CrossMark

*English Language and Linguistics*, 25.2: 325–345. © The Author(s), 2020. Published by Cambridge University Press.
doi:10.1017/S1360674320000088

# The syntax of PP-adverbs within English determiner phrases[1]

MUTEB ALQARNI
*King Khalid University*
(Received 4 October 2019; revised 18 February 2020)

The current article explores the distribution of PP-adverbs, such as *this month*, *this year* etc., within English determiner phrases. Examples extracted from English newspapers show that PP-adverbs surprisingly separate head nouns from their PP-complements (i.e. *of*-phrases), e.g. *the election this month of the first female president*. At other times, PP-adverbs follow PP-complements, e.g. *the election of the first female president this month*. Assuming that these PP-adverbs have a null preposition (Larson 1985; McCawley 1988; Caponigro & Pearl 2008, 2009; Shun'ichiro 2013), I put forward three possible syntactic analyses to account for the examples above: (i) adjunction of both the PP-complement and the PP-adverb; (ii) leftward movement of the head noun or the noun phrase; and (iii) rightward movement of the PP-complement. Following Stowell (1981), Higginbotham (1983) and Anderson (1984), the adjunction proposal argues that both PP-adverbs and *of*-phrases are adjuncts, thus being freely ordered in the nominal hierarchy (Bresnan 1982; Svenonius 1994; Stroik & Putnam 2013). In contrast, the leftward movement analysis respects Kayne's (1994) Antisymmetric Theory of Linearization and argues that the *of*-phrase in the examples above is still a genuine complement, but the head noun, or sometimes the noun phrase, moves leftwards to a position higher than spec,FP where PP-adverbs are situated. As for the rightward movement account, it follows the leftward movement in treating the *of*-phrase as a complement but differs in that it extraposes the PP-complement outside PP-adverbs and right-adjoins it inside the DP. The article shows that the first two proposals are untenable, and sometimes cannot derive the wanted data. The third account is superior in that it accounts for the required data as well as other island-sensitive facts.

**Keywords:** PP-adverbs, argument structure, extraposition, adjunction

## 1 Introduction

In his seminal work *Semantic Interpretation in Generative Grammar*, Jackendoff (1972) opens his discussion on adverbs saying that adverbs are 'perhaps the least studied and most maligned part of speech, … maltreated beyond the call of duty' (p. 47). Since then, the syntax of adverbs has received considerable research, with emphasis on adverbs occurring within verb phrases (e.g. Ernst 1984; Travis 1988; Alexiadou 1994; Cinque 1999; Potsdam 1999; Buchstaller & Traugott 2006; Giegerich 2012; Guz 2014). As for adverbs within noun phrases, they have received little attention in the literature with the exception of the works by Kratzer (1994), Fu, Roeper & Borer (1995) and Hazout (1995).

[1] I would like to express my sincere gratitude to Eric Potsdam for his insightful suggestions and to the two anonymous reviewers for their constructive feedback. All remaining errors are my own.

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

In English, there are two types of adverbs: (i) adverbs that end with the suffix *-ly* in (1), and (ii) those that look like noun phrases in (2). The latter type is known in the literature as Bare DP-adverbs because most of them consist of a determiner and a noun phrase (Larson 1985; Emonds 1987).

(1) *suddenly, quickly, widely, funnily, strangely,* etc.
(2) *this month, this year, that day, tonight, yesterday, now, tomorrow*, etc.

The first type is structurally represented as in (3), where *suddenly*, *quickly* etc. occupy the head of an adverbial phrase (AdvP).

(3) $[_{AdvP}\ [_{Adv}$ suddenly/quickly/widely]]

As for the second type, it has been argued that they are DP dominated by PP with a phonetically null preposition (McCawley 1988; Whitman 2002; Trawinski 2004; Dixon 2005; Shun'ichiro 2013). Thus, the underlying structures of *this month* and *that day* in (2) are *in this month* and *on that day* respectively, with the prepositions *in* and *on* being null, as in (4) (see Caponigro & Pearl 2008, 2009). According to Emonds (1987: 224ff.), these covert prepositions in (4) bear semantic features such as Temporal, Direction, Location etc.[2]

(4) (a) $[_{PP\ P}$ Ø $[_{DP\ D}$ this $_{NP}$ month]]
(b) $[_{PP\ P}$ Ø $[_{DP\ D}$ that $_{NP}$ day]]

Regarding the remaining adverbs in (2) such as *today* and *tonight*, I assume that they are pronouns, thus taking a DP structure. There are three pieces of evidence for this assumption (Huddleston & Pullum 2002: 429). First, adverbs such as *yesterday*, *today*, *tonight* and *tomorrow* are deictic like other pronouns such as *I* and *you*. That is, unlike common nouns, the meanings of *yesterday* and *tonight* are not inherent, but they depend on the time and context of the speech. Second, given that pronouns occupy the head D, these adverbs, like pronouns, do not allow determiners, as in (5). Third, unlike other adverbs such as *usually* and prepositions such as *after*, these adverbs are similar to possessive pronouns *his* and *its* in that they inflect for genitive, as in (6).

(5) Today/*The today is my birthday.
(6) Now's/Yesterday's/*Usually's /*After's performance was great.

Thus, I maintain that *tonight* and *yesterday* in (2) are also DPs dominated by a silent preposition, as in (7).

(7) (a) $[_{PP\ P}$ Ø $[_{DP\ D}$ tonight]]
(b) $[_{PP\ P}$ Ø $[_{DP\ D}$ yesterday]]

[2] As a justification for the non-realization of the preposition in these Bare DP-adverbs, Collins (2007) argues that the Doubly-filled Comp Filter, a principle in Universal Grammar, is behind the non-pronunciation of the preposition after the movement of DP to spec,PP.

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

To prove that the so-called DP-adverbs are truly PPs, Larson (1985: 599) shows that they can be coordinated with other adverbial PPs, as in (8). Also, they can be licensed in the same position where PP-complements occur, as in (9).

(8) The entire company will be arriving [$_{PP}$ at two o'clock] and/or [$_{PP}$ Ø the next day].
(9) Peter put the letter [$_{PP}$ in the mailbox]/[$_{PP}$ Ø some place].

McCawley (1988: 585) also argues that these DP-adverbs behave like regular PPs in that they both cannot occur before verb phrases, as in (10a,b). In contrast, adverbs with *-ly* can, as in (10c).

(10) (a) *Smith may have [$_{PP}$ on a subsequent day] withdrawn his lawsuit.
(b) *Smith may have [$_{PP}$ Ø that day] withdrawn his lawsuit.
(c) Smith may have [$_{AdvP}$ subsequently] withdrawn his lawsuit.

Given that these Bare DP-adverbs in (2) are in fact PPs, I will not use the term 'Bare DP-adverbs', as found in the literature. For the purpose of clarity, I will rather use the term 'PP-adverbs'.

In this article, I will focus on the distribution of these PP-adverbs within noun phrases, showing that they differ from those ending with *-ly*. Adverbs ending with *-ly* can occur after the head noun and its PP-complement, as in (11) (see Alexiadou 1997: 221). However, they cannot separate the head noun from its PP-complement, as in (12).

