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THE RELATIONSHIP BETWEEN MEANING  
AND MORPHOLOGICAL PRODUCTIVITY

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Aronoff (1976: 39) has suggested a simple relationship between meaning and productivity; he hypothesizes that a morpheme whose meaning is more easily analyzable, or "semantically coherent" in his terms, will be more productive. Citing an example from Zimmer (1964: 32), he says that the prefix non-, meaning 'not X,' is more productive than the prefixes in- or un-, which mean 'opposite to X.' That is, there are more words like non-scientific than like unscientific. Thus, in Aronoff's view, the more semantically analyzable affix is more productive.

However, historical evidence shows that the relationship between meaning and productivity is more complicated. Diachronic evidence for productivity lies in the spread of a morpheme to form new lexical items. Some derivational suffixes have become inflections, and this change implies an increase in productivity accompanied by a decrease in meaning. Good examples of derivational suffixes that later became part of the inflection occur in the history of Romance languages. The Rumanian suffixes -ez and -esc originated in the Latin -IZ-ĀRE and the inchoative -ESC-ERE, where -IZ- and -ESC- are derivational suffixes followed by the infinitive ending. These suffixes are more frequent in Rumanian than in Latin, even though they do not retain any lexical meaning. Blaylock (1975: 436) counts 680 verbs in -ESC- or its variants in Latin, while Lombard (1955: II.776) says that Rumanian has 2800 verbs with -esc or its variant; the modern Romance language thus has over four times as many suffixed forms as the ancient language.

Of the 2568 Rumanian verbs whose infinitives end in -a, 1737 take the suffix -ez (Lombard 1954: I.558). On the other hand, Classical Latin has only a few examples of verbs ending in -IZ-ĀRE or its variant -ISS-ĀRE, the ancestors of Rumanian -ez. In a count of all the first conjugation verbs in a Latin dictionary (Simpson 1960) containing words current from 200 BC to 100 AD, I found only three ending in -IZ-ĀRE and nine in the variant -ISS-ĀRE; one of these verbs has forms in both -IZ-ĀRE and -ISS-ĀRE. All but one are loans from Greek, and the only exception, GRAEC-ISS-Ō 'I imitate the Greeks,' is a clear calque of Greek hellen-iz-ō, which has the same meaning. This suffix became more productive in later Latin and still more productive in Rumanian even though it lacks a clear meaning and thus is not "semantically coherent." Today, new Rumanian verbs of the first conju-

gation normally take -ez, and those of the fourth take -esc, whether their roots are Latin, Rumanian, or loans from other languages.

What is the function of these suffixes in Rumanian? A comparison of the paradigms of suffixed and non-suffixed paradigms clearly shows their function:

inf.	adresa	chema	lucra	juca	dori	dormi
	'to address'	'to call'	'to work'	'to play'	'to wish'	'to sleep'
1s	adres-ez	chem	lucr-ez	joc	dor-esc	dorm
2s	adres-ezi	chemi	lucr-ezi	joci	dor-ești	dormi
3s	adres-ează	cheamă	lucr-ează	joacă	dor-ește	doarme
1p	adresăm	chemăm	lucrăm	jucăm	dorim	dormim
2p	adres-ați	chem-ați	lucrați	juc-ați	doriți	dormiți
3p	adres-ează	cheamă	lucr-ează	joacă	dor-esc	dorm

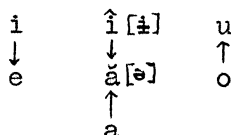
In the above paradigms, the root vowels lacking -ez or -esc undergo changes not occurring in the roots of suffixed verbs, as exemplified by adres-ează and chem-ă, lucr-ează and joac-ă, and dor-est-e and doarm-e. Due to ă in the final syllable, umlaut occurs in the stressed vowel either in the root syllable, as in chem-ă or joac-ă, or in the -ez suffix, as in adres-eaz-ă or lucr-eaz-ă; similarly, final e conditions umlaut in doarm-e but not in the root-vowel of dor-est-e. Changes in the root-vowel due to umlaut are thus absorbed by the suffix.

