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Ablaut in Classical Arabic Measure I Active Verbal Forms

Mohand Guerssel & Jean Lowenstamm

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1 *Introduction*

In this paper we tackle an old problem of Classical Arabic morphophonology, the vocalization of the verbal forms known as Measure I.[1] We take the facts of (1), 3rd masculine singular active forms, to be representative of the data under discussion.

(1)	a.	b.	c.	d.
	√	Gloss	Perfective	Imperfective
	lbs	"dress"	*labis+a*	*ya+lbas+u*
	ktb	"write"	*katab+a*	*ya+ktub+u*
	ḍrb	"hit"	*ḍarab+a*	*ya+ḍrib+u*
	kbr	"be great"	*kabur+a*	*ya+kbur+u*

Verbs from the roots of (1a) are vocalized as shown in (1c, d). Some aspects of their vocalization are variable, others are constant. The latter features will be of no concern to us. Thus, the system of 3rd person masculine singular agreement markers displayed in all the forms of (1c, d), *+a* in the Perfective, and *ya+...+u* in the Imperfective, falls beyond the scope of this paper. As well, the a uniformly vocalizing C_1 in Perfective forms, and the absence of any vowel between C_1 and C_2 in Imperfective forms, will be of marginal relevance to the main topic of this paper.[2]

Of interest to us, is the distinctive vocalization of C_2 (underscored in 1c, d). Specifically, we want to know whether the alternations in (1) are organized in terms of a

[1] This report is part of a much larger study on the phonology of the verbal system of Classical Arabic, Guerssel & Lowenstamm (forthcoming).

[2] As the details of morphological analysis just alluded to will be of no relevance for the remainder of this paper, all Perfective forms will be quoted without their final *a*, all Imperfective forms without their final *u*, and the boundary marking the attachment of *ya* will be omitted, thus *labis* instead of *labis+a*, *yaktub* instead of *ya+ktub+u*, etc.

comprehensive network of sound correspondences or whether each class of alternation has to be stated fully and independently of every other, in the form of a lexical stipulation. It has long been noted that the classes of verbs defined by the vocalization of C_2 appear to match identifiable syntactic and semantic properties of verbs. For instance, verbs of the *i-a* class, such as *labis/yalbas* are reputed to denote, for the most part, accidental or transient conditions or states, whereas verbs of the *u-u* class such as *kabur/yakbur* denote permanent states or conditions, as well as being intransitive[3]. We will not have anything to add to the abundant literature on this topic. We merely note that the success, indeed the credibility of a program purporting to establish a link between generalizations regarding the argument structure of verbs and the extant classes of vowel alternations crucially depends on an adequate characterization of the facts of vocalization. Such a characterization is what we propose to offer in this study.

With the notable exception of Kuryłowicz (1957–58, 1961) most modern students of Classical Arabic view the state of affairs illustrated in (1) as pertaining to the lexicon. Thus, the position expressed in Schramm (1962) is not untypical:

> "The correspondence between the active patterns in the past and future, however, is only partially predictable."

We take a radically different stance, arguing that the role of the lexicon in the vocalization of the root medial consonant is much more reduced than has hitherto been assumed. We argue, indeed, that the vocalic alternations exhibited in (1) are part of a genuine apophonic system serving in synchronically active fashion as the vehicle of derivation of aspect and voice[4].

In section 2, we motivate our bias towards downplaying the role of the lexicon. In section 3, 4, and 5, we review various properties of the set of facts at hand and conclude that a novel outlook on the evidence is called for. In section 6, we offer our solution. Our results are summed up in a brief section of concluding remarks.

2 *The alleged arbitrariness of the vocalization of* C_2

Taken individually, the sets in (1c) and (1d) are unremarkable: they simply reveal that all three short vowels of Classical Arabic, *a, i, u*, can appear following C_2. On the other hand, joint consideration of both sets evidences a much more tightly constrained state of affairs. That is, if a verb displays *i* in the Perfective, then it displays *a* in the Imperfective; if a verb displays *u* in the Imperfective, then it displays *u*, or *a* in the Perfective, etc. Thus, the four classes in (2a), with illustrative examples in (2b), can be isolated.

[3] See, for instance, Bohas & Guillaume (1984) and Wright (1896) on Arabic, and Aro (1964), Brockelmann (1908) and Dillmann (1907) on other branches of Semitic.