(11) (a) the destruction of the city **completely**
(b) the distribution of the paper **widely**
(c) the reading of the book **loudly**
(12) (a) the destruction (***completely**) of the city
(b) the distribution (***widely**) of the paper
(c) the reading (***loudly**) of the book

In contrast, PP-adverbs can occur before as well as after PP-complements. Consider the following examples extracted from different English newspapers, where the head nouns are surprisingly separated from their PP-complements by PP-adverbs.

(13) The first manual survey **this year** of California's snowpack revealed Tuesday that it holds about half as much water as normal. (*Reno Gazette Journal*, 3 Jan 2017, https://bit.ly/2sDuS1t)
(14) He also repeated threats of retribution against the UK for its seizure **this month** of an Iranian tanker in the Mediterranean Sea off the coast of Gibraltar. (*Arab News*, 16 July 2019, https://bit.ly/2mePycU)
(15) There is growing talk **tonight** of possible U.S. military action against the government of Syria. (WNYC, 6 April 2017, https://bit.ly/2mh1w5P)
(16) Let's begin in Seoul and a historical election **yesterday** of its first female president. (NPR, 20 Dec 2012, https://n.pr/2mLsiDB)

These PP-adverbs can also come after PP-complements, as demonstrated in (17) below.

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

(17) (a) the first manual survey of California's snowpack **this year**
(b) its seizure of an Iranian tanker **this month**
(c) growing talk of possible U.S. military action **tonight**
(d) a historical election of its first female president **yesterday**

The examples in (13) through (16) where the head noun is separated from its PP-complement by PP-adverbs are not uncommon in English. English native speakers find such examples grammatical, and we can still find more instances of this behavior in the following data from other newspapers.

(18) the review **today** of Venezuela's human rights record is being conducted based on a massive amount of manifestly false information (*UN Watch*, 1 Nov 2016, https://bit.ly/39e3nMJ)
(19) His remarks were made in advance of publication **tomorrow** of a major report 'The Future of Food and Farming'. (*The Guardian*, 23 Jan 2011, https://bit.ly/2Q27xja)
(20) The murder **this month** of Member of Parliament Jo Cox, a leader in the effort to keep Britain in the European Union, (*The Baltimore Sun*, 24 Jun 2016, https://bit.ly/2EW9d7w)
(21) the pay of the Sinaloa cartel because of his leading role in the arrest **this year** of dozens of the gang's gunmen (Reuters, 14 May 2008, https://reut.rs/2QuoLot)

I assume that the above constructions in (13)–(16) and (18)–(21) are resultant from the fact that the constituents bigger in size generally follow the smaller ones (Wasow & Arnold 2003). This is frequently attested in phrasal verbs with heavy objects, as in (22) (see Leech 2006: 38).

(22) (a) ?We'll have to *put* the next meeting of the General Assembly *off*.
(b) We'll have to *put off* the next meeting of the General Assembly.

For sentence (22a) to be more acceptable, the long NP *the next meeting of the General Assembly* needs to move to the right of the preposition *off*, as in (22b). Being in the middle of the clause, a long phrase 'makes the information it contains harder to hold in short term memory. A writer may, therefore, place a long NP at the end of a sentence to make the sentence easier to process (comprehend)' (Cowan 2008: 338, parenthesis in original). Thus, according to Cowan (2008: 338, ex. 42), native speakers tend to prefer sentence (23a) over (23b).

(23) (a) Abby gave the kids foot-long frankfurters that had been roasted over an open hickory fire.
(b) Abby gave foot-long frankfurters that had been roasted over an open hickory fire to the kids.

This grammatical tendency is defined by Greenbaum & Nelson (2002) as the Principle of End-Weight, where the longer, heavier constituent must occur later in a sentence. In examples (13)–(16) and (18)–(21), the news reporters seemed to place PP-complements after PP-adverbs because the former are relatively long.

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

The objective of this article is to propose a syntactic account that captures such a distribution of PP-adverbs within English DPs. I will examine why PP-adverbs sometimes precede PP-complements and at other times follow them; in section 2, I will evaluate three possible accounts for this behavior: (i) adjunction of the PP-complement as well as the PP-adverb, (ii) leftward movement of the head noun or the noun phrase, and (ii) rightward movement of the PP-complement. I will present evidence against the first two analyses, supporting the third one. Concluding remarks will be given in section 3.

## 2 Analyses of PP-adverbs within English DPs

In section 2.1, I will present my first possible analysis of the facts above, treating both PP-complements and PP-adverbs as adjuncts. After presenting the problems associated with that analysis, section 2.2 develops an alternative movement-based proposal that displaces the head noun (or the noun phrase) leftwards away from its PP-complement. I will show how this leftward movement analysis is also problematic, before moving to section 2.3, which presents a better account that bypasses all the problems arising from the two earlier analyses. The latter proposal will be based on a rightward movement of the PP-complement, and it will receive empirical evidence from island sensitivity.

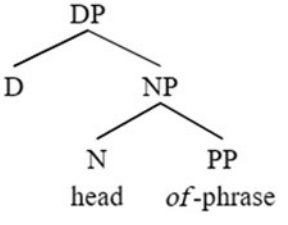
### *2.1 Adjunction analysis*

Given that PP-adverbs can occur either before or after PP-complements, as in (24), one might take this bi-directionality of PP-adverbs with PP-complements as evidence that they are adjuncts.

(24) (a) The first survey **(this year)** of California's snowpack **(this year)**
(b) its seizure **(this month)** of an Iranian tanker (**this month)**
(c) growing talk **(tonight)** of possible U.S. military action **(tonight)**
(d) a historical election **(yesterday)** of its first female president **(yesterday)**

In other words, the underlined *of*-phrases in (24) are not PP-complements selected by the head nouns *survey*, *seizure*, *talk* and *election* as represented in (25). Recall that a complement is a phrase (YP) whose sister is a head (i.e. X) whose mother is its projection (i.e. XP).

(25)

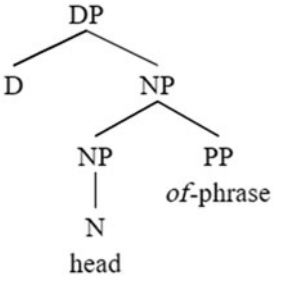



Under the adjunction account, these *of*-phrases should rather be adjuncts that add non-essential information to the nominal structure as drawn in (26). Recall that an

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

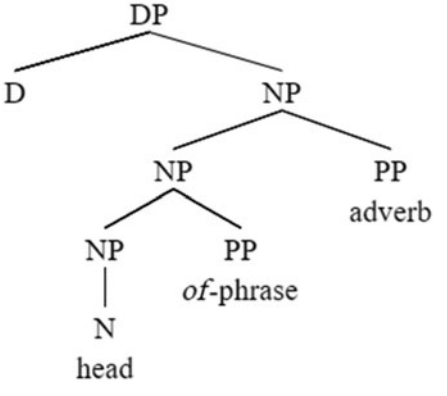
adjunct is a dispensable phrase (i.e. XP) whose sister is also a phrase (i.e. YP), but whose mother is not its projection (i.e. YP).

