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PDF issue: 2026-11-21

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(Citation)
Proceedings of the 18th International Conference on Role and Reference Grammar (RRG2025):138-154

(Issue Date)
2026-01-15

(Resource Type)
conference paper

(Version)
Version of Record

(JaLCDOI)
https://doi.org/10.24546/0100499725

(URL)
https://hdl.handle.net/20.500.14094/0100499725

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Adverbs and operator classes in Mexican languages*

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1. Introduction

In this paper, we examine the status of adverbs attached to verbal words in Mexican languages. Within the framework of Role and Reference Grammar (RRG), adverbs are considered peripheral elements, whereas operators are grammatical forms with their own projection. However, in Mexican languages, two types of adverbs can be identified: lexical adverbs, as in (1a) *jakam* 'away' in Mixe[1], and incorporated adverbs, as in (1b) *ñaxañ* 'first' in Chol. This raises the question of whether both types —lexical and incorporated—should be analyzed in the same way within RRG, or whether their distinct morphological status requires different analyses. If analyzed identically, they would share the same projection and function; if morphology is relevant, they may belong to different analytical domains. Within RRG parameters, some forms classified as adverbs may instead belong to the functional class of operators.

Drawing on the distinction between lexical and incorporated adverbs, this paper aims to review the morphosyntactic status of these units within the clause. We argue that lexical adverbs retain their lexical category, whereas incorporated adverbs behave as operators. Accordingly, the central question is whether both should be considered the same type of lexical item, or whether— as we propose—they belong to two different categories: lexical adverbs and lexical affixes.

(1) a. *y-nëjkx-y muum* ***jakam***
3S-go-DEP somewhere far.away
'He went somewhere far away.'
(Mixe de Ayutla, Romero 2009)

b. *primero tyi k-**ñaxañ**-ts'äb-ä-ø tyi i-xiñil*
first PRFV A1-first-light-VT-B3 PREP A3-in.the middle
'First I lit a candle in the middle.'
(Chol, Vázquez 2022)

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* This paper was presented at *The 18th International Conference on Role and Reference Grammar (RRG)* held on July 14 and July 15, 2025, hosted by the Graduate School of Humanities, Kobe University. The paper was originally presented by Sergio Ibáñez Cerda, Armando Mora, Alejandra Ortiz, and Antonio García (in this order) under the same title *Adverbs and operator classes in Mexican languages*. The present paper adopts the same title, but adjusts the order of authors to Alejandra Ortiz, Armando Mora, Sergio Ibáñez, and Antonio García. This change reflects the process of writing the current research.

[1] The glosses of the cited examples have been transcribed as in the original documents.

Incorporated adverbs add specific information to the verbal predicate. In (2a), in Zoque, *ka'm.pä.'äy* 'quickly' modifies the predicate *kä's* 'eat'. In (2b), in Chol, *mero* 'a little bit' indicates the degree of fear expressed by the predicate *bä'ñ-añ* 'be afraid of', with scope over both the predicate and its arguments.

Mithun (1997, 2010), among others (Evans 1997, Haspelmath 2023, 2025), distinguishes between roots and lexical affixes. Lexical affixes exhibit lexical meaning similar to roots, which is why we consider incorporated adverbs to constitute lexical affixes: they retain their adverbial content, but appear in a fixed position within the verbal root. In (2), they are realized as core operators (Van Valin and LaPolla 1997, Van Valin 2005).

(2) a. *y-kä's-**ka'm.pä.'äy**-pa='unh* *Ø-manh-ke't-pa='unh*
A3-eat-quickly-ICP=REP S3-go-REPET-ICP=REP
'He ate it quickly and left.'
(Zoque de Ocotepec, Ramírez 2022)

b. *pero* *tsa'=ix* *keji* *i-**mero**-bä'ñ-añ-ø* *je'e*
but PRFV=already begin A3-a.bit- be afraid of -TD-B3 also
'But he also began to be a bit afraid of it.'
(Chol, Vázquez 2022)

Our revised data show that lexical affixes express a range of meanings, as seen in (1b), (2a), (2b), and (3). In (3a), in Lacandon, the affix *hach* 'very' expresses degree or intensity with respect to the predicate *ir* 'see', and the clitic *ki'* 'well' modifies the manner of the event. In (3b), in Totonaco, *akstu* 'only' conveys exclusivity, and coexists with comitative *taa*, locative *puu*, and causative *maa* affixes, following an ordered sequence before the verbal root *pup* 'boil'.

(3) a. *t-in-**hach=ki'**=ir-ah-ø*
PFV-ERG1-very=well=see-COMPLTR-ABS3
ch'a'ak-ih-ø *y-o'ok* *in-teet*
cut.PSV-COMPL.INTR-ABS3 ERG3-foot ERG1-dad
'I saw very well that my dad's foot was cut.'
(Lacandón de sur, Martínez Corripio 2019).

b. *k-**akstu**-taa-tiya-puu-maa-pup-i-qoo-lh*
S1SG-only-COMIT-DPA-LOC.INSTR-CAUS-boil-CAUS-3PL-COM
chuchut *k-tlamil* *ma* *ki-laq-sata-n*
water LOC-clay.pot DET POS1-DSTR-children-PL
'I went only with my children to boil water in the clay pot.'
(Totonaco de Tuxtla, Puebla. Juárez 2016).

