

Multiple correspondence[☆]

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Abstract

Recent work has proposed a reinterpretation of allomorphy in terms of relations between surface forms rather than in terms of a common underlying representation. Burzio (1994a) argues that accentual similarities within pairs like *phenomenon/phenomenology*, *american/americanize* are due to a ‘metrical consistency’ constraint applying across surface forms. McCarthy (1995), Benua (1995, 1997) formulate a similar hypothesis by extending the notion of ‘correspondence’ of McCarthy and Prince (1995) beyond the domain of reduplication, for which it was originally developed.

This reinterpretation is one further step in the direction of parallelism. Once this step is taken, there is no longer any reason why word formation should utilize a unique ‘base’, as there is in a derivational framework. Since constraints can apply multiply at the same time, multiple bases with which a derived word would be simultaneously in correspondence, will be expected.

This article argues that Italian agentive nouns in *-ore* are indeed based simultaneously on both the infinitive and the past participle, and that affixal allomorphs are in general also in multiple correspondence with one another, both facts evading any derivational account.

1. Introduction

Before turning to the specific goals of the article, I briefly review the scope of the notion of surface-to-surface ‘Correspondence’, which the article pertains to.

McCarthy (1995), Benua (1995, 1997) propose that surface forms depend in part on their degree of faithfulness to other surface forms that they may be in ‘correspondence’ with by virtue of certain morphological relations. This extends to non-reduplicative morphology the apparatus of McCarthy and Prince (1994, 1995, to appear), by specifically extending the relevance of ‘Correspondence’ from relations

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between base and reduplicant to morphological relations at large. The idea that phonology involves direct comparison of surface forms is a central theme of Burzio (1994a), henceforth ‘PES’, and related work (1991–1997), whose terms ‘Consistency’ (mostly ‘Metrical’ consistency) and ‘Anti-allomorphy’ are closely equivalent to McCarthy’s and Benua’s ‘Output to output faithfulness’, which I will adopt here.

The introduction of output to output faithfulness (OO-F) is an important step in the general re-conceptualization of morpho-phonological theory made possible by the ‘parallel’ approach, and is readily expressible within OT with the same formal resources (faithfulness constraints) used to express input to output faithfulness (IO-F). A number of important results have been shown to follow from such a step. One of these is the correct characterization of effects which were formerly attributed to the phonological ‘cycle’ (Benua, 1995, 1997; Buckley, 1995; Burzio, PES, 1995a, 1997; Duanmu, 1996; Itô and Mester, 1996; Kenstowicz, 1995). Another is the account of counterbleeding effects (PES: 190n; Wilson, 1996), formerly attributed to rule ordering, and sometimes cited as a direct proof of derivations (Bromberger and Halle, 1989; Chomsky, 1995: 224). A third is the characterization, by means of higher-ranked/lower-ranked sets of OO-F constraints triggered by different classes of affixes, of effects formerly attributed to level-ordering (Benua, 1997; Burzio, PES: 10.4, 1995a). Yet another result is the account of one class of ‘Non Derived Environment Blocking’ (NDEB) effects given in Burzio (1997), where these are reduced to ‘The Emergence of the Unmarked’ in the sense of McCarthy and Prince (1995, to appear). McCarthy and Prince argue that reduplicants often exhibit less marked (phonologically more regular) structures than their bases because they are subject to OO-F, while their bases are subject to IO-F. Emergence of the unmarked in reduplication will arise whenever the ranking schema in (1) holds, ‘Phon’ being some phonological constraint.

(1) Emergence of the Unmarked: IO-F >> Phon >> OO-F

The ranking in (1) will have the effect of ‘blocking’ Phon in the base (via high ranking IO-F), while enforcing it in the reduplicant (via low ranking OO-F). Once the notion of OO-F is extended beyond reduplication to relations between a base and its morphological derivatives more generally, as in fact in McCarthy (1995) and the other references cited above, then ‘Emergence of the Unmarked’ effects will correspondingly be expected more generally, an expectation fulfilled exactly by ‘NDEB’ – cases in which a phonological regularity observable over derived environments ‘blocks’ in underived ones. One notorious case of this discussed in Burzio (1997) is that of English vowel shortening, which affects derived environments in general as shown in (2), but not underived ones such as *divi:ne*, *i:vory*, etc.

- (2) **defam-ation; divin-ity; ton-ic; oblig-atory; refut-ation; pleas-ant; blasphem-ous; minor-ity; generat-ive; in-finite**

The ‘Phon’ constraint at work in (2) and responsible for the shortening of the vowels in boldface, appears to be simply a member of the markedness hierarchy of

Prince and Smolensky's (1993: ch. 9) barring long vowels, storable as *V:. The latter, in conjunction with the ranking in (1) will supplant the 'Generalized Shortening' of PES: 10.3, in terms of which the cases in (2) had been analyzed in that work.¹

In contrast to 'The Emergence of the Unmarked', 'cyclic' effects have been argued to instantiate the ranking in (3) (see references cited).

(3) Cyclic effects: OO-F >> Phon >> IO-F

Hence, major phonological generalizations such as cyclic effects and NDEB/Emergence of the Unmarked appear to fall out of the general architecture of the theory that has constraint ranking and surface-to-surface correspondence relations, given the logical possibilities for constraint ranking. This is in sharp contrast with the traditional derivational theory, which had always required specific theoretical artefacts (the 'cycle', 'strict cyclicity', etc.) to deal with those effects (see Burzio, 1997).

Of relevance to the aims of the present article will be not only the existence of surface to surface correspondence relations, but also the radical interpretation of the latter originally given in PES. (See also Burzio, 1995a, 1997.) In that work, I have taken such relations to be not only necessary to deal with allomorphy, but also sufficient, making underlying representation (UR) unnecessary. The resulting conception is one in which words are mentally represented only in their surface forms and are connected to one another to the extent that they share sound and meaning, as in Bybee's (1988, 1995) 'Network' model, and Derwing (1990). The connections simulate a morphological parse, and also serve as the vehicle for the enforcement of OO-F constraints relevant to the phonology.

Within this general setting, the specific goal of the article is now to show that morphologically complex words can have multiple bases. This is a possible situation under surface-to-surface correspondence in OT. Since a single base would impose one set of OO-F constraints, and since there is no limit to the number of constraints that can simultaneously apply in OT, multiple bases would simply yield multiple sets of OO-F constraints, posing no new challenge to the analytical apparatus. In contrast, within a derivational framework, the notion of multiple inputs to a derivation seems completely excluded. Within the UR-less conception just outlined above, multiple links seem furthermore necessary rather than just possible, since words are related to others multiply, specifically to all members of each of the morphological classes to which they belong.

The empirical domain to be investigated centers around nouns in *-ore* in Italian (cognates to English agentive *-er*) and other derivatives such as adjectives in *-ivo* (English *-ive*). While the standard view in the literature has been that such items are formed from a past participial base (Vogel, 1993 and reff.), matters are in fact more complex, as shown by the sample in (4).

¹ The conjecture of PES: 323n that shortening is an instance of regularization thus proves correct.

(4) Gloss	Infinitive	Participle	-ore/-ivo derivative
a. <i>adapt</i>	adatt-áre	adatt-át-o	adatt-at-óre
b. <i>provide</i>	provved-ére	provved-út-o	provved-it-óre
c. <i>sell</i>	vénd-ere	vend-út-o	vend-it-óre
d. <i>mail</i>	sped-íre	sped-ít-o	sped-it-óre
e. <i>compress</i>	comprím-ere	compres-s-o	compres-s-óre
f. <i>win</i>	vínc-ere	vín-t-o	vinc-it-óre ←
g. <i>ascend</i>	ascénd-ere	ascé-s-o	ascen-s-óre ←
h. <i>exceed</i>	eccéd-ere	ecced-út-o	ecces-s-ívo
i. <i>possess</i>	posed-ére	posed-út-o	posses-s-óre
j. <i>aggress</i>	aggred-íre	aggred-ít-o	aggres-s-óre

This sample illustrates a complex pattern of syncope alternating with segmental regularity. The cases in (a–d) exemplify the segmentally regular cases for each of the four conjugations. Note however that derivatives from the *-ére* and *-ere* conjugations use participial affix *-it-* of the *-íre* conjugation rather than *-ut-*, a fact that will be of some relevance. In contrast, the cases in (e–g) have syncopated participles, a phenomenon limited to the (unstressed) *-ere* conjugation. The cases in (h–j) show further that all conjugations other than the one in *-áre* can have syncopated participial derivatives even in the absence of syncope in the participle, while the case in (e) shows that persistence of participial syncope in the derivatives is also possible (and this is in fact common). But the case in (f) shows in addition that derivatives can revoke the participial syncope. Crucial to our concerns here will be the fact that, when this happens, a link with the infinitive may be revealed, as with the material in boldface, lacking in the participle. A similar link is revealed in (g) as well, making both (f) and (g) crucial to the ‘multiple correspondence’ thesis.

The paper is organized as follows. The next section (2) introduces metrical OO-F(aithfulness), a main ingredient of the analysis. Sections 3, 4, and 5 utilize that notion to deal with, in order, syncopated participles like those in (4e–g); syncopated derivatives from non-syncopated participles, like those in (4h–j); and non-syncopated derivatives from syncopated participles, like the one in (4f), as well as cases like (4e). It will be shown that all syncopes as well as all divergences between the participle and its derivatives follow from metrical OO-F, satisfied at the expense of segmental OO-F. When participial derivatives break away from participial segmentism for such metrical reasons, then infinitival segmentism has a chance to assert itself, revealing the multiplicity of correspondence. At various points, correspondence of affixal material will also be argued to be multiple. Section 6 sums up and concludes, and section 7, an appendix, reviews the prospects for a derivational approach to this range of facts.

