Subtractive morphology and morpheme identity in Arabic pausal forms*

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1. INTRODUCTION

In classical Arabic, most words have two forms: at the ends of major syntactic constituents ("in pause") a word is shorter than the same word when it appears in non-final position. The pausal form is shorter than the full form by up to one whole syllable and by the whole or part of as many as three morphemes, as the following examples illustrate:

(1) gloss | full form | pause form
---|---|---
a. write-INDC | yaktub-u | yaktub
  write-PL-INDC | yaktub-uu-na | yaktubu:n
  wrote-1SG | katab-tu | katabt
b. book-GEN-INDEF | kitaab-i-n | kitaab
  writer-AT-GEN-INDEF | kaatib-at-i-n | kaatiba[h]

The difference is not simply phonological; several morphological conditions determine how much is missing in a pausal form. The following points will be argued in this paper:

(1) The derivation of pausal forms from full forms is (at least in part) indeed subtraction. The alternative analysis, that certain morphological realization rules that add suffixes are constrained not to apply in pause, entails unnecessary complexities and lack of generality. For instance, the three case-marking suffixes, nominative u, genitive i, and accusative a, are absent in pause, and the indicative suffixes na and ni appear as n – all these are better described as loss of a final short vowel.

(2) The rules of subtraction must be sensitive to morphological information. At a minimum they must recognize a morpheme boundary, but it will be argued that they must also identify a specific morpheme. They cannot be stated in terms of phonological properties alone, nor with a combination of phonological and morphosyntactic information. The subtraction of final vowels is restricted to vowels which are part of a suffix, and does not apply to stem vowels. A more complex case involves the suffix at, which will be glossed as ‘At’ (it often, but not always, marks feminine gender), and has the pausal form ah (1c). In this it must be differentiable not only from words with stems ending in the sequence at but also from the homonymous suffix at marking third person feminine singular subjects in verbs in the perfect tense, which

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undergoes no change in pause, and from the plural suffix aat. Because at – ah ‘AT’ appears in both masculine and feminine nouns, both singular and plural, and has no invariant semantic import, it cannot be identified by the morphosyntactic properties of the word. Since the morphemes which must be recognizable by the morphological rules that specify pausal forms and those morphemes that are affected by the rules are highly productive inflectional markers, this is a strong counterexample to the “a-morphous morphology” hypothesis of Anderson (1992), that morphological structure is invisible to morphological rule application, a stronger counterexample than the cases that were discussed by Carstairs-McCarthy (1992).

2. EVIDENCE FOR THE REALITY OF THE PAUSAL ALTERNATION

The alternation of pausal and full forms comprises three general types of alternation. Final short vowels are dropped in pausal forms, as in (1a). The suffix n which marks indefinite nouns and adjectives is likewise dropped (1b). Furthermore, as mentioned above, the suffix glossed AT is at in full form but ah in pause.

These alternations are characteristic of Classical Arabic, which is the language of texts composed from about the sixth through the ninth centuries, and also of its analogue, Modern Standard Arabic. The latter, however, is nobody’s native language and is learned as part of the acquisition of literacy in Arabic. The classical pausal alternations do not exist in modern vernacular Arabic dialects. As they also do not appear in Arabic orthography – a word is written identically whether in pause or in “context” – it can reasonably be asked how we can be sure that it was ever a real phenomenon.

The evidence has three parts: for the reality of the full forms, for the reality of the pausal forms, and for their synchronic alternation. The Arabic full forms have cognates in several ancient Semitic languages, so it is certain that they survived with only minor changes from proto-Semitic into Classical Arabic. The pausal forms are similar in all relevant respects to the words that take in modern vernacular (colloquial) Arabic; more precisely, the pausal forms are essentially identical to what could be reconstructed as the common ancestor of the modern dialects. Clearly, then, there has been a diachronic change somewhere along the way from the ancient Semitic type (similar to the classical Arabic full forms) to the modern vernacular Arabic type (similar to the classical Arabic pausal forms). What remains to be demonstrated is that the two co-existed at a single time, in alternation. This issue is complicated by the fact that diglossia such as is characteristic of the modern Arabic speech community is known to have existed in the Classical Arabic period as well, probably as early as the pre-Islamic period, the sixth century (Zweiter 1978: 116-156; 170-172). Therefore proving that pausal and full forms coexisted temporally is not enough, because they could have been in diglossic variation. It must be shown that they were in alternation in a single register.

The evidence for synchronic alternation comes from five sources. The first is the descriptions of the medieval Arabic grammarians, who were not mere prescriptivists but also described a range of different speech forms they heard around them, some of which they accepted as legitimate variants and others they stigmatized. The second source of evidence is from poetic metrics and rhyme. While the meters of classical Arabic poetry unequivocally require full forms, the rhymes, which are obligatory at line ends, are partly on pausal forms (though rhyme forms admit variations that are not found in prose). The third and fourth bodies of evidence are from spelling errors found in documents of the Classical Arabic age and from a transcription of Arabic in the Greek alphabet made in the same period (both surveyed in Hopkins 1984).