To argue that lexical affixes function as operators, it is necessary to examine: (i) their distribution within the verb; (ii) their scope within the clause; (iii) the specific layer of the clause over which they have scope; (iv) whether they modify or alter the meaning of verb; (v) whether they reduce or specify the scope of modification; (vi) how many and which adverbs in a given language behave as lexical affixes; (vii) whether lexical affixes are obligatory or optional.

In terms of methodology, the examples presented come from two sources: (a) individual field research conducted within different communities, and (b) documentary

research, specifically on online narratives published in the journal *Tlalocan: Revista de fuentes para el conocimiento de las culturas indígenas de México*.

Given the characteristics of the documentary data, we examined both the adverbial class as described in grammatical descriptions, and the meanings typically encoded by this lexical class. We reviewed nine of the eleven linguistic families of Mexico:

i) Yuto-nahua: Nahuatl of the Huasteca (Veracruz), Nahuatl of the Huasteca (Hidalgo), Nahuatl (Tlaxcala), Mayo, Mexicanero, Pima bajo, Raramuri (Nogogachi), Raramuri (Munerachi), Tepehuan (Santa María Magdalena Taxicaringa), Yaqui.
ii) Cochimi-yumana: Kumiay (San José), Paipai (Santa Catarina).
iii) Oaxaca Chontal: Chontal (San Pedro Huamelula).
iv) Seri: Seri.
v) Otomangue: Mazateco (Ayautla), Mazateco (Huautla de Jiménez), Mazahua (San Pedro Potla), Triqui (Chicahuaxtla), Zapoteco (San Pablo Güilá), Zapoteco (Teotitlán del Valle), Zapoteco (Coatlán), Otomí (Valle del Mezquital).
vi) Mixe-zoque: Zoque (Ocotepec), Mixe (Tamazulápam), Mixe (Ayutla).
vii) Tarasca: Purepecha.
viii) Totonaco-tepehua: Totonaco (Río Necaxa).
ix) Maya: Chol, Chuj, Lacandon (southern).

The remainder of this paper is organized as follows. First, we review theoretical considerations regarding the distinction between lexical and functional classes, as well as the status of adverbs and lexical affixes functioning as operators. We then examine how adverbs and operators function in Mexican languages, describing their behavior in clause structure. Finally, we offer some concluding remarks.

2. Exploring lexical and grammatical categories

There are substantial differences between lexical and functional classes. According to Bisang (2023), different criteria are often combined when defining lexical categories based on their semantic denotations and formal distribution. A contrast is sometimes made between 'content words' and 'function words'. However, as Muysken (2008) points out, it is preferable to use the terms functional and lexical category, since not all languages express these forms as independent words. In this regard, lexical categories are open classes, have lexical meaning, and function as independent words or roots. By contrast, functional categories are closed classes; morphologically, they tend to be clitics or affixes and often have few syllables. These two categories are perceived as discrete, as differences arise along different dimensions, as Muysken (2008) explains. This author points out that there are lexical items (e.g. measure terms or class terms), lexico-grammatical (e.g. numeral, noun or verbal classifiers), and grammatical forms (e.g. noun classes and gender). Thus, functional categories may be realized as lexico-grammatical or grammatical elements.

It is also important to note, as Hopper and Traugott (2003) point out, that a lexical item may acquire grammatical functions through a process of grammaticalization. In this sense, the scale of grammaticalization represents a continuum from content item and inflectional affix, as shown in (4).

(4) content item > grammatical word > clitic > inflectional affix

Regarding adverbs, this category has often been treated as residual. Adverbs have been described as an open class, defined by their ability to modify verbs or other constituents. In this sense, adverbs may modify different levels of the clause and provide additional information enriching the predicate with semantic information about manner, spatial and temporal setting, recurrence, among others. Structurally, they are considered peripheral and constitute units used as modifiers (Hengelveld 1997: 121, Schachter and Shopen 2007: 20).

Although not all documents in the corpus explicitly recognize adverbs as a distinct category, our analysis considers the meanings typically associated with this class, such as manner, quantity or intensity, time, place, affirmation, negation, possibility, inclusion, and direction, among others. The discussion extends to the interrelation between the wide range of semantic concepts encoded in lexical or functional categories and their syntactic distribution in a given language.

This paper proposes that incorporated adverbs should be treated as affixes with lexical content. Since they are morphologically bound, they change their categorial status —from lexical to functional— and perform a grammatical function.

The concept of incorporation (Mithun and Corbett 1999, Haspelmath 2025) is understood as "compounding of a word (typically a verb or preposition) with another element (typically a noun, pronoun, or adverb)" (Gerdts 2017: 84). It is a compounding process that combines the syntactic functions of the elements involved. As is well known, nominal incorporation has been widely described, whereas adverbial incorporation has received less attention. According to Givón (2001: 90), when adverbial incorporation occurs, the incorporated item fuses with the verb stem and becomes an inherent semantic feature. When this combination becomes stable and recurrent, the predicate has a high potential for co-lexicalizing into a single verbal word. Adverbial incorporation thus functions as a modifier of verbal phrase and distinguishes different levels of sentence structure (Rivero 1992). Finally, the process of incorporation involves changes in grammatical functions (Baker 1988), such as creating a single complex verb or reducing verbal valency.

