



An Account to n-realization in Standard and Jordanian Arabic

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Abstract

This paper focuses on n-liaison which is a phonological process in Arabic. There are two types of liaison in Arabic: the case of the feminine -t and the -n of the sound masculine plural and the dual. Several proposals have been suggested to account for the (non-)application of t-liaison. It has been proposed that its application is determined by its distribution in its spell-out domain in Jordanian Arabic (Jaradat, to appear), its maximal syntactic projection in Standard Arabic (Abdelghani 2010) and its containing phonological phrase in both varieties (Yasin 2012). As for n-liaison, no previous studies accounted for this process. In this study, following Jaradat (to appear), I will show that n-liaison in Standard Arabic is relatively similar to t-liaison. Its realization and omission is adequately predicted by Phase Theory (Chomsky 2001). Its realization is determined based on its distribution in its spell-out domain: it must be omitted in a spell-out domain-internal position. Otherwise, it must be realized. As for n-liaison in Jordanian Arabic, it cannot be fully explained and predicted by the multiple spell-out algorithm since the -n with the dual form must be realized in all possible distributions. With regard to the sound plural, -n is optionally omitted in a spell-out domain-internal position and obligatorily preserved in final position.

Keywords: Dual and plural -n, Phase Theory, spell-out domains, Jordanian Arabic, Standard Arabic.

ظهور النون في العربية واللهجة الأردنية: حساب نحوي

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ملخص

هذه الورقة هي محاولة لتفسير متى تثبت نون جمع المذكر السالم والمثنى ومتى يتم حذفها في اللغة العربية الفصحى واللهجة الأردنية. تُظهر هذه الدراسة بأن ثبوت النون وحذفها يمكن تفسيره ضمن حساب نحوي مبني على نظرية المرحلة لتشومسكي (2001) فإثباتها، سواء كانت للجمع أو للمثنى، في العربية الفصحى يُعتمد على مكانها في حقلها النحوي. فهي تُحذف إذا كانت متواجدة في داخل حقلها النحوي، وتثبت إذا كانت في آخر الحقل. على العكس من ذلك، لا يمكن توقع ثبوت نون المثنى من عدمه في اللهجة الأردنية بناءً على هذا الحساب النحوي، إذ أنها يجب إثباتها. أما إذا كانت نون جمع المذكر السالم، فيمكن توقع ثبوتها باستخدام الحساب النحوي المقترح، إذ أنها تظهر اختياريًا داخل حقلها النحوي وإجباريًا في نهايته.

الكلمات المفتاحية: نون الاثنين والجماعة، نظرية الحقل، الحقل النحوي، اللهجة الأردنية، العربية.

1. Introduction: n-liaison in Arabic

Liaison is one of the phonological processes that exist in Modern Standard Arabic and Arabic vernaculars. 'It is the realization of a floating segment in one or more contexts' (Jaradat, to appear). The first instantiation of liaison in Arabic is the realization of the feminine suffix *-t* that can be deleted in other context, as exemplified in (1a&b).

- (1) a. Feminine suffix preservation:

NP[*ʃu:ra-t-u-n*]

Photo-F-NOM-INDEF

'A photo'.

- b. Feminine suffix omission or production as *-h*:

NP[*ʃu:ra-0/h*]

Photo-F

'A photo'.

Beside the feminine suffix *-t*, Arabic has the *-n* of the sound masculine plural suffix and the dual suffix. *-n* does not contribute to the meaning of the sound masculine plural suffix (the nominative *-uun* and the accusative and genitive *-iin*) and the dual suffix (the nominative *-aan* or the accusative and genitive *-ajn*). Specifically, the vowels in these suffixes are the elements responsible for determining the number specification of the host noun. In (2b) and (3b), for example, the number specification of the host noun can be identified as dual and plural respectively despite the omission of the *-n*.

- (2) a. *muḥaamij-aan*

Lawyer-DUAL.NOM

'Two lawyers'.

- b. *muḥaamij-aa* *l-muttaham*

Lawyer-DUAL.NOM DEF-accused

'The two lawyers of the victim'.

- (3) a. *muḥaamij-uun*

Lawyer-PL.NOM

'Lawyers'.

- b. *muḥaamij-uu* *l-muttaham*

Lawyer-PL.NOM DEF-accused

'The lawyers of the victim'.

Although the *-n* does not seem to contribute to the semantics of the sound masculine plural and the dual form in Arabic, the contexts in which it must be preserved and deleted in Standard Arabic are not necessarily the same in Vernacular Arabic. In Rural Jordanian Arabic (henceforth RJA),¹ the *-n* in the sound masculine plural *mʕallm-iin* can be optionally deleted in (4b), but obligatorily deleted in the same context in Standard Arabic.

¹ Jordanian Arabic branches into three regional sub-varieties, Urban, Rural and Bedouin Jordanian Arabic. Urban Jordanian Arabic is spoken in the main cities in Jordan, including Amman and Zarqa, Rural Jordanian Arabic is spoken by villagers in the north-western part of Jordan, and Bedouin Jordanian Arabic is used in north-eastern and southern parts of Jordan.

- (4) a. *mʕallm-iin* *il-midrāse*
Teacher-PL.MASC DEF-school
'The teachers of the school'.

- b. *mʕallm-ii* *il-midrāse*

In this study, I will focus on *n*-liaison in Standard Arabic and RJA and try to explain the contexts in which it is preserved and deleted following a phase-based account.