In addition to umlaut, another phonological alternation occurs between stressed and unstressed vowels, as in the paradigm of juca, where root-stressed forms like joc have o and ending-stressed forms like juc-ăm have u in the root. This alternation of stressed and unstressed root vowels does not occur in verbs having a stressed suffix after a root lacking a stressed ending, as in the verb lucra, which keeps u both in lucr-éz and lucr-ăm, corresponding to joc and juc-ăm respectively. Thus, a second kind of vowel alternation is avoided in the root syllable by the addition of a suffix.

Finally, there is a consonantal alternation, palatalization, that occurs in roots lacking -ez or -esc. Thus, joc [ʒok] ends in a velar, but joci [ʒotʃi] has a root ending in a palatal because the velar has assimilated to the following ending.

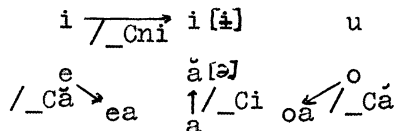
As shown above, three kinds of alternation of the root--stressed vs. unstressed vowels, umlaut, and palatalization--are avoided with the -ez or -esc suffix, and this is the paradigmatic function of these suffixes. Let us observe these alternations in greater detail. The most widespread variants are between stressed and unstressed vowels in the paradigm. Stressed i varies with unstressed e, as in vin 'I come' and venim 'we come.' Stressed î

before n and stressed a elsewhere vary with unstressed ă, as in rămîn 'I remain,' rămăs 'remained,' and rămaseî 'I remained.' Stressed a varies with unstressed ă, as in tac 'I am silent' and tăcem 'we are silent.' Finally, stressed o may correspond to unstressed u, as in joc 'I play' and jucăm 'we play.' The following diagram summarizes changes from stressed to unstressed vowels with arrows pointing toward the unstressed vowel:



When unstressed, the front high vowel is lowered to mid, the central high and low vowels become mid, and the back mid vowel is raised.

Umlaut is easier to describe because it changes a vowel in the direction of a word-final vowel in the following syllable (Graur 1966: I.48-9). Thus, a is raised to â before a consonant plus i, as in arăți 'you (sg.) show,' which contrasts with arată 'he, she, it/they show.' The monophthong e becomes the diphthong ea and o becomes oa before -Că as in cheamă 'he, she, it/they call' and doarme 'he, she, it sleeps.' Finally, î becomes i before -nCi as in vînd 'I sell' compared with vinzi 'you (sg.) sell.' The diagram below presents the pattern of umlaut of the stressed vowel of the verb:



Another easily described change is consonantal palatalization, especially before i (Graur 1966: I.48-9). Thus, t becomes ț [tsʲ], d becomes z, s becomes ș [ʃ], c [k] becomes ç [tʃ], and g [g] becomes g [dʒ] before i and often before e. We can observe consonantal palatalization in the following pairs of forms:

ajut 'I help'	ajuți 'you (sg.) help'
aud 'I hear'	auzi 'you (sg.) hear'
ies 'I go out'	ieși 'you (sg.) go out'
joc 'I play'	joci 'you (sg.) play'
rog 'I ask'	rogi 'you (sg.) ask'

Some consonant clusters undergo palatalization; [sk] becomes [ʃt] before i and e, as exemplified by cunosc 'I know,' cunoști 'you know,' and cunoaște 'to know.'

Similarly, [st] becomes [ʃt] before i as in exist 'I exist' and existi 'you (sg.) exist.'

The interplay of stress, umlaut, and consonantal palatalization results in a complicated paradigm. Simplification is considerable when a single suffix absorbs these changes, as shown by the following list of simple endings, post-root suffixes plus endings, and alternations undergone by non-suffixed roots (Graur 1966: I.253):

I (-a conjugation)	IV (-i conjugation)
-- -ez	-- -esc
-i -ezi palatalization	-i -ești palatalization
-ă -ează umlaut	-e -ește palatalization
-ăm -ăm stress change	-im -im stress change
-ați -ați stress change	-iți -iți stress change
-ă -eaza umlaut	-- -esc

The alternations listed above do not occur in the root of the suffixed verb but are absorbed or neutralized by the suffix itself.

