such movement to the feature (+focus) in the matrix COMP. This feature motivates *if*-clause fronting to spec,C position. This assumption puts *if*-clauses in a par with other 'subordinate clauses'. Quirk and Greenbaum observe that adverbial clauses, like adverbials in general, occur in final, initial, or medial position within the main clause.⁽⁴⁵⁾ This conclusion is fine, except that sometimes a conditional sentence does not seem to undergo movement, due to the distribution of pronominal elements. Now consider the following sentences:

- (30) (a) yanjaHu Salih-un fi al-ikhtibaar *luw (anna-hu) thaakara druusa-hu*
 (b) *luw (anna-hu) thaakara druusa-hu*, yanjaHu Salih-un fi al-ikhtibaar
 (c) *luw (anna-Salih-an) thaakara druusa-hu*, yanjaHu fi al-ikhtibaar

In the first sentence (30a), *if*-clause (italicised) occurs as sister to V^o as in structure (29a). Notice the pronominal elements (*-hu*) and the pro subject of the verb 'thaakara' in

⁽⁴³⁾ See Larson, "Construction" and *Double Object*.

⁽⁴⁴⁾ In some analyses, fronted elements move to spec, Topic, as in Gasde Horst-Dieter and W. Paul "Functional Categories, Topic Prominence, and Complex Sentences in Mandarin Chinese," *Linguistics*, 34 (1996), 263-94.

⁽⁴⁵⁾ R. Quirk and S. Greenbaum, *A University Grammar of English* (England: Longman, 1973), 322.

if-clause all refer to the proper noun ‘*Salih*’ in the main clause. The sentence sounds very much straightforward because the proper noun c-commands the pronominal elements in the following *if*-clause. In the second sentence (30b), *if*-clause (also italicised) occurs in spec,C as in structure (29b). In this structure, *if*-clause precedes the main clause; the pronominal elements in this clause precede the proper noun ‘*Salih*’ which supposed to be their antecedent; here the c-command requirement is not satisfied. The sentence sounds a bit puzzling but still acceptable with a very emphatic meaning accompanied with the appropriate intonation. Contrary to that is (30c) with more straightforwardly apprehended meaning, as the proper noun ‘*Salih*’ precedes all pronominal elements. Bearing in mind that unmotivated movements are better be avoided in the Minimalist Program due to (procrastinate principle), we can assume that *if*-clauses appear in spec,C when the feature (+*focus*) is encoded in the matrix COMP. When the feature (+*focus*) is absent and only (+*con*) is encoded in the embedded c-minor category, *if*-clauses can only appear as sister of the main V°, as illustrated in (29) above.

The analysis described above can be extended to French examples as well; observe the following French conditional sentences:⁽⁴⁶⁾

(31)

- (i) Il viendrait s’il savait que vous étiez ici. “He would come *if* he knew you were here”
- (ii) Il serait très content *si* vous lui écriviez. “He would be very happy *if* you wrote to him”
- (iii) S’il arrive demain, vous le verrez. “*If* he arrives tomorrow, you will see him”
- (iv) S’il a reçu ma lettre, il téléphonera demain. “*If* he has received my letter, he will phone tomorrow”

In (31a and b), *si*-clauses (= *if*-clause) project in complement position as ‘*optional complements*’ of the verb (*viendrait*= come) and the adjective (*content*= happy) respectively. *Si*-clauses (= *if*-clauses) structure come about when the head words (*viendrait*= come) and (*content*= happy) encode the feature (+*con*), matching a similar feature at c-minor category. The lexical elements (*si*) (= *if*) that project as heads of C-node move to c-node (prior to Spell-Out), prompting the match-features process and interpretation at LF. The sentences in (31c and d) have similar structures except that *si*-clauses move to the front of the sentence, matrix spec,C, motivated by a (+*focus*) feature in the matrix C.

