



Syntactic Ambiguity of Arabic Prepositional Phrase Attachment in Saudi Newspaper Headlines

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Abstract: In this article, an attempt is made to analyze syntactic ambiguity in a specific register, i.e. newspaper headlines. As a form of media text, newspaper has a significant role in society as it presents various local, national and international events and information. In order to attract readers' attention, journalists may tend to form headlines to be ambiguous and confusing so that readers become curious to read the whole report. This article addresses the issue of syntactic ambiguity caused by prepositional phrase (PP) attachment in newspaper headlines by analyzing examples of such headlines. After investigating the ambiguity of the headlines, an attention was directed to PP attachment preferences by examining the type of headlines (VP-NP-PP and NP1-NP2-PP structure). The main results were that NP attachment was generally preferred over VP attachment and NP1 attachment was notably favored over NP2 attachment.

Keywords: Syntactic Ambiguity, Newspaper Headlines, Arabic Language, Prepositional Phrase Attachment

1. Introduction

Newspaper headlines might be an important phenomenon to investigate. They can be significant as they reflect prestigious models of linguistic behaviors and general features of the language in a society and make them apparent to modern readers. Newspaper headlines are designed to attract much more readers than the articles themselves since those who buy a newspaper may first glance at headlines before determining whether an issue is worth reading or not. Furthermore, headlines might often be scanned in public places such as at the library, on the bus, and even on the road when drivers must stop for traffics. Thus, it may not be surprising that headlines are designed to be brief, eye catching and impacted; yet, memorable and effective.

In linguistics, newspapers have attracted the attention of some linguists especially in terms of linguistic techniques used in presenting information. Newspapers may also have power in creating new words and expressions in languages. Many new words are used by the society because they read them in the press though people might not know the precise way to employ some of the new expressions. Thomas and Wareing [18] state that "One of the most important and interesting aspects of the potential power of the media from a

linguistic point of view is the way people and events get reported (p. 52)". According to Reah [14], linguists who are interested in headlines structure draw on a clash between clarity and information; which accordingly leads to a type of linguistically undetermined meaning. In fact, structural ambiguity is caused by a syntactic structure that lends itself to more than one interpretation including incidents of ambiguous word order, referential ambiguity, and prepositional phrase attachment. Given the complexity of textual structures of headlines discourse, I restrict my focus to what is called the syntactic ambiguity of Arabic prepositional phrase (PP) attachment in Saudi newspaper headlines since structural ambiguity can be caused by this kind of attachment.

2. Literature Review

Sentence structure has been the focus of numerous studies in linguistics. Yule [20] states that if we concentrate on the structure and ordering of components within a sentence, we are studying what is technically known as the syntax of language. Chomsky [4] and Bornstein [1] claim that each

sentence in a language has two levels of representation, a deep structure (DS) and a surface structure (SS). Deep structure clarifies understanding or meaning, and surface structure leads to the sounds we speak or the letters we write. When a surface structure relates to more than one deep structure, the case is called structural ambiguity. Radford [13] affirms that all sentences have a categorical constituent structure, are hierarchically structured out of words and phrases, and each of the component words and phrases in a sentence belongs to a specific category. Those categories and structures can be represented in tree diagrams. Finch [6] argues that one of the advantages of tree diagrams is that they enable us to see at a glance the hierarchical structure of any sentence. Moreover, diagrams can offer a visual representation of the phrases structure for a sentence which may help readers to understand the syntactic ambiguity of a sentence (in case there is any).

Syntactic ambiguity as a linguistic phenomenon attracts the attention of much research and studies. Khamahani [9] presented a study on lexical ambiguity and structural ambiguity of English language in the register of newspaper which was written by native of English journalists and non-native. Yet that study did not provide any discussion about different kinds of ambiguity that can be found everywhere in languages. Elmawati's [5] study focused on structural ambiguity headlines compiled by Department of Languages, Cultures and Linguistics Bucknell University based on the X-bar theory. Elmawati claimed that the three factors which cause structural ambiguities are the differences of syntactic category, placement of prepositional phrase that functions as an adjunct, and sub categorization of verbs. Despite the existence of many studies on the language of newspaper headlines (e.g., Rose, [15]; Bucaria, [2]; Tiono, [19]; Fowler, [7]; Reah, [14]), structural ambiguity in this register in Arabic has not received sufficient attention. Reah [14] claims that the language of headlines makes use of linguistic and stylistic devices that are specific of this genre. Moreover, Tiono [19] analyzes newspapers headlines in terms of syntactic and semantic factors. A specific study on lexical and structural ambiguity in humorous English headlines is offered by Bucaria [2]. However, it seems that due attention is not given to the structural ambiguity found in the Arabic language in the literature.

