

## Assignment of Plural Modes in Northern Rural Jordanian Arabic

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### ABSTRACT

This article seeks an explanation why many nouns in this Arabic variety are irregularly pluralized (e.g. *dʒabal* □ *ʔidʒba:l*) whereas only few are regularly pluralized (*muʔalim* □ *mʔalm-iin*). While repudiating the long-standing views which attribute the dichotomy of the sound (regular) and broken (irregular) plurals to primarily morphological factors, the current study shows that this dichotomy rather follows from a confluence of morpho-phonological processes, including moraic weight. It argues that the broken plural is the normal mode of plural formation in Arabic, being basically confined to words weighing 2-5 moras. If the given word weighs more than five moras or less than two moras (i.e., mono-moraic), broken formation is no longer accessible, and hence, the sound plural mode is called for. Furthermore, the study demonstrates how certain vowel melodies and the OCP are competing forces that constrain plural formation in this Jordanian Arabic variety.

**Keywords:** Broken Plural, Sound Plural, Moraic Structure, Vowel Melody, Primality Theory.

### INTRODUCTION

#### Introduction and Research Aims

Traditional grammars of Arabic distinguish between two modes of plural formation: the broken plural (BrPl) and the sound plural (SP). Whereas the former primarily involves internal modification of a singular stem to map onto a certain template, the latter is formed by suffixation of either *-u:n*, *i:n* or *-a:t* to a given stem which, in turn, remains intact (McCarthy and Prince 1990a, Benmamoun *et al* 2014, Albirini 2015, among others). To date, very few studies have addressed these two modes in terms of the factors deciding on them given that (1) the choice between them is not selective, and (2) apart from a handful, nouns cannot be both irregularly and regularly pluralized. What this means is that the frequent mode of pluralisation in Arabic is the BrPl, a state of affairs which

entails that the SP is the mode which departs away from the norm (cf. McCarthy 1983).

Recently, much of the literature on plural formation in Arabic within the framework of Generative Grammar has centred mainly on two aspects: prosodic mapping of BrPl forms onto designated templates (e.g., Hammond 1988, McCarthy and Prince 1990a, b, Idrissi 1997, Kiraz 2001, Boudelaa and Gaskell 2002, and Haddad 2008) and morphological correlates of BrPl and their non-concatenative idiosyncrasies (e.g., Abd-Rabbo 1990, Plunkett and Nakisa 1997, Ratcliffe 1998, Ravid and Farah 1999, Neme and Laporte 2013, and Albirini and Benmamoun 2014). Grossly speaking, what has been the locus of research regarding plural formation in Arabic in the last three decades are primarily the morpho-phonological changes to the stem when pluralized and how such changes can be fitted within phonological theory at the time. For instance, the Arabic BrPl was intensively examined in the 1980's and 1990's, thanks to its advantage to the theory of Prosodic Morphology (McCarthy 1984, *et seq.*) over the then-prevailing CV-

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based templatic morphology (cf. McCarthy 1979, 1982 and Dawdy-Hesterberg and Pierrehumbert 2014). Given the main tenets of the metrical grid (Lieberman and Prince 1977), BrPl was assumed to be formed by parsing out an initial minimal word from the base and, then, mapping its contents onto an iambic foot (McCarthy and Prince 1990a: 210), hence the empirical evidence for prosodic morphology (for details, see McCarthy, 1993).

Currently, such issues relating to plural formation in Arabic are being addressed within the Optimality Theory (OT) framework of analysis, the current medium of generative phonological practice. As constraint-based, such studies consider the interplay between faithfulness, markedness, and alignment constraints in deciding the appropriate BrPl template for the given noun in question. However, no investigation to date, to our best knowledge, has explored the underlying factors assigning the appropriate mode (BrPl or SPL) to nouns in Arabic. It should be noted that nominal modifiers, like nouns, can be pluralized in Arabic, as well. This follows from the fact that nominal modifiers must agree in gender and number with the noun they modify. However, the current discussion is only restricted to nouns. Thus, it is beyond the bounds of the current study to reflect on the findings of such studies which are immaterial to such 'deciding' factors.

Against this background and motivated by the assumption that assignment of plural modes in Jordanian Arabic (and in other Arabic varieties) is not arbitrary, the current study comes into being. It addresses the less investigated, though significant, notion of why many nouns are irregularly pluralized (e.g. *dʒabal* > *dʒiba:l*) whilst others are regularly pluralized (e.g. *muʔalim* > *muʔalim-u:n*) in the first place (cf. Gaber 2012, Sakarna 2012, and Al-Aghbari 2012). The current study then attempts to answer the following intertwined queries:

- i. Why are there originally two modes of plural formation in Arabic?
- ii. Which mode is the norm?
- iii. Why are there few cases of free variation (i.e.

both modes are possible)?

