Pronominal System in Standard Arabic: A Distributed Morphology Analysis

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Abstract:

The current paper explores the pronominal system in Standard Arabic (SA) within the framework of Distributed Morphology (Halle & Marantz, 1993, 1994; Halle, 1997; and Embick & Noyer, 2006). Although the pronominal system in SA includes pronouns declining for person, gender, number and case, morphological syncretism exists where gender is not contrastive in the 1st person pronouns plus the dual pronouns. Moreover, case does not show distinct realizations in the accusative/genitive pronouns. The paper shows that the under-specification of vocabulary items can account for all the pronominal patterns. However, two syntax-independent mechanisms are needed to account for problematic bimorphemic pronouns: Fission (Noyer, 1997) and Impoverishment (Bonet, 1991). In this paper, fission is proposed in a rule-governed format, where a node is split into two nodes: the first node bears the case/person features while the other bears the number/gender features. As for the syncretism in the case of the 3rd person pronouns and in the gender of the dual pronouns, they are accounted for by two contextualized impoverishment rules: the first rule involves the deletion of case features, whereas the other deletes the gender features. Both impoverishment rules are operative in the 3rd person dual pronouns and they occur in a non-restrictive order.

Keywords: Standard Arabic, pronouns, Distributed Morphology, Impoverishment

نظام الضمائر في اللغة العربية المعيارية: تحليل بالصرف الموزع

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الملخص:

تستكشف الورقة الحالية نظام الضمائر في اللغة العربية المعيارية في إطار الصرف الموزع (هالي ومارانتس، ١٩٩٣، ١٩٩٤؛ هالي، ١٩٩٧؛ وإمبيك ونوير، ٢٠٠٦). فعلى الرغم من أن نظام الضمائر في اللغة العربية المعيارية تشتمل على ضمائر تنصرف وفقًا لحالة الضمير (متكلم\مخاطب\غائب) وحالات الجنس (مذكر\مؤنث) والعدد (مفرد\مثنى\جمع) والإعراب (رفع\نصب\جر)، إلا أن التوافق الصرفي يتواجد من حيث عدم التباين في الجنس في ضمائر المتكلم بالإضافة إلى ضمائر المثنى. بالإضافة إلى ذلك، لا يسهم تباين الحالة الإعرابية في تغيير أشكال ضمائر النصب والجر. تُظهر الورقة أن تقليل مواصفات المفردات (بحسب الصرف الموزع) تفسّر جميع أنماط الضمائر. ومع ذلك، ثمة حاجة إلى آليتين مستقلتين عن النحو تسهم في تفسير مشكلة الضمائر ثنائية التقسيم: الانشطار (نوير، ١٩٩٧) والإفقار (بونيت، ١٩٩١). في هذه الورقة، يُطرح الانشطار في صيغة محكومة القاعدة، حيث تقسم حزمة السمات لحزمتين: الحزمة الأولى تحمل سمات الحالة الإعرابية والحالة الضميرية (متكلم\مخاطب\غائب) في حين أن الأخرى تحمل سمات الجنس والعدد. أما فيما يخص التوافق في حالة ضمائر الغائب وضمائر المثنى، فيتم تفسيرها من خلال الإفقار بقاعدتين نسقيتين: القاعدة الأولى تحذف سمات الحالة الإعرابية والثانية تحذف سمات الجنس. كلتا القاعدتين تؤديان عملهما في تفسير حالة الضمير الغائب المثنى، وكلتاهما تعملان بلا ترتيب مقيّد.

الكلمات المفتاحية: اللغة العربية؛ الضمائر؛ الصرف الموزع؛ الإفقار.

1. Introduction

Although nominal inflections have been the concern of many morpho-syntactic analyses, especially within the framework of Distributed Morphology (e.g Müller, (2002, 2003, 2004) for German, Icelandic and Russian nouns respectively; Weisser (2006) for Croatian nouns and Lampitelli (2011) for Bosnian nouns), the morphology of the nominal referring expressions, pronouns, has not received adequate attention besides the feature geometric analysis proposed by Harley and Ritter (2002). To the best of my knowledge, most works of the pronominal system in Standard Arabic (SA) are grammatical sketches (e.g. Ryding, 2005; Japen & Kasiyarno, 2015, among others) with the exception of Albuhayri's theory-based analysis (2013) which investigated the correlation between independent and dependent personal pronouns from phonological and morphosyntactic perspectives. This study attempts to provide a formal account to the Arabic pronominal inflections from a Distributed Morphology perspective (Halle & Marantz, 1993, 1994; Halle, 1997; Embick & Noyer, 2006, henceforth DM) .

In consistent with the Greenberg Universal (42) that 'all languages have pronominal categories involving at least three persons and two numbers" (Greenberg, 1963: 96), SA pronouns inflect for person (1st, 2nd and 3rd), number (singular, dual, plural), gender (masculine and feminine) and case (nominative, accusative, and genitive). The declensions of Arabic pronouns are laid out in paradigm (1) below.

