ON THE NATURE OF CIRCUMSTANTIAL AD-VERBIALS

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This paper encompasses a syntactic analysis of circumstantial prepositional phrases and argues that their attachment as the innermost complements of verbs (McConnell-Ginet 1982, Larson 1989, 2005, Kayne 1994, Chomsky 1995) can give a better account not only of their nature as constituents related to the event (Davidson 1967, Kratzer 1996) but also of other grammatical phenomena like agreement with inflected adverbials (as in Aleut, Nilsen 2000) or word order setting in V-initial languages.

1.   Circumstantial adverbials as adjuncts

The standard representation of circumstantial prepositional phrases in the generative linguistics (up until the minimalist program) is the one of constituents (multiply) adjoined to X' level. This type of configuration has its roots in the observation that such elements, similarly to adverbs, are optional. Also, they can be reiterated without severely affecting the structure of the phrase in which they might occur (VP, NP). Therefore, the syntactic representation of recursive "adverbials" in the Davidsonian example in (1a) is as in (1b):

(1)   a.   Jones buttered the toast *in the bathroom, with a knife, at midnight.*
       b.
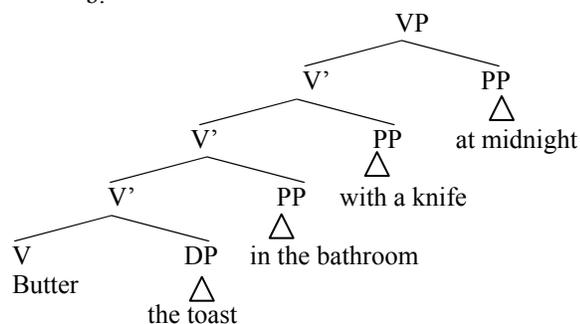
In the minimalist descendant of the PP approach, the status of adjunction has come under debate. Kayne's (1995) antisymmetric approach to syntax prohibits left adjunction. In this context, both Kayne (1995) and Chomsky (1995) argue that Larson's analysis (1989) according to which circumstantials of the type in (1) are attached as the innermost complements of verbs, before the direct object, is correct. In a larger theory of adverbs, Cinque (1999) proposes a ground breaking account, demonstrating that they are inserted as specifiers of functional projections which enter into a universally fixed hierarchy. Nonetheless, Cinque (1999) also observes that circumstantial prepositional phrases cannot be taken to represent the same class as adverbs. Chapter 2 presents evidence supporting this type of distinction.

2.   Circumstantial adpositional phrases

2.1   Circumstantial adpositional phrases and adverbs

The general observation on the syntax of circumstantials is that they appear to not have a rigid order (Chomsky 1995); moreover, they can mutually interchange, as the structural relations they enter into are subject to scope properties. For example, in the sentence in (2a) the place adverbial is in the scope of the time adverbial, while in (2b) the structure is reversed (Cinque 1999):

(2)   a. He attended classes every day of the week in a different university.
         b. He attended classes in each university on a different day of the week.

        Another important distinction between the two classes is a morphological one. Circumstantials are generally (with some limited exceptions) constructed in adpositional (*in the garden*, *with a knife, in a polite way)* or in bare NP form (*this way, today*), as observed in Larson (1985) or Stroik (1992). It should also be noted that languages that allow both adpositional phrases and adverbs do not place both in the same spot in the clausal structure. Adverbs can appear higher and allow more flexibility, while adpositional phrases, are generally excluded from the same positions. For example, in languages like English or Romance, prepositional phrases usually follow the main verb (phrase), while adverbial forms (see also Cinque 1999, for similar observations) can intervene higher in the clause, for example, between the main verb auxiliaries. In (3) an example from Romanian is given in order to illustrate the distinction:

(3)   Romanian adverbs and prepositional phrases
        a. Ce-ai   *mai* facut   *in*   *ultima*   *vreme*?
           What-Aux.Have. Adv.   do.PPART.   in   last   time?
           'What have you done lately'? (How have you been lately?)

        b. *Ce-ai *in ultima*   *vreme* facut?
        c. *Ce *in*   *ultima*   *vreme* ai facut?