2. Literature review: liaison in Arabic

Consonant liaison which is the realization of a consonant in word-final position is not only found in Arabic, but it is also a common feature of French, and there is the case of the *r* in English. In non-rhotic English accents (where *r* is not realized in all possible positions), considerable efforts have paid attention to r-liaison, which has two types; linking *r* and intrusive *r*, which are basically to resolve vowel hiatus. The former is realized in word-internal position, such as the realization of *r* at the right of *store* once the suffix *-ing* is attached to it, while the latter is inserted at the contact point of two words (e.g., the idea [r] is). In terms of distribution, it is commonly realized or inserted if it is preceded by a non-high back vowel and followed by a vowel. At the usage level, it has not been considered categorical and may be associated with social acceptance, i.e., the intrusive *r* is less prestigious (Mompean & Mompean 2009).

Liaison, which is a form of external sandhi, is also found in French, such as the realization of the sound *t* at the right of *petit* 'little' when it is followed by a vowel as in *petit ami* 'little friend' (Nguyen et al. 2007). It has been reported that it can be in three forms: obligatory, impossible and optional liaison. In previous work on liaison in French, it has been found that several factors may affect the realization of a certain consonant including syntactic, prosodic, lexical and sociolinguistic factors (Selkirk 1972, 1974, 1986; Post 2000).

In Arabic, liaison is the case of the *-n* of the masculine sound plural suffix and the dual suffix and the feminine suffix *-t* are the only instantiations of liaison in Arabic. As far as I know, there are only three previous studies that focused on liaison. These studies investigated the contextual factors that influence the realization of the feminine suffix *-t* and tried to explain and predict them within a pure syntactic account or an account based on syntax-prosody interface. Abdelghani (2010) studied the realization of the feminine suffix in Modern Standard Arabic within a syntactic account. She suggested that the feminine suffix *-t* is realized under one condition: when the feminine suffix in word-final position is followed by any phonetic material in the same maximal syntactic projection. In (5), for example, NP1 *rasma-t-un* and AP *jamiila-t-un* are specified as feminine; however, the feminine suffix is realized only at the end of *rasma-t-un* as it does not occupy the final position of its containing maximal syntactic projection, NP2.

- (5) NP₂[NP₁[*rasma-t-u-n*]] AP[*jamiila-Ø/h*]]
painting-F-NOM-INDEF beautiful-F
'A beautiful painting'.

More recently, Yasin (2012) offered an account to *t*-liaison in RJA and Standard Arabic. His account is based on syntax-prosody interface. Following an edge-based approach (Truckenbrodt 1995, 1999), he assumed that the suffix *-t* is realized if the target word occupies a non-final position in its prosodic domain, the phonological phrase. Based on Yasin's (2012) account, the feminine suffix *-t* is realized at the right of *midrasi-t* in (6a) since the entire genitive construct *midrasit baladna* is parsed in a single phonological phrase. This means that the feminine suffix at the right of *midasi-t* does not match a phonological phrase boundary, and therefore it cannot be suppressed.

(6) Genitive construct:

$$\text{NP}_3[[\text{N}[\textit{midrasi-t}] \text{NP}_2[\textit{balad-na}]]]$$

$$(\quad)\Phi$$

School-F village-1PL.POSS

'The school of our village.'

Jaradat (to appear) has shown that the syntactic-prosodic account offered by Yasin (2012) cannot adequately predict the inability of prosodic variability to change the phonological status of the feminine suffix especially when the rate of speech is modified. Therefore, Jaradat (to appear) offered an alternative account to t-liaison in RJA. His account is based on Phase Theory (Chomsky 2001). He has shown that the realization of the feminine suffix *-t* is determined just before a syntactic domain is transferred to the phonological form. It is realized under one condition: it must be in a spell-out domain internal position. Its suppression or production as fricative glottal *-h* is a consequence of its distribution in a spell-out domain-final position.

Based on the limited work on liaison in Arabic, efforts were paid to investigate the first instantiation of liaison, the realization of the feminine suffix *-t*. More work is needed to explore the other case of liaison in Arabic which is the realization of the *-n* at the right of the sound masculine plural suffix and the dual suffixes. In this paper, I will explore that contextual factors that influence the realization of this consonant in Standard Arabic and RJA and I will try to account for this process in these varieties within a phase-based account (Chomsky 2001). In the following section, I will discuss the contexts in which the *-n* of the sound masculine plural suffix and the dual suffix is realized and omitted in Standard Arabic and RJA.

3. Contexts of n-liaison in Modern Arabic

In Modern Standard Arabic, the *-n* that appears at the end of the sound masculine plural suffix and the dual suffix is preserved at the right of nouns and adjectives, as shown in (7).

(7) a. $\text{NP}_2[\text{NP}_1[\textit{muhandis-uun}]]$ $\text{AP}[\textit{mafshur-uun}]$
 Architect-PL.MAS famous-PL.MAS

'Famous architects'.

b. $\text{NP}_2[\text{NP}_1[\textit{muhandis-aan}]]$ $\text{AP}[\textit{mafshur-aan}]$
 Architect-DUAL famous-DUAL

'Two famous architects'.

Furthermore, it is obligatorily omitted when the noun hosting the sound masculine plural suffix or the dual suffix is in genitive construct-internal position and when it is followed by a pronominal clitic. In (8), for instance, *-n* is deleted since the host nouns are not at the right edge of the embedding genitive construct. On the contrary, they are preserved in (9) due their distribution at the right edge of the hosting genitive constructs.

(8) a. $\text{NP}_3[\text{NP}_1[\textit{muhandis-uu}]]$ $\text{NP}_2[\textit{al-mafshruuf}]$
 Architect-PL.MAS.NOM DEF-project

'The project architects'.

b. $\text{NP}_3[\text{NP}_1[\textit{muhandis-aa}]]$ $\text{NP}_2[\textit{al-mafshruuf}]$
 Architect-PL.MAS.NOM DEF-project

'The two project architects'.

