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QUANDARIES OVER THE MORPHONOLOGY OF THE VERB IN MODERN STANDARD ARABIC AND TUNISIAN ARABIC: A TENTATIVE DRAFT

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Abstract. Brought up for discussion are problems of general and particular mor(pho)phonology. First, some linguistic terms are clarified, and the status of morphophonology as a linguistic subdiscipline is considered. The particular morphophonological part, referring to Modern Standard Arabic (MSA) and Tunisian Arabic (TA), is topic oriented and it treats in succession: the structure of the verb forms, the relation of homoradicality (homolexicality) specifying the corresponding paradigmatization, and the intra- and interparadigmatic relations. In terms of the former of these relations the concept of morphoneme is defined, and among the latter morphophonological convergence and analogy as well as thematogen homoaffixality are distinguished. Finally, the dynamics of morphophonological space, morphonemic and morphonic representations are touched upon.

Key words: mor(pho)phonology, Modern Standard Arabic, Tunisian Arabic, morphonological convergence, morphonological analogy, morphonemics

1. Introductory remarks

The subdisciplines of linguistics such as phonetics, phonology, morphology, if approached non-locally, permeate each other to a considerable extent, in spite of their inherent and recognizable peculiarities. Certain linguistic objects, such as sounds, phones, words, and certain relations, such as distinction, equality, distribution, appear in all of these subdisciplines testifying to their close congenerity.

The present article will concern itself, in a rather brief and fragmentary way, with the morphophonology of Modern Standard Arabic (MSA) and Tunisian Arabic (TA). The original intention of the authors has been to confine themselves only to the latter variety, but for the sake of better understanding its peculiarities they decided to take recourse also to the former. However, even in an attempt to propose a brief descriptive treatment of some selected aspects of morphophonology, it is necessary to avail oneself of the appropriate metalingual knowledge encoded in conceptual and propositional contents of the theory being adhered to. The concepts are expressed by the terms and the propositions by the postulates (assumptions) of the theory.

For various reasons, the theory serving as the background for the current study, will not be explicitly formulated. Nevertheless its assumptions should become clear through the model resulting from the application of this theory to the description of lingual data.

Morphophonological reality, as any other area of lingual domain, can be investigated within various theoretical frameworks, whereby the obtained linguistic insights may be complementary to each other. It would be encouraging to hope that our morphophonological conception, although diverging from others, offers a structuralist insight not completely negligible for the branch of study which is also called ***morphonology***, and which term we shall use rather consistently, and abbreviate it to the prefix mfn.

2. Some terminological clarifications

In pursuing the aim of describing a fragment of MSA and TA morphonology, it stands to reason that the authors are required to resort to the appropriate terminology, all the more so, if the intended description may diverge from other similar proposals. In order to ensure unambiguous understanding of the subsequent argumentation, it does not seem out of place to clarify briefly the meanings of at least some of the general terms being used. However, if such a clarification turns out superfluous, the present authors run the risk to have contributed something blatantly obvious. Despite such an eventuality, they will not change their minds believing that the clarification in question may have some advantage yet, in particular, facilitating the understanding of the methodological principles underlying the current article.

The reason for the explanation of certain general terms already in this preparatory section is thus their participation, to a considerable extent, in organizing the transmission of the conceptual contents of our current apprehension of morphonology. These terms will denote certain classes of entities in this linguistic field fairly diversified ontologically.

Let us then begin with the characterization of the entities of two kinds: ***objects*** and ***relations***: Actually we shall avail ourselves of binary relations, that is, such that

bind two objects. However, in order to be bound by a relation, objects must exhibit appropriate ***properties*** (features) with respect to which these objects are connectable. Consequently, a binary relation may be considered as a set of pairs of objects.

Accounting for the ontological diversity of objects, they are classified into disjoint subsets called ***logical types*** (cf. Batóg 1967: 7f; Oueslati 2015: 35f). To the simplest type belong individuals, conceived of as single, indivisible and distinct entities. The individuals are followed in succession by more abstract types, that is, sets of individuals, sets (families) of sets of individuals, and so on. The current article limits itself only to these first three types.

In our considerations, a highly expedient function is accomplished by ***equivalence relations*** which are simultaneously reflexive, symmetric, and transitive. Each such relation defined on a set of objects specifies a corresponding ***classification*** of this set, that is, it converts it into a set (family) of disjoint subsets.

Properties, if associated together, form dimensions (parameters). A ***dimension*** may be defined as a set of homogeneous properties, that is, properties in the same regard. A subset of appropriate dimensions, closely interacting, may jointly create a connex ***space*** in relation to which a lingual reality is characterizable. Properties determine respective categories. A ***category*** determined by a property can be thought of as a set of all objects sharing this property.

To conclude the above brief explanation of some general terms to be made use of in this article, let us still draw attention to the fact that among other entities there can be distinguished complex ones, including: systems, structures, schemata, and sequences. A ***system*** is an entity consisting of a set of objects, and a relation or relations operating on this set (cf. Oueslati 2015: 37). A ***structure*** appears as a representation or manifestation of a corresponding system, usually in terms of a graph. A ***schema*** and a ***sequence*** are but kinds of structures. Both represent respective systems in terms of appropriate graphs.