The fifth kind of evidence is from fossilized relics of the alternation found in modern vernacular Arabic. While in general a word in the modern dialects is the reflex of its classical pausal forms, there are syntactic constructions which preserve reflexes of full forms. The chief example, found in all modern Arabic dialects, is the type of noun phrase called a “construct phrase” (known in Arabic terminology as tādāla). The construct phrase in classical Arabic is illustrated in (2a). A construct phrase is tightly bound, in the sense that no word can come between the first member (a noun) and the second (a noun phrase). The construct phrase can occur at the beginning or middle of a larger syntactic constituent or at the end of one, so the last word of the construct phrase can be in full or pausal form. The first member of the phrase, on the other hand, obviously can never be at the end of a major constituent and therefore never appears in pausal form. Now if the second member contains the morpheme AT, it can appear as at (full form) or as ah (pausal form), but in the first member it can appear only as at. This is reflected in the modern dialects, exemplified here by Cairene (2b); the reflex of AT is a everywhere except in the first element of a construct phrase, where it is at. Within the framework of the modern vernacular, the functions as a marker of the bound form of a noun in the construct-phrase construction.

(2) a. Classical Arabic

<table>
<thead>
<tr>
<th>full form</th>
<th>pausal form</th>
</tr>
</thead>
<tbody>
<tr>
<td>madaris-at-u</td>
<td>madras-at-i-n</td>
</tr>
<tr>
<td>mudarris-at-u</td>
<td>madras-alh</td>
</tr>
<tr>
<td>teacher-NOM</td>
<td>school-AT-GEN-INDEF</td>
</tr>
</tbody>
</table>

b. Cairo Arabic

<table>
<thead>
<tr>
<th>full form</th>
<th>pausal form</th>
</tr>
</thead>
<tbody>
<tr>
<td>madarris-at</td>
<td>madras-a</td>
</tr>
</tbody>
</table>

A second fossilized relic of the pausal/full alternation is found in Arabic dialects of the center and north of the Arabian peninsula (the data are summarized and insightfully analyzed by Blau 1965: 187-202; see also Fischer and Jastrow 1980: 120-121). The classical indefinite marker n is in general lost in the modern dialects, in keeping with the fact that they reflect pausal, not full, forms. In central and north Arabian bedouin dialects, however, an indefinite noun followed by a modifying adjective, prepositional phrase, or clause retains the n. The n in these modern dialects thus functions as the marker of the construction of an indefinite noun with a following complement (Blau 1965: 191-200). As Blau demonstrates, *Ta’wil ti'i.
Final -\(\text{m}n\) serves as a morpheme indicating that the indefinite noun to which it is affixed regardless of case is followed by an attribute (1965: 193).

(3) a. Classical Arabic
full form: \(\text{naas-}u\)-\(\text{m}\) \(\text{kaf}il\)-\(\text{m}\)-\(\text{u}\)
pausal form: \(\text{naas-}u\)-\(\text{m}\) \(\text{kaf}il\)
people-NOM-INDEF many-NOM-INDEF ‘many people’
b. Central Arabian
naas-\(\text{m}\) \(\text{a}f\)hil (Blau 1965: 194)

To summarize, in modern vernacular Arabic the \(t\) of the formative AT has disappeared, reflecting the classical pausal form, except in the first member of a construct phrase, where it survives as a reflex of the classical full form; similarly the Classical Arabic indefinite marker \(n\) has disappeared except (in certain dialects) in a similar construction-intensional position. Though these relics are limited to particular syntactic constructions, they show medial \(t\) and \(n\) alternating synchronically with final zero. This reflects an earlier stage in which the \(t\) and \(n\) of full forms were absent in final position regardless of the syntactic construction type, and it thus corroborates the other kinds of evidence mentioned above for the reality of the Classical Arabic pause/full alternation. The relics show that the phenomenon was not merely diachronic, nor a matter of register differences in a diglossic speech community, but was a synchronic alternation within a single register, just as described by the medieval Arabic grammarians and attested in the documentary evidence mentioned above.

3. THE PAUSAL-FULL ALTERNATION

Having demonstrated the reality of the pausal/full alternation in the previous section, we are now in a position to inquire into its formal nature. We will begin with the loss of final short vowels in pausal forms, illustrated by the forms in (4).