To answer these questions, we have put forward the thesis that plural formation in Jordanian Arabic follows from a confluence of morpho-phonological processes, where competing forces conspire to yield the suitable mode (BrPl or SPL) for each given noun.

The research is organized as follows. Section 2 introduces Northern Rural Jordanian Arabic (henceforth, NRJA), the dialect from which the data surveyed are taken and outlines the methodology used in the gathering of the data. In the discussion section in 3, we present syllabification as the only determining factor which causes all Arabic words (including classical forms) to be either irregularly pluralized or regularly assigned. This section shows how the moraic structure of a given word, vowel melody patterns, and morphological gemination are the stepping stones to fathom this dichotomy. Section 4 extends the discussion to both tri-syllabic and quadri-syllabic words; we highlight the reverse correlation between the number of syllables (and hence syllable weight in terms of mora count) and the vulnerability of the BrPl formation. BrPl is basically confined to words with a range of 2-5 moras. Section 5 discusses some implications and speculations following our findings. Section 6 concludes the research with pointers for further research.

### **Methodology**

Existing only as a spoken variety of Arabic, NRJA belongs typologically and genetically to the Semitic language family (cf. Al-Sarayreh 2013:11). It is spoken in northern rural areas in Jordan. By and large, NRJA is treated as a sub-variety of Levantine Arabic with a multitude of shared aspects of stress, duration, and intonation between them (De Jong and Zawaydeh 1999). Contra Standard Arabic (henceforth, SA), NRJA has received less attention in various linguistic domains including phonology, as is the case with other Arabic varieties. It is worth pointing out that phonological phenomena are not all shared one-to-one by both NRJA

and SA. For example, some words which are regularly pluralized in SA are assigned BrPl in NRJA and vice

versa. Consider Table 1 below:

**Table (1)**

Variation of pluralisation modes between SA and NRJA

(The sign ‘\*’ indicates that no possible plural form is utilized)

Word	Dialect	Singular	SPI	BrPl
a project	SA	maʃ.ru:ʃ	*	ma.ʃa.ri:ʃ
	NRJA	maʃ.ru:ʃ	*	ma.ʃa.ri:ʃ
a teacher	SA	mu.ʃal.lim	mu.ʃal.li.mi:n	*
	NRJA	ʔim.ʃal.lim	ʔim.ʃall.mi:n	ma.ʃa.li:m
a washing cloth	SA	xir.qah	*	xi.raq
	NRJA	xir.gah	xir.ga:t	*
a soul	SA	nafs	*	ʔan.fus/ nu.fu:s
	NRJA	na.fis	*	ʔin.fu:s

As shown in Table (1), the plural of [maʃ.ru:ʃ] ‘a project’ is the same in both SA and NRJA. However, the correspondence is not as identical for the other cases. Although the Arabic word for ‘a teacher’ in SA and NRJA is approximately the same, only NRJA has a plural doublet for this one: SPI [ʔimʃallmi:n] and BrPl [maʃa.li:m] vis-à-vis [muʃallimi:n] in SA. Second, whereas [xirgah] ‘a washing cloth’ is irregularly pluralized in SA [xi.raq], it is regularly assigned in NRJA [xir.ga:t]. Thirdly, SA has two BrPls [ʔan.fus] and [nu.fu:s] for the Arabic word [nafs] ‘a soul’, but NRJA only uses one BrPl [ʔin.fu:s].

Because the current research attempts to explore the phonological factors which govern the assignment of plural formation modes in NRJA and which might be, the claim goes, unique to those in SA, 500 countable nouns with different syllable structures (i.e., monosyllables, disyllables, etc.) were surveyed. Additionally, since phonology is basically meant to capture generalizations over phonological phenomena (Davenport and Hannahs 2010 and Carr and Montreuil 2013), the current research seeks for substantial evidence to generalize about the bearing on the syllabic structure of a given word and its tendency to be irregularly or regularly pluralized. To do just this, syllabification is taken as the departure point for

the whole discussion herein, bearing in mind the role syllables play in speech perception (Kenstowicz 1994:284, following Mehler *et al.* 1981, Goswami *et al.* 2013, and Miller 2014). Monosyllabic words are thus discussed in relative isolation and so are the disyllabic and polysyllabic words. In reality, there is good reason to believe that this division of labour would be appropriate, given that what counts for monosyllabic words is distinct from that for multi-syllabic words, and that availability of SPI increases as long as the number of syllables gets higher (see discussion below).