(9) a. NP3[NP1[*maʃhruuʃ-u*] NP2[*al-muhandis-iin*]]
 project-NOM DEF-Architect-PL.MAS.ACC
 'The project of the architects'.

 b. NP3[NP1[*maʃhruuʃ-u*] NP2[*al-muhandis-ajn*]]
 project-NOM DEF-Architect-PL.MAS.ACC
 'The project of the two architects'.

The *-n* of the sound masculine plural suffix and the dual suffix must also be omitted when it is immediately followed by a pronominal clitic. In (10) and (11), *-n* of the sound masculine plural suffix and dual suffix are deleted due to the cliticization of the bound pronominal morphemes, *-ha* and *-hum*, to the host nouns.

(10) a. *mudarris-uu-ha*
 Teacher-PL.MAS.NOM-POSS.3SG.F
 'Her teachers'.
 b. *mudarris-aa-ha*
 Teacher-DUAL.MAS.NOM-POSS.3SG.F
 'Her two teachers'.

(11) a. *muwaḏḏʻaf-uu-hum*
 Employee-PL.MAS.NOM-POSS.3PL.F
 'Their employees'.
 b. *muwaḏḏʻaf-aa-hum*
 Employee-DUAL.MAS.NOM-POSS.3PL.F
 'Their two employees'.

Hence, there are two distributions in which the *-n* of the plural suffix and the dual suffix must be realized in Standard Arabic: in genitive construct-internal position and when it is followed by a cliticized pronominal clitic.

4. *n*-liaison in Rural Jordanian Arabic

The current study is to explore the (non-)realization of the plural and dual *-n* in RJA and to explain its (non-)realization within a syntactic account. In this section, the method that has been implemented to find out the contexts where the plural and dual *-n* is realized in RJA and those in which they are suppressed or deleted. The starting hypothesis is that the sound plural *-n* and the dual *-n* behave the same in RJA, i.e., they are realized in the same contexts and suppressed in similar syntactic positions. They show up if they occupy the right edge of a word, yet this word should not be construct-state internal or has a pronominal clitic. Otherwise, it has to be suppressed. To test this hypothesis, the following method is implemented.

4.1 The task

The wordlist of this study consists of 20 linguistic expressions for the dual *-n* (10 words hosting a pronominal clitic and 10 construct state nominals) (See Table 1 & 2 in Appendix). Further, 20 linguistic expressions (10 words with a pronominal clitic and 10 construct state nominal) has been selected for pluralization using the sound masculine plural. Ten native speakers (5 males and 5 females) of RJA participated in the task. They are between 20 and 40 years old. All of them were born and brought up in the rural areas of Irbid.

Each participant has been asked to read each of the first twenty target words/construct state nominals, and then asked to turn each single word and the first word in each construct state into dual. Similarly, each speaker has been asked to pluralize the second set of words (the remaining 10 words and 10 construct states, as can be seen in Table 3&4 in Appendix. Consider the examples in (12) where the singular noun *kaas*, which is followed by a pronominal clitic in (12a) and construct state nominal-internal in (12b). By turning it into dual, will the *-n* of the dual morpheme *-een*, in these contexts, will be preserved?

- (12) a. *kaas maj* → *kaas-een maj* or *kaas-ee maj*
 Cup water cuo-DUAL water
 'A cup of water'. 'Two cups of water'.
- b. *kaas-ak* → *kaas-een-ak* or *kaas-ee-k*
 Cup-2SGM.POSS cup-DUAL-2SGM.POSS
 'Your cup' 'Your two cups'

With regard to the *-n* of the sound masculine plural, will its occurrence in a non-final position within a word or a construct state nominal, result in its suppression. Consider the examples in (13).

- (13) a. *mʕallim ʕarabi* → *mʕallim-iin ʕarabi* or *mʕallim-iin ʕarabi*
 teacher Arabic teacher-PL.M Arabic
 'A teacher of Arabic'. 'Teachers of Arabic'
- b. *mʕallim-hum* → *mʕallim-iin-hum* or *mʕallim-ii-hum*
 teacher-3PLM.POSS Teacher-PLM-3PLM.POSS
 'Their teacher'. 'Their teachers'.

All the target nominals must be pluralized by the sound masculine plural suffix. The total number of collected tokens are 400 (10 words of the dual + 10 words for the sound masculine plural + 10 construct state nominals for the dual + 10 construct state nominals for the sound masculine plural x 10 speakers).

4.2 Results

The results show, inconsistent with the starting hypothesis, that the dual must appear in all the target position (i.e., in word-internal and construct state nominal-internal positions). More specifically, all the 200 tokens collected have been turned into dual without omitting the dual *-n* (even though the researcher realized that few participants were somehow reluctant to preserve or delete the dual *-n* in these position). On the other hand, 166 tokens collected for the sound masculine plural (83% of the collected tokens) confirmed that the sound plural *-n* should be deleted in word-internal and construct state-internal positions. However, this deletion is not obligatory; 34 sound plural tokens (27%) contained no plural *-n*.

4.2 n-liaison in Rural Jordanian Arabic (its (non-)realization)

Based on the results of the task in 4.1, the behavior of *-n* in RJA is not straightforward as it is the case in Standard Arabic. With the sound masculine plural suffix, it is obligatorily preserved at the right edge of a hosting word (i.e. a noun or adjective) unless it appears in genitive construct-internal position or is followed by a pronominal clitic. In (14), for instance, it is preserved at the right of *mudarris-iin* when it is post-modified and in sentence-final position.

- (14) a. with a post-modified NP:
mudarris-iin idzdaad
 Teacher-PL.MASnew.PL

'New teachers'.

b. In sentence-final position:

<i>ʕajjan-uu</i>	<i>mudarris-in</i> _{sentence-final}
Appoint.PST-3PL.MAS	Teacher-PL.MAS

'The appointed some teachers.'

