Stress Faithfulness in English Blends

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Abstract: In this paper, I propose that blend words can be treated as a form of correspondence between multiple inputs. Based on this suggestion, the theoretical claim underlying my analysis is that prosodic compression is the result of a large prosodic domain being recycled at a lower level of the phonology. The phenomena of phonemic overlap and a preference for stress alignment, which are two of blending's most salient characteristics, fall out from *CLASH, MAX-SEG, and IDENT-STRESS (McCarthy 2008) working together to make the best prosodic word out of the available feet.

0.   Introduction

Though less productive than rival word-formation processes like compounding and affixation, blending is still a rich source of neologisms in English. Despite this productivity, however, blends are often seen by scholars as unpredictable, uninteresting, or both. In his work on morphological productivity, Bauer (1988: 39) states that "in most cases…the new word is created from parts of two other words, with no apparent principles guiding the way in which the two original words are mutilated", expressing the sentiment that blending is not only irregular, but also unnatural (i.e. extragrammatical). Taken collectively, the more thorough analyses of blends are something of a mixed bag as well: some focus on their derivation and structure (Algeo 1977; Ruá 2004), others on their usage (Gries 2004), and still others on their place in the grammar (Bat-El 1996; Kubozono 1990). Of these studies, only a few have treated blends as a regular phonological process, and only Bat-El (1996; 2012) has offered a serious account of their formation within the framework of Optimality Theory (Prince & Smolensky 1993). The analysis below picks up where Bat-El's analysis of Hebrew blends leaves off, using Correspondence Theory and a variety of prosodic constraints to deal with this phenomenon as it pertains to English. More specifically, it shows that blending is the result of forcing multiple prosodic words to be dominated by a single prosodic word head node, a process that can be elegantly accounted for using only Output-to-Output (OO) Correspondence. The analysis also differs from previous studies in that it locates blending exclusively within the phonology, provided that certain conditions are met at the level of Logical Form, leaving its morphological and semantic characteristics to be handled by other processes in the grammar.

1.   Previous Research
1.1   Blending and the Grammar

Many previous studies treat blending as a special type of word-formation closely related but not quite identical to both compounding (Piñeros 2003) and coordination (Kelly 1998). Compared to these processes, however, blending in English is relatively unproductive: Of the approximately 285,000 nouns, verbs, adjectives, and adverbs listed in the *Oxford English Dictionary*, only 484 of them are blends (OED Online). Granted, blends, clippings, and other subtractive word formations are often used in informal discourse as slang or nonce-words (Algeo 1977), which might affect the likelihood of them appearing in records of well-established lexemes like the *OED*; nonetheless, this fact, coupled with the basic desire to keep morphological theory as streamlined as possible, seems to be motivation enough for at least questioning blending's status as a derivational process of the same scope and stature as compounding and affixation. Most

contemporary research (e.g. Bat-El 1996 and Bat-El & Cohen 2012) follows this line of thinking, suggesting that prosodic factors like syllable structure and word stress, not the semantic or morphosyntactic contents of the base forms, are the driving forces behind the process. By extension, the implication is thus that blending comprises two separate processes: one morphosyntactic, which selects, arranges, and inflects lexemes according to the established categorical restrictions of the language; and one phonological, which performs some set of prosodic and segmental operations on the outputs of the first process to produce a subtractive formation whereby both are ideally (though not necessarily) recognizable. Because this second process is unique to blending—the first is simply regular word formation and spell-out—it is the focus of the OT analysis in Sections 4. However, in order to make the distinction between the two as clear as possible, the remainder of this section will address the issues of categorial combination and lexical ordering, while Section 3 will address the problem of delimiting a syntactic phrase-level domain for the process, an issue that has caused some difficulty for accounts in the past.

1.2   Categorial Restrictions

Despite the suggestion above that blending might not be derivational, there are still patterns in the categorical structure of blends that must be explained—in English, for example, they may be formed from two nouns, or a noun and its modifying adjective, but never a verb and a noun (in that order). Interestingly, words belonging to functional categories also do not appear in blends, possibly providing further evidence in support of their phonological separation from words belonging to lexical categories (Selkirk 2003). Both Algeo (1977) and Lopez-Rúa (2004) discuss these patterns in detail, outlining the various possible categorical combinations for blends and other subtractive formations, which are summarized in (1).

