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The Phonological Pattern of phi-features in the Perfective Paradigm of Moroccan Arabic

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Abstract
Non-lexicalist theories assume a tight relationship between functional structure and exponence. A different view informs the analysis proposed in this paper. While the non-lexicalist view is endorsed, it is argued that morphemes have a life of their own and do not consistently and faithfully reflect functional architecture. Perfective Inflection in Moroccan Arabic with its standard, but nevertheless challenging restrictions on the way Number and Gender are allowed to combine is taken as a case in point. The discussion is preceded by a detailed study of the vowel system of the language and selected aspects of its templatic structure.

Keywords
morphology; phonology, Semitic; Moroccan Arabic; Classical Arabic; Chaha; Hebrew; inflection; perfective; root; template; agreement; number; gender; vowel length; syllable structure

0. Introduction*

The overarching concern of this paper is the construal of exponence. Its specific topic is the representation of the Person/Number/Gender Complex (henceforth PNGC) evidenced in Semitic Perfective paradigms with special attention paid to Moroccan Arabic (henceforth MA). Much important work has brought to light significant aspects of the morphosyntactic behavior and architecture of the Semitic or Afroasiatic PNGC (Akkal (1993), Benmamoun (2000), Fassi Fehri (2000), Halefom (1994), Noyer (1992), Shlonsky (1989)). Yet, in spite of important exceptions (Banksira (2000), Bendjaballah (2003), Harbour (2007),

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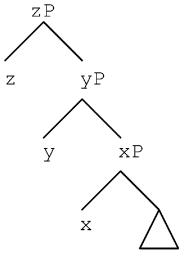
Lumsden & Halefom (2003), Rucart (2006), Rose (1996)) the influence of which will be felt throughout this paper, comparatively little work has been conducted with a view to assess the relevance of phonological evidence to claims put forth in the area of concern here. Because this paper is an attempt to reduce the gap with a detailed study of the MA PNGC and eventhough its primary concern is word-formation, several subdiscussions, mostly phonological, will have to be conducted: a) the nature of the vowel system of MA in the light of a comparison with that of Classical Arabic (henceforth CA), b) the makeup of MA Perfectives as revealed by verbs from weak roots), c) the phonological representation of Person.

A *caveat* should be introduced right away. Many discussions of the architecture of Semitic Perfectives are conducted in the context of an attempt to sort out the difference between prefixed conjugations (imperfective, jussive and subjunctive) as opposed to the unprefixed conjugation, i.e. the Perfective itself. No such attempt will be made here, and the discussion will be confined to Perfective inflection.

As a general way of framing the discussion, suppose a) (1a) is some functional structure headed by morphosyntactic features x, y, and z; b) the exponents associated to the realization of (1a) involve morphemes X, Y, and Z in (1b) such that (the feature matrix of) X contains x, Y contains y, and Z contains z; c) the order of realization of X, Y, and Z is X-Y-Z, (1c), when {X,Y,Z} is associated to (1a).

(1)

a.



b.

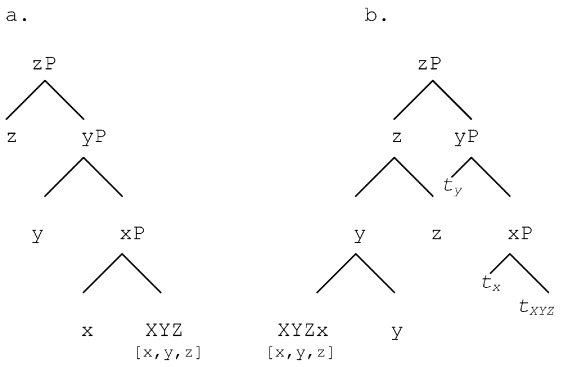
{X, Y, Z}
[x] [y] [z]

c.

X-Y-Z
[x][y][z]

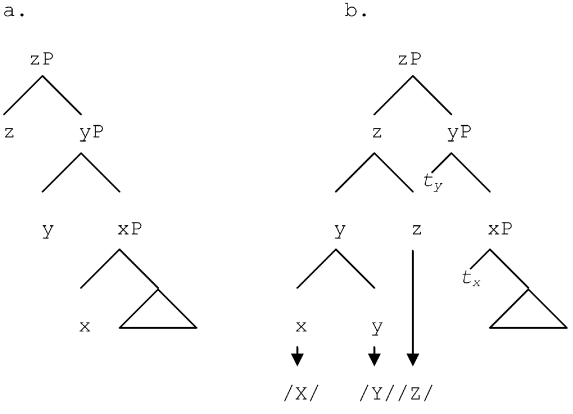
Broadly speaking, there are, at least, two ways of construing exponence in the case at hand. Under one view, call it the verificational scheme, string XYZ moves up to each head in (2a) so as to check its conformity with the feature present therein, eventually forming the complex head in (2b).

(2)



An alternative, call it the realizational scheme, is to deny that morphemes X, Y and Z are initially present as autonomous participants in the derivation in the manner depicted in (2a). Rather, they are merely the phonological materialization (or spellout), the saussurean *signifiés* of the various heads, x, y, and z of (3a), as shown by means of the vertical arrows in (3b) pointing downward to underlying phonological representations.

(3)

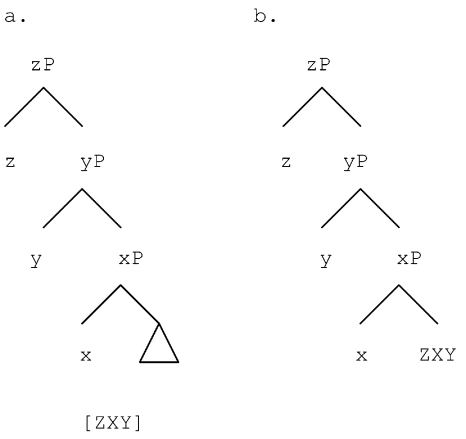


Two arguments in favor of the second scenario will be considered. The first argument, not a decisive one, stems from a comparison of the amount and distribution of information necessary under the two schemes: the first such scheme (2a) involves a significant amount of redundancy, with features x, y and z present in both the morphemic material (X, Y and Z) and the associated functional structure. (3a), by contrast, is burdened with no such redundancy. The second argument, surely decisive this time, is the fact that the respective order of X, Y and Z happens to be precisely the mirror image of the terminals

of the associated functional structure. While this is a pure accident under the scheme in (2a), it directly follows from a realizational scheme involving Head Movement, as in (3b).[1]

The crucial empirical question then, is whether the order of exponents is *always* the mirror image of the terminals of functional structure. This is THE critical question because if the morphemic material associated with a structure such as (4a) linearizes as anything other than the mirror image of its terminals, say Z-X-Y, then Z-X-Y owes nothing to the associated functional structure, *neither the linear ordering of X, Y, and Z, nor their morphosyntactic or phonetic makeup*. All of that must come from a different source, in which case, Z-X-Y must enter the derivation as a full-fledged ingredient as shown in (4b).

(4)



Are both scenarios necessary, the realizational scenario for mirror image strings of morphemes, and the verificational scenario for departures from the mirror image pattern? In this paper, I will propose an analysis of Moroccan Arabic Perfectives which is compatible with a verificational scenario, but not with its realizational rival.[2] A question, of course, arises, viz. would the verificational scenario suffice since, as we saw, it can in principle handle the mirror image pattern as well as departures thereof, with a measure of redundancy in the first case? I will not attempt to settle this question in the context of this brief contribution.[3] Rather, I will leave the question pending and assume—for the

1) Cf. Borer (1998, 2005) for valuable discussion.

2) I chose to ignore mop-up devices sometimes invoked in DM literature such as e.g. Fusion, Fission, etc. which allow for the manipulation and reorganization of output strings, in effect rendering discussion and comparison virtually impossible.

3) Cf. Kaye (1995) for a discussion of interfaces from a different perspective.

time being—that both types of derivation are *bona fide* derivational options, a catholic approach which will make it possible to raise another question. Realizational models of word formation assume that spellout takes place in the form of a competition between potential candidates to insertion, a device to be illustrated directly in the next section. Now, suppose that, perhaps as a consequence of analytical confusion, a realizational treatment is forced on a set of data which should, in reality, have been dealt with along the lines of the verificational scheme. Something should snap somewhere. To the credit of the robustness of realizational models, something indeed does: if competition is illegitimately harnessed, it leads up to incoherence, vacuousness or both, as we will see.

The paper is organized as follows. The first section follows a path opened by Bendjaballah (2003).[4] It includes a critical discussion of part of Halle's influential treatment of various Afroasiatic systems of verbal inflection (Halle, 2000). It is concluded that Halle's approach is too crude to provide useful insights, and calls for an alternative. The articulation of an alternative in section 4 is preceded by an attempt at unravelling fundamental aspects of the sound system of Moroccan Arabic, in sections 2 and 3. Section 2 offers a construal of the syllable structure and vowel system of the language. Section 3 focuses on what verbs from weak roots reveal regarding the makeup of MA Perfectives. In section 4, verification is shown to be the alternative to realization.

1. Halle (2000)

1.1. *Competition ???*

Competitive Late Insertion can be illustrated by means of a sample of English nominal Plurals. Take, for instance the Plurals in (5b).

(5)	a.	b.	c.	d.
	ox	oxen	-en$_{[PL]}$	[$_{Num}$ _ [$_{nP}$ n √FOX]]
	fox	fox	-ø$_{[PL]}$	[$_{Num}$ _ [$_{nP}$ n √BOX]]
	box	boxes	-z$_{[PL]}$	[$_{Num}$ _ [$_{nP}$ n √OX]]

Each competitor in (5c) bears a PL feature. As such, all are suitably and equally equipped for insertion into any of the contexts in (5d).

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[4] See also Rucart (2006), Faust (2011), Lampitelli (2011) for further implementation of the program initiated in Bendjaballah (2003).

Competition is settled as in (6).

(6) a. $en_{[+PL]} \leftrightarrow /[_{Num} \_ [_{nP}\ n\ \sqrt{OX}]]$
b. $ø_{[+PL]} \leftrightarrow /[_{Num} \_ [_{nP}\ n\ \sqrt{FOX}]]$
c. $z_{[+PL]} \leftrightarrow$ elsewhere

The set of statements in (6) appears to say exactly the right thing. They are entirely trivial as should be the case when suppletion is involved. Indeed, the fact that *oxen* is one of the accepted Plural of *ox* (but not of *fox*) warrants nothing more than a stipulation in the form of (6a). Similarly, the true fact that +z is the default Plural is correctly recorded in (6c), consistent with the fact that children learning English or L2 learners can be expected to produce *oxes, boxes* or *foxes* (though not *foxen* or *boxen*) until instructed to do otherwise.

Note that (6a, b, c) do not require being ordered with respect to each other: as both (6a) and (6b) stipulate the full set of contexts for the insertion of *-en* and *ø* respectively, it is inconsequential which of the two applies first. As for (6c), the elsewhere condition guarantees that it will apply last.

The competition metaphor is not unduly stretched in this case, because each of the candidates in (5c) approaches insertion with a fair chance: all compete for insertion into the same position (the Number node) with the same featural equipment, namely $_{[+PL]}$.

Now, compare this account with an other putative instance of competition. Halle (2000) proposes to extend the same devices as in (6) to the description of several Afroasiatic verbal paradigms.

Consider the Perfective paradigm of Hebrew in (7).

(7)

1sg.	katav-***ti***
2m.sg.	katav-***ta***
2f.sg.	katav-***t***
3m.sg.	katav-***ø***
3f.sg.	katv-***a***
1pl.	katav-***nu***
2m.pl.	katav-***tem***
2f.pl.	katav-***ten***
3m.pl.	katv-***u***
3f.pl.	katv-***u***

Following a line of research illustrated in Lumsden (1987, 1992), Noyer (1992), Halle & Marantz (1993) familiarity with which is assumed here, Halle (2000) devises a set of statements meant to implement the association of phonetic content to the underlying morphosyntactic features transmitted from the

subject onto the AGR node. Halle's proposal for Hebrew appears in (8). Each item in (8), /ten/, /tem/, /t/, etc., a vocabulary item in DM terminology, carries morphosyntactic features in addition to phonetic content.[5]

(8)
a.	/ten/	↔	[+PSE, -Auth, +Fem, +Pl]
b.	/tem/	↔	[+PSE, -Auth, +Pl]
c.	/t/	↔	[+PSE, -Auth, +Fem]
d.	/ta/	↔	[+PSE, -Auth]
e.	/nu/	↔	[+Auth, +Pl]
f.	/ti/	↔	[+Auth]
g.	/u/	↔	[+Pl]
h.	/a/	↔	[+Fem]
i.	/ø/	↔	elsewhere

The items in (8) are ranked according to the amount of information necessary for their successful insertion: the more richly specified first, default last. Insertion proceeds according to the subset Principle in (9) (Halle, 2000):[6]

(9) The phonological exponent of a Vocabulary item is inserted into a morpheme in the terminal string if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary item contains features not present in the morpheme. 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.

Thus, suppose a subject, say Hebrew 2nd person masculine Plural strong pronoun *ʔatém*, transmits its features to the AGR node dominating a verb, say *katav* 'write'. The relevant resulting configuration will be as in (10), where the morphosyntactic features of AGR eventually materialize in the form of an affix occupying the PNG slot (Person, Number, Gender) of the verb.

(10) $[_{AGR}$ AGR [+PSE, -Auth, +Pl] X $[_{V}$ katav$[_{PNG}$ _]] Y]

Neither /ten/ nor /t/ could be inserted because both contain a feature not present in AGR, viz. +Fem. /ta/ and /tem/ share two of the required features, +PSE and –Auth. But, /tem/, in addition, contains one more of the required features than /ta/, viz. +Pl. As a consequence, /tem/, the perfect match, is inserted.

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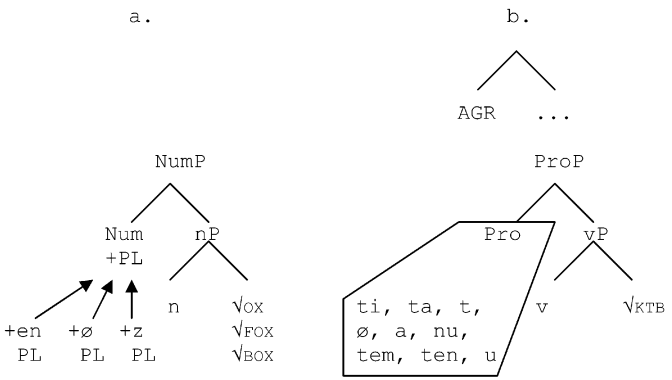
5) Person features such PSE (participant in speech act) and Auth (author) classify the person system as follows: First Person: [+PSE, +Auth], Second Person: [+PSE, -Auth], Third person: [-PSE, -Auth].

6) For an alternative, the superset principle, cf. Caha (2009).

From the presentation in (8,9), it might seem that the scheme used for the selection of Hebrew subject agreement markers is the same as was discussed earlier in connection with English nominal Plurals, viz. competition. In reality, the two tasks are totally unlike. Indeed, nothing remotely suggests that competition is involved in the case of subject agreement vocabulary items. What difference is there?