(4) | gloss | full form | pause form |
--- | --- | --- |
| writer-NOM | ka\(\text{t}i\)-\(\text{m}\) | ka\(\text{t}i\) |
| writer-GEN | ka\(\text{t}i\)-\(\text{i}\) | ka\(\text{t}i\) |
| writer-ACC | ka\(\text{t}i\)-\(\text{a}\) | ka\(\text{t}i\) |
| writes-NOM | yak\(\text{t}\)u\(\text{b}\)-\(\text{m}\) | yak\(\text{t}\)u\(\text{b}\) |
| writes-GEN | yak\(\text{t}\)u\(\text{b}\)-\(\text{i}\) | yak\(\text{t}\)u\(\text{b}\) |
| writes-ACC | yak\(\text{t}\)u\(\text{b}\)-\(\text{a}\) | yak\(\text{t}\)u\(\text{b}\) |
| saw-1SG-2MASC.SG | ra\(\text{a}y\)-\(\text{tu}\)-\(\text{ka}\) | ra\(\text{a}y\)-\(\text{tu}\)-\(\text{um}\) |
| saw-1SG-2FEM.SG | ra\(\text{a}y\)-\(\text{tu}\)-\(\text{ki}\) | ra\(\text{a}y\)-\(\text{tu}\)-\(\text{um}\) |
| saw-1PL-3MASC.SG | ra\(\text{a}y\)-\(\text{n}\)aa\(\text{u}\)-\(\text{ka}\) | ra\(\text{a}y\)-\(\text{n}\)aa\(\text{u}\)-\(\text{um}\) |
| write-PL-NOM | yakt\(\text{u}\)ub-\(\text{u}\)-\(\text{a}\)-\(\text{m}\) | yakt\(\text{u}\)ub-\(\text{u}\)-\(\text{a}\)-\(\text{um}\) |

In many cases the loss of final short vowels results in the obliteration of morphological distinctions. As the examples in (4a) show, the nominative, genitive, and accusative cases of a noun like ka\(\text{t}i\)-\(\text{b}\)-\(\text{m}\) (typical of the largest and most productive declension class, which distinguishes three cases) are marked solely by the short final vowel. In pausal form, where these are all absent, a single form ka\(\text{t}i\)-\(\text{b}\) stands for all cases, and the entire category of case is neutralized. The same is true of the indicative and subjunctive of verbs in certain person/nomber/gender categories (4b), so that in pause yakt\(\text{u}\)ub is both the indicative and the subjunctive for ‘he writes’, as well as the jussive, which is suffixless yakt\(\text{u}\)ub in both full and pausal form. Similarly, gender is neutralized in pause in the examples in (4c). In other cases (4d), final vowels are lost without affecting grammatical categories.

Words ending in long vowels (5a) are identical in pausal and full form, as are words ending in a consonant (5b):

(5) | gloss | full form | pause form |
--- | --- | --- |
| write-PL-SBINCT | yakt\(\text{u}\)ub-\(\text{u}\) | yakt\(\text{u}\)ub-\(\text{u}\) |
| saw-1SG-3FEM.SG | ra\(\text{a}y\)-\(\text{tu}\) haa | ra\(\text{a}y\)-\(\text{tu}\) haa |
| saw-1SG-2MASC.PL | ra\(\text{a}y\)-\(\text{tu}\)-\(\text{um}\) | ra\(\text{a}y\)-\(\text{tu}\)-\(\text{um}\) |

A final short vowel which is part of a stem, rather than a suffix, remains in pausal forms, but is followed by phonetic [h], as in (6). Consequently, in pausal position there are no final short vowels, and the opposition of vowel quantity is neutralized.

(6) | gloss | full form | pause form |
--- | --- | --- |
| throw (jussive) | yar\(\text{m}\) | yar\(\text{m}\)-\(\text{h}\) |
| low | ka\(\text{y}\)f\(\text{a}\) | ka\(\text{y}\)f\(\text{a}\) |

It would be possible to state the pausal/full alternation insofar as it affects final short vowels, illustrated in (4) above, by building it into the morphological realization rules for each suffixing process. For instance, it would be possible to say that nominative case is realized by suffixation of \(u\) in non-pausal position only, or that indicative mood is realized in certain verb forms by suffixation of \(a\) in non-pausal position but of \(u\) in pause. This handles the facts but it radically lacks generality and misrepresents the phenomenon, which applies in identical manner to at least a dozen suffixes. The alternation is subtraction:

(7) Pausal Subtraction

A final short affixal vowel is dropped in pause.

The indefinite marker \(n\) is likewise absent in pause (1b). This is straightforward in the nominative and genitive cases: nom. kita\(\text{b}\)-\(\text{n}\) and gen. kita\(\text{b}\)-\(\text{i}\)-\(\text{n}\) are both kita\(\text{b}\) in pause. In the accusative case, too, the \(n\) is absent in pause, but here the case vowel \(a\) is retained and lengthened: acc. kita\(\text{b}\)-\(\text{a}\)-\(\text{n}\) is kita\(\text{b}\)-\(\text{a}\) in pause. Only rarely is it absent entirely: kita\(\text{b}\). One way to derive an indefinite accusative form like kita\(\text{b}\)-\(\text{a}\) would be to specify it in the realization rules for the indefinite marker.
(8) **INDEF** is realized by suffixing n if non-pausal.