3. The status of morphonology

A decently exhaustive overview of the status of morphonology as a subfield of phonology cannot be given within the bounds of this section. Hence we shall concentrate only on some selective aspects which seem relevant to the current inquiry, and the appraisal of which may not necessarily agree with the mostly favored convictions.

Roughly speaking, phonology as a linguistic subdiscipline studies the phonic reality of language. However, this reality may be approached linguistically in different ways. In language reality various subrealities interact, including ones that are morphological, syllabic, lexical or syntactic. The phonic reality of language is thus fairly diversified, which lets us in advance surmise that this diversity may find reflection in the corresponding diversification of the phonology itself.

Phonology may be pursued without taking into consideration the ontological diversity of its subject matter, that is to say, without limiting itself to a particular subreality, but pertaining to lingual phonics as a certain integral whole. Such a kind of phonology could be called ordinary, general, or overall phonology, since it is oriented towards overall aspects of the lingual phonics, and thus without attempting specifically to treat a particular subreality.

In contrast with this, a particular phonology limits itself to a particular phonic field. Sounds of every language occur in larger units, such as syllables, morphs, syntagms and sentences. Consequently, within particular phonologies syllabic phonology, morphonology and syntactic phonology are distinguished. The ontological diversity of phonology thus justifies its particularization.

Structuralist phonology encountered seeming difficulties with adequately accounting for certain phonological phenomena conditioned not only by the phonetic environment but also morphologically. Thus, for example, phones bound by phonological opposition could reveal morphological cognateness, while occurring in corresponding positions in word forms belonging to the same paradigm, as is shown by the following Polish data:

(3.1) *mogę* [*mogɛ̃*] ‘I can’ ~ może [*mɔʒɛ*] ‘he/she can’.
(3.2) *wlekę* [*wlɛkɛ̃*] ‘I drag’ ~ wlecze [*wlɛtʃɛ*] ‘he/she drags’.

The phones [g] and [ʒ] belong to different phonemes (cf. *gar* [*gar*] ‘large pot’ ~ *żar* [*ʒar*] ‘heat’. The phones [k] and [tʃ] also belong to two different phonemes (cf. *kuć* [*kutɛ*] ‘to forge’ *czuć* [*tʃutɛ*] ‘to feel’.

Despite the phonological distance the respective phones show close morphologically conditioned cognateness. Such and similar phenomena leveled the way towards morphonology.

The alternations of heterophonemic phones occurring in the root morphs belonging to the same morpheme are rather widespread in Polish (cf. Gussmann 2007: 13ff; 2003). The attempts of theoretical approximation of phonological phenomena, conditioned grammatically or lexically, and not phonetically, within structuralist phonology, even if the concept of archiphoneme was introduced, turned out to be disappointing. The necessity of calling into existence of a new phonological subdiscipline became evident. This necessity was timely recognized by Polish linguist Henryk Ułaszyn, who proposed the term ***morphonema*** in 1931, and contributed to the foundation of morphonology, the subsequent development of which gathered momentum. To the linguists who figure prominently in this field belong, among many others, Trubetzkoy (1934), Jakobson (1948), Schenker (1954), Stankiewicz (1954, 1967), Hockett (1958: 269–300) and Gussmann (2007).

In the context of morphonological deliberations it would be inappropriate to pass over in silence the original contribution of traditional Arab grammarians to morphology and morphological phonology, although this latter was not referred to

by a specific term. In traditional Arabic grammar, three main categories of words, namely, three parts of speech, have been distinguished: verb (*fiʿl*), noun (*ism*), and dependent word (*ḥarf*, *adāt*). Such a triadic division turned out insufficient and required further subdivisions of each of these three categories into more particular ones (cf. Danecki 1994: 101).

Theoretical and practical morphology and morphological phonology were pursued in close connection with theoretical syntax, or rather within it. The enquiry into these linguistic areas is highly advanced, which also finds reflection in the corresponding linguistic terminology to which, among other terms, the following belong:

ṣarf 'morphology' ('divert', change);
taṣrīf 'inflection' ('morphologization', cf. Owens 2000: 68; Danecki 1994: 100, 1993);
ištiqāq 'derivation';
naḥw 'grammar, syntax' ('direction, way');
ǧumla 'sentence';
ǧiḏr, *ʾaṣl* 'consonantal root' (for example *k-t-b*);
f-ʿ-l 'symbolic representation of triconsonantal roots' (the root pattern, root template, root schema);
binā' 'consonantal-vocalic stem' (for example *katab-*, *-ktub*);
wazn, *ṣīḡa* 'symbolic representation of the stem patterns' (for example *faʿal*, *fʿul*).

Traditional Arabic grammar succeeded thus in describing morphological structure of words quite adequately, and simultaneously contributed to gaining insight into the knowledge of Arabic morphological phonology. The inflectional and derivational diversity has been treated, inter alia, in terms of consonantal roots, root schemata, consonantal-vocalic stems and stem schemata. These terms likewise others did not lose relevance for current intensive research of today (cf: Baccouche 1992; Dendane 2008; Abdulsada 2017).