(26)

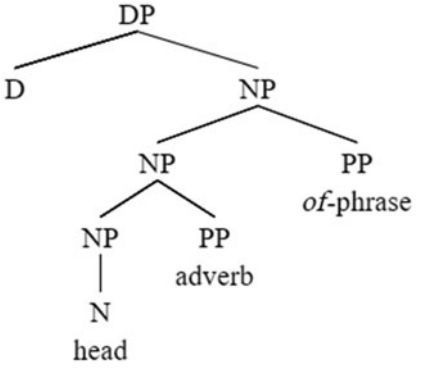



Given that PP-adverbs are commonly adjuncts, the free ordering in (24) comes as no surprise given that adjuncts are freely ordered (Bresnan 1982; Svenonius 1994; Stroik & Putnam 2013). Adjunct PP-adverbs can follow adjunct *of*-phrases, as in (27), or precede them, as in (28).

(27)




(28)




https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

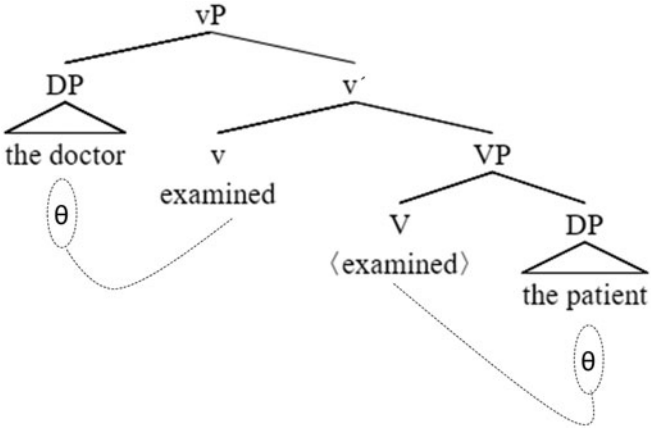
This proposal can therefore account for all the facts above. Although the claim that the *of*-phrases in (24) are adjuncts is so strong that it requires independent evidence, many scholars can justify it. Following Stowell (1981), for instance, Grimshaw (1990) assumes that the CP in (29a) is a complement to the head verb *concluded*, but a modifying adjunct to the head noun *conclusion* in (29b).

(29) (a) The physicists *concluded* [$_{CP}$ that the earth is round]. (V + CP)
(b) the physicists' *conclusion* [$_{CP}$ that the earth is round] (N + CP)

Thus, the verb *concluded* in (29a) assigns an internal θ-role to the CP-complement *that the earth is round*, but the noun *conclusion* in (29b) does not. In other words, nouns do not have argument structure as verbs do, thus they do not select complements. What is meant by 'argument structure' is whether or not the head, be it a verb or noun, selects a complement to complete its meaning. If so, complements are considered arguments to which the head element assigns θ-roles. If not, the head element is said to not have argument structure, and does not require obligatory complements. It may rather take optional adjuncts.

The literature has reached a consensus that verbs generally have argument structure (Chomsky 1970; Grimshaw 1990; Wechsler 1995; Levin & Hovav 2005 among others). Thus, in (30) represented in (31), the verb *examined* assigns an external θ-role to its subject *the doctor*, and an internal θ-role to its complement *the patient*.

(30) The doctor *examined* the patient.
(31)




Grimshaw (1990), however, rejects this option for nouns. She provides two pieces of evidence to support her claim. First, although the subject is obligatory in sentences such as (32a), the same external argument is not required in NPs such as (32b). Second, some verbs like *examined* require an obligatory complement, as in (33a).

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

However, the noun *examination* derived from the same verb *examine* does not require this, e.g. (33b).

(32) (a) **Examined* the patient. (VP)
(b) the *examination* of the patient (NP)
(33) (a) *The doctor *examined*. (VP)
(b) The doctor's *examination* was successful. (NP)

These observations led many other scholars such as Higginbotham (1983), Anderson (1984) and Dowty (1989, 1991) to conclude that nouns lack argument structure altogether. In short, there is evidence for the adjunction analysis above that the *of*-phrases in (24) are not complements, but adjuncts that can be freely ordered with other adjuncts.

While attractive, the adjunction analysis is not entirely uncontroversial. There is another stance in the literature that argues that nouns, or at least some of them, in fact select complements and assign θ-roles to them (e.g. Hazout 1991, 1995; Barker & Dowty 1993; Alsina 1996; van Hout & Roeper 1998; Borer 2003, 2005 among others). Giorgi & Longobardi (1991: 2), for instance, note that gerund nouns such as *reading (a book)* have θ-grids similar to those of corresponding verbs such as *read (a book)*, and any differences at face value are reduced to the modules of grammar that generate variations. Chomsky (1970: 91) also argues that the item *destroy* in (34a,b) has fixed selectional properties in the lexicon, and that it is free of categorial features such as [±N; ±V]. Thus, *destroy* in the verb phrase in (34a) and *destruct* in the noun phrase in (34b) are the same item, thus requiring the same complement, namely *the city.*

(34) (a) The enemy destroyed the city.
(b) The destruction of the city by the enemy.

Although she argues that nouns do not have argument structure, Grimshaw (1990: 47ff.) still admits that some nouns do take complements. She distinguishes between different types of nouns in this respect: Class I nouns which consist of complex event nominals such as *examination*, *giving* etc., and Class II nouns which consist of result nominals such as *exam*, *gift* etc. Grimshaw provides diagnostics that can distinguish between the two classes, and argues that Class I nouns select complements whereas Class II nouns do not. In this article, I will consider only three of these tests to see whether the nouns in (24), namely *survey*, *seizure*, *talk* and *election*, fall into Class I, thus selecting complements and involving argument structure, or into Class II that does not. According to Grimshaw (1990), Class I nouns can denote an action thus requiring a duration of time, as in (35a), whereas the other class cannot, as in (35b). In Verkuyl's (1993) terms, Class I nouns are durative whereas Class II nouns are terminative.

(35) (a) The examination of the patient took a long time.
(b) *The exam of the patient took a long time.

Examining the examples in (24), we find that the head nouns, namely *survey*, *seizure*, *talk* and *election*, are also event-denoting nouns showing duration of time, as demonstrated in

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

(36). Thus, this is the first evidence that the *of*-phrases in these examples should be treated as complements rather than adjuncts.

(36) (a) The first survey of California's snowpack took a long time.
(b) Its seizure of an Iranian tanker took a long time.
(c) The talk of possible U.S. military action took a long time.
(d) A historical election of its first female president took a long time.

Another piece of evidence comes from the fact that Class I nouns allow *by*-phrases in their constructions, as in (37a), but Class II nouns do not, as in (37b).

(37) (a) the examination of the students by the instructor was generous.
(b) *the gift by my father was generous.

The examples in (24), like Class I nouns, also allow *by*-phrases, as in (38) below.