### Discussion

Given the data we collected and motivated by the observation made by McCarthy and Prince (1990a) on preservation of moras of stem when mapped onto the appropriate BrPl templates, we dare to claim that a binding relation exists between the number of moras in the base and the choice between BrPl and SPI. Everything else is equal, no BrPl template can tolerate a word that weighs more than four moras. This contention seems natural since it is hard to squeeze a word with, say, five or six moras into a BrPl template with maximally three moras. Additionally, what this basically implies is that monomoraic words, at the other end of the scale, cannot

be irregularly pluralized, due to the fact that BrPl template cannot be mono-moraic. This is so because the broken plural requires internal modification. Reasoning along these lines, we argue that this relation between moraic quantity and plural mode assignment is governed by some conditioning forces which ban mono-moraic words and words with more than four moras from being mapped onto a BrPl template. We name this as *The Moraic Condition on Plurality* (MCP), formulated as follows:

(1) Moraic Condition on Plurality (MCP):

BrPl templates are accessible to countable nouns weighing only 2-5 moras.

That is, monomoraic nouns and nouns weighing more than four moras (henceforth, super-moraic nouns) are not

prone to BrPl templates, and are thus regularly pluralized. Given that Arabic words with a range of 2-5moras are more frequent and more productive (cf. McCarthy 1983 and Boudelaa and Gaskell 2002), we dare to argue that (1) the BrPlis the norm, and (2) the SPI is only invoked when access to the norm is banned by high ranking demands. The analysis below will then be mainly devoted to plural mode assignment for words which only weigh 2-5moras.

Monosyllabic words:

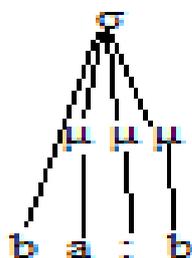
On the basis of the whole data surveyed, it is evident that most monosyllabic words (mostly weighing three moras) in NRJAare irregularly pluralized. Consider Table 2:

Table (2)

Pluralisation of the monosyllabic words in NRJA

No	Singular	Meaning	Syllabification	Plural
1.	ba:b	door	CV:C	?ib.waab
2.	xaal	maternal uncle	CV:C	?ix.waal
3.	θɔ:r	ox	CV:C	θi.raan
4.	ʃabb	young man	CVG	ʃa.baab
5.	ʕamm	paternal uncle	CVG	?iʕ.maam

Consider, for example, the moraic structure of the monosyllabic word [ba:b] ‘a door’, where the long vowel [a:] weighs two moras:



(2)

However, one remark challenging this piece of analysis is in order. A huge amount of research advanced in almost all OT and pre-OT-approaches argues for the bi-moraic limit of syllables and feet in Arabic (Prince

1983, Hyman 1985, Kiparsky 2003, and Al-Jarrah 2002, 2011). In this respect, McCarthy and Prince (1990b) maintain that Arabic requires quantitative trochaic stress feet, so the minimal stem is bi-moraic:

‘Since the word dominates the foot in the prosodic hierarchy, the smallest word will be a single foot. We call a word, stem, or other top-level category that exactly meets this criterion minimal’ (McCarthy and Prince 1990b:17).

In order to account for the apparently tri-moraic structure of such words, their choice was to assume that the final mora is extra-prosodic (i.e., extra-syllabic), and is therefore not contributing to the weight of the syllable (For details, see Al-Jarrah, 2002). What this basically means is that the word [ba:b] is a heavy bi-moraic

monosyllable with the following prosodic structure (following McCarthy and Prince 1990a:252):

(3)



What probably bears this analysis out is the observation that this “assumed” extra-prosodic mora becomes obligatorily an onset (and therefore morales) of the immediately following syllable in case of suffixation (The long vowel [a:] in (4a) is shortened due to the avoidance of stress clash, given that stress in NRJA is quantity and position sensitive (the stress lodges in general on the first heavy syllable in a given word. However, once the stress migrates to a second heavy syllable, the first heavy syllable must be consequently shortened).

(4) a. [ba:b] → [ba.be:n] ‘two doors’

b. [ba:b] → [ba:.buh] ‘his door’

However, monosyllables without a coda are prohibited in Arabic. Logically speaking, we then reach a paradoxical situation: the final consonant showing up in the coda position is extra-prosodic (no longer contributes to the syllable weight) and, in the meantime, there is a ban on monosyllables to appear without a coda. As a first approximation, the idiosyncratic characteristic for monosyllables in NRJA to have a coda might endorse the underlying role of the coda for monosyllabic words formation (see below). In addition, the notion why such codas are not counted as phonologically important is far from being clear, bearing in mind that there are severe phonotactic constraints on what can be attached to the end of monosyllabic words.