Worth emphasizing is the recognition of the status of the category of dependent words, comprised of adpositions, conjunctions, and particles. The instrumental function of these words in expressing grammatical meanings was asserted already by Sībawayhi who died in 793 (cf. Danecki 1994: 101, 342ff). Consideration is also deserved by the method of applying proportional analogy, which is reflected in the term *qiyās*, connected with the linguistic school of Baṣra.

4. The mfn-structure of the verb forms

It is not the authors' intention to thoroughly inquire into the complexity of the morphological structure of the Modern Standard Arabic or Tunisian Arabic verb forms but rather briefly survey out some aspects of this structure as required by the

needs of the current article. Verb forms as mereological wholes *sui generis* are a kind of syntactic words, comprised of entangled lexical and grammatical significators. Nonetheless, some morphologically relevant objects (morphemes) can be distinguished within verb forms, although not always unambiguously. Each verb form signifies thus simultaneously lexical and grammatical meanings. The meaning, if signified grammatically, becomes communicatively more conspicuous.

The lexico-grammatical dichotomy at the meaning's level requires of necessity a corresponding recognizable dichotomy at the level of signification. Verb forms as significators exhibit in Arabic a peculiarity appearing as a contrast between:

(i) radicality, and
(ii) affixation.

The ***radicality*** can be conceived of as:

(i) a linearly ordered fixed sequence of three or even more consonants, and
(ii) a significator of a general lexical meaning of the verb form.

The consonants being members of the radicality are called: first (initial), second (medial), and third (final) radical. However, the radicality does not determine whether it appears as completely discontinuous, separated by affixes, or partly continuous sequence within the verb forms. Thus, this is not decided upon until affixation.

The ***affixes*** convey grammatical meanings. Regarding their morphological function they divide into two groups:

(i) thematogen, and
(ii) inflectional.

The distinction between them is not always clear enough, since they may be engaged jointly in co-signification of one and the same meaning. The affixes may consist of consonants and/or vowels, and they turn up as: prefixes, suffixes, infixes transfixes, or circumfixes. The thematogen affixes together with the radicality create the stems whereby the roots are also specified.

The ***stems*** (***themes***) of the verb forms result thus from the fusion of the radicality with the thematogen affixes which may convey meanings from the dimensions of Time, Diathesis, Modality or Aspectuality. The stems are always continuous, and it is within them that the radicality is converted into roots. Distinguished are ***basic*** and ***derived*** stems. In these latter the medial radical may be geminated. In this article we shall focus only on the verb forms with basic triconsonantal stems.

The ***root*** emerges as a concrete manifestation of the radicality in the verb form. It could also be said that the interaction of the radicality with the thematogen affixation calls into existence the stems and the roots of the verb forms. Thus, the root is

derived from the radicality, while this latter is not itself derivable. And, what is more, one and the same radicality may be converted into differing roots.

The ***verb forms***, as a subset of word forms, more precisely, syntactic word forms, belong to the maximal units of morphology, and they are composed, as shown below, of stems and inflectional affixes. The latter signify meanings from the dimensions of Person, Number, and Gender (cf: Danecki 1994: 101ff).

All of the objects distinguished above, characterize the internal structure of Arabic verb forms. This structure can be safely referred to as morphonological, since all its constituents are, after all, coded in terms of phones. In exemplifying below the mfn-structure of the MSA and TA verb forms (*katabtu*, *ktibit* 'I wrote' and *'aktubu*, *niktib* 'I write/shall write) their constituents will be associated with the theoretical objects being proposed above.

(4.1)
MSA

	Perfect	Imperfect
verb form	*katabtu*	*'aktubu*
stem (theme)	*katab-*	*-ktub-*
inflectional affix	*-tu*	*'a- -u*
radicality	*k*, *t*, *b*	*k*, *t*, *b*
thematogen affix	*-a-a-*	*ø -u-*
root (radix)	*k-t-b*	*-kt-b*
root schema	C_1-C_2-C_3-	-C_1C_2-C_3-
stem schema	$C_1VC_2VC_3$-	-$C_1C_2VC_3$-

As can be easily noticed both verb forms have the same radicality which manifests itself as two root variants (alloroots), one completely discontinuous (*k-t-b*). However, the variation between roots does not affect the homolexicality of the respective verb forms. Consequently, the radicality should not be identified with the root.