Arabic language has special syntactic features which lead to complex syntactic structures. Its structural complexity makes it difficult to parse Arabic sentences. According to Osman et.al. [12], parsing difficulty is also due to the length of the sentences and the free word order nature of Arabic sentence. In the present study, I briefly analyze PP attachment since it is generally found to be the major cause of syntactic ambiguity in some Arabic newspaper headlines.

3. Data and Analysis

The data is collected from four different Arabic newspapers namely: Okaz, Almadina, Al-Sharq AI-Awsat, and Alwatan. This research also investigates native Arabic

speakers' initial attachment preferences for ambiguous NP-VP-PP / NP1-NP2-PP structures through a reading task questionnaire. The experimental stimuli included sentences in which four Arabic prepositions /fi:/ 'in'; /li-/ 'for, of, about'; /bi-/ 'in, of, by means of' and /min/ 'from' were used.

3.1. /Fi:/ "IN"

3.1.1. NP1 or NP2 Attachment

Cantarino [3] claims that the preposition /fi:/ is an essential locative preposition in Arabic. It can be used to express location in space or in time. It could be translated as 'at,' 'in,' or 'on,' depending on the context (Ryding, [16]). /Fi:/ and its object form a prepositional phrase that can serve as an adjectival or adverbial adjunct depending on the word it modifies. Consider the PP in the following headline:

مؤتمر دولي لصناعات تقنية النانو في الرياض

- Mu?tamar duwali: liṣna9a:t taqneyat ?anna:nw fi: ?rriyaad
- NP1 | PP1 | NP2 | PP2
- International conference of nanotechnology industry in Riyadh.

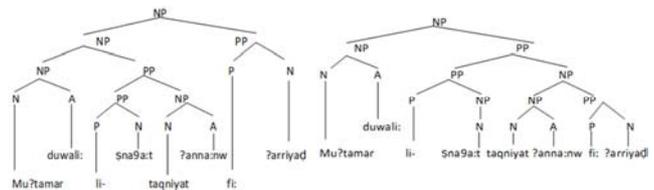


Figure 1. NP1 or NP2 Attachment.

As illustrated by the two diagrams in figure 1, this headline is ambiguous. The ambiguity is due to the dual function of the PP2 /fi: ?rriyaad/. It can serve as a post-modifier for either NP1 /mu?tamar/ or NP2 /taqneyat ?anna:nw/. In both cases; however, it has an adjectival function.

3.1.2. VP or NP Attachment

/Fi:/ can also be used to introduce the location in which the action is completed. Hence it is used to introduce adverbial modal specifications (Cantarino, [3]).

الملتقى يجمع أقطاب صناعة السياحة والسفر في المملكة

- ?almultaqa: yajma9u ?aqta:b ṣina9at ?assiyaha: wassafar fi: ?lmamlaka
- NP1 | VP | NP2 | PP
- The forum congregates travel and tours magnates in Saudi Arabia.

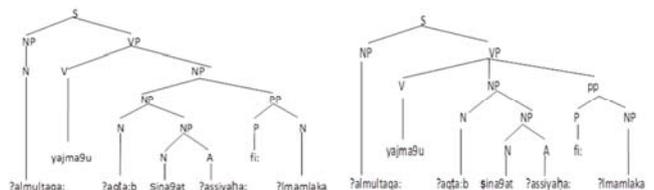


Figure 2. VP or NP Attachment.

In the above headline and as illustrated in figure 2, the PP (filmamlaka) can be contained in the NP2 constituent (?aqta:b sina9at ?assiyaha: wassafar). If this is the case, it has

an adjectival function. On the other hand, when the PP is contained in the larger VP constituent (yajma9u ...); it has an adverbial function then.