2. Metrical Faithfulness

A crucial role in the analysis will be played by metrical OO-F constraints, expressing the notion that morphologically related words tend to be metrically consistent with one another, as argued extensively in PES (see also McCarthy's 1995 analysis of Rotuman; Benua, 1997). More specifically, metrical OO-F constraints will be shown to be the source of pervasive segmental allomorphy. This state of affairs can be illustrated independently of the facts at hand, by means of the alternations in (5a) and (5b).

(5)	a. 'go'	b. 'finish'
1S	vád-o	fin-ísc-o
2S	vád-i [vai]	fin-ísc-i
3S	vád-e [va]	fin-ísc-e
1P	and-iámo	fin- -iámo
2P	and-áte	fin- -íte
3P	vád-ono [vanno]	fin-ísc-ono

In (5a) the verbal stem *vad-* is sometimes replaced by the suppletive form *and-*, while in (5b) the infix *-isc-* (a property of a majority of the verbs of the *-íre* conjugation) sometimes disappears. Interestingly, the two paradigms are completely parallel (1P, 2P versus all other forms). The reason is that they are both controlled by the metrical properties of the inflectional affixes. The stressed affixes *-iámo*, *-iáte*, and only those, both invoke *and-* in (5a), and suppress *-isc-* in (5b). As Carstairs (1988, 1990) once noted, such facts falsify the traditional 'hailstone' conception of morpho-phonology: if one built words starting from a kernel and moving out, it should never be the case that an outer affix makes a choice of stems. On the other hand, as argued in DiFabio (1990), Burzio and DiFabio (1994), such facts are explained by metrical OO-F ('consistency'). That is, while the paradigms in (5a,b) are considerably disuniform segmentally, they are perfectly uniform metrically, in the following sense: given any sequence of segments S, it is never the case that S has more than a single metrical parse. Thus: *vád-* is always stressed; *and-* is always unstressed; *-isc-* is always stressed; and the verbal stem in (5b) is always unstressed.

Now if the existence of the two allomorphs in each case: *vad-/and-* and *-isc-/∅* were taken as a lexical given, thus expressing the fact that these are indeed idiosyncratic properties of specific items and not more general (only *vad-* has a suppletive form and only *-isc-* deletes), then there may not be any violation of segmental faithfulness in (5a,b) after all. The reason is that choice of one allomorph would violate faithfulness with the other and conversely – violations that could conceivably neutralize one another. This would not be correct, however, in so far as we want to capture the fact that the segmental allomorphy is forced by, rather than independent of, the observed metrical consistency. A more adequate formalization and the one which I will adopt here, will be to say that whenever there is suppletion (or perhaps allomorphy in general), one allomorph is primary, preferred over the others. In this case,

let us say that there is a ranking: *vad-* >> *and-*; and *-isc-* >> \emptyset . This encapsulates both the notion that segmental allomorphy, like metrical allomorphy, is to be avoided, and the fact that allomorphy, at least of the suppletive variety, is item-specific (for example for the verb *mangi-are* there is no *x* such that either *mangi-* >> *x*, or *x* >> *mangi-*).

In sum, certain items in each of the paradigms in (5a,b) are in violation of segmental OO-F, stated as *vad-* >> *and-*, and *-isc-* >> \emptyset , while all items are in compliance with metrical OO-F, thus bearing witness to the ranking in (6).

(6) Metr-OO-F >> Segm-OO-F_{vad/isc}

3. Participial syncope

In this section I analyze syncopated participles like *compresso*, *vinto*, *asceso* of (4e–g) above, a first step towards an understanding of the structure of the participial derivatives.

Syncopated participles occur in the conjugation whose infinitival inflection is unstressed *-ere* (the other conjugations being in *-áre*, *-éere*, *-íre*). I take that conjugation to have a primary allomorph of the participial suffix *-út-*, and two suppletive forms *-t-* and *-s-*. In the formalism proposed for (5), this will give us (7), stating that *-ut-* is the primary segmental correspondent for a participial affix (of this conjugation), while ‘suppletive’ *-t-* and *-s-* are the secondary ones.

(7) Segm-OO-F_{ut}: *-ut-* >> *-t-*, *-s-*

The suppletive forms in (7) can be referred to as syncopated, in the sense that they are a-vocalic, compared with *-ut-*. I furthermore take a participle to be based on the infinitival stem, namely the form of the infinitive less the infinitival inflection, e.g. in (4e–g) *comprím-*, *vínc-*, *accénd-*, respectively, as will be further discussed below.

As argued in DiFabio (1990), participial syncope is substantially the same kind of phenomenon as suppression of *-isc-* in (5b) above: it follows from metrical consistency/OO-F. The OT-style tableau illustrating the calculation of *vinto* ‘won’ in this analysis is given in (8).

(8)

	vínc- -út-o -t-	syl	Metr-OO-F		Segm-OO-F	
			suffix: -út-	stem: vínc-	suffix: -ut->>-t-	stem: vínc-
a.	vínc-út-o			*		
b.	vínc-ut-o		*			
c.	vínc-t-o	*			*	
d.	vín-t-o				*	*

In (8), there are two sets of OO-F constraints: metrical and segmental. Each set contains two subsets, one referring to the stem, the other to the suffix. As discussed in Burzio (1997), outer suffixes appear to consistently obey higher ranked OO-F than stems, a fact that I relate to their special status as the ‘head’ of the word, in the sense of determining its syntactic category and being a major contributor of its semantic content. Hence outer suffixes remain faithful to their other occurrences to a greater degree than affixed stems remain faithful to their bases. This effect is visible in English, where vowel shortening affects a stem as in *proselyt-ize*, but not the outer suffix, *-ize* maintaining its long vowel, except under further suffixation, as in *regular-iz-ation*. The relative ranking of suffix and stem OO-F in (8) thus reflects the general fact that suffixal allomorphy is limited to special circumstances. Here, it is limited to the existence of a specific suppletive form.² In (8) then, the participle is subject to OO-F to the material in the upper left-hand corner: the infinitival stem *vínc-* and the participial affix *-út-* or its suppletives, considering here only *-t-*. In addition, there needs to be a gender-and-number inflection, here given as MS *-o*. The correct outcome will result if Metr-OO-F outranks Segm-OO-F, i.e. if the dotted vertical line in (8) is interpreted as solid, a point to which I return. Assuming an undominated metrical constraint excluding adjacent stresses as in **vínc-út-o* (which I take to reflect the non-existence of monosyllabic feet, as argued in PES), perfect segmental correspondence will leave options (8a) and (8b), both violating high-ranking Metr-OO-F, respectively on the affix and the stem. In contrast, choice of suppletive *-t-* will violate only lower ranked segmental correspondence – for the suffix, by not utilizing the primary allomorph *-ut-*. There is no violation of Metr-OO-F on this option, since, on the one hand, *-t-* is (vowel-less and hence) always unstressed, and since, on the other, stem stress is preserved. However, candidate (8c) is in violation of an undominated constraint on syllable structure, *.vínc.* (with a complex coda) not being a possible syllable in Italian, thus compelling a violation of low ranking Segm-OO-F for the stem, whence *vinto* (8d) as the optimal candidate.

It is worth pausing for a moment here to consider the status of the material given in the upper left-hand corner in (8), which serves as the base for the calculation of the participle. One crucial aspect of it is that each piece comes with its own metrical parse, which is what enables us to account for the syncope. This means that these cannot really be traditional ‘underlying representations’ of the various morphemes. To maintain that view, one would have to especially encode the stress into the URs of *vínc-* and *-út-*, clearly the wrong move, given that there is nothing special about the stress of either, just the regular penultimate or antepenultimate stress of Italian. Moreover, the antepenultimate stress of *vínc-ere* depends on the metrical properties of the suffix (unstressed, unlike that of the other conjugations), and that is not part of the UR of *vínc-*. On the other hand, the forms in question can also not be surface

² Another set of special circumstances, discussed in PES (esp. 302–305), is the situation in which suffixal allomorphy results in the complete elimination of stem allomorphy, as with many English stress-neutral suffixes, e.g. *-ist*, which avoid metrical allomorphy of their stems, by accepting two different metrical parses themselves e.g. *-istθ* *-is* *tθ*. In contrast with this is the reluctance of suffixes to undergo allomorphy for the sake of the stem on a piecemeal basis, e.g. **(gérmani)cθ* (PES: 302). This reluctance reduces to the text generalization.

forms, for the simple reason that they are not words, but only fragments (in that respect, though not in others, the notion of UR and its ancillary notion of ‘morpheme’ seemed correct). Surface-to-surface correspondence gets us out of this quandary under one particular interpretation. It is clear that in a word like *vínc-ere* the suffix *-ere* is what makes it an infinitive. Accepting that the participle is based on the infinitive will require on the present approach that it be faithful to it. However, there is no reason to expect that faithfulness should be imposed relative to the full form of the infinitive including the portion that expresses the specific infinitival meaning. Rather, it will be natural to expect faithfulness only to the infinitival stem, here *vínc-*. Note that there seems no deeper reason why the participle should be based on, and hence be faithful to the infinitive, rather than, for instance, the other way around. This will be stipulated.³ The question of the internal structure of lexical paradigms is important, but largely orthogonal to the concerns of the present work, which revolve around whether allomorphy results from a common UR or from surface relations. On a more traditional approach, there would be a comparable dilemma if one tried to establish general guidelines for determining which member of any paradigm should more closely reflect the underlying representation. The common practice has been to accept whichever assumption turns out to work. Similarly, I will also not attempt to find any deeper reason why the derivatives should be based on the participle, here including the participial affix, rather than being based on the infinitive (as they are in English), given that they do not seem to bear any participial meaning.