		SG		**PL**		**DU**	
		M	**F**	**M**	**F**	**M**	**F**
1	**NOM**	ʔana:		nahnu			
	ACC	-ni		-na			
	GEN	-i					
2	**NOM**	ʔant-a	ʔant-i	ʔant-um	ʔant-unna	ʔant-uma	
	ACC	-k-a	-k-i	-k-um	-k-unna	-k-uma	
	GEN						
3	**NOM**	huwa	hiya	h-um	h-unna	h-uma	
	ACC	-hu	-ha	-h-um	-h-unna	-h-uma	
	GEN						

Paradigm 1: Pronominal System in SA

In paradigm (1), the pronouns in the nominative case are separate stand-alone words. Nonetheless, their accusative and genitive realizations are clitics (known as enclitic pronouns), in that they are affixed to the preceding verbs or prepositions. Consider the following examples from 1st person pronouns that demonstrate these morpho-syntactic occurrences.

(1) Throughout the paper, I will use "Arabic" and "Standard Arabic" interchangeably.

1) **ʔana:** (man) qul-tu ha:ða:
NOM.1.SG who said.1.SG this
'I am the one who said this'

2) Ali-un akhbara-**ni**
Ali-NOM told-1.SG.ACC
'Ali told me'

3) Ali-un qa:la l-**i** ʔanna …
Ali.NOM said.3.SG to-1.SG.GEN that …
'Ali said to me that …'

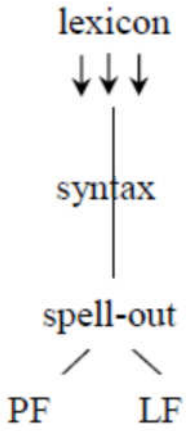
Regarding gender, all the pronouns in paradigm (1) inflect for gender (yielding two distinct forms) except the 1st person pronouns, in which gender is syncretized in all its forms. As far as number is concerned, all the pronouns inflect for singular, dual, plural except the 1st person pronouns which share the same forms for dual and plural. For case, it is evident that the 2nd and 3rd person pronouns have the same forms for accusative and genitive. This is also the situation with the 1st person pronouns in their plural and dual forms. However, the 1st person singular pronouns inflect for case, yielding three distinct forms.

The paper is structured as follows. In the next section, I will present the framework of DM along with its principles and morphological operations. Section 3 will develop a DM-based analysis to the Arabic pronominal system. Concluding remarks are presented in section 4.

2. DM Framework

From the Minimalist Program (Chomsky, 1995, 2000, 2004 et seq, MP henceforth) represented in the grammar architecture (4), Halle and Marantz (1993, 1994) propose a morphological framework known as Distributed Morphology that adds more focus to the syntax-morphology interface (at PF).

4) Minimalist Program Grammar Architecture



In DM, the MP-proposed labor of lexicon in creating words is "dead, deceased, demised, [and] no more" (Marantz, 1997:2) as the syntax is the only generative system. Alternatively, the lexicon is distributed among three components known as: List A, B, and C summarized in (5).

5) i. **List A** provides syntax with grammatical features and roots

ii. **List B** provides the features with phonological representations at Phonetic Form (PF)

iii. **List C** provides the structure with semantic interpretations at Logical Form (LF)

List A supplies syntax with information such as morpho-syntactic and semantic features from Universal Grammar (UG) and language-specific roots. It consists of two main primitives (Embick and Noyer, 2005:5, henceforth E&N) summarized in (6):

6) i. **abstract morphemes** that include non-phonetic features such as [fem] [masc], or [sg], [pl], etc, and

ii. **language-specific roots** such as √cat, √come, etc.

This information from List A will occupy their appropriate syntactic positions in the structure. The structure will project nodes (i.e. abstract morphemes) holding one feature or a bundle of features. For example, the node D is the locus of pronouns, thus bearing the so-called phi-features: definiteness, number, gender, person and case, i.e. [+def], [+fem], [+sg], etc.

At Spell Out, the structure is sent to PF and LF simultaneously. At PF, the structure undergoes morphological operations in a stage known as Morphological Structure (MS), where heads can be merged, lowered and/or raised. New (non-semantic) features or nodes, known as dissociated features/nodes, can be introduced under specified conditions, especially for agreement/case purposes (Embick, 1997, 1998).

At this stage, three morphological operations might target the features and change their content or position, such as impoverishment, fusion, and fission. Impoverishment, first proposed by Bonet (1991), is a rule-based operation that deletes a feature from a bundle as demonstrated in (7).

7) Impoverishment Rule

a. +F3 → Ø {within the projection XP/when +F1 and +F2 are available}

b.

XP
|
X
+F1 +F2 ~~+F3~~

In (7b), the feature [+F3] is removed from the structure according to the contextualized rule in (7a). As for fusion, it is an operation responsible for fusing the features of two nodes into one node as illustrated in (8), where the feature [+F3] on Y is grouped with the features [+F1 +F2] on X.

8) a. Before Fusion

X
X Y
+F1 +F2 +F3

b. After fusion

X
X Y
+F1 +F2 +F3

Fission is in contrast an operation which splits a feature-full node into two nodes, each of which bears a subset of the entire bundle. This is schematized in (9) where the feature [+F3] is separately split to a newly adjoined node X as shown in (9b).