3.2. /Li-/ “FOR, OF, ABOUT”

3.2.1. NP1 or NP2 Attachment

According to Ryding [16], the preposition /li-/ is used to express purpose, direction toward (destination), possession, the indirect object or dative concept of ‘to,’ and the benefactive concept of ‘for’ or ‘on behalf of’. Consider the following headline:

- الشورى يختتم برنامج المهارات البرلمانية لموظفيه
- ?a[ʃuwa: yaxtatim barnamaj ?almaharat ?albarlamaniyya limowaðafi:h
 - NP | VP | NP1 | NP2 | PP
 - Parliament concludes a program of parliamentary skills [for, of] its employees.

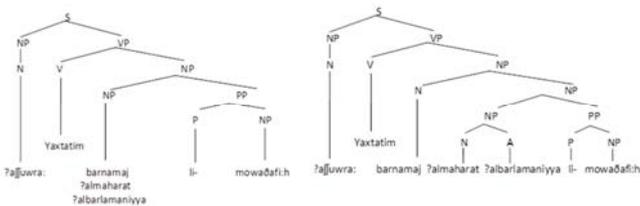


Figure 3. NP1 or NP2 Attachment.

The source of ambiguity in the above headline (figure 3) is the double interpretation of the PP /limowaðafi:h/. This PP may describe NP1 /barnamaj/ and serve as an adjectival modifier. Nevertheless, it might serve as a post modifier phrase if it describes the NP2 /?almaharat ?albarlamaniyya/ and functions adjectivally as well.

3.2.2. VP or NP Attachment

In a logical consideration, the noun governed by /li-/ becomes the indirect object of the verb. The function of this preposition is to express any indirect relation to an object, especially with the idea "for." The preposition /li-/ may introduce the idea of belonging as well, as claimed by Cantarino [3].

- سنقدم دراسة عن الإعلام الفضائي لوزراء الإعلام العرب
- Sanuqaddim dirasa 9an ?al?i9lam ?alfaða?i: li:wuzara? ?al?i9la:m ?al9arab
 - VP | NP | PP1 | PP2
 - We will provide a study of vas media [about, for] Arab information ministers.

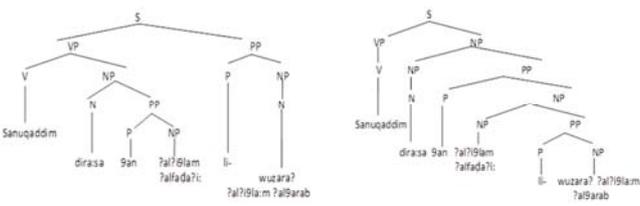


Figure 4. VP or NP Attachment.

The PP2 /liwuzara? ?al?i9la:m ?al9arab/ in the above headline is ambiguous (figure 4). It could function as an adverbial that describes the VP /Sanuqaddim/ or as an

adjectival post modifier for the NP2 /?al?i9lam ?alfaða?i/.

3.3. /Bi-/ “IN, OF, BY MEANS OF”

3.3.1. NP1 or NP2 Attachment

The preposition /bi-/ designates contiguity in its broadest sense. It has a wide range of usage including spatiotemporal, instrumental, and manner adverbial (Ryding, [16]). Two of them are illustrated by the following headlines:

- ضبط عصابة متخصصة في سرقة اللؤلؤ الفاخرة بشمال جدة
- Dabtu 9isaba mutaxašiša fi: sariqat ?alfilal ?alfaxira bi:fama:l jidda:
 - NP1 | PP1 | [NP2] | PP2
 - Arresting a gang expert in luxurious villas’ robbery in the northern Jeddah.

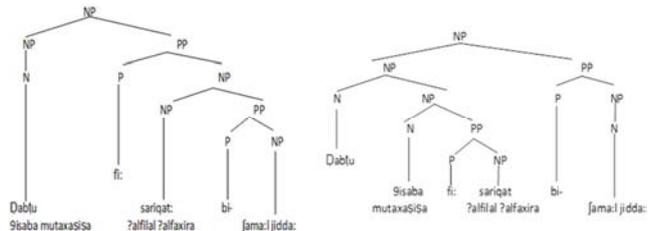


Figure 5. NP1 or NP2 Attachment.