Regarding lexical affixes, Mithun (1997) explains that they express precise ranges of meanings, appear to be roots, and convey information within particular context, with both formal and functional grounding. Hopper and Traugott (2003: 5) note that these forms add a semantic component without affecting the categorical status of the root to which they are attached. In this way, lexical affixes convey information that is semantically or pragmatically subordinate within a particular context (Mithun 1997: 369). According to Mithun (1997) lexical affixes are grammatical in nature.

Finally, we assume that when an adverb is attached to a verb, it provides semantic content but performs a grammatical function, much like a lexical affix. Thus, within a theoretical model such as RRG, we propose that incorporated adverbs should be treated as lexical affixes and interpreted as operators. Operators constitute a closed class of grammatical morphemes that indicate functional categories, modify distinct nodes, and may occur in different positions. Nuclear operators modify the state without reference to participants; core operators modify the relation between the arguments and the event; and clausal operators have scope over the entire clause.

In Table 1, Van Valin (2023) identifies types of operators. Nuclear operators as aspect, negation and directionals; core operators include event quantification, modality, and

internal negation; and clausal operators include status, tense, evidentials and illocutionary force.

Operators
Nuclear operators
Aspect
Negation
Directonals (only those modifying the orientation of an action or event without reference to participants)
Core operators
Directionals (only those expressing the orientation or motion of one participant with reference to another participant or to the speaker)
Event quantification
Modality (root modals, e.g. ability, permission, obligation)
Internal (narrow scope) negation
Clausal operators
Status (epistemic modals, external negation)
Tense
Evidentials
Illocutionary force (IF)

Table 1: Operators (Van Valin 2023: 33)

In Table 2, we summarize the properties of adverbs, incorporated adverbs or lexical affixes and operators. Adverbs and lexical affixes share lexical content, but differ in morphological status. Adverbs have free order, whereas operators belong to a functional class with fixed order within the verbal word and are morphologically bound. Although lexical affixes retain lexical content, they display particular morphological and syntactic behavior that distinguishes them from lexical adverbs.

	ADVERBS	LEXICAL AFFIXES	OPERATORS
lexical meaning			
unbound			
free order			
functional cat			
fixed order			
bound			

Table 2: Properties of adverbs, lexical affixes and operators

In summary, this section has reviewed the distinction between lexical and functional categories, discussed adverbs and lexical affixes in relation to incorporation processes, and outlined the concept of operators within the Role and Reference Grammar framework.

3. General properties of adverbs and operators in Mexican languages

3.1. Some examples

In the data reviewed, the concept of adverb is not always identified as a lexical category; rather, the corpus reveals meanings typically associated with them, such as manner, quantity, aspect, and location. In general, these meanings tend to be encoded either as part

of a lexical adverbial class with a limited number of members, or as bound grammatical morphemes, as lexical affixes.

Accordingly, as noted by the authors of the reviewed data, some languages recognize adverbs as a lexical class, whereas in others this category is not explicitly identified. In some cases, certain languages encode these meanings as lexical affixes, while others use free forms.

For instance, in Mixe, adverbs form a closed class. There are adverbial suffixes, adverbial demonstratives, and adverbial locatives; in some cases, other categories such as nouns or adjectives can also function adverbially. In Pima, the adverb class includes forms expressing negation, location, position, time, modality, and epistemic values, and adverbial incorporation is also attested. In Rarámuri, the adverb class includes directional, locative, demonstrative, temporal, and manner meanings. It is a closed class, and its members may occur as either free or bound morphemes. Finally, in Tseltal, adverbs belong to a specific class that includes intensifiers, demonstratives, adverbs of manner, and numeral classifiers. In this language, adverbs can appear as either a free or bound morphemes and may also be incorporated, functioning as lexical affixes.

3.2. Lexical affixes (adverbs incorporated)

In several Mexican languages, lexical affixes express a wide range of meanings. Degree is encoded in languages such as Chuj, Chol, Zoque, Zapoteco, Lacandon, and Totonac, while place or direction is expressed in Zoque, Yaqui, Totonac, Mazatec, Purépecha. In addition, manner appears in Chol, Zoque, Nahuatl, Zapotec, Otomi, Lacandon, and Mazatec; temporal meanings in Chol, Zoque, and Zapotec; and quantification values in Chol, Zoque, Zapotec, and Mazatec. Completive value is also found in languages such as Chuj, Chol, Zoque, Mazatec, Zapotec, Nahuatl, and Totonac, while reiterative value appears in languages such as Chuj, Chol, and Zoque. Finally, negation morphemes occur in Chuj, Zapotec, Mazatec, and Seri; affirmation morphemes in Chol and Zapotec; and approximation in Mazahua, to mention only a few types and languages.

3.3. Operators

According to Van Valin (2023), operators are a closed-class grammatical category that modifies the layers of the clause. In our analysis, the Mexican languages represented in the corpus exhibit nuclear, core, and clausal operators. For example, in Mazahua nuclear operators include aspect and negation morphemes. In Chontal, there are directional morphemes or morphemes related to associated movement. Both Zoque and Chuj exhibit core operators, such as event quantification, while Mazahua and Mazatec have clausal operators such as epistemic modals and tense, to name just a few.