(1)   a.   Noun-Noun (NN): *meritocracy* ← *merit + democracy*
        b.   Noun-Verb (NV): *carjack* ← *car + hijack*
        c.   Verb-Verb (VV): *meld* ← *melt + weld*
        d.   Adjective-Noun (AN): *mockumentary* ← *mock + documentary*
        e.   Adjective-Adjective (AA): *affluential* ← *affluent + influential*

Studies that treat blending as a word-formation process alongside compounding and affixation have developed a number of ways to account for these patterns. For example, Piñeros (2003) suggests that the blending mechanism gathers two free morphemes from the lexicon, and then combines the resulting "two morphological words to form a new lexeme". Likewise, Janda (1986), which Piñeros takes as the starting point for his analysis, suggests that blending is driven by phonemic sharing whereby a single segment may associate with multiple morphemes, providing an autosegmental explanation for the apparent overlap in blends like *slanguage* ← *slang + language* and *balloonatic* ← *balloon + lunatic*. Neither study discusses the categorical restrictions on the selection of free morphemes, however, nor do they provide a theoretical mechanism for implementing them. Nonetheless, these unanswered questions are beneficial in that they lead us to an important point regarding this particular aspect of blending, namely that the set of possible categorical combinations for a blend contains only those syntactic juxtapositions attested elsewhere in the language and, crucially, no others; in other words, a blend can only combine lexemes that could also be combined by another (presumably non-subtractive) derivational process. The question that follows this generalization, then, is this: why

should we posit two processes to account for one categorical output? Although a thorough answer to this question would necessarily deal with the nature of redundancy in grammar and is thus beyond the scope of this paper, the argument presented below is that a satisfying account of blending is more easily obtained by attributing its morphological characteristics to external processes (e.g. the derivational mechanisms mentioned above) and dealing only with its phonological characteristics than by attempting to deal with both sets of characteristics at once.

1.3 Ordering the elements

Similar to the problem of accounting for the categorical tendencies in blending, an account of the process must also explain both how and why the base forms are linearly ordered before undergoing segmental and prosodic alteration. Kubozono (1990) and Bat-El (1996) accomplish this by giving the bases numerical labels (e.g. BE$_1$, BE$_2$, etc.), but they do not explain why the bases were ordered the way they were to begin with; the impression is that the order was back-derived from the order of the elemental phonological substrings in the output, which is perhaps more arbitrary than we might like. In many cases, this problem can be avoided by appealing to either the semantic content or the argument structure of the unblended construction, considering that the constituency ordering for some blends, such as *brunch* ← *breakfast + lunch* and *sexploitation* ← *sex*(*ual*) + *exploitation*, is both syntactically and semantically intuitive (i.e. breakfast is normally eaten before lunch, and *sexual* clearly modifies *exploitation* and must therefore be situated at the beginning of the phrase). Yet, for many Noun-noun (NN) and adjective-adjective (AA) blends lacking a clear semantic head, where the base elements contribute equally to the meaning of the blended form, this argument is less appealing. For example, there is no reason to assume a particular ordering of the bases in *slithy* ← *slimy + lithe*, *frenemy* ← *friend + enemy*, or *smog* ← *smoke + fog*: because they have a semantic construction similar to that of copulative compounds, where the meaning of the derived form is approximately equal to the sum of its parts, there is no logical way to specify which element must come first, either in the derivation or the eventual output. This ambiguity poses a problem for the current accounts of blending in that they rely on the order of the base elements to determine not only segmental anchoring at the left and right edges of the blend, but also, and perhaps more importantly, its preferred prosodic structure, which itself is extremely important in determining how much material from the bases will eventually surface. Head-based theories like that of Bat-El & Cohen (2012) resolve this ambiguity by proposing that the length of the base elements may also influence their potential selection as the head of the blend, with preference being given to either the longer or shorter base, depending on both its length and stress pattern relative to that of the blend.