Recall that English nominal Plural vocabulary items all seek to be inserted into the head of NumP, marked +PL. All candidates bear the required feature, +PL. In other words, each one of them is, in principle, a perfect match, a potential winner. The factor that will determine the winner of the competition for exponence—a specific root, √OX, √BOX, or √FOX—lies further down in a complement position, (11a). Now, contrast this with the selection of subject agreement vocabulary items. In the most embedded complement position of (11b)—the site of the variable, triggering factor in (11a)—lies a unique, stable element, the root (or perhaps the verbal stem).[7] For any given verb, it is present in all conjugated forms, regardless of Number or Gender. Therefore this ingredient can not be a player in the selection of vocabulary items. *Therefore*, the entire action must be confined to the boxed portion of (11b), irrespective of the stem.[8]

(11)



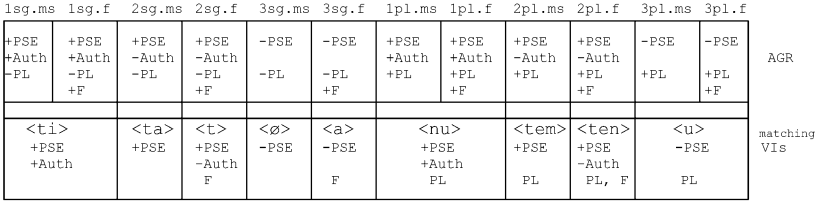
How much competition takes place inside that box? Not very much, evidently. To see this, consider the set of possible configurations of relevant features supplied by AGR (irrelevant features such as e.g. animate omitted), in the

7) In section 1.2.2. below, we will soon see that even when stem variation can be observed, this has no impact of a selective nature on the agreement markers.

8) The reason for labelling 'Pro' the projection eventually hosting the vocabulary items is immaterial at this stage. It will be justified later.

upper part of the chart in (12). Each such bundle is of course different from any other. This means that we are in a completely different situation from (11a) where competitors were seeking association *to the same feature bundle*. Now, consider the vocabulary items themselves in the bottom part of (12): they are all specified differently, in contradistinction with the Plural markers in (11a) which are all specified identically (at least for the relevant feature). Moreover, their number is inferior to that of the possible AGR configurations, in sharp contrast with Plural markers which, by definition, vastly outnumber the site into which they seek insertion. How could they possibly be viewed as competing under such conditions? On the contrary, much like cases in a case system,[9] it is obvious that they have no interest whatsoever in each other's turf.

(12)



Put differently, the English Plural exponents stand in a relationship of allomorphy. The exponents of Hebrew Perfective agreement markers do not.[10]

9) Cf. Caha (2009) for the morphology of case in general, and Lampitelli (2011) for a competition-free analysis of the case system of Bosnian.

10) A true analogue to the competition exemplified by English Plurals would be a hypothetical state of affairs such as sketched out in (a).

(a) i. First Person Plural agreement is realized as ⟨nu⟩ in the Hebrew Perfective paradigm, e.g. *katav-nu* 'we wrote', *ʔamar-nu* 'we said', *xašav-nu* 'we thought', etc. *except* …
ii. … for 23 verbs which display ⟨na⟩ instead, e.g. *gadal-na* 'we grew up', *kani-na* 'we bought', *šamar-na* 'we guarded', etc.

If such was the case, then an analogue to (6) could settle matters as in (b).

(b) /na/ ↔ [+Auth, +Pl]/√GDL,√KNY,√ŠMR, etc.
/nu/ ↔ elsewhere.

When allomorphy is involved, it is usually the case that one of the exponents can be identified as 'default'. While /z/ is certainly default in English for reasons mentioned earlier, no analogue can be identified in the case of the Hebrew Perfective paradigm, (8i) notwithstanding. For one thing, one single item falls into the scope of (8i), an improbable credential for a candidate to default status. But more importantly, speakers do not treat it as default. While children learning Hebrew will occasionally use 3rd person masculine inflection with subjects other than masculine singular (Lustigman, 2007), this can hardly be viewed as a default strategy comparable to the *oxes* or *foxes* of English speaking children. For, 'wrong' use of 3rd person masculine inflection by Hebrew speaking children occurs during a brief period of mild confusion and simultaneously with a variety of other subject agreement mistakes (Armon-Lotem, 2006).

To sum up, there is something very artificial in representing the distribution of subject agreement vocabulary items as resulting from competition. Borer & Rohrbacher (2003) adopt a more straightforward position in merely connecting a list of morphosyntactic feature bundles to a list of corresponding phonological indexes. And yet, in treating the vocabulary items under discussion as atomic, both approaches miss a number of generalizations, as I argue in the next subsection.

1.2. *A minimal agenda for the treatment of Semitic Perfective inflection*

In this subsection, I pursue the critical discussion of Halle's proposal, in an attempt to bring out a) the need to acknowledge the internal structure of the PNGC system, b) the relationship of the PNGC system to the verb stem.

1.2.1. Inflection is more than one piece

Consider the two Semitic paradigms in (13a,b), and the imaginary paradigm in (13c).

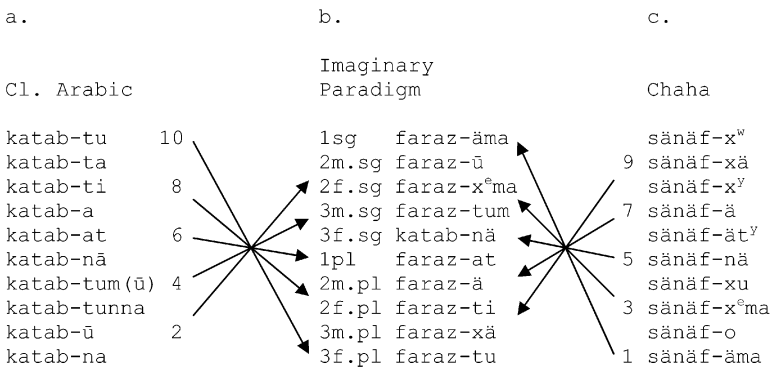
(13)

	a.	b.	c.
	Standard Arabic	Chaha	Imaginary paradigm
1sg.	katab-tu	sänäf-x^{w}	faraz-äma
2m.sg.	katab-ta	sänäf-xä	faraz-ū
2f.sg.	katab-ti	sänäf-x^{y}	faraz-x^{e}ma
3m.sg.	katab-a	sänäf-ä	faraz-tum
3f.sg.	katab-at	sänäf-ät^{y}	faraz-nä
1pl.	katab-nā	sänäf-nä	faraz-at
2m.pl.	katab-tum(ū)	sänäf-xu	faraz-ä
2f.pl.	katab-tunna	sänäf-x^{e}ma	faraz-ti
3m.pl.	katab-ū	sänäf-o	faraz-xä
3f.pl.	katab-na	sänäf-äma	faraz-tu

Note that the distribution of the set of affixes in (13c) results from applying the algorithm in (14).

(14) Given an affixless stem *faraz*, Classical Arabic and Chaha take turns contributing an affix. Chaha gets first shot and contributes its lowest affix to the highest suffixal position in (15b). Then, Classical Arabic contributes its second lowest affix to the next highest position available in the hypothetical paradigm. The operation is repeated until the paradigm in (15b) is rigged with a full set of affixes. For easier identification of which language contributes what, each shot is highlighted by a number in (15).

(15)



Eventhough the paradigm in (15b) is totally fantastic, a set of insertion statements for its vocabulary items can readily be cranked out. It appears in (16):

(16)
/ti/	↔	[+PSE, -Auth, +Pl, +Fem]
/ä/	↔	[+PSE, -Auth, +Pl]
/xᵉma/	↔	[+PSE, -Auth, +Fem]
/tu/	↔	[-PSE, +Pl, +Fem]
/ū/	↔	[+PSE, -Auth]
/xä/	↔	[-PSE, +Pl]
/nä/	↔	[-PSE, +Fem]
/nā/	↔	[+Auth, +Pl]
/at/	↔	[+Auth]
/tum/	↔	elsewhere (or [-PSE])

The fact that insertion statements such as appear in (16) can be formulated points to another feature of the spellout procedure to which they belong: the procedure has no empirical content of its own. If the arbitrariness of the makeup of vocabulary items is of the same order as the fact that the feline pet is called 'cat' (as opposed to something else), then the procedure is endowed with the right property. But, if there is more to it, then the possible internal structure of vocabulary items lies beyond the reach of a system of the type of (8) or (16). That the latter must be the case, eventhough featural complexity is not necessarily recorded in transparent fashion in the size and shape of affixes,[11] is strongly suggested by a number of generalizations, some of which appear in (17).

(17) a. In languages that have a Gender distinction in the Plural, that distinction is implemented for 2nd persons
b. In languages that have a Gender distinction in the Plural, no exponent in the entire paradigm is longer than that of 2nd fem. pl.
c. The shortest Plural exponent is never shorter than the longest singular exponent. The shortest Feminine exponent is never shorter than the longest masculine exponent
d. Where an exponent is segmentally null, it is always 3rd masculine singular
e. Third persons are never consonant-initial

[11] But then, full arbitrariness would be in contradiction with Halle's proposal to the effect that Number and Gender features are represented as privative, not equipollent. Under privativeness, any Feminine Plural vocabulary item bears two more features—PL and F—than any Masculine Singular. Unless such features are entirely abstract, it would be the null hypothesis that featural complexity be reflected phonologically.

f. Where exponents for Person (as opposed to Number/Gender) can be clearly detected, Person is closest to the stem
g. Where exponents for Person, Number and Gender can be clearly identified, the order is Person, Number, Gender
h. All 2nd persons—singular ***and*** Plural—display ***the same*** affix-initial consonant, be it the archaic voiceless velar of Ethiopian Semitic and the Modern South Arabian languages, or *t*

Note that those generalizations are not meant to be viewed as exceptionless. On the contrary, they have deliberately been given in their strongest possible form so as to throw into relief the difference between regular patterning and the more opaque cases requiring additional analytical work. Thus, (17c) is directly challenged by Hebrew *katav-ta* 'you (ms.sg.) wrote' longer than its Feminine counterpart *katav-t* 'you (fem.sg.) wrote'; while (17e) is apparently challenged by the consonant-initial affix of Standard Arabic *katab-na* 'they (fem.) wrote'.[12]

1.2.2. Stem and inflection

The relationship between stem and inflection is often viewed as involving two distinct domains: the domain of the stem and the domain of inflection. A strong version of such a view stems from frameworks in which stem and inflection are formed in different components of grammar, cf. the Split Morphology Hypothesis forcefully argued for, in e.g. Anderson (1982, 1992), Matthews (1972, 1991), Perlmutter(1988), and argued against in Booij (1993).

But the respective autonomy of stem and inflection that can be observed elsewhere is uncharacteristic of Semitic. Indeed, there is overwhelming evidence of interaction between the ultimate shape of the Semitic stem and the makeup of its accompanying inflection. A comparison of two Tigré Perfective paradigms, one from a sound root (18b), the other from a medial-weak root (18a), illustrates this.

[12] Exactly what the *-na* of Standard Arabic *katab-na* 'they (fem. pl.) wrote', stands for is not clear at all, for it reappears in *yaktubūna* 'they (ms. pl.) wrote' in a rightmost position which makes it very unlikely that it signals Person. Quite possibly, *katab-na* and *yaktub-na* 'they (fem. pl.) are writing' are best analyzed as /katab-øø-na/ and /ya-ktub-øø-na/ respectively, as insightfully proposed by Lumsden & Halefom (2003), Halefom (1994) for Amharic, and Banksira (2000) for Chaha.

(18)

	a.	b.
	√dwr	√fgr
1sg	dır-ko	fägär-ko
2msg	dır-ka	fägär-ka
2fsg	dır-ki	fägär-ki
3msg	dor-ä	fägr-ä
3fsg	dor-ät	fägr-ät
1pl	dır-nä	fägär-nä
2mpl	dır-kum	fägär-kum
2fpl	dır-kın	fägär-kın
3mpl	dor-äw	fägr-äw
3fpl	dor-äya	fägr-äya

Consider the generalizations in (19).

(19) a. In a verb from a sound root (18b), consonant-initial affixes ***demand*** the presence of a vowel between C_2 and C_3, *fägär-ko, fägär-nä*; whereas vowel-initial affixes ***prohibit*** it: **fägär-ä,* **fägär-äyä*, etc.

b. In a verb from a weak root (18a), consonant-initial affixes ***inhibit*** the realization of the root-medial glide, *dır-ko, dır-nä*; but vowel-initial affixes lay the ground for its realization: *dor-äw, dor-äyä* (⟨däwr-äw, ⟨däwr-äyä, respectively).[13]

The striking feature of those generalizations is how, in both cases, the critical factor (the prosodic shape of the affix) targets for examination not the stem as a whole, but *a specific ingredient of the stem*, viz. the root. The fact that a subpart of the stem remains accessible in the fashion described in (19) suggests that stem and inflexion are not separate domains. In minimalist parlance, they must be part of the same phasal episode.

The permeability of the two domains under discussion, the stem and the affixal complex, is corroborated by the fact that the interaction can go both ways. That is, the shape of an affix can itself be affected by properties of the root. This is documented in (20) by means of a comparison of several Perfective paradigms from Moroccan Arabic, one from a sound root (20a), (20b,c) from medial-weak roots, and (20d, e, f) from final-weak roots.[14]

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[13] Note that stem variations, as can be observed in Tigré, entail no consequences on subject agreement markers, nothing indeed that would resemble the selection of Plurals by English nouns.

[14] Much as is the case with Tigré consonant initial affixes (18a), Moroccan Arabic Perfectives from weak roots do not reveal the identity of the weak radical member. The verbs in (20) will be discussed again in section 3, with full justification for the roots as they appear above the paradigms.

(20)

	a.	b.	c.	d.	e.	f.
	'write'	'melt'	'awake'	'run'	'crawl'	'read'
	√ktb	√dwb	√fyq	√jry	√ħbw	√qr?
1sg.	kt^{e}b-t	d^{e}b-t	f^{e}q-t	jri-t	ħbi-t	qri-t
2m.sg.	kt^{e}b-t	d^{e}b-t	f^{e}q-t	jri-t	ħbi-t	qri-t
2f.sg.	kt^{e}b-ti	d^{e}b-ti	f^{e}q-ti	jri-ti	ħbi-ti	qri-ti
3m.sg.	kt^{e}b	dab	faq	jra	ħba	qra
1pl.	kt^{e}b-na	d^{e}b-na	f^{e}q-na	jri-na	ħbi-na	qri-na
2pl.	kt^{e}b-tu	d^{e}b-tu	f^{e}q-tu	jri-tu	ħbi-tu	qri-tu
3f.sg.	***k^{e} tb-At***	***dab-^{e} t***	***faq-^{e} t***	***jra-t***	***ħba-t***	***qra-t***
3pl.	***k^{e} tb-u***	***dab-u***	***faq-u***	***jra-w***	***ħba-w***	***qra-w***

For easier identification, the relevant forms have been italicized and set apart from the rest of their respective paradigms in (20). The 3rd Feminine Singular affix surfaces alternatively as *-at*, *k^{e} tb-at(+u)* 'she wrote (it)' in the case of a verb from a sound root, *-^{e}t* if the root is medially weak, and plain *-t* when the root is finally weak.[15] Similarly, the shape of the 3rd Plural exponent varies depending on whether the verb involves a weak final root, *jra-w, ħba-w, qra-w* vs. *k^{e} tb-u, dab-u, faq-u*. Note that such variation can not be construed as resulting from competition. Rather, it is of a strictly phonological nature, indeed akin to the allomorphy of the -z Plural in English (*bugs, cats, roses*).

Based on what precedes, I conclude that Halle's account calls for an alternative. The alternative will be offered on the basis of an analysis of the Moroccan Arabic perfective paradigm. The next two sections, 2 and 3, are devoted to a detailed discussion of selected aspects of the phonology and verbal morphology of Moroccan Arabic. While their relevance to the theoretical discussion in progress will not be obvious at first, it will become gradually clear how they lay the ground for the presentation of an alternative to Halle's proposal in section 4.

2. A framework for understanding the vowel system of MA

The description of Moroccan Arabic dialects is such a formidable task that the label itself may turn out to be somewhat of a misnomer.[16] But, the data discussed below requires no particularly fine-grained dialectological character-

[15] The reason for capitalizing the affixal vowel of the 3rd Feminine Singular in (20) and documenting it with a pronominal direct object in the following paragraph will soon be made clear.

[16] Justice can not be done here to the existing literature on Moroccan Arabic dialectology. But,

ization, and will be readily identified as 'Moroccan' by speakers of Moroccan Arabic, either because it corresponds to their own dialect, or because it corresponds to a dialect they have had experience with inside their country.[17]

2.1. *Length*

The phonological system of Moroccan Arabic vowels appears in (21a) next to that of Classical Arabic. Compared to Classical Arabic, (21b), it is immediately apparent that Moroccan Arabic does not display the short/long pairs of its ancestor. Moreover, it includes a high central vowel, the raised 'e', [ᵉ] in (21a).