(38) (a) the first survey of California's snowpack by the Americans
(b) the seizure of the Iranian tanker by the British Marines
(c) the growing talk of U.S. military action by the foreign columnists
(d) the election of the first female president by the Germans

Moreover, implicit argument control is permitted in Class I nouns, as in (39a), but not in Class II ones, as in (39b).

(39) (a) the assignment of easy problems in order to pass all the students
(b) *the exam in order to pass all the students

Like Class I nouns, the examples in (24) allow such argument control as well; see (40).

(40) (a) the first survey of California's snowpack in order to convince the Americans of the reality of climate change
(b) the seizure of the Iranian tanker in order to stop its suspicious activities
(c) the growing talk of U.S. military action in order to prepare the public for the possibility of war
(d) the election of the first female president in order to guide strategic decisions

In light of these similarities, I conclude that all the head nouns in (24) above behave like the Class I nouns, thus they should select true complements. In other words, the *of*-phrases in (24) should not be considered adjuncts that can switch positions with PP-adverbs.

Further evidence comes from verb phrases. In the verb phrase domain, PP-adverbs can also separate the head verb from its complements, as in (41).

(41) (a) Morstead, a punter for the New Orleans Saints, participated **this year** in the region-wide boycott of the Super Bowl between the Rams and New England Patriots (*Los Angeles Times*, 14 Sept 2019, https://lat.ms/2nJJzO6)
(b) The Trump administration announced **this month** that they plan to ban e-cigarette flavors (*Washington Examiner*, 2 Oct 2019, https://washex.am/2oqEVVy)

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

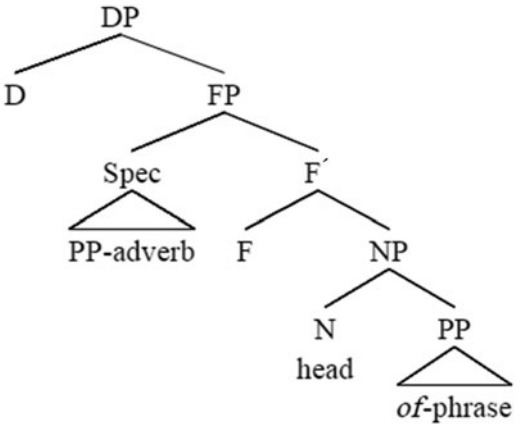
(c) Marc Benioff talked **last night** about how some of his customers are concerned about tariffs (*The Street*, 5 Jan 2019, https://bit.ly/2mN6yaD).
(d) Diane Abbott and Rebecca Long Bailey voted **yesterday** for the motion to ditch the deputy role (*The Sun*, 22 Sept 2019, https://bit.ly/2pdZkxn)

Given that PP-adverbs appear between head verbs and their complements in (41), the adjunction analysis above may argue that the head verbs in (41) should similarly be followed by adjuncts, with which PP-adverbs switch places, rather than selecting complements. However, this account is untenable because it is well established in the literature that verbs have argument structure and select complements (Chomsky 1970; Grimshaw 1990; Wechsler 1995; Levin & Hovav 2005 among others). In other words, all the elements after the PP-adverbs in (41) are genuine undisputed complements, to which the head verbs assign internal θ-roles. These conclusions pose empirical challenges to the adjunction analysis of the noun phrases above for its inability to be carried over to the verbal constructions in (41). Given that there is evidence that the *of*-phrases in (24) are complements rather than adjuncts, and that the adjunction analysis fails as a unified account for all the similar data in English, I will reject this proposal for the rest of the article.

### *2.2 Leftward movement of the head noun or the noun phrase*

In this section, I will provide an alternative movement-based analysis to the data above. Under this new analysis, the *of*-phrases in (24) will not be treated as adjuncts. Rather, they will be generated as genuine complements to the head nouns. As for the PP-adverbs, they will occupy the specifier of a functional projection (FP) above the lexical NP, as shown in (42).

(42)

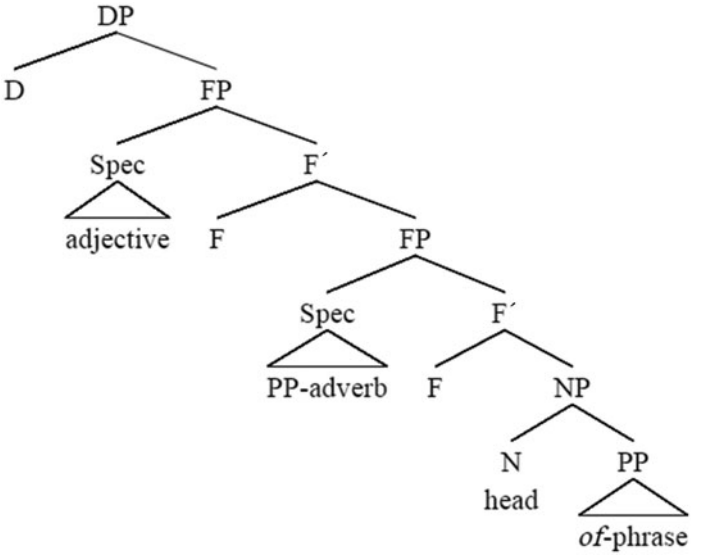



Structure (42) is elegant for three reasons. First, the *of*-phrase is not an adjunct but a complement, to which the head event-related noun assigns a θ-role. This is in line with the evidence presented in the earlier section for the availability of argument structures

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

for the head nouns in (24). Second, the placement of PP-adverbs in spec,FP is in harmony with Cinque's (1999) proposal for the position of adverbs within VPs, and it is the same position proposed by Valois' (1991) for other modifiers such as adjectives. Thus, if both adjectives and adverbs appeared within the NP, they would uniformly take the same positions, namely spec,FP, as in (43).

(43)