[4] Aspect only will be dealt with in this paper. See Guerssel & Lowenstamm (forthcoming) for a full discussion of all aspects of vocalization in the verbal system of Classical Arabic.

(2)

Perfective	Imperfective	a.	b.
i	*a*		*labis/yalbas*
a	*u*		*katab/yaktub*
a	*i*		*ḍarab/yaḍrib*
u	*u*		*kabur/yakbur*

Of course, the remarkable feature of the set of attested alternations of (2) is its restrictiveness. Why are logically possible correspondence classes such as those in (3) so conspicuously absent from the record ?

(3)

Perfective	Imperfective
**u*	*i*
**u*	*a*
**i*	*u*
**i*	*i*[5]
**a*	*ai*[6]

We submit that a gap of such magnitude as in (3) is not accidental, rather calls for an explanation.

3 *Unnaturalness*

The regular sound correspondences in (2) can be overridden by phonological factors. One such case will be briefly discussed in 3.1. Against the background of this phonologically natural albeit special case, the unnaturalness of the general pattern will be fully brought out in 3.2.

3.1 *The naturalness of a special pattern: interference of gutturals with the expected patterns of vocalization*

Consider the data in (4), Active forms of verbs from roots including a guttural in initial position (4a), medial position (4b), final position (4c), and a control set (4d) whose relevance will become clear shortly.

(4)

a.	Guttural-initial roots		
	√*ʔkl*	*ʔakal/yaʔkul*	"eat"
	√*ʕmd*	*ʕamad/yaʕmid*	"support"
b.	Guttural-medial roots		
	√*sʔl*	*saʔal/yasʔal*	"ask"
	√*nḥr*	*naḥar/yanḥar*	"slaughter"

[5] We are aware that verbs evidencing such alternations can occasionally be found. Such verbs indeed exist, e.g. *watiq/ya(w)tiq* "to rely on", but in such limited number that they must be viewed as exceptions, not as representative classes.

[6] The *a – a* class is not attested independantly of an obvious conditioning factor, the presence of a guttural in C_2 or in C_3 position, a phenomenon briefly dealt with in the next section.

c. Guttural-final roots

√qrʔ	qaraʔ/yaqraʔ	"read"
√qlʕ	qalaʕ/yaqlaʕ	"rip"

d. Control set

fariḥ/yafraḥ	"rejoice"
taʕib/yatʕab	"get tired"

Verbs from guttural-initial roots allow the full range of options for Imperfective vocalization. Thus, *ʔakal/yaʔkul* patterns like *katab/yaktub*, whereas *ʕamad/yaʕmid* patterns like *darab/yadrib*. On the other hand, if the root includes a guttural in second or third position, a only can appear in the Imperfective, hence in (4b): *yanhar* (not **yanhir*, or **yanhur*), and in (4c): *yaqlaʕ* (not **yaqliʕ*, or **yaqluʕ*). This is a clear departure from the general pattern since, as we saw, Perfective a is regularly matched by a high vowel, *i* or *u*, in the Imperfective. While we do not wish to engage in a full discussion of these data, three things are clear: a) the conditions under which Imperfective a appears are well defined in terms of the consonantal makeup of the root, b) there is a possible phonetic rationale for the phenomenon in terms of a lowering imposed by a guttural on an adjacent vowel within the stem, c) the forms in which this putative lowering is enforced, the Imperfectives, all display a cluster in stem-initial position, C_1C_2 ... This prosodic property distinguishes them from forms in which a high vowel is allowed to survive in the vicinity of a guttural such as the Perfectives of (4d).

Clearly, these data bear the hallmark of a possible phonological phenomenon in the sense that a synchronic sound change occurs in systematic correlation with definable properties of the environment.

3.2 *The unnaturalness of the general pattern*

In the absence of the vigorous interference of a phonological factor such as described above, it is clear that the environment plays no role in the selection of a particular vowel. This is illustrated by the vocalization of the Imperfectives (underscored) in (5d), where *u*, a, and *i* are equally welcome in very similar consonantal and prosodic environments.

(5)

a. √	b. Gloss	c. Perfective	d. Imperfective
krb	"come near"	karab	yakrub
xrb	"devastate"	xarab	yaxrib
drb	"be experienced"	darib	yadrab

The only sensible observation would take the form of a statement such as (6).

(6) a is the vocalization of *yadrab* "because" *i* is the vocalization of *darib*, etc.