9) a. Before fission

YP
|
Y
+F1 +F2 +F3

b. After fission

YP
|
Y
Y X
+F1 +F2 +F3

Before proceeding to PF for pronunciation, the structure with the non-phonetic features is supplied with phonological content in a stage known as Vocabulary Insertion. List B contains Vocabulary Items (VIs) which are phonological exponents that correspond to their features on the nodes. To illustrate, the English VI *the* will insert at the node D bearing the feature [+def] while the English VI *a/an* will occupy the D head bearing the feature [-def].

The Vocabulary Insertion is a principally governed operation. The Vocabulary Items (VIs) will compete to insert to their corresponding nodes. To regulate the competition, each VI is associated with a

feature or a bundle of features as represented in (10).

10) /Vocabulary Items/ ←→ [Associated Features]

/a/ ←→ [+F1]

/b/ ←→ [+F2]

The VIs in (10) are between slashes referring to their phonological nature. Two main principles govern the insertion of VIs: Underspecification and Subset Principle. Underspecification states that a VI does not need to be fully specified for all the features on a node. For example, if a node bears the features [+F1, +F3], the underspecified VI /a/ (associated with [+F1]) in (10) can insert into that node because it matches one of the feature on the node, i.e. [+F1]. However, if the competition involves such a stronger candidate as VI /c/ fully specified with [+F1, +F3], the VI /c/ will win out because it matches most of the features of the node.

As for Subset Principle, it regulates the competition when more than one candidate is available. Subset Principle postulates that "the phonological exponent of a Vocabulary Item is inserted into a position if the item matches all or a subset of the features specified in that position. Insertion does not take place if the Vocabulary Item contains features not present in the morpheme [=node]. Where several Vocabulary Items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen". (Halle 1997). Subset Principe can be summarized in (11).

11) Subset Principle (Halle, 1997)

a. The Vocabulary Item inserts iff

i. it matches all the features of the node.

ii. it matches a subset of features in the node.

b. Vocabulary Item does not insert iff

i. it contains a feature not present in the node.

c. If two VIs have the same features

i. insert the one that matches more features.

For illustration purposes, suppose that a node bears the features [+F1, +F2, +F3], and the competition involves the VIs in (12).

12) Vocabulary items

/c/ ←→ [+F1 +F2 +F3]

/d/ ←→ [+F1 +F2]

/a/ ←→ [+F1]

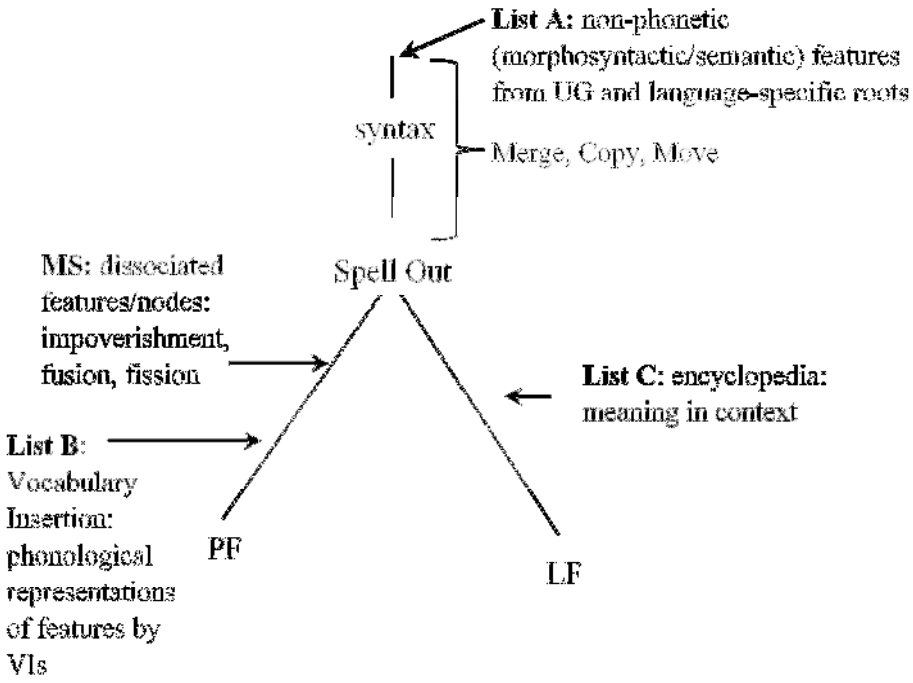
According to the Subset Principle (11a), the winning candidate is /c/ because /c/ matches all the features of the node. However, if the node bears only [+F1, +F2], the Subset Principle (11b) eliminates /c/ from the competition because it is specified with a feature not present in the node. Rather, the VI /d/ inserts because it is perfectly associated with the features [+F1 +F2].

It is worth mentioning that the competition of the VIs will be influenced by the earlier operations: impoverishment, fusion and fission. The features may be tampered with by deletion, fusion (grouped in one node) or fission (broken into two different nodes). For example, if the node specified with [+F1 +F2] undergoes an impoverishment rule that targets [+F2], it remove [+F2] from the node, thus eliminating the candidate /d/ from insertion, yet allowing the VI /a/ to win.

