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Lexical Selection in Bolognese Clitic Allomorphy

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Abstract

This paper presents an analysis of the Bolognese 3MS.NOM clitic, which deviates from the expected alternations found in other Romance languages. It appears as [al] preconsonantally and [l] prevocalically, but it surprisingly has an apparent third allomorph, [a], which occurs only (and sometimes optionally) when preceding DAT, ACC, or NEG clitics. For example, [a=t=ˈdiːz] 'he says to you.S' seems to show a sequence of 3MS.NOM [a] and 2S.DAT [t]; the expected preconsonantal [al] is replaced by [a]. We argue that constructions of this sort involve not a string of clitics but instead a "duplex" clitic [at] that combines 3MS.NOM with 2S.DAT. This approach explains why the apparent [a] surfaces only before certain clitics: it is actually the first half of a larger clitic that is available only in the presence the appropriate feature combinations (such as 3MS.NOM and 2S.DAT). We formalize this proposal in Optimality Theory using the framework of Lexical Selection. This analysis accounts for the puzzling behavior of the 3MS.NOM clitic and necessitates refinements to the Lexical Selection formalism.

Keywords: Bolognese; clitic allomorphy; suppletion; Lexical Selection

1. Introduction

Verbal proclitics in Bolognese are in many ways typical of the Romance family. For example, they contain the expected consonants and occur with four of the five existing atonic vowels in a complex but, as we will show, regular distribution. Two of these vowels, [e] and [u], are epenthetic. The other two, [i] and [a], are (parts of) allomorphs of the clitics' lexical items.

Our focus is allomorphy involving the 3MS.NOM clitic (shown in bold in Table 1), especially when followed immediately in a cluster with one of the other clitics shown in Table 1.

Table 1. Proclitics in Bolognese

	NOM		NEG	DAT		ACC		LOC	PRT
	S	P	[n]	S	P	S	P	[i]	[((n)i)n]
1	a	a		m	s	m	s		
2	t	a		t	v	t	v		
3M	**(a)l**	i		i	i	(a)l	i		
3F	l(a)	[æl]		i	i	l(a)	i		
3RFLX				s	s	s	s		

As shown in (1) and (2),[1] the 3MS.NOM clitic surfaces as [l] prevocalically and [al] preconsonantally, when there is no other clitic present. (The 3FS.NOM clitic behaves identically, with its allomorph [la] appearing pre-C.)

(1) l= arˈspɑnd / iŋdˈveŋna
3MS.NOM responds / guesses
'he responds/guesses'

(2) al= ˈvad / ˈsɛːlta
3MS.NOM sees / jumps
'he sees/jumps

However, when it appears in combination with certain other clitics, it seems to surface as [a]. Consider first the data in (3-4), where the 3MS.NOM clitic is followed by a sequence of a dative and an accusative clitic. Despite being preconsonantal in these examples, like in (2), we find [a], not [al]. (Note additionally that both 3MS.ACC and 3FS.ACC clitics alternate preconsonantally just as in the data with NOM clitics above.)

1 All data in this work were collected during fieldwork over several years, from Canepari & Vitali (1995) or Vitali (2009), or from publications of the cultural association Al Pånt dla Biånnda.

(3) a. a= m= la / al= ˈda
3MS.NOM 1S.DAT 3FS/MS.ACC gives
‘he gives/gave it to me’
b. a= t= la / al= ˈda
3MS.NOM 2S.DAT 3FS/MS.ACC gives
‘he gives/gave it to you.S’
c. a= s= la / al= ˈda
3MS.NOM 1P.DAT 3FS/MS.ACC gives
‘he gives/gave it to us’
d. a= v= la / al= ˈda
3MS.NOM 2P.DAT 3FS/MS.ACC gives
‘he gives/gave it to you.P’

(4) a. a= m= l a ˈdɛː
3MS.NOM 1S.DAT 3S.ACC has given
‘he gave it to me’
b. a= t= l a ˈdɛː
3MS.NOM 2S.DAT 3S.ACC has given
‘he gave it to you.S’
c. a= s= l a ˈdɛː
3MS.NOM 1P.DAT 3S.ACC has given
‘he gave it to us’
d. a= v= l a ˈdɛː
3MS.NOM 2P.DAT 3S.ACC has given
‘he gave it to you.P’

When 3MS.NOM is followed by just the dative (5) or the accusative (6) clitic (rather than both) and a consonant-initial verb, this unexpected [a] is optional; the ordinary preconsonantal [al] seen in (2) is also available:

(5) a. al= t= ˈdiːz
3MS.NOM 2P.DAT says
‘he says to you.S’
b. a= t= ˈdiːz
3MS.NOM 2S.DAT says
‘he says to you.S’
c. al= s= ˈdiːz
3MS.NOM 1P.DAT says
‘he says to us’
d. a= s= ˈdiːz
3MS.NOM 1P.DAT says
‘he says to us’
e. al= v= ˈdiːz
3MS.NOM 2P.DAT says
‘he says to you.P’
f. a= v= ˈdiːz
3MS.NOM 2P.DAT says
‘he says to you.P’