If the *-n* of the sound masculine plural suffix appears in genitive construct-internal position or is followed by a cliticized pronominal morpheme, it is optionally realized (its realization is far more frequent than its omission). In (14), it is optionally preserved due to its internal distribution within its containing genitive construct. It is also optionally realized in (15) since it is followed by a cliticized pronominal morpheme,

-ha.

(14) a. NP ₂ [N[<i>mudir-in</i>]	NP ₁ [<i>il-farik-aat</i>]]
Manager-PL.MAS	DEF-company-F.PL

'The managers of the companies'.

b. NP ₂ [N[<i>mudir-ii</i>]	NP ₁ [<i>il-farik-aat</i>]
-------------------------------------------------	-----------------------------------------

(15) a. *muwaððaf-**in**-ha*
 employee-PL.MAS-3SG.F
 'Her employees'.

b. *muwaððaf-**ii**-ha*

As for the behavior of the *-n* with the dual suffix, it must appear in all possible distributions, including a genitive construct-internal position and pre-pronominal clitic position, as shown in (16).

(16) a. With a post-modified NP:

<i>mudarris-een</i>	<i>idzdaad</i>
Teacher-DUAL.MAS	new.PL

'Two new teachers'.

b. In sentence-final position:

<i>ʕajjan-uu</i>	<i>mudarris-een</i> _{sentence-final}
Appoint.PST-3PL.MAS	Teacher-DUAL.MAS

'The appointed two teachers.'

c. In genitive construct-internal position:

*musaʕd-**een** il-ʕamiid*
 Assistant-DUAL DEF-dean
 'The two vice deans'.

d. With a pronominal clitic:

*funjan-**een**-ha*
 Teacher-DUAL-POSS.3SG.F
 'Her two cups of coffee'.

Unlike the behavior of *-n* with the sound masculine plural suffix, it is ungrammatical to delete the *-n* of the dual suffix when it is in genitive construct-internal position and when it is followed by a pronominal clitic, as shown in the ungrammatical structures in (17a-d).

(17) *a. *maḥalee* *al-biseh*
shop-DUAL DEF-clothes
'The two clothing store.'

*b. *ḡab-ee* *rijaad^hijjat*
book-DUAL math
'The two books of math'.

*c. *funjan-ee-ha*
cup-DUAL-POSS.3SG.F
'Her two cups of coffee'.

*d. *maḥall-ee-hum*
shop-DUAL-3PL.MAS
'Their two shops'.

Following these lines, the (non-)application of n-liaison (the realization of *-n* with the sound plural suffix and the dual suffix) in RJA, unlike what we have in Standard Arabic, is not symmetric: this consonant must always be realized when it comes with the dual suffix and is optionally deleted when it comes with the sound masculine plural suffix in genitive construct-internal position and when it is followed by a pronominal clitic.

3.3 The contexts of n-liaison and t-liaison

As can be inferred from previous examples, the *-n* with the sound masculine plural suffix or the dual suffix in Modern Standard Arabic must be preserved in all possible syntactic positions unless it occupies a genitive construct-internal position or is followed by a pronominal clitic. The common feature between these two contexts is that the relation between the components of each construction is strong: the elements of the concatenated word (noun + the plural suffix + clitic) are immediately adjacent: they do not allow intervening elements to be inserted in between.

This requirement also exists between the components of a genitive construct. They prevent any intervening material between its elements. For instance, the adjective *gadiim* cannot appear immediately after the modified head noun *ḡaabu* since that will interrupt the strong adjacency between the elements of the genitive construct *ḡaabu rijaad^hijjatin*, as shown in the ungrammatical form in (18b).

(18) a. *ḡaab-u* *rijaad^hijjat-i-n* *gadiim*
Book-NOM math-GEN-INDEF old
'An outdated math book'.

*b. *ḡaab-u* *gadiim rijaad^hijjat-in*
Book-NOM old math-GEN-INDEF

Genitive constructs are also metrically distinguished. The components of a genitive construct have uneven levels of metrical strength: the primary stress falls on the word to the left of the construct (Al-Ani 1992; Jaradat 2018, to appear).

Moreover, it has also been recently reported that a genitive construct acts like a single lexical word. For example, recent empirical results indicated that the maximal domain of emphasis spread, which has long been considered the inflected or uninflected word in Arabic varieties (Jongman et al 2007; Zawaydeh 1999; Davis 1995; Card 1983), can be as large as a genitive construct (Jaradat 2018).

Following this line of thought, *-n* with the sound masculine plural suffix and the dual suffix must be omitted in Modern Standard Arabic when it appears between elements that are immediately adjacent: it deletes when it occupies a genitive construct-internal position or when it is followed by a pronominal clitic. This way, n-liaison and t-liaison in Standard Arabic have opposite contexts of application: the feminine suffix *-t* is realized when it is followed by an element that is immediately adjacent to it, whereas *-n* is realized in all other contexts and is deleted when it is followed by an immediately adjacent element.

As for the behavior of *-n* in RJA, it is optionally preserved when it comes with the sound masculine plural and it cannot be omitted under any condition when it occurs with the dual suffix. The *-n* with the sound plural suffix is optionally preserved in a genitive construct-internal position and before a pronominal clitic, but it must be realized in any other distribution. In accord with that, the consonant *-n* with the sound masculine plural has the same distributional paradigm in RJA and Standard Arabic, but it differs in terms of application: unlike its behavior in Standard Arabic, its preservation is optional in RJA. On the other hand, the consonant *-n* with the dual suffix in RJA and Standard Arabic does not have any resemblances.

