Intra-Paradigmatic Homophony Avoidance in Two Dialects of Slavic

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In this paper, I examine cases of homophony-avoidance, one occurring in the Trigrad dialect of Bulgarian, and the other occurring in Contemporary Standard Russian. In both cases, a productive phonotactic phenomenon of the language (vowel reduction) is either completely or totally blocked just in case its application would cause two morphologically-related forms to become homophonous. Vowel reduction *can* create homophones in cases where the words involved are not morhpologically related. My analysis of these two cases rests on Correspndence Theory (McCarthy & Prince 1996, McCarthy 1995). In particular, the morphological limitations placed on Correspondence predict that honophony-blocking cannot affect non-related words.

1. INTRODUCTION

The focus of this paper is a phonological phenomenon which I will refer to as "homophony blocking". I will present data demonstrating that this phenomenon can either totally or partially block vowel the reduction processes normally seen in the Trigrad dialect of Bulgarian and in standard Russian. In addition, data concerning non-related homophones in both cases show that homophony blocking must operate under certain principled limitations. I argue that these limitations can be accounted for using Correspondence Theory (McCarthy & Prince 1993, 1994, 1995; McCarthy 1995).

1.1 Introduction to the Trigrad dialect of Bulgarian

The village of Trigrad is located in Southern Bulgaria. Trigrad is a predominantly Muslim village, which had about 835 residents in 1961. All the data presented in this paper is taken from fieldwork performed in the summer of 1961 by the Bulgarian dialectologist and phonetician Stojko Stojkov and colleagues, and which was publised in *Bulgarski Ezik* in 1963 in an article authored by Stojkov.

Bulgarian is a language which, like a number of Slavic languages, disprefers unstressed mid vowels. The degree to which unstressed mid vowels are disliked varies from dialect to dialect, as do the strategies used to avoid them. In most dialects of Bulgarian (including the standard dialect), unstressed mid vowels are raised: *o* become *u*, and *e* becomes *i*. In contrast, according to Miletič (1936), it is characteristic for the Rhodope dialect group (which includes the Trigrad dialect of Bulgarian) for unstressed mid vowels to lower—as shown in (1), both unstressed *e* and *o* lower to *a*. (Interestingly, Miletič also notes that this reduction scheme in some Rhodope dialects only applies post-tonically—pretonically, a raising pattern is observed.)

(1) Rhodope vowel reduction: general schema

<pre>
    i   u
    e ⟶   o
        ⟶ a ⟵
</pre>
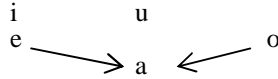
It is also interesting to note that in all the dialects of Bulgarian, *o* seems to reduce more easily than does *e*. For example, in the standard dialects, reduction of *e* in a given dialect or in the speech of a given speaker implies reduction of *o*, although the reverse is not true (Scatton, 1984). Similarly, some Rhodope dialects, such as the one spoken in Trigrad, show reduction of *o* in unstressed position, but do not show reduction of *e*, which remains unchanged in unstressed position. The vowel system of Trigrad Bulgarian is given in (2).

(2) The Vocalic System of Trigrad Bulgarian

Stressed		Unstressed	
i	u	i	u
e	o	e	
ɛ	ɔ		
a		a	

Under stress, Trigrad Bulgarian has a 7-vowel system, including two lower-mid vowels that do not occur in the standard dialect. In positions not under stress, there is a four-vowel system: the back mid vowels both lower to *a*, and the lower mid font vowel raises to *e*. Examples of all the Trigrad vowels under stress are presented in (3).

(3) Trigrad Vowels Under Stress

[i]	ˈdiva	'wild'	ˈglina	'clayish'	ˈpisma	'letter'
[u]	͡tʃuzda	'strange'	ˈuxa	'ear'	ˈmut͡ʃka	'small'
[e]	ˈsela	'village'	ˈmetra	'metro'	ˈpera	'pen'
[o]	ˈoka	'eye'	ˈoliva	'margarine'	ˈmnoga	'many'
[ɛ]	ˈbɛla	'white'	ˈmɛsta	'place'	ˈmlɛka	'milk'
[ɔ]	ˈgɔrla	'throat'	ˈdɔrva	'tree'	͡tʃɔrna	'black'
[a]	aˈrala	'plough'	ˈstara	'old'	ˈradiva	'radio'

2. VOWEL REDUCTION IN TRIGRAD BULGARIAN

In this section, I will present the data demonstrating vowel reduction alternations in Trigrad Bulgarian, including those that show the phenomenon of homophony-blocking. In particular, I will show that vowel reduction is blocked if it would produce an output form that is homophonous with the input form of a morphologically-related item, although vowel reduction is not blocked by homophony with a morphologically *un*related item.

2.1 Basic Trigrad Vowel Reduction Alternations

Examples of alternations due to vowel reduction in Trigrad Bulgarian are given in (4). For example, in examples (a,b), we see that the underlying *o* of *rog* 'horn*′* surfaces as *a* when not under stress: [raga'vete]. Also note that in example (n), unstressed *ɛ* surfaces as *e*, and in examples (d,f,g,i,j), unstressed *ɔ* surfaces as *a*.