(6) a. al= t= ˈʦaːma
3MS.NOM 2P.ACC calls
‘he calls you.S’
b. a= t= ˈʦaːma
3MS.NOM 2S.ACC calls
‘he calls you.S’
c. al= s= ˈʦaːma
3MS.NOM 1P.ACC calls
‘he calls us’
d. a= s= ˈʦaːma
3MS.NOM 1P.ACC calls
‘he calls us’
e. al= v= ˈʦaːma
3MS.NOM 2P.ACC calls
‘he calls you.P’
f. a= v= ˈʦaːma
3MS.NOM 2P.ACC calls
‘he calls you.P’

When 3MS.NOM occurs with just the dative or accusative clitic and a vowel-initial verb, the [a] form of 3MS.NOM is forbidden, and only [al] may appear:

(7)
a. al= m= arˈspɑnd
3MS.NOM 1S.DAT responds
'he responds to me'
b. al= t= arˈspɑnd
3MS.NOM 2S.DAT responds
'he responds to you.S'
c. al= s= arˈspɑnd
3MS.NOM 1P.DAT responds
'he responds to us'
d. al= v= arˈspɑnd
3MS.NOM 2P.DAT responds
'he responds to you.P'

(8)
a. al= m= abˈraθa
3MS.NOM 1S.ACC hugs
'he hugs me'
b. al= t= abˈraθa
3MS.NOM 2S.ACC hugs
'he hugs you.S'
c. al= s= abˈraθa
3MS.NOM 1P.ACC hugs
'he hugs us'
d. al= v= abˈraθa
3MS.NOM 2P.ACC hugs
'he hugs you.P'

When 3MS.NOM precedes NEG, as seen in (9) below, the facts are somewhat similar to the pattern in (5-8) where it precedes DAT or ACC, in that the phonological structure of the verb is influential, but they are also crucially different. Before a vowel-initial verb (9a), [a] is forbidden as it is in (7-8), but it is required before a consonant-initial verb (9b), rather than optional as in (5-6). (Note also the alternation between [n] and [ŋ] in (9), which is a regular alternation in Bolognese, with [ŋ] disallowed in onsets.) Why [a] is not merely optional in (9b) as it is in (5-6) is puzzling; we speculate that the cause lies in the segmental composition of the clitics in question and Bolognese's syllabification requirements. The expected alternative to (9b), *[al=n=diːz ˈbriːza], requires [n] to be syllabified either as part of a complex onset with the following [d] or a complex coda with the preceding [l]. Neither is tenable. There appear to be no [n]/[ŋ]-initial onset clusters in the language (in contrast to [md], e.g. [mdaˈjɑŋ] 'medallion'), and Bolognese bans sonorant-final coda clusters (Rubin & Kaplan to appear), so an [ln] coda is impermissible. The consonants in the clitics in (5-6) are not limited in similar ways.

(9)
a. al= n= arˈspɑnd / iŋdˈveŋna ˈbriːza
3MS.NOM NEG responds / guesses NEG
'he doesn't respond/guess'
b. a= ŋ= ˈdiːz / ˈvad ˈbriːza
3MS.NOM NEG says / sees NEG
'he doesn't say/see'

This pattern of facts raises a number of questions. Ordinarily, [al] is obligatory preconsonantally, as with the verb in (2). In (3-4), this 3MS.NOM precedes consonant-initial clitics, so why is [al] not possible there? And if [a] is an available 3MS.NOM allomorph, why is [al] generally favored in preconsonantal contexts even though it introduces a violation of NoCoda that [a] would avoid? An analysis that takes [a] to be derived from /al/ via deletion is tempting but fails to satisfactorily answer these questions. The conditions under which this deletion occurs are morphologically determined, and there is no obvious explanation for the fact that deletion appears to be blocked before roots (or alternatively, motivated only before clitics).

Our argument is that this curious behavior is explained by Lexical Selection (LS; Mascaró 2007, McCarvel 2016). We claim that [aŋ], [am], [at], [as], [av], glossed as two separate clitics in (3-6) and (9), e.g. [a=v=] in (6f), are instead single lexical items. Each one realizes the combination of the features of 3MS.NOM with those of the element glossed as separate above and also seen independently in other examples with the allomorph [al], e.g. (7d). For example, [at] is the exponent of {3MS.NOM+2S.DAT}, and [as] is the exponent of {3MS.NOM+1P.ACC}. We use the term "duplex" to refer to lexical items of this sort—i.e. items that bear two "bundles" of features: two different person, number, and case complexes, or (for [aŋ]) person/number/case plus NEG.

Thus the transcriptions given above are in fact inaccurate; below we provide transcriptions consistent with our proposal. (10), (11), (12), and (13) update the relevant parts of the glosses of (3), (5), (6), and (9) respectively.