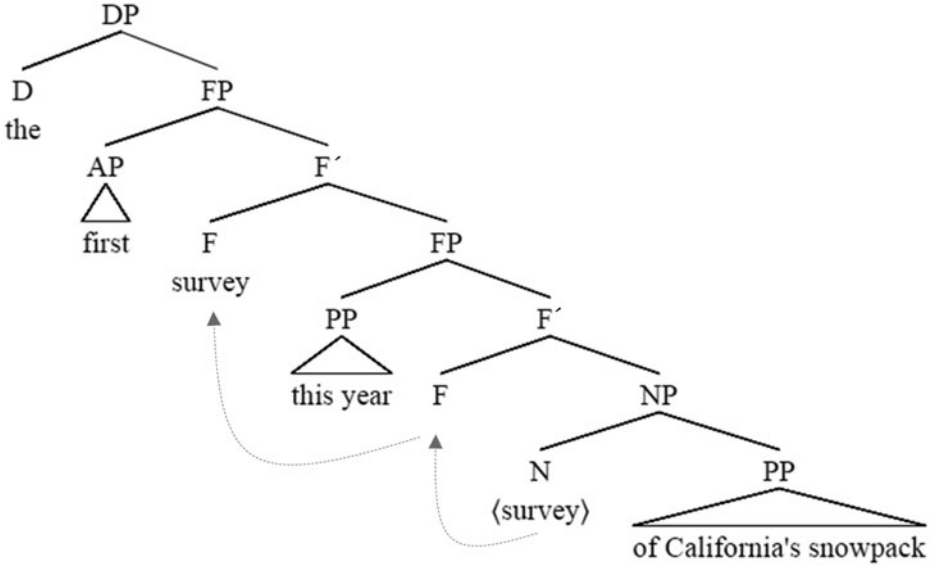

Third, structure (43) respects Kayne's (1994) Antisymmetric Theory of Linearization. According to Kayne (1994), the universal word order implies that non-complements such as modifiers and subjects, be they derived or base-generated, must precede the heads of their phrases. Thus, PP-adverbs, being non-complements, must precede the head noun. This requirement is satisfied in (43). Any peculiar word order, as shown in the examples in (24) where PP-adverbs separate the head noun from its complement, can be resolved by the leftward movement of the head noun given that 'no movement rule can adjoin anything to the right of anything' (Kayne 1994: 71). This Kaynian proposal finds support from Greenberg's (1963) observation that most languages place the subject (i.e. a non-complement element) to the left of the verb, and from Dryer (2013) who notes that *wh*-phrases are mostly displaced to the left and 'a few languages exhibit at least a weak tendency to place interrogative phrases at the end of sentences'.

Turning to the word order in (24) where PP-adverbs separate the head noun from its PP-complement, I propose the head N must move leftwards somewhere higher than PP-adverbs. For the example in (44), I argue that the head N moves to the head of the FP that hosts the adjective, as shown in (45).

(44) The first survey **this year** of California's snowpack

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

(45)

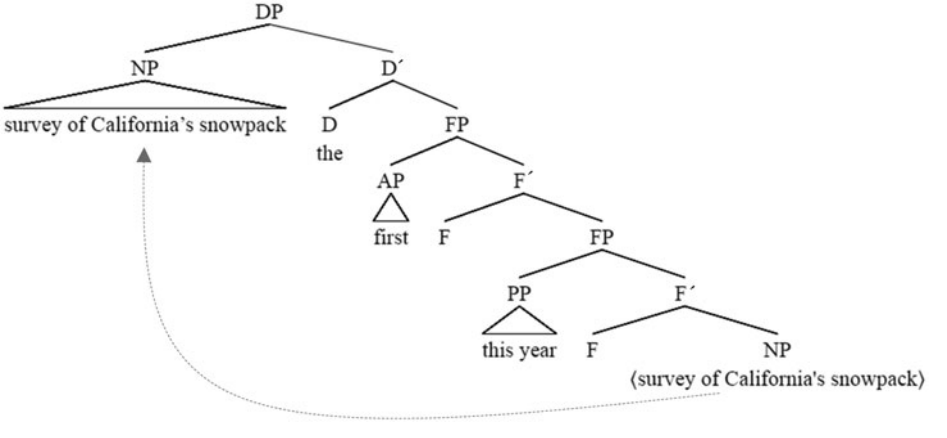



Although this derivation allows PP-adverbs to separate the head noun from its PP-complement, the same analysis cannot derive the cases where PP-adverbs follow the PP-complement, as in (46).

(46) The first survey of California's snowpack **this year**

For (46), the whole NP, i.e. the head noun as well as its PP-complement, must rise higher than PP-adverbs, but it is not clear where they should land. The movement of the whole NP to spec, DP, which is the only empty position, would produce the wrong word order where the definite article would follow the NP, as shown in (47). There is no empty position where the NP can land other than spec, DP.

(47)



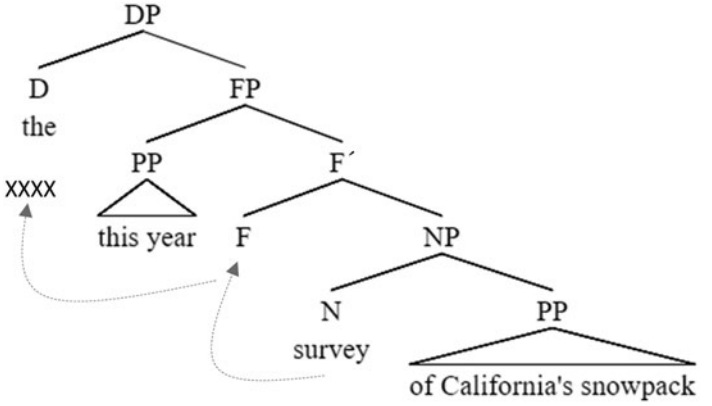

Thus, the derivation of the cases that place PP-adverbs after the PP-complement would always be impossible under this account. In fact, even the cases where PP-adverbs

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

precede the PP-complement would be non-derivable in the absence of adjectives. In that case, the head of the missing FP that hosts adjectives would not be available for the head noun to land on. Consider representation (49) for example (48), where the adjective *first* is missing.

(48) The survey this year of California's snowpack

(49)




Due to the absence of the FP of adjectives, the head noun in (49) will have no option but to land on the head D. That position, however, is filled by the definite article. In syntactic theory, it is unlikely that an element will move to a syntactic position which is lexically filled, as in (50) (see Shlonsky 2004: 8, ex. 16).

(50) (a) Had he done this, we would have been happy. (I→C)
(b) If he had done this, we would have been happy. (No I→C)
(c) *If had he done this, we would have been happy. (I→C).

In (50a), the auxiliary *had* can move from the head I to the head C because the latter position is empty, i.e. because the complementizer *if* is missing. However, the presence of the complementizer *if* in the head C precludes the movement of the auxiliary, as in (50b,c). I assume that this is the case in (49), where the definite article should not allow the head N to occupy its position. Based on these observations, I also reject the leftward movement analysis for the rest of the article for its inability to derive the required data.[3]

[3] One reviewer argues that N-to-D raising in noun phrases is possible in Semitic languages, as shown in (i) from Arabic (see Fassi Fehri 1993, 1999).

(i) (a) $[_{DP}\ [_{D}$ ʔal 'the'$]\ [_{NP}\ [_{N}$ kita:b 'book' $]]]]]$
(b) $[_{DP}\ [_{D}$ ʔal+kita:b $]\ [_{NP}\ [_{N}\ \langle$kita:b$\rangle]]]]]$

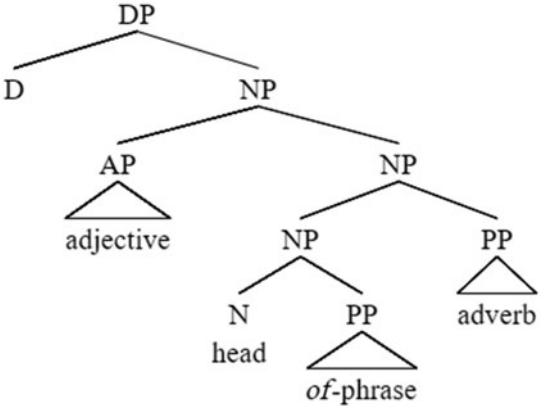
In (i), the head noun *kita:b* 'book' moves and adjoins to the head D *ʔal* 'the' although the head D is lexically filled. Similarly, the head noun in English should be able to land on the head D in (49). I argue that this analysis cannot be extended to English. The definite article in Arabic is a prefix that requires lexical support, whereas that of English is a separate word that can stand alone. This is clear from the fact that the English definite article *the* can be separated from the noun by an adjective, as in (ii).