In order to account for obligatory existence of codas in monosyllables, let us make recourse to mora strength. Following the general lines put forward by McCarthy and

Prince (1990a:252), we draw a distinction between a strong mora and a weak mora. Mora strength is decided by its position in conjunction with the nucleus of the syllable to which it belongs. The first short vowel (or the first half of the long vowel) bears a strong mora, whilst any consonant in the coda or the second half of the long vowel bears a weak mora. Consider the following illustration of the word [baab] ‘door’ (Strong mora = Sμ; weak mora = Wμ):

(5)



Following this line of thought, we assume that a weak mora does not on its own contribute to the prosodic structure of a given monosyllable unless it is followed by another segment which, in turn, is extra-syllabic. Following this, it sounds plausible to treat a weak more as a defective prosodic unit’, requiring certain prosodic support to be licensed as a legitimate prosodic unit. This leaves us with two options for a mora to be weak or defective (Alternatively, the long vowel in monosyllables can be assumed to weigh one mora, treating this notion as an idiosyncratic feature of the monosyllables. However, this analysis goes to the contrary of the well-established literature advanced in this field):

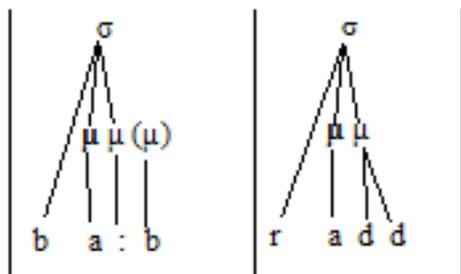
a. It is a second half of a long vowel, or

b. When consonantal, it is the second half of a geminate.

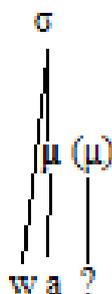
Put differently, monosyllabic words must be mapped onto two templates: CvVC or CvCC, where that the second part of the long vowel or the second part of the geminate is not moraic (i.e., does not bear any mora). Consider (6) where the strong mora is boldfaced (The potential relation between the weak mora and extra-

syllabicity is further supported by the peculiar behaviour of [s] when showing up in the coda position):

(6)



Not surprisingly though, the bi-moracity condition of monosyllables can be violated. In reality, there are few monosyllables that are mono-moraic. These include closed sets such as names of the letters of the alphabet as well as words like [laʔ] ‘no’ and [waʔ] ‘and’. According to McCarthy and Prince (1990a), such words are monomoraic because the glottalstop /ʔ/ appearing in coda position is considered extra-prosodic (1990a:254):



Interestingly enough, all of these words are regularly pluralized by suffixing *a:t* as shown in Table 3 below:

Table (3)

Monosyllabic words with mono-moraic structure

No	Singular	Meaning	syllabification	Plural
1.	waʔ	and	CVC	wa.ʔ-a:t
2.	laʔ	no	CVC	la.ʔ-a:t
3.	raʔ	‘R’ letter	CVC	ra.ʔ-a:t
4.	faʔ	‘F’ letter	CVC	fa.ʔ-a:t
5.	baʔ	‘B’ letter	CVC	ba.ʔ-a:t

The assignment of the plural formation mode for NRJA monosyllabic words seems then phonologically governed. According to McCarthy and Prince (1990a), the number of syllables in the BrPl depends on the number of moras in the base (1990a:218). They argue that bi-moraic stems form disyllabic plurals, and longer stems form trisyllabic plurals. We term this dependence as *Moraic Parallelism of the Base* (MPB), according to which, bi-moraic monosyllabic words demand a disyllabic BrPl (as clearly shown in Table 2 above). However, this demand is not possible for monosyllabic words that are mono-moraic (as shown in Table 3 above). In this latter case, as access to the BrPl templates becomes unattainable, the SPI becomes the only viable alternative (by suffixation of the feminine *a:t*). (NRJA uses two SPI suffixes: *+a:t* and *+i:n*. The latter is restrictively used with the masculine animate nouns, whereas the former is used elsewhere. The terms *masculine* and *feminine* suffixes are coined within the traditional grammar of Arabic and kept using although the suffix *+a:t* is exclusively used for inanimate masculine nouns) One bold assumption we make following demands of MPB is that SPI is only possible when the broken mode is inaccessible.

To Sum up, to establish a relation between the moraic structure of a given monosyllable and the assignment of the plural formation, one argue that all monosyllabic words (which are mostly bi-moraic) are irregularly pluralized due to MPB. Only when a monosyllabic word is monomoraic that it can be regularly pluralized by suffixation of the feminine *+a:t*.

*Di-syllabic words:*

On the basis of the data surveyed, it has turned out to us that what counts for disyllabic words is not only its moraic-structure. Both vowel harmony and heterosyllabic gemination are also decisive factors that militate against BrPl formation for disyllabic words. They are both higher ranking constraints that force the MCP not to work. In the following two subsections, we try to demonstrate how germination and vowel harmony both outrank MCP.