Returning then to the material in (8), as a member of the class of participles, *vinto* will stand in correspondence with other participles, but here the tables will be turned: it will obviously not stand in correspondence with them relative to their stems, since those express independent and unrelated meanings. Rather, it will be in correspondence with them only relative to what makes them participles, namely the suffixal material. The forms *-ut*, *-t*, *-s* in (7) are thus abstractions over sets of surface forms: the sets of participles in *-út*, *-t*, *-s*, respectively. The stronger correspondence that the first appears to impose, expressed as in (7), is likely to simply reflect the larger size of that set compared with the other two (see below for some discussion). Surface-to-surface correspondence of affixes is thus a case of *multiple* correspondence, since affixes do not occur in the surface other than in the sets of words that instantiate them.⁴

³ I thus assume in this discussion that OO-F is unidirectional in the sense that the infinitive is not required to be faithful to the participle. The issue is complex, however. As argued in PES: 244f., English bare verbs have an exceptional stress pattern by virtue of being faithful to their inflected forms. Similarly, adjectives in *-ic* appear to be faithful to their counterparts in *-ical*. Note as well that there can be no directionality of faithfulness with affixes, since there is no sense in which any one occurrence could be privileged over the others. For further discussion, see Burzio (1997).

⁴ This view has important elements of the ‘Amorphous Morphology’ of Anderson (1992), as it also rejects the notion that there are discrete elements called ‘morphemes’. Like Anderson’s amorphous morphology, correspondence morphology makes no commitment to morphological patterns (here abstractions over classes) being necessarily ‘concatenative’. As such, it contemplates no special devices such as plane segregation to reconstruct discrete morphological entities in non-concatenative languages (see

Consider now the larger sample of participles in (9), given along with other pertinent data.

(9) Gloss (Infinitive)	Infinitive	Participle	Preterit
a. <i>hide</i>	nascónd-ere	nascós-T-o	nascó-S-i
a'. <i>sell</i>	vénd-ere	vend-út-o	vend-é(tt)-i
b. <i>write</i>	scrív-ere	scrít-T-o	scrís-S-i
b'. <i>receive</i>	ricév-ere	ricev-út-o	ricev-é(tt)-i
c. <i>laugh</i>	ríd-ere	rí-S-o	rí-S-i
c'. <i>yield</i>	céd-ere	ced-út-o	ced-é(tt)-i
d. <i>put</i>	métt-ere	més-S-o	mí-S-i
d'. <i>beat</i>	bátt-ere	batt-út-o	batt-é(tt)-i
e. <i>discuss</i>	discút-ere	discús-S-o	discús-S-i
e'. <i>repeat</i>	ripét-ere	ripet-út-o	ripet-é(tt)-i
f. <i>oppress</i>	opprím-ere	opprés-S-o	opprés-S-i
f'. <i>press</i>	prém-ere	prem-út-o	prem-é(tt)-i

One fact that (9) illustrates is that, as was already seen in (4) above, participial syncope is not systematic within the unstressed *-ere* conjugation. While the first member of each pair of participles in (9) is syncopated, the other is not. This variation does not seem predictable, each pair in (9) being a minimal one. This variation can be dealt with by supposing that segmental and metrical faithfulness (Segm-OO-F, Metr-OO-F) are in fact unranked with respect to one another, differently than assumed in the discussion of *vinto* above, but just as indicated by the dotted line in (8). This will have the effect of making candidate (8a), representing the second member of each pair in (9), and (8d), representing the first, equally optimal. On this analysis, the grammatical system is thus indeterminate, the choice of options being made lexically, just as with the variable shortening of *blaspheme/blasphem-ous* versus *desire/desi-r-ous* in the analysis of PES: 10.3.

A further observation provided by (9) is that there is a considerable degree of correlation (perfect, within this sample) between participle and preterit with respect to syncope, the first member of each pair of verbs syncopating both, while the other syncopates neither. This correlation points to another form of multiple correspondence since, while both participle and preterit are based on, and hence correspondent with, the infinitive, each is apparently also constrained to resembling the other. Note that it would not do to take either the participle or the preterit to be based on the full form of the other, since the preterit only syncopates in *-s-*, while the participle syncopates either in *-s-* or in *-t-*. The latter variation (*s/t*) is not fully predictable, inci-

Gafos, 1996 for relevant discussion and a critique of such devices). Cases that would involve 'subtractive' morphological operations on traditional conceptions, such as the text case of the participles based on their infinitives, also do not challenge the correspondence approach, as the text implies.

dentally, as shown by the minimal contrasts in (10), and will be treated here as idiosyncratic, although there are some detectable tendencies.

(10) Gloss (Infin.)	Infinitive	Participle
a. <i>assume</i>	assúm-ere	assún-T-o
a'. <i>oppress</i>	opprím-ere	opprés-S-o
b. <i>hand</i>	pórg-ere	pór-T-o
b'. <i>emerge</i>	emérg-ere	emér-S-o
c. <i>ask</i>	chiéd-ere	chiés-T-o
c'. <i>laugh</i>	ríd-ere	rí-S-o
c'. <i>concede</i>	concéd-ere	concés-S-o
d. <i>hide</i>	nascónd-ere	nascós-T-o
d'. <i>expand</i>	espánd-ere	espán-S-o
d'. <i>ascend</i>	ascénd-ere	ascé-S-o
e. <i>write</i>	scrív-ere	scrít-T-o
e'. <i>move</i>	muóv-ere	mós-S-o

I will also not make any systematic attempt to deal with the segmental readjustments that the syncopated participial affixes *-t-* and *-s-* induce in the stems, visible in some of (9) and (10), although many of them are straightforward, like the one of *vinto* in (8d).

Therefore, when participial syncope would permit satisfaction of Metr-OO-F, the proposed system predicts that syncope may occur, though it is not able to predict whether it will in fact occur. What it does predict, is that it will not occur *unless* it was to satisfy Metr-OO-F. Its occurrence otherwise is excluded as an unforced violation of Segm-OO-F. This means that participial syncope is predicted to occur *only* in the unstressed *-ere* conjugation. Aside from a few isolated cases that I will ignore (except for note 5 below), this is correct, as the other conjugations essentially only exhibit the non-syncopated patterns, as was noted above and as further illustrated in (11).

(11) Gloss (Infin.)	Infinitive	Participle
a. <i>associate</i>	associ-áre	associ-át-o
<i>generate</i>	gener-áre	gener-át-o
b. <i>fall</i>	cad-ére	cad-út-o
<i>know</i>	sap-ére	sap-út-o
c. <i>sculpt</i>	scolp-íre	scolp-ító
<i>inhibit</i>	inib-íre	inib-ít-o

The reason there is no participial syncope in any of (11) is that all infinitives have suffixal stress, and hence lack stem stress (at least on the pre-suffixal syllable). Syn-

cope in these cases, e.g. as in *scolp-íre/*scól-t-o* would thus not only violate Segm-OO-F for the suffix (as in (8d)), but also Metr-OO-F for the stem, posting no net gains at all.⁵

To sum up, participles syncopate in the unstressed *-ere* conjugation in Italian so as to yield stem stress consistently with the infinitival form. The syncope breaks the segmental consistency of affixal material but not its metrical consistency, since each allomorph maintains fixed metrical properties. Hence, syncopated participles are perfect with respect to Metr-OO-F. Non syncopated participles, perfect with respect to Segm-OO-F, occur as well, however, in the same conjugation, revealing an indeterminacy in the relative rank of the two sets of constraints.⁶

The existence of only *-út-*, *-s-*, *-t-*, and not of unstressed *-ut-* reveals further that affixal non-consistency (for outer suffixes) is only by suppletion and not by metrical re-parse (modulo note 2). Such surface consistency of suffixes (surface because of the presence of metrical structure) entails multiple correspondence, since suffixes only occur in the surface multiply, in the words that bear them. The above analysis has found no use for underlying representation.

4. Syncopated derivatives

Turning now to the participial derivatives, these consist of a number of formations all of which have in common a stress on the first suffixal syllable, which turns out to be responsible for their behavior. The suffixes that cluster in this manner are listed in (12). Each has a transparent English cognate (except for *-oio*, which is a variant of *-orio*, cognate to English *-ory*).

⁵ I am departing slightly here from PES: 318ff. and DiFabio (1990), which take the class of *-ire* verbs that do not infix *-isc-* such as *appar-íre/appái-o* to have stem stress as their primitive property, whence the participial syncope of *appar-s-o*. Rather, I take the primitive (and idiosyncratic) property to be whether or not a verb takes *-isc-*, absence of *-isc-* automatically resulting in stem stress in many forms of the present tense. The participial syncope, also resulting in stem stress, will be construed as a metrical consistency with those forms of the present rather than with the infinitive, a possibility made available by the notion of 'multiple' correspondence of the text. This predicts no difference between the (*-isc-*-less) *-ire* and *-ére* conjugations relative to participial syncope (since there is also no *-isc-* in the latter), and that seems true, witness *val-ére/vál-s-o* and just a few other cases, paralleling the rare cases of *-ire* verbs. This prediction does not extend to the conjugation in *-áre* for reasons given below in the text.

⁶ Note that this analysis is too crude, however, in failing to express the apparent fact that segmental faithfulness is a more highly valued form of morphological regularity than metrical faithfulness. As will be noted below, in domains in which irregularity is altogether excluded, as in the *-are* conjugation, there is only segmental regularity, i.e. the latter is never overcome by metrical regularity, via syncopes. This is consistent as well with the fact reported by Nina Hyams (LSRL 27, discussion) that children prevalently underapply participial syncopes, as in *víncúto* for *vínto*, rather than overapply it, as in **vénto* for *vendúto*. The difficulty here arises from the inability of the present framework, as well as others, to characterize gradient regularity, so that syncopated participles must then be either purely irregular (plainly an incorrect conclusion), or just regular along the lines of the text. Instead, they appear to form a sub-regularity (not too unlike, e.g. English *compell/compuls-ive*, *subregular* given *impuls-ive*, *repuls-ive*, etc.).