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

### 2.3 *Rightward movement of the PP-complement*

In the previous two sections, it was shown that the adjunction analysis is problematic because it treats *of*-phrases as adjuncts when they are genuine complements selected by head nouns. Although the leftward movement analysis subverts this problem, it fails to derive the variations attested in (24). In this section, I will present an alternative account that maintains that the *of*-phrases in (24) are complements. However, this account does not follow the leftward movement proposal that both adjectives and adverbs occupy different specifiers of FPs. Adjectives and adverbs, under this proposal, are simply adjoined to the NP. Adjectives are left-adjoined whereas PP-adverbs are adjoined to the right, as in (51).

(51)




This proposal is reasonable in that adjectives do precede the head noun in English, as in (52). Thus, they should be structurally left-adjoined as well. However, PP-adverbs, as in (53a), appear only to the right, similar to other constituents in English such as PP (e.g. 53b), relative clauses (e.g. 53c) and complement-selecting adjectives (e.g. 53d). Because all the constituents in (53) are heavy, Emonds (1985) and Di Sciullo *et al.* (1987) assume that they should be structurally right-adjoined, as shown in (51).

(ii) $[_{DP}\ [_{D}$ the $[_{AP}$ smart $[_{NP}$ girl$]]]]$

In contrast, Arabic adjectives cannot separate the definite article from its head noun, as in (iiia). The head noun must move and adjoin to the definite prefix, thus leaving the adjective behind agreeing with the noun's definiteness, as in (iiib).

(iii) (a) $*[_{DP}\ [_{D}$ ʔal 'the' $[_{AP}$ dʒadi:d 'new'$]\ [_{NP}\ [_{N}$ kita:b 'book'$]]]]]]$
(b) $[_{DP}\ [_{D}$ ʔal+kita:b $[_{AP}$ ʔal-dʒadi:d $]\ [_{NP}\ [_{N}\ \langle$kita:b$\rangle\ ]]]]]]$

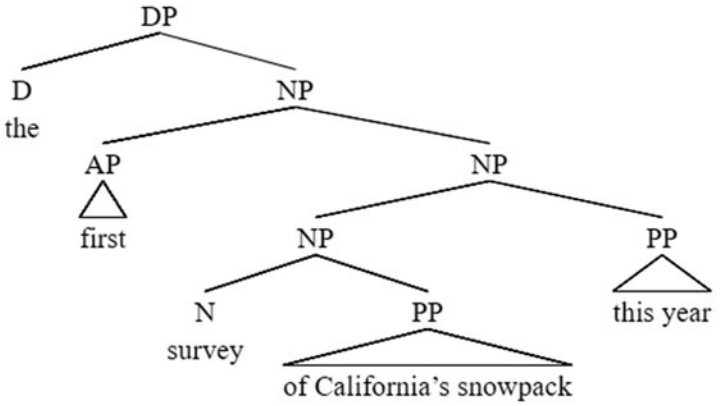
https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

(52) The (first/last) question (*first/last).
(53) (a) The (*this year) survey (this year)
(b) The (*on Thursday) exam (on Thursday).
(c) The (*that we took) exam (that we took).
(d) The (*afraid of the dog) boy (afraid of the dog).

All else being equal, structure (51) can directly derive data such as those in (54), where PP-adverbs follow *of*-phrases. Consider the tree in (55), which represents example (54a).

(54) (a) The first survey of California's snowpack **this year**
(b) its seizure of an Iranian tanker **this month**
(c) growing talk of possible U.S. military action **tonight**
(d) a historical election of its first female president **yesterday**

(55)

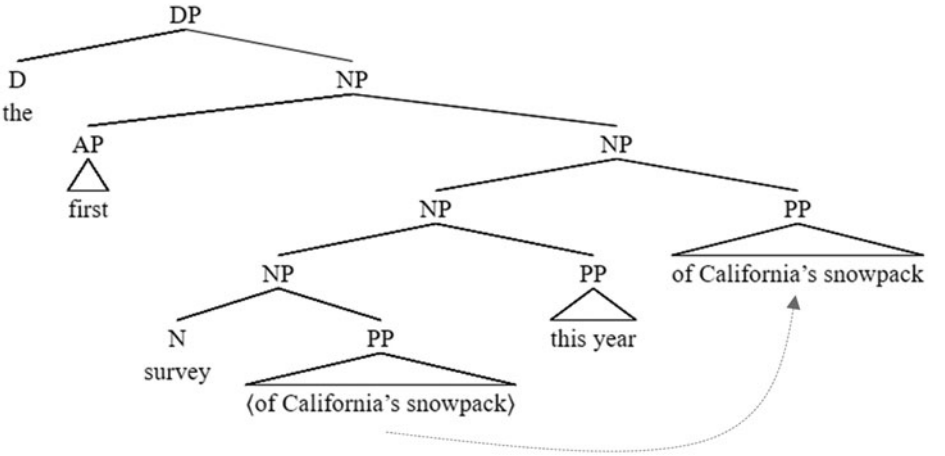



As for the data where PP-adverbs separate the head noun from its complement, as in (56), I follow the theorists of rightward movement such as Ross (1967), Larson (1988) and Overfelt (2015) who call such constructions Complex-NP Shift, and propose that the *of*-phrase extraposes and adjoins to the right of the PP-adverb, as shown in (57) representing example (56a).

(56) (a) the first survey **this year** of California's snowpack
(b) its seizure **this month** of an Iranian tanker
(c) growing talk **tonight** of possible U.S. military action
(d) a historical election **yesterday** of its first female president

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

(57)




Extraposition of the PP-complement to the right of the PP-adverb captures the data in (56). This analysis therefore accounts for all the data in question, in contrast to the adjunction analysis and the leftward movement of the head noun or the noun phrase.

One piece of evidence that supports the extraposition analysis over the other two analyses comes from island-sensitivity. Under the rightward movement account, I predict that we can ask about the elements inside the PP-complements in (58) before they move to the right of the PP-adverbs. In fact, the elements inside these PP-complements can be questioned, as demonstrated in (59).

(58) (a) He wrote the first manual of physical education **this year**.
(b) There is growing talk of possible US military action **tonight**.
(59) (a) What did he write the first manual of ___ **this year**?
(b) What is there growing talk of ___ **tonight**?

If the PP-complements are really dislocated to the right outside the PP-adverb as proposed in (57), they then become adjuncts. We know that adjuncts form island domains, disallowing any extraction of their embedded elements. This is known in the literature as Adjunct Island Condition (see Huang 1982).

(60) Adjunct Island Condition
If an XP is in an adjunct position, nothing may move out of it.

If the dislocated PP-complements become adjuncts, i.e. islands, I predict that no element can be extracted from their domains. In fact, this prediction is borne out as shown in (62) below, where extraction is impossible after the PP-complement extraposes as an adjunct to the right.