Indeed, nothing in the environment of *yadrab* itself seems to favor the choice of a over *i*, or *u*. A similar observation can be made about the vocalization (underscored) of the Perfectives of (7c).

(7)

a. √	b. Gloss	c. Perfective	d. Imperfective
qrb	"be close to"	qarub	yaqrub
šrb	"drink"	šarib	yašrab
hrb	"flee"	harab	yahrub

Again, all three vowels are equally suitable in comparable environments. Again, the only meaningful generalization about the vocalization of the Perfectives in (7c) concerns their membership in recognized ablaut classes with respect to their Imperfectives (7d).

Clearly, the sound changes, or correspondences under discussion are unnatural in the sense that they take place in the absence of any phonetic conditioning. Another characteristic feature of these facts is the fair measure of opacity they involve, a topic to which we turn next.

4 *Opacity*

Surface opacity in the case at hand is inevitable given the existence of our four classes of vocalic alternations, repeated in (8) for convenience, and the three vowels of the system.

(8)

a. Perfective	Imperfective	b.
i	a	labis/yalbas
a	u	katab/yaktub
a	i	darab/yadrib
u	u	kabur/yakbur

Since we are not, yet, in a position to assess directionality, that is whether the Perfective vowel is ablauted from the Imperfective vowel, or vice versa, we display the situation obtaining under both possibilities.

The state of affairs under the former hypothesis is represented in (9a). That is, the vowel appearing in the Imperfective is assumed to be ablauted into the vowel appearing in the Perfective. For ease of reference, each line connecting a candidate input vowel, //, to its output, [ ], is labelled according to the verb type representative of its class (9b). Thus, connecting line 3 in (9a) describes the {Imperf. *i* → Perf. a} class, the representative of which is item 3 in (9b), etc.

(9)

a.

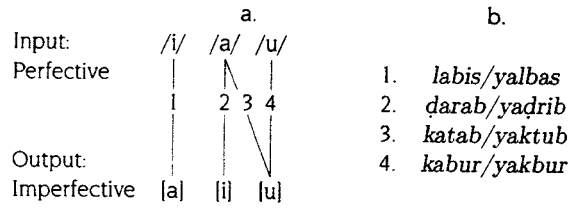
	/u/	/i/	/a/
Input:			
Imperfective			
	1	2 3	4
Output:			
Perfective	[u]	[a]	[i]

b.

1. *yakbur/kabur*
2. *yaktub/katab*
3. *yadrib/darab*
4. *yalbas/labis*

The alternative hypothesis whereby the Imperfective vowel is derived from the Perfective vowel appears in (10a), with familiar representative examples of each class in (10b).

(10)

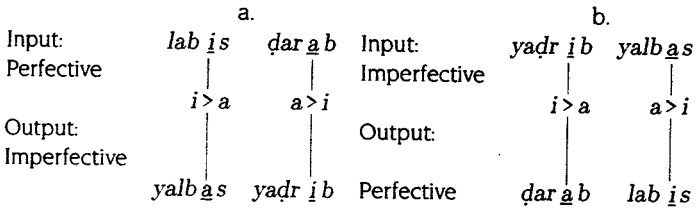


Opacity stems from the fact that two *a*'s appear in the set of Perfective forms, *ḍarab* and *katab*, and two *u*'s in the set of Imperfective forms, *yaktub* and *yakbur*. As expected, the picture of neutralization varies depending on the assumed directionality. Thus, in one case *a* is the source of opacity (10a), whereas *u* is, in the other case represented in (9a). We do not wish to impose *a priori* limitations on the amount of opacity beyond which a system ceases to be viable. We merely assume that the learnability of a system, hence its diachronic stability, directly relates to its transparency. Thus, we do not rule out the possibility that a grammar can sustain a measure of opacity due to neutralization, possibly including absolute neutralization. We are equally unprejudiced with respect to non-phonetically conditioned processes, a feature of the facts brought out in the preceding section. Still, the facts at hand seem to exemplify the most unfavorable situation, mutual neutralization of context-free processes. But the worse is still to come . . .

5 *Partial Polarity*

Consider a subset of the data just discussed, pairs such as *labis/yalbas* and *ḍarab/yaḍrib*. Whether one assumes the Perfective, or the Imperfective vowel to be basic, *either version of directionality* will include *both* a statement to the effect that *i* → *a*, and another statement to the effect that *a* → *i*. This can be seen more clearly in the chart below, (11), where both directionalities are represented.