(12) *-óre, -íone, -ívo, -úra, -ório/-óio*

These formations all employ the participle as their primary base including, in this case, the participial affix (though of course not the gender-number affix). The ‘regular’ pattern is illustrated again in (13) for the *-áre* and *-íre* conjugations. The *z* (= *[ts]*) before *ione* in (13) is just the spirantized version of *[t]* resulting from the following glide.


(13) Gloss (Part.)	Participle	Derivatives
a. <i>generated</i> <i>washed</i>	gener-at-o lav-at-o	generat-ore, gener-az-ione, generat-ivo lav-at-ore, lav-at-oio
b. <i>abolished</i> <i>inhibited</i> <i>finished</i>	abol-it-o inib-it-o fin-it-o	abol-it-ore, abol-iz-ione, abol-it-ivo inib-it-ore, inhib-iz-ione, inib-it-ivo, inib-it-orio fin-it-ore, fin-iz-ione, fin-it-ura

There are two major divergences from the pattern in (13), noted in (4) above, which we now examine. Both divergences involve the choice of syncopated versus non-syncopated participial affixes. The first one, illustrated in (14) will be the topic of this section.

(14) Gloss (Infin.)	Infinitive	Participle	Derivatives
a. <i>sculpt</i>	scolp-íre	scolp-ít-o	scul-T-óre
a'. <i>abolish</i>	abol-íre	abol-ít-o	abol-it-óre
b. <i>assert</i>	asser-íre	asser-ít-o	asser-T-ívo
b'. <i>wound</i>	fer-íre	fer-ít-o	fer-it-óre
c. <i>scan</i>	scand-íre	scand-ít-o	scan-S-íone
c'. <i>prepare lavishly</i>	imband-íre	imband-ít-o	imband-it-óre
d. <i>invert</i>	invert-íre	invert-ít-o	inver-S-íone
d'. <i>lie</i>	ment-íre	ment-ít-o	ment-it-óre
e. <i>adhere</i>	ader-íre	ader-ít-o	ade-S-ívo
e'. <i>discolor</i>	scolor-íre	scolor-ít-o	scolor-it-úra
f. <i>aggress</i>	aggred-íre	aggred-ít-o	aggres-S-óre
f'. <i>hear</i>	ud-íre	ud-ít-o	ud-it-ívo
g. <i>execute</i>	esegu-íre	esegu-ít-o	esecu-T-óre
g'. <i>chase</i>	insegu-íre	insegu-ít-o	insegu-it-óre

The verbs in (14) all have non-syncopated participles. The reason is that they have suffixal stress in the infinitive, as discussed in connection with (11) above. However, the first member of each pair nonetheless has syncopated participial derivatives, in contrast to the second. We can account for all first members of these pairs by sup-

posing that syncopated participial allomorphs *-s-* and *-t-* are available not only to participles (as in (8)), but also to their derivatives. This yields the typical calculation in (15), parallel to the one in (8).

(15) aggred-ít-óre -s-	syl	Metr-OO-F		Segm-OO-F	
		suffix: -óre	stem: aggred-ít-	suffix: -ore	stem: aggred-it->> aggred-s-
a. àgred-it-óre			*		
b. àggred-ít-ore		*			
c. àggred-s-óre	*				*
d.  aggres-s-óre					**

Here, the outer suffix *-óre* plays the role that the outer suffix *-út(o)* played in (8). It has no other allomorph, though. The morphologically complex stem *aggred-ít-* plays the role of the simple stem in (8). It does have an allomorph, however: *aggred-s-*, or, rather, its affixal part *-ít-* has allomorph *-s-*. The calculation is then just as in (8). Barring again adjacent stresses and hence **aggred-ít-óre*, the only candidates that are segmentally faithful to the participial base are the first two, both metrically *unfaithful* to it by failing to bear stress on *-ít-* and on *-óre*, respectively. The last two candidates are metrically faithful to the base by switching to unstressed suppletive *-s-*, and by maintaining the normal stress on *-óre*. Remember that suppletive affixes *-s-* and *-t-*, though unstressed, do *not* violate metrical faithfulness to *-út-* or *-ít-*. The reason is that metrical faithfulness is faithfulness to a *relation* between stress (or some metrical structure) and some segmental structure. Changing the segmental structure (here dropping the vowel in particular) will violate *segmental* faithfulness, but will render *metrical* faithfulness irrelevant (discussion of (5) above). Finally, candidate (15c) is in violation of syllabification constraints, *d* not being a possible coda in Italian (except as a part of a geminate). Hence (15d) is the optimal candidate under the given ranking.

The variation within each pair in (14) will follow in the same way as that in (9) above: by taking Metr-OO-F and Segm-OO-F to be unranked. This will make (15a), representative of all the second members of each pair in (14), also optimal along with (15d), representative of all the first members. Candidate (15b), on the other hand, would never prevail, for the same reasons as the one in (8b): outermost suffixes invoke a higher ranked OO-F than stems. The same kind of question that arose for (8) above will now arise here. That is, what is the nature of the material in the upper left-hand corner of (15) that serves as the base for the calculation under OO-F? The form *aggredít-* is of course just the surface form of the participle (minus inflection). As for the suffix *-óre*, it can again not be in its ‘underlying representation’ given its metrical parse, crucial to understanding the syncope. It must therefore

be a surface form, but as such it can only be an abstraction over a class of surface forms. That is, *aggress-óre* stands in correspondence with all other nouns in *-óre* over the relevant affixal material: a case of *multiple* correspondence. Now, if *aggress-óre* (or each of the candidates in (15)) stands in correspondence with other nouns in *-óre*, then it is of relevance that, in some of these, *-ore* is preceded by *-s-*, such as those in (16), modeled on (13).

(16) Gloss (Part.)	Participle	Derivatives
<i>compressed</i>	compres-s-o	compres-s-ore, compres-s-ione, compres-s-ivo
<i>diffused</i>	diffu-s-o	diffu-s-ore, diffu-s-ione, diffu-s-ivo
<i>derided</i>	deri-s-o	deri-s-ore, deri-s-ione, deri-s-ivo
<i>expelled</i>	espul-s-o	espul-s-ore, espul-s-ione, espul-s-ivo
<i>incided</i>	inci-s-o	inci-s-ore, inci-s-ione, inci-s-ivo, inci-s-ura
<i>interceded</i>	interces-s-o	interces-s-ore, interces-s-ione
<i>oppressed</i>	oppres-s-o	oppres-s-ore, oppres-s-ione, oppres-s-ivo
<i>propelled</i>	propul-s-o	propul-s-ore, propul-s-ivo, propul-s-orio
<i>killed</i>	ucci-s-o	ucci-s-ore, ucci-s-ione

The syncopated participles in (16) are of the type discussed in the previous section, that is from verbs of the unstressed *-ere* conjugation as usual. Their derivatives on the right are simply faithful to them segmentally, though not metrically (e.g. *compréssso/còmpressóre*) – the familiar trade-off. The patterns *-itóre*, *-sóre* are thus in competition because they are functional equivalents, consisting of a participial affix and *-óre*. The latter pattern prevails in (15) by avoiding unstressed *-it-*, a violation of metrical faithfulness. Hence the *-s-* of (15) is simply the one that occurs before *-ore* in a number of independent cases – another instance of multiple correspondence.

The syncopated forms in (16) are all related to *-íre* verbs, but the phenomenon of syncopated derivatives from non syncopated participles is not limited to that conjugation, as shown by the examples in (17), parallel to (14).

(17) Gloss (Infin.)	Infinitive	Participle	Derivatives
a. <i>detain</i>	deten-ére	deten-út-o	deten-T-óre.
a'. <i>contain</i>	conten-ére	conten-út-o	conten-IT-óre
b. <i>possess</i>	posed-ére	posed-út-o	posses-S-óre
b'. <i>provide</i>	provved-ére	provved-út-o	provved-IT-óre
c. <i>exceed</i>	eccéd-ere	ecced-út-o	ecces-S-ívo
c'. <i>sell</i>	vénd-ere	vend-út-o	vend-IT-óre

The first two pairs in (17) illustrate the stressed *-ére* conjugation, which does not syncopate its participles for the familiar reasons: no stem stress. The third pair illustrates the unstressed *-ere* conjugation which does syncopate them but not always, as we have seen. The non-syncopated *-óre* items in (17) utilize unstressed *-it-* from the *-íre* conjugation. This is a further effect of OO-F under multiple correspondence.

Unstressed *-ut-* would represent yet another allomorph, violating metrical OO-F. In contrast, unstressed *-it-* exists independently, for items from the *-íre* conjugation. The non-syncopated derivatives in (17) thus in effect violate segmental rather than metrical faithfulness to the participle, like the syncopated ones. They are segmentally and metrically faithful to the non-syncopated derivatives in (14), which, however, are metrically unfaithful to their participles as we saw. The analysis of the variation in (17) will still be fundamentally similar to that of the variation in (14), although the competition here is between two types of segmental faithfulness rather than between segmental and metrical faithfulness.

In contrast to the other conjugations, the conjugation in *-áre* exhibits no syncopes of either participles or derivatives, and hence only patterns as in (13a) above. The lack of participial syncope will follow from the grammar developed so far given the lack of stem stress in the infinitive, but the lack of syncope in the derivatives will require re-ranking of the constraints, as I propose below.

Recapping so far, the syncope observed in participial derivatives of all conjugations except the one in *-áre* is substantially the same kind of phenomenon as the participial syncope in the unstressed *-ere* conjugation. The similarity, which includes the variable character of both types of syncopes, is highlighted in (18).