The mfn-structure of the TA verb forms appear different, if compared with the verb forms of MSA, which can be seen from the following:

TA

	Perfect	Imperfect
verb form	*ktibit*	*niktib*
stem (theme)	*ktib-*	*-ktib*
inflectional affix	*-it*	*ni-*
radicality	*k*, *t*, *b*	*k*, *t*, *b*
thematogen affix	*-ø -i-*	*-ø -i-*
root (radix)	*kt-b*	*kt-b*
root schema	C_1C_2-C_3	-C_1C_2-C_3
stem schema	$C_1C_2VC_3$-	-$C_1C_2VC_3$

5. Homoradicality

The radicality has been conceived of here as a constituent of a verb form, which signifies a general lexical meaning, and which resides in every verb form. With regard to radicality verb forms may be indistinguishable or distinct. The sameness (equality) of radicality can be captured as ***homoradicality*** finding formal reflection in the binary ***relation of homoradicality***, symbolized for convenience as ***Hrd***. Verb forms bound by the relation ***Hrd*** are thus not opposed with respect to the meaning signified by radicality. It could be also said that homoradicality binds verb forms whose roots are derived from the same radicality. Since radicality expresses general lexical meaning, homoradicality can be identified with homolexicality.

Let us now inspect the family of verb forms under the angle of homoradicality. The relation ***Hrd*** as an equivalence specifies a corresponding classification of this family. The result of this classification amounts to nothing else but ***the family of homoradical paradigms*** (***PHR***). The verb forms belonging to the same homoradicality class, that is, to the same homoradical paradigm, fulfill the following conditions:

(i) they share a common radicality permeating the whole paradigm;
(ii) any two different verb forms exhibit distinctions regarding various grammatical dimensions;
(iii) each verb form belongs to a corresponding paradigm;
(iv) any two different paradigms are disjoint sets of verb forms.

The above conditions are necessarily required by paradigmatisability.

If applied to Tunisian Arabic verb forms (***VFTA***), we could say that the system (***VFTA***, ***Hrd***) converts the family ***VFTA*** into the family of homoradical paradigms for TA. Admittedly, a comprehensive treatment of radicality should be extended to embrace also the verb forms with derived stems. This, however, will not be dealt with in this article.

By way of concluding this section, let us put it somewhat metaphorically that each radicality generates a corresponding homoradical paradigm. An in-depth approach to this problem would require taking into consideration not only verbs but also substantives and adjectives, in a word, all word forms. Then, it would make sense to compare particular radicalities for the numerosities of paradigms generated by them, that is, for the number of word forms each of these paradigms is comprised of. In this context one could speak about the ***dispersion*** or the ***load*** of a given radicality in a considered language.

Lastly, we would like to signal that, in addition to homoradicality, also the problem of homoaffixality and homothematicity deserves consideration. With the family of homoradical paradigms at our disposal the connections between verb forms both intra- and interparadigmatically can be investigated.

6. Intraparadigmatic mfn-relations

Having thus gained access to the family of ***Hrd***-paradigms, the relationships between phones occurring in the verb forms belonging to one and the same paradigm may be identified. More precisely, we will be interested in the morphonological relations binding phones occurring in the ***morphologically corresponding positions*** of the stems of the homoparadigmatic verb forms. On the basis of such morphonological correspondences the comparison of appropriate phones is possible. Consequently, the inquiry will be confined to the consonants forming the roots and to vowels of the thematogen affixes.

The phones occurring in the considered morphological positions may be:

(i) invariable (unalterable, constant) or
(ii) variable (alterable, changing).

In order to formally capture this distinction, we shall operate with the following two relations:

(i) the ***relation of mfn-invariability*** (***Mfni***), and
(ii) the ***relation of mfn-alternation*** (***Mfna***).

For the sake of exemplification the following MSA and TA selected verb forms and their stems can be inspected and compared.

(6.1)
MSA

Verb form	Stem
kataba ‘he wrote’	*katab-*
yaktubu ‘he writes’	*-ktub-*
kutiba ‘it was written’	*kutib-*
yuktabu ‘it is/will be written’	*-ktab-*
katabtu ‘I wrote’	*kataḇ-*

TA

Verb form	Stem
ktib ‘he wrote’	*ktib·*
yiktib ‘he writes’	*-ktib·*
tiktib ‘it was written’	*-ktib·*
yiktib ‘it is/will be written’	*-ktib·*
ktibit ‘I wrote’	*ktib-*

The comparison of the morphologically corresponding phones occurring in the stems of the considered MSA verb forms shows that:

(i) the following pairs of phones belong to the relation of mfn-invariability: (*k*-, *k*-), (-*t*-, -*t*-), (-*a*-, -*a*-), (-*b*, -*b*), and, in turn,
(ii) the following pairs of phones belong to the relation of mfn-alternation: (-*a*-, -*ø*-), (-*a*-, -*u*-), (-*a*-, -*i*-), (-*u*-, -*i*-), (-*ø*-, -*u*-), (-*b*, -*b̥*).

The situation in TA is only partially similar to that of MSA. The mfn-invariability is comprised here of the following pairs of phones: (*k*-, *k*-), (-*t*-, -*t*-), (-*b*·, -*b*·), (-*i*-, -*i*-), (-*ø*-, -*ø*-) whereas to the mfn-alternation there belongs only the following pair of phones: (-*b*, -*b*·). The latter relation is thus less numerous.

The relation of mfn-invariability and mfn-alternation allow us to formulate the following definition:

Df 6.1. ***The relation of homomorphonemicity*** (***Hmfm***) results from the set-theoretical summing up of the relations ***Mfni*** and ***Mfna***.