Although List C is the least discussed component in the DM works, the same pairing between features and their corresponding VIs occurs at LF. List C, known as the Encyclopedia, provides semantic interpretations to the features and the roots. The information in List A (features/roots) have their corresponding entries in the Encyclopedia (Harley and Noyer, 2000:2).

All in all, the lexicon in DM consists of three lists: List A, List B and List C. List A provides the syntactic structure with features and language-specific roots. The structure is sent through Spell Out to PF and LF. At PF, the structure bearing features might be manipulated via morphological operations such as impoverishment, fusion, and fission. At Vocabulary Insertion, List B provides these features (after manipulation) with their appropriate Vocabulary Items (Phonological Exponents) according to two principles: Underspecification and the Subset Principle. At LF, List C provides the features and the roots with their semantic interpretations. Marantz (1997:204) provides the Y-tree in (13) to schematize such distribution.

13) Distributed Morphology Grammar Architecture



In the following section, I will provide an analysis to Arabic pronouns based on the afore-discussed DM principles/operations.

3. Analysis of Pronouns in SA

Since the VIs for Arabic pronouns will be associated with their representative features, it is essential that we determine the inventory of the features relevant for the paper. For number, I will employ the feature [+sg] for singular and [+pl] for plural. Following Harley and Ritter's (2002:18) feature geometry that treats dual based on "the simultaneous activation of Minimal [=singular] and Group [=plural]", I will use [+sg +pl] as a feature representation of the dual number. As for Gender, two features are needed: [+fem] for feminine and [+masc] for masculine.

Person and case features merit special attention. Following Noyer (1992), Halle (1997) and Nevins (2005), I will represent person using the binary values laid out in paradigm (2)

	First Person	Second Person	Third Person
AUTHOR	+	-	-
PARTICIPANT	+	+	-

Paradigm 2: Person Features in SA

In other words, 1st person is represented by the features [+auth +part] whereas the 2nd person by [-auth +part]. The 3rd person is the unmarked case with [-auth -part]. As for case features, I will employ Embick & Noyer's (2006:17) understanding of case paradigm in SA as demonstrated in paradigm (3). The nominative case is marked with [+sup] while genitive is associated with [+obl]. As for accusative, it is the default option, i.e. [-sup -obl].

	NOM	ACC	GEN
SUPERIOR	+	-	-
OBLIQUE	-	-	+

Paradigm 3: Case Features in SA

Let us turn to the presentation of the Vocabulary Items needed to account for all the Arabic pronouns. For the sake of simplicity, consider the pronominal system repeated below in paradigm (4).

		SG		**PL**		**DU**	
		M	**F**	**M**	**F**	**M**	**F**
1	**NOM**	ʔana:		naħnu			
	ACC	-ni		-na			
	GEN	-i					
2	**NOM**	ʔant-a	ʔant-i	ʔant-um	ʔant-unna	ʔant-uma	
	ACC	-k-a	-k-i	-k-um	-k-unna	-k-uma	
	GEN						
3	**NOM**	huwa	hiya	h-um	h-unna	h-uma	
	ACC	-hu	-ha	-h-um	-h-unna	-h-uma	
	GEN						

Paradigm 4: Pronominal System in SA

The list of the VIs for the 1st person pronouns is presented in (14). As shown in paradigm (4), the VI /na/ is the prevalent form in the 1st person pronouns. Thus, it is worth being the elsewhere case as shown in (14), i.e. it is the form that inserts at the node when all the preceding VIs fail. Given that the VI /naħnu/ does not either have different realizations for plural and dual; it is therefore better to be unmarked for number, making it associated only with person [+auth +part] and case [+sup]. As for the 1st person singular pronouns, they should be unmarked for their gender features as they have the same realization regardless of gender. In these pronouns, case features are considered, however. The VI /ni/ is unmarked for case because it is the default accusative form, as opposed to the nominative VI /ana/ (associated with [+sup]) and the genitive VI /i/ (specified for [+obl]).

14) Vocabulary Items (first person)

/ʔana:/ ⟷ +auth +part +sg +sup

/i/ ⟷ +auth +part +sg +obl

/ni/ ⟷ +auth +part +sg

/naħnu/ ⟷ +auth +part +sup

/na/ ⟷ +auth +part (the elsewhere case)

Consider the VIs of the 2nd person pronouns as manifested in (15).

15) Vocabulary Items (2nd person pronouns)

ʔant ⟷ +part +sup

k ⟷ +part

a ⟷ +masc + sg

i ⟷ +fem +sg

um ⟷ +masc +pl

unna ⟷ +fem +pl

uma ⟷ +sg +pl

In 2nd person pronouns, the form of the nominative 2nd person pronoun is /ʔant/ regardless of gender and number, whereas that of the accusative/genitive 2nd person pronoun is /k/. The accusative and genitive forms are syncretized (i.e. the same forms) across the board. This means that the 2nd person pronouns will be only marked for the nominative [+sup]. The absence of this feature [+sup] from the node will allow the elsewhere case (the accusative/genitive forms) to insert as a last resort. Since it is shown in paradigm (4) that the singular and plural 2nd person pronouns make a gender distinction, the VIs

must be associated with gender/number altogether for the singular/plural as is the case with /a/, /i/, /um/ and /unna/. The dual pronouns however undergo gender syncretism. Thus, I will consider the dual to be the elsewhere case as it is less marked with gender.