(18)	Metr-OO-F	Segm-OO-F
a. báttere ⇒ battúto	*	spedíto ⇒ speditóre
b. méttete ⇒ méssó		* aggredíto ⇒ aggressóre

In (18), both formations in (a) violate metrical faithfulness relative to the boldfaced vowel, while they are both segmentally faithful to their bases. In contrast, the ones in (b) are both metrically faithful in the usual sense that neither reparses any of the base material, while they are segmentally unfaithful to either canonical participial affix, *-ut-* or *-it-*.

The grammatical system proposed can be schematically represented as in (19), which gives the morphological organization, while the relevant constraint ranking, distinguishing the *-áre* conjugation from the others will be given in (20) below.

(19)	Infinitive ⇒	Participle ⇒	Derivatives
1:	-áre	-Vt- >>	-óre, -íone, -ívo, -úra, -ório/-óio
2a:	-ere	-t-	
2b:	-ére	-s-	
3:	-íre		

The diagram visualizes word formation in more or less traditional terms: participles are derived from infinitives, and other formations are derived from the participle; there are four different infinitival suffixes defining the different conjugations, three stressed and one unstressed. Participles have a choice of three types of affixes: one

Turning now to the relative rank of the various forms of faithfulness involved, no difference seems required for conjugations 2a,b and 3, which uniformly exhibit the ranking in (20a) with metrical and segmental faithfulness unranked, while conjugation 1 appears to require the ranking in (20b).

- Recall that the difference between conjugation 2a, in *-ere* and conjugations 2b, 3, in *-ére* and *-íre* relative to participial syncope requires no re-ranking because it follows from the difference in stem stress: only the former has it, hence only the former has the participial syncope, which is to maintain the stem stress. In contrast, conjugation 1 lacks syncope not only in the participles but in the derivatives as well. This will require the ranking in (20b), by which Metr-OO-F may not compel violations of Segm-OO-F. Since Segm-OO-F and Metr-OO-F are not the only constraints in the grammar, however, the question arises whether the difference between (20a) and

(20b) consists in re-ranking Segm-OO-F (as suggested by the vertical alignment) or rather in re-ranking Metr-OO-F, relative to the rest of the hierarchy. The former conclusion seems to be the correct one, given that conjugation 1 lacks segmental allomorphy altogether, as shown by the contrasts in (21).

(21) a.	2a: <i>vinco/vinciamo</i>	[k/č]	'I-win/we-win'
	2b: <i>vuole/vogliamo</i>	[o/wo], [l/λ]	'he-wants/we-want'
	3: <i>fuggo/fuggiamo</i>	[gg/ğğ]	'I-flee/we-flee'
b.	1: <i>manco/manchiamo</i>	[k]	'I-am-missing/we-are-missing'
	<i>lancio/lanciamo</i>	[č]	'I-launch/we-launch'
	<i>volo/voliamo</i>	[l], [o]	'I-fly/we-fly'
	<i>taglio/tagliamo</i>	[λ]	'I-cut/we-cut'
	<i>suono/suoniamo</i>	[wo]	'I-sound/we-sound'

As shown in (21a), conjugations 2a,b, and 3 each exhibit segmental alternations of various sorts beside syncope, specifically palatalizations and diphthongizations, while, as shown in (21b), conjugation 1 never does, each stem maintaining an invariant form. We note that conjugation 1 is by far the largest (and most productive). Its lack of segmental allomorphy (which, incidentally, appears to be rather general across the Romance languages) would not seem unrelated to its larger size. This is in fact reminiscent of English 'level 2' affixation, which also sharply limits allomorphy and is relatively more productive than 'level 1' affixation. Although the issues involved are complex and beyond the scope of this article, this behavior would suggest that allomorphy is minimized globally, and thus suppressed more vigorously over larger classes (PES: 263, 303f. 307; Burzio, 1994b). The higher ranking of segmental OO-F in (20b) would then follow from taking that rank to be scaled to the size of the class involved. The lack of a comparable effect on metrical OO-F would remain obscure, however, but see fn. 6.

To conclude this section, while participles may or may not syncopate as compelled by metrical OO-F, certain derivatives based on non syncopated participles may syncopate in turn. This is also compelled by metrical OO-F. The derivatives in question all bear stress on the syllable abutting the participial affix, which is itself stressed when not syncopated. Since adjacent stresses are excluded by undominated metrical constraints, there will be two choices: syncopating the participial suffix (*Segm-OO-F); or destressing it (*Metr-OO-F). Both are attested, pointing again to a ranking indeterminacy. The syncope of participial derivatives utilizes the same two suppletives *-s-* and *-t-* as the participial syncope, so that the overall range of choices is: *-ýt-*, *-s-*, *-t-*, as with participles. As in the case of participles, we find affixal anti-allomorphy: unstressed *-ut-* is avoided altogether, and unstressed *-it-* is available only under compulsion, as shown by its being in variation with *-t-* and *-s-*, which must be compelled, since they violate Segm-OO-F. Given that the faithfulness effect is with metrically parsed affixes (*-ýt-*, *-ít-*), it cannot be with some 'underlying' form of such affixes (i.e. by Input-Output faithfulness), but must rather be with their surface forms. As noted, however, affixes do not occur as separate surface forms, but

only as parts of words. Affixal correspondence must therefore be with sets of words that bear each affix, hence multiple. This view accounts for the parallel outcomes of the syncopes in the derivatives and in the participles themselves. The derivative *aggressore*, while from non syncopated *aggredito* echoes a form ‘**aggresso*’, like *compresso*. This is because participles like the latter have their own derivatives in which the syncope persists, like *compressore*. Hence, newly syncopated *aggressore* is simply ‘tying into’ the pattern of *compressore*. More specifically, it is in correspondence with those items over the affixal sequence *-sore*. As noted, the pattern *compréssso/còmpressóre* is segmentally but not metrically faithful (loss of participial stress). Given the usual double outcome, we expect a metrically consistent solution over this class of cases as well – the concern of the next section.

5. Syncope revoked

Participial derivatives from syncopated participles exhibit the double outcome illustrated by the contrasts in (22).

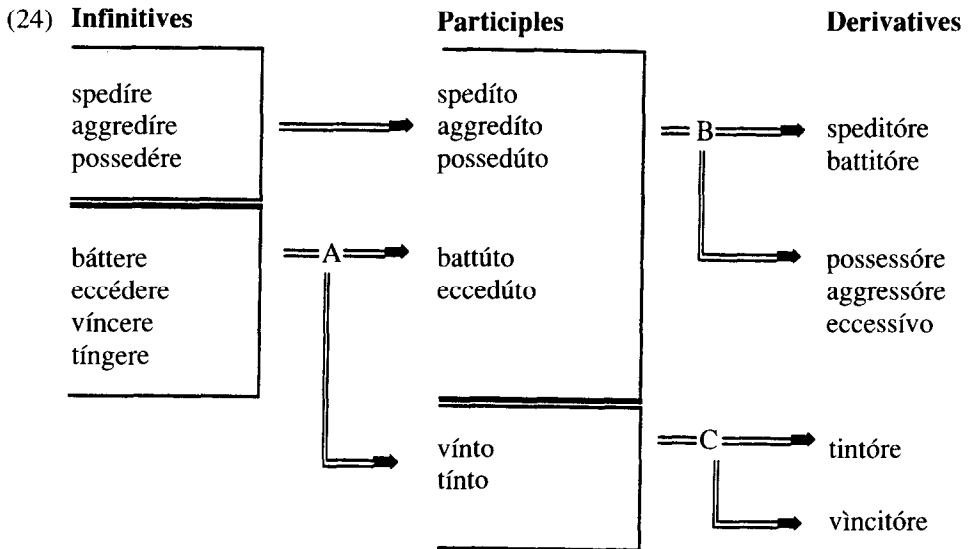
(22) Gloss (Infin.)	Infinitive	Participle	Derivatives
a. <i>convince</i>	convínc-ere	convín-T-o	cònvin-Z-íone
a'. <i>win</i>	vínc-ere	vín-T-o	vinc-IT-óre
b. <i>add</i>	aggiúng-ere	aggiún-T-o	àggiun-Z-íone
b'. <i>collect</i>	raccógli-ere	raccól-T-o	raccògl-IT-óre
c. <i>disperse</i>	dispérd-ere	dispér-S-o	disper-S-íone
c'. <i>lose</i>	pérd-ere	pér-S-o	pèrd-IZ-íone
d. <i>talk</i>	discórr-ere	discór-S-o	discor-S-ívo
d'. <i>aid</i>	soccórr-ere	soccór-S-o	soccòrr-IT-óre
e. <i>annex</i>	annétt-ere	annés-S-o	ànnes-S-íone
e'. <i>transmit</i>	trasmétt-ere	trasmés-S-o	trasmètt-IT-óre
f. <i>diffuse</i>	diffónd-ere	diffú-S-o	diffu-S-óre
f'. <i>intend</i>	inténd-ere	inté-S-o	intènd-IT-óre
g. <i>divide</i>	divíd-ere	diví-S-o	divi-S-óre
g'. <i>gnaw</i>	ród-ere	ró-S-o	ròd-IT-óre
h. <i>read</i>	légg-ere	lét-T-o	let-T-úra
h'. <i>say</i>	dí(c-e)re	dét-T-o	dic-IT-úra

The reasons behind these contrasts are the now familiar ones. Within each pair of derivatives, the first member maintains the segmentism of the participle (again, *z* is just spirantized *t*), but necessarily loses its stress, while the second member maintains its stress, albeit only as a secondary, by inserting a buffer syllable between stem

and outer suffix. The calculation is straightforwardly as in (23), pending identification of the inserted material.