Consequently, these two relations turn out to be but subrelations of the relation ***Hmfm***. And this means that all the pairs of phones which belong to mfn-invariability or to mfn-alternation belong at the same time to the relation of homomorphonemicity. Being reflexive and symmetric the relation ***Hmfm*** induces a grouping of the set of phones of a language under consideration. This grouping is simply a ***family of morphonemes***. However, this family, as should be clear, is not a classification of the set of phones.

A ***morphoneme*** emerges thus as a set of phones which occur in morphologically corresponding positions of phonological representations for the stems of the homoparadigmatic verb forms.

Based on definition 6.1, and (6.1) (i) (ii), the following subsets of phones can be recognized as morphonemes for MSA:

(6.2) {*k*-}, {-*t*-}, {-*a*-, -*ø*-, -*u*-}, {-*a*-, -*u*-, -*i*-}, {-*b*, -*b̥*}

Of course, taking into consideration the whole paradigm specified by the radicality *k*, *t*, *b*, the number of morphonemes operating in this paradigm would be significantly larger.

The morphonemic grouping of TA phones is based on the same principle as stated in Df 6.1, whereby the following morphonemes can be established: {*k*-}, {-*t*-}, {-*b*,-*b*·}, {-*ø*-}, {-*i*-}.

The conception of morphonemicity reflects a kind of intraparadigmatic connectedness. The verb forms belonging to the same ***Hrd***-paradigm are bound together also morphonemically, in which radicality participates as well.

Concluding this section, it is worth mentioning that the structuralist phoneme, on the one hand, and the morphoneme as defined here, on the other, are approximated based on different principles. Generally speaking, the former may be defined as

set of phones being bound by free variation or complementary distribution and sufficiently similar phonetically (cf. Batóg 1978; Bańczerowski et al. 1981: 178 ff; Oueslati 2015: 258 ff). The latter is also defined as a set of phones, but theoretically differently apprehended (cf. Df 6.1).

Notice attracts also the relation of mfn-alternation in MSA and Tunisian showing similarity to apophony (ablaut, vowel gradation) in the Indo-European languages (cf. English *drink*, *drank*, *drunk*). This problem is thoroughly delved into by Mailhammer and Vennemann (2019).

7. Interparadigmatic relations in the family of hrd-paradigms

Any two different paradigms belonging to the family of ***Hrd***-paradigms, by means of their verb forms, exhibit both:

(i) equality (similarity) in certain dimensions, and
(ii) distinction (dissimilarity) in some other dimensions.

The equality with regard to dimension D_i simply means indistinguishability of the heteroparadigmatic verb forms, if compared for D_i. It may concern all grammatical categories accessible to the paradigms, and the affixation of the stems. The distinction, in turn, with regard to dimension D_j means that heteroparadigmatic verb forms are in opposition, if compared for D_j. What is more, any two heteroparadigmatic verb forms are conspicuously distinct with respect to Radicality (Lexicality), since they are obligatorily heteroradical. And, of course, the distinction may also concern grammatical categories, and the affixation of the stems.

Thus, the interparadigmatic relevance of equality and distinction finds reflection in appropriate relations which come to light, if heteroparadigmatic verb forms are confronted. The verb forms are not accidental entities, chaotically put together, but they are wholes composed according to certain mfn-schemata which determine the mode of arrangement of the mfn-structure of these wholes appearing ultimately as systematic entities of correlated morphological constituents coded in terms of phonological units.

The family of ***Hrd***-paradigms is not only a set of:

(i) clearly distinct (dissimilar) subsets, that is, particular paradigms, but it also is a set of
(ii) subsets clearly equalized (similar) to each other.

The equality and distinction complement each other of necessity forming a connex ***Hrd***-paradigmatic whole.

The interparadigmatic reciprocal action with respect to the duality equality/distinction can be jointly captured in terms of mfn-convergence which, however, has

a gradable nature while appearing weaker or stronger, and thus accounting for various degrees of similarity in question. Treated in this way mfn-convergence is more general in comparison to mfn-analogy which reflects a stronger interaction between ***Hrd***-paradigms. More attention to these two kinds of interparadigmatic relationships will be devoted in the course of the following considerations.

7.1. Morphophonological convergence

As should be remembered, the relation of homoradicality (***Hrd***) binds verb forms belonging to the same ***Hrd***-paradigm. Such a paradigm is based upon the sameness of radicality consisting of certain phones (consonants) co-creating with the appropriate vowels the stems of verb forms which signify, just by virtue of their radicality, a general lexical meaning (a lexeme). The relation of homomorphonemicity (***Hmfm***), in turn, binds phones occurring in morphologically corresponding positions of the stems of verb forms belonging to the same ***Hrd***-paradigm, whereby a relationship also between the verb forms themselves is established.