In summary, our analysis reveals that adverbs appear as a lexical category in some languages, while incorporated adverbs —referred to in this study as lexical affixes functioning as operators— represent a distinct grammatical phenomenon.

4. Clause structure

Modification is a grammatical process through which certain constituents provide additional information about the referent; modification enriches the information in the discourse (Croft 2022). Specifically, Rijkhoff (2014) proposes five levels of modification: (i) class, (ii) quality, (iii) quantity, (iv) location, and (v) discursive-referential, each of which serves a communicative function.

Lexical adverbs are modifiers that peripherally affect the nucleus, core, or clause, while lexical affixes and operators add grammatical information to the layers of the clause.

The examples presented in this section are not exhaustive; rather, they illustrate the range of possibilities attested in Mexican languages.

4.1. Lexical adverbs

In RRG, lexical adverbs may function as clausal modifiers (Van Valin 2023), such as (i) speech act modifiers and (ii) evidentials that indicate the speaker's attitude. In (5), in San Pablo Güila Zapotec, *ngjă* 'clearly' indicates speaker judgement. The projection of this modifier is represented in Figure 1.

(5) *ʧĭʔ* ***ngjă*** ***ngjă*** *r-nı̱=ʒa̱*
NEX clearly clearly H-speak=3CNF
'...and he/she spoke clearly.'
(Zapoteco de San Pablo Güila. Arellanes, *et al*., 2022: 70)

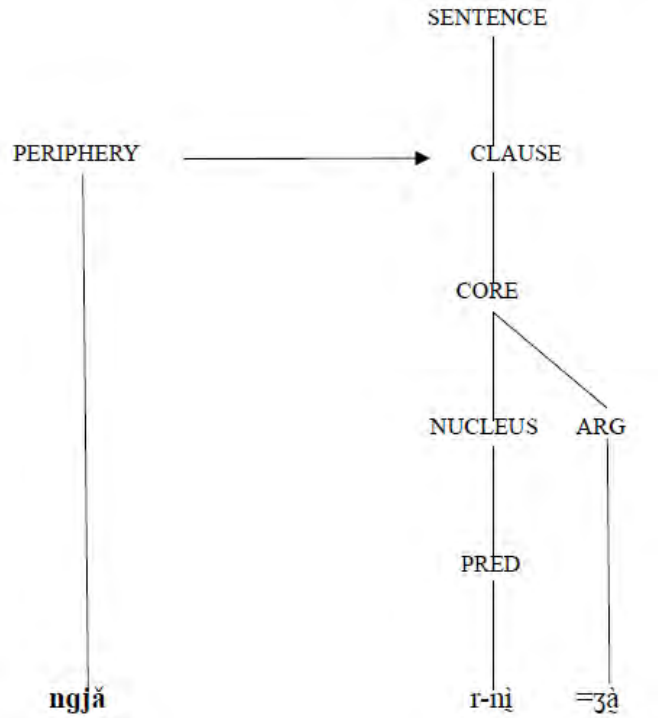


FIGURE 1: Clause lexical adverb

Core modifiers —such as (i) temporal, (ii) manner, (iii) pace, (iv) intent, (v) performance, or (vi) action— affect both the core and its arguments peripherally. In San Bortolo Yautepec Zapotec, (6a), *mód* expresses a manner type that modifies the verb m-rú' 'go out', including its arguments, in this case, the noun phrase *Altamirano*. In (6b), in Alcozauca Mixtec, *ki^{AB}i^{A}* is a pace adverb meaning 'quick'. This adjunct has scope over the verb and its arguments, showing the culmination of an event and the way in which it is integrated into the predicate. Figure 2 shows an overview of the scope of core modifiers.

(6) a. ***mód*** *jiá'* *m-rú'* *Altamiráan*
manner ACV C-go.out Altamirano
'That is how Altamirano came out'.
(Zapoteco de San Bartolo Yautepec. Covarrubias y Jiménez, 2024: 161)

b. *[B]ku[M]ũa* ***ki[AB]i[A]***=*jã[A]* *ca[B]ʔa[A]*
PFV-grind quick=3.SG.M salsa
'She quickly prepared salsa.'
(Mixteco de Alcozauca de Guerrero y Santa María Peñones, Ruíz, Ramírez y Swanton, 2023)