The above headline is ambiguous because of the PP2 /bi:fama:l jidda:/ attachment (figure 5). The PP may modify the NP2 /?alfilal ?alfaxira/, or the larger NP1 /Dabtu 9isaba mutaxašiša/. These two different interpretations are due to the grouping of the words in two different ways. However, PP2 is an adjectival post modifier in both interpretations.

3.3.2. VP or NP Attachment

Gully [8] states that most grammarians agree that one of the meanings of the /bi/ is /isti9ana/ to indicate the instrument used for assistance. The instrument can be defined as “an object that plays a role in bringing a process about, but which is not the motivating force, the cause or the instigator” (Chafe, 1970, cited in Ryding, [16], p. 160)

- حماس تدرس اقتراحا من القاهرة بلجنة وطنية مرجعية
- Hamaas tadrusu ?iqtira:han min ?alqahira bilajnaa wataniya: marji9iya:
 - NP1 | VP | NP2 | PP1 | PP2
 - Hamas studies Cairo’s suggestion [of, by] a native public committee.

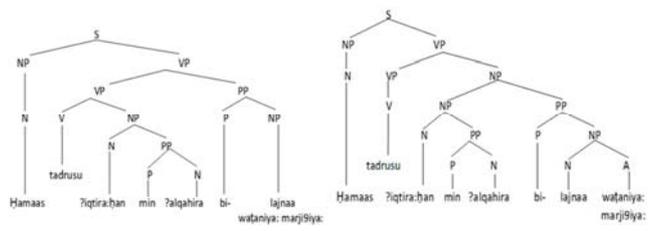


Figure 6. VP or NP Attachment.

Two interpretations can be assigned to this headline (figure 6). The NP2 /?iqtira:han min ?alqahira/ can be modified by the PP2 /bilajnaa wataniya: marji9iya:/. In this respect, PP2 functions adjectivally as a post modifier. Or, the VP /tadrusu/ is modified by the same PP giving the meaning of by means

of; and PP2 serves as an adverbial modifier then.

3.4. /Min/ “FROM”: VP or NP Attachment

In a temporal meaning, /min/ expresses the time “from which” or “since which” the action takes or has taken place. /Min/ can also be understood differently, considering the part as being separated from the whole, as a local designation as Cantarino [3] denotes in his *Syntax of Modern Arabic Prose*. Consider the following headline:

خالد الفيصل يروي مسيرة الاعتدال من مدارس البنات لعهد التغيير

- Khalid ?alfaisal yarwi: masi:rat ?al?i9tidal min madaris ?albana:t li9ahd ?attx̣yi:r
- NP1 | VP | NP2 | PP1 | PP2
- Khalid Alfaisal narrates moderation journey from girls’ school to the era of permutation.

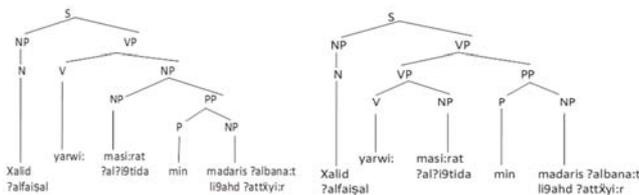


Figure 7. VP or NP Attachment.

There are two grammatically acceptable interpretations for the above headline (figure 7). In parsing terms, whether the PP /min madaris ?albana:t li9ahd ?attx̣yi:r/ should be attached as a VP or an NP post modifier. In the former respect, the adjunct attachment is functioning adverbially since it modifies the VP /yarwi:/. On the other hand, the adjunct attachment is functioning adjectivally if it modifies the NP /?al?i9tidal/.

4. Discussion

Prepositional phrase attachment ambiguities discussed in this paper involve structures such as:

- NP1-NP2-PP (as in 3.2.1. above)
- NP1-PP1-NP2-PP2 (as in 3.1.1. and 3.3.1. above)
- NP1-VP-NP2-PP (as in 3.1.2. above)
- VP-NP-PP1-PP2 (as in 3.2.2. above)
- NP1-VP-NP2-PP1-PP2 (as in 3.3.2 and 3.4. above)

They are ambiguous in that the PP/PP2 can be attached to the VP denoting the instrument of the action described by the verb or to the preceding NP as a post modifier. In some other cases, the ambiguity is basically caused by the PP attachment to either the NP1 or NP2 functioning as a post modifier in both respects.