(4) Trigrad Bulgarian Vowel Reduction Alternations

a.	/rog+ave/	ˈrogave	'horns'
b.	/rog+ave+te/	ragaˈvete	'the horns'
c.	/sɔrp+ave/	ˈsɔrpave	'sickles'
d.	/sɔrp+ave+te/	sarpaˈvete	'the sickles'
e.	/klɔb+o/	ˈkloba	'globe, sphere'
f.	/klɔb+o+to/	klaˈbota	'the glove'
g.	/klɔb+a/	klaˈba	'globes'
h.	/dɔrv+o/	ˈdɔrva	'tree'
i.	/dɔrv+o+to/	darˈvota	'the tree'
j.	/dɔrv+a/	darˈva	'trees'
k.	/ok+o/	ˈoka	'eye'
l.	/ok+o+to/	aˈkota	'the eye'
m.	/sɛn+o/	ˈsɛna	'hay'
n.	/sɛn+o+to/	seˈnona	'the hay'

To account for these data, I will assume that there is a constraint that punishes unstressed mid-back vowels, and I will give this constraint the following (rather unilluminating[1]) statement:

(5) *ŏ,ɔ̆:
  The mid back vowels o,ɔ may not occur in unstressed position.

This constraint is demonstrated in the tableau shown in (6), along with two input-output faithfulness constraints: Ident-High and Ident-Low.

(6) Tableau Showing Basic Vowel Reduction

/ˈdɔrvo/ *'tree'*	*ŏ,ɔ̆	Ident-High	Ident-Low
☞ ˈdɔrva			*
ˈdɔrvo	*!		
ˈdɔrvu		*!	

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[1] For a more detailed analysis of this and other vowel reduction processes, see Crosswhite (*in progress*).

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From this tableau, you can see that Ident-High has to outrank Ident-Low because we know that reduction through lowering is the chosen reduction strategy in Trigrad Bulgarian. The dialects with reduction through raising (*o>u*), as in standard Bulgarian, would presumably have the opposite ranking. As you can see from the tableau, the ranking Ident-High >> Ident-Low ensures that the incorrect output form *ˈdɔrvu (in the third row) does not surface. Also, the ranking *ŏ,ɔ̆ >> Ident-High ensures that incorrect output forms without vowel reduction (such as *ˈdɔrvo) do not surface. This leaves the correct form, ˈdɔrva, to emerge as the correct output form since it violates only the low-ranked constraint Ident-Low.

2.3 Homophony Blocking in Trigrad Bulgarian

Looking back at the forms in (4), note that the reduction of underlying /ˈdɔrvo/ to [ˈdɔrva] does not cause homophony with any of the other forms for '*tree*'. There is one "near homophone"—the plural form *darˈva 'trees'*. This form has stress on a different syllable (with concomitant changes in vowel quality), so no homophony results: ˈdɔrva 'tree', *darˈva* 'trees'.

Not all Bulgarian nouns show this type of stress shift between singular and plural forms. Could vowel reduction cause homophony elsewhere in the Trigrad dialect?

In order to answer this question, we need to examine all contexts where vowel reduction could occur—namely, contexts with underlying *o* or *ɔ*—and look for possible homophony. I will start this endeavor by examining grammatical morphemes that contain mid-back vowels. Later, I will return to the question of stems that contain mid-back vowels. The gramatical morphemes of Trigrad Bulgarian that contain mid-back vowels are listed in (7).

(7) Grammatical Morphemes Containing Mid-Back Vowels[2]

-ˌova-	verbal suffix	never reduces
-ove-	plural marker for monosyllabic masculine nouns	reanalyzed as –ave-
-ox-	aorist marker for athematic verbs	reanalyzed as –ax-
-oː	vocative marker	never reduces
-o	predicative adjective marker	never reduces
-o	neuter singular noun ending	sometimes reduces

As noted above, these grammatical endings have different behaviors with respect to vowel reduction. In particular, many of them are immune to vowel reduction. For example, in the first grammatical ending listed in (7), the *o* of -ˌova- has fixed secondary stress, making it immune to vowel reduction. The second two affixes, -ove- '*pl.*' and -ox- '*aorist*', never have stress on their initial vowel, and always surface with the vowel quality *a* in the first syllable. However, as pointed out by Stojkov (1963), it is likely that these endings have been relexicalized with underlying /a/—meaning that they do not actually undergo vowel reduction synchronically.[3] The vocative marker *oː* is also immune to reduction. According to Stojkov, this is due to the lengthened quality of this ending—he also notes that vowel reduction is not found in Trigrad in those open syllables that occur before a pause, where phrase-final lengthening of the vowel occurs.[4] This leaves the grammatical ending for masculine nouns representing male persons, the neuter singular ending for nouns, and the predicative adjective marker, all of which are underlyingly represented as /-o/. Let's go through these three endings one at a time to see how the act with respect to vowel reduction.