(11)



A few processes seemingly involving "polarity" have been reported. Although their number is very small and their status poorly understood, one might be tempted to invoke "polarity", here. We note, though, that the alleged polarity only partially characterizes the surface evidence. Indeed, *u* remains outside of such a relation. Thus, for lack of a better term, we call this characteristic relationship holding of *i* and *a*, to the exclusion of *u*, the "partial polarity" effect.

Derivational operations are essentially directional. We cannot expect directionality to be readily readable off the facts. On the other hand, it is difficult to believe that

if X → Y is the manifestation of a process unidirectionally relating A and B, X → Y obtains regardless of whether A → B or B → A ! Our reluctance can only increase in the case at hand as not only would *a* → *i* be the case regardless of directionality; rather *a* → *i and i* → *a* would have to be true in either case, presumably causing insuperable difficulties for the learner trying to decide directionality. Indeed, we want to suggest that partial polarity is not a possible property of a system supporting derivation[7].

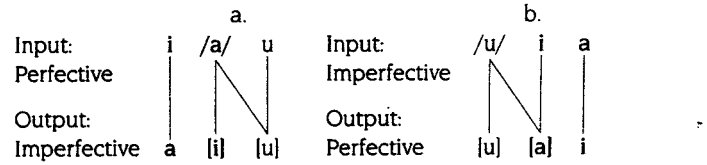
Up to this point, we have discussed three properties of the system at hand in order of increasing obnoxiousness: unnaturalness, excessive opacity and "partial polarity". We conclude that the evidence has not been properly construed and that an alternative way of confronting it is called for.

6 *An alternative view*

6.1 *Unraveling*

The main claim developed in this section is that the level of opacity of the system is not nearly as severe as what we have assumed it to be so far. To this point, we have been dealing jointly with two facets of an ambiguous picture of opacity, repeated in (12), each version corresponding to the two possibilities regarding directionality.

(12)



Under (12a), /a/, involved in both *ḍarab* and *katab*, is opaque, being manifested as either [i] or [u] (*yaḍrib* and *yaktub*, respectively). Under (12b), /u/, involved in *yaktub* and *yakbur* is opaque being manifested as either [u] or [a] (*kabur* and *katab*, respectively).

Suppose for a moment that the conundrum pictured in (12) results from our failure to have detected a fourth vocalic element, in addition to our three vowels, *a*, *i*, *u*. Let us call such an object x, for the time being. There are four possibilities as to the place x could occupy in a system free of ambiguity, two for each version of directionality.

In (13, 14, 15, and 16), we have represented the four possibilities of disambiguation afforded by the introduction of x: (13) and (14) for Perfective → Imperfective directionality, and (15) and (16) for the alternative reverse directionality. As a result, within each of our four alternation classes every input segment is distinct from any other. In each case, the relevant verb types can be straightforwardly identified and are indicated by means of their usual token representatives to the right of the chart.

[7] See Chomsky & Halle (1968) for discussion of similar facts in Hebrew, and Brame (1970) for discussion of the same facts in Arabic.

(13)

	a.				b.
Input:	*i*	*a*	x	*u*	
Perf.	|	|	|	|	1. *ḍarab* → *yaḍrib*
	3	1	2	4	2. *katab* → *yaktub*
	|	|	|	|	3. *labis* → *yalbas*
Output:	|	|	|	|	4. *kabur* → *yakbur*
Imperf.	*a*	*i*	*u*	*u*	

(14)

	a.				b.
Input:	*i*	x	*a*	*u*	
Perf.	|	|	|	|	1. *ḍarab* → *yaḍrib*
	3	1	2	4	2. *katab* → *yaktub*
	|	|	|	|	3. *labis* → *yalbas*
Output:	|	|	|	|	4. *kabur* → *yakbur*
Imperf.	*a*	*i*	*u*	*u*	

(15)

	a.				b.
Input:	*u*	x	*i*	*a*	
Imperf.	|	|	|	|	1. *yaḍrib* → *ḍarab*
	4	2	1	3	2. *yaktub* → *katab*
	|	|	|	|	3. *yalbas* → *labis*
Output:	|	|	|	|	4. *yakbur* → *kabur*
Perf.	*u*	*a*	*a*	*i*	