*Heterosyllabic gemination and the SPI formation*

Almost all disyllabic words are irregularly pluralized as shown for the word [miʕla:g] ‘a heart’:

(7)



However, the only exception is a disyllabic word with a (morphologically) heterosyllabic geminate, which are instead regularly pluralized. Consider Table 4 where ‘G’ stands for a heterosyllabic geminate whose first part is the coda of the first syllable, while the other part is the onset of the second:

Table (4)

Disyllabic Words with a Heterosyllabic Geminate

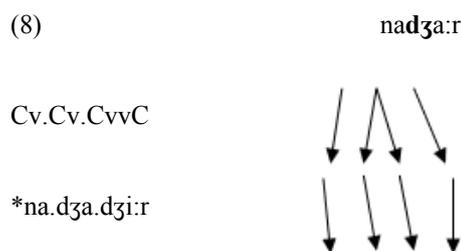
No	Singular	Meaning	Syllabification	Plural
1.	nadʒ.dʒa:r	carpenter	CVGV:C	i:n
2.	fal.la:h	farmer	CVGV:C	i:n
3.	bay.ya:ʕ	vendor	CVGV:C	i:n
4.	χay.ya:tʕ	tailor	CVGV:C	i:n
5.	dadʒ.dʒa:l	deceiver	CVGV:C	i:n

The main reason for such words to be regularly pluralized (in utter violation of the MCP) can be ascribed to the Obligatory Contour Principle (OCP). Although the original idea of this principle was formulated to disallow adjacent identical tones (cf. Odden 1986, Yip 1988, and Jacques 2014), we extend this principle to disallow adjacent identical (or closer) onset consonants. Therefore, when identical, two adjacent onsets are disallowed regardless of the nature of the intervening vowels. So, the non-occurring word (na.dʒa.dʒi:r) has two adjacent (dʒ)-s.

All heterosyllabic geminates are found in singular bases with the disyllabic [CvCCvC] structure which is, in turn, mapped onto a BrPI template with tri-syllabic

[CvCvCvC] make-up. When pluralizing words with heterosyllabic geminates in a broken fashion, the final and the penultimate syllables in the resulting BrPI template both surface with the same consonant of the geminates the onset, as shown for the word [nadʒdʒa:r] ‘a carpenter’ below. Although mapping configuration is ancillary to the main thrust of the current analysis, its details are kept aside for the sake of space:

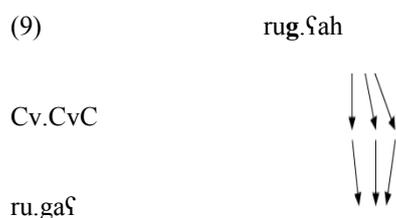
(8)



In such cases, the OCP comes into play to break this monotony. Concisely, it militates against consecutive onsets with the same consonant (na.dʒa.dʒi:r). Because this violation is serious (i.e. high-ranking), such words are regularly pluralized, instead. The SPI then becomes no more than a means to resolve the conflict between the need to respect the OCP and the need to pluralize the word in question.

Interestingly enough, disyllabic words with a tautosyllabic geminate are irregularly pluralized. This is because, when pluralized, they already undergo degemination, and hence no violation to the OCP is triggered. For example, the disyllabic word [rug.ʕah] ‘a patch’ is irregularly pluralized [ru.gaʕ] by being mapped onto the designated BrPI template [Cv.CvC] in line with MPB, as shown below:

(9)



Again, this analysis lends support to our claim that the BrPI is the normal mode of plural formation in Arabic, and the SPI is only invoked when higher ranking

constraints (e.g. the OCP) are violated.

Vowel harmony and SPL formation:

Being the exception, the SPL is also invoked for disyllabic words with specific patterns of vowel melody, namely [u\_i], [a\_a] and/or [i\_a]. Based on the data surveyed, it has turned out to us that every masculine animate disyllable with the vowel melody [u\_i] is regularly pluralized by suffixation of the masculine +i:n. Consider Table (6):

**Table (5)**

Disyllabic masculine animate word with vowel melody [u,i] (<> is used to mark in a sense of Hayes (1995) the extrametrical segments. Extrametrical elements are deleted or become an onset of the following syllable in case of suffixation)

No	Singular	Meaning	Syllabification	Plural
1-	mus.lim	muslim	CVC.CV<C>	mus.li.mi:n
2-	mu.ði:ʃ	reporter	CV.CV:C	mu.ði:ʃi:n
3-	muʔ.min	faithful man	CVC.CV<C>	muʔ.mi.ni:n
4-	mugi:m	resident	CV.CV:C	mu.gi:mi:n

But disyllabic words with the vowel melody [a\_a] or [i\_a] are regularly pluralized by suffixation of the feminine +a:t. Consider Table (6).