Neuter Singular -o: This ending is a near-homophone producer, in that words that take this ending can also take the near-homophone ending –a 'plural', as shown in (8).

(8) More Plural Neuter Nouns

	singular	plural	gloss
a.	varˈzala	varzaˈla	*morring point*
b.	vlaˈt͡ʃila	vlat͡ʃiˈla	*[gloss not given]*
c.	kaˈpita	kapiˈta	*hoof*
d.	ˈklɔba	klaˈba	*globe*
e.	ˈpera	peˈra	*pen*
f.	ˈrebra	reˈbra	*rib*
g.	ˈzɔrno	ˈzɔrna	*grain*
h.	ˈpetalo	ˈpetala	*horseshoe*
i.	ˈblago	ˈblaga	*good, blessing*
j.	tsigaˈrilo	tsigaˈrila	*cigarette*

Here, in examples (a-f), stress in the singular is on the stem, and the *-o* ending undergoes reduction. If you look at the forms in the 2nd

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[3] Stojkov notes that the reanalysis of aroist -ox- to -ax- is fairly common in Bulgarian dialects, even in dialects that don't have vowel reduction. In most cases, the impetus for this reanalysis is the existence in Bulgarian of a much more common aorist ending which has underlying /a/. The -ax- aorist ending is used with Bulgarian verbs that have a thematic *a* vowel—this is the largest and most productive group of verbs in contemporary Bulgarian. In comparison, the -ox- aorist ending is only used with athematic verbs, which is a small, closed-class group in Bulgarian.

[4] Stojkov also notes that the vocative ending is generally immune to reduction in standard Bulgarian and other dialects of Bulgarian due to its length.

column for these examples, you will see that these forms display a stress shift in the plural—the plural ending *-a* bears stress. In examples (g-j), however, there is no stress shift—these nouns have non-mobile stress on the stem. Also note that the singular forms in the first column for examples (g-j) do *not* show vowel reduction. In other words, the forms (g-j) have unstressed, unreduced *-o* in the singular, and unstressed *-a* in the plural.

Masculine Animate -o: A similar situation occurs with the *-o* ending used to denote male persons. The words that take this ending can also take the *-a* accusative marker. (In this dialect, accusative forms are limited to masculine animate nouns. Non-animates don't have accusative forms.)

(9) Masculine Animate Nouns in -o

	nominative	accusative	gloss
a.	ˈago	ˈaga	*'older brother'*
b.	buˈbajko	buˈbajka	*'father'*
c.	ˈdɛdo	ˈdɛda	*'uncle'*
d.	ˈdajt͡ʃo	ˈdajt͡ʃa	*'uncle'*
e.	ˈKliko	ˈKlika	*'Kliko'* (a personal name)

As you can see in (9), all the nominative forms in the first column end in unstressed *-o*, which does not reduce, and all the accusative forms in the second column end in unstressed *-a*. In other words, if the nominative forms in the first column *had* undergone vowel reduction, they would be homophonous with the accusative forms in the second column.

Predicative Adjective -o: The last grammatical morpheme containing *-o* is the suffix used to mark predicative adjectives in Trigrad Bulgarian. This dialect grammatically marks the difference between predicative and attributive adjectives, similar to contemporary German.

(10) Predicative Adjectives *(adjective in bold):*

a.	**ˈbolno**	si	sam		'I am sick'
	sick	*I*	*am*		
b.	mad͡ʒɔs	nʲɔ	je	ˈ**glanno**	'the man is
	mane	*not*	*is*	*hungry*	not hungry'
c.	**viˈdɛlo**	ga	xubaf	mɔʃ	'(a) handsome
	see-adj.	*him*	*handsome*	*man*	man saw him'
d.	lʲulka	mu	sam	ˈ**storilo**	'I made him
	pipe	*him*	*am*	*make-adj.*	a pipe'
e.	zɔtet	mu	**biˈlo**	tam	'his brother-

     b-in-law his was-adj. there. in-law was there

As shown in the examples in (10), predicative adjectives have the ending -*o* in this dialect. Note that the examples in (10) include not only "traditional" adjectives like "hungry" (*glanno*) and "sick" (*bolno*), but also deverbal adjectives used to form past tense sentences. For example, in sentences (c-e), "l-participles" for the verbs "see", "make", and "be" are used (sometimes along with an auxiliary verb) to form the past tense. These participles also show the predicative -*o* ending. Also note that the -*o* predicative ending occurs without respect for gender. That is, in standard Bulgarian, a predicative adjective agrees in gender with the subject noun. Therefore, the -*o* ending for predicative adjectives would normally be found in the standard dialect of Bulgarian only in sentences with a neuter subject (since -o marks neuter gender in standard Bulgarian). The examples in (10) show that this cannot be the case in Trigrad Bulgarian. All of the examples in (10) use the -*o* ending, yet *none* of them have neuter subjects. In fact, in examples (b,c,e), the subject is masculine ("the man", "a handsome man" and "brother-in-law", respectively); in examples (a,d), the subject is 1st person (which could be either masculine or feminine, depending on the speaker—but not neuter).