**INDEF** is realized by suffixing a (or a mora) after a in pause.

Thus the pausal alternation of indefinite n with zero is derived separately and differently from that of final short vowels. Additional support for treating the absence of n in pause separately comes from poetic rhyme. In rhyme, an alternative to dropping a final short vowel is to lengthen it (recall that there are no final short vowels in pause). Thus *kitaab-u* 'book (nominate)' could appear at the end of a line of poetry as *kitaab* or as *kitaabu* (but not as *kitaba* or *kitabuh*). Either way, the indefinite marker n is absent, and in *kitaabu* the n is lacking although the vowel has not dropped.

The most obvious way to attempt to state the alternation of at with alh/ would be in the same manner as the indefinite u, by specifying it in the morphological rule that spells out the realization of AT:

(9) AT is realized by suffixation of a in pause, otherwise of at.  

This approach turns out to be more complex than it seems at first glance, and ultimately unworkable in certain cases. It succeeds in nouns in nominative-case forms like *kaatib-at-at-n*. In deriving the pausal form of this word, starting with the stem *kaatib*, the pausal form of AT is attested: *kaatiba*. Next comes case marking, and it makes no difference whether we assume the vowel u to be added, yielding *kaatibau*, which would be shortened to *kaatiba* by Pausal Subtraction (7), or alternatively we restrict the realization of the case-marking vowel to non-pausal position, yielding the same outcome. The indefinite marker n is not applied in pausal position after vowels other than a. This approach has the same success with the genitive in i and with accusative forms that lack the indefinite marker (full form *kaatibah*, pausal *kaatiba[h]f*). However, it fails in the combination of accusative case and indefinite marker (full form *a-n*); recall that in pause this is not zero but aa, as in *kitaabaa* (full form *kitaab-a-n* discussed above). This lengthened accusative marker *-aa* is not found after AT (except in poetic rhyming): the normal pausal form of *kaatib-at-a-n* is *kaatiba[h]*. The markers of the indefinite accusative are absent if and only if they are preceded by the element AT, in its pausal form a. It is this fact which makes the formulation in (9) unsuccessful.

Let us examine how (9) would apply in such a situation. Given the realization rule for AT tentatively suggested in (9), together with the realization rule for INDEF in (8), the pausal form corresponding to *kaatib-at-a-n* would be *kaatibaha*. Even if the sequence *aa* is automatically reduced to *aa*, as Arabic has no triple-length vowels, the resulting form *kaatibaha* is incorrect. We could try to modify the realization rules for INDEF, AT, or accusative case in order to save the situation, but there is no way to derive the correct result *kaatibani* while also deriving the correct pausal accusative *-aa* for other nouns, avoiding such incorrect outcomes for the feminine as *-kaatibatua*, *kaatibatuua*, or *kaatiba*, without specifying the particular element AT in one or more of the realization rules for accusative case or indefiniteness. The situation is more complex still, because the problematic case ending a is not exclusively accusative. In nouns and adjectives the "diploite" declensional class, both accusative and genitive take a. Thus *makk-at-a* 'Mecca' is both accusative and genitive, and has the pausal form *makkah* in both cases. Consequently any specification that mentions accusative case must also mention genitive diploites, as well as an additional provision excepting the morphosyntactic conditions in which diploites revert to the default triprote declension and take i in the genitive.

The simplest way to derive the correct form is by a special rule of pausal subtraction for AT. The morphological element AT is realized as at everywhere, and in pause the i and following segments are deleted by a rule of pausal AT-subtraction:

(10) AT-Subtraction

\[ \text{X}+\text{AT}+V(V) \rightarrow \text{Xa in pause} \]

Note that this will correctly fail to apply in the presence of heavier suffixes, as in *kaatib-at-a-ka* 'your (mas.) writer (fem. acc.)'. In poetic rhyme, when the final vowel is not deleted but rather lengthened, AT Subtraction does not apply, so that *kaatibataan* 'writer (fem. acc. indef.)' may rhyme as *kaatibah* or as *kaatibaa*.