(16)

	a.				b.
Input:	x	*u*	*i*	*a*	
Imperf.	|	|	|	|	1. *yaḍrib* → *ḍarab*
	4	2	1	3	2. *yaktub* → *katab*
	|	|	|	|	3. *yalbas* → *labis*
Output:	|	|	|	|	4. *yakbur* → *kabur*
Perf.	*u*	*a*	*a*	*i*	

Clearly, a sufficiently convincing case will have to be made for the phonological identity of x. On the other hand, there can be no doubt that a more favorable picture is now available under any of the four above possibilities. A measure of ambiguity still subsists inasmuch as two different input segments may apophonize into the same surface segment, an inescapable consequence of the discrepancy between our four ablaut classes and our three surface vowels, but it is no longer the case that two different output segments proceed from the same input.

Before selecting one of the options of (13, 14, 15, and 16), we want to point out that any such decision will have a double consequence.

First, it will commit us to the specific directionality embodied in each of the four hypotheses under consideration. Thus, choosing, say, (14) implies endorsing Perfective → Imperfective directionality, whereas the choice of (16) means opting for Imperfective → Perfective directionality, etc.

Second, it will lead to the identification of the verb type "carrying" x. Thus, selecting, say, (16) implies endorsing that the representation of the *yakbur* → *kabur* class "is", at a deeper level, *yakbxr* → *kabur*.

While several properties of the four systems just described would warrant comment, one feature of (14) clearly recommends it over the other three possibilities: (14) happens to be the only configuration free of the undesirable "partial polarity" effect. Indeed, under (14), it is no longer the case that both a → *i* and *i* → a. For that reason, we choose to further explore the implications of (14) and to disregard the alternatives.

As already pointed out, (14) embodies two substantial claims. We spell them out in (17).

(17) a. apophony maps the Perfective melody into that of the Imperfective.
b. *ḍarab/yaḍrib* is the verb type "bearing" x.

Thus, *ḍarab* and *katab* with apparently identical vocalism differ, we claim, as follows: *katab* involves genuine *a* and manifests the a → *u* apophonic class, whereas *ḍarab* (underlyingly *ḍarxb*) involves x, manifesting, as such, the x → *i* apophonic class.

We now proceed to show how the detection of the identity of x requires no additional machinery.

6.2 *The identity of* x

The first observation will be that the surface vocalization of /*ḍarxb*/ resembles that of /*katab*/. In other words, the posited underlying contrast in (18a) seems to be neutralized as in (18b).

(18)

a.	b.
underlying contrast	surface neutralization
katab	*katab*
ḍarxb	*ḍarab*

An underlying contrast of comparable magnitude opposes *ḍarxb* and *katab* on the one hand, and *ḍarxb* and *labis*, on the other. Is it an accident that no neutralization such as in (19) takes place whereby /*ḍarxb*/ would end up resembling /*labis*/ rather than /*katab*/ ?

(19)

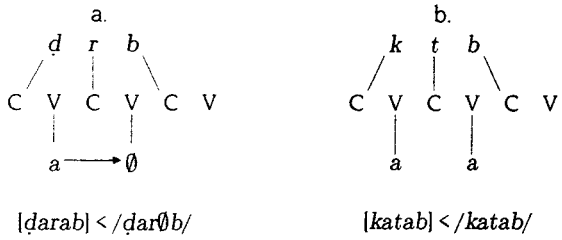
a.	b.
underlying contrast	surface neutralization
labis	*labis*
ḍarxb	**ḍarib*

The second observation has to do with the vocalization of C_1 in the Perfective paradigm. Whereas C_2 can be vocalized in a variety of ways, the topic of this paper, C_1 is uniformly followed by *a*: *katab*, *labis*, etc.

Is it accidental that x should surface as *a* in a paradigm where *a* regularly occurs in the preceding nuclear position ?

Our solution answers both questions: x, the true underlying vocalization of surface *ḍarab* is the null element ∅. As vacuous vocalization of C_2 is not tolerated in the Perfective, spreading eventually ensues, as shown below in (20a)[8].

(20)



The important point for our purpose is the emergence of the four clearcut vowel alternation classes in (21a), with matching examples in (21b).