Compare the forms in (10) with the attributive uses demonstrated in (11):

(11) Attributive Adjectives *(adjectives in **bold**)*

  a. **ˈslepa** ˈoka   'blind eye'
  b. **ˈxubava** ˈsɛna 'good hay'
  c. **ˈtsala** ˈsela   'whole village'
  d. **ˈbɛla** ˈplatna 'white linen'

In the examples in (11), all the adjectival forms end in unstressed -*a*, while in (10), all the adjectival forms end in unstressed, unreduced -*o*. Again, it appears as if vowel reduction is suspended for adjectival forms to prevent homophony between two grammatically distinct categories of Trigrad Bulgarian.[5]

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[5] It should be pointed out that this interpretation of the data is distinct from Stojkov's. Stojkov hypothesizes that the grammatical ending for both attributive adjectives and predicative adjectives is -o, and that reduction is blocked for the predicative adjectives but not for the attributive adjectives. His reasoning for this is as follows: In attributive adjectival contexts, gender is doubly marked (once on the noun and once on the adjective), and it's therefore OK to obliterate the gender marking on the attributive adjective via vowel reduction—in other words, application of vowel reduction in this case leaves enough information to retrieve the correct gender of the noun. However, this reasoning is flawed. For one thing, application of vowel reduction in *predicative* position would not obliterate the gender of the subject noun either—nouns show gender themselves. Therefore, it cannot be the case that reduction is blocked predicatively to aid in correctly retrieving gender. Furthermore, as noted in the main text, predicative adjectives do not agree for gender in Trigrad Bulgarian. (This is most likely due to Turkish influence on this dialect.) Recall that in the examples from (10), the -*o* ending occurred with both masculine and 1st person subjects. This strongly indicates that "gender preservation" is not responsible for blocking

2.4 Analysis of Homophony Blocking

As seen above, Trigrad Bulgarian shows systematic blocking of vowel reduction with three different grammatical endings—the only three where homophony effects would be expected. In order to account for this effect, I will propose a constraint on anti-homophony. This constraint, called ANTI-IDENT is based on the familiar IDENT constraints of McCarthy and Prince's theory of Correspondence (1993, 1995). In Correspondence Theory, a correspondence relation, $\Re$, is established between two strings (S_1 and S_2). This relation produces pairs consisting of one S_1 element and one S_2 element. IDENT constraints examine the members of these pairs and determine whether they are the same or not. The ANTI-IDENT constraint will perform a similar action. This constraint will be stated as follows:

(12) ANTI-IDENT:
  For two forms, S_1 and S_2, where $S_1 \neq S_2$,
    $\exists\, \alpha,\ \alpha \in S_1,$ *such that* $\alpha \neq \Re(\alpha).$

This constraint states that for two forms, S_1 and S_2, there must be some segment α which is a member of S_1 such that α is not identical to its correspondent in S_2. ANTI-IDENT also requires that S_1 and S_2 are not "the same". This requirement ensures that ANTI-IDENT won't apply to forms that are supposed to be identical—i.e., it will not affect forms that are underlying identical.

Before proceeding to some examples of how the ANTI-IDENT constraint works to derive the correct output forms, let me note that the ANTI-IDENT constraint is logically complementary to the Paradigm Uniformity (PU) constraints utilized by Steriade (1994, 1996). In the theory of Paradigm Uniformity, constraints of the following sort are employed:

(13) PARADIGM UNIFORMITY:
  All surface realizations of μ, where μ is the morpheme shared by the members of paradigm X, must have identical features for property P. (Steriade 1996)

PU constraints are similar to surface-surface correspondence constraints, except that PU constraints are especially concerned with

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vowel reduction in predicative adjectives—because predicative adjectives don't mark gender. Finally, the functional "gender-preservation" argument does not seem to be active in any other area of the dialect. For example, Bulgarian verbs, adjectives, and articles agree in number with their accompanying nouns. You would think that with this "multiple making" of number, you could apply vowel reduction to singular neuter nouns if they were in subject position (i.e., if number was marked on the verb), or if they were accompanied by an adjective or definite article that showed the correct number. This is not the case—the homophony blocking effects that we've already discussed for sg.~pl. in neuter nouns does not interact with this type of functional consideration.

"paradigmatic" correspondence, and are specifically targeted at reducing allomorphy. In other words, PU constraints are aimed at making sure that forms with the same meaning "look" the same, while ANTI-IDENT is aimed at making sure that forms that (minimally) don't mean the same *do* look different.