(23)	vínt- -óre	Metr-OO-F		Segm-OO-F	
		suffix: -óre	stem: vínt-	suffix: -ore	stem: vint-
a.	vínt-óre		*		
b.	vínt-ore	*			
c.	vìnC-IT-óre				*

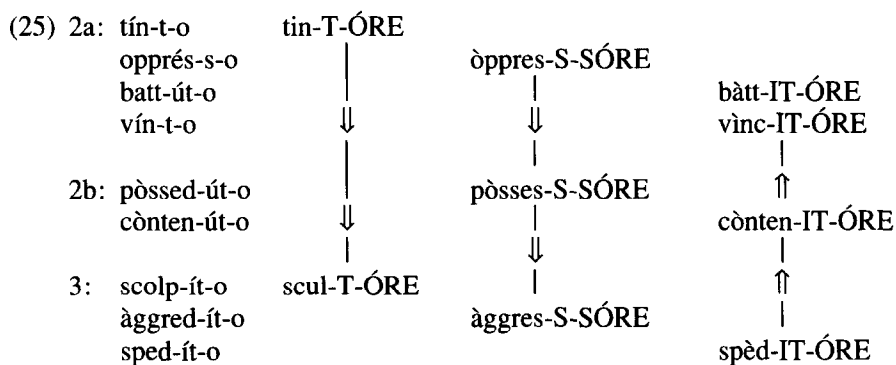
Candidate (c) represents the second member of each pair in (22), while candidate (b) represents the first. The variation in (22) is expressed by the indeterminate relative rank of Metr-OO-F and Segm-OO-F as usual. Our concern will be the nature of the non-participial material given in upper case in (23c). Before turning to that issue, however, it will be useful to recap the overall configuration of facts observed, schematically illustrated in (24).



Starting from the infinitives, we have seen that they come in two varieties: with suffixal stress and with stem stress, as in the two blocks in (24), ignoring the conjugation in *-áre*, which has the different subgrammar of (20b) above. Infinitives of the first kind never yield syncopated participles (modulo fn. 5) since the non-syncopated (and stressed) participial affixes lead to satisfaction of both segmental and metrical faithfulness directly. Participles from stem-stressed infinitives bifurcate into syncopated (metrically faithful) and non-syncopated (segmentally faithful) as at point A in

the diagram, whence the two blocks of participles. Derivatives of non-syncopated participles bifurcate at point B into syncopated and not, the former being again metricaly faithful, while the latter are segmentally faithful, except for the noted type *battitóre* which is segmentally unfaithful to its own participle *battúto*, though metricaly faithful to it, by avoiding unstressed *-ut-*. Recall, again, that a change in both segments and stress does **not** compound faithfulness violations. Metrical faithfulness is faithfulness to a relation between stress and segments. Hence, changing the segments avoids violating metrical faithfulness to the original segments. Finally, derivatives of syncopated participles bifurcate at point C, as we just saw in (22) and as was accounted for in (23). Aside from the qualification just noted for the *battitóre* case, the upper branch in each of the bifurcations in (24) thus satisfies segmental faithfulness, and the lower one metrical faithfulness.

Returning now to the nature of the inserted material in *vinC-IT-ore* of (23c) and in the other cases in (22), it is clear that this is not just some general epenthesis. The affixal sequence *-IT-* of *vinc-IT-óre* is plainly just the same as that of *batt-IT-óre* just discussed, in turn in affixal correspondence with cases like *sped-IT-óre*, segmentally regular from 3rd conjugation *sped-íre*, *sped-ít-o*. Hence this is just another case of affixal correspondence/faithfulness. While breaking away from the segmental structure of its own participle *vinto* for metrical reasons, the *-óre* derivative falls into correspondence with independently existing items in *-óre*, in line with the general hypothesis that there is correspondence where there is shared semantic content. The overall patterns of affixal correspondence so far encountered are summarized in (25).



Conjugation 2a has syncopated participles like *tinto* and *oppresso*, which give syncopated derivatives like *tintore* and *oppressore* by segmental faithfulness. Conjugations 2b and 3 only have non-syncopated participles but these can still give syncopated derivatives by metrical faithfulness. The segmentism of these cases breaks away from their participle and falls in with the affixal segmentism *-t-ore*, *-s-ore* independently available for conjugation 2a, as indicated by the downward arrows. At the same time, other derivatives from *-ító* participles are segmentally consistent with those participles rather than being syncopated, yielding affixal sequences *-it-ore*, *-iz-ione*, *-it-ivo* etc. As indicated by the upward arrows in (25), these sequences are utilized by derivatives of participles in *-ut-* from conjugations 2a and 2b, as an alterna-

tive to the syncopes, thus altogether avoiding unstressed *-ut-*. Derivatives of syncopated participles like *vinto*, whose segmentism breaks away from the participle for metrical reasons, also find this independently available segmentism well-suited, whence *vinc-it-ore*, etc. Hence affixal correspondence/faithfulness is pervasive: whenever affixal material is driven into allomorphy, recourse is had to independently existing patterns, even if this crosses boundaries between the conjugations, otherwise segregated systems by definition. For the usual reasons, affixal correspondence here entails multiple correspondence: correspondence is to surface forms of affixes, and those are only instantiated multiply, in the words that bear them.

The discussion has thus accounted for the affix *-it-* of *vinc-it-ore*. It remains to account for the *c* ([č]), also absent in *vin-t-o*. That clearly comes from the infinitive, thus establishing multiple correspondence for stems as well. Candidate *vinc-it-óre* in (23c) must best **vinc-it-óre* not given in (23) but more faithful to the participial stem. One way to attain this result would be to assume that the strength (rank) of faithfulness constraints is relativized to the independent fit: once the derivative breaks away from the participle by replacing *-t-* with *-it-*, the attraction of the participle becomes weaker and that of the infinitive (always lurking) relatively stronger as a result. Another way, which I will adopt here, is to appeal to faithfulness of syllabification: in *vin.ci.to.re* the *n* is a coda, just as in both *vin.ce.re* and *vin.to*. In hypothetical **vi.ni.to.re* it would become an onset – an inconsistency of syllable parse quite parallel to those of the metrical parse that we have been examining. With slight modifications, which I will not explicitly address, this type of consideration appears to correctly carry over to the other derivatives in (22) as well.⁷

In sum, the participle is the primary base for the derivative formations in question, but when the derivatives are forced to stray from the participle, they do not stray randomly, but are rather pulled in by the infinitive, evidently a secondary base, next in line. In terms of the formal theory of correspondence and OT, a secondary base is to be characterized as one that imposes its own, lower ranked, set of OO-F constraints.

Worthy of note in connection with the contrasts of (22) above is also the behavior of nouns in *-rice*, feminine counterparts to those in *-óre*. In general, these pattern like their masculine counterparts, as shown in (26) along with the participial bases.

⁷ For some cases, such as *ró-S-o/ròd-IT-óre*, it is necessary to appeal to the requirement that syllables have onsets (**roitore*). For others, such as *inté-S-o/intend-IT-óre*, however, it still seems necessary to appeal to a ‘clustering’ effect as in the first text alternative. Here, assuming that the *d* is picked up from the infinitive to provide an onset, the *n* seems to be needed only to further perfect the fit with the infinitive. There is yet a further possibility, not exclusive of the one pursued in the text, which is that *-it-* simply has a lexical association to infinitival stems.

It is interesting to note that verbs with syncopated infinitives such as *opporre* ‘oppose’, whose non-syncopated form would be *oppón-ere*, maintain the participial stem of *oppós-t-o* even when switching to *-it-*, as in *oppos-it-óre*, *oppos-IZ-ióne*. The intuitive account of this is that in these cases there is no suitable infinitival stem to resort to (**oppon/r(?)itore*). In the case of syncopated *díre* in (22), however, the derivative *dic-it-úra* suggests reconstruction of a non syncopated infinitival stem *dic-*. There is no need to commit to an ‘underlying’ non-syncopated form */dic/*, however. Direct correspondence with the actual forms of the present, all using *dic-*, can be postulated instead, as proposed for other cases in note 5 above.

(26) Gloss (Part.)	Participle	-ore Noun	-rice Noun
a. <i>created</i>	cre-at-o	cre-at-ore	cre-at-rice
b. <i>contained</i>	conten-ut-o	conten-it-ore	conten-it-rice
c. <i>sold</i>	vend-ut-o	vend-it-ore	vend-it-rice
d. <i>directed</i>	diret-t-o	diret-t-ore	diret-t-rice
e. <i>sculpted</i>	scolp-it-o	scul-t-ore	scul-t-rice
f. <i>executed</i>	esegui-it-o	esecu-t-ore	esecu-t-rice

There is one class of exceptions, however, represented by items in *-s-ore*. In these cases, the feminine in *-rice* is non-syncopated, as in (27).

(27) Gloss (Inf.)	Infinitive	Participle	-ore Noun	-rice Noun
a. <i>aggress</i>	aggred-ire	aggred-it-o	aggres-s-ore	aggred-it-rice
b. <i>review</i>	recens-ire	recens-it-o	recen-s-ore	recens-it-rice
c. <i>defend</i>	difend-ere	dife-s-o	difen-s-ore	difend-it-rice
d. <i>divide</i>	divid-ere	divi-s-o	divi-s-ore	divid-it-rice

The obvious reason for this divergence is the cluster **sr*, not tolerated in Italian, hence excluding **s-rice*. With the syncopated pattern blocked by higher-ranking constraints, the non-syncopated one in *-it-rice*, made available by the existence in other cases such as those in (26b,c) above, is resorted to. The participial segmentism that *-s-* induced is lost with it, and the infinitival segmentism reappears instead, just as with the other *-it-* cases in (22) above.

There are other cases showing the double affiliation of participial derivatives with both participle and infinitive. One is that of (4g) above, further illustrated in (28).