(61) (a) He wrote the first manual **this year** of physical education.
(b) There is growing talk **tonight** of possible US military action.
(62) (a) *What did he write the first manual **this year** of ___?
(b) *What is there growing talk **tonight** of ___?

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

In conclusion, the rightward movement analysis is superior in that it can also account for the contrast in extraction between (59) and (62). The contrast shows that PP-complements adjoin to the right above PP-adverbs, and form islands out of which no element is extractable. The rightward movement analysis becomes preferable in that it can also account for the verb phrases in examples (63), which exhibit the same behavior. Note that it is possible to extract from the complements in (64), but not from the same phrases after they are dislocated as adjuncts after the PP-adverbs in (65).

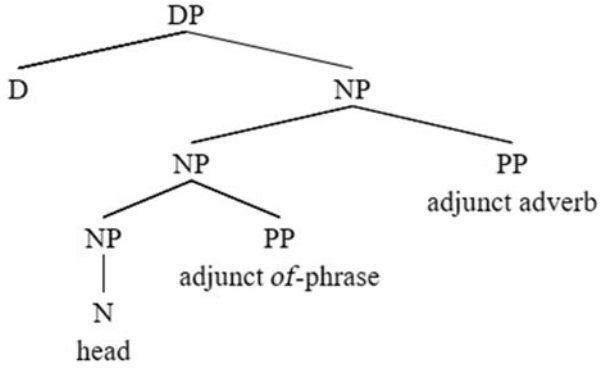
(63) (a) Marc Benioff talked **last night** about how some of his customers are concerned about tariffs (*The Street*, 5 Jan 2019, https://bit.ly/2mN6yaD).
(b) Diane Abbott and Rebecca Long Bailey voted **yesterday** for the motion to ditch the deputy role (*The Sun*, 22 Sept 2019, https://bit.ly/2pdZkxn)

(64) (a) What did Mark Benioff talk about ___ **last night**?
(b) What did Diane Abbott and Rebecca Long Bailey vote for ___ **yesterday**?

(65) (a) *What did Mark Benioff talk **last night** about ___ ?
(b) *What did Diane Abbott and Rebecca Long Bailey vote **yesterday** for ___?

Unlike the rightward movement proposal, the adjunction and leftward movement analyses become progressively worse because they are unable to account for the significant contrast just discussed. Under the adjunction analysis, both PP-complements and PP-adverbs are adjuncts, as in (66), thus being freely ordered. If this is true, I predict that they both form adjunct islands from which no element is allowed to move. However, we have already noted that extraction is possible from the *of*-phrases in (59) above, which confirms that the *of*-phrases in (66) should not be adjuncts.

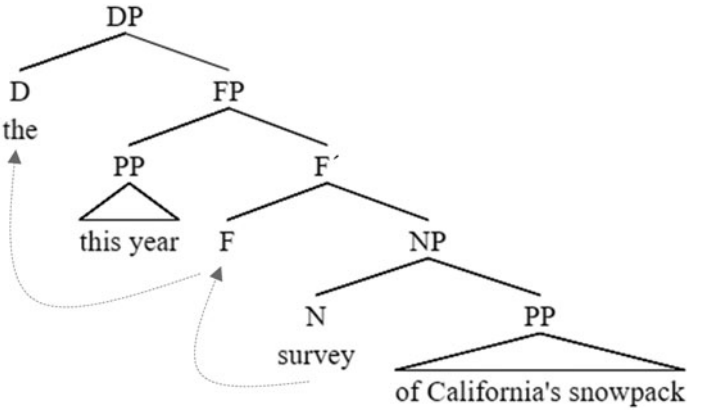
(66) Adjunction analysis




The leftward movement analysis also faces this problem. Assuming that it is not problematic for the head noun to land on the head D, as shown in (67), it is not clear why the PP complement does not allow any extraction of its embedded element, as in (62). There is no clear justification for why the PP-complement in (67) disallows such movement if it is not an adjunct.

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

(67) Leftward movement analysis




on island sensitivity evidence, I conclude that the rightward movement analysis is superior to the other two accounts. Unfortunately, and due to the smallness of the DP domain, it is challenging to bring evidence besides island sensitivity to support the rightward movement proposal. The small body of evidence should not, however, be taken as insufficient or inconclusive. The other two analyses have been shown to be seriously flawed. The adjunction analysis fails to treat the *of*-phrases as complements, and the leftward movement proposal cannot derive the variations in the first place. The rightward movement proves plausible in that it accounts for all the data, and it receives independent evidence from island conditions.

## 3 Conclusion

In this article, I have discussed the distribution of the PP-adverbs within the nominal domain, showing that PP-adverbs can occur before or after PP-complements. Three syntactic accounts are proposed for this behavior, namely adjunction, leftward and rightward movement. The article shows that the adjunction analysis fails to maintain the important generalizations regarding argument realization whereas leftward movement cannot derive the required data. In contrast, the rightward movement proposal respects the complement selection requirements, and it derives all the data under study. It also finds further support from island sensitivity where moved PP-complements to the right of the NP form adjunct islands, from which elements cannot be extracted.

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

*Author's address:*

*King Khalid University*
*College of Science and Arts, Tanuma*
*PO Box 250*
*69889 Abha, Asir*
*Saudi Arabia*
*moteebalqarni@kku.edu.sa*

## References

Alexiadou, Artemis. 1994. Issues in the syntax of adverbs. PhD dissertation, University of Potsdam.
Alexiadou, Artemis. 1997. *Adverb placement: A case study in antisymmetric syntax*. Amsterdam and Philadelphia: John Benjamins.
Alsina, Alex. 1996. *The role of argument structure in grammar*. Stanford, CA: CSLI Publications.
Anderson, Mona. 1984. Prenominal genitive NPs. *The Linguistic Review* 3(1), 1–24.
Barker, Chris & David Dowty. 1993. Non-verbal thematic proto-roles. In Amy J. Schafer (ed.), *Proceedings of the annual meeting of the North East Linguistic Society (NELS) 23*, 49–62. Amherst, MA: GLSA.
Borer, Hagit. 2003. Exo-skeletal vs. endo-skeletal explanations. In John Moore & Maria Polinsky (eds.), *The nature of explanation in linguistic theory*, 31–68. Stanford, CA: CSLI, and Chicago, IL: University of Chicago Press.
Borer, Hagit. 2005. *Structuring sense*, vol. I: *In name only.* Oxford: Oxford University Press.
Bresnan, Joan. 1982. *The mental representation of grammatical relations*. Cambridge, MA: MIT Press.
Buchstaller, Isabelle & Elizabeth Traugott. 2006. *The lady was al demonyak*: Historical aspects of adverb *all*. *English Language and Linguistics* 10(2), 345–70.
Caponigro, Ivano & Lisa Pearl. 2008. Silent prepositions: Evidence from free relatives. In Anna Asbury, Jakub Dotlačil, Beri Gehrke & Rick Nouwen (eds.), *Syntax and semantics of spatial P*, 365–85. Amsterdam: John Benjamins.
Caponigro, Ivano & Lisa Pearl. 2009. The nominal nature of where, when, and how: Evidence from free relatives. *Linguistic Inquiry* 40(1), 155–64.
Chomsky, Noam. 1970. Remarks on nominalization. In Roderick A. Jacobs & Peter S. Rosenbaum (eds.), *Readings in English transformational grammar*, 184–221. Waltham, MA: Ginn & Co.
Cinque, Guglielmo. 1999. *Adverbs and functional heads: A cross-linguistic perspective*. Oxford: Oxford University Press.
Collins, Chris. 2007. Home sweet home. *NYU Working Papers in Linguistics* 1, 1–34.
Cowan, Ron. 2008. *The teacher's grammar of English*. Cambridge: Cambridge University Press.
Di Sciullo, Anna-Maria & Edwin Williams. 1987. *On the definition of word*. Cambridge, MA: MIT Press.
Dixon, Robert. 2005. *A semantic approach to English grammar*. Oxford: Oxford University Press.
Dowty, David. 1989. On the semantic content of the notion of thematic role. In Gennaro Chierchia, Barbara H. Partee & Raymond Turner (eds.), *Properties, types, and meaning II*, 69–129. Dordrecht: Kluwer.
Dowty, David. 1991. Thematic proto-roles and argument selection. *Language* 67(3), 547–619.
Dryer, Matthew. 2013. Position of interrogative phrases in content questions. In Matthew S. Dryer & Martin Haspelmath (eds.), *The world atlas of language structures online*. Leipzig: Max Planck Institute for Evolutionary Anthropology.