In order for the ANTI-IDENT constraint to be evaluated, we have to compare a candidate output form with other input forms that occur in the language, and determine whether there is homophony or not. To aid in interpreting tableaux that use the ANTI-IDENT constraint, I will present a schematic diagram, such as the one shown in (14) below. In this diagram, I present two different candidate outputs for the input form /klɔbo/ 'globe, nom. sg.'. Each of these forms is shown in comparison with a morphologically-related form—the underlying representation for 'globe, nom. pl.'. Presumably, this type of comparison would occur for every candidate output form. In addition, the statement of the ANTI-IDENT constraint given above also indicates that each candidate output could be compared with any number of other forms—that the candidate output [klɔbo] 'ball, sg.' could be compared not only with /klɔba/ 'ball, pl.', but also with /klobate/ 'the balls', or indeed, any word other than *klɔbo*. These concerns will be laid aside momentarily in order to demonstrate how the constraint works. For this reason, these tableaux will only consider those cases which are "potential homophony builders". Questions concerning the exact scope and limitations of the ANTI-IDENT constraint will be returned to shortly. In diagrams such as (14), a line will be drawn between the two segments that are correspondents. If a line unites two identical segments, it will be a dashed line; if it unites two non-identical segments, it will be a dotted line. In graphical terms, the ANTI-IDENT constraint will be satisfied with respect to a given candidate output if its diagram contains one (or more) dotted-line correspondences, since the double lines indicate non-homophonous segments.

(14) Some Comparisons Made by the ANTI-IDENT Constraint

    a. candidate with vowel reduction

    b. candidate w/o vowel reduction

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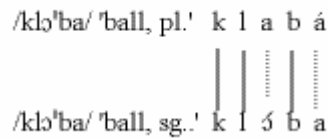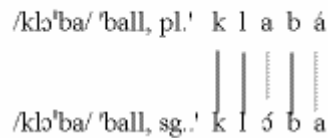
This diagram will be used in the following tableau for evaluation of the ANTI-IDENT constraint. Specifically, since both diagrams contain dotted lines, the ANTI-IDENT constraint is not violated. Vowel reduction occurs as predicted by the constraints discussed above. In other words, since *klɔ́bo* has a stress-shift in the plural, homophony blocking does not come into play with respect to vowel reduction.
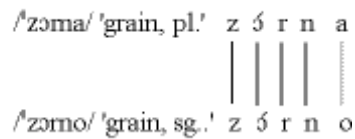
(15) No Homophony Blocking For a Noun With a Stress Shift

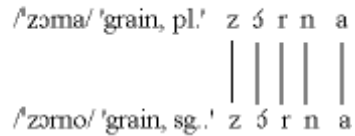| /klɔ́bo/	ANTI-IDENT	*o,ɔ	IDENT(high)	IDENT(low)
☞ klɔ́ba				*
klɔbo		*!		

Now let's see how the ANTI-IDENT constraint works with a word that does not have a stress shift.

(16) Comparisons Made by ANTI-IDENT for /zɔrnó/

   a. candidate with vowel reduction

/ˈzɔrna/ 'grain, pl.'   z ɔ́ r n a

/ˈzɔrno/ 'grain, sg.'   z ɔ́ r n o

   b. candidate w/o vowel reduction

/ˈzɔrna/ 'grain, pl.'   z ɔ́ r n a

/ˈzɔrno/ 'grain, sg.'   z ɔ́ r n a

(17) Tableau showing homophony blocking with /ˈzɔrno/

/ˈzɔrno/	ANTI-IDENT	*o,ɔ	IDENT(high)	IDENT(low)
☞ ˈzɔrno		*		
ˈzɔrna	*!			*

In this tableau, the second candidate output, *[ˈzɔrna] violates the ANTI-IDENT constraint because it is homophonous with the related plural form, where there is no stress shift. This is shown pictorially in (16b), where there are no double-line correspondences.

So far, I've only presented evidence for homophony blocking in grammatical endings. How about homophony in *stems*? Lexical homophones appear to be more rare than grammatical homophones,

but there are two lexical homophones included in the Trigrad data provided by Stojko (1963). These are given below:

(18) Lexical Homphones in Trigrad Bulgarian

	noun		adjective	
a.	'blago	'benefit'	c. 'blago	'sweet' (predicative)
b.	'blaga	'benefits'	d. 'blaga	'sweet' (attributive)

Here, we have two words that are pronounced ['blago]—one is a noun that means "benefit" (singular), and one is an adjective that means "sweet" (predicative).   There are also two words that are pronounced ['blaga]—one being a plural form of "benefit" and the other being the attributive form of "sweet". Note that, paradoxically, within each paradigm, homophony is avoided—the two forms for "benefit" are both distinct, and the two forms for "sweet" are distinct. This is despite the fact that both forms do have homophonous forms elsewhere in the language. In this case, you could say that homophony is unavoidable—every candidate output will break the ANTI-IDENT constraint. In this case, you might expect that the winners would be those candidates that faired the best on phonotactic constraints. However, this is not the case since the phonotactics predict vowel reduction—this is clearly not what we get since the singular and predicative forms listed in (18) show that vowel reduction has been blocked. This pattern can be accounted for if we postulate that the ANTI-IDENT constraint can only compare morphologically related items.   In other words, there can be no homophony-blocking effect between forms like *'blago* 'benefit' and *'blago* 'sweet' because these forms are not morphologically related.