(21) a. b.

i	ᵉ	u		ī,ĭ			ū,ŭ
	a				ā,ă		

A question immediately arises: the length contrast evidenced in (21b) is in complementary distribution with the presence of a 4th vowel in Moroccan Arabic, the [ᵉ] in (21a). Is it significant?

There is a variant to this question. Classical Arabic displays two series of vowels: ī, ā, ū, and ĭ, ă, ŭ. Suppose the absence of a length contrast in Moroccan Arabic arose as a consequence of the loss of one of the two series, either the long or the short one. In either case, Moroccan Arabic should display exactly three vowels, i.e. three less than Classical Arabic. But it displays four, instead. Is it the case that the difference between the two grammars can indeed be characterized in terms of the loss of one of the two series? A look at the sample in (23) reveals the robust generalization in (22):

(22) Where a 'word' is attested in both Classical and Moroccan Arabic, the latter does not realize the short vowels of the Classical Arabic version, but retains the long vowels present therein.[18]

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see e.g. Boukous (1995), Heath (2002), and references therein for valuable general discussion and information.

17) I am aware that, by the same criterion, much of the data adduced in this paper could also be called Algerian Arabic.

18) When the loss of short vowels results in an unmanageable string of consonants, the high central vowel (noted [ᵉ]) is inserted. The differential placement of [ᵉ] in (j,k,l,m) illustrates the economy of epenthesis. Cf. Kaye (1990) for fuller discussion.

(23)

	CA	MA	
a.	muslim	mŭslĭm	m^{e}sl^{e}m
b.	generous	kărīm	krim
c.	donkey	ħĭmār	ħmar
d.	door	bāb	bab
e.	dog	kălb	k^{e}lb
f.	you (ms.) are getting dressed	tălbăsŭ	t^{e}lb^{e}s
g.	he ran	jărā	jra
h.	it is melting	yădūbu	y^{e}dub
i.	they became great	kăbŭrū	k^{e}bru
j.	he made x write	kăttăbă	k^{e}tt^{e}b
k.	he wrote	kătăbă	kt^{e}b
l.	we wrote	kătăbnā	kt^{e}bna
m.	they wrote	kătăbū	k^{e}tbu
n.	you (sg.f.) wrote	*kătăbtĭ*	*kt^{e} bti*

While (22) is truly general and a key factor in understanding the correspondences illustrated in (23),[19] its coverage can not be expected to include the entirety of the Moroccan Arabic evidence. Indeed, full coverage would entail the improbable consequence that Moroccan Arabic completed the diachronic change leading up to the differences in (23), and then remained frozen in that state until today. Such is far from being the case. For instance, the short 'i' at the end of (23n) seems to have survived. The reader will have noted that the sample in (23) includes inflected verbal forms. It will be one of the tasks of the following sections to show that it is no accident if such a rare occurrence as (23n) also happens to involve, of all regions of a form, the site of realization of verbal inflection. Challenges such as (23n) will be dealt with in section 4. For the time being, I pursue the discussion of (23).

The systematic correspondence highlighted in (23) has long been recognized. By far the most popular interpretation of what took place appears in (24).

(24) i. MA lost the short vowels of CA
ii. The remaining long vowels of CA *therefore* became short in MA

[19] Cf. Lowenstamm (1991) for discussion, and El Medlaoui's extremely interesting and insightful contributions (1998, 2000) for more illustrative data (while El Medlaoui does not explicitly conclude that MA peripheral vowels are still long today, his discussion can lead to no other conclusion). Another valuable conjecture entertained by El Medlaoui is the idea that the Berber substratum of Moroccan Arabic is responsible for the loss of brevity. For synchronic evidence that Berber and MA have similar vowel systems, cf. e.g. Bendjaballah (1999), Idrissi (2000), Lahrouchi (2003), Lahrouchi & Ségéral (2010).

In the context of (24), (24ii) has all the properties of a *non sequitur*. In reality, the full reasoning is as in (25).

(25) i. Length can only be contrastive
ii. MA lost the short vowels of CA
iii. *Therefore* the vowels remaining in MA can not have retained their length

The missing premise (25i) encapsulates the idea that long vowels can only be recognized as the result of a comparison with short counterparts. If short counterparts disappear, so does the basis for recognizing length.[20] When (25i) is reinstated as in (25), (25iii) is no longer a *non sequitur*. But the question is whether anything weighs in favor of (25i) in the first place.[21] The enormous longevity of (25i) is surely rooted in the fact that, for a very long time, no independent standard was available for appreciating length. In the absence of such a standard, length could only be construed as relative.[22] But with theories of syllable structure combined with explicit representations of templatic structure (McCarthy 1979, Lowenstamm & Kaye 1986), such a standard now exists: a vowel is long if it is associated to two timing units, short if associated

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20) This position is explicitly endorsed by Heath (1987) with respect to Moroccan Arabic.

21) The sort of reasoning documented in (25) is usually not upheld in everyday life. Perhaps an anecdote entirely unrelated to Linguistics may illustrate the point. In his memoirs (Adler, 1899), Shraga Adler, a 19th century agronomist, recounts his dismay upon witnessing a curious natural phenomenon. Count Rozov, an enlightened member of the nobility and Adler's employer, owned a large estate in Volhynia in which he was successfully growing oak trees for timber. In 1846, Adler had recommended that a large patch of forest be set aside for an unprecedented experiment whereby two varieties of oak trees—one shorter and bushier than the other—would be made to share the same territory. Trees of both varieties grew side by side for almost thirty years. But by the Spring of 1875, it became apparent that—mysteriously—all trees of the shorter variety were dying. In consequence, they had to be felled urgently and at a significant financial loss. By the following winter, the forest patch exclusively hosted 'tall' oaks. The value of Adler's memoirs as an early ethnological essay, lies in the minute description he provides of the mentalities in a rural community of Eastern Europe at the turn of the century. The book describes in great detail how the loss of timber was lamented by peasants, officials, and the local clergy; how Adler blamed himself and how Count Rozov tried to cheer him up. At one point, it transpired that a young priest was agitating—with a measure of success—against both Count Rozov and Adler. While Adler grew frantically worried at the prospect of social unrest, the count remained unflappable throughout. In a conversation (Adler 1899, p. 122), he tells Adler "Relax, Adler … PLEASE relax … Let me tell you where I draw the line: if those fools come to us claiming that the remaining trees have now all become *short* as a consequence of the absence of their former neighbours, THEN I'll know the time has come for us to seriously worry!"

22) This is not to say that (25i) was universally accepted. As Caubet (1993) points out in her thorough and detailed description of a rural dialect spoken in the vicinity of Fès, insisting that (25i) must be maintained even in the face of compelling contrary distributional evidence, would only be dogmatic.

to one. On that view, recognizing the existence of, say *ā* in a system depends exclusively on the geometry of the templatic anchoring of the vowel, not on whether *ă* is attested or not in the same system. Accordingly, the next subsection will be devoted to the consideration of templates, how they can shed light on syllable structure, and ultimately help in assessing vowel length.

2.2. *Syllable structure, templates*

A popular procedure for establishing syllable structure is inspection. Thus, Classical Arabic *bāb* 'door' and *kălb* 'dog' will be said to illustrate syllable sequences of types CVVC and CVCC respectively, while *mŭslĭm* 'Muslim' and *kărīm* 'generous' will be viewed as illustrating types CVCVC and CVCVVC, respectively. Suppose alternatively, that syllable structure only arose as the winner in a process of selection of various hypotheses confronted to a problem.[23] Consider in this respect the challenge offered by the MA data in (26) and how a solution might lead up to the identification of syllable structure.

(26)	a.	b.	c.	d.
	Root	Form II 3rd ms.sg.	Form I 3rd ms.sg.	???
	√ktb	k$^{\text{ᵉ}}$tt$^{\text{ᵉ}}$b 'he caused x to write'	kt$^{\text{ᵉ}}$b 'he wrote'	CCVC
	√md	m$^{\text{ᵉ}}$dd$^{\text{ᵉ}}$d 'he caused x to stretch'	m$^{\text{ᵉ}}$dd 'it (ms.) stretched'	CVCC
	√jry	j$^{\text{ᵉ}}$rra 'he caused x to run'	jra 'he ran'	CCV
	√dwb	d$^{\text{ᵉ}}$ww$^{\text{ᵉ}}$b 'he caused x to melt'	dab 'it (ms.) melted'	CVC

The inflected verbs in (26) are all Perfective third person masculine singular forms, causatives in (26b), and 'plain' in (26c).[24] In each case, I assume, the underlying templatic structure contributes to the expression of morphosyntactic and argument-structural information common to each member of the paradigms in (26b, c).[25] The identification of the template underlying causatives (26b) is not entirely straightforward on account of a vowel-final form, *j$^{\text{ᵉ}}$rra*. But except for this minor wrinkle (to be returned to momentarily), the task is not intractable. Much more difficult, on the other hand, is the identification of the template underlying the forms in the sample in (26c). The

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[23] Cf. Guerssel (1990) for an early implementation of such a program.

[24] By 'plain', I mean that argument structure (in (26c) as opposed to (26b)) remains unformatted, as will be clear from the glosses.

[25] For an elaboration of the relationship between templates and argument structure, see Arbaoui (2010).

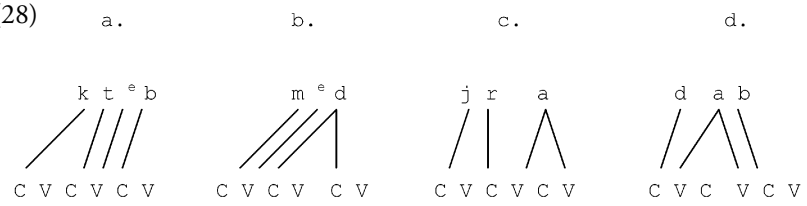
inspection procedure would yield all the different structures in (26d), and the prospect of capturing a generalization would recede accordingly, as indicated by the question marks.

Now suppose, as does Arbaoui (2002) following an early and bold idea due to Angoujard (1982) that the relevant template is, improbably as it might initially seem, as in (27):

(27) C V C V C V

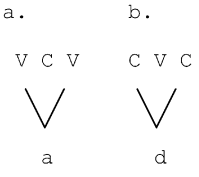
If (27) is adopted, all the forms in (26c) can fit. This is shown in (28).[26]

(28)



The adoption of the proposal in (27) and (28) carries two representational consequences. Firstly, peripheral vowels are associated to two V positions. Secondly, long vowels and geminates are construed as in (29a,b), respectively.

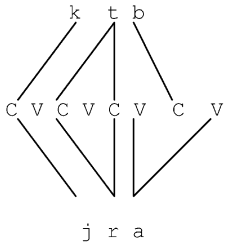
(29)



Several benefits are immediately available. One has to do with the apparently outstanding behavior of *j^{e}rra* 'he caused x to run' which contrasts prosodically with the other causatives in (26b). Under the view put forth in (28), all causatives, including *j^{e}rra* fit into the same template, as shown in (30) with the examples of *j^{e}rra* and *k^{e}tt^{e}b*.

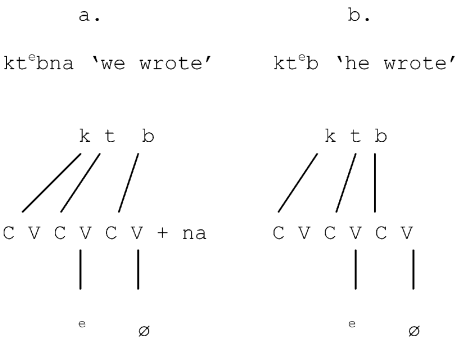
[26] For a radically different view of the syllable structure of Moroccan Arabic, cf. Dell & El Medlaoui (2002, 2008).

(30)



Another benefit of the proposal is the straightforward account of the distribution of the central vowel available under the view that the template consists of light CV syllables: the central vowel simply appears to the left of an empty nucleus.

(31)

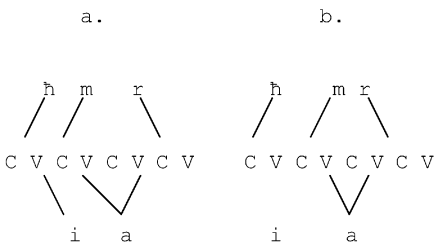


With these ingredients, we can now turn to a characterization of the loss of the short vowels of Classical Arabic.

2.3. *Loss of brevity*

In the framework just developed, the loss of the short vowels of CA can be described as in (32) with the illustrative example of the change from CA *ħĭmār* 'donkey' to MA *ħmar*.

(32)



The delinking of the initial short vowel of *ħĭmār* can be generalized into the claim in (33), the consequences of which are spelled out in (34).

(33) *Loss of brevity*

i, a, and *u* must branch

(34) i. A vowel delinks unless it is attached to two Vs (i.e. it is long)
ii. templatic structure is unaffected by delinking (i.e. everything being equal, MA inherits the templatic structure of CA for the relevant items)
iii. delinking does not entail vowel loss

Three comments are in order. First, under the claim in (33), the loss of a short vowel (34i) does not entail the concomitant shortening of a long vowel; rather, it positively says the opposite. The second comment is a *caveat*: (34ii) should not be interpreted as meaning that the entire array of CA templates is passed on to MA *en bloc*; nor is it intended to suggest that those templates that were passed on to MA were immunized against alterations. The point, rather, is that the development depicted in (32) strictly affects the link between a vowel and a templatic position, and does not, in and of itself, entail any modification of the template. The third comment is an additional *caveat*: a delinked vowel is not necessarily lost. Under favorable circumstances, it may reappear in dramatically systematic fashion, as we will see in section 4.

For the time being, I pursue the discussion of the idea that Moroccan Arabic never lost vowel length by confronting it with the behavior of a class of nouns.

2.4. *Segholates*

The first piece of evidence to the effect that peripheral vowels never lost their length is introduced directly.[27] Consider the monovocalic nouns in (35).

[27] I am grateful to Mohand Guerssel (p.c.) for making me aware of this important argument, which he credits Jean-Pierre Angoujard for.

(35)

a.	b.
Dar[28] 'house'	y^{e}dd 'hand'
fil 'elephant'	q^{e}TT 'cat'
ruz 'rice'	j^{e}nn 'devil'
bab 'door'	k^{e}lb 'dog'

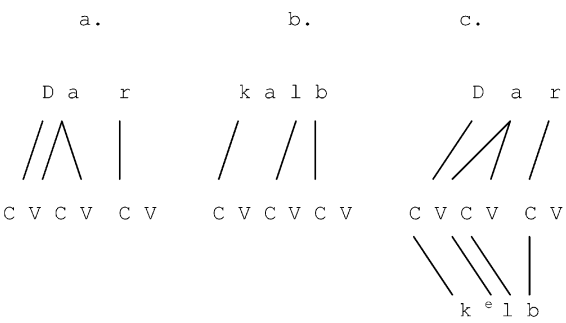
The pattern documented in (35) exhausts the distributional options for MA vowels *in non-deverbal monovocalic nouns*.[29] Indeed, no peripheral vowel may be followed by two consonants word-finally. Concomitantly, no central vowel may be followed by less than two consonants word-finally:

(36) *#C{a,u,i}CC#
*#C^{e}C#

In other words, nouns such as hypothetical *dibb, dirb, rudd, zuld, wald, wazz* are unattested. So are hypothetical *d^{e} b, d^{e} z, w^{e} l*, and the like.

The complementary distribution just described is directly accounted for under the proposals laid out earlier. Consider (37).

(37)



(37a, b) show *Dar* and *kălb* at the moment when short vowels undergo delinking. Under the hypotheses that long vowels do not shorten and that the template itself remains unaffected, the Moroccan Arabic pattern in (37c) follows,

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[28] D is the emphatic voiced coronal stop.