(10)	a.	am=	la / al=	ˈda
		3MS.NOM+1S.DAT	3FS/MS.ACC	gives
		'he gives it to me'		
	b.	at=	la / al=	ˈda
		3MS.NOM+2S.DAT	3FS/MS.ACC	gives
		'he gives it to you.S'		
	c.	as=	la / al=	ˈda
		3MS.NOM+1P.DAT	3FS/MS.ACC	gives
		'he gives it to us'		
	d.	av=	la / al=	ˈda
		3MS.NOM+2P.DAT	3FS/MS.ACC	gives
		'he gives it to you.P'		

(11)	a.	al=	t=	ˈdiːz
		3MS.NOM	2S.DAT	says
		'he says to you.S'		
	b.	at=		ˈdiːz
		3MS.NOM+2S.DAT		says
		'he says to you.S'		
	c.	al=	s=	ˈdiːz
		3MS.NOM	1P.DAT	says
		'he says to us'		
	d.	as=	ˈdiːz	
		3MS.NOM+1P.DAT	says	
		'he says to us'		
	e.	al=	v=	ˈdiːz
		3MS.NOM	2P.DAT	says
		'he says to you.P'		
	f.	av=		ˈdiːz
		3MS.NOM+2P.DAT		says
		'he says to you.P'		

(12)	a.	al=	t=	ˈʦaːma
		3MS.NOM	2S.ACC	calls
		'he calls you.S'		
	b.	at=		ˈʦaːma
		3MS.NOM+2S.ACC		calls
		'he calls you.S'		
	c.	al=	s=	ˈʦaːma
		3MS.NOM	1P.ACC	calls
		'he calls us'		
	d.	as=		ˈʦaːma
		3MS.NOM+1P.ACC		calls
		'he calls us'		
	e.	al=	v=	ˈʦaːma
		3MS.NOM	2P.ACC	calls
		'he calls you.P'		
	f.	av=		ˈʦaːma
		3MS.NOM+2P.ACC		calls
		'he calls you.P'		

(13) a. al= n= arˈspɑnd / iŋdˈveŋna ˈbriːza
3MS.NOM NEG responds / guesses NEG
‘he doesn’t respond/guess’
b. aŋ= ˈdiːz / ˈvad ˈbriːza
3MS.NOM+NEG says / sees NEG
‘he doesn’t say/see’

In (11-12), duplex clitics expressing 1P.DAT or 1P.ACC optionally alternate with a sequence of two simplex clitics when followed by a consonant-initial verb. As shown in (14-15), a duplex clitic expressing {3MS.NOM+1S.DAT} or {3MS.NOM+1S.ACC} also optionally alternates with a sequence of two simplex clitics in this circumstance. Unlike (11-12), however, the non-duplex realization of 3MS.NOM is not [al], but [l] because it is followed by a vowel. That vowel, though, is epenthetic: [u] is regularly epenthesized before 1S.DAT and 1S.ACC [m] to avoid violating the prohibition on sonorant-final consonant clusters. I.e. if epenthesis didn’t occur, we would expect *[al=m=ˈdiːz], but an [lm] coda cluster is not possible. Why an [md] onset is not possible in this circumstance is unclear (recall [mdaˈjɑŋ] ‘medallion’); perhaps falling-sonority onsets like this one occur only root-internally. In any case, [u] is epenthesized, and because of this complication we set data of this sort aside; see Rubin & Kaplan (to appear) for an analysis of epenthesis in Bolognese.

(14) a. l= um= ˈdiːz
3MS.NOM 1S.DAT says
‘he says to me’
b. am= ˈdiːz
3MS.NOM+1S.DAT says
‘he says to me’

(15) a. l= um= ˈʦaːma
3MS.NOM 1S.ACC calls
‘he says to me’
b. am= ˈʦaːma
3MS.NOM+1S.ACC calls
‘he says to me’

The duplex-clitic proposal brings to the fore the rather extensive homophony apparent in Bolognese’s clitic system. For example, [at] is the exponent of {3MS.NOM+2S.DAT} (11b) or {3MS.NOM+2S.ACC} (12b). Under the right morpho-phonological circumstances, [at] is the exponent 2S.DAT or 2S.ACC, without 3MS.NOM: [t=at=ˈdiːz] ‘you.S say to yourself’, [t=at=ˈʦaːm] ‘you.S call yourself’. This is an aspect of the common Romance phenomenon in which first and second person clitics are identical across different cases and reflexive/non-reflexive forms. (There is additional irrelevant homophony among complex forms. For example, [a=t=ˈdiːz] ‘I say to you.S’ is homophonous with (11b). This occurs in all forms of consonant-initial verbs from conjugations that don’t distinguish verbal inflection in 1S and 3S.)