This hypothesis has also been used to account for certain limitations of prosodic correspondence in Chamorro (Crosswhite, *to appear*), and is consistent with the standard practice of establishing correspondence relations only between forms that display a specific form of relatedness (forms of "relatedness" include input~output, base~reduplicant, normal~argot, etc.).   Therefore, it is not unusual that ANTI-IDENT cannot compare *'blago* 'benefit' and *'blago* 'sweet' to cause homophony blocking—forms such as these simply do not qualify for the establishment of a correspondence relation. This also makes sense intuitively—if you want to make sure that a given output candidate does not create homophony, it would be preferable from a computational point of view to limit comparisons to a small number of items, preferably those that are most likely to cause homophony.

With the above in mind, the ANTI-IDENT constraint makes a nice complement to the Paradigm Uniformity constraints discussed in Steriade (1994, 1996). Paradigm Uniformity (PU) constraints are parallel to the output-output correspondence constraints used by McCarthy, Benua, and others, but the PU constraints specifically rely on the idea of the paradigm and are specificaly targeted at reducing

inter-paradigmatic allomorphy. The combination of ANTI-IDENT and PU constraints provide a nice OT-based equivalent for ideas on analogy in sound change that are commonly referred to in historical linguistics. For example, Kiparsky (1982) talks about "functionality" of sound change as obeying the following conditions:

(19) Conditions on Functionality in Sound Change
(Kiparsky 1982, p. 87)

Levelling Conditions: Allomorphy in paradigms tends to get eliminated.

Distinctness Conditions: There is a tendency for semantically relevant information to be retained in surface structure.

These conditions can be traced back to the tenet "one form, one meaning", meaning that forms which are lexically identical should also be phonologically identical and forms that are lexically distinct should be phonologically distinct. There are a number of examples from historical linguistics where the anti-homophony aspect of "one form, one meaning" come into play—see, for example, the cases from Sanskrit, German, and Estonian discussed in Kiparsky (1982). One case where homophony-blocking also seems to play a role comes from another Slavic language and involves vowel reduction in Contemporary Standard Russian. This case is discussed in the next section.

3. HOMOPHONY BLOCKING IN CONTEMPORARY STANDARD RUSSIAN

The basic unstressed vowel reduction patterns for Contemporary Standard Russian are given below in (20). As shown, the high vowels do not undergo reduction, and the non-front non-high vowels /o,a/ reduce differently depending on the palatality of the preceding consonant—after a palatalized consonant, they reduce to [i], and after a non-palatalized consonant they reduce to [ə].[6] The vowel /e/ always reduces to [i], regardless of the preceding consonant.

(20) Basic Vowel Reduction Patterns in CSR

After Palatalized Consonant	**After Non-Palatalized Consonant**
Cʲá > Cʲi	Cá > Cə
Cʲó > Cʲi	Có > Cə
Cʲé > Cʲi	Cé > Ci
/i,u/ do not reduce	

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[6] Actually, in certain contexts (such as in the immediately pretonic syllable or in immediate word-initial position), unstressed /a,o/ neutralize to [a] rather than [ə].

Example forms demonstrating reduction for unstressed /o,a/ are provided below. In each case, a comparison form is provided in the last columns that establishes the underlying quality of the reduced vowel.

(21) Reduction of /o,a/ in Contemporary Standard Russian

       reduction of /o/

a.	vɨ́gəvərʲitʲ	'speak out'	cf. gǿvər 'dialect'
b.	vɨ́kərmʲitʲ	'to bring up'	cf. kórma 'feed'
c.	vɨ́nʲisʲtʲi	'carry out'	cf. nʲós 'he carried'
d.	vɨ́vʲisʲtʲi	'lead out'	cf. vʲós 'he lead'

       reduction of /a/

e.	vɨ́pəlʲitʲ	'shoot'	cf. pálʲitʲ 'shoot'
f.	vɨ́mənʲivətʲ	'coax'	cf. manʲivətʲ 'coax'
g.	vɨ́tʲinutʲ	'pull out'	cf. vɨtʲágivətʲ 'stretch'
h.	vɨ́jivʲitʲ	'reveal'	cf. javnəj 'overt'

To account for the reduction facts themselves, I will posit two constraints. Again, these constraints have been simplified a bit for purposes of exposition. I will assume that [ə] is a featureless vowel.

(22) *[-Hi]:
    Non-high vowels may only occur stressed.

(23) CʲV:
    A vowel must have the same specification for [front] as the preceding consonant.

As shown in the following tableaux, these constraints give the correct output forms.

(24) Reduction of /a/ After Palatalized and Plain Consonants

/vɨ́tʲanutʲ/ 'pull out'	*[-Hɪ]	CʲV	Ident-IO(V)
☞ vɨ́tʲinutʲ			*
vɨ́tʲənutʲ		*!	*
vɨ́tʲanutʲ	*!	*	

/vɨ́palʲit/ 'shoot'	*[-Hɪ]	CʲV	Ident-IO(V)
☞ vɨ́pəlʲitʲ			*
vɨ́pilʲitʲ		*!	*
vɨ́palʲitʲ	*!		