[29] The class of nouns under discussion here is known as *segholates* (on Hebrew segholates, cf. Faust (2010)). It is important to emphasize that the generalization just put forth with respect to the distribution of vowels and consonants is intended to hold of that particular class, not of the entire language. Indeed, active participles of verbs from 'deaf' roots—*šamm* from √šm 'smell', *kabb* from √kb 'pour'—exhibit precisely the property segholates are incapable of displaying.

with a saturated template in both cases. On this view, it is no accident if **dirb*, **dᵉb* and the like are unattested: they are unattested because they are impossible, as **dirb* would exceed the capacity of the template while **dᵉb* would fail to saturate it, as shown in (38).

(38)

A skeptic might insist that Classical Arabic *Dār* did lose its length and that its Moroccan Arabic reflex—supposedly *Dăr*—simply ceased to belong in the same templatic class as *kᵉ lb*. If that were correct, such supposedly short peripheral vowels in CVC nouns should be located in exclusively those items where Classical Arabic displays the originally long vowel.

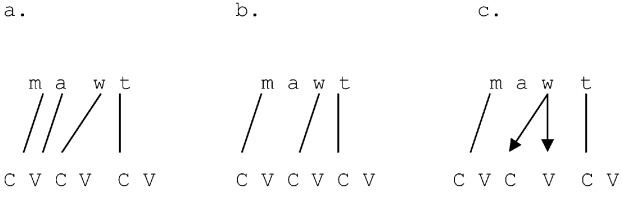
This is not correct, however, as Moroccan Arabic developed its own series of nouns of that type. Consider in this respect, Classical Arabic segholates from medial-weak roots, and how they are realized in Moroccan Arabic, (39).

(39)

Classical Arabic	Moroccan Arabic
mawt 'death'	mut
sayf 'sword'	sif
raʔs 'head'	ras

Here, the same set of hypotheses predicts exactly the Moroccan Arabic outcome. (40a) shows the Classical Arabic input form, *măwt*. (40b) illustrates delinking of the short vowel. But this time, as shown in (40c), rather than inserting a high central vowel as had been the case with *kᵉlb*, Moroccan Arabic reacts by redeploying the medial glide over the two nuclei straddling its original location in (40a).

(40)



In effect, Moroccan Arabic has created a series of CVC nouns such as *mut*, *ras*, or *sif*, which did not exist in Classical Arabic.

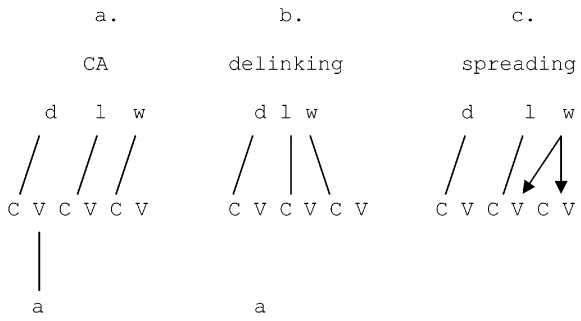
This poses a very serious problem for length-skeptics who would want to maintain that CA *Dār* became MA *Dăr*. Indeed, *mut*—a consequence of the delinking of short vowels—must have arisen, for that reason, at precisely the same time. Is its vowel short or long? If it is short, it should delink as well, thus producing **mᵉt*, or perhaps **mᵉtt*. But if it is long, then the undesirable consequence follows that Moroccan Arabic *rās*, *mūt* and *sīf* all have long vowels, whereas *Dăr*, *rŭz*, and *fil* have short ones, a distinction for which there is no evidence whatsoever.

Note that the scenario whereby a glide redeploys as shown in (40c) is not limited to segholates from medial-weak roots. It also affects segholates from final weak roots such as the items in (41), as demonstrated in (42).[30]

(41)

Classical Arabic	Moroccan Arabic
jady 'kid'	jdi
dalw 'pail'	dlu

(42)



Again, we see how Moroccan Arabic developed, on its own, peripheral vowels in nouns where Classical Arabic had none. I conclude that the evidence just discussed supports the view that the long vowels of Classical Arabic retained their length when they were passed on to Moroccan Arabic, indeed are long to this day.

30) Cf. Boueddine (2011) for further discussion and for an exhaustive list of Moroccan Arabic segholates from weak roots.

3. The Vocalization of Verbs from Weak Roots

Semitic verbs from weak roots offer some of the most vexing analytical challenges (cf. Voigt (1988) and references therein). Consider again the Moroccan Arabic Perfective paradigms in (43), where (43a) is a verb from a sane root and all others from 'weak' roots: (43b,c) from glide-medial roots, (43d,e) from glide-final roots, and (43f) from a root with a final glottal stop. Each root is indicated on top of its corresponding paradigm.[31]

(43)	a.	b.	c.	d.	e.	f.
	'write'	'melt'	'awake'	'run'		
	√ktb	√dwb	√fyq	√jry	√ħbw	√qr?
1sg.	kt$^{\varsigma}$b-t	d$^{\varsigma}$b-t	f$^{\varsigma}$q-t	jri-t	ħbi-t	qri-t
2m.sg.	kt$^{\varsigma}$b-t	d$^{\varsigma}$b-t	f$^{\varsigma}$q-t	jri-t	ħbi-t	qri-t
2f.sg.	kt$^{\varsigma}$b-ti	d$^{\varsigma}$b-ti	f$^{\varsigma}$q-ti	jri-ti	ħbi-ti	qri-ti
3m.sg.	kt$^{\varsigma}$b	dab	faq	jra	ħba	qra
3f.sg.	k$^{\varsigma}$tb-$^{\varsigma}$t/at	dab-$^{\varsigma}$t/*at	faq-$^{\varsigma}$t/*at	jra-t	ħba-t	qra-t
1pl.	kt$^{\varsigma}$b-na	d$^{\varsigma}$b-na	f$^{\varsigma}$q-na	jri-na	ħbi-na	qri-na
2pl.	kt$^{\varsigma}$b-tu	d$^{\varsigma}$b-tu	f$^{\varsigma}$q-tu	jri-tu	ħbi-tu	qri-tu
3pl.	k$^{\varsigma}$tb-u	dab-u	faq-u	jra-w	ħba-w	qra-w

Note that both verbs from medial-weak roots, (43b,c), pattern alike with either a high central vowel or *a* between C_1 and C_3. Moreover, all three verbs from final-weak roots, (43d, e, f), pattern alike as well, displaying vowel *i* or *a* after C_2. Thus, two distinct vocalization patterns emerge—$C_1{}^{\varsigma}C_3$ for verbs from medial-weak roots vs. C_1C_2i for verbs from final-weak roots. But in addition to the challenge of understanding these differential systems of vocalization, another challenge arises: the two systems overlap in striking fashion in the sense that a vowel *a* occurs in all third persons, whether the verbs be derived from middle-weak or from final-weak roots.

The Perfective paradigms of (43) remain themselves entirely uninformative as to the identity of the weak consonant involved in each case: how do we know, for example, that the roots involved in (43) differ exactly as indicated above each paradigm, e.g. √dwb vs. √fyq (rather than √dyb vs. √fwq, or √dwb and √fwq, or √dyb and √fyq)? Two different sources can be tapped for the identification of the root: causatives in the case of verbs from medial-weak roots, and the Imperfectives corresponding to the paradigms of (43d,e,f) in the

31) The data is due to Kabbaj (1990) and Arbaoui (2002).

case of verbs from weak-final roots. This can be seen in the causative paradigms in (44) with the overt manifestation of the root middle glide as a geminate; and in the Form I Imperfectives given in (45) with the manifestation of a different vocalization for each verb. In both (44) and (45), verb *kt^{e}b* 'he wrote' from sane root √ktb serves as a control.

(44)

	a.	b.	c.
1sg.	k^{e}tt^{e}b-t	d^{e}ww^{e}b-t	f^{e}yy^{e}q-t
2m.sg.	k^{e}tt^{e}b-t	d^{e}ww^{e}b-t	f^{e}yy^{e}q-t
2f.sg.	k^{e}tt^{e}b-ti	d^{e}ww^{e}b-ti	f^{e}yy^{e}q-ti
3m.sg.	k^{e}tt^{e}b	d^{e}ww^{e}b	f^{e}yy^{e}q
3f.sg.	k^{e}tt^{e}b-^{e}t/at	d^{e}wwb-^{e}t/at	f^{e}yyq-^{e}t/at
1pl.	k^{e}tt^{e}b-na	d^{e}ww^{e}b-na	f^{e}yy^{e}q-na
2pl.	k^{e}tt^{e}b-tu	d^{e}ww^{e}b-tu	f^{e}yy^{e}q-tu
3pl.	k^{e}tt^{e}b-u	d^{e}wwb-u	f^{e}yyq-u

(45)

	a.	d.	e.	f.
1sg.	n^{e}-kt^{e}b	n^{e}-jri	n^{e}-ħbu	n^{e}-qra
2m.sg.	t^{e}-kt^{e}b	t^{e}-jri	t^{e}-ħbu	t^{e}-qra
2f.sg.	t-k^{e}tb-i	t^{e}-jri	t^{e}-ħbu/i	t^{e}-qray
3m.sg.	y^{e}-kt^{e}b	y^{e}-jri	y^{e}-ħbu	y^{e}-qra
3f.sg.	t^{e}-kt^{e}b	t^{e}-jri	t^{e}-ħbu	t^{e}-qra
1pl.	n-k^{e}tb-u	n^{e}-jri-w	n^{e}-ħbu	n^{e}-qra-w
2pl.	t-k^{e}tb-u	t^{e}-jri-w	t^{e}-ħbu	t^{e}-qra-w
3pl.	y-k^{e}tb-u	y^{e}-jri-w	y^{e}-ħbu	y^{e}-qra-w

Based on what precedes, we can be fairly certain that we are indeed dealing with triradical roots, and proceed with the hypothesis that a) the realization of the weak consonant—be it C_2 or C_3—is thwarted in all Form I Perfectives, and b) its non-realization makes it possible for a two-faceted system of vocalization to emerge. This system, which is so consistent and general that it presumably reveals general properties of the MA verb, can now be characterized as in (46).

(46) Form I Perfectives from weak roots display

i. *a* in third persons
ii. *i* or ^{e} elsewhere depending on root weakness type

The generalizations in (46) are illustrated in (47).

(47)

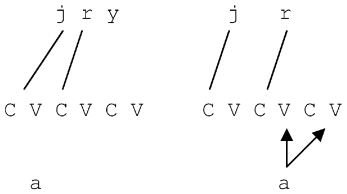
	a.	b.	c.	d.	e.
	√ktb	√dwb	√fyq	√jry	√ħbw
	'write'	'melt'	'awake'	'run'	
1sg.	kt^{e}b-t	d^{e}b-t	f^{e}q-t	jri-t	ħbi-t
2m.sg.	kt^{e}b-t	d^{e}b-t	f^{e}q-t	jri-t	ħbi-t
2f.sg.	kt^{e}b-ti	d^{e}b-ti	f^{e}q-ti	jri-ti	ħbi-ti
1pl.	kt^{e}b-na	d^{e}b-na	f^{e}q-na	jri-na	ħbi-na
2pl.	kt^{e}b-tu	d^{e}b-tu	f^{e}q-tu	jri-tu	ħbi-tu
3m.sg.	kt^{e}b	dab	faq	jra	ħba
3f.sg.	k^{e}tb-^{e}t/at	dab-^{e}t/*at	faq-^{e}t/*at	jra-t	ħba-t
3pl.	k^{e}tb-u	dab-u	faq-u	jra-w	ħba-w

Kabbaj (1990) offers a valuable account of the vocalization patterns in (47). Of exclusive interest to us in the context of this paper is the second part of Kabbaj's proposal, the part concerning the lowest box in (47):

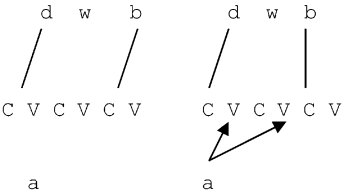
(48) i. an *a* is present in the representation of the verb[32]
ii. when the non-realization of a root consonant opens a gap, *a* is realized.

This is shown in (49) and (50) with the examples of *jra* and *dab*, respectively.

(49)



(50)



At a descriptive level, the correctness of Kabbaj's claim is beyond discussion: *jra* and *dab* do exhibit an *a*, and the scenario in (48) provides a source for it. Note,

[32] The same idea is taken up in Amimi (1997).

moreover, that the geometry of its deployment vindicates the representational assumptions made here with respect to long vowels. But, Kabbaj's proposal begs two questions, one is diachronic, the other synchronic. I will argue that the challenge is met in both cases.

A diachronic source for *a* can be identified in fairly straightforward fashion. To see this, consider the vowel alternations relating the Classical Arabic active verbs of Form I (3ms.sg), given in (51) with their corresponding passives for comparison:

(51)

	Perfective		Imperfective	
√	Active	Passive	Active	Passive
√Drb 'hit'	Dar<u>a</u>b-a	Durib-a	ya-Dr<u>i</u>b-u	yu-Drab-u
√lbs 'wear'	lab<u>i</u>s-a	lubis-a	ya-lb<u>a</u>s-u	yu-lbas-u
√ktb 'write'	kat<u>a</u>b-a	kutib-a	ya-kt<u>u</u>b-u	yu-ktab-u
√kbr 'become great'	kab<u>u</u>r-a	ya-kb<u>u</u>r-u		

Several observations can be made.

(52) a. Vowel alternations (underscored) can be observed in Active forms only. Indeed, all Passives, Perfective or Imperfective, are vocalized in uniform fashion.
b. The alternations are not phonologically conditioned.[33]
c. The alternations in (51), a~i, i~a, a~u, u~u, exhaust the set of possible alternation patterns. Indeed, no alternations such as i~u or u~a are attested. Each root is normally realized in one of the alternating patterns exemplified in (51). Thus, if a root is realized in more than one alternating pattern, the additional pattern(s) will match one of the types documented in (51).[34]

It now appears that the vocalic makeup of Classical Arabic Perfective actives can be broken down into two independent components: a) a stable *a* located between C_1 and C_2 (D***a***rab, l***a***bis, k***a***tab, k***a***bur), and b) a second, 'lexical' vowel located between C_2 and C_3 which varies depending on which root is selected (Dar***a***b, lab***i***s, kat***a***b, kab***u***r) and enters into a pattern of alternation

[33] Cf. Guerssel & Lowenstamm (1996) and Guerssel (2003) for a detailed account of the economy of vowel alternations exemplified in (51), and Guerssel & Lowenstamm (1990) for an extension of the apophonic system to the entirety of the verbal system of Classical Arabic, as well as Ségéral (1994) on Standard German, and Bendjaballah on Berber (1999).