It is not hard to find other suffixes in Rumanian that protect the root but have no meaning of their own and are still quite productive. For example, many onomatopoeic verbs have the suffix -ăn- or -ot- after the root and before the inflectional ending. These suffixes signal the onomatopoeic meaning of the root and in some cases prevent palatalization of the root-final consonant. The following verbs are from Lombard (1955: II.789-90) and are followed by the onomatopoeia from which they are derived:

boc-ăn-i 'to knock'	boc	groh-ot-i 'to grunt'	groh
țac-ăn-i 'to click'	țac	hropot-i 'to snore'	hropot
trânc-ăn-i 'to prattle'	tranc		
crănt-ăn-i 'to crunch'	cranț		
foș-n-i 'to rustle'	foș		

Although -ăn- and -ot- have no lexical meaning, they play an indirect roll in the semantics of the verbs by signaling onomatopoeia and by protecting the form of the sound-symbolic root.

As well as preserving the form and meaning of a root, a suffix may also regularize a paradigm. Such a suffix may be in a suffix-chain ending in a regular paradigmatic conjugation or declension. For example, the intensive or frequentative suffix is -IT-ARE, -T-ARE, or simply -ARE attached to a non-first-conjugation past participle. The resulting verb is in the first conjugation, the most regular in Latin and Romance; this conjugation is termed "regular" because it is of high frequency and the different forms are predictable. The suffix may have the intensive meaning 'vigorously, with intensity,' the

frequentative sense 'often, repeatedly,' or no meaning at all, as in the following examples (Simpson 1960):

intensive: AUCT-IT-ĀRE (<AUG-ĒRE 'increase') 'increase  
very much'  
frequentative: ACCŪS-IT-ĀRE (<ACCŪS-ĀRE 'accuse') 'accuse  
often'  
Ø-meaning: ADNŪ-T-ĀRE (<ADNU-ERE 'nod to') 'nod to'

Sometimes, a verb with a meaningless suffix will give rise to a double derivative, as in CAN-Ō 'I sing,' CAN-T-Ō 'I sing,' and CAN-T-IT-Ō 'I sing repeatedly.' In the verb CAN-T-ĀRE, the intensive-frequentative simply provides a more regular conjugation, as shown by the following comparison:

CAN-Ō 'I sing,' CAN-ERE 'to sing,' CECIN-Ī 'I sang,' CAN-TUS  
'sang'  
CANT-Ō 'I sing,' CANT-ĀRE 'to sing,' CANT-ĀVI 'I sang,'  
CANT-ĀTUS 'sang'  
AM-Ō 'I love,' AM-ĀRE 'to love,' AM-ĀVI 'I loved,'  
AM-ĀTUS 'loved'

The perfect CECIN-Ī with its reduplication and vowel change is not predictable from the present, because only a few verbs have such perfects. It is also impossible to form the past participle of -ERE verbs by a single consistent rule. On the other hand, CANT-ĀRE is perfectly regular with its perfect formed by adding -ĀVI and the past participle formed by adding -ĀTUS. Since CANT-ĀRE does not differ in meaning from CAN-ERE, this regularization in form must be an important motivation for the intensive-frequentative. Furthermore, it is such derivatives that survive in modern Romance, so that Spanish has cantar derived from CANTĀRE but no verb derived from the third conjugation CANERE. Other Romance languages show the same preference, as exemplified by French chanter, Italian cantare, and Rumanian cînta, which all mean 'to sing.'

The fact that Latin itself used the intensive-frequentative to simplify the conjugation is supported by Latin morphology as well as by the historical and semantic evidence mentioned above. Although -ĀRE verbs are by far the most numerous in Latin, they are not the majority of verbs supplying input for the formation of intensive-frequentatives, which are derived from 41 -ĀRE verbs, 16 -ERE verbs, 117 -ERE verbs, and 12 -IRE verbs. The great majority of verbs are from the third conjugation, which is the most irregular in the formation of its principal parts. Verbs derived from the more regular first, second, and fourth conjugations are less frequent. In addition, seven of the 41 verbs with -ĀRE infinitives are

really examples of an unusual mixed conjugation, where the perfect and the perfect passive participle are not formed with *-ĀVI* and *-ĀTUS*; for instance, the principal parts of *CREPĀRE* 'to make noise' contrast with those of *AMĀRE* 'to make love':