(21)

	a.	b.	
1.	Ø→ *i*	*ḍarØb*	*yaḍrib*
2.	*i* → *a*	*labis*	*yalbas*
3.	*a*→ *u*	*katab*	*yaktub*
4.	*u* → *u*	*kabur*	*yakbur*

7 *Results and concluding remarks*

We are now in a position to answer some of the questions raised earlier in this paper. We started by noting a puzzling gap whereby four vowel alternation classes only were attested, out of nine logical possibities. We can now rationalize such a gap in terms of a deeper regularity. That is, classes are not lexically recorded *as such* as had earlier been held[9]. Rather, each root is lexically associated with one of our four vocalic objects, Ø, *a*, *i*, *u* as shown in (22). From such a vantage point, "classes" of vowel correspondences are a mere by-product of the operation of the ablaut function.

(22)

√	lexical vocalization
ḍrb	☞═══☞ Ø
lbs	☞═══☞ *i*
ktb	☞═══☞ *a*
kbr	☞═══☞ *u*

[8] The solution just offered calls for a comment. In early generative work, the distinction between the *a* of *ḍarab* and the *a* of *katab*, resp. the one that apophonizes into *i* and apophonizing into *u*, might have been captured by postulating two kinds of *a*'s, say /a_1/ and /a_2/, later undergoing neutralization into [a]. We are proposing nothing of the kind. Rather, the phonetic interpretation of a null melodic element by rightward propagation from a neighboring position falls well within the inventory of legitimate descriptive devices of autosegmental theory. It is amply documented in an outside of noncatenative morphological systems, as well as in tonal phonology

[9] Cf. McCarthy (1981) p. 403 "It is obvious that we can give only a lexical account of assignment of any given root to an ablaut class".

Based on strictly morphophonological considerations, exactly four types of verbs are recognized. We expect that this unambiguous typology arrived at on independent grounds may be viewed as an anchoring point by scholars attempting to relate vocalization and clusters of syntactic and semantic properties of verbs.

The careful reader will have noticed a striking formal property of the individual apophonic statements in (21a), viz. each output vowel of an apophony is the input to another. Thus, the discrete statements of (21a) can be linearized into a path, as in (23).

(23) $\emptyset \rightarrow i \rightarrow a \rightarrow u \rightarrow u$

As much more space would be required for full discussion, two points will only be mentioned in connection with the scope of (23).

First, as we have argued elsewhere (Guerssel & Lowenstamm, forthcoming), the formula in (23) can be extended to account for all facets of vocalization of the Arabic verb, allowing for the derivation of the vowel melodies of the four classes determined by Aspect and Voice in each derived conjugation.

Second, there is very good indication that (23) is not limited to Arabic or Semitic, indeed might be universal. Thus, (23) has been argued to be operative in Ge'ez (Ségéral 1995), Kabyle Berber (Bendjaballah 1995). In addition, recent work (Ségéral & Scheer 1995, and Ségéral 1995) has shown the entire system of strong verbs of Modern German, 43 different vowel patterns altogether, to be a mere instantiation of (23).

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Arabic and Celtic Sentence Structure: the Generalized Expletive Hypothesis

Giuliano Lancioni

1 *Introduction*

Similarities among languages which belong to different families issue a doubtless exciting challenge to linguistics, a challenge traditional approaches to the study of language are at odds with. On the one hand, historical linguistics has simply no answer to give: since structural similarities cannot but stem from a common historical origin, genetically unrelated languages can share features by accident only.[1] Typological linguistics, on the other hand, seems to be able to offer a solution: by listing universals of language and grouping features which tend to appear together, it shows some predictive power.[2] But this power is mostly taxonomic: one can predict that, say, if a language has VSO dominant order it has post-head modifiers too, but one cannot give a principled explanation of that.

The approach of generative linguistics to this challenge is completely different: if we accept the idea that, at an adequate level of representation, all languages share the same structure, what we expect is exactly that even unrelated languages can show common features, provided that they have the same settings for the relevant parameters.

In this paper, I face a case study in comparative generative linguistics. The core hypothesis, *Generalized Expletive Hypothesis*, is meant to account for a bundle of morphological and syntactic features shared by Modern Standard Arabic (henceforth MSA) and modern Celtic languages (Irish, Welsh, Breton): it basically says that most

1 Another possible approach to similarities in unrelated languages within historical linguistics is the widening of the concept of linguistic kinship so much so that even very distant languages (or, in some version of the approach, all human languages) can be said to belong to the same family: see e.g. Bomhard 1984. This trend, whose scientific plausibility is, to say the least, highly questionable, does not seem to be much represented in mainstream historical linguistics, however.

2 See Greenberg (1963, 1978).