Considering Chinese data, it is well known that a subordinate clause (e.g., *if*-clause) precedes superordinate clause in Chinese complex sentences. Gasde and Paul claim that conditional clauses, which they consider ‘clausal topic’, are base-generated in the specifier position of the functional projection TopP.⁽⁴⁷⁾ The element (*dehua*) that appears

⁽⁴⁶⁾ The examples are from Byrne and Churchill, *French Grammar*, 322-25.

⁽⁴⁷⁾ Gasde and Paul, “Functional Categories,” 276.

at the end of *ruguo*-clause (= *if*-clause) is a realization of the functional head Topic^o. The head of Topic phrase, (*dehua*), need not be always overt, as it is optional. To Gasde and Paul, the mere presence of *ruguo*-clause (= *if*-clause) at the beginning of the sentence is itself a realization of TopP projection.⁽⁴⁸⁾

These observations seem to be at odds with the analysis described here. Furthermore, assuming a syntactic movement seems to be out-of-the-way in conditional sentences, for Chinese does not display any movement at the syntactic level.⁽⁴⁹⁾ Po-Cing and Rimmington state that the superordinate and subordinate clauses are usually linked by *conjunctions* and/or *conjunctives* (=adverbs).⁽⁵⁰⁾ Subordinators (*ruguo*, *yaoshi*, *jiari* (=if), and *chufei* (=unless)) usually appear initially in subordinate clauses; and adverbs, that they call *conjunctives*, such as (*jiu* (=then), *chufei* (cai =only then) appear following the subject in the main clause. The function of these adverbs is to link the main clause to the preceding subordinate clause. They also note that *conjunctions* and *conjunctives* appear in related split pairs, such that one is placed at the beginning of the subordinate clause and the other at the beginning of the main clause. The subordinator in the subordinate clause may alternatively come after the subject, when the two clauses share the same subject. Consider the following example and structure:⁽⁵¹⁾

(32)

- (a) Ni *ruguo* mei kong, women *jiu* gaitian tan ba
 I *if* not free we *then* change-day talk particle
 “If you are busy, we’ll talk [about it] another day”
- (b) *ruguo*-Clause CP_{[spec,C e} [C’ C^o=*ruguo* IP]]_{main clause} cP_{[spec,c} *jiu* [c’ c^o=∅ IP]]

Despite the fact that Chinese and Japanese clause structures represent a challenge to LCA-based analysis, we would like to put forward the following suggestion, admittedly speculative, though. First, based on the analysis suggested by Gasde and Paul, we can assume that *ruguo*-Phrase is base generated in specifier position of TopP.⁽⁵²⁾ The superordinate clause follows the subordinate *if*-clause. Second, based on the split-COMP hypothesis, we can assume that (*ruguo*), as a lexical head of CP, dominates *ruguo*-Phrase. The cP projection remains within the superordinate clause; the adverb like (*jiu*) may appear in the spec position of cP.⁽⁵³⁾ The head of the minor projection cP has to be phonetically nil, as illustrated in (32b) above.

IV. Temporal Clauses

⁽⁴⁸⁾ Ibid., 276.

⁽⁴⁹⁾ See Huang, C-T. J. “Logical Relations in Chinese and the Theory of Grammar,” unpublished Ph.D. Dissertation, MIT (Cambridge, Mass, 1982).

⁽⁵⁰⁾ Yip Po-Cing and D. Rimmington, *Chinese: An Essential Grammar* (London: Routledge), 1997, 142-43.

⁽⁵¹⁾ These examples are quoted from Po-Cing and Rimmington, 144.

⁽⁵²⁾ See Gasde and Paul, “Functional Categories.”

⁽⁵³⁾ Compare the Chinese adverb element (*jiu*) to the Arabic adverb prefix (*le-*) attaching to the main verb of the main clause in 20 and 22.

These following words introduce adverbial subordinate clauses specifying the circumstances in Arabic.

- (33) *BaGdama* (after)/ *qablama* (before)/ *maadama* (as long as)/ *Halama/ Talama* (as long as)/ *munthu* (since)/ *bainama* (while)/ *Gindama* (when).