Moreover, the allomorphs [aŋ], [am], [at], [as], [av] in (10-13) do not indicate the object-for-subject phenomenon discussed in Manzini & Savoia (2004) and elsewhere. Importantly, they argue that, in those grammars, the presence of the third person [l] of the ACC clitic after the consonant of a DAT clitic leads to the absence of a third person NOM clitic before that DAT, but nevertheless licenses its interpretation; the cluster overtly begins with that DAT consonant. The patterns in the grammars discussed there are quite different from the ones considered here in Bolognese. First, it is clear that data like (13) do not include two pronominal features, but 3MS.NOM together with NEG. Second, the other duplex items in (10-12) also do not include two third person elements in their interpretation, the central component of the object-for-subject phenomenon and of its explanation for other grammars. Here, there is only one third person (of the NOM), combined with an element of first or second person. Third, the forbidden combinations in the object-for-subject phenomenon, for example 3MS.NOM with 3MS.ACC or 3FS.ACC, are well-formed in Bolognese as separate cooccurring allomorphs: [al=la=ˈvad] 'he sees her' and [al=le=ˈvad] 'he sees him' (with epenthetic [e] in the latter), thus like the data they cite from grammars without this phenomenon.

As is apparent, this analysis treats the relevant clitic allomorphy as suppletion. LS is a constraint-based formalism for this sort of alternation. In the remainder of this paper we develop an LS account of the 3MS.NOM clitic's behavior.

2. Lexical Selection

Lexical Selection provides a formalism for suppletion. In this theory, all allomorphs for a morpheme are included in the input in an Optimality Theory (OT; Prince & Smolensky 1993) tableau. In addition to the usual phonological differences between candidates, candidates may differ according to which of these allomorphs they contain. It is up to the constraint ranking to determine, in the usual OT fashion, which allomorph is optimal for a given form. For example, an LS analysis of the indefinite determiner in English would include both *a* and *an* in the input, and *an orc* might be favored over **a orc* by ONSET or NOHIATUS, while *a gnome* beats out **an gnome* because the latter violates NOCODA.

In cases in which there is no clear phonological reason to favor one allomorph over another, LS permits allomorphs to be listed hierarchically. The constraint PRIORITY favors candidates that adopt allomorphs ranked higher on this hierarchy; thus, if there is a more-or-less arbitrary default allomorph, that allomorph appears at the top of the hierarchy, and its appearance is mandated by PRIORITY, all things being equal. But constraints dominating PRIORITY may force an allomorph lower on the hierarchy to appear. For example, a PRIORITY-based analysis of *a/an* might impose the ranking *a* > *an,* so that in most cases *a* appears. But if NOHIATUS outranks PRIORITY, *an* still surfaces where its presence avoids a violation of NOHIATUS, despite the violation of PRIORITY that *an* incurs.

A framework of this sort is well-suited for Bolognese's 3MS.NOM allomorphy. Bolognese has no regular phonological processes that can derive the various surface forms of the 3MS.NOM clitic from a single underlying representation, and therefore each allomorph must be listed lexically. And as pointed out above, there is often no phonological justification for the appearance of one morpheme over another; in fact, general constraints on syllabification often appear to make the wrong prediction. As a consequence, a PRIORITY-based analysis seems necessary: sometimes an allomorph appears simply because it is the default allomorph.

For example, setting aside the duplex allomorphs for the moment, [l] appears to be the default 3MS.NOM allomorph, with [al] appearing only where [l] presents syllabification problems—namely, before a consonant-initial root. In LS, this can be modeled with the hierarchy in (16). PRIORITY favors [l], but it is outranked by syllabification constraints that rule out *[l=ˈvad]. Bolognese exhibits a variety of onset clusters (e.g. [zbdɛl] 'hospital,' [mdaˈjɑŋ] 'medallion'), so the relevant constraint is likely not *COMPLEX, but a constraint against particular kinds of clusters; most relevantly, Bolognese has no onset clusters beginning with a liquid. A full account of onset cluster phonotactics would take us too far afield, so we provisionally adopt a constraint *LC, which bans liquid+C onsets.[2] The tableau in (17) shows how it produces [al=ˈvad].

(16) [l] > [al]

(17)

/ˈvad, 3MS.NOM/	*LC	PRIORITY
a. l=ˈvad	*!	
☞ b. al=ˈvad		*

Further evidence for the hierarchy in (16) comes from question constructions, in which subject clitics surface as enclitics, as in [ˈvad=el] 'Does he see?'. Bolognese prohibits sonorant-final coda clusters (Rubin & Kaplan to appear), hence the epenthetic [e]. Interestingly, the allomorph [al] would avoid the sonorant-final coda cluster without the need for epenthesis, yet Bolognese prefers to use the allomorph that requires epenthesis, suggesting that [l] is in fact favored over [al].