        In the sentence in (3a), only the adverb *mai* is allowed to intervene between the auxiliary verb and the past participle, while an example with the prepositional phrase in the same spot is completely ungrammatical. The same result is obtained when the prepositional phrase appears to the right of the auxiliary verb, to a higher, preverbal position.
        Apart from syntactic differences, this paper also assumes that there are semantic distinctions between adverbs and circumstantial adpositional classes. Following Davidson (1967), one assumption that can be made is that proper adverbs have an operator characteristic, while prepositional phrases are not semantically specified in this manner. Nilsen (2000), as well as Cinque (1999) and Parsons (1990) also support this approach and argue that, while proper adverbs are functions mapping propositions to propositions or predicates to predicates, prepositional phrases are rather "modifiers predicated of an underlying event variable" (Cinque 1999; p.28).

It should also be mentioned that circumstantials can take several semantic specifications, among which temporal, locative, manner, commitative, instrumental are the most salient. Although there are numerous syntactic and semantic differences between these different interpretation, this paper unifies them in order to offer a general analysis of adpositional phrases. The structure of the paper is the following: part 2.2. introduces Davidson's event semantics; part 3 presents the most important syntactic approaches to circumstantials; the proposal is included in part 4. Section 5 contains the conclusions.

2.2   Events and their modifiers

Following a long-standing debate in the philosophical tradition, which had the purpose of revealing the logical structure of action sentences ("what someone does"), Davidson (1967) assumes that a sentence containing prepositional elements, 'adverbials', like the underlined examples in (4), must have a formalization that could capture its complex meaning.

(4)   Jones buttered the toast *in the bathroom, with a knife, at midnight*.

In other words, the logical form should be formulated in such a way as to contain the information that Jones buttered the toast and he did it in the bathroom, and Jones buttered the toast and he did it with a knife, and so on.

The only possibility to accomplish this requirement in an accurate way is to assume that the verb's argument structure contains not only the argument variables, but also an event variable, a variable that ranges over events. Therefore, the logical form of the sentence in (4) has to be something in the lines of (5), where x stands for the variable:

(5). $(\exists x)(Butter(Jones, the\ toast, x)\ \&\ (in\ the\ kitchen, x)$

In an implementation of this theoretical account, Kratzer (1995) argued that stage-level predicates (predicates that express transient stages of a characteristic) contain an extra argument position for events or spatio-temporal locations that individual-level predicates (expressing long-lasting properties) lack. Kratzer's analysis (1995) is based on the approach taken in Davidson in assuming that predicates have an extra argument position for the spatio-temporal location; but it differs from the majority of accounts formulated in the Davidsonian and Neo-Davidsonian developments, in that it clearly specifies that not of all verbs are Davidsonian (that is not all verbs have an extra argument position).

One aspect in which any analysis in the Davidsonian approach does not make any commitment is the nature of the Davidsonian argument. There are no clear-cut answers to questions like: "How is it realized structurally? Where exactly is it placed in the verbal configuration?" The minimum requirement is that this argument be a simple argument for spatiotemporal relations (present in locatives, for example); the variable standing for it in the logical representation is "a variable ranging over spatiotemporal locations" (Kratzer, 1995, p.128).

Such an assumption was first formulated by Lemmon (1967), who extended it to an identification of the events with their spatiotemporal relations.
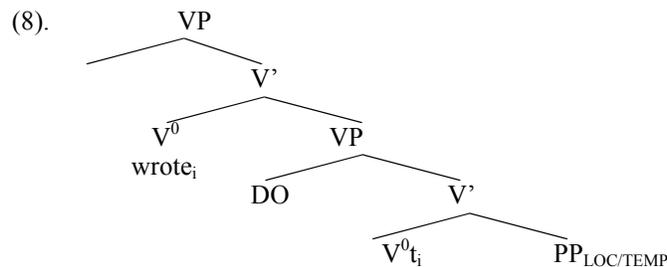
On a more refined syntactic stipulation of Kratzer's (1995), there is a difference among predicates in the realization of the argument for spatio-temporal location. Predicates that denote transient properties, *stage-level predicates*, allow this type of argument (as in 6); predicates encoding immutable characteristics block circumstantial PPs:

(6). *Stage-level predicate*
 He was drunk at

(7). *Individual-level predicates*
 *He was tall in the kitchen, at 5 pm.