In Jaradat (to appear), it has been suggested that the adjacency between the elements of a genitive construct and the elements of a concatenated word (e.g. noun + the plural suffix + clitic) is a consequence of spelling out each one to the phonological form as an impenetrable domain (Chomsky 2000, 2001, 2005). Based on this suggestion, Jaradat (2018) explain why the other form of liaison in Arabic, the realization of the feminine *-t*, must be realized in only two contexts: in genitive construct-internal position and before an affix or a clitic, as exemplified in (19).

(19)

a. The feminine *-t* in genitive construct-internal position:

<i>midrasi-t</i>	<i>il-binit</i>
school-F	DEF-girl
'The girl's school'.	

b. The feminine *-t* before a clitic:

<i>midrasi-t-ha</i>
School-F-POSS.SG.F
'Her school'.

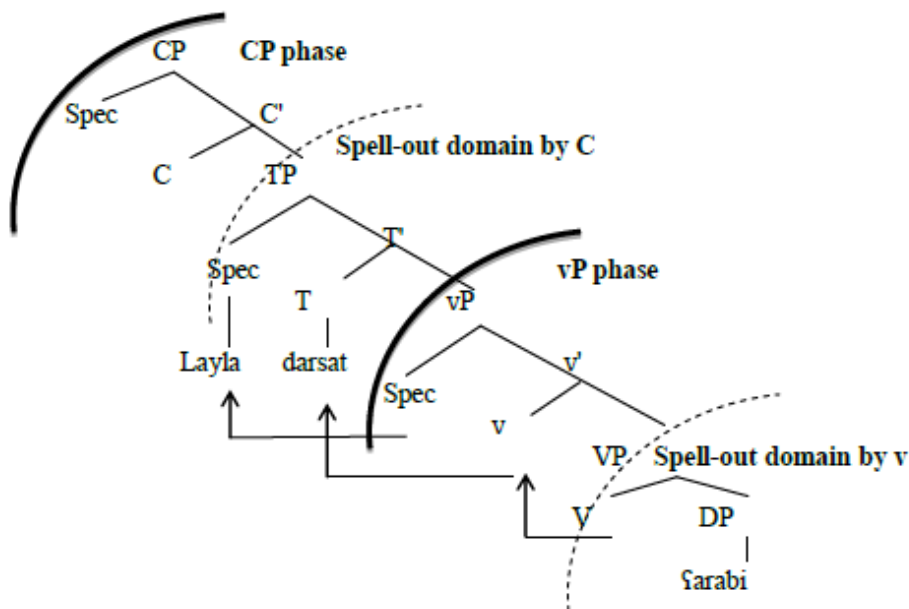
This entails that the two forms of liaison share the same distributions: the feminine *-t* is preserved and the *-n* of the dual and plural suffix is deleted in these two contexts in Standard Arabic. As for the *-n* of the plural and dual in RJA, depicting their behavior is more complicated. This means that the behavior of *-n* with the plural suffix and the dual suffix in Standard Arabic can be easily captured by Jaradat's (to appear) proposal offered for t-liaison: *-n* is preserved in a spell-out domain edge position and must delete in a spell-out domain-internal position. Similarly, *-n* with the sound plural suffix in RJA must be preserved in a spell-out domain edge position, but it may optionally delete in a spell-out domain internal position. As for the behavior of *-n* with the dual form in RJA, it is insensitive to its position within a spell-out domain. It must be always realized in all possible distributions.

Before suggesting a comprehensive syntactic analysis to n-liaison in RJA and Standard Arabic within a phase-based account in Section 5, Phase Theory (Chomsky 2001) and spell-out domains are introduced in the following section.

4. Phases and Spell-out domains

In Phase Theory (Chomsky 2001), the syntactic structure is derived cyclically in chunks called phases, which are vPs

and CPs. *v* and *C*, the heads of these phrases are able to spell out their complement to the phonological form. As shown in (20), the head *v* spells out VP and then *C* ships TP to the phonological form as chunks that are impenetrable to any further syntactic processes. Therefore, all the movements of the subject and the verb up to spec TP and T were made prior to the completion of spelling out domains to the phonological form.



(20) Phases and spell-out domains:

layla *darsa-t* *ʕarabi*
 Layla study.PST-F Arabic
 'Layla studied Arabic.'

Following Phase Theory, several studies (e.g. Dobashi 2003; Adger 2006; Kratzer and Selkirk 2007; Kahnemuyipour 2009, among others) indicated that spelling out syntactic domains to the phonological form should have a hand in shaping the phonological form of the components of the shipped domain and the surrounding domains. Adger (2006), for instance, suggested that the metrical grid should be structured based on a spell-out domains algorithm in Scottish Gaelic. Specifically, a stress mark must be assigned to a spell-out domain once it is shipped to the phonological form. Kratzer and Selkirk (2007) also set a condition, the Highest Phrase Condition, in order to account for the assignment of phrasal stress in English. This condition needs this type of stress to fall on the highest XP within a spell-out domain.

These studies indicate that the phonological component is deeply influenced by the process of spelling out domains to the phonological form since the phonological component comes after shipping a syntactic domain to the phonological form. In the following section, I will show that n-liaison, similar to t-liaison (Jaradat, to appear), can be accounted for straightforwardly using a spell-out domains algorithm in Standard Arabic. More specifically, I will show that the *-n* with the sound plural suffix and the dual suffix is always sensitive to its distribution in its containing spell-out domain in Modern Standard Arabic. On other hand, I will show that only the *-n* with the sound masculine plural suffix in RJA is sensitive to its distribution within its containing spell-out domain, but it is insensitive to spell-out domains if it appears within the dual suffix.