A temporal complementizer projects as a head of CP dominating a finite IP. The function of the CP of this sort is similar to other categories describing circumstances, such as AdvP, NP, PP. As it is well known, adverbial constituents, either sentential or phrasal, are in many cases loosely attaching to the main clause. They can be pre-posed or deleted altogether without significantly affecting the grammaticality of the sentence in which they occur. For example, the following sentences are very well grammatical:

- (34)
- (i) i- It rained yesterday. ii- Yesterday, it rained. iii- It rained.
 - (ii) It was raining [when our plane landed on the runway].
 - (iii) [When our plane landed on the runway], it was raining.

Notice also that adverbial constituents, such as those describing circumstances of *manner*, *place* or *time* vary in some of their properties. For example, circumstances of time or temporal constituents usually follow in order those of manner and place respectively in many languages. In Arabic, clauses introduced by temporal conjunctions such as those mentioned above may occur as the final constituent of the main clause or may occur initially. Consider the following examples:

- (35)
- (a) dakhala Gamr-un CP[*Gindama* ranna al-talifuun]
entered-3sm Amr-nom [when rang the-phone]
“Amr entered CP[*when* the phone rang]”
 - (b) CP[*Gindama* ranna al-talifuun] , dakhala Gamr-un.
[when rang the-phone] , entered-3sm Amr-nom
“ CP[*When* the phone rang] Amr entered”
 - (c) dakhala Gamr-un CP[*bainama* kaana-t ?umm-u-hu naaim-t-an]
entered-3sm Amr-nom [while was- f mother-nom-his sleeping-f-obj]
“Amr entered CP [*while* his mother was sleeping]”
 - (d) CP[*bainama* kaana-t ?umm-u-hu naaim-t-an] , dakhala Gamr-un
while was-f mother-nom-his sleeping-f-obj, entered-3sm Amr-nom
? “CP[*While* his mother was sleeping], Amr entered”

Considering the internal structure of the subordinate CP, we have stated that temporal conjunctions, such as, *Gindama* and *bainama*, belong to the set of complementizers. That is to say, they project from the lexicon as heads of CP, introducing finite subordinate clauses. A temporal complementizer occurs in COMP if it is in complementary distribution with other complementizers, such as the interrogative

complementizer ‘*hal*’. Notice the following sentences:

- (36)
- (a) dakhala Gamr-un CP[***hal bainama* kaana-t ?umm-u-hu naaim-t-an]
- (b) dakhala Gamr-un CP[**man*_i *bainama* kaana-t t_i naaim-t-an]

The subordinate clause in (36a) is ungrammatical because both the interrogative complementizer ‘*hal*’ and temporal complementizer *bainama* cannot occur concurrently in COMP, (*doubly-filled COMP). Similarly, the interrogative WH-Q ‘*man*’ in (36b) seems to be ungrammatical with the element *bainama*. Both words, ***hal*, and **man*, are ungrammatically categorized for different reasons. The first word is ungrammatical because of its co-existence with the word *bainama*. In other words, one of them must be scrapped in order to put the clause right. In (36b), the interrogative wh-Q word must be scrapped too because COMP encodes the feature [-Q]; the word *bainama* is acceptable in this position. These two observations suggest that *bainama* is the head of CP. Adopting a Split-CP hypothesis; we assume that a cP minor projection dominating CP, whose head encodes the feature (+temp). Prior to Spill-Out, the lexical temporal complementizer (e.g., *bainama/ Gindama*) moves to c-minor to trigger the match-features process with (+temp) of the dominating category.⁽⁵⁴⁾ Consider the following illustrations:

(37) cP and CP structures before and after Spill-Out:

- (a) ^{cP} [_{spec,c} [_{c-bar} c-minor ^(+temp) CP [_{spec,C} [_{c-bar} C-*bainama/ Gindama* Finite IP]]]]
- (b) ^{cP} [_{spec,c} [_{c-bar} c-*bainama/ Gindama* ^(+temp) CP [_{spec,C} [_{c-bar} C-trace Finite IP]]]]