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

Emonds, Joseph. 1985. *A unified theory of syntactic categories*. Dordrecht: Foris.
Emonds, Joseph. 1987. The invisible category principle. *Linguistic Inquiry* 18(4), 613–32.
Ernst, Thomas. 1984. *Towards an integrated theory of adverb position in English*. Bloomington, IN: Indiana University Linguistics Club.
Fassi Fehri, Abdelkader. 1993. *Issues in the structure of Arabic clauses and words*. Dordrecht: Kluwer.
Fassi Fehri, Abdelkader. 1999. Arabic modifying adjectives and DP structures. *Studia Linguistica* 53(2), 105–54.
Fu, Jingin, Thomas Roeper & Hagit Borer. 1995. The VP within nominalizations: Evidence from adverbs and the VP anaphor *do-so*. MS, University of Massachusetts.
Giegerich, Heinz. 2012. The morphology of *-ly* and the categorial status of adverbs in English. *English Language and Linguistics* 16(3), 341–59.
Giorgi, Alessandra & Giuseppe Longobardi. 1991. *The syntax of noun phrases*. Cambridge: Cambridge University Press.
Greenbaum, Sidney & Gerald Nelson. 2002. *An introduction to English grammar*. London: Longman.
Greenberg, Joseph. 1963. Some universals of grammar with particular reference to the order of meaningful elements. In Joseph H. Greenberg (ed.), *Universals of language*, 73–113. Cambridge, MA: MIT Press.
Grimshaw, Jane. 1990. *Argument structure*. Cambridge, MA: MIT Press.
Guz, Wojciech. 2014. Non-*ly* adverbs in preverbal position: the case of fast. *English Language and Linguistics* 18(1), 133–56.
Hazout, Ilan. 1991. Verbal nouns: θ-theoretical studies in Hebrew and Arabic. PhD dissertation, University of Massachusetts.
Hazout, Ilan. 1995. Action nominalizations and the lexicalist hypothesis. *Natural Language and Linguistic Theory* 13(3), 355–404.
Higginbotham, James. 1983. Logical form, binding and nominals. *Linguistic Inquiry* 14(3), 395–420.
Huang, Cheng-Teh. 1982. Logical relations in Chinese and the theory of grammar. PhD dissertation, MIT.
Huddleston, Rodney & Geoffrey K. Pullum. 2002. *The Cambridge grammar of the English language*. Cambridge: Cambridge University Press.
Jackendoff, Ray. 1972. *Semantic interpretation in generative grammar*. Cambridge, MA: MIT Press
Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge, MA: MIT Press.
Kratzer, Angelika. 1994. On external arguments. *University of Massachusetts Occasional Papers* 17, 103–30.
Larson, Richard. 1985. Bare-NP adverbs. *Linguistic Inquiry* 16(4), 595–621.
Larson, Richard. 1988. On the double object construction. *Linguistic Inquiry* 19, 335–91.
Leech, Geoffrey. 2006. *A glossary of English grammar*. Edinburgh: Edinburgh University Press.
Levin, Beth & Malka Hovav. 2005. *Argument realization*. Cambridge: Cambridge University Press.
McCawley, James. 1988. Adverbial NPs: bare or clad in see-through garb? *Language* 64(3), 583–90.
Overfelt, Jason. 2015. Rightward movement: A study in locality. PhD dissertation, University of Massachusetts.
Potsdam, Eric. 1999. A syntax for adverbs. In Elly van Gelderen & Vida Samiin (eds.), *Proceedings of the twenty-seventh Western Conference on Linguistics*, 397–411. Fresno, CA: California State University.
Ross, John. 1967. Constraints on variables in syntax. PhD dissertation, MIT.

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press

Shlonsky, Ur. 2004. The form of Semitic noun phrases. *Lingua* 114(12), 1465–1526.
Shun'ichiro, Inada. 2013. On the relativization of DP adverbs. *English Linguistics* 30(1), 223–42.
Stowell, Timothy. 1981. Origins of phrase structure. PhD dissertation, MIT.
Stroik, Thomas & Michael Putnam. 2013. *The structural design of language*. Cambridge: Cambridge University Press.
Svenonius, Peter. 1994. The structural location of the attributive adjective. In Eric Duncan, Donka Farkas & Phillip Spaelti (eds.), *Proceedings of the twelfth West Coast Conference on Formal Linguistics*, 439–54. Stanford, CA: CSLI Publications.
Travis, Lisa. 1988. The syntax of adverbs. *McGill Working Papers in Linguistics*, 280–310.
Trawinski, Beata. 2004. Towards licensing of adverbial noun phrases in HPSG. *Proceedings of the 11th International Conference on Head-Driven Phrase Structure Grammar*, 293–312.
Valois, Daniel. 1991. The internal syntax of DP. PhD dissertation, University of California at Los Angeles.
van Hout, Angeliek & Thomas Roeper. 1998. Events and aspectual structure in derivational morphology. *MIT Working Papers in Linguistics* 32, 175–220.
Verkuyl, Henk J. 1993. *A theory of aspectuality: The interaction between temporal and atemporal structure*. Cambridge: Cambridge University Press.
Wasow, Thomas & Jennifer Arnold. 2003. Post-verbal constituent ordering in English. *Topics in English Linguistics* 43(1), 119–54.
Wechsler, Stephen. 1995. *The semantic basis of argument structure*. Stanford, CA: CSLI Publications.
Whitman, Neal. 2002. A categorical treatment of adverbial nouns. *Journal of Linguistics* 38(1), 561–97.

https://doi.org/10.1017/S1360674320000088 Published online by Cambridge University Press