In (15), most VIs are not associated with the 2nd person feature [+part]. In fact, these VIs /um/ (masculine plural), /unna/ (feminine plural) and /uma/ (dual) should be unmarked for 2nd person because they are also the same realizations in the 3rd person pronouns as represented in (16). The underspecification of these VI will be of assistance during the Vocabulary Insertion stage at PF.

16) Vocabulary Items (3rd person pronouns)

hiya ⟷ -auth -part +sg +sup + fem
huwa ⟷ -auth -part +sup
ha ⟷ -auth -part +sg +fem
hu ⟷ -auth -part +sg
h ⟷ -auth -part
um ⟷ +masc +pl
unna ⟷ +fem +pl
uma ⟷ +sg +pl

As for 3rd person pronouns in (16), they have identical forms for the nominative in each number, and other forms for both nominative/accusative cases. Thus, they are generally unmarked for case other than [+sup]. As for the 3rd person singular pronouns, they are marked for gender because they have distinct forms /huwa/ and /hu/ (for masculine) and /hiya/ and /ha/ (for feminine). The masculine forms do not need to be marked for gender (i.e. associated with [+masc]) as illustrated in (16). The inability of the VIs (associated with [+fem]) in terms of insertion will make the underspecified masculine VIs naturally insert on their behalf, given their association with an adequate subset of other features [person, case, or number].

The VIs in (14), (15) and (16) are all combined in (17). This inventory of VIs is adequate to account for all the Arabic pronouns in paradigm (4).

17) Vocabulary items for Arabic pronouns

ʔanta ⟷ +auth +part +sg +sup
i ⟷ +auth +part +sg +obl
ni ⟷ +auth +part +sg
naħnu ⟷ +auth +part +sup
a ⟷ +masc + sg
i ⟷ +fem +sg
um ⟷ +masc +pl
unna ⟷ +fem +pl
uma ⟷ +sg +pl
hiya ⟷ -auth -part +sg +sup +fem
huwa ⟷ -auth -part +sup
ha ⟷ -auth -part +sg +fem
hu ⟷ -auth -part +sg
ʔanta ⟷ +part +sup
k ⟷ +part
h ⟷ -auth -part
na ⟷ +auth +part

The most appealing consideration in paradigm (4) is that the 2nd and 3rd person (plural/dual) pronouns are parsed and treated as bi-morphemic pronouns. The suffixal VIs /um/, /unna/ and /uma/ in (17) are not associated with person features at all. These under-specifications allow them to insert at any nodes lacking in person features. The morphemes that represent person in the 2nd and 3rd person pronouns are the prefixal VIs /ʔanta/ for 2nd person nominative pronouns, /k/ for 2nd person accusative/genitive pronouns, and /h/ for 3rd person pronouns irrespective of case.

After the presentation of the VIs, it is important to illustrate the workings of the DM in the derivations of all these pronouns. Starting with mono-morphemic pronouns, consider the following derivation for the structures in (18) where the D head bears all the relevant phi-features in terms of person/number/gender/case, i.e. [+auth +part +sg +masc +sup -obl].

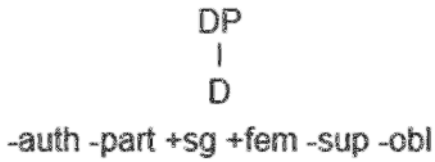
18) a. Before Vocabulary Insertion

b. After Vocabulary Insertion

In (18), the possible VIs competing for insertion might be /ʔana:/ (associated with [+auth +part +sg +sup]) and /i/ (associated with /+auth +part +sg +obl/). However, the VI /i/ fails to insert according to the subset principle (11b) that eliminates all VIs specified with features not present on the node, in this case [+obl]. Thus, the winning candidate in (18) is /ʔana:/ given their specification with a corresponding subset of features found on the node.

As another example, consider the terminal node D with the features [-auth -part +sg +fem -sup -obl] in (19).

19) a. Before Vocabulary Insertion

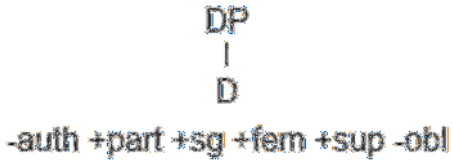


b. After Vocabulary Insertion

In (19), the winning candidate is /ha/ associated with [-auth -part +sg +fem] because it is perfectly specified with the features borne by the node. Two candidates can be considered, i.e. /hu/ that is associated [-auth -part +sg], and /h/ that is associated with [-auth -part]. Although both candidates match a subset of the features at the node, they are eliminated from the competition by the VI /ha/ according to the Subset Principle (11c) that posits "if two VIs have the same features, insert the one that matches more features".