There is a piece of evidence from morphology supporting the split-COMP hypothesis; temporal complementizers such as, *bainama/ Gindama* are in fact morphologically complex. For example, each word of these consists of two morphemes, *baina-* (=between)/ *Ginda-* (=at) and the suffix (-*ma*). It is only when they combine with the element (-*ma*) that they become temporal complementizers. The element (-*ma*), on the other hand, refers to indefinite pronoun, combining with other elements to produce complex words that refer to: *person/ thing ayyu-ma* (whoever/ whatever); *place aina-ma*, (wherever); *time mata-ma* (whenever). Based on these morphological observations, the element (-*ma*) can be realized as an instance of c-minor, and the other element (e.g., *baina- /Ginda-*) are realized as instances of C. If this is the case, head-to-head adjunction movement forms the complex complementizer prior to Spell-Out. Consider the following structures:

(38) cP and CP structures before and after Spill-Out:

⁽⁵⁴⁾ Other lexical complementizers trigger other features of the c-minor, e.g., English (*because*) triggers (+reason), Arabic (*ainama* =wherever) triggers (+place), and so on. This assumption is compatible with Bresnan’s original COMP theory of (1972) that associates this category with a semantic content. The range of semantic features encoded in complementizers of this sort is most certainly limited in number.

- (a) cP [_{spec,c} [_{c-bar} *c-ma* ^(+temp) CP [_{spec,C} [_{C-bar} *C-baina-/ Ginda-* Finite IP]]]]
- (b) cP [_{spec,c} [_{c-bar} *c-baina-ma/ Ginda-ma* ^(+temp) CP [_{spec,C} [_{C-bar} *C-trace* Finite IP]]]]

Furthermore, in French complex temporal complementizers such as, (*après que*) and (*aussitôt que*) introduce adverbial subordinate clauses. The element (*que*) is very similar in its properties to the Arabic morph (-*ma*) whereas the elements (*après*) and (*aussitôt*) represent the lexical C elements.⁽⁵⁵⁾ Accordingly, we can consider (*que*) as instance of c-minor, (*après*) and (*aussitôt*) are the lexical heads of CPs.

Po-Cing and Rimmington report that in Chinese sentences displaying temporal subordinate clauses, *time* expressions (such as, *de shihou* ‘when’, *yihou* ‘after’, *yiqian* ‘before’) are regularly linked with the adverb (*jiu* ‘then’) in the main clause.⁽⁵⁶⁾ Observe the following French and Chinese sentences:

(39) French and Chinese temporal subordinate clauses:

- (i) Je vous écrirai [*après qu’il sera parti*] “I’ll write to you after he has left”
- (ii) [*Aussitôt que vous aures fini*], nous pourrons partir. “As soon as you have finished, we can leave”⁽⁵⁷⁾
- (iii) [*Xi yan wan yiqian*] guanzhong *jiu* he daocai le. “Before the performance (of the play) has ended, the audience booded”⁽⁵⁸⁾
- (iv) [*Ni dao le yihou*] *jiu* gei wo da dianhua. “After you’ve arrived, telephone me”

In French examples, the two elements (*après*) and (*que*) in the complex temporal conjunction, e.g., (*après que*), project in C-node and c-minor respectively. Prior to Spell-Out, the lexical C-element, e.g., (*après*) must adjoin to the left-hand side of (*que*) at c-minor node in order to prompt match-features process and interpretation at LF.

In Chinese, the cP remains in the second clause (the main clause), while CP detaches from the cP and appears with the subordinate clause at the beginning of the sentence.⁽⁵⁹⁾

Let us now turn to the configurational structure representing the relationship between the superordinate clause and subordinate ‘temporal’ clause (the clause governed

⁽⁵⁵⁾ The element (*que*) has several functions in French clauses: a conjunction, an adverb, a relative pronoun, interrogative word, (what). It can also appear in words like *quoi que* (whatever), *qui que* (whoever), *où que* (wherever), *à quelque moment/ chaque* (whenever); it has an indefinite pronominal meaning, like (some), (one), or invariable adverb/ determiner, etc. There striking similarities between (*que*) and (-*ma*). Based on these and other observations, I conclude that (*que*) must be realised as an instance of c-minor.