There is an alternative formulation of AT-Subtraction which should be considered at this point:

(11) AT-Subtraction (alternative form)

\[ \text{X}+\text{AT}+V(V) \rightarrow \text{Xa in pause} \]

In the first version (10), the element AT is mentioned by name. In the alternative version (11), the same work is accomplished by a very specific series of morpheme boundaries. This is possible because of an accidental fact about the homonymous suffix at which marks third person feminine singular or dual subjects in verbs. This may be followed by a variety of suffixes, but as it happens only one of them is vowel-initial: the dual marker *aa*, as in *kaatab-at-aa* 'they (du.) wrote'. Such a form is unchanged in pause, and the rule of AT-Subtraction as stated in 11 is prevented from applying to it by the stipulation of the morpheme boundary before the optional final vowel. The crucial fact is that the dual suffix is a long vowel, while the suffixes which may follow AT and delete in pause are short vowels. While this approach is workable (and has the advantage that the non-application of AT-Subtraction before a case vowel lengthened in poetic rhyme is then automatic), it relies on an accidental quirk of the distribution of suffixes: it happens that there are no suffixes which may follow subject markers in verbs (including at) and consist solely of a short vowel, and furthermore the subject marker of a verb (including at) can be final in the word, while AT is always followed by a case marker. That a suffix at which is followed by
a suffix should shorten in pause, while a suffix at which is word-final should be unchanged, is the opposite of what we would expect if the difference is simply a matter of phonological weight.

Another alternative hypothesis would be that at shortens in pause in nouns but not in verbs. This runs into difficulty when participles are brought into consideration. Active and passive participles in Arabic are productively formed from verbs of all types, but they have nominal morphology, including AT (marking feminine gender) which undergoes pausal shortening. Despite their nominal morphology, participles have largely verbal syntax (Wright 1896-98: vol. 2, 63-68). Therefore if the criterion for AT-Subtraction is that it occurs in nouns, not verbs, the relevant sense of these terms cannot be syntactic. It is in fact purely morphological: the element AT undergoes AT-Subtraction precisely in those words which are inflected as nouns, and we are back to a morphological specification for the conditioning of the rule.

4. THE IDENTITY OF AT

The formulation of AT-Subtraction in the preceding paragraphs relies on reference to specific morphological structure, identifying AT either by name (10) or by a series of morpheme boundaries (11). In this section it will be demonstrated that neither phonological nor morphosyntactic specifications can replace the reference to morphological structure in the rule of AT-Subtraction.

First, the element AT must be kept distinct from other words which end in the phonological sequence at. Thus there are words in which the t is the last consonant of the root, such as nabaat-u-n 'vegetation (sg.)' or mustanbat-u-n 'cultivated nursery' (cited in the nominative indefinite full form); in the pausal forms these retain the final t; nabaat, mustanbat (identical for the nominative, genitive, and accusative).

Second, there is a suffix at which marks a verb in the third-person feminine singular of the perfect tense: katab-at 'she wrote'; in pause such a word, like all consonant-final words, undergoes no change. In the alternative version of AT-Subtraction (11), as discussed above, it is the specification of the following vocative element (+Y) after AT that can keep these two suffixes apart, because all the suffixes which can follow the perfect tense begin with a consonant (for instance katab-at-haa 'she wrote it', sami'-at-nii 'she heard me') or consist of a long vowel (aa, discussed above).

Finally, AT is distinct from the plural suffix aat, which occurs with both masculine and feminine nouns, and which (in the standard language) does not lose its t in pause. Vowel length is not sufficient to identify it, because the phonologically identical sequence aat can arise when AT follows a glide-final stem. The (nominative indefinite) forms in (12a) contain AT, while those in (b) contain the plural marker aar.

\[
\begin{array}{llll}
\text{gloss} & \text{morphological structure} & \text{full form} & \text{pausal form} \\
\hline
\text{a. youth (fem. sg.)} & \text{fatay-at-u-n} & \text{fataatun} & \text{fataah} \\
\text{nobles (masc. pl.)} & \text{karaat-at-u-n} & \text{araatun} & \text{saaah} \\
\text{judges (masc. pl.)} & \text{qadat-at-u-n} & \text{qadatun} & \text{qadah} \\
\hline
\text{b. writers (fem. pl.)} & \text{kattib-bt-aat-u-n} & \text{kattibatun} & \text{kattibat} \\
\text{descriptions (fem. pl.)} & \text{sif-aat-u-n} & \text{sifatun} & \text{sifat} \\
\text{pashas (masc. pl.)} & \text{baašaaw-aat-u-n/} & \text{baašawatun} & \text{bāšawat} \\
\text{baths (pl.)} & \text{hammaa-aat-u-n/} & \text{hammaaatun} & \text{hammaaat} \\
\end{array}
\]

Thus AT cannot be identified phonologically. Neither can it be identified morphosyntactically. The element AT marks a variety of morphosyntactic processes, most often feminine gender (13a) or singulative (b). It is in fact the most productive marker of feminine gender. It is also part of a large variety of broken plural patterns (c) and irregular plurals (d), and in a few cases the sole marker of plurality (e). It is also simply a part of the base forms of many nouns, both feminine (f) or (less often) masculine (g).