A note regarding inputs: Mascaró (2007) includes the full set of allomorphs in the input. For example, limiting ourselves to the [l] and [al] allomorphs, the Mascaró-style input for (17) would be /{l_1, al_2}=ˈvad/, where subscripts encode the hierarchy in (16). This may suffice when all of the allomorphs are morphosyntactically identical, but it will not do in the present context because the duplex allomorphs are more morphosyntactically complex than the simplex allomorphs in (16). Obviously it would be inappropriate to choose [at], e.g., in (17) because that allomorph represents 2S.DAT in addition to 3MS.NOM (or just 2S.DAT; recall the homophony created by duplex allomorphs). Thus selecting the proper allomorph is not merely a phonological matter—it also requires consulting the morphosyntactic content that the syntax hands to the phonology. For this reason we represent inputs as in (17), with clitics represented not by their allomorph sets but by their morphosyntactic content, under the assumption that this is in fact what the syntax provides. It is up to the phonological grammar to select allomorphs that realize these features; hence, as we will see, the phonological grammar contains faithfulness constraints ensuring a match between input features and output morphemes.

The duplex allomorphs belong at the top of the hierarchy, as in (18).[3] The justification for this is that these allomorphs are available (if not obligatory) whenever the morphological conditions are met, except when the verb begins with a vowel.

(18) {[aŋ], [am], [at], [as], [av]} > [l] > [al]

2 Virtually all conceivable liquid+C onsets violate the Sonority Sequencing Principle (SSP; Selkirk 1984, Clements 1990), but we are reluctant to call on the SSP because Bolognese clearly violates it in onsets such as the one in [mdaˈjɑŋ] 'medallion.'

3 An anonymous reviewer suggests that duplexes' position at the top of the hierarchy may follow from the fact that they express a superset of the features of the simple clitics (and therefore cannot be used in all contexts). Thus the ranking in (18) is not entirely arbitrary. This is an intriguing possibility, and more work is needed, both in Bolognese and crosslinguistically, to assess its viability.

No ranking among the duplex allomorphs can be determined. The constraint DEP-MorphFeat, defined below, rules out candidates in which a duplex allomorph (or any lexical item, for that matter) introduces a morphosyntactic feature that is not present in the input, and because the input may only contain combinations of morphosyntactic features permitted by the syntax,[4] only one duplex allomorph will be viable in any situation.

If that is their position, why do they not always surface? There are three conditions that force a violation of PRIORITY. First, if the morphological features that duplex allomorphs represent are not present, that allomorph is impossible. For example, unless both 3MS.NOM and 2P.DAT (or 2P.ACC) are present in the input, [at] is not viable. To account for this, we adopt DEP-MorphFeat (abbreviated DEP-MF), defined in (19).

(19) DEP-MorphFeat: each morphological feature in the output must be present in the input.

DEP-MF outranks PRIORITY, so it can block the appearance of any duplex allomorph in the absence of the appropriate morphological features. This is shown in (20), from (1).

(20)

/arˈspɑnd, 3MS.NOM/	DEP-MF	*LC	PRIORITY
a. am=arˈspɑnd	*!		
b. at=arˈspɑnd	*!		
☞ c. l=arˈspɑnd			*
d. al=arˈspɑnd			**!

Candidates (a) and (b), with duplex allomorphs, each introduce a morphological feature not present in the input; likewise for all of the other duplex allomorphs. With those candidates eliminated, the competition between candidates (c) and (d) is decided by PRIORITY. As is apparent, we assume that PRIORITY evaluates candidates gradiently, following Mascaro (2007:726): it assigns one violation for each step down the

4 As (10) shows, duplexes involving 3MS.NOM plus DAT and 3MS.NOM plus ACC are both available, but notice that the only duplex allomorphs with ACC include those with first and second person ACC in their feature set; no duplex with 3MS.NOM and a feature set including a third person ACC exists. Recall what was said about the object-for-subject construction, above, where those feature sets occur individually, and not as a duplex. This is essentially an effect of what the morphosyntax provides for inputs. In Bolognese and very often in Romance languages and elsewhere, the syntax forbids clitic combinations (understood here as feature sets) with a DAT and a non-third person ACC. This “person-case constraint” is intensively studied in the syntactic literature, but the effect for our analysis is that, in inputs with feature sets for all three cases, NOM, DAT, and ACC, a duplex allomorph including an ACC cannot satisfy DEP-MF, since an ACC with first or second person is never in the input, and those are the only persons with available duplex ACC allomorphs. Only a duplex with DAT could ever satisfy DEP-MF.

hierarchy we must go to find the allomorph in question. (See McCarvel (2016) for a different formulation of PRIORITY.)

When the appropriate feature combinations for a duplex allomorph are present, that allomorph does not violate DEP-MF, as shown in (21) for the data in (10b). In this tableau, both 3MS.NOM and 2S.DAT are present in the input, so the duplex allomorph [at] does not violate DEP-MF; PRIORITY rules out the other possible ways of realizing this combination of morphological features (i.e. sequences of non-duplex allomorphs), and *LC can of course also eliminate candidates.