⁽⁵⁶⁾ See Po-Cing and Rimmington, *Chinese*, 56-149.

⁽⁵⁷⁾ See Byrne and Churchill, *French Grammar*, 321.

⁽⁵⁸⁾ See Po-Cing and Rimmington, *Chinese*, 149.

⁽⁵⁹⁾ Gasde and Paul, “Functional Categories,” claim that adverbial subordinate clauses in Chinese complex sentences are base-generated in the specifier position of TopP, in sentence initial position.

by a temporal complementizer). In the VP-Shell analysis, Larson proclaims that adverbs are not the outermost adjuncts of V but rather its innermost complements in the manner illustrated above.⁽⁶⁰⁾ In such structure, the verb projects at the lowest position in the VP-shell taking adverbial constituent as its intimate complement before other arguments.

Following the same line of analysis, we assume that a temporal clause has the option to adjoin to the main clause IP when the matrix V optionally encodes the feature (+temp), and the matrix c-minor in the adverbial subordinate clause encodes the feature (+temp). The match-features process will happen when the lexical complementizer moves to c-minor prior to Spell-Out. Consider the following structure representing VP of the main clause and cP structure in temporal subordinate clause: (irrelevant elements are omitted)

(40) VP of the main clause and subordinate cP structures before and after Spell-Out

- (a) ${}^{VP} \dots [v\text{-bar } V^{(+temp)} cP_{[spec,c]} e [c\text{-bar } c^{(+temp)} = ma] {}^{CP}_{[spec,C]} e [C\text{-bar } C=baina\text{-IP}] \dots]$
 (b) ${}^{VP} \dots [v\text{-bar } V^{(+temp)i} cP_{[spec,c]} e [c\text{-bar } c^{(+temp)i} = [baina\text{-}ma]_j] {}^{CP}_{[spec,C]} e [C\text{-bar } C\text{-}t_j \text{IP}] \dots]$

(41) The structure of fronted *temp*-clause (irrelevant elements are omitted):

- ${}^{cP}_{[spec,c]} e [c\text{-bar } c^{(+temp)i} = [baina\text{-}ma]_j] {}^{CP}_{[spec,C]} e [C\text{-bar } C\text{-}t_j \text{IP}], \dots {}^{VP} \dots [v\text{-bar } V^{(+temp)i}]$

Notice that the structures (38) and (39) explain sentences like (35 a and c), and (35 b and d) respectively with no further explanation. However, we find interrogative complex sentences in which the question word may precede the *temp*-Clause in structure (42). Look at the following well-formed questions in Arabic:

(42)

- (a) *man*_i [*Gindama* ja,a *Zaid-un*] kana *t*_i naim-an?
 Who [when arrived Z-nom] was sleeping-obj
 Literary, “**Who*_i [*when* Z. was sleeping] *t*_i arrived?”
 (b) *Hal* [*Gindama* ja,a *Zaid-un*] kana Gamr-un naim-an?
 Q [when arrived Z-nom] was G-nom sleeping-obj
 Literary, “**Did* [*when* G. was sleeping] Z. arrive?”

Notice that we assume that *temp*-Clause is in spec,C position of the matrix COMP in both (42 a and b). The wh-Q word (*man*) appears to the left-hand side of *temp*-Clause, which is assumed to be in matrix spec,C position; yet the sentence is fully grammatical in Arabic. Now we need to identify the position of the wh-Q word (*man*) appears. Of course, we cannot say that this position is spec,C of the *temp*-Clause, because COMP in this clause does not encode the feature +Q. Consider (42b), the (-wh-Q) word (*hal*) occurs to the left-hand side of *temp*-Clause, yet the sentence is fully grammatical in Arabic. The (-wh-Q) word (*hal*) occurs in COMP, but not COMP of the pre-posed *temp*-clause as the temporal complementizer already occupies that position. In addition, we cannot say that it occupies the COMP of the main clause because it would then have

⁽⁶⁰⁾ See Larson, “Construction” and *Double Object*.

appeared to the right-hand side of *temp*-Clause in (42b). Before giving an explanation, we would like to note that these two structures seem ungrammatical in English as it is clear from the English glosses in (42).