[34] An example is √ħsn, realized as *ħasan-a/yaħsun-u* or *ħasun-a/yaħsun-u*. For more elaborate discussion, cf. Aro (1964) and Chekayri (1995).

with the corresponding vowel in the Imperfective (ya-Dr***i***b, ya-lb***a***s, ya-kt***u***b, ya-kb***u***r, respectively). Clearly, the Perfective vocalic melody can be characterized as in (53), where V stands for the 'variable' or 'lexical' vowel.[35]

(53) a+V

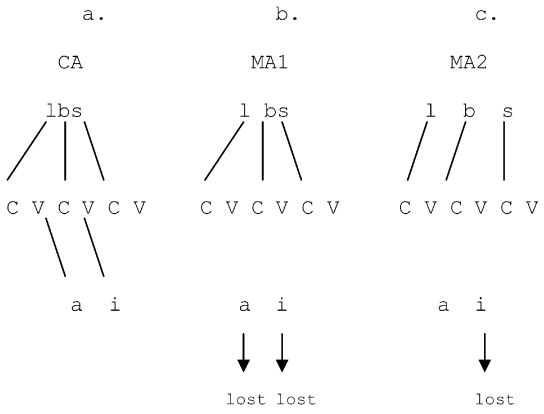
The relevance of Kabbaj's conjecture to the topic of this paper is the composite nature of the CA vocalic melody in (53) and the insight it may offer on contemporary Moroccan Arabic. MA has lost the system of alternations documented in (51), as can be seen from the comparison of 3m.sg. forms in (54):[36]

(54)

	CA		MA	
	Perfective	Imperfective	Perfective	Imperfective
√ktb	katab-a	ya-ktub-u	kt^{e}b	y^{e}-kt^{e}b
√lbs	labis-a	ya-lbas-u	lb^{e}s	y^{e}-lb^{e}s

However, under the view in (53) whereby the makeup of the Classical Arabic Perfective melody involves two distinct objects, ***a*** and alternating vowel V, the loss of V and its apophonic counterpart in no way entails that its companion, ***a***, was lost as well. In other words, the two scenarios in (55) must be carefully considered:

(55)

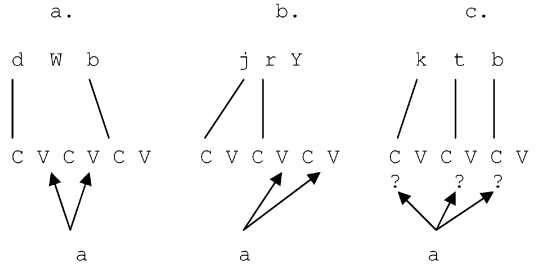


35) The variable vowel can arguably be linked to argumental properties of verbs. Thus, 'a~u' verbs such as kat***a***b/ya-kt***u***b are often transitive while 'i~a' verbs such as šar***i***b/ya-šr***a***b 'drink' often have an affected subject, etc.

36) But, see Marçais (1912).

According to the first scenario (55b), the entirety of the vocalic equipment of a CA verb was lost in Moroccan Arabic. On the other hand, under (55c) the alternating vowel was lost, but ***a*** was retained. Clearly, the second scenario constitutes a plausible historical background for Kabbaj's underlying ***a***. But now, the obvious question is how much *synchronic* evidence weighs in favor of the retention of *a* along the lines of (55c). Indeed, it is one thing to be able to trace the ***a*** of Moroccan Arabic weak verbs back to a feature of the Classical Arabic verb. It is another thing to conclude that the ***a*** still plays an active role in the grammar of contemporary Moroccan Arabic. To see what is at stake, let us consider again Kabbaj's proposal and what it implies, (56). Because verbs from weak roots do not realize one of the root's consonants (capitalized in (56)), a gap is opened which makes it possible for the hypothesized underlying vocalization to crop up. But, by the same token, it must be the case that verbs from sane roots will never open such a window of opportunity, a state of affairs depicted in (56c).

(56)



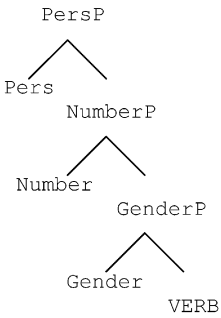
The fact is that verbs from sane roots represent an overwhelming majority. Does Kabbaj's diachronically motivated ***a*** remain in a synchronic limbo most of the time? As we will see in the next section when the issue of the vocalization of stems finally ties in with the structure of subject agreement markers, there is plenty of synchronic evidence in support of Kabbaj's claim, even when a sane root such as √ktb is involved.

4. The Person-Number-Gender Package

4.1. *Their Order and AGR*

A first place to look for insights into the organization of inflection is the Agr system. Fassi Fehri (1984, 1992a, 1992b) and Shlonsky (1989) have argued for splitting the Agr node in such way that Person, Number and Gender each head their own projection. Crucially, the proposed hierarchical organization is as in (57).

(57)



But if the verb moved up the structure gradually picking up pieces of inflection, first Gender, then Number, then Person, the surface order should be as in (58), as per Baker's Mirror Principle (Baker, 1985).

(58) VERB+Gender+Number+Person

Yet, consider, the subsystem formed by the 2nd persons singular and Plural, and 3rd persons Plural in (59).

(59)

	a.	b.	c.	d.
	Hebrew	Standard Arabic	Moroccan Arabic	Chaha
2m.sg.	katav-ta	katab-ta	kt^{e}b-t	sänäf-xä
2f.sg.	katav-t	katab-ti	kt^{e}b-ti	sänäf-x^{y}
2m.pl.	katav-tem	katab-tum(ū)	kt^{e}b-tu	sänäf-xu
2f.pl.	katav-ten	katab-tunna		sänäf-x^{e}ma
3m.sg				
3f.sg				
3m.pl.	katv-***u***	katab-ū	k^{e}tb-u	sänäf-o
3f.pl.		katab-na		sänäf-äma

It stands to reason that the affix-initial consonant—*t* or *x* in Chaha—consistently absent from 3rd persons, stands for 2nd person and whatever follows for Number (and/or Gender). Standard Arabic 2f.pl. *katab-tunna* (< *katab-tum-na*) even suggests a full decomposition along the lines of (60d).

(60)

a.	Hebrew	[$_{\text{VERB}}$ katab][$_{\text{Person}}$ t][$_{\text{Number/Gender}}$ en]
b.	Moroccan Arabic	[$_{\text{VERB}}$ kt^{e}b][$_{\text{Person}}$ t][$_{\text{Number}}$ u]
c.	Chaha	[$_{\text{VERB}}$ sänäf][$_{\text{Person}}$ x][$_{\text{Number/Gender}}$ ma]
d.	Standard Arabic	[$_{\text{VERB}}$ katab][$_{\text{Person}}$ t][$_{\text{Number}}$ um][$_{\text{Gender}}$ na]

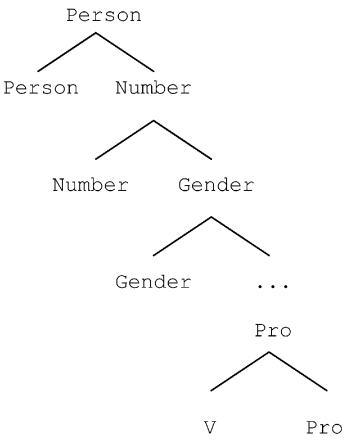
In all cases, the order is the reverse, the anti-mirror of what is expected, as noted by Sharon Rose (Rose, 1996).

(61) expected: VERB+Gender+Number+Person
actual: VERB+Person+Number+Gender

While there is good reason to suppose that Agr is indeed organized as in (57), the arrangement of the ingredients of inflection evidently owes nothing to the upward movement of the stem. Instead, I will pursue another line, viz. the Perfective paradigm enters the agreement machine fully equipped with its inflectional apparatus.

The proposal I will directly put forth partially draws from insights laid out in the literature. Essentially, it consists of an extended template in the sense of Rose (1996), involving two parts as initially suggested by Halefom (1994),[37] which reflect the presence and makeup of an incorporated pronoun (Fassi Fehri (2000)).[38]

(62)

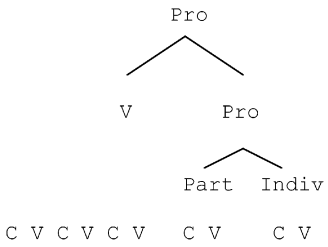


The dots above Pro in the diagram reflect this author's agnosticism with respect to possibly intervening projections, e.g. Tense, between the verbal complex and the Shlonsky-split Agreement cluster. Of interest here is the structure of the lowest branching node in (62), viz. Pro. I propose, following Harley & Ritter (2002), that Pro is organized as in (63) with two dependents, Person and Individuation where the Individuation node hosts Number and Gender.

37) Cf. Banksira (2000), and Lumsden & Halefom (2003) for implementations of that idea.
38) Cf. Goldenberg (1998) for valuable discussion.

The novel aspect of the proposal is that both dependents of Pro each specify a minimal templatic platform.

(63)



The testing ground will be the Moroccan Arabic Perfective paradigm repeated in (64) for convenience.

(64)

	1sg.	kt^{e}b-t
	2m.sg.	kt^{e}b-t
	2f.sg.	kt^{e}b-ti
	3m.sg.	kt^{e}b
	3f.sg.	k^{e}tb-^{e}t/at
	1pl.	kt^{e}b-na
	2pl.	kt^{e}b-tu
	3pl.	k^{e}tb-u

The agenda of this section comprises four items.

Agenda 1. The Asymmetric Distribution of Gender and Number

Following Halle (2000), I assume that Plural results from the presence of a PL feature, and Singular from the absence thereof. Similarly, Feminine forms reflect the presence of an F feature, masculine forms its absence. In other words, there will be no such thing as –PL or –F markings.

A first observation can be made: Gender and Number are—roughly—in complementary distribution. Two generalizations can be formulated (65a,b).

(65) a. verbal forms are marked for Gender or Number
b. no verbal form is marked for both Number and Gender

In view of the fact that first person singular is common for both genders, that is bears neither PL nor F, (65b) is obviously the safer generalization. But, as is the case with formulations whose only virtue is to be non-false, it says nothing of interest. Indeed, (65b) is compatible with a state of affairs such that more than

one MA Perfective form should be entirely markless. Why only the first, of all singular persons, should have no Feminine counterpart remains mysterious under (65b). Consequently, it will be discarded and (65a) further pursued.

Agenda 2. The Discrepancy between the Diachronically Expected and the Synchronically Actual

To the extent that the lengthy development in the two preceding sections established that MA lost the short vowels it inherited from CA but retained the long vowels, that very account is now directly challenged by some of the suffixes of our paradigm. To see this, consider the data in (66).

(66)

	Classical Arabic	Moroccan Arabic	
		Expected	Actual
1sg.	katab-tu	kt^{e}b-t	kt^{e}b-t
2m.sg.	katab-ta	kt^{e}b-t	kt^{e}b-t
3m.sg.	katab-a	kt^{e}b	kt^{e}b
1pl.	katab-nā	kt^{e}b-na	kt^{e}b-na
2m.pl.	katab-tum(ū)	kt^{e}b-tu	kt^{e}b-tu
3m.pl.	katab-ū	k^{e}tb-u	k^{e}tb-u
2f.sg.	katab-ti	kt^{e}b-t	kt^{e} b-ti
3f.sg.	katab-at	kt^{e}b-t	k^{e} tb-^{e} t/at

The paradigm has been rearranged so as to bring out the difference between the expected and the actual. The upper part of (66) gathers the well-behaved forms, the lower part the ill-behaved forms, where well-behaved is defined as in (67).

(67) Stripping a CA form of its short vowels should yield the corresponding MA form

In this respect, both *kt^{e}b-t* forms (1 sg. and 2m.sg) are well-behaved in the sense that they arise as the neutralization of the CA minimal pair *katab-tu* and *katab-ta*. Similarly, consideration of CA *katab-nā* leads to the correct guess that the sole surviving vowel will be the affixal vowel. On the other hand, the affixal vowels of the two MA actual forms in the lower part of (66) had no business surviving in a fashion identical to their CA counterparts. Indeed, CA *katab-ti* and *katab-at* should have neutralized into MA *kt^{e}b-t*. This inconsistency requires addressing.

Agenda 3. The Representation of Third Persons

This third item is not specific to Moroccan Arabic. Rather, it concerns all Semitic languages, possibly all languages. Following Benveniste (1966), I adopt the idea that 3rd persons are, in reality, non-persons, indeed correspond to the non-realization or the vacuous realization of the person category. Now, everything being equal, one would expect the nullness of 3rd person to go hand in hand with a reduced ability to serve as a support for overt Gender or Number marking. The challenge here will be to reconcile the null nature of 3rd person with its ability to support nevertheless Gender and Number.

Agenda 4. What Sorts of Objects Are the Ingredients of Inflection?

4.2. *The Proposal*

4.2.1. Affixes as Roots

Second persons come in three varieties: unmarked for Number or Gender, *tø* (*kt^{e}b-t*); marked for Feminine, *ti* (*kt^{e}b-ti*); and marked for Plural, *tu* (*kt^{e}b-tu*). Their common denominator, *t*, is obviously the exponent of 2nd person.

Consider and compare 2nd and 3rd persons in their masculine and Plural versions: each form in (68) forms a minimal pair with the form below or next to it.

(68)

	2	3
ms.	kt^{e}b-t	kt^{e}b
pl.	kt^{e}b-tu	k^{e}tb-u

From a comparison of 3ms and 3pl, it is clear that *u* stands for Plural. Since *t* stands for 2nd person, 2pl—unsurprisingly—combines both *t* and *u*. Unsurprisingly too, 3pl involves *u* only. Under the assumption that *u* in *kt^{e}b-tu* and *k^{e}tb-u* occupy the same position, it can be safely induced that no phonological content is associated with 3rd person. This preliminary survey consequently yields the results in (69):

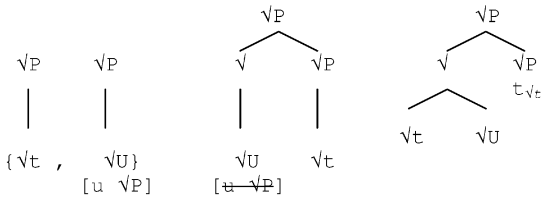
(69)

t	=	2
U	=	PL
[ø]	=	3
t+U	=	2pl
[ø]+U	=	3pl

What type of grammatical objects are the items in (69)? I propose that they are roots. The guiding line in this respect is the detection of an asymmetry between the items in (69): person exponents can appear on their own, that is without either Fem or PL; by contrast, Fem or PL can only graft onto person exponents. I submit that this differential behavior be interpreted as follows.

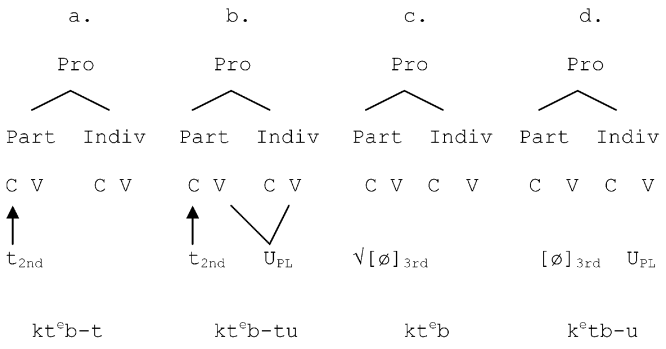
Person exponents, on account of their ability to stand on their own, project at the phrasal level, √P. Gender or Number exponents, because of their dependence on Person, carry an uninterpretable feature [u √P].[39] 2nd person Plural will serve as an example. The ingredients of the derivation appear in (70a). In (70b), √U merges with a suitable complement, thus ridding itself of its uninterpretable feature. Head Movement left adjoins √t to the superordinate head, thereby forming the complex head in (70c).

(70)



In the framework just defined, the full representations of the combinations of affixal ingredients in (69) minus root structure, are as in (71).

(71)



[39] Cf. Lowenstamm (2010) for elaboration of this idea, and De Belder (2011) for germane concerns.

In (71), the relevant roots, √t, √U, √ø, appear in what can be dubbed their canonical position, i.e. below their designated categories, Part and Indiv. A significant difference emerges between the respective structures of 2nd and 3rd persons. Their differential phonological behavior follows. In 2nd persons, *t* links up to the C position of Part, as indicated by the upward arrow in (71a,b). When the Plural exponent is present (71b), the stage is set for its deployment as a long vowel. But, second person *t* in effect bounding (to the left) the phonological domain of Pro, it follows that PL will never display any kind of allomorphy in the context of its association with 2pl. Indeed, the entire affixal object will always be realized in fully stable fashion in all contexts, viz. *tu*.

Things are entirely different when √U is associated to 3rd person. In such a context, the phonological vacuity of the third person opens a range of possibilities for the realization of √U. For the time being, we can note that the overall construal of the relationship between 3rd persons ingredients proposed here is identical to that put forth in Banksira (2000) and Lumsden & Halefom (2003) for Chaha and Classical Arabic, respectively. But, as we will next see, my explicit representation of the templatic space over which the affixal material deploys, leads up to a completely different view of 3rd person Feminine.