Based on these observations regarding the nature of adverbials, the main task has been in finding the right mapping between their logical form and their syntactic representation. Assuming a generative approach, an investigation into their syntax is not an easy one. The next section introduces the most recent analyses on the syntax of circumstantials and argues that the canonical adjunction mechanism proposed for their representation is not able to give an adequate account. The observation is also made that analyses proposing that the VP is realized as a specified of the PP (like Barbiers' 2005) is not without problems, too. Rather, it is proposed that generating the adverbials as the innermost complements of the verb is a better analysis.

### 3. On the syntax of circumstantials

The most recent syntactic analyses of circumstantials can be divided into two directions. On one side, there is the low-attachment account. Chomsky (1995) and Kayne (1994) support a configuration similar to Larson's (1989) in which prepositional phrases are merged as the innermost complements to verbs, before the direct object and other arguments of the verb, as in (8):

(8).

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             VP
              \
               V'
              /  \
          V⁰      VP
        wrote_i  /  \
              DO     V'
                    /  \
                V⁰t_i   PP_LOC/TEMP
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On the other side, there are accounts that assume an adjunction account for circumstantial prepositional phrases, more precisely a right adjunction configuration. Barbiers (2000) starts from Davidson's event semantics and proposes the analysis in which the verb is generated low, while the prepositional phrases are higher. The correct word order is obtained by moving the verb into

the specifier of the circumstantial adverbials, like in (9) and the corresponding movement configuration in (10):

(9)

$$VP_1 \quad [\; PP_{TEMP} \quad VP_2 \; [\; PP_{LOC} \quad VP_3 \; [\; V \;] \;] \;]$$
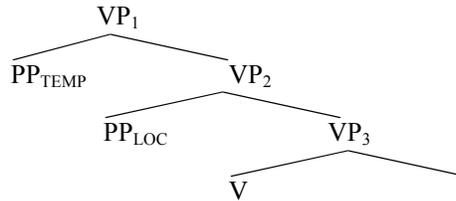
(10)
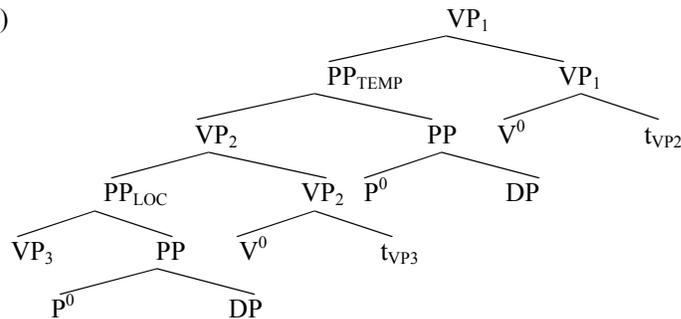
The structure proposed by Barbiers (1995), although complying to the LCA (Kayne 1995) is not without problems. For example, it cannot successfully explain all the syntactic processes adpositional phrases might be subject to. One of these phenomena is adposition incorporation. There are languages in which the adposition can incorporate into the main verb and its object becomes the object of the sentence, as in Nadëb (Weir 1990, Nilsen 2000), an Amazonian language:

(11)a. NADËB   (Nilsen 2000, p. 109)
   Subih   a-hing   kad   sii.
   Subih   FORM-go.downriver   uncle   with.
   'Subih went downriver with uncle'.

   b. Kad   Subih sii   hing.
      Uncle Subih with   went.downriver.
      'Subih went downriver with uncle'.

(12)a. NADËB
   Éé   a-hing   hxóóh   go.
   Father   FORM-go.downriver   canoe   in.
   'father goes downriver in a canoe'.
   b. Hxóóh   éé   ga-hing.
      Canoe   father   in-go.downriver.

'Father goes downriver in a canoe'.

In order to account for these facts, Barbiers's will have to assume the incorporation of the postposition into its own specifier (as Nilsen 2000observes, too), but such an operation is hardly a plausible one.