An explanation may be achieved by adopting a split-COMP analysis with a minor category *cP* dominating the CP; with two COMP-nodes (*c*^o and *C*^o) and two spec positions (spec,c and spec,C). So the *temp*-Clause in (42) will occupy spec,C position. The question word (+wh-Q word (*man*)) will appear in spec,c in (42a), and the (-wh-Q) word (*hal*) will appear in *c*, occupying the head of the minor comp. The following structures illustrate these suggestions:

- (43)
- (a) $cP_{[spec,c]} e_{[c-bar]} c^o_{[spec,C]} CP_{[spec,C]} [CP=temp-Clause] [C-bar C^o main IP]]$
 - (b) $cP_{[spec,c]} man_{[c-bar]} c^{o= (+wh)}_{[spec,C]} [temp-CP] [C-bar C^o= (+root, +temp, +focus) IP]]$
 - (c) $cP_{[spec,c]} man_{[c-bar]} c^{o= (-wh)} Hal_{[spec,C]} [temp-CP] [C-bar C^o= (+root, +temp, +focus) IP]]$

This seems to be a reasonable explanation. However, one may wonder why similar English examples are ill formed. Recall that we assume that when COMP encodes the feature (+*focus*), the adverbial subordinate clause (either *if*-clause or *temp*-Clause) generates in spec,C position. Suppose that in English, or similar languages as well, the category bearing or encoding the feature (+*focus*) is not *C*^o, but the minor category *c*^o dominating CP, in this case the adverbial subordinate clause (either *if*-clause or *temp*-Clause) would generate in spec,c position.⁽⁶¹⁾ Therefore, sentences like the following are ungrammatical in English:

- (44)
- (a) **Who* [when Mary was sleeping] went out?
 - (b) **Did* [when Mary was sleeping] John go out?

The question words (*who*) in (44a) and (*Did*) in (44b) are placed outside the limits of *cP* to the left-hand side of the *temp*-Clause occurring in spec,c position in English. Notice that the *temporal* complementizer does not license the whole sentence but only selects its clause (the subordinate *temp*-clause). The features encoded in the matrix *V* that we argue to optionally encode features like (+*con*) or (+*temp*) trigger generating an *if*-Clause or *temp*-Clause.

V. Conclusion

The task of this discussion is to offer description and analysis of some adverbial subordinate clauses in Arabic. We attempt to achieve such task by assuming the Split-CP

⁽⁶¹⁾ Does this have any connection with the word order in English SVO A VSO? for more insightful ideas concerning the double specifiers in clause structure, see D. Jonas, "Clause Structure and Verb Syntax in Scandinavian and English," unpublished PhD Dissertation, Harvard University, 1996.

hypothesis, following suggestions in Takano,⁽⁶²⁾ implementing the VP-Shell structure as described in Larson,⁽⁶³⁾ and adopted in Kayne⁽⁶⁴⁾ and Chomsky.⁽⁶⁵⁾

We suggest that some functional categories encoding particular features act as a link between the main verb and the projecting subordinate structures complement or non-complement. We limit this discussion to adverbial subordinate clauses that overtly display subordinators encoding *purpose*, *conditional*, *temporal* features. More explicitly, both the *VP-Shell*-based and the *LCA*-based structures exclude right-node adjunction. Kayne states that the head of the constituent in which the adverbial adjunct forms the second party can be a verb, a preposition, or it can be phonetically covert.⁽⁶⁶⁾ Still, an intermediate functional link is needed to elicit the structural relation between, say, the verb and an adverbial adjunct.

In the analysis presented here, the category dominating the subordinate clause encodes a feature (*F*) responsible for establishing this kind of relationship between a matrix category and a subordinate (non-complement) structure. This intermediate category acknowledged in Kayne seems to be the minor category projection cP that takes CP as its complement.⁽⁶⁷⁾ The c-minor category has two characteristics: it encodes the feature (*F*); it characterizes the grammatical function of adverbial subordinate structure.