(21)

/ˈda, 3MS.NOM, 2S.DAT, 3FS.ACC/	DEP-MF	*LC	PRIORITY
a. am=la=ˈda	*!		
☞ b. at=la=ˈda			
c. l=t=la=ˈda		*!	*
d. al=t=la=ˈda			*!*

The second condition under which duplex allomorphs do not surface concerns the optionality shown in (11-12): when 3MS.NOM occurs with just one of ACC or DAT, duplex allomorphs are optional preconsonantally. To produce optionality, we adopt the Partial Orders theory of variation (Anttila 1997). Under this theory, optionality arises when a language's constraint ranking is not a total order on the constraint set. That is, there are at least two constraints A and B that are unranked with respect to each other. On any evaluation (i.e. in any tableau), a ranking between them is chosen at random. If A >> B and B >> A produce different outcomes, multiple surface forms are available. In our case, PRIORITY is unranked with respect to *DUPLEX, a constraint that penalizes lexical items expressing more than one set of morphological features provided by the syntax and appearing in an input. That is, 3MS.NOM is the set of morphological features {3, M, S, NOM}, and, for example, [al] in (17) expresses the features in this one set, incurring no violations of *DUPLEX. On the other hand, duplex allomorphs express two sets of morphological features provided by the syntax and in the input. For example, [at] in (21) expresses the features in both {3, M, S, NOM} and {2, S, DAT}, which is the content of two sets, and would incur a violation of *DUPLEX. Likewise, [aŋ] expresses the two sets {3, M, S, NOM} and NEG, thus violating *DUPLEX.

As (22) shows, this arrangement produces both outputs for 'he says to you.S' (11a-b). When PRIORITY outranks *DUPLEX (22a), the duplex allomorph surfaces. Under the opposite ranking (22b), 3MS.NOM and 2P.DAT are realized with distinct morphemes; the particular 3MS.NOM allomorph that appears is determined by *LC and PRIORITY.

(22) a.

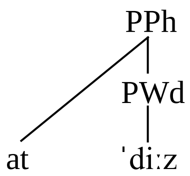
/ˈdiːz, 3MS.NOM, 2S.DAT/	DEP-MF	*LC	PRIORITY	*DUPLEX
a. am=ˈdiːz	*!			*
☞ b. at=ˈdiːz				*
c. l=t=ˈdiːz		*!	*	
d. al=t=ˈdiːz			*!*	

b.

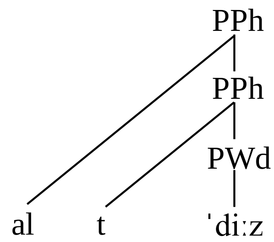
/ˈdiːz, 3MS.NOM, 2S.DAT/	DEP-MF	*LC	*DUPLEX	PRIORITY
a. am=ˈdiːz	*!		*	
b. at=ˈdiːz			*!	
c. l=t=ˈdiːz		*!		*
☞ d. al=t=ˈdiːz				**

The introduction of variability in the ranking between PRIORITY and *DUPLEX requires care: if the latter can outrank the former, we incorrectly predict that non-duplex allomorphs are always possible. This is clearly incorrect: the winner in (21) is the only possible output for that input. Optionality arises only when 3MS.NOM appears with just one of ACC and DAT—not both. This suggests that the grammar is sensitive to the prosodic structure projected by a verb and its clitics. We follow Cardinaletti & Repetti (2008), who argue that the clitics of the closely related (and geographical nearby) grammar of Donceto lie outside the Prosodic Word (PWd). Thus the winner from (22a) has the structure in (23), with the clitic a constituent of the Phonological Phrase (PPh) but not the PWd.

(23)



(24)

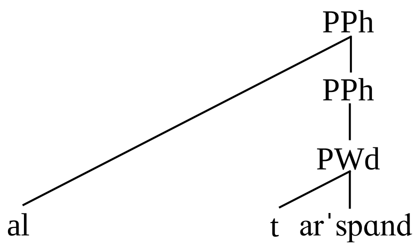


We further suggest that each additional proclitic induces recursion of the PPh level; thus we adopt the recursive prosodic hierarchy of Ito & Mester (2007, 2009a, 2009b, 2013), and the winning candidate from (22b) has the structure in (24).

We also suggest a minor revision to Cardinaletti & Repetti's position: a clitic may be inside the PWd if that arrangement provides an onset for the PWd, as in [al=t=arˈspɑnd] 'he responds to you.S' (7b), which we suggest has the structure in (25). Thus the generalization is that each proclitic's left edge must align with the left edge of a PPh (hence the two PPhs in (25), one for each clitic), and a proclitic may be in the

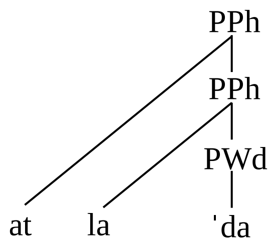
PWd only if necessary to satisfy Onset-PWd. We assume that whatever constraints are responsible for this pattern are high-ranking in the language. We note that a similar amendment to the analysis in Cardinaletti & Repetti is also required because in Donceto (as in Bolognese), a clitic can provide an onset for an otherwise vowel-initial PWd: [{t=ɛ buˈviːd}] ‘you have drunk/you drank’.

(25)



*Duplex penalizes the structure in (23), favoring (24). However, it must not have the same effect in (26), which is the sole winning candidate from (21): when 3ms.nom is accompanied by both dat and acc, a duplex is obligatory.