(13) Words containing AT

\[
\begin{array}{ll}
\text{Comparison without AT} & \text{Comparison without AT} \\
\hline
\text{a. kaatibatun 'female writer'} & \text{kaatibun 'male writer'} \\
\text{kabiratun 'large (fem.)'} & \text{kabirun 'large (masc.)'} \\
\text{tuffaahatun 'an apple (fem.)'} & \text{tuffaahun 'an apple(s) (mass noun, masc.)'} \\
\text{c. talababatun 'pupils (masc.)'} & \text{talababun 'students (masc.)'} \\
\text{talababatun 'clothes'} & \text{talababatun 'students (masc.)'} \\
\text{talabatun 'students'} & \text{talabatun 'students (masc.)'} \\
\text{d. niswaban 'women'} & \text{niswaaan (cf. sg. niswah)} \\
\text{e. hammaaraban 'driver'} & \text{hammaaraan (masc. sg.)} \\
\text{f. madrasaban 'school'} & \text{*madrasun} \\
\text{g. xalifatun 'caliph'} & \text{xalifun} \\
\end{array}
\]

The sets of words in 12 and 13 taken together show that AT cannot be specified even by a combination of phonological and morphosyntactic properties. It must be specified "by name" in the rule of AT-Subtraction (10) or by morphological boundaries (11).

Interestingly, Arabic orthography takes note of the special character of AT: it is written with a unique letter of the alphabet, found only in this morpheme: a hybrid of the shapes of the letters <t> and <h>. 
5. CONCLUSIONS

The element AT does not fit the traditional picture of a morpheme: it has neither an invariant form (it is at in context, a/h in pause) nor an invariant meaning or set of morphosyntactic properties. It is not simply ambiguous nor is it an empty morph, because in any particular word it has a single, specific function.

In this AT is similar to the English suffix *s* ~ *z* ~ *æ*, which marks plurals and possessives of nouns and third-person singulars of present-tense verbs, in that it exists as a unit, a single entity, only in the purely morphological level which mediates between morphosyntactic and phonological representations. It is what Aronoff (1994, especially 22-29) has called a “morpheme”: a purely morphological function in which disparate morphosyntactic elements are neutralized. An entity on the morphemic level may relate in many-to-many fashion to morphosyntactic properties. Thus English *s* ~ *z* ~ *æ* on one hand marks three different morphosyntactic properties, but on the other hand it is not the unique marker of plurality, since there are morphosyntactic plurals which do not have this suffix: *fees, alumni, phenomena*, *series, sheep*. Another clearly morphemic entity is the English stem *-ceive*, occurring in words like *receive, deceive, conceive*. Despite the etymological link among these words, they have no semantics or syntax in common synchronically. Yet *-ceive* is an entity of some sort, as its uniform alternation with *-cept* demonstrates: *reception, deception, conception*. It is a purely morphological entity, a morpheme. As Aronoff has demonstrated extensively, a large variety of morphological phenomena can be correctly understood only in this way, as purely morphological, rather than as reducible to syntax or phonology. The behavior of the Arabic suffix AT in pause is one.

The alternation of pausal and full forms is not much like what is normally thought of as morphology. It is neither derivational nor inflectional in the commonly understood meanings of those terms. It does not form new lexical items nor does it express such morphosyntactic categories as person, tense, number, or case. If this round peg must be forced into one of those square holes, it must be inflectional rather than derivational (because it does not form new lexical items and its behavior is regular and predictable), but it is a strange sort of inflectional category that applies uniformly to words of all the lexical classes, is not involved in agreement, has no semantic correlates, and is not tied to any specific syntactic constructions. All these properties are more usually associated with phonology than with morphology. Why, then, do we call the Arabic pausal alternation morphology? Not only because it is in part phonologically unnatural, but more importantly because it seems to be a general property must refer to morphological information and because in a part it must be stated by means of the morphological realization rules which spell out certain morphemic entities.22

To the extent that this is indeed morphology, and insofar as it requires the specification of morpheme boundaries and even specific morphemes for its correct operation, it violates the “a-morphous hypothesis” of Anderson 1992. This claims that morphemes (or morphs or formations) in the classical sense do not exist, and specifically that the presence in a word of affixes does not imply the presence of morpheme boundaries that can be detected by rules applying subsequently. Rather, Anderson proposes “to replace reference to morphological structure within a form by conditions on the structure of the derivation of a word” (Anderson 1992: 290). While Anderson’s theory admits some kinds of word-internal boundaries, not only in compounds but also in certain other types of derived words (Anderson 1992: 299-319), all the examples that Anderson mentions are derivational and most involve lexically idiosyncratic rules and forms. The same is true of the additional examples adduced by Carstairs-McCarthy (1993). The Arabic pausal alternation, on the other hand, involves extremely productive inflectional affixes. AT is the commonest and the default marker for feminine gender (besides its other functions), and it is a marker of indefiniteness is characteristic of the largest, most productive declensional class of nouns and adjectives, which is also the default class. All the suffixes that are affected by Pausal Subtraction are totally productive inflectional markers. The Arabic pausal alternation is therefore the strongest counterexample yet found to the a-morphous hypothesis.