CREP-Ō, CREP-ĀRE, CREP-ŪI, CREP-ITUS  
AM-Ō, AM-ĀRE, AM-ĀVI, AM-ĀTUS

Is the intensive-frequentative suffix the only one to play the role of a meaningless verb regularizer in Latin? By no means! Latin suffix-chains ending in *-ĀRE* include *-IC-ĀRE*, *-NT-ĀRE*, and *-IDI-ĀRE/-IZ-ĀRE(-ISS-ĀRE)* as well as others (Menéndez Pidal 1958: 328-9). These were used to form new denominative verbs in addition to deriving first conjugation verbs from those of less regular conjugations. In modern Romance, *-IC-ĀRE* is no longer productive, but it clearly once was so in Latin, as shown by traces in modern languages like the following (Menéndez Pidal 1958: 328):

*cabal-g-ar* 'to mount; parade on horseback' < *CABALL-US* 'pack-horse'  
*mas-c-ar* 'to chew' < *MAST-IC-ĀRE* 'to chew' (post-classical)  
< *MAND-Ō*, *-ERE*, *MAND-I*, *MANS-US* 'chew'

The suffix-chain *-NT-ĀRE* was derived from the present participle to form factitives; the only Classical Latin example is *PRAESENT-ĀRE* 'to present,' but Vulgar Latin used the suffix much more, as illustrated by (Menéndez Pidal 1958: 328):

*a-crec-e-nt-ar* 'to increase' < *CRESC-Ō* 'I grow'  
*a-pac-e-nt-ar* 'to feed cattle' < *PASC-Ō* 'I feed, I lead to pasture'

A third example is the Vulgar Latin *-IDI-ĀRE* and its learned variant *-IZ-ĀRE*. As mentioned in our earlier discussion of Rumanian, this suffix originally entered Latin with a few Greek loans (Menéndez Pidal 1958: 328). Other examples of suffix chains that form or regularize verbs are Vulgar Latin *-IDI-ĀRE* and its learned variant *-IZ-ĀRE*. The suffix chain *-IDI-ĀRE* developed into *-ear*, the most common derivational suffix for Spanish verbs today. Sometimes *-ear* has no meaning at all, not even differential meaning, so that *color-ar* and *color-ear* both mean 'to dye, to color.' There may also be non-systematic differences in meaning, as in *pas-ar* 'to pass' and *pas-ear* 'to walk' or *plant-ar* 'to plant' and *plant-ear* 'to plan.' New verbs with this suffix have arisen throughout the history of Spanish, as illustrated by the following examples (Menéndez Pidal 1958: 328): *blanqu-ear* 'to bleach,'

guerr-ear 'to wage war,' cañon-ear 'to cannonade,' and telefon-ear 'to telephone.' Literary and ecclesiastical Latin have a more learned form of this suffix--that is, -IZ-ĀRE, which becomes -izar in Spanish. Examples of verbs with this suffix-chain are (Menéndez Pidal 1958: 328-9): baut-izar 'to baptize,' latin-izar 'to give words a Latin ending,' español-izar 'to make Spanish,' colon-izar 'to colonize,' and autor-izar 'to authorize.' Thus, the spread of the intensive-frequentative suffix to form more first conjugation verbs is not an isolated phenomenon but is part of a general trend--a morphological conspiracy to produce more first conjugation verbs.

There are still other segments or syllables that have lost, or never had, meaning but retain their productivity. Such is the usual status of anti-hiatic consonants and syllables. For instance, there is no meaning that can be attributed to French -t- in the noun café-t-ière 'coffee pot' or the infinitive numéro-t-er 'to number' (Nyrop 1908: III.54-61). On the other hand, the same segment may be traced back to the third person singular inflectional ending in Latin when it appears in French parle-t-il 'does he speak' and parle-t-elle 'does she speak.'

Is it possible to reconcile Aronoff's claim about the simple relationship of productivity to meaning with our knowledge about the historical development of inchoative, intensive-frequentative, and other suffixes in Latin and Romance? Reconciliation is possible if we extend his claim. In the examples discussed in this paper, productivity is related not to the meaning of the affix itself but to that of the preceding root. Keeping the root in a simple and unvarying form preserves the association of the root with its meaning and with other derived forms. Thus, productivity can be related to the meaning of a morpheme or to the form and meaning of a root protected from change by the morpheme, which may lose its meaning.

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