This analysis accounts for the mechanisms whereby non-complement constituents, adverbial subordinate clauses, are analysed in the same manner as complements. It has been shown that the verb as the head of VP optionally encodes the feature (*F*) in the same way as it encodes the feature (+/*transitive*). This feature permits projection of an optional constituent (subordinate clause) within VP, as sister to V^o.

The features encoded in the subordinate c-minor head of cP are: [+*purpose*/+*conditional*/+*temporal*]. Integrating semantic notions into syntactic analyses will enhance the theoretical vindication. Alternatively, one can assume a general feature representing all types of adverbial subordinate clauses, such as [+*adv*]. The semantic features such as [+*purpose*/+*conditional*/+*temporal*] are encoded in the lexical entry of individual subordinators.

(45) ... V^o[+*adv*]_i cP_{[spec,c e [c-bar c=minor (+*adv*)_i CP_{[spec,C [c-bar lexical subordinator [IP]]]}}

We have adopted articulated CP-structure, in which CP consists of minor projection cP. The head c-minor encodes the functional feature matching the feature (*F*) of the dominating category that establishes a link with the dominating V. The head of the CP is the lexical subordinator. Prior to Spell-Out, the lexical subordinator incorporates into the c-minor, in order to prompt the match-feature process (represented by indexing

⁽⁶²⁾ See Takano, "Movement."

⁽⁶³⁾ See Larson, "Construction" and *Double Object*.

⁽⁶⁴⁾ See Kayne, *Antisymmetry*.

⁽⁶⁵⁾ See Chomsky, *Minimalist Program*.

⁽⁶⁶⁾ See Kayne, *Antisymmetry*.

⁽⁶⁷⁾ See *ibid*.

relations); the latter allows for interpretation at LF.

The Split-CP analysis has shown that CP structures dominating adverbial subordinate clauses, reflecting linguistic variations, comprise three patterns:

(46) CP structures in Arabic, French & English and Chinese:

- (i) (Main clause) [cP ([C+c] =subordinator) subordinate clause], (main clause). (Arabic)
- (ii) (Main clause) [cP (C, c =subordinator) subordinate clause], (main clause). (French and English)
- (iii) [CP (C = subordinator) subordinate clause], [cP-main clause]. (Chinese)

CP-

. تتناول هذه الدراسة بالوصف والتحليل الجمل الظرفية التابعة التي تبتدئ بعناصر

استهلاكية خاصة بهذا النوع من التراكيب؛ كما تشتمل أيضا على وصف تركيب المقطع - CP وبنائه الهيكلي والعلاقة الشكلية بين الجملة الظرفية التابعة والجملة الرئيسية. التحليلات التقليدية تضع الجملة الظرفية التابعة ضمن تفرع شجري يقع بجانب إسقاط العنصر الأساسي س^٠ وهي بذلك تختلف عن التراكيب الأساسية في الجملة الرئيسية، والتي توضع عادة في تفرع يميني بجانب عنصر س^٠ تحت س^٠.

من خصائص الجمل الظرفية التابعة ما يلي: أولا، وقوعها في تفصل مرن يسمح بتقديم الجملة التابعة أمام الجملة الرئيسية بدون تأثير على نوع العلاقة بينهما. ثانيا، اختصار العلاقة بين الجملة الرئيسية والتابعة بشكل هيكلي معين و تماثل الخاصية المحددة لنوع الجملة التابعة. ثالثا، الجمل التابعة محددة بدلالة مرتبطة بنوع الظرفية كما يظهرها لفظا العنصر الرابط (الحرف الرابط) وضمنا

بخاصية تقبلها دلالة عنصر الإسناد في الجملة الرئيسية ؛ اقتصررت هذه الدراسة على الجمل الغرضية و الشرطية و الزمنية.
اشتمل التوصيف على مادة لغوية من اللغات التالية : العربية و الفرنسية و الصينية و الإنجليزية.