4.2.2. 2nd and 3rd Persons Feminine, kt^{e}bti and k^{e}tbAt

We now turn to the representation of Feminine. Feminine is evidenced in two guises: *kt^{e}b-ti* in association with 2nd person (*kt^{e}b-ti*) and *k^{e}tb-At* in the context of the 3rd person.

In light of the preceding discussion of the representation of 2nd person, the null hypothesis would seem to be that *ti* straightforwardly decomposes as in (72).

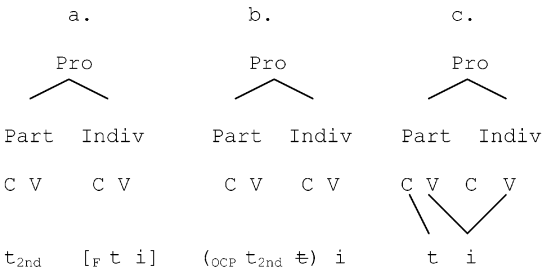
(72) [$_{2PERS}$ t][$_{FEM}$ i]

If so, the realization of Feminine will be contextually determined: *i* in the context of 2nd person and *At* in the context of 3rd person. There is nothing wrong with such an allomorphic relationship *per se*. On the other hand, the idea that the phi-feature system of Perfectives decomposes into the two subdomains shown in (71) leads to the expectation that the various roots which will flesh out Pro, can all be identified independently of each other. And indeed, 2nd person, 3rd person, and Plural have been shown to be amenable to an autonomous characterization. Accordingly, I will pursue the idea that Feminine too can be characterized in non-contextual fashion, i.e. without reference to its Person partner in Pro, be it 2 or 3. The proposal appears in (73).

(73) F = ti

I directly show how F combines with 2nd person.

(74)



In (74a), 2nd person and Feminine are represented each in its canonical position, t_{2nd} below Part and [$_F$ t i] below Indiv. The adjacency of identical consonants triggers an OCP effect whereby one of the two *t*'s is deleted.[40] The remaining material associates as indicated in (74c). Note that the phonological behavior of the affixal material under discussion in (74c) replicates that of *-tu* in (71b) in two ways. First, the consonant left-bounds the domain of Pro, thus guaranteeing the stability of the associated vocoïd material in all cases. The second observation to be made relates to the point dubbed Agenda 2 above: the fact that CA (katab)-*ti* did not yield MA (kt^{e}b)-*t* ceases to be mysterious, indeed follows from the templatic structure of Pro in MA Perfectives. This is but another instance of MA long vowels which owe nothing to CA. We now turn to 3rd Person singular.

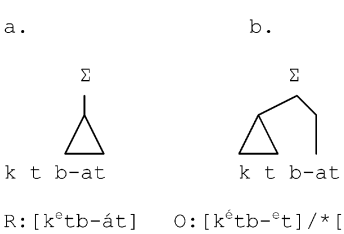
There are two ways of realizing the citation form of the 3rd person Feminine in Moroccan Arabic: *ketb-át* or *k^{é}tb-^{e}t*,[41] the former bears final stress while the latter has initial stress. The first variety characterizes a Western dialect spoken in the big cities of the Atlantic coast. The Eastern border of its territory lies somewhere between Meknes and Fes. Exactly, how far South it extends is not known to me. For short, I will refer to it as the Rabat dialect, henceforth R. To the best of my knowledge, the rest of the country, including the Northern cities of the Mediterranean coast (and most of Algeria, as well), utilizes the second form, *k^{é}tb-^{e}t*. For short, I will refer to that dialect as the Oujda dialect, henceforth O.

40) For convenience, the rightmost *t* in (74) is described as undergoing deletion. In reality, I know of no argument suggesting that the rightmost rather the leftmost *t* gets deleted.

41) In normal speech, the two syllables of *k^{é}tb-^{e}t* do not dramatically differ in intensity or pitch (in sharp contrast with the overwhelming stress of *k^{e}tb-át*). But stressing the first syllable of *k^{é}tb-^{e}t*, if not obligatory, remains possible, whereas stressing the second syllable directly leads to ungrammaticality.

I submit that the difference between *k^{e}tb-át* and *k^{é}tb-^{e}t* is due to the placement of stress. That is, both share the same underlying representation, but stresslessness does not license the templatic configuration necessary for the deployment of the long suffixal vowel. The proposal will not be further elaborated here beyond a reference to an old idea put forth in Hayes (1981) whereby the recessive part of a stress tree may not branch. This is sketched out in (75) where stress licenses *a* in (75a), but not in (75b).

(75)



The argument for crediting the difference between *k^{e}tb-át* and *k^{é}tb-^{e}t* to stress placement comes from the fact that the initial stress of *k^{é}tb-^{e}t* can be forced to move rightward. The relevant context is the suffixation of a pronominal object. In that case, *a* is licensed and both dialects converge in displaying *a*, as shown in (76).[42]

(76)

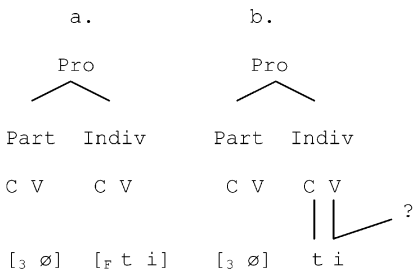
	a.	b.
	'she wrote'	'she wrote it'
O	k^{é}tb-^{e}t	k^{e}tb-át+u
R	k^{e}tb-át	k^{e}tb-át+u

On the basis of this clarification, the representation of the 3rd person Feminine can now be addressed. If the apparatus developed so far is to be kept constant, the object under discussion must involve the ingredients in (77), and their canonical arrangement must be as in (78a).

(77) 3 = ø
F = ti

[42] Cf. Grand'Henry (1972) for a similar realization in Cherchell (Algeria), but Kouloughli (1978) for *k^{e}tb^{e}ttu* 'she wrote it' in the Sra dialect spoken to the north of Constantine (Algeria).

(78)

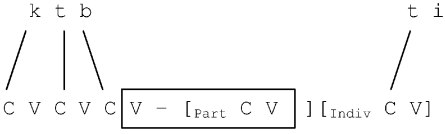


This proposal calls for one comment and raises two questions. First, the proposed makeup of Feminine is *ti*. But the *i* never surfaces. For the *i* never to surface, it is imperative that *ti* be realized in its canonical position. Indeed, if *ti* is realized as shown in (78b), the available templatic support is insufficient for the expression of its vocoïd component as a vowel. In consequence, *t* only will be realized in conformity with the facts.

The situation at this point involves a result and a problem. The result, under the assumptions that a) there is a unique representation for F, and b) it is realized in its canonical position, is its successful materialization, i.e. *t*, not *ti*. The problem is the fact that the relevant form surfaces as *k^{e}tb<u>a</u>t*, not *kt^{e}bt*. Where does the *<u>a</u>* come from?

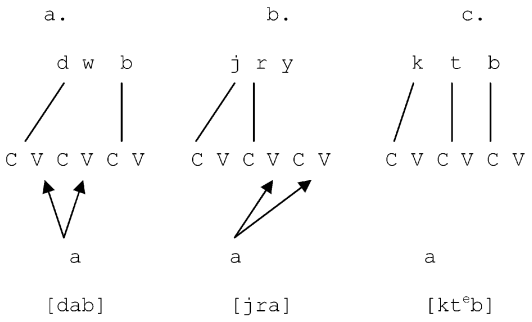
In order to gain insight into the source of *a*, I suggest that the configuration in (78b) be re-examined in the whole *stem+Pro* context, that is the extended template, (79).

(79)



It now clearly appears that the extended template, bounded to its right by the Feminine marker, involves the nasty gap boxed in (79). Before activating a last resort strategy such as deletion of the vacant templatic portion, an alternative is available. Recall Kabbaj's contention that the representation of Perfectives includes an underlying *a*. This is repeated in (80) for convenience.

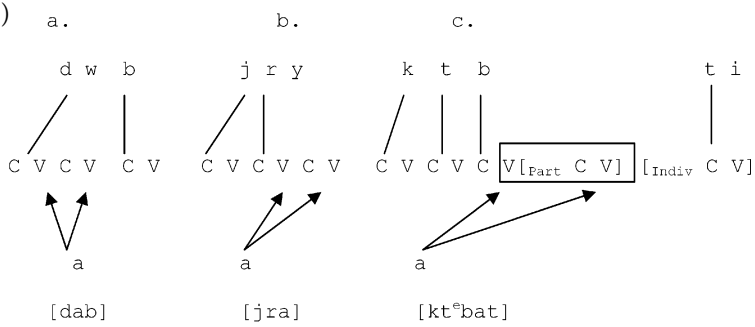
(80)



The strong point of Kabbaj's proposal was the account it affords of the peculiar *a*-vocalization of verbs from medial-weak (80a) and final-weak roots (80b). Its weak point was, of course the fact that weak roots are a minority. As such, a question was begged: how plausible is a proposal that exclusively handles special cases (however successfully), but remains inconsequential most of the time? This is most sharply illustrated in (80c): what would cause speakers to suppose that the representation of *kt^{e}b* involves an a?

In fact, the evidence is plentiful. Moreover, it is consistent with the assumptions that led to the proposed architecture of 3rd persons. The reader will recall how I insisted on the vacuity of the 'Part' portion of the extended template in the case of 3rd persons, thereby raising the question of the source of the *a* which occupies that site in *k^{e}tbat*. Kabbaj's proposal answers two questions, the one his own proposal faces with respect to the need for more evidence for *a*; as well, it answers the question faced by my own proposal in regard of the source of the *a* of *k^{e}tbat*: I submit that the *a* Kabbaj credits for the vocalization of *dab* and *jra* is the same as that of the Feminine affix in *k^{e}tbat*. This is shown in (81), where the orphan *a* in (80c) is shown to materialize in (81c). The reader is invited to note that the deployment of *a* in (81c) is consistent with my hypothesis about the representation of long vowels. As such it, once more, vindicates Arbaoui's (2002) view of the syllable structure of Moroccan Arabic.

(81)



Perhaps, the most effective way of highlighting the predictions made by the schemed proposed in (81), is to examine them in the context of a brief critical discussion of Heath's view on verbs from weak roots.

Heath (1987) contends that verbs such as *dab* 'he melted', *faq* 'he woke up' constitute a special class on account of the apparent syllabic profile of their stems. The claim made here, on the other hand, is that such verbs require no special treatment, just an understanding of the language's syllable structure, the behavior of its glides, and a proper construal of its peripheral vowels. Heath's contention rests on the outstanding surface structure of the stems of verbs from weak-medial roots, supposedly CVC. Suppose for a moment that Heath is correct and that the shape of the stem truly motivates the recognition of a special derivational class of verbs. What is expected from the associated inflectional material? Should it be affected by its association to that class? Should it be oblivious to it? Surely, if the grammar must record outstanding behavior from the part of inflection precisely when it attaches to a special class of stems, a generalization has been missed.

By contrast, the view put forth here boils down to the simple generalization in (82).

(82) Stem-a and 3rd Feminine-a are in complementary distribution: they are one and the same thing

It follows that if a verb such as *baʕ* 'he sold', exhibits an *a* in its stem, the corresponding Feminine, 'she sold' will be incapable of including one. This is verified in (83b,c), with *kt^eb* as a control (80a). All examples in (83) involve a 3rd person masculine pronominal direct object, *u*. For clarity, it is preceded by + so as to distinguish, say *šaf-u* 'they wrote' from *šaf+u* 'he wrote it'.

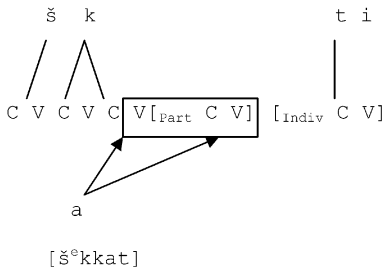
(83)		a.	b.	c.
		√ktb	√byʕ	√šwf
	3m.sg.	kᵉtb+u 'he wrote it'	baʕ+u 'he sold it'	šaf+u 'he looked at him'
	3f.sg	kᵉtb-at+u 'she wrote it'	baʕ-t+u/baʕ-*at+u 'she sold it'	šaf-t+u/šaf-*at+u 'she looked at him'

Conversely, if a verb derived from one of the roots in (83), say a causative, specifies an arrangement of root consonants such that the realization of *a* in the stem is impossible for lack of space, it follows from (82) that *a* cannot fail to reappear in the affix of the corresponding Feminine (in a fashion exactly paralleling the Feminine of *kᵉttᵉb* 'he caused someone to write'). This too is verified in (84), again with *ktᵉb* as a control.

(84)		a.	b.	c.
		√ktb 'write'	√byʕ	'sell' √šwf 'look'
	3m.sg.	kᵉttᵉb+u 'he made him write'	bᵉyyʕ+u 'he made him sell'	šᵉwwf+u 'he made him look'
	3f.sg	kᵉttᵉb-at+u 'she made him write'	bᵉyyʕ-at+u 'she made him sell'	šᵉwwf-at+u 'she made him look'
			bᵉyyᵉʕ-*t+u	šᵉwwᵉf-*t+u

For the sake of further documenting the exceptionless character of the generalization in (82), I adduce evidence from an additional class of verbs, deaf verbs. Deaf verbs, like verbs from sane roots, thwart the expression of their underlying *a*, though under a different arrangement of their consonantal equipment. Again, the absence of *a* in the stem is matched by its presence in the affix, as shown in (85) and exemplified in (86) with a plain verb and a causative.

(85)



(86) a. 3li šᵉkk f-karim 'Ali doubted Karim'
b. mlika šᵉkk-at f-karim 'Malika doubted Karim'
c. 3li šᵉkkᵉk n-nas f karim 'Ali caused people to doubt Karim'
d. mlika šᵉkkᵉk-at n-nas f-karim 'Malika caused people to doubt Karim'

4.2.3. Third Person singular ktᵉb

The crucial factors conditioning the behavior of 3rd Person Feminine were shown to be a) the underlying vocalic equipment of the stem and the motivation for its expression, viz. the pressure to identify the templatic extension as defined and bounded by the presence of the Feminine marker. The first factor is certainly present in the case of the Masculine Singular, but the absence of any material bounding the template extension does not trigger spreading. That is, 3rd Person Masculine certainly had the potential for surfacing as *kᵉtba*, minus the motivation.[43]

Semitic languages mark no Gender distinction for first persons, and Moroccan Arabic is no exception. Here, we reach the point where the incremental system identified for 2nd and 3rd persons displays its limits. In the next section, we move directly to a discussion of how the proposals so far put forth fare in the context of their confrontation with AGR. This hardly means that we are giving up on understanding the makeup of 1st persons and how they function. On the contrary, as we will see, the agreement mechanism sheds the necessary light on 1st persons.

43) Thanks to Cedric Patin for pointing this out. Cf. Fathi (in preparation) for an account of the Egyptian Arabic strategy under similar circumstances.

4.2.4. Affixes and AGR

This final subsection deals with the interaction between AGR and inflection. The ingredients of the discussion are a) the list of feature configurations supplied by the verb's subject and transmitted by AGR for expression by the inflectional system (87), b) the list of imperfectly matching tools available to Moroccan Arabic for that purpose, presented here as they result from the analyses of the previous sections (88), c) the universal format in which the challenge is offered to every individual grammar (89).

The first list is the set of all possible combinations of Person, Number and Gender, taken to involve in the case at hand 1, 2, 3, PL, and Fem, where 1, 2 and 3 are abbreviations for the relevant bundles of appropriate person features.

(87)

a.	[1]	1st
b.	[1, F]	1st Feminine
c.	[1, PL]	1st Plural
d.	[1, F, PL]	1st Feminine Plural
e.	[2]	2nd
f.	[2, F]	2nd Feminine
g.	[2, PL]	2nd Plural
h.	[2, F, PL]	2nd Feminine Plural
i.	[3]	3rd
j.	[3, F]	3rd Feminine
k.	[3, PL]	3rd Plural
l.	[3, F, PL]	3rd Feminine Plural

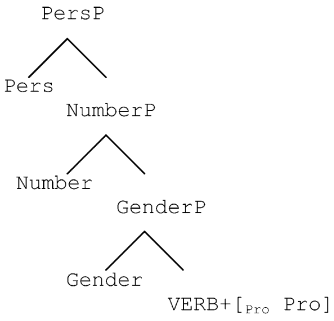
The second list, the means at the disposal of Moroccan Arabic for the expression of Number and Gender distinctions appears in (88a) along with a recapitulative of their structural position in (88b) and, for easier identification, the full verbal paradigm itself yet again in (88c).