In the tableau for *vɨ́tʲinutʲ*, the [i]-reduced form emerges as the winner because it breaks only the low-ranked constraint on input-output faithfulnees for vowel quality. The schwa-reduced form in the

second row is eliminated because it breaks the CʲV constraint, and the non-reducing form in the third row is eliminated because it breaks the CʲV and *[-Hi] constraints. In the tableau for *vɨ́pəlʲitʲ*, the same constraints correctly derive a schwa-reduced candidate after the plain [p]—again, the schwa-reduced candidate breaks only the low-ranked Ident-IO(V) constraint. The incorrect form with reduction to [i] is ruled out because it violates the CʲV constraint, and the incorrect non-reducing form violates the [-Hi] constraint. Additional candidates would be necessary to derive the full range of vowel reduction facts as well as rule out additional candidates that are not shown in these tableaux (such as candidates where underlying palatality of a consonant is changed), but the constraints presented here sketch an adequately detailed analysis of the pertinent Russian vowel reduction patterns. For a more detailed analysis of the Russian vowel reduction facts, see Crosswhite (*in progess*).

With the basic vowel reduction patterns in mind, let's look at a case of possible homophony. For a certain class of verbs, the 3rd sg. is formed with the ending *-it*, and the 3rd plural is formed with the ending *-at*. Both endings will have a preceding palatalized consonant. However, when these endings are not stressed, we see that they do not follow the reduction patterns already described. Examples are given below:

(25) Reduction in Russian Verbal Desinences

	infinitive	3rd. sg.	3rd. pl.	gloss
a.	gəvárʲitʲ	gəvárʲit	gəvárʲat	'speak'
b.	stávʲitʲ	stávʲit	stávʲet	'place'
c.	pómnʲitʲ	pómnʲit	pómnʲət	'recall'
d.	lamʲítʲ	lómʲit	lómʲət	'break'

In example (25a), I show an end-stressed verb in order to demonstrate the different vowel qualities under stress: in the 3rd sg., the vowel quality is /i/, and in the 3rd pl. it is /a/. In exx. (25b-d), the stem always carries stress in the forms under consideration. Here, notice that in the "3rd pl." column, all the underlying *-at* suffixes show up with [ə], despite the fact that there is a preceding palatalized consonant. As we saw before, we would expect to see reduction of /a/ to [i] in this context, but since this type of reduction would cause homophony with the 3rd sg. forms, reduction to schwa occurs instead. This result can be achieved by adding the Anti-Ident constraint, ranked above the two phonotactic constraints *[-Hi] and CʲV.

(26) Tableau Showing ANTI-IDENT in Russian 3rd pl. Verb

/pomnʲat/	ANTI-IDENT	*[-HI]	CʲV	IDENT-IO(V)
☞ pómnʲət			*	*
pómnʲat		*!	*	

pómn^jit	*!			*

In (26), the schwa-reduced form does not have a violation mark for Anti-Ident, but the [i]-reduced form (in row 3) does. This eliminates the [i]-reduced form. An additional candidate that does not have vowel reduction (in row 2) does not violate Anti-Ident, but it is later eliminated by the phonotactic constraints—i.e., it violates the *[-Hi] constraint while the correct output form violates only the low-ranked Ident-IO(V) constraint.

It should also be noted that homophony blocking in Russian does not ever affect the reduction of /o,a/ to [ə]. There are several instances where grammatical homophones result from the neutralization of unstressed /o/ and /a/. For example, the neuter past tense and feminine past tense verbal endings –o and –a are often neutralized. For example, the surface form [igrálə] can be either 'she played' (from *igrá+l+a*), or 'it played' (from *igrá+l+o*). In order to avoid generating homophonous forms in this case, it would be necessary to completely arrest vowel reduction in one form or the other, similar to the homophony-blocking effect seen in Trigrad Bulgarian.[7] However, this does not occur in Russian. Recall that in the Trigrad Bulgarian case, it was necessary to rank Anti-Ident above the vowel reduction constraint, thus allowing unreduced mid vowels to appear in stressless syllables. The reverse ranking in Russian explains why vowel reduction does not affect the reduction of unstressed /o,a/ when not preceded by a palatalized consonant in Russian.[8]

The interesting fact to be pointed out at this time is that Russian vowel reduction causes *lots* of homophones to be produced. Two such pairs are listed below:

(27) Reduction-Derived Homophony in Russian

a.	m^játʃ^j	sg.	m^jitʃ^jí	pl.	'ball'
b.	m^jétʃ^j	sg.	m^jitʃ^jí	pl.	'sword'
c.	tʃ^jásta	adj.	tʃ^jistatá	noun	'frequent'
d.	tʃísta	adj.	tʃ^jistatá	noun	'clean'

In (27), we see that the surface form [m^jitʃ^jí] can mean either 'balls' or 'swords'. Note that the singular forms, [m^játʃ^j] and [m^jétʃ^j], are distinctive and the words only become homophonous in the plural due