The present study involves investigating native Arabic speakers' initial attachment preference for temporarily ambiguous VP-NP-PP and NP1-NP2-PP structured newspaper headlines through a reading task questionnaire. The participants are 25 Arabic native speakers mainly with a bachelor degree; and a considerable number of them are teachers. The experimental stimuli included sentences in which four Arabic prepositions /fi:/, /li-/ ,/bi-/ and /min/ were used.

The results indicated a significant main effect of attachment during the processing of the critical PP segments in some cases. NP1 attachment was significantly preferred over NP2 attachment (72% >28%) with the preposition /fi:/ in the structure NP1-PP1-NP2-PP2. In the structure NP1-VP-NP2-PP with the same preposition /fi:/, NP attachment was considerably chosen over VP attachment (60% > 40%). As for the preposition /li-/ in the structure NP1-NP2-PP, NP1 attachment was notably favored over NP2 attachment (68% > 32%). NP attachment was preferred over VP attachment (64% >36%) with the same preposition /li-/ in the structure VP-NP-PP1-PP2.

On the other hand, some prepositions did not induce any significant effect of attachment on the critical segment. For example, NP1 attachment was chosen only by 44%, whereas NP2 attachment was preferred by 56% of the participants in the structure NP1-PP1-NP2-PP2 with the preposition /bi-/. In the structure NP1-VP-NP2-PP1-PP2 with the same preposition /bi-/, NP attachment was favored merely by 52% while VP attachment was chosen by 48% of the respondents. Concerning the preposition /min/, NP attachment in the structure NP1-VP-NP2-PP1-PP2 was preferred simply by 56% and the VP attachment was selected by 44% of the participants.

5. Conclusion

The present study has analyzed prepositional phrase attachment as the most frequent source of syntactic ambiguity in a number of Arabic newspaper headlines. In general terms, the result of this study designates a significant preference for NP1 over NP2 and NP over VP with prepositions such as /fi:/ and /li-/, while NP1 and NP preference is almost closely related to the choice of NP2 and VP with prepositions like /bi-/ and /min/. However, the employment of PP attachment in Arabic newspaper headlines, especially as far as structural ambiguity is concerned, has rarely been the object of systematic research and it therefore offers ample possibilities that might be explored in the future.

Appendix 1: Phonetic Symbols

The following symbols are used to transcribe the sentences given in the paper. The phonetic values are used for the convenience of this study. The use of these symbols is based on their usage in the master thesis of Khattab [10].

Consonants

- /ʔ/ = a glottal stop همزة
- /h/ = a voiceless glottal fricative هـ
- /ʕ/ = a voiced pharyngeal fricative ع
- /ħ/ = a voiceless pharyngeal fricative ح
- /ʁ/ = a voiced velar fricative غ
- /x/ = a voiceless velar fricative خ
- /q/ = a voiced velar stop ق

- /k/ = a voiceless velar stop ك
 /j/ = a voiced alveo-palatal stop ج
 /y/ = a voiced palatal semi-vowel ي
 /s/ = a voiceless alveo-dental emphatic fricative ص
 /d/ = a voiced alveolar emphatic stop ض
 /s/ = a voiceless alveolar fricative س
 /ʃ/ = a voiceless alveo-palatal fricative ش
 /z/ = a voiced alveolar fricative (zoo) ز
 /t/ = a voiceless alveo-dental emphatic stop ط
 /ð/ = a voiced alveo-dental emphatic stop ظ
 /r/ = a voiced alveolar fricative ر
 /l/ = a voiced alveolar lateral ل
 /m/ = a bilateral nasal م
 /n/ = a alveo-dental nasal ن
 /f/ = a voiceless labio-dental fricative ف
 /b/ = a voiced bilabial stop ب
 /w/ = a voiced labio-velar semi-vowel و
 /t/ = a voiceless dental stop ت
 /d/ = a voiced dental stop د

Vowels

- /a/, /i/, /u/: Short vowels.
 /a:/, /i:/, /u:/: Long vowels

Appendix 2: Abbreviation List

- PP = Prepositional Phrase
 VP = Verb Phrase
 NP = Noun Phrase
 DS = Deep Structure
 SS = Surface Structure
 V = Verb
 N = Noun
 A = Adjective
 P = Preposition

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