Moreover, sentences like (11) and (12) are a strong argument against adjunction, understood in its canonical interpretation as a structure-preserving operation. If a simple adjunction mechanism is in use, incorporation of the postposition is predicted to be impossible. In fact, adjunction has been proposed in order to interdict these types of incorporation, as well as other grammatical processes (ex. agreement) that have been thought to be specific only to arguments. But even a basic typology of circumstantials reveals that they have inflected form and exhibit various agreement patterns.

There are numerous languages that exhibit adverbial agreement or the so-called inflected adverbials. One example is given below from Atkan Aleut (Bergsland and Dirks 1981). In this language, circumstantial adverbials are inflected for tense and subject agreement (13) or only for subject agreement (14):

(13).   ATKAN ALEUT INFLECTED ADVERBIALS
    Adang   sagal   hingamakux.
    Father$_{1sg}$ sleep   there$_{pres-3sg.}$
    'My father sleeps/is sleeping there'.

(14).a. ATKAN ALEUT INFLECTED ADVERBIALS
    Hlax   waaGalakan   qilaxsix.
    Boy.3.sg.   come.back.$_{Neg}$.   morning.3.sg.
    'The boy didn't come back this morning'.

  b. Hlas   waaGalakan   qilaxsis.
    Boy.3.pl.   come.back.$_{Neg}$ morning.3.pl.
    'The boys didn't come back this morning'.

Moreover, Nilsen (1995) also observes that in this language temporal adverbials like *qilaxsix* (in examplea 14a and b) are generally uninflected for tense, but when they appear with inflection, their meaning changes:

(15).   ATKAN ALEUT INFLECTED ADVERBIALS
    Chixtal   angalikux.
    Rain   today$_{pres-3sg.}$
    'It was raining today and it still does'.

When the adverbial is not present, the main verb bears tense and subject agreement:

(16).   ATKAN ALEUT
    Hlax   saGakux.
    Boy.$_{3sg}$ sleep$_{pres-3sg}$
    'The boy is sleeping'.

Maintaining the general assumption that adjoined positions are different from complement and specifiers contradicts the empirical facts in the case of Atkan Aleut (and many other languages that exhibit such data). The same problems arise when preposition incorporation is considered. The following section shows, instead, that an account in which circumstantial adpositional phrases are generated as the innermost complement of the verb is superior.

4. Circumstantial PPs as the innermost complements of verbs

4.1 Adverbs and their semantics

This paper argues that an account in which circumstantial PPs are taken to be the innermost complements of verbs can give better results in explaining the empirical facts mentioned above, as well as other observations regarding the nature of adverbials. Semantic and syntactic arguments, as well as considerations regarding the economy of derivation are brought into discussion and showed to favor the complement attachment.

In the majority of generative semantics analyses, prepositional phrases are considered to be introduced by the rule of predicate modification that is applied after the other rules (the event identification, et c) are activated. In a canonical Fregean account, the rule of *Predicate Modification* is crucial for the interpretation of modifiers, as it can explain how two properties are intersected. For example, in cases in which an adjectival form is added into the representation (The *talented* boy sang a song), it asserts that *the boy* has two characteristics: of being talented and of singing a song. The form of the rule of Predicate Modification given here is the adapted form proposed by Pylkkänen and McElree (2004), following Heim and Kratzer (1996):

(17)   Predicate Modification
         If α is a branching node, $\{\beta,\gamma\}$ is the set of α's daughters, and $[[\beta]]$ and
         $[[\gamma]]$ are both of type $<e,t>$, then $[[\alpha]] = \lambda x .[[\beta]] (x) ([[\gamma]] (x)$
                                                                    (Pylkkänen and McElree, 2004)

On the other side, the same rule needs many other stipulations in order to explain the systematic behavior of adpositional phrases and adverbs; what causes problems is the observation that certain types of modifiers (like adpositional phrases and adverbs) seem to have, a different type of output, after application.