5. Discussion

5.1. n-liaison in Modern Standard Arabic

As previously discussed, there are two contexts in which the *-n* of the sound masculine plural suffix and the dual suffix can be omitted in Standard Arabic: in genitive construct-internal position and when it is followed by a pronominal clitic. I

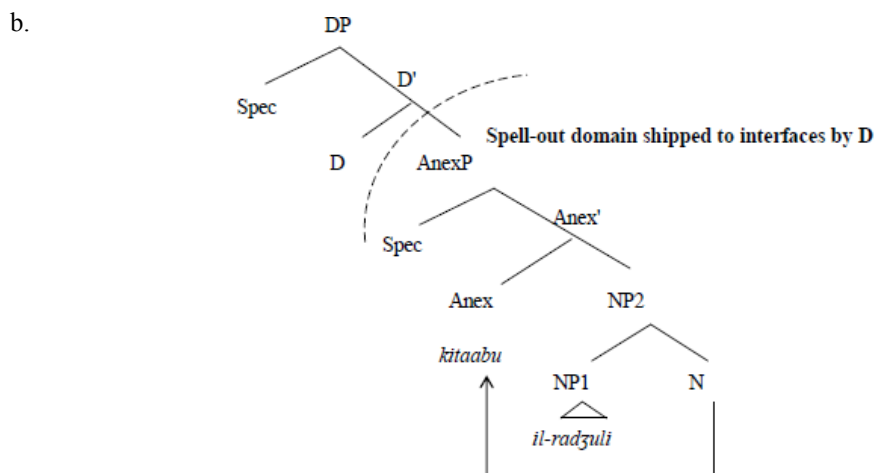
will show in this section that this *-n* is distributed in a spell-out domain-internal position in these contexts and I will explain how its distribution in its spell-out domain determines its phonetic realization (preservation or omission). I will start with the construction of the genitive construct and how it constitutes a spell-out domain shipped to the phonological form by a D head.

A theoretical issue that needs to be clarified first is the phasal status of DP in Arabic. Chomsky (2001) argued that phases are essentially syntactic reflexes of the semantic notion of proposition, which are CPs and vPs. More recently, several studies suggested that other types of syntactic phrases can be considered phasal including TPs and DPs (Fox and Lasnik 2003; Fox and Pesetsky 2005; Adger 2006; Epstein and Seely 2006; Boeckx and Grohmann 2007; Bošković 2014, among others). In this paper, following Jaradat (to appear), a DP is considered phasal in Standard and RJA due to the fact that the elements constituting a DP are not subject to extraction. In (21), for instance, neither the first word *naafiḏatu* nor the second *bajt* can be extracted out of its containing genitive construct, as shown in the ungrammatical forms in (21a&b). The extraction is ungrammatical in this case due to its violation to Phase Impenetrability Condition (Chomsky 2001): none of the elements of the genitive construct can move out since this construct is phasal. This entails that *naafiḏatu bajt* is the complement of D head, and therefore extracting one of its elements is ungrammatical.

- (21) *naafiḏa-t-u* *bajt-in*
 Window-F-NOM house-ACC-INDEF
 'A window of a house'.
- *a. *ʔajju* *naafiḏa-t-i-n₁* *kusira-t* *bajt* *t₁*
 Which window-F-ACC-INDEF break.PST.PASS.3SM book
- *b. *ʔajj-u* *bajt-i-n₁* *kusita-t* *t₁* *naafiḏa-h*
 Which book.PL break.PST.PASS.3SM-F window-F

In the previous work on the internal structure of the genitive construct, it has been considered either a single DP (e.g. in Al-Qahtani 2016) or two DPs (e.g. Siloni 2002; Benmamoun 2006; Almansour 2012). In this study, I adopt the single DP analysis. In (22), the DP of the genitive construct dominates an AnexP. AnexP head triggers the movement of N *kitaab* to Anex, and consequently we obtain the right word order in the genitive construct. This movement is followed by shipping the entire genitive construct as a complement by the D head to the phonological form.

- (22) a. *kitaab-u* *al-radzul-i*
 Book-NOM DEF-MAN-GEN
 'The man's book'.



Shipping the entire genitive construct to the phonological form as a spell-out domain has its own consequences on the syntactic status of this construct: it becomes inaccessible to syntactic operations. One of these syntactic operations is word insertion. Shipping a genitive construct to the phonological form prevents the insertion of an intervening word between its components. Following this line of thought, the immediate adjacency between the components of a genitive construct (Borer 1999; Benmamoun 2000; Al-Sharifi and Sadler 2009; Almansour 2010) is a consequence of shipping it to interfaces as a single inaccessible spell-out domain. In (23), for instance, the post-construct adjective *qadiim* modifies N *ktaabu*. This adjective must appear after *al-radzuli*. It cannot be inserted in an intervening position between the elements of the genitive construct *kitbaabu alradzuli*, as shown in the ungrammatical structure in (23b) since this will break the adjacency between the elements of the genitive construct.

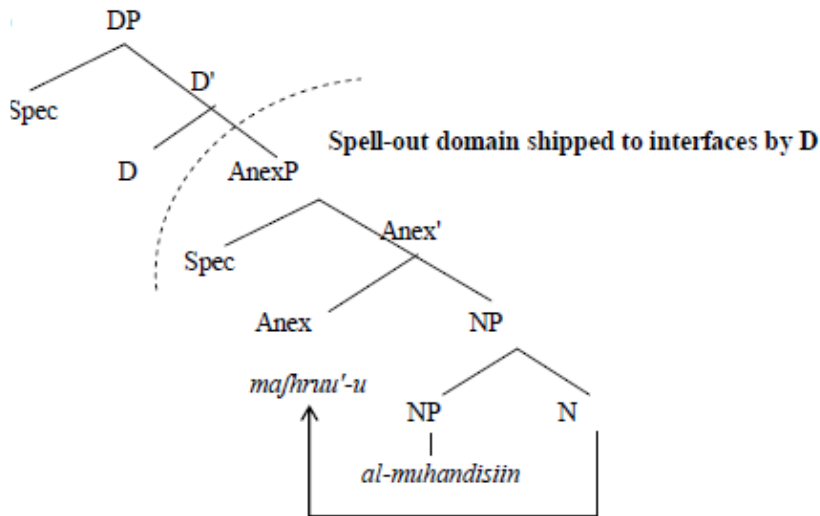
- (23) a. *ktaab-u* *al-raadzul-i* *al-qadiim*
 Book-NOM DEF-man-GEN DEF-old
 'The man's old book '.
- * b. *ktaab-u* *al-qadiim* *al-raadzul-i*
 Book-NOM DEF-old DEF-man-GEN