(26)



Why does *Duplex have no effect on this form? An explanation for this is found in the distinction Ito & Mester make between maximal and minimal projections of a recursive structure: *Duplex holds only for the minimal PPh—that is, a PPh that dominates no other PPh. For this reason, *Duplex—which we henceforth call *Duplex-PPh$_{min}$—does not penalized the duplex allomorph in (26), so no matter the ranking between this constraint and Priority, the duplex allomorph will always surface:

(27)

/ˈda, 3ms.nom, 2s.dat, 3fs.acc/	Dep-MF	*LC	*Duplex-PPh$_{min}$	Priority
a. am=la=ˈda	*!			
☞ b. at=la=ˈda				
c. l=t=la=ˈda		*!		*
d. al=t=la=ˈda				*!*

Thus the curious fact that a duplex is required when 3ms.nom, dat, and acc are all present is explained: at least two levels of recursion for PPh are inevitable in this configuration, putting the duplex {3ms.nom+dat} clitic out of the reach of *Duplex-PPh$_{min}$.

Finally, duplex allomorphs are disallowed with vowel-initial verbs. We suggest that this is a consequence of CRISPEDGE (Ito & Mester 1999), a constraint family that discourages elements from straddling the boundary of some unit: if an element belongs to a particular unit (syllable, foot, etc.), it must be entirely within that unit. In other words, a unit's edges must be "crisp" in the sense that where the unit stops, the elements it contains must also stop. For example, geminates typically violate CRISPEDGE constraints because they are often the coda of one syllable and the onset of another.

The relevant CRISPEDGE constraint for Bolognese is CRISPEGE(PWd), which assigns a violation for each element belonging to a PWd that is not completely within that PWd.[5] The combination of a duplex clitic and a vowel-initial root violates this constraint: in *[a.{t=ar.ˈspɑnd}] 'he responds to you.S', the clitic-final [t] is syllabified as an onset to satisfy ONSET-PWd (which requires the initial syllable in a PWd to have an onset); this means [a] is outside the PWd, whose boundaries we indicate with braces, and therefore the clitic induces a violation of CRISPEDGE(PWd). Alternatives like *[{a.t=ar.ˈspɑnd}] and *[at.={ar.ˈspɑnd}] satisfy CRISPEDGE(PWd) but violate ONSET-PWd. The analysis is illustrated in (28). The first three candidates show that no prosodification of the duplex allomorph satisfies both CRISPEDGE(PWd) and ONSET-PWd. Instead, separate allomorphs for 3MS.NOM and 2S.DAT are required: the usual pre-V allomorph for 2S.DAT permits a configuration that violates neither CRISPEDGE(PWd) nor ONSET-PWd (candidate (d)). Candidate (e) uses the same allomorphs but violates ONSET-PWd. (For reasons of space, DEP-MF and *LC are omitted. Neither is violated in this tableau.)

(28)

/arˈspɑnd, 3MS.NOM, 2S.DAT/	CRISPEDGE (PWd)	ONSET-PWd	PRIORITY	*DUPLEX-PPh_{min}
a. a.{t=arˈspɑnd}	*!			*
b. {a.t=arˈspɑnd}		*!		*
c. at={.arˈspɑnd}		*!		*
☞ d. al=.{t=arˈspɑnd}			**	
e. al=t.={arˈspɑnd}		*!	**	

We further surmise that CRISPEDGE(PWd) and ONSET-PWd contribute to the account of the ordinary clitic allomorphy conditioned by C- and V-initial roots from (17) and (20). In (20), the winner, [l=arˈspɑnd], satisfies both of these constraints, but the alternative *[al=arˈspɑnd] presents the same irreconcilable conflict that candidates (a)–(c) illustrate in (28). Whether this can wholly replace the PRIORITY-based account in (17) and (20) is an issue left for future research.

To summarize, in this section we have developed an LS-based account of 3MS.NOM allomorphy in Bolognese in which duplex clitics are at the top of the

5 We adopt the CRISPEDGE formalism of Ito & Mester (1999). Walker (2001), Kawahara (2008), and Kaplan (2018) propose elaborations that are unnecessary for present purposes.

3MS.NOM allomorph hierarchy. Despite this privileged position, duplex clitics do not always surface. Our analysis attributes this to (i) DEP-MF, which prohibits duplex clitics in the absence of the proper morphosyntactic features; (ii) *DUPLEX-PPh$_{min}$, which may outrank PRIORITY and thereby prohibit duplex clitics in a minimal PPh; and (iii) CRISPEDGE(PWd) and ONSET-PWd, which cannot both be satisfied by a duplex clitic when the verb root is vowel-initial.

3. Hierarchies of Allomorphs

We have argued that certain clitic allomorphs in Bolognese represent combinations of morphosyntactic features that are often realized by separate clitics, both in Bolognese and in other (Romance and non-Romance) languages. This is a necessarily suppletive arrangement, and we have argued that the hierarchical ranking of allomorphs that LS permits contributes to an account of the distribution of clitic allomorphs.