**Table (6)**

Disyllabic words with a vowel melody [a\_a] or [i\_a]

No	Singular	Meaning	Syllabification	Plural	vowel melody
1.	dʒa:m.ʃah	university	CV:C.CV<C>	dʒa:m.ʃa:t	a_a
2.	nidʒ.mah	star	CVC.CV<C>	nidʒ.ma:t	a_a
3.	ħam.lah	campaign	CVC.CV<C>	ħam.la:t	a_a
4.	ti:.nah	fig tree	CVC.CV<C>	ti:.na:t	i_a
5.	kil.mah	word	CVC.CV<C>	kil.ma:t	i_a

These examples suggest that vowel harmony is, probably contrary to previous convictions, relevant in the assignment of the plural modes in NRJA. (Vowel harmony is defined as a phonological state in which the vowels in a given domain share or harmonize for a

particular feature (Kenstowicz 1994:347)). In a nutshell, all masculine animate disyllables with high vowels [u\_i] and all other disyllables with front vowels [a\_a] or [i\_a] are regularly pluralized. To account for this, we capitalize on the claim made by McCarthy and Prince (1990a) that the vowel melody of a given base is overwritten (In this regard, McCarthy and Prince (1990a) states that the vowel melody of the singular is replaced by another vowel melody like /u\_a/ (1990a:214). To illustrate, unlike the consonants which form the BrPl templates, the vowels of a given template are fixed in the BrPl templates. In other words, no transferring of the stem vowels occurs when a given word is mapped onto its corresponding BrPl template. For instance, all masculine animated syllables with a [CvC.CvC] structure are mapped onto the BrPl template [Ca.Ca:.CiC] in which the vowel melody [a\_a\_i] is fixed irrespective of the vowels in the base. Illustrative examples are provided below:

(10)

- a. /maglab/ 'a prank' → /maga:lib/
- b. /malʔab/ 'a pitch' → /mala:ʔib/
- c. /masbaħ/ 'a swimming pool' → /masa:biħ/
- d. /maxzan/ 'a store' → /maxa:zin/

Consider the mapping configuration of word [mag.lab] 'a prank' which is irregularly pluralized as shown below:

(11)



However, such mapping configuration is blocked when the vowels of the masculine animate singular are both high [u\_i] but differ in backness (one back and one front). For some reason, this vowel melody [u\_i] of the base cannot be overwritten by the melody of the template [a\_a\_i] when mapping take place. Accordingly, there should be some constraints that preclude these vowels melodies to be overwritten, hence no access to BrPl

templates is available. Such constraints must outrank the MCP which forces nouns with moraic quantity of 2-5 to be irregularly pluralized. Let us name such constraints as FILTERING since they filter out certain vowel melodies to be overwritten.

Taking a stab at the account of this blocking, we can assume that back high rounded vowels (e.g. [u]) cannot be replaced by low front unrounded vowels (e.g. [a]) since both are different in vowel height, backness and roundness. This vowel melody is then a high ranking requirement that prevents disyllabic nouns of this sort to be irregularly pluralized. The same analysis can be extended to the other disyllabic words which are regularly pluralized by suffixation of the feminine *+a:t*. In short, the vowel harmony of the singular base can then be seen as another deriving factor pertaining to the plural mode formation in NRJA.

#### Multi-syllabic words:

For trisyllabic words, heterosyllabic geminate and the vowel melody pattern are by far what determine whether a given noun is irregularly or regularly pluralized. Consider Table 8 below where all words involved are regularly pluralized by the suffixation of the feminine *+a:t*.

**Table (8)**

Tri-syllabic words with a heterosyllabic geminate

No	Singular	Meaning	Syllabification
1.	sidʒ.dʒa:.dih	carpet	CVGV:CV<C>
2.	sij.ja:.rah	car	CVGV:CV<C>
3.	ħaf.fɑ:.yih	shoes	CVGV:CV<C>
4.	nazʕ.zʕa:.rah	glasses	CVGV:CV<C>
5.	θal.la:.dʒih	refrigerator	CVGV:CV<C>

Like disyllabic words, tri-syllabic words with a heterosyllabic geminate are not irregularly pluralized because of the demands imposed by the OCP. For instance, mapping the word [sij.ja:.rah] ‘a car’ onto the BrPl template [CaCaCi:C] constitutes a serious violation to the OCP, when the ultimate and penultimate syllables surface with the same consonant of the geminate. In such cases, because it becomes really hard to articulate the resulting BrPl, the SPl is the viable alternative that the language makes available to its users.