In contrast to just now mentioned two relations, the relation of ***morphonological convergence*** (***Cvmfn***) will bind pairs of verb forms, both homo- and heteroparadigmatic. Thus, if [(*X*, *Y*), (*U*, *V*)] is an element of the relation ***Cvmfn***, then

7.1 (a) the pair (*X*, *Y*) is the predecessor of ***Cvmfn***, and (*U*, *V*) its successor. Consequently, the relation ***Cvmfn*** appears as a set of pairs of pairs of verb forms;
(b) *X* and *Y* are homoradical as are *U* and *V*;
(c) *X* and *U* belong to the same grammatical categories as *Y* and *V* do;
(d) the pairs (*X*, *Y*) and (*U*, *V*) are in grammatical analogy, since the grammatico-categorial distinction between *X* and *Y* is identical with that between *U* and *V*;
(e) the thematogen infixes in the verb forms may be identical or may alternate regularly conforming to fixed principles.

As can be rightly inferred from the above, the relation ***Cvmfn*** is an equivalence on the set of homoradical pairs of verb forms, since it is reflexive, symmetric, and transitive, whence the following implications hold:

(i) (*X*, *Y*) ***Cvmfn*** (*X*, *Y*);
(ii) (*X*, *Y*) ***Cvmfn*** (*U*, *V*) → (*U*, *V*) ***Cvmfn*** (*X*, *Y*);
(iii) (*X*, *Y*) ***Cvmfn*** (*U*, *Y*) ∧ (*U*, *V*) ***Cvmfn*** (*M*, *N*) → (*X*, *Y*) ***Cvmfn*** (*M*, *N*).

However, it should be clear that not all pairs of homoradical pairs of verb forms are mfn-convergent but also those which fulfill the conditions 7.1 (a)–(e).

For the sake of exemplification let us inspect the following pairs of homoradical pairs of MSA verb forms.

(7.1) [(*katab-tu*, *katab-a*), (*ḍarab-tu*, *ḍarab-a*)],
'I wrote', 'he wrote', 'I hit', 'he hit'
(7.2) [(*katab-tu*, *katab-a*), (*šarib-tu*, *šarib-a*)],
'I wrote', 'he wrote', 'I drank', 'he drank'
(7.3) [(*katab-tu*, *katab-a*), (*qarub-tu*, *qarub-a*)].
'I wrote', 'he wrote', 'I was close to, 'he was close to'

As can be easily stated, each of the above pairs of pairs of verb forms belongs to the relation ***Cvmfn***, since each of them fulfills the conditions 7.1 (a)–(e). These mfn-convergences exhibit the following thematogen discontinuous infixes:

-a-a-/*-a-a*, *-a-a-*/*-a-i-*, *-a-a-*/*-a-u-*

The phonetic alternation of the affixes is thus irrelevant for the mfn-convergence. What is relevant is their functional correlation.

To continue the comparison of the heteroparadigmatic mfn-convergences it may be in order to take a glance at the following instances:

(7.4) [(*katab-a*, *ya-ktub-u*), (*ḍarab-a*, *ya-ḍrib-u*)],
'he wrote', 'he writes/is writing', 'he hit', 'he hits/is hitting'
(7.5) [(*daras-a*, *ya-drus-u*), (*šarib-a*, *ya-šrab-u*)],
'he studied', 'he studies/is studying', 'he drank', 'he drinks/is drinking'
(7.6) [(*'akal-a*, *ya-'kul-u*), (*ḥasun-a*, *ya-ḥsun-u*)].
'he ate', 'he eats/is eating', he became good/he is good

These mfn-convergences may be associated with their respective thematogen affixation arranged in the following way:

(7.4′) [(*-a-a-*, *ø-u-*), (*-a-a-*, *ø-i-*)],
(7.5′) [(*-a-a-*, *ø-u-*), (*-a-i-*, *ø-a-*)],
(7.6′) [(*-a-a-*, *ø-u-*), (*-a-a-*, *ø-u-*)].

The relation ***Cvmfn*** has been recognized as binding homoradical pairs of pairs of verb forms, whence it appears as a subset of the Cartesian product ***Hrd*** × ***Hrd***. It binds these pairs with regard to the radico-affixal structure of the stems of their verb forms and for this reason it can be extended to the pairs of pairs of such stems, which, in turn, may be exemplified as follows:

(7.7) [(*katab-*, *-ktub-*), (*ḍarab-*, *-ḍrib-*)]
(7.8) [(*daras-*, *-drus-*), (*šarib-*, *-šrab-*)]

The extension of the relation ***Cvmfn*** to the pairs of thematogen affixes has been shown in (7.4′)–(7.6′).

Observing the alternations of the thematogen affixes in the mfn-convergent pairs of pairs of verb forms, makes us realize sort of irregularities connected with these alternations. The search for appropriate regularities leads straight to the mfn-analogy (cf. Milewski 1993: 144f; Lyons 1968: 30f, 36f, 182f, 405, 471).

7.2 Morphophonological analogy

Analogy in general may be conceived of as a partial similarity between objects with regard to features which these objects share and which serve as a basis for comparison. The similarity as a gradable property may be weaker or stronger. The comparison of mfn-convergent pairs of verb forms for the degree of similarity obtaining between them with respect to thematogen affixation leads to the identification of mfn-analogy.