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[7] That is to say, the context after a palatalized consonant has one additional option not available here: either follow the expected pattern for the C^j__ environment (i.e., reduce to [i]), or use the default pattern (i.e., reduce to [ə]).
[8] It should be noted that in a number of cases, the type of homophony discussed apropos of igrálə is avoided in Russian, but not in a way that involves vowel reduction. Instead, many verbs show stress shifts in the past tense—for example, bilá 'she was' vs. bílə 'it was'. However, not all verbs show this phenomenon, and it is not predictable which ones will shift stress and which ones won't.

to a stress shift (to the ending of the word), which causes reduction of the stem vowel. Similarly, the surface form [tʃʲistatá] can mean either 'frequency' or 'cleanliness'. Note that these forms are also distinct in their base forms: [tʃʲásta] and [tʃʲísta]. Again, homophony is derived through a change in stress with concurrent vowel reduction. Also, as in the Trigrad case, it seems as though homophony-blocking is limited to comparison with lexically-similar items—the items that would be thought of intuitively as existing within a single paradigm. This is represented pictorially below.

(28) Non-Related Homophones Produced by Reduction

Paradigm 1	Paradigm 2
ball	*sword*

mʲatʃ - - - - - - mʲetʃ

mʲitʃi ` ` mʲitʃi
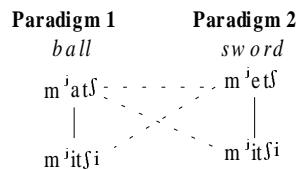
In this diagram, solid lines indicate forms that can be compared by Anti-Ident; dashed lines indicate words that *cannot* be compared by Anti-Ident. As illustrated, the comparisons that cannot be made by Anti-Ident always involve words taken from different paradigms:

4. CONCLUSIONS

In the preceding sections, I have shown that homophony-blocking effect the processes of vowel reduction found in two different Slavic languages, and that homophony-blocking is limited to making intra-paradigmatic comparisons in both cases. As mentioned above, this parallels suggestions made in Crosswhite (*to appear*) about Correspondence. Namely, I claim that Correspondence requires a "qualifying" relation—in both the Russian and Bulgarian cases discussed here as well as the Chamorro case discussed in Crosswhite (*to appear*), the relevant "qualifying relationship" is that of morphological relatedness—correspondences are only allowed between items that are exponents of a single morphological paradigm. However, it has been shown by numerous researchers that correspondence relations are necessary between other types of forms as well, such as base~reduplicant forms (McCarthy and Prince 1993, 1995). In these analyses, it is necessary to regard a reduplicant as a special type of morpheme—usually notated as {RED}. This means that a reduplicant and the stem to which it is attached are *not* morphologically related—they have distinct morphological etiologies. For example, in a reduplicated form like Chamorro *hugágandu* 'playing' (habitual action), the reduplicant –*gá*– is an exponent of the morphological category {RED$_{habitual}$}, while the base *hugandu* is an exponent of that morphological category whose semantic content is

"PLAY".   This suggests that both morphological relatedness (which includes input~output, base~truncatum, output~output and other subtypes) and reduplicatory relatedness (base~reduplicant) are permissible "qualifying relations"—correspondence can compare items that are related in either way.[9] If the Anti-Ident constraint suggested in this paper is parallel to the Ident constraints used in correspondence theory (as claimed), we would expect that anti-homophony effects might be observed in reduplicatory processes as well. In Yip (1995a,b), one such case is investigated.[10] Yip considers a number of examples where homophonous elements cannot occur in adjacency—for example, some languages do not allow homophonous suffixes or other morphological markers to occur side by side, and may modify or omit one of them.[11] In her analysis, Yip treats echo-word reduplicants using an approach similar to the Anti-Ident analysis given here. That is, Yip hypothesizes that echo-word reduplication like English *table-shmable* is due to a *REPEAT constraint that disallows adjacent surface-identical realizations of some item (in this case, a *stem* cannot be repeated). The idea is that a reduplication constraint demands that the two halves of *table-shmable* be identical, while *Repeat demands that they be different. The presence of both constraints in a single grammar can derive cases (such as the one under consideration) where *REPEAT is not violated and where the reduplication constraint is violated only minimally—most of the segments are identical, but not all of them. This example (as well as similar cases discussed by Yip) provide a reduplicatory parallel for homophony-blocking in the vowel reduction processes of Russian and Trigrad Bulgarian. In both cases, some constraint would produce homophony (either for phonotactic or morphological reasons), but homophony is *minimally* avoided. In the Trigrad case, homophony is avoided via blocking the process altogether while in the cases of Russian vowel reduction and English echo-word reduplication, homophony is avoided via an unexpected phonological modification.

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[9] Indeed, other types of relatedness are possible. For example normal~argot forms are related to their normal forms in a certain way (Itô and Mester 1995), and rhyming words in a verse are related in a certain way, etc.
[10] I would like to thank Moira Yip for pointing out the relevance of this type of example to me.
[11] It should be noted that many of the cases investigated by Yip can only be analyzed using her OCP-based analysis, and not an Anti-Ident analysis. This is due to the fact that the phenomena investigated by Yip all involve the requirement of adjacency (or near adjacency). The case discussed here (echo-word reduplication) is one of Yip's cases where the Anti-Ident approach is relevant.

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