This analysis prompts reconsideration of the organization of suppletive lexical items. We have focused in this paper on the hierarchy of 3MS.NOM allomorphs, but the inputs in most of the tableaux presented above contain features for (what might be) multiple distinct clitics. For example, the inputs in the tableaux in (22) contain both 3MS.NOM and 2S.DAT. Consequently, that evaluation must consider not just the hierarchy of allomorphs for 3MS.NOM, but also the one for 2S.DAT. (Like 3MS.NOM, 2S.DAT must be treated suppletively because the clitics through which it is realized are not uniform in the features they express: [t] represents just 2S.DAT, but [at] represents {3MS.NOM+2S.DAT}.) Presumably, then, [at] appears in the allomorph hierarchies for both 3MS.NOM and 2S.DAT, and that introduces the possibility that a single lexical item might appear twice in the lexicon.

PRIORITY must evaluate candidates according to both of these allomorph hierarchies. If the hierarchy for 2S.DAT is [at] > [t], (22a) proceeds as expected, with PRIORITY favoring [at=ˈdiːz] because [at] is undominated on both the 3MS.NOM and 2S.DAT hierarchies. But suppose the 2S.DAT hierarchy is [t] > [at]. Now PRIORITY makes conflicting demands of the two hierarchies; as (29) shows, candidate (a) now violates PRIORITY, which can no longer choose between candidates (a) and (b). In this case the correct outcome still emerges thanks to *LC, but it is easy to imagine scenarios in which conflicting hierarchies prevent PRIORITY from favoring the intended candidate.

(29)

/ˈdiːz, 3MS.NOM, 2P.DAT/	DEP-MF	*LC	PRIORITY	*DUPLEX
☞ a. at=ˈdiːz			*	*!
b. l=t=ˈdiːz		*!	*	
c. al=t=ˈdiːz			*!*	

Even more complex is (27), with features for (what might be) three separate clitics: 3MS.NOM, 2S.DAT, 3FS.ACC. Thus it is conceivable that a grammar may be forced to resolve conflicts among three allomorph hierarchies at once. In the current situation, the person-case constraint (see fn. 2) and the available allomorphs (there is no

{3MS.NOM+3FS.ACC} duplex) conspire to avoid an actual conflict, but whether all crosslinguistic situations involving potential conflicts like the one under discussion can be resolved in this manner remains to be seen. Perhaps other languages will require multiple PRIORITY constraints (Round 2009, Brinkerhoff 2019) so that potential conflicts are resolved in the usual OT fashion. Alternatively, if a grammar supplies a single hierarchy that incorporates all allomorphs for all lexical items, then the conflict is resolved when PRIORITY favors the higher-ranked of the conflicting allomorphs, as usual.

4. Conclusion

We have argued for an analysis of Bolognese's 3MS.NOM proclitic that is grounded in suppletion. What seems at first to be this clitic's anomalous realization as [a] before certain other clitics is in fact the appearance of a clitic of the shape [am], [at], etc., that combines 3MS.NOM with morphosyntactic features that are typically realized on separate clitics.

To formalize this proposal we adopted LS, and our analysis has a number of consequences for that framework. Because clitics like [am] and [at] represent morphosyntactic features that are usually realized on separate lexical items, it is necessary to list [am] and [at] in multiple places in the lexicon: [at], e.g., belongs in the allomorph hierarchies for both 3MS.NOM and 2S.DAT. Furthermore, because competing allomorphs are not morphosyntactically identical, it is necessary to refine the content of inputs in tableau. Merely listing the available allomorphs in the input is insufficient. The input must also include a record of the target morphosyntactic features so that the grammar (through constraints like DEP-MF) can determine whether an allomorph accurately reflects those features. And finally, because one allomorph may appear in multiple allomorph lists, careful attention to the way PRIORITY operates is required. It may be necessary to adopt more than one PRIORITY, each with control over a different set of allomorph hierarchies, or to pursue some other means of resolving conflicts between allomorph hierarchies.

Although this account has not fully explained clitic allomorphy in Bolognese, especially with respect to its interaction with more general phonological phenomena like epenthesis, it has provided an account of when and why the 3MS.NOM clitic interacts with other aspects of the language's clitic system based on a set of allomorphs in the lexicon that are readily apparent in the data (and therefore easily learnable by children). This analysis has important consequences for the understanding of both phonology and morphosyntax. We have argued that inputs to phonological grammars can include bundles of features organized into sets, and that allomorphs can individually express more than one of those sets. Future research will need to explore whether grammars have allomorphs that can express at most two such sets, as in the Bolognese clitic data presented here, or even more. Furthermore, this paper strongly indicates that morphosyntactic claims about which clitics are or are not present in a data set needs to take into account the phonological patterns of a grammar, which may obscure the surface realizations of the feature sets passed to it as input without requiring any morphosyntactic explanation.

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