Bound by mfn-convergence the pairs of verb forms may exhibit either equality or distinction in their corresponding thematogen affixation. Equality means that the respective affixes in the stems of these pairs are homosignificative and homophonous, whereby the stems of the verb forms are homoaffixal. For the sake of exemplifying homoaffixation or its absence, instrumental are the following pairs of verb forms which enter, respectively, into the relation of mfn-convergence.

(7.9)
(a) (*katab-a*, *ya-ktub-u*)
‘he wrote’, ‘he writes/is writing’
(b) (*daras-a*, *ya-drus-u*)
‘he studied’, ‘he studies’/is studying’
(c) (*’akal-a*, *ya-’kul-u*)
‘he ate’, ‘he eats/is eating’

(7.10)
(a) (*šarib-a*, *ya-šrab-u*)
‘he drank’, ‘he drinks/is drinking’
(b) (*'amil-a*, *ya-'mal-u*)
‘he worked’, ‘he works/is working’
(c) (*'alim-a*, *ya-'lam-u*)
‘he knew’, ‘he knows’

(7.11)
(a) (*ḥasun-a*, *ya-ḥsun-u*)
‘he became good’, ‘he is good’
(b) (*kabur-a*, *ya-kbur-u*)
‘he grew up, he grows/is growing up’

(c) (*qarub-a*, *ya-qrub-u*)
'he was near', 'he is near'

(7.12)

(a) (*mana'a*, *ya-mna'-u*)
'he stopped', 'he stops/is stopping'
(b) (*dafa'-a*, *ya-dfa'-u*)
'he pushed', 'he pushes/is pushing'
(c) (*nafa'a*, *ya-nfa'-u*)
'he served', 'he serves/is serving'

The pairs of verb forms in (7.9) create the following mfn-convergences:

(7.13) [(*katab-a*, *ya-ktub-u*), (*daras-a*, *ya-drus-u*)]
'he wrote', 'he writes/is writing', 'he studied', 'he studies/is studying'
[(*katab-a*, *ya-ktub-u*), (*'akal-a*, *ya-'kul-u*)]
'he wrote', 'he writes/is writing', 'he ate', 'he eats/is eating'
[(*daras-a*, *ya-drus-u*), (*'akal-a*, *ya-'kul-u*)]
'he studied', 'he studies/is studying', 'he ate', 'he eats/is eating'

In a similar way, the pairs of verb forms in (7.10), (7,11) and (7.12) can be associated with respective mfn-convergences.

Inspecting all the mfn-convergences (7.9)–(7.12) it can be easily noticed that they are based, respectively, upon the pairs of the same pairs of thematogen infixes, and namely:

(i) [(*-a-a-*,*ø-u-*), (*-a-a-*, *ø-u-*)] (7.9)
(ii) [(*-a-i-*,*-ø-a-*), (*-a-i-*,*-ø-a-*)] (7.10)
(iii) [(*-a-u-*,*-ø-u-*), (*-a-u*,*-ø-u-*)] (7.11)
(iv) [(*-a-a-*,*-ø-a-*), (*-a-a-*,*-ø-a-*)] (7.12)

The thematogen infixes in the considered mf-convergences are thus, respectively, homophonous.

Having in mind the affixal correspondences within the pairs of verb forms affected by mfn-convergence the ***relation of mfn-analogy*** can be defined as follows:

Df 7.1. A pair of verb forms (*X*, *Y*) bears the relation of mfn-analogy to a pair of verb forms (*U*, *V*) if and only if these pairs are bound by mfn-convergence, and additionally their respective homosignificative thematogen affixes are homophonous.

In accordance with definition 7.1, the pairs of verb forms (*katab-a*, *ya-ktub-u*) and (*daras-a*, *ya-drus-u*) are bound by mfn-analogy, since they are related by mfn-

convergence and by thematogen homoaffixality. In contrast to this neither the pairs of verb forms (*katab-a*, *ya-ktub-u*) and (*šarib-a*, *ya-šrab-u*) nor the pairs of verb forms (*katab-a*, *ya-ktub-u*) and (*ḥasuna*, *ya-ḥsun-u*) are bound by mfn-analogy. Admittedly, these pairs of verb forms are mfn-convergent but they exhibit thematogen heteroaffixality.

For the sake of presenting a more general view on the mfn-analogy let us approximate its definition more completely. Then, it could be said that:

Df 7.1′. A pair of verb forms (*X*, *Y*) is in relation of mfn-analogy to a pair of verb forms (*U*, *V*), if and only if *X* and *Y* are homoradical as are *U* and *V*. And, the stems of *X* and *U* are homoaffixal as are the stems of *Y* and *V*. Therefore, *X* is to *Y* as *U* is to *V*.

The mfn-analogy is but a proper subset of the mfn-convergence, and it results from a complex interaction of homo- and heteroradicality (heterolexicality), and from thematogen homo- and heteroaffixality.

The relation of mfn-analogy as a set of heteroradical pairs consisting of homoradical (homolexical) pairs of verb forms is diversified, which results from various thematogen affixations. In order to account for this kind of diversification, it is necessary to introduce the relation of thematogen homoaffixality (***Thaf***) which binds pairs of verb forms entering mfn-analogy and exhibiting sameness (equality) of thematogen affixation.