(88)

a.	b.	c.
[1]	$[_{Pro}\ \sqrt{t}]$	kt^{e}bt
[2]	$[_{Pro}\ [_{Part}\ \sqrt{t}][_{Indiv}]]$	kt^{e}bt
[2, F]	$[_{Pro}\ [_{Part}\ \sqrt{t}][_{Indiv}\ \sqrt{ti}]]$	kt^{e}bti
[3]	$[_{Pro}\ [_{Part}\ \sqrt{ø}][_{Indiv}]]$	kt^{e}b
[3, F]	$[_{Pro}\ [_{Part}\ \sqrt{ø}][_{Indiv}\ \sqrt{ti}]]$	k^{e}tbat
[1, PL]	$[_{Pro}\ [_{Part/Indiv}\ \sqrt{na}]]$	kt^{e}bna
[2, PL]	$[_{Pro}\ [_{Part}\ \sqrt{t}][_{Indiv}\ \sqrt{U}]]$	kt^{e}btu
[3, PL]	$[_{Pro}\ [_{Part}\ \sqrt{ø}][_{Indiv}\ \sqrt{U}]]$	k^{e}tbu

Finally, the universal hierarchical order of Person, Number and Gender is recalled in (89).

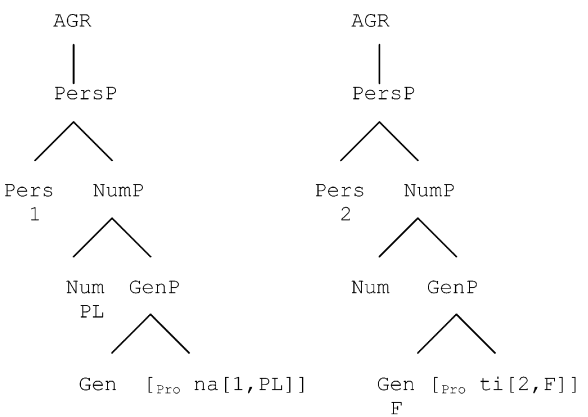
(89)



Consider now the two matches in (90) where 1st Person Plural *kt^{e}bna* (90a) and 2nd Person Feminine Singular *kt^{e}bti* (90b) approach checking against AGR configurations specifying [1, PL] and [2, F], respectively. No conflict arises and both candidates will be successfully validated. The diagrams below merely represent the inflectional items under discussion, not the verbal stem to which they are attached. Yet, while *na* or *ti* only appear in (a), the text will continue to consistently refer to the relevant objects as *kt^{e}bna* and *kt^{e}bti*, resp.

(90)

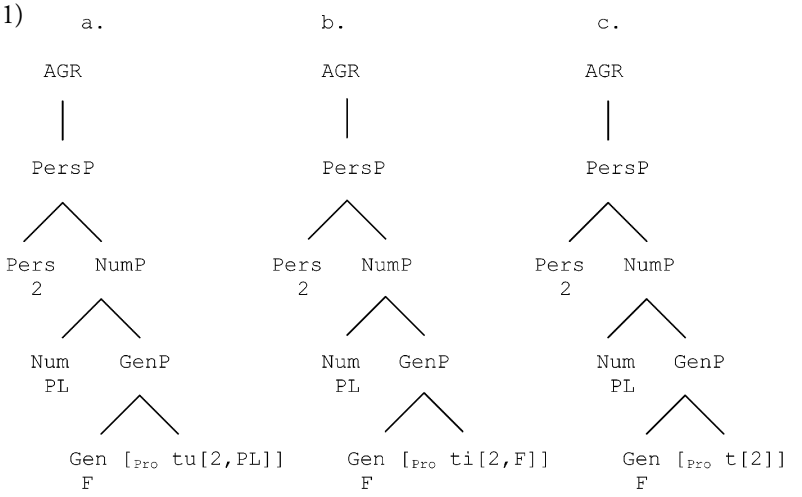
a.



But now, consider what happens when the subject of a verb causes AGR to be specified as [2, F, PL]. The Moroccan Arabic Perfective paradigm lacks a form exactly corresponding to that configuration, and the 2nd person Plural *kt^{e}btu* unmarked for Gender is used whether the subject be Feminine or not.

The candidacy of genderless *kt^{e}btu* to validation by an AGR configuration positively stipulating F is represented in (91a). What is the status of this partial match which, imperfect as it is, will nevertheless have to be eventually validated? A possible line of argumentation might run as follows: *kt^{e}btu* merely *lacks* the Feminine specification of the particular AGR structure against which it is matched; but, it will suffice that the features it does bear—PL and 2 in this case—correspond to those of AGR. In other words, a feature specified by AGR but not borne by the candidate can be ignored. Unfortunately, this 'liberal' approach immediately runs into serious problems. Indeed, by the same reasoning, *kt^{e}bti* 'you (fem.) wrote' being unspecified for Number, will be seen as not conflicting with the PL specification of the same AGR structure (91b). And, if further evidence is needed that this approach is hopeless, *kt^{e}bt* 'you (ms.) wrote' being unspecified for both F and PL will bother with neither, directly check its person feature, and eventually pass the test (91c), undesirably but inevitably. Yet, *kt^{e}btu*—neither *kt^{e}bti* nor *kt^{e}bt*—is the correct inflection, given a Feminine Plural subject.

(91)



There were two reasons for examining this unsuccessful first pass. The first such reason is that we can now more clearly see where the problem lies. *kt^{e}btu* and *kt^{e}bti* are equally wanting with respect to the specifications stipulated by AGR in the sense that both are unspecified for one of the required properties. But the system is incapable of distinguishing between the fact that *kt^{e}btu*'s specific deficiency in the Gender department constitutes no handicap in the relevant context whereas *kt^{e}bti*'s deficiency for Number should lead to its disqualification in the same context. Of course, the crucial clue is (91c): it

is enough for a third party such as *kt^{e}bt* to be *even less* specified than either the legitimate contender *kt^{e}btu* or the impostor *kt^{e}bti*, to put the former in a position to threaten the other two. Clearly, more precise though not necessarily richer information than was available in (91) is needed.

The other reason for considering the dead end in (91) is the fact that it sheds a light on the context in which the erroneous perception arises that competition might be involved, viz. loose characterization of the ingredients involved.

I submit that the combinations represented in privative terms in (87) are actually represented in equipollent fashion on AGR, as shown below in (92), where Person bundles have merely been abbreviated as 3, 2, and 1.

(92)
a. [$_{AGR}$ [[[$_{Person}$ 1][$_{Number}$ –PL]][$_{Gender}$ –F]]]
b. [$_{AGR}$ [[[$_{Person}$ 1][$_{Number}$ –PL]][$_{Gender}$ +F]]]
c. [$_{AGR}$ [[[$_{Person}$ 1][$_{Number}$ +PL]][$_{Gender}$ –F]]]
d. [$_{AGR}$ [[[$_{Person}$ 1][$_{Number}$ +PL]][$_{Gender}$ +F]]]
e. [$_{AGR}$ [[[$_{Person}$ 2][$_{Number}$ –PL]][$_{Gender}$ –F]]]
f. [$_{AGR}$ [[[$_{Person}$ 2][$_{Number}$ –PL]][$_{Gender}$ +F]]]
g. [$_{AGR}$ [[[$_{Person}$ 2][$_{Number}$ +PL]][$_{Gender}$ –F]]]
h. [$_{AGR}$ [[[$_{Person}$ 2][$_{Number}$ +PL]][$_{Gender}$ +F]]]
i. [$_{AGR}$ [[[$_{Person}$ 3][$_{Number}$ –PL]][$_{Gender}$ –F]]]
j. [$_{AGR}$ [[[$_{Person}$ 3][$_{Number}$ –PL]][$_{Gender}$ +F]]]
k. [$_{AGR}$ [[[$_{Person}$ 3][$_{Number}$ +PL]][$_{Gender}$ –F]]]
l. [$_{AGR}$ [[[$_{Person}$ 3][$_{Number}$ +PL]][$_{Gender}$ +F]]]

As well, I suggest that the features of the pieces of Moroccan Arabic inflection are converted from privative to equipollent *at the point in derivation where the verb approaches its confrontation with AGR*. The reader can verify that every PL or F feature present in Pro in (88) is represented with a positive value in (93), while every such feature absent in the matrices of (88) is represented with a negative value below. Note the absence of First Person Singular in (93), soon to be returned to.

(93)

a.	b.	c.
[2]	[$_{Pro}$ [$_{Part}$ 2][$_{Indiv}$ –PL, –F]]	kt^{e}bt
[2, F]	[$_{Pro}$ [$_{Part}$ 2][$_{Indiv}$ –PL, +F]]	kt^{e}bti
[3]	[$_{Pro}$ [$_{Part}$ 3][$_{Indiv}$ –PL, –F]]	kt^{e}b
[3, F]	[$_{Pro}$ [$_{Part}$ 3][$_{Indiv}$ –PL, +F]]	k^{e}tbat
[1, PL]	[$_{Pro}$ [$_{Part/Indiv}$ 1, +PL, –f]]	kt^{e}bna
[2, PL]	[$_{Pro}$ [$_{Part}$ 2][$_{Indiv}$ +PL, –f]]	kt^{e}btu
[3, PL]	[$_{Pro}$ [$_{Part}$ 3][$_{Indiv}$ +PL, –f]]	k^{e}tbu

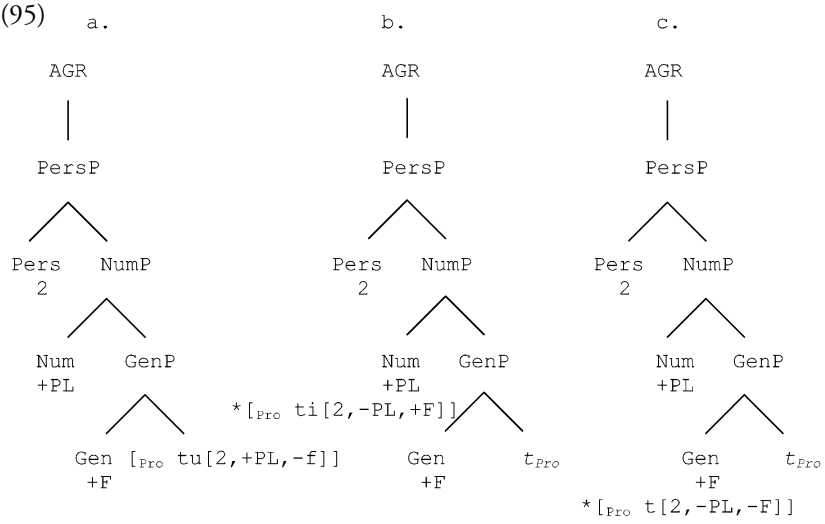
Moreover, I submit that the redundancy proviso in (94) applies across the board in Pro.

(94) *Specification Numbing*

In Moroccan Arabic Pro, +PL does not license F

For easier identification, unlicensed F's are noted in lower case ±*f* in (93) and henceforth. (94) correctly represents the language particular fact that Moroccan Arabic—as opposed to Classical Arabic or Chaha—makes no Gender distinction in Plural verbal forms. As such, it is descriptively adequate no more no less (though not merely observationally adequate, as we will soon see with a brief discussion of Hebrew). We can now return to how *kt^{e}btu*, *kt^{e}bti*, and *kt^{e}bt* fare when confronted to an AGR reflecting the properties of a 2nd Person Feminine Plural subject.

(95)



kt^{e}btu (95a) is intrinsically non-Feminine, a specification unlicensed in a Plural context, hence *-f*. Accordingly, *kt^{e}btu* will directly move up to Num, then Pers, successfully undergoing validation both times. By contrast, while *kt^{e}bti* will successfully check its licensed Gender specification, it will fail in the face of its incompatible value for Number (95b). *kt^{e}bt* (95c) will cause the derivation to crash as early as Gender on account of its contrary albeit licensed, specification.

For the sake of completeness, I indicate in (96) the AGR configurations which validate *kt^{e}bti*, *kt^{e}bt*, and *kt^{e}btu*. The reader can verify the absence of any kind of ambiguity.

(96)	a.	b.	c.
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ -PL]][_{Gender}\ -F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ -PL, -F]]$	kt^{e}bt
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ -PL]][_{Gender}\ +F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ -PL, -F]]$	NO
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ +PL]][_{Gender}\ -F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ -PL, -F]]$	NO
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ +PL]][_{Gender}\ +F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ -PL, -F]]$	NO
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ -PL]][_{Gender}\ -F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ -PL, +F]]$	NO
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ -PL]][_{Gender}\ +F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ -PL, +F]]$	kt^{e}bti
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ +PL]][_{Gender}\ -F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ -PL, +F]]$	NO
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ +PL]][_{Gender}\ +F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ -PL, +F]]$	NO
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ -PL]][_{Gender}\ -F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ +PL, -f]]$	kt^{e}btu
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ -PL]][_{Gender}\ +F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ +PL, -f]]$	kt^{e}btu
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ +PL]][_{Gender}\ -F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ +PL, -f]]]$	NO
	$[_{AGR}\ [[[_{Person}\ 2][_{Number}\ +PL]][_{Gender}\ +F]]]]$	$[_{Pro}\ [_{Part}\ 2][_{Indiv}\ +PL, -f]]$	NO

Of course, these results extend painlessly to 3rd persons, masculine, Feminine or Plural. As a preliminary to a discussion of how 1st persons fare in their confrontation with AGR configurations freely combining PL and F, I would like to provide perspective on the device introduced in (94) which in effect 'numbs' Gender specifications in a PL context.

As pointed out earlier, Numbing is only meant to capture a language particular fact. Indeed, not all languages behave in similar fashion with respect to whether or not +PL leaves room for the expression of F *in 2nd and 3rd persons*. Thus, both Classical Arabic and Chaha license Gender in a +PL context, but Moroccan Arabic does not, as we know. In comparison, Hebrew appears to be an intermediate system in that respect, as +PL licenses F in 2nd persons though not in 3rd persons, (97).[44]

(97)	a. Standard Arabic	b. Chaha	c. Moroccan Arabic	d. Hebrew
1sg.	katab-tu	sänäf-x^{w}	kt^{e}b-t	katav-ti
2m.sg.	katab-ta	sänäf-xä	kt^{e}b-t	katav-ta
2f.sg.	katab-ti	sänäf-x^{y}	kt^{e}b-ti	katav-t
3m.sg.	katab-a	sänäf-ä	kt^{e}b	katav-ø
3f.sg.	katab-at	sänäf-ät^{y}	kt^{e}b-at	katv-a

[44] According to Noam Faust (p.c.) a regularization seems to be under way in colloquial Modern Hebrew whereby the licensing of Gender in 2nd Person Plural shows signs of weakening.

1pl.	katab-nā	sänäf-nä	kt^{e}b-na	katav-nu
2m.pl.	katab-tum(ū)	sänäf-xu	kt^{e}b-tu	katav-tem
2f.pl.	katab-tunna	sänäf-x^{e}ma	_____	katav-ten
3m.pl.	katab-ū	sänäf-o	k^{e}tb-u	katv-u
3f.pl.	katab-na	sänäf-äma	_____	_____

Of interest is the form taken by the Hebrew restriction. It appears in (98b), along with the corresponding restrictions for the other languages in (98).