As for bi-morphemic 2nd and 3rd person pronouns, the situation is quite complex. Suppose that we want to derive the form /ʔant-i/ 'the 2nd person singular feminine pronoun'. The terminal node D will therefore bear the following features [-auth +part +sg +fem +sup -obl] as manifested in (20).

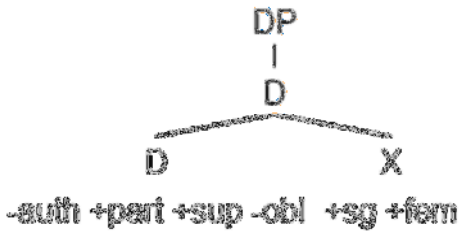
20)



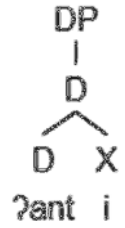
In (20), many candidates compete, i.e. /ʔant/ (associated with [+part +sup]), /i/ (associated with [+fem +sg]), and /k/ (associated with [+part]). Although the last candidate will be eliminated according to Subset Principle (11c), the two former candidates match the exact number of features on the node. In this case, the derivation of the wanted form /ʔant-i/ is impossible because either VI (/i/ or /ʔant/) will yield an ill-formed realization.

To overcome this problem, I propose a fission operation in the MS. According to Noyer (1997), fission is a syntax-independent mechanism that takes place when a single morpheme corresponds to more than one VI. The primary exponence of a susbet of features does not block the other remaining abstract features from being realized as well. Thus, a dissociated node is added, on which the other non-realized features received secondary exponence (Carstairs, 1987). Thus, fission will split off the D head in (20) into two nodes as in (21). The first node bears a subset of features, specifically person/case, and the right-adjunct node bears the number/gender features.

21) a. Before Vocabulary Insertion

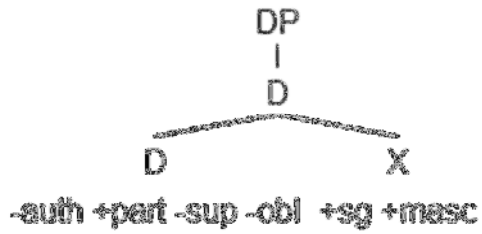


b. After Vocabulary Insertion



After fission occurs as shown in (21), the best candidate VI for the terminal node D is /ʔant/ (associated with [+part +sup]) whereas the best candidate for the dissociated node X is /i/ (associated with [+fem +sg]), yielding the desirable form /ʔant-i/. The same derivation occurs for the 2nd person feminine/masculine singular pronouns in the genitive/accusative: /ka/ and /ki/, where case/person features are split in one node, while number/gender features are dissociated in a newly adjoined node as shown in (22).

22) a. Before Vocabulary Insertion



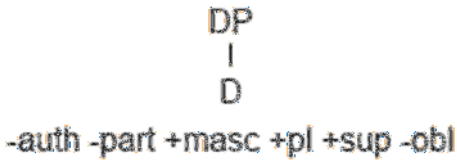
b. After Vocabulary Insertion

Without fission operation, the node [-auth +part -sup -obl +sg +masc] would be undesirably spelled out with the best candidate /a/ (associated with [+masc +sg]). To derive the bimorphemic pronoun /k-a/, the node needs to be fissioned into two nodes. The first node bearing the person/case features, [-auth +part -sup -obl], is realized as /k/ (associated with [+part]). The second node X bearing the gender/number, [+masc, +sg], is spelled out as /a/ as the best candidate. The pronouns /kunna/ and /ʔantunna/ will undergo the same processes of derivation.

It is worthwhile that the feature distribution undertaken by fission is theoretically motivated, i.e. person/case features on a separate node from number/gender features. In contrast to person/case, gender and number are inherent features on nouns; therefore, they should be grouped in a distinct node. They have been also widely assumed to occur in the same syntactic projection (see. e.g. Ritter, 1993). As for case/person features, ample evidence indicates that they are syntactically and morphologically related as they both occupy the D head (Carstens, 1993; Bejar, 2002; Danon, 2006, 2011; Baker, 2008 inter alia). The DP layer is the locus of person and it is also the primary condition for Case Filter (Chomsky, 1986, 2000; Bošković, 2002 inter alia).

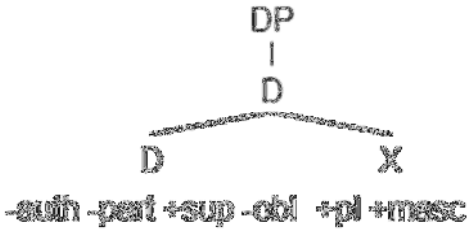
Consider the derivation of the form /h-um/ 'the 3rd person masculine plural pronoun'. For this derivation, List A will provide the terminal node with the appropriate features [-auth -part +masc +pl +sup -obl] as diagrammed in (23).