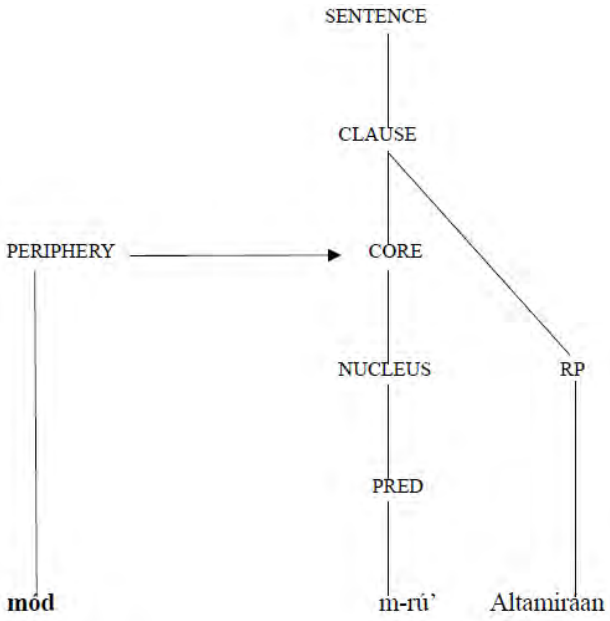


FIGURE 2: Core lexical adverb

In Chicahuaxtla Triqui, *si:[3]na:[4]* 'promptly' is a nuclear modifier; this form configures the aspect in which the manner of the event is performed, that is, in a quick way (7). Figure 3 shows the scope of this nuclear modifier.

(7) ***si:[3]na:[4]*** *ga[2]-ʔwe:[3]* *g-a[2]nu:[2]* *ʃi[3]ʔi:[1]* *ni[3]h*
promptly POT-may POT-be.stuck disease 3P
'She may be promptly attacked by diseases.'
(Triqui de Chicahuaxtla. Elliott, *et al*., 2024: 238)

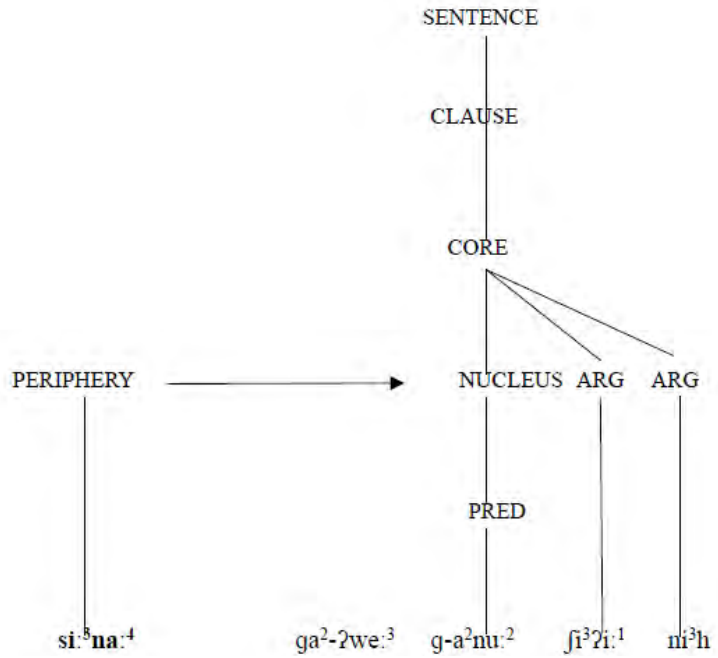


FIGURE 3: Nuclear lexical adverb

In sum, lexical adverbs may modify the clause (Figure 1), the core (Figure 2), or the nucleus (Figure 3); in all cases, they form part of the periphery.

4.2. Operators

Operators can also have scope over all the layers of the clause; thus, it is possible to identify clausal, core and nuclear operators. In Mazahua, *pó* is a clausal operator that expresses the degree of certainty of the whole event, in the case of the example (8), the action of going somewhere and dancing. Another clause operator in (8) is tense, expressed in *nèm'e*. The projection of clausal operators is shown in Figure 4.

(8) ***pó***=*já*=*hè*=*ndà*=***nèm'e*** *a*=*ma*=*kw'a*=*j'a*=*k'o*
PSB=PTL=LOC=TOT=3PST.dance PREP=go=there.PRX2=today=DEMPL.PRX2
'Maybe all of those already danced there.'
(Mazahua de San Pedro Potla, Mora Bustos, 2022)