The impossibility of existing types to translate the semantic and structural features of adverbs has motivated, therefore, the introduction of operators into the inventory of expression types in LF. The classical predicate logic provides the following set of expression-types (see also McCawley 1981, McConnell-Ginet 1982): constants and variables that denote individuals, n-place predicate that express (n-place) relations among individuals and quantifiers that bind variables in the operands (usually sentences with which they combine). As such a system does not have any expressions corresponding to adverbs, other logics

have been developed. In one of the fundamental works on adverbial semantics, Thomason and Stalnaker (1973) introduced two types of operators: predicate operators and sentence operators. The general assumption is that, both syntactically and semantically, the operators mentioned above produce expressions of the same category and of same semantic types as their operands. Hence their non-obligatory character.

Nevertheless, even the initiators admit that the operator account is not able to give a full image of the treatment and behavior of adverbials. Moreover, many semanticists observe that "this elegant system cannot…represent certain striking and systematic correspondences between English syntactic structure and adverbial interpretive possibilities" (McConnell-Ginet 1982). Among the problems that cannot get an answer are some basic aspects: their implicit semantic contribution when they are not overt, their sensitivity to the active-passive alternation[1], the semantic distinctions between different types of circumstantials, the fallacious observation that they do not create structure.

This paper demonstrates that the operator analysis, as it stands, encounters problems, as it does not explain cases in which the presence of adpositional phrases cannot be denied to create structure (obligatory PPs); also it does not establish a drawing line between adjuncts and arguments. In the same line as McConnell-Ginet (1982), in this paper it is shown that treating adverbials as variable-binding elements can provide a better understanding of their nature and of their behavior cross-linguistically.

4.2. Syntax of adverbials. Some considerations regarding word order

Syntactically, the high attachment of the adpositional phrase has consequences especially on the configuration of verb-initial languages, where several types of movements and shifts (object shift, for example) have to be postulated in order to get the right linearization. An example from Romanian (in a V-initial context) is discussed below.

In Romanian, although the general word order is SVO, there are numerous instances in which the verb is placed sentence-initially[2], as in (18):

(18). ROMANIAN

A	mâncat	copilul	o	prăjitură	în	grădină.
Has	eaten	child.THE	a	cookie	in	garden.

'The child has eaten a cookie in the garden'

If a structure in which PPs are attached higher than the VP is assumed, two movement processes are necessary; first the V moves to the I domain (Alboiu 2000, Cornilescu), and then the DO has to move across the locative PP:

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[1] as in McConnell-Ginet (1982)

[2] As a side note linguists like Alboiu 2000 even assume that Romanian is a V-initial language and other word orders are derived ones.

The same problem arises when a ditransitive verb is considered:

(19)   Romanian
   I-am   dat   copilului   o prãjiturã în grãdinã.
   CLT.3.sg.-have.$_{1.sg.}$ give.Pst.Prt. child.the.D.   a cookie   in garden.
   'I gave the child a cookie in the garden'.

The licensing of the correct word order will require in this case movement of the V, as well as of the DO and IO object (or of the Applicative head). It is not clear what the motivation of this movement is and how to set its parameter.
   Word orders in which the locative PP appears in other positions are either impossible or apply focus to the modifier:

(20). I-am dat în grãdinã copilului o în grãdinã. (focus reading)
   I-am dat copilului în grãdinã o prãjiturã. (focus reading)
   În grãdinã i-am dat copilului o prãjiturã. (focus reading)

On the other side, an account in which PPs are generated as the innermost complements of verbs (and which uses VP shells) needs only the movement of the verb. This type of movement can be explained by postulating the existence of a strong feature on V in verb initial languages, that requires it to move to the I or to the C domain:

(21).
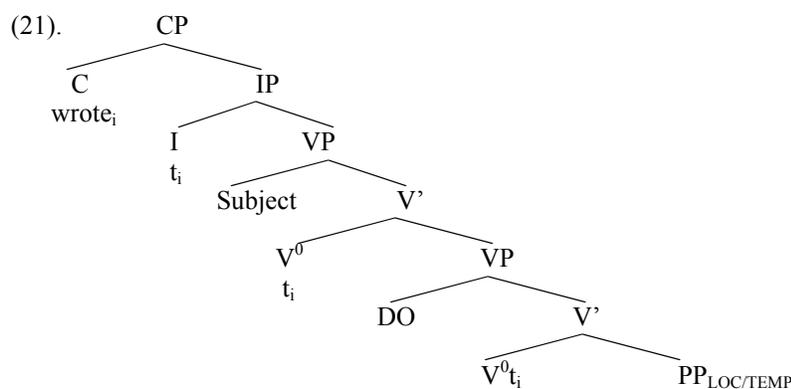
For other types of languages (where the verb does not appear in the I or C domain), the structure in (21) can also be applied by assuming that the V moves in order to establish the predication relation. The rationale behind it is that it is easier to postulate verb movement, than movement of any other constituents.
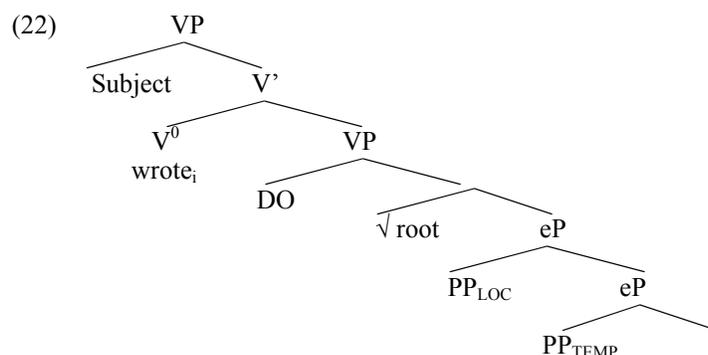   Another piece of evidence regarding the nature of adverbials is regarding the presence of several circumstantial PPs in the same structure. In this case, the V has to move through/past all of them in order to get the right spell-out structure. Several linguists agree that this option should be avoided in a minimalist account of language. Chomsky (1995) assumes that a low attachment is better, as it is more economical: 'whatever might be involved in such cases

(of multiple-adjunct structures), it is unlikely that proliferation of shells is relevant. Even if that analysis is assumed for multiple adjuncts, there is little reason to assume that the verb raises repeatedly from deep in the structure; rather, if a shell structure is relevant at all, the additional phrases might be supported by empty heads below the main verb".

5.   Iterated circumstantials

The innermost complement analysis needs several implementations in order to explain a typical property of circumstantials, namely the fact that they can be reiterated. This paper starts from the Davidsonian analysis of adverbials and proposes that they bind the event argument that is attached as a complement to the verb. In such an account what is reiterated is not the V' or the VP, but the internal constituents of the event phrase. More specifically, the PP is merged into the specifier position of the *eP* (event phrase) that has the capacity of almost endless generation and reiteration, in order to specify all the conditions of the event. Canonical arguments (the direct object, the subject, the indirect object) are introduced either by the verb or by separate functional heads.

Another assumption made in this paper is that he *e* head is taken to be an empty one, based on the empirical observation (valid cross-linguistically), that reiterated adpositional phrases have no connective element overtly spelled-out. After the eP is formed, it merges with a root (which is not completely specified categorically) and is the first step to turn it into a verb or noun; if the verb has to be transitive, the merging of the direct object is also necessary; only after these steps are applied the verb is fully formed.

(22)

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                VP
          ┌──────┴──────┐
       Subject          V'
                   ┌─────┴─────┐
                  V⁰           VP
                 wrote_i   ┌────┴────┐
                          DO
                      ┌────┴────┐
                   √ root      eP
                          ┌─────┴─────┐
                        PP_LOC        eP
                                 ┌─────┴─────┐
                               PP_TEMP
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As opposed to previous accounts, the current proposal assumes that the linearization of the PPs in the eP does not follow strict patterns and does not respect hierarchies of the type proposed in Rizzi (2002) and Cinque (1999). Empirical evidence, as well as a more detailed investigation into their semantics show that such analyses cannot be supported (Maienborn 2003, for an ample discussion).

6.   Conclusions

This short paper presented several facts regarding the nature of circumstantials that have not been extensively studied (with some exceptions, see Nilsen 2000), and that are in fact prohibited in a canonical adjunction analysis. It argued that phenomena like adverbial agreement, adposition incorporation or word order setting receive a more adequate account if circumstantials are base-generated as specifier of an event phrase that is attached as the innermost complement of the verb (root).

7. References

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