(98) Licensing of F rejected by

a. Moroccan Arabic: +PL
b. Hebrew: +PL except for 2nd person
c. Classical Arabic, Chaha: +PL except for 2nd and 3rd person

A regularity clearly pervades the restrictions at work here: in the most radical case (Moroccan Arabic), the value of PL determines whether Gender is licensed or not. Should the requirement be somewhat relaxed as in the case of Hebrew, or even more liberally so as in Classical Arabic or Chaha, the context is provided by Person. Thus, a hierarchy controls the distribution under discussion, viz. Pers > Number > Gender. While that hierarchy is strongly reminiscent of the structure posited for AGR and strong pronouns (Harley & Ritter 2002), the point I want to make here is a more narrow one: the use made of (94) with respect to numbing Gender in Moroccan Arabic +PL inflection is no *ad hoc* device. Rather, it is a natural segment of a universal generalization. We can now turn to 1st persons.

4.2.5. First Persons, kt^{e}b-t and kt^{e}b-na

As a starting point, consider a sentence such as (99).

(99) Drew drew Drew

There is enough information in an expression like (99) for anyone to understand that an event took place (as opposed to being in progress) whereby someone named Drew drew a picture. Further, while it is not out of the question that Drew drew a picture of himself, the preferred reading will be that Drew drew a picture of someone else coincidentally named Drew, too. The striking fact is that (99) can be computed as if homophony was not an obstacle. Now, *kt^{e}b-t* 'I wrote' and *kt^{e}b-t* 'you (ms.) wrote' are perfect homophones even-though they carry radically distinct information. I take this to mean that they must be significantly different objects in most respects other than phonetic, or

the homophony would not be sustainable. They are indeed extremely different, as I proceed to show.

While discussing 2nd and 3rd persons, we established earlier that roots √U (Plural) and √ti (Feminine) freely combine with √t '2' and √ø '3', thus deriving *kt^{e}b-ti* 'you (fem.) wrote' *kt^{e}b-tu* 'you (pl.) wrote', *k^{e}tb-At* 'she wrote' and *k^{e}tb-u* 'they wrote'. Put differently, *kt^{e}b-t* 'you (ms.) wrote' was shown to be a subset of *kt^{e}b-ti* 'you (fem.) wrote' and *kt^{e}b-tu* 'you (pl.) wrote', and *kt^{e}b* 'he wrote' a subset of *k^{e}tb-At* 'she wrote' and *k^{e}tb-u* 'they wrote'.

Because *kt^{e}b-t* 'I wrote' is phonetically identical to 2nd person non-Feminine singular *kt^{e}b-t* 'you (ms.) wrote' and both are similarly unmarked for Gender and Number, it could be expected, everything being equal, that *-t* 'I' will lend itself to the same process of incrementation whereby Feminines and Plurals can be built. But instead of the expected forms (100b), there is simply no Feminine counterpart to *kt^{e}b-t* on the one hand, and on the other hand while a Plural version *kt^{e}b-na* exists, it is not formed incrementally on the basis of the unmarked form, as shown in (100c).

(100)	a.	b.	c.	d.
	'Masculine'	kt^{e}b-[$_{\text{Part}}$ t][$_{\text{Indiv}}$]	kt^{e}b-t	kt^{e}b-t
	Feminine	kt^{e}b-[$_{\text{Part}}$ t][$_{\text{Indiv}}$ F]	*kt^{e}b-ti	—
	Plural	kt^{e}b-[$_{\text{Part}}$ t][$_{\text{Indiv}}$ PL]	*kt^{e}b-tu	kt^{e}b-na

Given the set of assumptions made so far, the conclusion is inescapable: segment [t] at the end of *kt^{e}b-t* is not a person root in the sense in which √ø and √t were said to serve, i.e. a root bearing specific person features and located in its designated site, as pictured in (101). And yet, Moroccan Arabic does have a root endowed with all the necessary properties to occupy the 1st person slot in the paradigm in (101). We will soon see what it is and why it is barred from appearing in the Perfective paradigm.

(101)	3rd person	[$_{\text{Pro}}$ [$_{\text{Part}}$ √ø] …
		[3]
	2nd person	[$_{\text{Pro}}$ [$_{\text{Part}}$ √t] …
		[2]

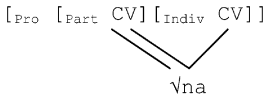
Note that under the view just put forth and the proposed merger of roots leading to the formation of subject agreement markers, it follows that the hypothetical incrementation contemplated in (100b) will be out of the question. Indeed, under the selection mechanism whereby roots √U (Plural) and √ti (Feminine)

must unburden themselves of their uninterpretable feature by selecting a Person root, no merger can possibly take place in the case at hand if the natural selectee remains unavailable.

We now turn to 1st person Plural with a parallel question concerning its relationship to the inflectional template. I submit that 1st person Plural *na* is a *porte-manteau* root, the exponent of two distinct linguistic objects.

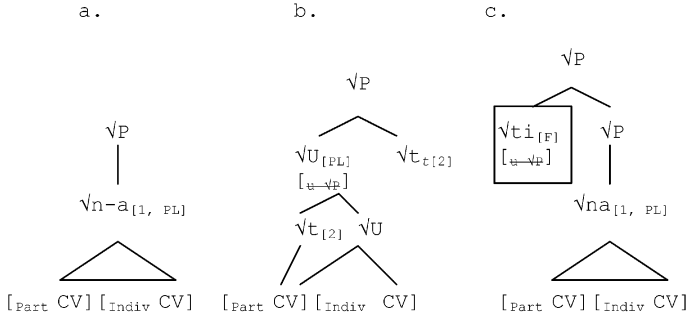
Indeed, *na* satisfies two conditions for being recognized as such, one positive, the other negative. The first condition derives from the templatic identity of the two objects of which *na* serves as the exponent: templatic satisfaction of the space provided by Pro must be met. Such is the case, as shown in (102).

(102)



The negative condition in the case at hand is that *na*—a Plural—not be analyzable in such way that analysis will return a basic Plural ingredient. The condition is met here too, in the sense that √U is evidently not involved. The difference between a *porte-manteau* such as *na* and a complex head such as 2nd Plural *-t+u* is given below in (103). Note that *-na* being a self-sufficient object, it must be construed as projecting to the phrasal level. As such, it could fall prey to selection by bound roots, either Feminine √ti or Plural √U. Yet nothing of the kind takes place. As it turns out, no special proviso is required to block such mergers, as the derived object in each case would exceed the capacity of the affixal portion of the extended template. Indeed, there would be no room in the template for the accomodation of the putative affixal material encased in the boxed portion of (103c), which illustrates an attempt at forming a Feminine First Person Plural.

(103)



While it is clear that the *a* of na is not the standard vehicle of Pluralness for verbal affixes, what can we say about its *n*? I submit that *n* is the true 1st Person root, viz. √n. Consider in this respect the data in (104).

(104)

	a. Imperfective (expected)	b. Perfective	c. Perfective (actual)	d. Independent Pronouns
1sg.	n̲ᵉ-ktᵉb	ktᵉb-n	ktᵉb-⊡t	ʔan̲a
2m.sg.	tᵉ-ktᵉb	ktᵉb-t		nta
2f.sg.	t-kᵉtb-i	ktᵉb-t-i		nti
3m.sg.	yᵉ-ktᵉb	ktᵉb-ø		huwa
3f.sg.	tᵉ-ktᵉb	kᵉtb(a)t		hiya
1pl.	n̲-kᵉtb-u	ktᵉb-n-u	ktᵉb-n̲a	ħn̲a
2pl.	t-kᵉtb-u	ktᵉb-t-u		ntuma
3pl.	y-kᵉtb-u	ktᵉb-ø-u		huma

A very simple generalization relates the Perfective and Imperfective paradigms: Aff_1+stem+Aff_2 for the Imperfective and stem+Aff_1+Aff_2 for the Perfective. Under the assumption that the ø affix in the Perfective is realized epenthetically when prefixed, the generalization covers the relationship between the paradigms, *save for 1st persons*. And in spite of that, *n* appears in three of the four expected places (underscored in (104a) and (104c)). The comparison of the two verbal paradigms with the paradigm of independent pronouns further corroborates the correctness of the claim that √n is the rightful exponent of 1st person and that -t (boxed in (104c)) is the odd man out.[45]

Accordingly, I proceed with the position that √na is a *porte-manteau* bearing features [1, PL] and that √n—the legitimate exponent of 1st person—bears [1].

Both will now be run through agreement. When privative specifications are converted to equipollent, *ktᵉbna* becomes [1, +PL, –F]. But, being +PL, its Gender feature is unlicensed and its ultimate characterization is [1, +PL, –f]. As such, it will be validated in the environments indicated in (105), with the gamut of possible AGR configurations involving 1, PL and F in (105a) against the features specifications of *ktᵉbna* in (105b). Unsurprisingly and for the same reasons as *kᵉtbu* and *ktᵉbtu*, *ktᵉbna* being +PL, is the correct form whether its subject be masculine or Feminine. Note that the *porte-manteau* identity of *√na*—a point soon to become crucial—has been represented in

45) Cf. Lumsden & Halefom (2003) for insightful discussion of the structure of strong pronouns in Classical Arabic.

(105) by means of the collapsing of the two internal domains of Pro in (b), Part and Indiv.

(105)	a.	b.	c.
	$[_{AGR}\ [[[_{Person}\ 1][_{Number}\ -PL]][_{Gender}\ -F]]]]$	$[_{Pro}\ [_{Part/Indiv}\ 1, +PL, -f]]$	NO
	$[_{AGR}\ [[[_{Person}\ 1][_{Number}\ -PL]][_{Gender}\ +F]]]]$	$[_{Pro}\ [_{Part/Indiv}\ 1, +PL, -f]]$	NO
	$[_{AGR}\ [[[_{Person}\ 1][_{Number}\ +PL]][_{Gender}\ -F]]]]$	$[_{Pro}\ [_{Part/Indiv}\ 1, +PL, -f]]$	kt^{e}bna
	$[_{AGR}\ [[[_{Person}\ 1][_{Number}\ +PL]][_{Gender}\ +F]]]]$	$[_{Pro}\ [_{Part/Indiv}\ 1, +PL, -f]]$	kt^{e}bna

Evidently, *kt^{e}bna* does extremely well with agreement, and we can now turn to 1st Person singular. But, since I assume that √n is the only legitimate exponent of 1st person, virtual (indeed unattested) **k^{e}tb^{e}n* will be run through agreement. By hypothesis, it carries a single feature specification, [1]. Changing this to equipollent will yield [1, –PL, –F]. In the context of this equipollent matrix, F is fully licensed given the negative value of PL. The unfortunate but inevitable result is that **k^{e}tb^{e}n* will cause the derivation to crash when faced with the AGR configuration resulting from the presence of a Feminine subject, as shown in the 2nd row in (106).

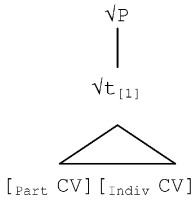
(106)			
	$[_{AGR}\ [[[_{Person}\ 1][_{Number}\ -PL]][_{Gender}\ -F]]]]$	$[_{Pro}\ 1, -PL, -F]$	k^{e}tb^{e}n
	$[_{AGR}\ [[[_{Person}\ 1][_{Number}\ -PL]][_{Gender}\ +F]]]]$	$[_{Pro}\ 1, -PL, -F]$	*NO
	$[_{AGR}\ [[[_{Person}\ 1][_{Number}\ +PL]][_{Gender}\ -F]]]]$	$[_{Pro}\ 1, -PL, -F]$	NO
	$[_{AGR}\ [[[_{Person}\ 1][_{Number}\ +PL]][_{Gender}\ +F]]]]$	$[_{Pro}\ 1, -PL, -F]$	NO

Clearly, the problem with **k^{e}tb^{e}n* is not one of intrinsic ill-formedness. Indeed, **k^{e}tb^{e}n* is perfectly adequate for 1st Person Masculine Singular agreement. Its problem is that it only discharges one half of its brief: it is unsuitable for 1st Person Feminine Singular agreement. The fact that it must be banned from the paradigm is, I submit, a facet of the generalization in (107).

(107) If the inflectional system of a language combines Gender and Number, and Gender is subject to licensing by Number, all licensed combinations must manifest a Gender difference.

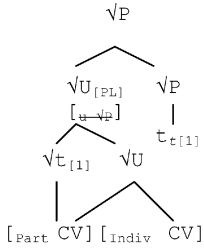
It follows from (107) that the inadequate candidate will have to be substituted by an object entirely foreign to the rest of the system, something other than a combination. What is 1st Person Singular -t? It is an unlikely *portemanteau* because, unlike *-na*, it is the exponent of one property only, 1st Person (108).

(108)



The second reason has to do with its relationship to templatic structure: even if the preceding objection was ignored and *t* qualified as *porte-manteau* after all, its phonological makeup is such that, if it was selected by Feminine or Plural root √ti or √U, there would be ample room for the realization of the entirety of the root material involved, as shown in (109) with putative **kt*^{e}*b-tu* 'we wrote'.

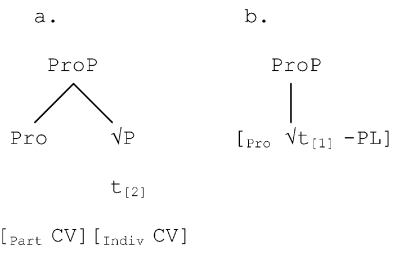
(109)



Instead, I will offer a view of the 1st Person affix *-t* which covers its non-participation in the incremental mechanism: 1st Person *-t* is itself a Pro, as shown in (110b) along with 2nd person -t (110a) for comparison. As such, 1st Person *-t* can not be targeted for selection by √ti or √U. Moreover, it carries an intrinsic [–PL] feature, which shields it against the mechanism changing all features from privative to equipollent, crucially against the insertion of a valued Gender feature.[46]

[46] Because of the Gender syncretism it consistently displays, the first person singular of all Semitic languages falls in the scope of this proposal. I do not expect that all Semitic languages will reproduce the Moroccan Arabic evidence, or even that the evidence will be morphological in nature. I only mean to say that I take responsibility for the claim.

(110)



When confronted to AGR, kt^{e}bt performs as indicated in (111).

(111)

[AGR [[[Person 1][Number –PL]][Gender –F]]]	[Pro 1, –PL]	k^{e}tbt
[AGR [[[Person 1][Number –PL]][Gender +F]]]	[Pro 1, –PL]	k^{e}tbt
[AGR [[[Person 1][Number +PL]][Gender –F]]]	[Pro 1, –PL]	NO
[AGR [[[Person 1][Number +PL]][Gender +F]]]	[Pro 1, –PL]	NO

5. Summary and Concluding Remarks

The argumentation developed in this paper has followed a sinuous path. First, I have argued that the realizational scenario in Halle (2000) is inadequate, my main objection being that a) inflection must be decomposed into ingredients, b) the order of the ingredients does not match the hierarchical organization of AGR. The next step has been to build a background for the discussion of Moroccan Arabic Perfective inflection. Towards this end, I have laid out all the relevant evidence at my disposal regarding the behavior of vowels, the aim being to establish that the vocalic equipment of the Perfective stem is richer than can be surmised from merely examining regular verbs from sound roots such as *kt^{e}b*. Specifically, I have shown that vowel *a* is a constant attribute of the Perfective. Then, based on that background, I have offered a complete proposal for the identity and canonical arrangement of inflectional ingredients,[47] which the reapparance of 'Perfective' *a* in 3rd Feminine singular turns out to crucially support. Finally, in an attempt to account for the patterns of syncretism evidenced by Moroccan Arabic Perfective inflection, I have put forth a licensing scheme, then shown how the system meets and satisfies AGR.

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[47] For lack of space, I have offered no explicit account of the non-canonical arrangement of such ingredients. Cf. Lowenstamm (2011) for the discussion of 3rd Person Feminine Singular allomorphy, *k^{e}tbat* 'she wrote'/***dab^{e}t*** 'she melted'/*jrat* 'she ran' and the difference with 2nd Person Masculine Singular allomorphy *kt^{e}bt* 'you (ms.) wrote'/*d^{e}bt* 'you (ms.) melted'.

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