(28) Gloss (Inf.)	Infinitive	Participle	Derivatives
a. <i>ascend</i>	ascénd-ere	ascé-s-o	àsCEN-s-óre
b. <i>ignite</i>	accénd-ere	accé-s-o	àcCEN-s-ióne
c. <i>apprehend</i>	apprénd-ere	appré-s-o	àpPREN-s-ívo
d. <i>defend</i>	difénd-ere	difé-s-o	diFEN-s-óre

In (28), the derivatives have the *s* of the participle, but also the *n* of the infinitive that the participle lacks. These paradigms can be accounted for in the following fashion. There exists a notion of prosodic prominence independent of stress (stress is often just ‘aligned’ with such independent prominence, as per McCarthy and Prince’s, 1993, Prince and Smolensky’s, 1993 ‘Weight-to-Stress’ principle). Heavy syllables are prosodically more prominent than light ones. The derivatives in (28) are metricaly unfaithful to their participles since the participial stress is lost, but they are still faithful to them in the (weaker) prosodic sense just introduced, by turning the open (stressed) syllable of the participle into a closed (hence heavy) one.⁸ When extra

⁸ Similar to this are English cases like *cònd[e]nsation* in which the non reduced [*e*] preserves some of the prosodic prominence of that of *cond[é]nse*, though not the stress (PES: 333).

material is needed, the infinitive is the regular supplier, whence the *n*. One question still lingering is why should the participle drop the *n* of the infinitive in the first place, a violation of segmental faithfulness? The answer is: ‘The Emergence of the Unmarked’, alias the ranking schema in (1) above: open syllables are less marked than closed ones. The reason why syllable structure simplifies under affixation here is thus the same as why vowels shorten under affixation in English: phonological structure/inventories tend to simplification under affixation. The participles in (28) are subject to metrical faithfulness to their infinitives, and that is not jeopardized by the simplification in syllable structure since Italian allows penultimate stress on both closed and open syllables.⁹

Since in (28) the derivatives violate segmental faithfulness to the participle for the sake of some prosodic faithfulness, and since we know this in general to be an even trade-off, we will expect the opposite outcome as well. While this class of cases is small providing few opportunities to check, the pattern in (29) would seem to be the one sought.

(29) ‘diffuse’ diffónd-ere diffú-s-o diffu-s-óre

In (29), and similarly with other verbs based on *fond-ere* ‘fuse’, the derivative is segmentally, rather than prosodically, faithful to the participle – the expected oscillation compared with (28).¹⁰

The infinitive rears its head in another class of cases otherwise based on the participle. These are de-verbal nominals similar to English *wound*, *fall*. In Italian, these are de-participial and mostly feminine, ending in *-a*. The regular paradigm for the three suffix-stressed conjugations is given in (30).

(30) Gloss (Infin.)	Infinitive	Participle	Nominal
a. <i>eat</i>	mangi-áre	mangi-át-o	mangi-át-a
b. <i>fall</i>	cad-ére	cad-út-o	cad-út-a
c. <i>wound</i>	fer-íre	fer-ít-o	fer-ít-a

As usual, matters get more complex in the unstressed *-ere* conjugation, which exhibits the four different patterns in (31), the last two revealing the effects of the infinitive.

⁹ Another hybrid case worthy of note is *assól-v-ere/assól-to/assòlu-t-óre*. Here the derivative is at the same time syncopated like the participle, and has the infinitival stem, with one change: vocalization of *v* to *u*. This violation of segmental faithfulness to the infinitive permits satisfaction of metrical faithfulness to both infinitive and participle.

¹⁰ I will attempt no account of the *o/u* alternation in (29), however, on a par with many other segmental differences elsewhere.

(31)	Infinitive	Participle	Nominal	Metr-F	Segm-F	Metr-F	Segm-F
				to infinitive		to participle	
a.	atténd-ere 'wait'	atté-s-o	atté-s-a			*	
b.	ricév-ere 'receive'	ricev-út-o	ricev-út-a	*			
c.	vínc-ere 'win'	vín-t-o	vínc-it-a				*
d.	vénd-ere 'sell'	vend-út-o	vénd-it-a			*	*

In the first two patterns in (31), the noun is fully consistent with the participle, and inconsistent with the infinitive just like the participle is. In (c), however, the noun has the segmentism of the infinitive rather than of the participle, in minimal contrast with (a). Finally, in (31d), the noun is metrically consistent with the stem-stressed infinitive and not with the participle. It is also segmentally inconsistent with the participle: the noted absence (in all environments) of unstressed *-ut-* forces the noun to employ *-it-* contrasting with *-ut-* of the participle. Note that the de-participial nouns in (31c,d) utilize unstressed *-it-* despite the fact that this is never available to the participles themselves, in conformity with the noted lack of suffixal allomorphy in non-embedded environments. Hence the nouns in (31c,d) behave phonologically like embedded environments (e.g. *vinc-it-ore*), despite the peripherality of *-it-* (inflection aside). This effect follows from the categorial shift separating the nominal from the participle. Recall that the higher-ranked faithfulness affecting multiple instances of an outer suffix was related the suffix's 'head' status, as the determinant of lexical category. Now the outer suffix *-ita* in (31c,d) is indeed the head of the nominal, but it cannot be the *same* head as that of participles like *cap-íta* 'understood-FS' given precisely the different category. Hence there is no reason to expect the high ranked faithfulness to be at work between them. Rather, we only expect the usual kind of faithfulness here, the one at work for instance between a bare stem and its affixed derivatives (see also Burzio, 1997). The allomorphy of the outer suffix in (32b,c) is in fact totally parallel to that observed with English *-ate* in deverbal nouns or adjectives. For example, in the noun/adjective *altern-ate*, the suffixal vowel shortens, just as it does under further suffixation in *altern-at-ive*, while, as noted above, it never does in verbs: *alterná:te*, etc. (PES: 295). Again, the categorial shift is responsible for this.

In sum, the patterns in (31) reveal that participle and infinitive compete rather evenly as sources of stem material for the noun, with all four constraints of (31) ranking freely, whence a choice of four different patterns.

A final case in which the double affiliation is quite apparent is that of preterits, which must be in correspondence with both infinitive and participle as already noted.

On the one hand, the more general pattern for preterits is straightforwardly consistent with the infinitive, as in (32).

(32) Gloss (Infin.)	Infinitive	Preterit (1S)
a. <i>eat</i>	mangi- <i>áre</i>	mangi- <i>ái</i>
b. <i>be able</i>	pot- <i>ére</i>	pot- <i>éi</i>
c. <i>finish</i>	fin- <i>íre</i>	fin- <i>íi</i>

On the other, however, in the unstressed *-ere* conjugation, preterits sometimes syncopate so as to remain metrically (rather than segmentally) true to the infinitive, just like participles, as in *scrív-ere/scrís-si*. What is relevant here is that, as shown in (9) above, they syncopate in unison with the participle, that is if and only if the participle also syncopates, hence revealing a preterit-participle (metrical) faithfulness, while each of them is also faithful to the infinitive (metrically or segmentally). The preterit-infinitive correspondence is further highlighted by the fact that the paradigm of a syncopated preterit is in fact always split relative to the syncope, as shown in (33).

(33) <i>scrív-ere</i> :	1S	<i>scrís-si</i>	1P	<i>scriv-émmo</i>
‘ <i>write</i> ’	2S	<i>scriv-ésti</i>	2P	<i>scriv-éste</i>
	3S	<i>scrís-se</i>	3P	<i>scrís-sero</i>

It is only the 1S, 3S, 3P inflections, normally *-é(tt)i*, *-é(tte)*, *-éttero/-érono* respectively, that also have syncopated, unstressed, s-initial suppletives *-si*, *-se*, *-sero* respectively. In the remaining, non-syncopating 2S, 1P, 2P cases, the full infinitival segmentism: *scriv-*, in (33), always shows up.

In sum, participial derivatives in *-ore/-rice*, *ione*, *-ivo*, etc. exhibit a primary correspondence with the participle and a secondary one with the infinitival stem. Under compulsion from metrical/prosodic faithfulness, or – for the case of *-rice* nouns – high-ranked phonotactics (**sr*), segmental faithfulness to the participle can be violated, allowing faithfulness to the infinitive to assert itself. The double base is also similarly evident in the structure of ‘de-participial’ nouns like *véndita* (stressed like the infinitive) and *víncita* (with infinitival segmentism). In addition, preterits are also correspondent with both infinitive and participle.

6. Conclusion

Once a formal theory of surface-to-surface correspondence is developed within OT, nothing bars the formal expression of multiple correspondence. Furthermore, if correspondence is interpreted ‘radically’, as not only necessary to express word-to-word relations, but in fact sufficient (supplanting underlying representation), its role becomes more pervasive. At that point, if one places no external conditions on the presence of correspondence, but simply takes it to reflect the kinds of semantic rela-

tions usually associated with shared morphology, multiple correspondence will be directly expected. The reason is that those relations are not limited to word pairs, but typically involve larger sets, what are sometimes referred to as ‘paradigms’. The aim of this article was to establish the existence of multiple morpho-phonological correspondence over a certain range of Italian material.

In Italian, in three out of four verbal conjugations, there is a wide-spread pattern of conflicting metrical and segmental faithfulness, yielding violations of either one. When a primary form of faithfulness is violated, a secondary one typically takes over. This is true for both stems and affixal material. The patterns of multiple correspondence/faithfulness observable are summarized below.