Once a genitive construct is shipped to the phonological form as a spell-out domain, the phonetic status of *-n* with the sound plural suffix or the dual suffix is determined. It is either omitted or preserved. It is preserved if it appears at the edge of a genitive construct and it is omitted if it occupies a genitive construct-internal position. In (24a&b), *-n* with the sound plural and dual suffixes in bold appears in genitive construct-final position, and therefore it is at the right edge of the spell-out domain containing the entire genitive construct. On the contrary, it is in genitive construct-internal position in (25a&b). It is obvious that it is realized in (24) and omitted in (25). Accordingly, I propose that *-n* with the sound plural and dual suffixes must be preserved in Standard Arabic if it occupies a spell-out domain-final position, as in (24), and is omitted in a spell-out domain-internal position, as in (25).

- (24) a. NP₃[NP₁[*maʃhruuʃ-u*]] NP₂[*al-muhandis-iin*]]
 project-NOM DEF-Architect-PL.MAS.ACC
 'The project of the architects'.
- b. NP₃[NP₁[*maʃhruuʃ-u*]] NP₂[*al-muhandis-ajn*]]
 project-NOM DEF-Architect-PL.MAS.ACC
 'The project of the two architects'.
- (25) a. NP₃[NP₁[*muhandis-uu*]] NP₂[*al-maʃhruuʃ*]]
 Architect-PL.MAS.NOM DEF-project
 'The project architects'.
- b. NP₃[NP₁[*muhandis-aa*]] NP₂[*al-maʃhruuʃ*]]
 Architect-PL.MAS.NOM DEF-project
 'The two project architects'.

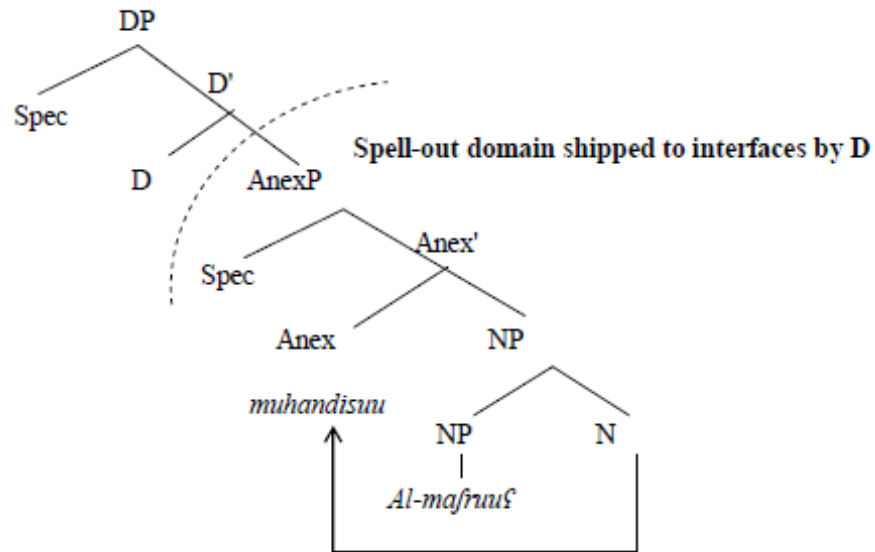
As can be seen in (26), the entire genitive construct *maʃhruuʃ-u al-muhandisiin* is shipped to the phonological form by D. Since the *-n* at the right of *muhandisiin* is in a spell-out domain final position, it must be realized.

(26)



On the contrary, it occupies a spell-out domain-internal position in (27): it is followed by *al-mafhruuʕ*. Therefore, it is obligatorily omitted at the time of shipping out this domain to the phonological form.

(27)

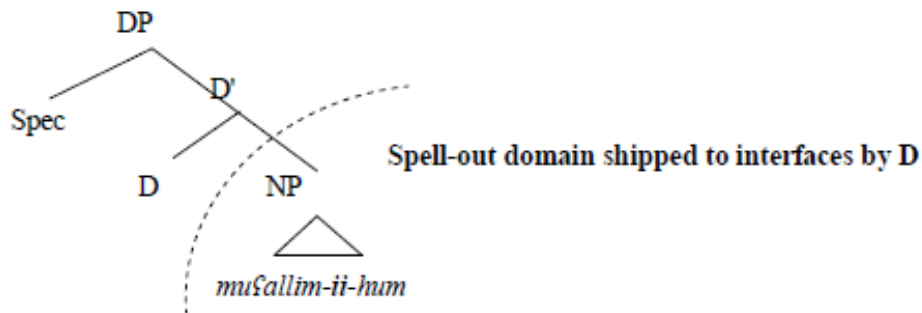


As for the second environment in which *-n* with the sound plural suffix and dual suffix must be omitted, it is deleted when it is followed by a pronominal clitic that prevents it from being at the edge of a spell-out domain, and therefore it cannot be preserved in a spell-out domain-internal position in Standard Arabic. In (28), for example, the plural suffix *-iin* is followed by the pronominal clitic *-hum*. Since *muʕallim-iī-hum* constitutes a DP, which is phasal in Arabic, the head D ships its complement *muʕallim-iī-hum* to the phonological form as a spell-out domain. In this situation, *-n* is in a genitive construct-internal position and therefore it cannot be realized.