23)

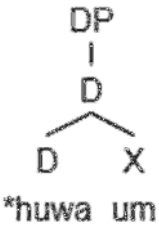


In (23), three strong candidates compete: i.e. /hu/ (associated with [-auth -part +sg]), /huwa/ (associated with [-auth -part +sup]) and /um/ (associated with [+masc +pl]). All these candidates match an equal number of features, and they can undesirably insert. The fission operation however can prevent their insertion and reduce the number of candidates. At any case, if the fission splits the case/person features from the number/gender features as in (24), the desirable form is still not derived yet.

24) a. After Fission



b. After Vocabulary Insertion



After fission, the candidate /huwa/ will still insert into the terminal node D given that it matches [-auth -part +sup], yielding an ill-formed realization. The favorable VI /h/ (associated with [-auth -part]) cannot insert into D according to the Subset Principle (11c).

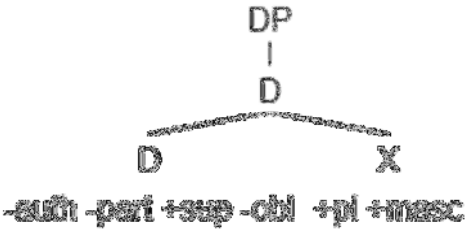
To solve this problem, it should be noted from paradigm (4) that the piece /h/ does not inflect for case in 2nd and 3rd person pronouns (in both the plural and dual number). This observation indicates that the case features are impoverished in all these forms. Given that impoverishment rules are viewed as feature-cooccurrence restrictions (Noyer, 1997) or filters according to the analysis of phonological segment inventories (Calabrese, 1995), I propose an impoverishment rule governed by the presence of the domain, i.e. where [-auth -part] (3rd person) and [+pl] (plural) and [+sg +pl] (dual) are available. The impoverishment rule will be formulated in (25).

25) Impoverishment Rule (Case Features)

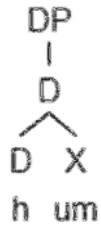
+sup → Ø / [_____ X {+pl, +sg, -auth -part}]

The application of the impoverishment rule (25) to the structure in (24) will generate the well-formed pronoun /h-um/ as shown in the revised structure in (26).

26) a. After Impoverishment Rule (25)



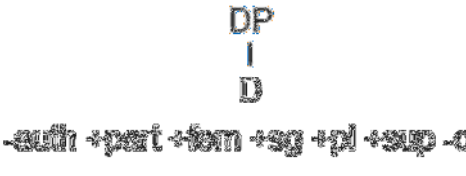
b. After Vocabulary Insertion



After impoverishment rule takes place, the feature [+sup] is deleted, thus bleeding the insertion of the VI /huwa/ (associated with [-auth -part +sup]) according to the subset principle (11b) where the VI cannot insert if it has a feature not present on the node. As a result, the only candidate is /h/ underspecified with only two feature [-auth -part], yielding the wanted form /h-um/. Similar processes will be necessary for the derivation of the pronoun /hunna/.

If impoverishment rules are proposed to resolve syncretism as noted from the above example (see other examples in Bobaljik, 2015), it is then expected that the derivation of the dual pronouns will require another impoverishment rule. The rule will remove the gender features based on the observation that the dual pronouns do not inflect for gender. This prediction comes true. Consider the following derivation where List A supplies the terminal node with the appropriate features for the 2nd person feminine dual pronouns in (27).

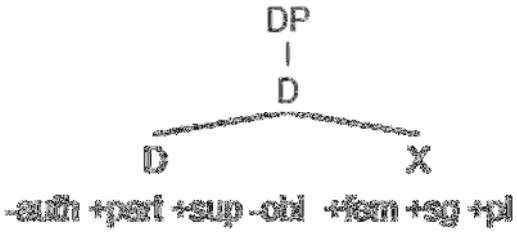
27)



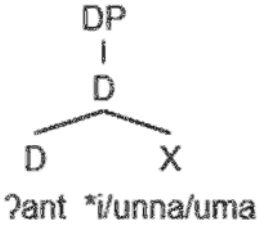
In (27), four strong candidates compete with an equal number of corresponding features: /unna/ (associated with [+fem +pl]), /ʔant/ (associated with [+part +sup]), /i/

associated with [+fem +sg], and /uma/ associated with [+sg +pl]. Fission will reduce the number of candidates. In (28), the case/person features will be on D, and the number/gender features will be in the newly dissociated node X.

28) a. Before Vocabulary Insertion



b. After Vocabulary Insertion



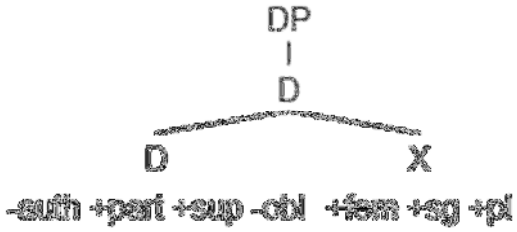
Following fission, the terminal node D will be spelled out as /ʔant/ (associated with [+part +sup]). However, the newly added node X will have three possible exponents: /i/ (associated with [+fem +sg]), /unna/ (associated with [+fem +pl]) and /uma/ (associated with [+sg +pl]). Given the gender syncretism in the dual, an impoverishment rule should be proposed as presented in (29) in order to remove the gender feature in the domain of the dual [+sg +pl].