Likewise, each masculine trisyllabic word with a [u\_a\_a] or [u\_a\_i] vocalic structure and each feminine trisyllabic word with a [i\_a\_a] or [a\_a\_a] vocalic structure is regularly pluralized, because of vowel melody. Consider Table (9):

**Table (9)**

The vowel melody in trisyllabic words which are regularly pluralized

No	Gender	Singular	Meaning	Syllabification	Vowel melody
1.	Masculine	mudʒ.ta.maʕ	community	CVC.CV.CV<C>	u_a_a
2.		mus.taw.daʕ	store	CVC.CVC.CV<C>	u_a_a
3.		mus.taʕ.fa	hospital	CVC.CVC.CV	u_a_a
4.		mu.hann.dis	engineer	CV.CVC.CV<C>	u_a_i
5.	Feminine	mik.ta.bah	library	CVC.CV.CV<C>	i_a_a
6.		'ʃa.dʒa.rah	tree	CV.CV.CV<C>	a_a_a
7.		'ba.ra.kah	bless	CV.CV.CV<C>	a_a_a

However, all trisyllabic words without a heterosyllabic geminate or without some specified vowel melody patterns are irregularly pluralized.

### **Some pedagogical implications:**

With the discussion above in place, we argue that plural assignment in NRJA (and presumably in all other Arabic varieties) is not arbitrary but follows from a set of (morpho)-phonological rules which work in tandem. When an accountable noun is pluralized, there are two options that the language makes available to its users. However, the choice between these two paths (SPI and BrPI) is not selective. In the aforementioned discussion we tried to show the choice between the two paths follows from the interaction between a number of competing forces that all conspire to yield the optimal output form. These constraints include the MPB, the MCP, the OCP and some vowel-melodies filtering constraint (VMFC).

In OT terms, the main trigger of these two paths is the effect of MPB which demands no loss of the moraic structure of the base (i.e., singular). MPB is therefore the brute force which preserves the moraic structure of the singular. However, because it is violable, MPB is overridden by the MCP, a high ranking force that restricts BrPI templates to words weighing only 2-5moras. Due to the MCP, neither mono-moraic nor super-moraic words can be irregularly pluralized. The MCP filters out words with either mono-moraic or super-moraic structure, demanding SPI formation. In OT terms, MCP dominates MPB.. However, the BrPI is not licensed in two other cases: if it violates either the OCP or VMFC. Consequently, the following ranking of relevant factors holds for BrPI formation in Arabic:

- (15) OCP; VMFC >>>> the MCP >>>> MPB

One immediate finding based on our analysis is that plural formation is not lexical information. Rather, plural forms are derived by the interaction of a set of constraints that, like those in (15) above, all conspire to let the correct form surface as the optimal output form. In order

to see if this is productive, we asked 10 native speakers of NRJA to pluralize the foreign word ‘google’. Interestingly enough, all of the participants pluralized this word irregularly as ‘gawagiil, utilizing the normal mapping operation, although they have never heard of this word in its plural form before. This suggests that plural forms in Arabic are constrained by the grammar of the language, and no plural forms are stored in the lexicon. This finding corroborates the findings of other cross-linguistic studies (e.g. Mervis and Johnson 1991, and Clark 2009).

One relevant point to raise is the rare cases where one word can be both irregularly and regularly pluralized (i.e., free variation), like the word [ʔim.ʕal.lim] ‘a teacher’: SPI [ʔim.ʕal.mi:n] and BrPI [ma.ʕa.li:m]. For this, we entertain the possibility that these words have moraic structure of five moras, the grey area where both forms of plural can be licensed. However, this grey area (five moras) is disappearing since BrPI of such words are only restricted to the language of old people. What this implies is that moraic structure allowed by the MCP to access BrPI templates is shrinking. However, we leave this assumption for future research to explore.

One immediate benefit of this analysis is that it lends a helping hand for teachers of Jordanian Arabic to non-native speakers as they are interested in figuring out second language learners’ error patterns. However, in order to do just this, these teachers need to do three things. First, they need to figure out learners’ actual rankings of the set of violable constraints at a particular stage of learning. Second, they need to identify error patterns resulting from the learners’ failure to exploit the target language relative constraint ranking. Third, they need to sketch a remedy strategy by which they set priorities of treatment, i.e. which error patterns should be targeted first (For details see Al-Jarrah, 2011).

The strong thesis that falls off this OT analysis is that certain errors are predicative of others (Dinnsen et al., 1997) because certain constraints (and ultimately error patterns) are ranked relative to each other. What this

means is that the demotion of some error patterns (by means of OT demotion mechanism) may pull along some other error patterns for free. In other words, fixing some error pattern may obviate the need for fixing (an) other error pattern(s). To illustrate, let us start off with the last finding where some words can have both plural forms such as word [ʔim.ʕal.lim] ‘a teacher’ whose sound plural form is [ʔim.ʕall.mi:n] and its broken plural form as [ma.ʕa.li:m]. Drilling exercises that target such forms may not be a first-hand priority because they can be predictive, and should therefore be demoted. The same line of reasoning applies to words that weigh less than two moras which always pluralize regularly.