(34) Patterns of Multiple Correspondence

- a. Formations in *-ore/-rice*, *-ione*, *-ivo*, *-ura*, *-orio/-oio*, which are primarily based on the participle, are secondarily based on the infinitive:

<i>vincere</i>	<i>vinto</i>	<i>vincitore</i>
<i>ascendere</i>	<i>asceso</i>	<i>ascensore</i>
<i>dividere</i>	<i>diviso</i>	<i>dividitrice</i>

- b. A class of nominals which are transparently and generally de-participial are also in correspondence with the infinitive:

<i>véndere</i>	<i>vendúto</i>	<i>véndita</i> (infinitival stress)
<i>pérdere</i>	<i>pérso</i>	<i>pérdita</i> (infinitival segmentism)

- c. Participles are in correspondence with one another, witness the consistency of affixal patterns, especially the existence of *-út-*, *-t-*, *-s-*, to the exclusion of unstressed *-ut-*:

<i>dovére</i>	<i>dovúto</i>	
<i>véndere</i>	<i>vendúto</i>	<i>/*vénduto</i>
<i>préndere</i>	<i>présó</i>	<i>/*prénduto</i>
<i>scrivere</i>	<i>scrítto</i>	<i>/*scrívuto</i>

- d. Members of each of the suffixal classes listed in (a) above are in correspondence with one another, witness a number of intra-class affixal consistencies:

<i>aggressore</i> (ex <i>aggredito</i>)	like <i>oppressore</i> (ex <i>oppresso</i>)
<i>scultore</i> (ex <i>scolpito</i>)	like <i>tintore</i> (ex <i>tinto</i>)
<i>vincitore</i> (ex <i>vinto</i>)	like <i>speditore</i> (ex <i>spedito</i>)

- e. Preterits utilize the infinitival stem when they do not syncopate, but whether or not a preterit syncopates correlates highly with whether or not its participle does, hence preterits must be in correspondence with both infinitive (segmental faithfulness), and participle (metrical faithfulness):

<i>préndere</i>	<i>présó</i>	<i>prési</i> , <i>prendésti</i> , ...
<i>véndere</i>	<i>vendúto</i>	<i>vendé(tt)i</i> , <i>vendésti</i> , ...

- f. Similarly to the correspondence between participle and preterit, there also appears to be correspondence among items from the different suffixal classes in

(a) that share a stem. This is shown by the high degree of correlation present not only in whether syncope obtains in each derivative: (i), but also in which kind of syncope (in *s* or *t*) obtains: (ii).

(i)	spedire	spedito	speditore	spedizione	speditivo
	aggredire	aggredito	aggresSore	aggresSione	aggresSivo
(ii)	aderire	aderito	adeSore	adeSione	adeSivo
	asserire	asserito	asserTore	asserZione	asserTivo

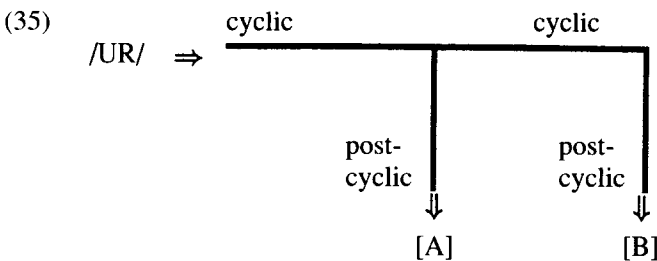
The correlation is particularly strict for items in *-ore* and their feminine counterparts in *-rice*, broken only when the impossible cluster *sr* would arise, excluding **s-rice*.

The notion of multiple correspondence finds of course no direct expression in a derivational framework, in so far as derivations do not contemplate multiple inputs. We note as well that several of the points in (34) above (c, d, e, f in particular) define generalizations among what would from a derivational standpoint be products of independent affixational processes – what Bybee (1995) calls ‘product oriented generalizations’. These are particularly likely to elude derivationally-based characterizations. The appendix that follows considers the prospects for the derivational approach in more detail.

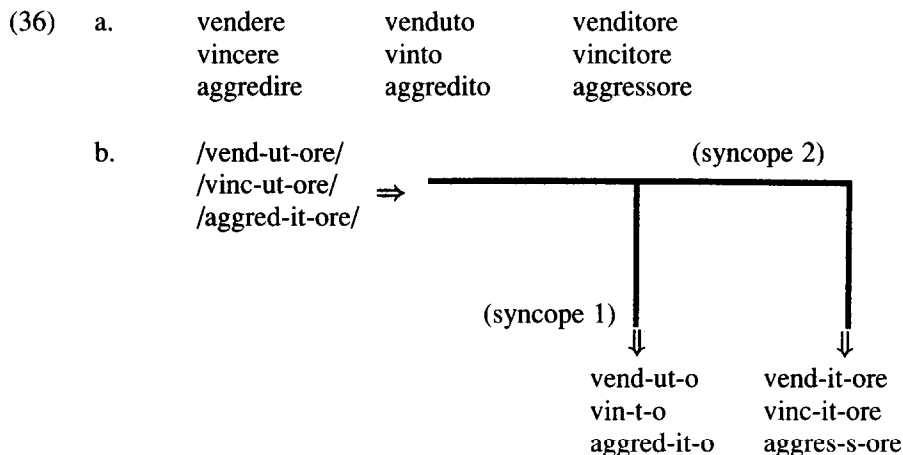
7. Appendix: Prospects for derivations

The general empirical problem addressed above is that of partial similarity among words, in essence the problem of ‘allomorphy’. In the framework of surface-to-surface correspondence, partial similarity can generally be characterized by competition between OO-F constraints on the one hand (requiring identity), and structural constraints of the phonology at large on the other (imposing individual adaptation to context). In the specific cases studied, this competition was in fact somewhat indirect. The main competition observed was rather between two different forms of faithfulness: metrical and segmental, while the phonology was involved indirectly in controlling opportunities for satisfaction of each type of faithfulness, e.g. by excluding complex codas, adjacent stresses, and so forth.

In a derivational framework, on the other hand, partial similarity between two different words A and B needs to be captured by distributing the analysis appropriately over the different portions of the derivational schema in (35).



Specifically, similarities between the two words A and B in (35) must be attributed to either the common UR, or to the ‘cyclic’ part of the derivation leading to A, also common. In contrast, the differences need to be attributed to those portions of the derivation which the two words do not share (the ‘post-cyclic ones’). A characterization of the three contrasting paradigms in (36a) would on this approach, and in its essentials, be as in (36b).



Specifically, participial syncope yielding *vinto* could not be on the cyclic portion of the derivation of the participle, lest **vintore* also be derived. Rather, it would have to be further downstream in the part of the derivation specific to the participle. This is ‘syncope 1’ in (36b), the parentheses expressing its variable applicability, to deal with non-syncopeated *venduto*, *aggredito*. Similarly, the syncope yielding *aggressore* must be further downstream from the derivation of the participle to avoid **aggresso*. This is ‘syncope 2’ in (36b), once again in parentheses because variable, as shown by *venditore*, *vincitore*. Some special readjustment would be required to turn *ut* to *it* under specific circumstances.

There are insurmountable difficulties with this kind of an analysis, however. First, all syncopes are stress-driven, the participial one being driven by the stem-stress. However, the stem stress of e.g. *vínc-ere* depends on the metrical properties of the infinitival suffix, which is not part of the participle. Second, the choice among allomorphs *-ut/-it-*, *-s-*, *-t-*, or, for preterits, between, e.g. *-e(tt)i* and *-si*, because stress-dependent, presupposes a relation between phonology (that assigns stress) and morphology (that selects morphemes), which cannot be linearized into a sequential derivation: the phonology needs the morphemes to apply, but the morphology needs the metrical structure (relative to each morphological choice) to select morphemes. We may call this the ‘Prosodic Morphology’ syndrome, i.e. the inherent inability of the derivational model to deal with the fact, by now extensively documented thanks to McCarthy and Prince (1993), that prosody, hence phonology on the one hand, and morphology on the other are mutually interdependent.

Thirdly and most significantly, splitting up the account of syncope phenomena into the ‘syncope 1’ and ‘syncope 2’ of (36b) is both a logical necessity for the derivational theory and a serious error. It is a necessity because participle and participial derivatives can syncopate independent of each other as shown by the cases in (36). It is an error for several reasons. For one thing, both syncopes are in either *-t-* or *-s-*, an accident if they are independent. For another, when both participle and a derivative syncopate, they never fail to have the same syncope (*-t-* or *-s-*), and only pattern as in (37a,b), a minimal pair.

- | | | | | | |
|---------|-----------|----------|------------|-------------|------------|
| (37) a. | redimere | redenTo | redenTore | redenZione | redenTivo |
| b. | opprimere | oppresSo | oppresSore | oppresSione | oppresSivo |

It must be clear at this point that what derivations from UR miss are exactly the ‘product oriented generalizations’ alluded to earlier. In (37), participles and derivatives are independent products from the point of view of (36b), and their similarity is thus fortuitous. Analogously, the various derivatives in both (37) and (34f) above would also be independent from one another, since they feature separate suffixes (they would have independent paths starting at the bifurcation point in (36b)), and the consistency among them would be fortuitous. The consistency of syncope or no syncope across participle-preterit pairs would also remain unexpressed, for similar reasons. The inability of *-ūt-* to lose its stress even under further suffixation would also remain unexplained in the schema in (36b) and unrelated to other metrical consistency effects such as those involving stems. Its readjustments to *-it* would also remain unrelated to the independent existence of *-it-* in another conjugation.

In sum, a pervasive pattern of relations among surface forms eludes the expressive power of traditional derivations. The principle of the ‘cycle’, once introduced to capture one class of such relations, leaves other classes unaccounted for. The latter can essentially only express stem similarities between words whose affixal sequences are in a substring-superstring relation (e.g. *condense/condens-ation*). It cannot express stem similarities between words whose respective affixal material represents disjoint strings. (e.g. Italian participle *vin-t-o*/preterit *vin-si*; sets like *ades-ore/ades-ivo*, etc.) since those words would have independent derivations. It can also not express similarities that reside in the affixal material itself, for the same reasons, for instance the consistency of metrical parse of English *-ic*, discussed in PES: 302, Burzio (1994b), or the consistency of stress of Italian *-ūt-* noted above. In order to express the kinds of generalizations listed in (34) above, the derivational model would be forced to enrich underlying representations with ad-hoc diacritic marks that may steer the derivations in the right directions. The artificial encoding of surface properties into underlying representation, however, is simply the admission that the surface, rather than the underlying representation is relevant.

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