NOTES

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1 Birkeland 1940 is the most comprehensive and insightful study of this phenomenon, from both the synchronic and diachronic points of view. Arabic pausal forms are described in any comprehensive grammar of the language, such as Wright (1896-98: vol. 2, 368-373).

Abbreviations: NOM=nominative case, GEN=genitive, ACC=accusative, INDEF=indefinite; IND=indicative, SBJUNCT=subjunctive, Juss=jussive; 1, 2, 3=first, second, or third person; SG=singular, PL=plural, FEM=feminine, MASC=mascuine (likewise sg., du., etc.); AT is the suffix *at-a-h*, which has various functions, discussed below, but most often marks feminine gender. Phonetic symbol *α* is pharyngealized. Within full forms the segments that are susceptible to pausal deletion are sometimes italicized. The notation [h] represents a phonic [h] which occurs after a final short vowel in pause.

2 Note that this often creates extra-heavy final syllables, as in yakubba (from yakubuuna) and kaabah (from kaaba). Extra-heavy syllables otherwise occur in classical Arabic only with the vowel *aa* in medial position, and that almost exclusively in the active participles of biconsonantal verbs (Wright 1896-98 vol. 1: 15).

3 The various pausal alternations that do exist in modern vernacular Arabic dialects, such as those described in Blanc 1973-74, Blanc 1970: 122-123, Borg 1977, and Fischer and Jastrow 1980: 110-111, 179-180, are not historically derived from the Classical Arabic pausal alternation, and at least some may be purely phonological or phonetic.

4 Arabic is written in two forms, a basic one which does not represent short vowels and various other phonological particulars, and an augmented form which adds diacritical symbols specifying all the phonological details absent in the basic form. The basic orthography in general represents a word in its pausal forms, no matter where in a sentence it appear. The augmented orthography shows full forms even at the ends of constituents and sentences. (This pattern is modified in poetic rhyme, which is discussed below.)

5 This does not refer to such borrowings from classical Arabic into the vernacular as marhaba 'hello', fehan wa-salah 'welcome', or tabuhun 'never'.
In Modern Standard Arabic there is considerable flexibility and variation from speaker to speaker and some randomness in the selection of pausal versus full forms (Movius 1977, Schulz 1981). For example, a noun-adjective phrase like *mu'taṣar-*a-tān* šadīrat*āt-*u*-a-*a* 'a smart teacher (fem.)' can be pronounced with two full forms, with the first word in full form and the second in pausal form, or even with two pausal forms: *mu'taṣar*āt *šadīrat*āta. However, as Dr. Elabbas Ben-Manoun has pointed out to me (and as described in Beeston 1970: 53-54), AT is the first member of a conjugate phrase must retain the 1: *mu'taṣar*āt*šadīrat*āta 'a teacher,' while *mu'taṣar*āt*šadīrat*āta 'a teacher of a school.' The difference between consonantal and adjectival phrases reflects influence from the modern vernaculars of Modern Standard Arabic, but it parallels the pattern which we can deduce (on the evidence of the modern vernaculars) prevailed in Classical Arabic times. It also parallels the much earlier but essentially identical development in Hebrew.

It is interesting that essentially the same change in the structure of the phrase took place in Hebrew and Aramaic well over a thousand years before the Classical Arabic period.

In modern vernacular Arabic the morphological category of case is lost and that of verbal mood is expressed by prefixes. The question of how Classical Arabic was able to function with these markers being obliterated at least once in every sentence has received an interesting answer. Corrente (1971-72, 1973) has demonstrated that in Classical Arabic the functional load of the case and mood suffixes was quite low. There are few situations in actual texts in which the change of a word-final vowel suffix can yield a grammatical sentence with a different meaning. This is so because in most instances the case or mood is necessitated by a grammatical particle or by a syntactic construction which is detectable from other elements other than the final vowel suffixes. Therefore most Classical Arabic texts are unambiguous even if every word is pronounced in its pausal form. (For Modern Standard Arabic see Beeston 1970: 53-54.) In this respect it is quite different from other "case languages" like Latin or Russian.

The alternative of deleting these vowels just as suffixal vowels are deleted was judged non-standard (Carton 1990).

The underlying form of *zar* is *y vườn* of which the triliteral root is *yrm*. The final *y* (or *y* in *ii*) is shortened in the active mood.

One might analyze the final *a* of *kayf* as a suffix (the accusative case marker), but this is not the opinion of the medieval Arabic grammarians.


I leave to others the question of the proper formalization of a rule that deletes short vowels without shortening long ones. While it may be that underlies short final vowels are, in a sense, in opposition to final quantity (since there is no opposition of quantity in final position), they must still be kept distinct from short non-affixal vowels, which in pause do not delete but end in phonetic [h]. The distinction between final pausal *ah* (whether underlying or from non-affixal *a* or from the morpheme AF) and *aa*, and similarly between *ii* and *ii* and *ah* and *u*, is certainly maintained in poetic rhyme and in the nominal pronunciation described by the medieval grammarians, though there is evidence from speaking errors in documents from the classical period that it was neutralized in common speech just as it is in modern vernacular dialects (Hopkins 1984: 10. 43, 66).