However, of at most concern to the language teacher in this context are those words which weigh two moras or more but less than five moras. Here the choice between the two paths (SPl and BrPl) is never selective as it follows from the interaction between a number of competing forces that all conspire to yield the optimal output form. The relevant constraints include the MPB, the MCP, the OCP and some vowel-melodies filtering constraint (VMFC). The ultimate ranking we reached is something like (15) above.

In more concrete terms, we argue that for disyllabic words drilling exercise for “miʕla:g” (plural: ma.ʕa.li:g) should dominate drilling exercises for “nadʒ.dʒa:r” (Plural: nadʒ.dʒa.ri:n). Likewise, drilling exercises for “mal.ʔab” (plural: ma.la.ʔib) should be given more emphasis than drilling exercise for “kil.mah” (plural: kil.ma:t). The same reasoning applies to trisyllabic and quadrisyllabic words whose vowel melody are regularly pluralized such as “mus.taw.daʕ” (a storage) and “mu.hann.di.sah” (a female engineer). Therefore, drilling exercises for “ban.Ta.lu:n” (plural: ba.na.Ti:l) and “sim.sa:r” (sa.ma.si.rah) should outrank “mus.taw.daʕ”

(plural: mus.taw.da.ʕa:t) and “mu.han.di.sah” (plural: mu.han.di.sa:t).

### Conclusion

Although the current study does not address all the conflicting forces that yield the optimal plural form mode for each word, it makes inroads onto native speaker’s intuitive conviction that plural mode formation in NRJA is not arbitrary. Rather, a constellation of morpho-phonological factors all conspire to yield the desired output form. First and foremost, the study comes up with the finding that the sound form is not a rival but an alternative to the BrPl that becomes only available when the mapping onto a designated BrPl is not possible. For monosyllabic words, the moraic structure is the factor which has the final say to determine whether a given word is irregularly or regularly assigned. If a given monosyllabic word has a bi-moraic structure and contains a consonant bearing an extra-prosodic mora, this word is definitely pluralized in a broken fashion; otherwise the SPl mode is called for.

Additionally, multisyllabic words are assigned the appropriate plural mode due to high ranking constraints that have to do with gemination and vowel melody. It has turned out that certain vowel melodies resist the BrPl formation, making the SPl the only viable alternative mode that can be accessible. Likewise, gemination makes it imperative to obviate the need for a corresponding BrPl template. Finally, the study leads to the conclusion that a negative correlation between the multisyllabic (i.e., quadrisyllabic) words and the susceptibility to the BrPl formation can be established. Such a correlation is governed by the moraic mapping between the singular and its corresponding plural form. We discussed some implications of these findings.

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## أنماط الجمع في اللهجة الريفية في شمال الأردن

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### ملخص

تهدف الدراسة إلى تقديم تحليل نقدي لخطاب محطتي أبناء عربيتين لدى تغطيتهما للاحتجاجات المصرية في الفترة التي تبحث هذه الدراسة في آلية بناء صيغ جمع السلامة وجمع التكسير في اللهجة الريفية في شمال الأردن، وعلى نحو أدق؛ فهي تسعى إلى تفسير كون كثير من صيغ أبنية الجمع غير قياسية (نحو: جبل - جبال)، وأن الأبنية القياسية (نحو: معلم: معلمين) قليلة نسبياً. وخلافاً للفكرة التقليدية السائدة القائمة على أن صيغ الجمع تخضع لعوامل مورفولوجية؛ فإن هذه الدراسة ترى أن صيغ الجمع تسير وفق عمليات مورفولوجية تشمل الوزن الصوتي العروضي. والفكرة المركزية في الدراسة أن جمع التكسير يمثل أساس صيغ الجمع في العربية، ويتحدد بالألفاظ التي يأتلف وزنها العروضي من وحدتين إلى خمس وحدات صوتية في التقطيع العروضي، فإذا تجاوز وزن الكلمة خمس وحدات أو قل عن وحدتين، فيتعذر عندها ظهور جمع التكسير، ويصبح جمع السلامة هو المغيار. فضلاً عن ذلك؛ فإن الدراسة تحاول إظهار أن الأنماط الحركية (OCP) تُعد ضوابط فاعلة تحكم صيغ الجمع في اللهجة موضوع الدراسة.

الكلمات الدالة: جمع التكسير، الفونولوجيا، المحكية الاردنية، نظم التنغيم.

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