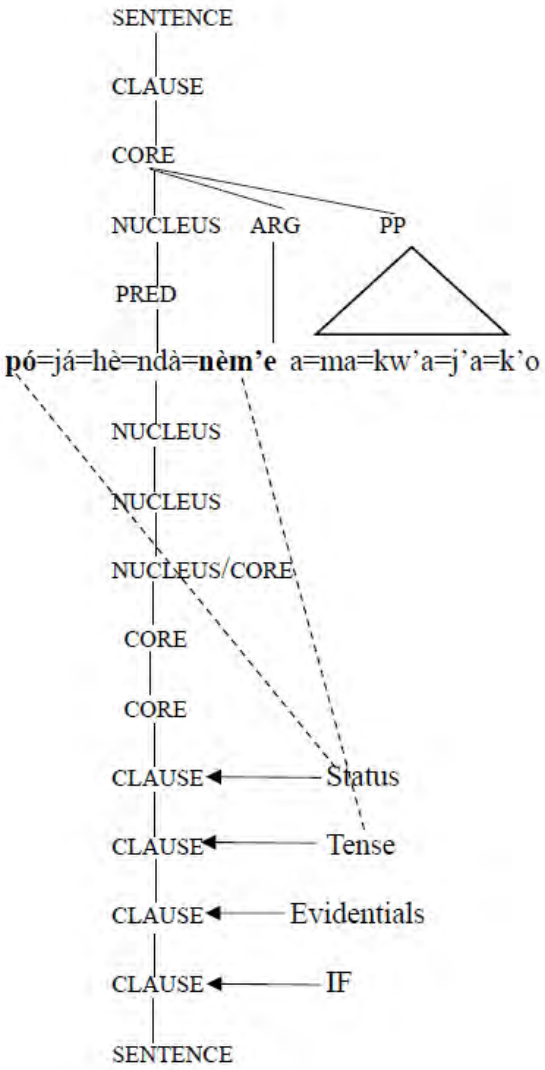


FIGURE 4: Clausal operators

Languages such as Ocotepec Zoque or Chuj exhibit core operators. In (9a), from Zoque, the clitics *te'*, *se'ŋ* and *ti* encode limit. In the same language, in (9b), there is a totalizing affix *pä* that functions as an event quantifier; the same occurs in (9c) from Chuj with the affix *te*. The core operators are shown in Figure 5.

(9) a. *tambyen* *ø-te'=se'ŋ='omo=ti=pä=ma=ke*
also S3-MED=LIM=SR:above=LIM=REL=yet=pues
'also as his age'
(Zoque de Ocotepec, De la Cruz Morales, 2022)
b. *manh-pa=ma='tsi* *ø-ken-pä-ke't-i*
AUX:go-ICP=yet=ABS1 S1-see-total-REPET-DEP1
'I'm going to go see again.'
(Zoque de Ocotepec, De la Cruz Morales, 2022)

c. *mero b'ab'el wal*
mero first INTS
*tz-in-**te**-t'ek'-e-j* *k'ejmi* *lu'um*
IPFV-A1S-**INTS**-trample-DERIV-VTD lap CLF.PRON
'First I trampled (the mud) a lot, going around.' (Chuj)

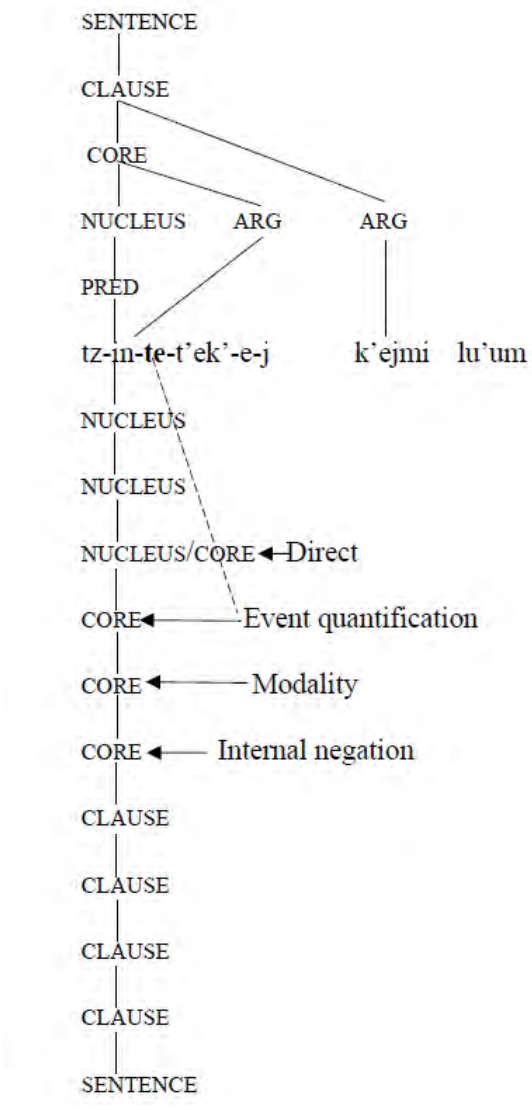


FIGURE 5: Core operators

Finally, in Chontal and in Oxchuc Tseltal, there are nuclear operators. In (10a), *pa* indicates perfective aspect, while *-s-* is a directional operator marking event orientation. Similarly, in Tseltal, *tel* encodes a directional meaning for the verb 'to come'. Figure 6 shows the projection of these operators.

(10) a. *fa-**s**-**pa**=ya'*
sow-AND-PFV.SG=1S.AGT
'I went and sowed.'
(Chontal de la baja de Oaxaca, O'Connor, 2014)

b. *la* *jk-ich'* ***tel*** *ixim*
COM.T A1-take[B3] DIR:venir+NF corn
'I brought corn.'
(Tseltal de Oxchuc, Polian, 2013)

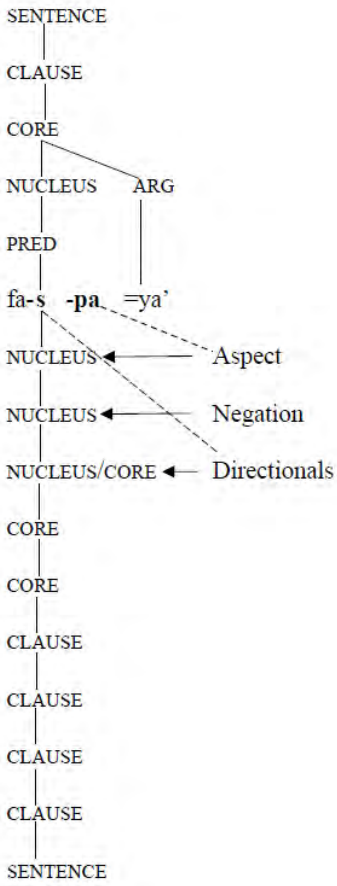


FIGURE 6: Nuclear operators

4.3. Lexical affixes

In this study, we propose that incorporated adverbs cannot be described in the same way as lexical adverbs. As lexical affixes, they should instead be treated as operators: closed-class grammatical morphemes indicating functional categories such as aspect or modality. In the languages under study, they appear exclusively as core and nuclear modifiers.