29) Impoverishment rule (gender features for the dual number)

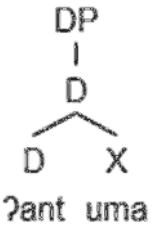
+fem/+masc → Ø / [____ +pl, +sg]

The rule (29) will solve this problem. After impoverishment rule erases the feature [+fem] as shown in (30), the insertion of the candidates /i/ and /uma/ will be impossible. The favorable candidate /uma/ will win out. The derivation of the dual pronouns /kuma/ will also follow the same processes.

30) a. After Impoverishment Rule (29)

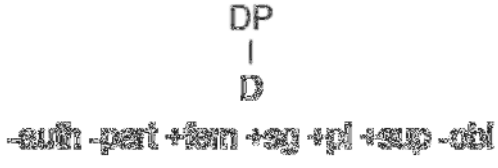


b. After Vocabulary Insertion

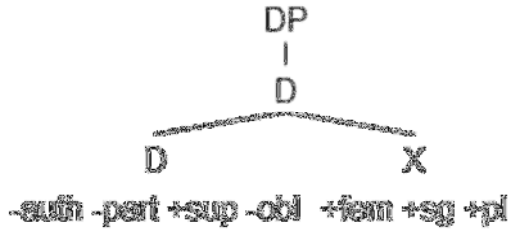


Given that the impoverishment rule in (25) removes case features in the domain of the dual 3rd person pronouns [+pl, +sg, -auth -part], and the impoverishment rule in (29) erases gender features in the domain of the dual pronouns [+pl +sg] as well, it is predictable that we will have two simultaneous impoverishment rules to derive the 3rd person dual pronoun, e.g. /huma/. This predication comes true. Consider the derivation in (31) for the pronoun /huma/ where the terminal node bears the following features [-auth -part +fem +sg +pl +sup -obl] supplied from List A.

31) a. Before Fission



b. After Fission



For the structure (31a), the VIs in (32) are all candidates for insertion.

32) Vocabulary Items for structure (31a)

hu ⟷ -auth -part +sg

ha ⟷ -auth -part +sg +fem

unna ⟷ +fem +pl

i ⟷ +fem +sg

huwa ⟷ -auth -part +sup

hiya ⟷ -auth -part +sg +sup +fem

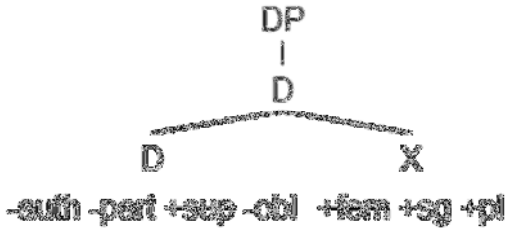
uma ⟷ +sg +pl

h ⟷ -auth -part

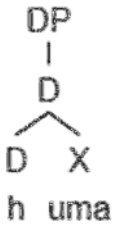
To block such long list of VIs from insertion, and particularly block the richly specified VI /hiya/ that corresponds to most of features on the node, the fission process is required. It splits the node into two nodes as shown in (31b): one for case/person and the other for the gender/number, thus reducing the number of candidates, and more importantly eliminating the strongest candidate /hiya/ according to the Subset Principle (11b).

After fission occurs as in (31b), the D head can be undesirably spelled out by /hiya/ (associated with [-auth -part + sup]). However, the impoverishment rule in (25) will delete the feature [+sup], eliminating /hiya/ from insertion, making the desirable candidate /h/ the winner. As for the node X, it can be still realized by the candidates: /unna/ (associated with [+fem +p]), /i/ (associated with [+fem +sg]) or by the desirable candidate [+sg +pl]. Yet, impoverishment rule in (29) removes the gender features, therefore eliminating the two candidates /unna/ and /i/ from insertion, making /uma/ the best candidate as shown in (33).

33) a. After Impoverishment Rule (25)/(29)



b. After Vocabulary Insertion



It is worth mentioning that the two impoverishment rules in (25) and (29) are operative across the board and does not need to be in a strict order. In other words, the deletion of either feature (case or gender) by one impoverishment rule does not tamper with the domain of the other rule, as both are in the domain of intact features [-auth -part +pl +sg] for case deletion or [+pl +sg] for gender deletion.

4. Conclusion

Put together, I have shown in this paper that the pronominal system in SA fares well with the framework of Distributed Morphology. The pieces of pronominal inflections are neatly dealt with via separate competing VIs. To regulate the competition and develop the appropriate derivations, the abstract features undergo two post-syntactic mechanisms: fission and impoverishment. As for fission, the paper presents it as a principled operation.

Fission splits features not randomly, yet according to earlier theory-based findings that case/person features must occupy a distinct location than that of gender/number features. As for impoverishment rules, they desirably account for the syncretic forms found in the pronominal morphology, and thus contribute to the derivations of the problematic bi-morphemic pronouns. It has been shown that the two impoverishment rules do not need to be in a strict order to derive the 3rd person dual pronoun, e.g. /huma/.

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