The relation ***Thaf*** induces a classification of the family of the pairs of mfn-analogical verb forms into the family of **thematogen *homoaffixality*** classes. Each such class as an element of this family is thus comprised of all pairs of verb forms the pairs of the thematogen affixes of which are the same. Thus, all the pairs of verb forms listed in (7.9) (a), (b), (c) belong to one and the same class of thematogen homoaffixality. We can also say that this class is specified by the pair of infixes (*-a-a-*, *-ø-u*) or, more generally, by the mfn-schema (C_1-*a*-C_2-*a*-C_3-, -C_1C_2-*u*-C_3-).

Both the relations of mfn-convergence and mfn-analogy are at work also in TA morphonology. It should be remembered that the latter of these relations is but a particular regularized subset of the former. For the purpose of giving some insight into them the following examples may be expedient:

(7.14) mfn-convergence in TA
[(*sma'*, *yasma'*), (*šrab*, *yušrub*)]
‘he heard’, ‘he hears/is hearing’, ‘he drank’, ‘he drinks/is drinking’
[(*'raf*, *ya'rif*), (*dfa'*, *yadfa'*)]
‘he knew’, ‘he knows’, ‘he paid’, ‘he pays/is paying’

(7.15) mfn-analogy in TA
[(*ktib*, *yiktib*), (*fhim*, *yifhim*)]
‘he wrote’, ‘he writes/is writing’, ‘he understood’, ‘he understands’

[(*mna'*, *yamna'*), (*šba'*, *yašba'*)]
'he blocked', 'he blocks', 'he got full from eating', 'he gets full from eating'

The drive towards regularization of mfn-convergence by way of mfn-analogization is thus also observable in TA.

8. Dynamics of morphonological space

The notion of mfn-space, already mentioned in Section 2, has been conceived of as a theoretical construct created by the set of relevant mfn-dimensions (parameters), that is to say, dimensions for which the mfn-entities are sensitive and thus characterizable. Metaphorically, it could be said that the totality of the mfn-reality happens within this space. As a matter of fact, the authors of these lines have availed themselves of some of the dimensions in questions, without however explicitly referring to them as such. Admittedly, the following terms can be reinterpreted as denoting the respective dimensions, comprised of appropriate properties:

(i) Morphological correspondence (homomorphological vs heteromorphological);
(ii) Grammatical analogy (vs lexical);
(iii) Radicality (homoradical vs heteroradical);
(iv) The mode of signification (lexical vs grammatical);
(v) Thematogen affixation (homoaffixal vs heteroaffixal);
(vi) Mfn-convergence (convergent vs non convergent);
(vii) Mfn- analogy (analogical vs non-analogical).

The lingual entities, objects, relations, etc., appearing in the mfn-space, assume appropriate properties (meanings, features) in the dimensions to which they are sensitive. With respect to these properties, lingual entities enter into corresponding relations which, in turn, may enter into relations with relations.

The lingual entities interact in the mfn-space by exerting influence upon each other. One of the driving forces behind the creation of new forms is certainly mfn-analogy by virtue of which previous forms are replaced by more regular ones, often being more common. However, the action of analogy may be either fortified or lenited by various factors as, for example, phonetic or semantic.

Certain mfn-convergences may be converted into corresponding mfn-analogies by processes of regularization. The mfn-analogies operating in the set of mfn-convergence may be diversified as to their numerical predominance and other factors, which determine their prevailence or lack of it in the mfn-space. Thus, certain schemata of mfn-analogy reflect greater productivity of this process while others reflect greater recessivity.

The mfn-space is not stable but changeable, and it constantly produces new forms by the processes of regularization and de-regularization. The former are thus based also upon mfn-analogy. The latter may be conditioned phonetically or semantically, as already mentioned above. The operation of the processes of these two kinds is observable in Arabic dialects.

9. Concluding thoughts

This article should be viewed as merely a modest proposal sketching out tentatively selected mfn-aspects of the verb of MSA and TA rather than offering ready, firmly established solutions. The authors have attempted to implicitly apply some theoretical principles which may turn out to be relevant, while formulating an explicit general mfn-theory also applicable to the two lingual varieties in question.

The mfn-descriptions of concrete languages should try out various theoretical frameworks whereby the resulting complementary models could apprehend the mfn-complexity more versatilely and thus exhaustively. The definition of the morphoneme, proposed in Section 6, if refined, could contribute to establishing within morphonology a subdiscipline of ***morphonemics*** (morphonematics) which studies, among others, the relationships obtaining between morphonemic (morphonematic) and morphonic (morphonotactic) representations, in particular the mutual convertibility of these representations.

Recapitulating let us objectively state that the mfn-proposal submitted for consideration is far from being satisfactory in many respects. Certain problems have been signaled rather than thoroughly discussed or even completely omitted. Hence, what remains for the authors is to hope that despite all the deficiencies their article brings at least something worthy of note and not simply less than nothing.

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