As core modifiers, in Ocotepec Zoque, in (11a), *ton* 'quickly' indicates how the person should climb. Based on its meaning, it may be considered to express a type of quantification of the rate at which the predicate is performed. In (11b), in Nahuatl, *kwal* 'well' appears in the verbal word together with negation and aspect operators, as well as person indexes. Figure 7 illustrates the projection of these lexical affixes.

(11) a. *y-täp=**ton**=ki'm-u='uŋ*
A3-jump=quickly=get.on-CP=REP
'He climb it quickly.'
(Zoque de Ocotepec. De la Cruz Morales (2022)

b. *pampa* *ax-ø-ki-**kwal**-ita-k* *nopa*
because NEG-3SUJ-3OP-well-see-PERF that
tlama:n-tli *yeka* ø-ki-mik-tih
thing-ABS that's.why 3SUJ-3OP-die-CAUS.PERF
'Because he didn't like that thing and that's why he killed her'.
(Náhuatl de la Huasteca Veracruzana. Martínez y Peralta, 2021).

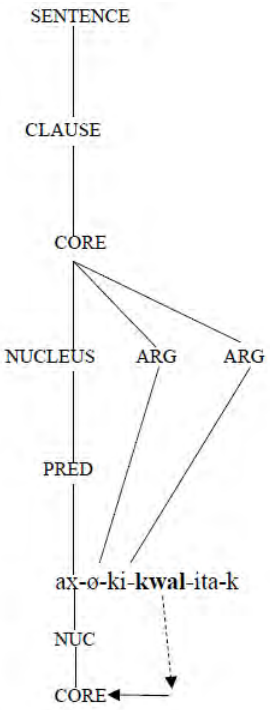


FIGURE 7: Lexical affix (core modifiers)

As a nuclear modifier, in Mixe, *timy* has scope only over the predicate *nëjkx* 'go'. This lexical affix restricts the mode of action. Figure 8 presents the corresponding projection.

(12) *yë'ë* *jëte'n* *yë'ë* *y-**timy**-në-nëjkx-të-yp*
DEM.M M.DEM DEM.M 3S-only-above-go-PL-INDEP;TR
'They are only going to see him.'
(Mixe, Romero & Vázquez, 2012)

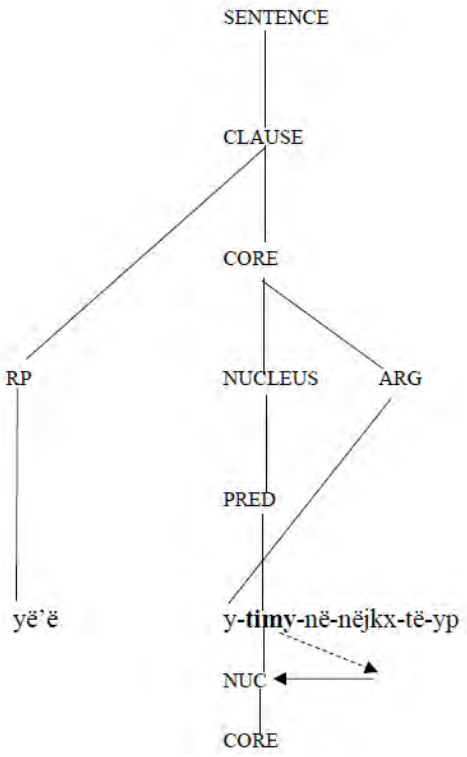


FIGURE 8: Lexical affix (nuclear modifier)

Future research should determine whether the values expressed by lexical affixes correspond fully to those in the list of operators presented in Table 1, or whether additional distinctions are required.

5. Grammatical properties of lexical affixes

Regarding morphological status, in some languages, such as Chol, the same adverb *cha'* 'again' may occur either as an affix or as an independent word (13). This difference depends on the speaker's choice; however, further research is needed to determine whether its use is mandatory in certain contexts.

(13) *che'* *jiñ* *jiñ=tyo ty* *i-**cha'**-puntuj-i-Ø* *paaj*
so PRON3 PRON3=yet PRFV A3-again-aim-VT-B3 ONOM
cha' che' yambä
again say another
'And then, he pointed it at him and 'paaj' again.'
(Chol, Vázquez, 2022).

In the same language, as shown in (14), multiple categories associated with adverbs may occur with different morphological statuses: *yoke* is an intensifier, *äch* an affirmative morpheme, and *ix* 'already' a punctual aspect morpheme.