In Modern Standard Arabic *-an* is often so pronounced in pause as in full form, but this is non-classical.

There is one bit of evidence which may indicate that the absence of indefinite *n* in pausal forms, or at least after the accusative marker *a*, is derived by subtraction rather than by failure to add. The "energetic" mood is a relatively infrequent verbal category which takes a suffix *an*. This too becomes *aa* in pause. (The energetic mood has no reflex in modern vernacular dialects.) It is plausible that this arose diachronically by generalization of the pausal variant of the accusative indeclinable. Although features of nouns may not often be generalized to verbs, it seems less implausible that such a case occur in this case when one remembers that the pausal alternation is a purely formal one without semantic or morphosyntactic correlates. The fact is simply that any suffixal *an* is *aa* in pause. If this historical assumption is correct, it may imply that there was a synchronic rule forming the indefinite accusative pausal *aa* from the fully realized form *an*, or at least that speakers (or the medieval grammarians who codified the standard language!) were able to function on the level of a process in terms of a property of the contextual accusative *an*; pausal *aa* :: contextual energetic *an* : pausal X. Alternatively, of course, it may be a phonological rule, *an* → *aa* in pause, although the phonetic sequence *an* does appear in pause in neuter (the pausal form of *badān*-un*a* is *badān*). In any case, nothing crucial in the analysis of Pausal Subtraction or AT: Subtraction hinges on the analysis of the indefinite accusative *-an*.

Note also the feminine dual verb *katāb*-*u*-a-*a* 'they wrote,' which contrasts strikingly with a noun in the accusative indefinite, such as *kāvabat*an 'writer (fem.)' with the pausal form *kātib*-*a*-h for which *kātib*-*a*-a (in prose) is not an alternative.

The plural suffix *-at* is also distinct from AT in case marking. Accusative case is marked by the vowel *i* after plural *-at*, but by *a* after AT as after most nominal forms: accusative indefinite *qadā*-*a*-at 'judges' (with AT), *ī*-at-i 'descriptions' (with *aat*).

It is not possible to base the identification of AT or prosodic factors such as stress in the reading of Classical Arabic by modern Arabs *quddata* (with *-at*+*i*) and *sīfat* (with *-at*+*t*) are stressed identically, on the long vowel. Several linguists have attempted to deduce the stress pattern of Classical Arabic period on the assumption that it must have at least at included something like the least common denominator of the stress patterns of certain modern dialects (Blau 1972; Fischer and Jastrow 1980: 57-58, 297; and most interestingly Jastrow 1991). All these reconstructed patterns would stress *quddata* and *sīfat* identically. Moreover, other scholars emphasize that we know nothing reliable about stress in classical Arabic (Fleisch 1980: 170-171, Blau 1972, Hopkins 1984: 18). In fact, we do not even know whether classical Arabic had stress at all. It may well have been (and in my judgments most likely was) like modern Moroccan vernacular Arabic, in which all syllables are fairly evenly stressed, and where whatever extra prominence exists moves rather freely from one syllable to another. As Henri Fleisch, the author of a comprehensive treatise on classical Arabic phonology and morphology, wrote, our knowledge of Classical Arabic stress is "très précaire" and therefore concerning morphological phenomena we can argue from stress only with "une très grande prudence" (Fleisch 1961: 171).

The final *h* in forms like *fatah* is not accounted for by the analysis presented above, where the *h* in pausal forms of words with AT, such as *kātib*-*h*- *writer (fem.)*, is treated as a phonetic detail, appearing automatically after final short vowels; according to this theory there is no function of *h* in long vowel, as in *quddata*. However, I am not sure whether to rely on the orthography, in which *fatah* and *kātib* in the same letter, as evidence that both were really pronounced with *h*, and the evidence from the modern vernacular dialects is mixed. If *fatah* was actually so pronounced, then there are two sources for final *h* (other than underlying *h* in stems); it arises phonetically after short vowels in pause, as in the examples in (6), and it arises morphologically in the pausal form of AT.

This is the plural of the masculine noun *hamam*-*u*-a-*n* 'bath.' The plural of an inanimate noun takes feminine singular agreement, regardless of whether the noun in the singular is masculine or feminine.

Gerwitz (1993) distinguishes two varieties of pausal phenomena in Biblical Hebrew, one "morphological" and the other "low-level" or "phonetic." The two often, but not always, occur together. The morphological pausal forms arose, according to his analysis, through the morphologization of originally phonetic phenomena. As he points out, the Classical Arabic pausal phenomenon bears only a loose analogical similarity to that of Hebrew.
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