(28) a. *muʕallim-iī-hum* #
 teacher-F-3PL.POSS

'Their teacher'.

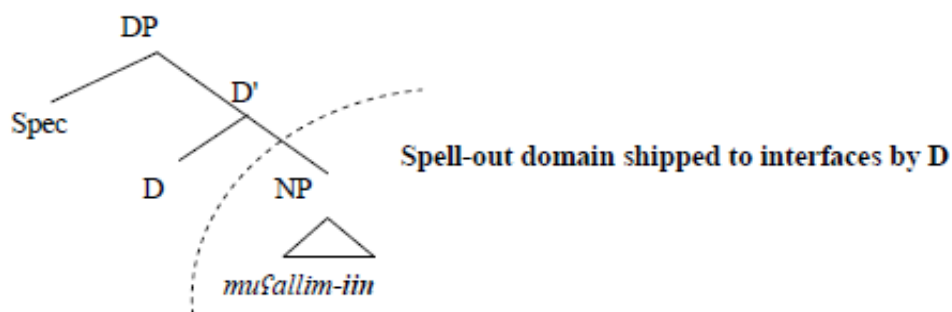
b.



In the absence of a pronominal clitic, *-n* must be realized because it becomes in a spell-out domain-final position, as shown in (28).

- (29) a. muʕallim-**iin** #
 teacher-F-3PL.POSS
 'Their teacher'.

b.



5.2 n-liaison in Jordanian Arabic

Similar to *-n* with the sound masculine plural suffix in Standard Arabic, its phonetic realization in RJA with the sound masculine plural is determined by its distribution in its containing spell-out domain. Specifically, *-n* with the sound masculine plural suffix in RJA is obligatorily realized in a spell-out domain edge position, as shown in (30). On the other hand, if it appears in a spell-out domain-internal position, it is optionally realized. In (31&32), *-n* with the plural suffix occupies the final position in the genitive construct and precedes the pronominal clitic *-hum*, respectively. As just proposed in the previous subsection, genitive constructs and concatenated words are phasal DPs in Arabic, and therefore, their phonetic components are shipped to the phonological form as spell-out domains. Accordingly, *-n* with the sound masculine plural in these examples occupies a non-final position in its containing spell-out domain. This entails that they are optionally realized.

- (30) In a spell-out domain-final position:
 - a. In a genitive construct-final position:

NP ₃ [NP ₁ [<i>luʕat</i>]	NP ₂ [<i>l-mʕallm-iin</i>]
Language	DEF-teacher.PL

 'The Teachers' language'.

(31) In a spell-out domain-internal position (genitive construct-internal position):

a. NP3[NP1[*mʕallm-iin*] NP2 [*il-luyat*]]
teachers DEF-language

'The teachers of language'.

b. NP3[NP1[*mʕallm-ii*] NP2 [*il-luyat*]]

(32) In a spell-out domain-internal position (pre-pronominal clitic position):

a. *mʕallm-iin-hum*

teacher-PL.MAS-3PL.POSS

'Their teachers'.

b. *mʕallm-ii-hum*

Although the *-n* of the plural in RJA is not obligatorily deleted in a spell-out domain as it is the case in Standard Arabic, the optionality of its realization in a spell-out domain-internal position and its obligatory realization in a spell-out domain-final position indicate that the presence of this consonant is sensitive to its distribution within its containing spell-out domain.

Contrary to n-liaison in Standard Arabic and *-n* with the sound masculine plural suffix in RJA, it must be realized in all possible distributions in RJA when it appears at the end of the dual suffix, as exemplified in (32-34). This means that the realization of *-n* with the dual suffix is not influenced by its distribution in its containing spell-out domain.

(32) In a spell-out domain-final position (in a genitive construct-final position):

NP3[NP1[*luyat*] NP2[*l-mʕallm-een*]]
Language DEF-teacher.DUAL

'The two Teachers' language'.

(33) In a spell-out domain-internal position (in a genitive construct-internal position):

NP3[NP1[*mʕallm-een*] NP2[*il-luyat*]]
teachers DEF-language

'The teachers of language'.

(34) In a spell-out domain-final position (in a pre-pronominal clitic position):

a. *mʕallm-een-hum*

teacher-PL.MAS-3PL.POSS

'Their teachers'.

Accordingly, n-liaison, as t-liaison, can be easily explained and predicted within a phase-based account in Modern Standard Arabic, but it is less straightforwardly explained by such a syntactic account in RJA due to the insensitivity of *-n* within the dual suffix to its distribution within its containing spell-out domain.

6. Conclusion

This paper offered a phase-based account (Chomsky 2001) to n-liaison in Modern Standard Arabic and RJA. It has been found in this paper that *-n* which appears at the end of the sound masculine plural suffix and the dual suffix is sensitive to its distribution within its containing spell-out domain in Modern Standard Arabic. It is realized in a spell-out domain-final position and is omitted in a spell-out domain-internal position. Similarly, it has been shown that *-n* in RJA is sensitive to its distribution in its containing

spell-out domain only when it appears with the sound masculine plural suffix. On the contrary, it is insensitive to its distribution when it appears with the dual suffix in RJA: it must be realized in all possible distributions. Worth noting is that the contexts of n-preservation and omission is expected to somehow vary among Arabic varieties. Hence, more efforts in future research should be paid to determine whether or not Arabic vernaculars exhibit symmetries in terms of –n (non-)realization.

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