(14) ***yoke*** *i-ñox-il=**äch**=**ix*** *i-ba*
INTS A3-old-POS=AFIR=already A3-SR
'It was very big.'
(Chol, Vázquez, 2022).

At this stage of the investigation, we have found that the scope of these lexical affixes is core and nuclear. In Lacandon, as in (15), *hach* 'a lot' functions as a type of event quantification modifier, and although *ki'* 'well' retains its manner meaning, it also adds punctual information.

With respect to internal order, lexical affixes have specific positions relative to the verbal predicate. In (16), *akstu* 'only' appears after the person marker and before the comitative morpheme, five positions before *pup* 'boil'. The internal order, however, varies across languages.

(15) *t-in-**hach=ki'**=ir-ah-ø*
PFV-ERG1-a.lot=well=see-COMPLTR-ABS3
ch'a'ak-ih-ø y-o'ok in-teet
cut.PSV-COMPLINT-ABS3 ERG3-foot ERG1-dad
'I saw very well that my father's foot was cut (with a machete).'
(Lacandón de sur, Martínez Corripio, 2018).

(16) *k-**akstu-**taa-tiya-puu-maa-pup-i-qoo-lh*
S1SG-only-COMIT-DPA-LOC.INSTR-CAUS-boil-CAUS-3PL-COM
chuchut *k-tlamil* *ma* *ki-laq-sata-n*
water LOC-clay_pot DET POS1-DSTR-baby-PL
'I went only with my children to boil water in the clay pot.'
(Totonaco de Tuxtla, Puebla. Juárez, 2016).

In Mazatec, lexical adverbs naturally appear in preverbal position, as in (17a), where *nda* 'well' modifies the event of drying clothes. When they occur as lexical affixes, however, they appear as suffixes, as in (17b) and (17c), where *nda* indicates that the action of arranging or making clothes must be carried out correctly.

(17) a. *kri^{3}s **nda^{2}*** *<t>i^{21}ʃi^{31}* *na^{1}hɲǫ^{1}*
Cris well <IMP>be.dry.3 clothes
'Cris, dry clothes well.'
b. *ã^{2}* *ø-bi^{21}ɲja^{1}-**nda^{1}*** *he^{3}=ʧi^{2}kĩ^{3}*
PRON.1SG HAB-accommodate-well.3 ART.DEF=firewood
'I arranged the firewood well.'
c. *he^{3}* *ki^{32}-si^{2}-**nda^{2}*** *na^{h2}ɲo^{2}=le^{1}*
3.PRON COMPL.LEJ-make-well.3 clothes=3
'They made (in a specific way) the clothes.'
(Mazatec of Huautla, Ortiz, personal data)

Based on Van Valin (2005: 22), the level of modification of lexical adverbs is peripheral. By contrast, the syntax of lexical affixes and operators is similar (Figure 9).

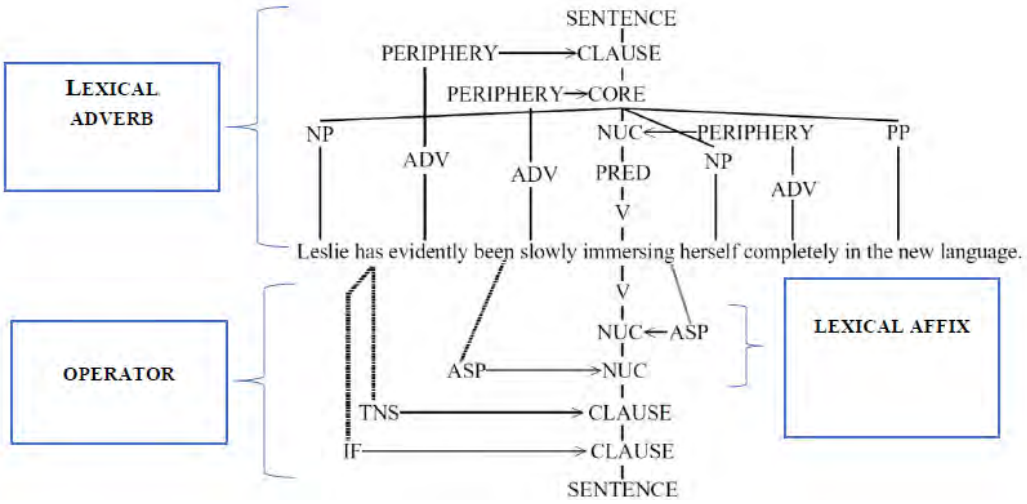


FIGURE 9: Projection of lexical affixes and operators.

6. Final remarks

In summary, lexical adverbs function as clausal, core, or nuclear modifiers, while lexical affixes function as core and nuclear modifiers and, as operators, add grammatical information (e.g. aspect, event quantification, or modality). Lexical affixes exhibit variable distribution relative to the verb. Their scope is specific with respect to clause structure; they retain part of the semantic content but add grammatical information. Further research is required to determine the contexts in which their presence is obligatory or optional and whether particular semantic restrictions apply.

A more detailed examination of the operator inventory is also needed, since these lexical affixes retain certain adverbial meanings that cannot be entirely reduced. Finally, the co-occurrence of lexical adverbs and lexical affixes requires further study in order to determine what kinds of restrictions arise and whether their scope is affected.

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