Trommer & Zimmerman (2010) propose such an alternative by suggesting that blending is driven by a form of templatic affixation. Under their analysis, one of the base forms functions as the prosodic head for the blend, and the blending process is then the "result of a constraint forcing all material in a morphologically complex word to be dominated by head-prosody." Although this model captures the prosodic compression of the base forms particularly well, it leaves a few questions unanswered. First, the morphosemantic content of a blending affix, if such a thing exists, would be very difficult to pin down, considering that the semantic relationship between the base words of a blend is exactly the same as the relationship between the same two words when combined in a non-subtractive derivational environment. For example, the blends in (2) are semantically equivalent to their respective compounds, as are the adjective-noun blends in (3) to their corresponding to adjunct-modified noun phrases.

(2)   a.   *bleen ← blue + green*
          b.   *murse ← man + purse*
          c.   *spork ← spoon + fork*
          d.   *mizzle ← mist + drizzle*

(3)   a.   *digipeater ← a digital repeater*
          b.   *adhocracy ← an ad-hoc bureaucracy*
          c.   *Britcom ← a British sitcom*

Second, why should the target template for blending be variable, when the targets for other morphological processes, like reduplication and truncation, are not? Although templates may vary in size within a single language, they are generally consistent within the domain of a single word-formation rule. For example, the reduplicative progressive prefix in Ilokano is always a heavy syllable (McCarthy & Prince 1986), and shortened nicknames in German are always well-formed trochaic feet (Ito & Mester 1997). Even in cases where there is noticeable variation in the prosodic structure of a single morpheme, like that of the truncated hypocoristic in Japanese, we can still make do with a single template, admitting, as Mester (1990) suggests, that such a template may function not only as a prosodic target for the output, but also as a prosodic delimiter for the input. Following this generalization, if blending is indeed a templatic process, then we should expect the preferred prosodic structure for each blend to converge toward a single, standard structure. However, this is decidedly not the case in English, where blends are always at least as long as their shortest base element but preferably no longer than the longest (Bat-El 1996).

(4)   a.   *Smog ← smoke + fog*
          b.   *brifter ← brake + shifter*
          c.   *celebutante ← celebrity + debutante*

Although Prosodic Morphology does support the generalization that any prosodic constituent may be a target for morphological processes, it does not support the more specific claim that templates may vary widely in size, so that even if we admit that the general template for blending is the prosodic word, as Trommer & Zimmerman suggest, we cannot immediately explain the structural variation exemplified by the data in (3) using its framework alone. The potential solution of allowing blending to be a-templatic also would not work, since similar processes invariably make some semantic or syntactic change to the base, whereas blending does not. Even full reduplication, which McCarthy (1993) notes is an "almost trivial case of a-templatic prosodic morphology" in that there are no apparent restrictions on the shape of the reduplicant, carries with it some syntactic information, having been documented as marking features like aspect (Gafos 1998) and the plural (McCarthy 1993).

      Trommer & Zimmerman solve this problem by proposing that the prosodic target for any given blend is not a generalized prosodic template, like a heavy syllable or foot, but rather that it corresponds to the shape of one of the base elements (see Bat-El & Cohen 2012 for a similar analysis). By viewing each blend as an instance of localized, ad-hoc templatic creation and then affixation, this suggestion accounts for the variation in the size of blends, but it creates another problem in the process: how do we know which of the base elements will be the head of the blend? As mentioned earlier, the relationship between the root words in many blends makes

labeling one of them the semantic or syntactic head easy; that a *motel* is a kind of hotel, for instance, and not a kind of motor is uncontroversial, as is the headedness of blends like *adhocracy* ← *ad-hoc* + *bureaucracy* and *Blaxploitation* ← *Black* + *exploitation*. Some blends, however, have no clear semantic head (5) (i.e. they are exocentric), whereas others have two (6), making the decision much more difficult, if not arbitrary.

(5)   a.   *Clamato* > clam + tomato (juice)
(6)   a.   *frenemy* > friend + enemy
          b.   *mimsy* > miserable + flimsy
          c.   *squoggy* > quaggy + soggy

Moreover, if blending does rely on this kind of head designation, then we are also faced with the difficulty that, at least for some pairs of base elements, changing the head (and thus the prosodic target) would drastically change the shape of blend; in (5b), for instance, making *miserable* the head would yield *flimserable* instead of *mimsy* (Kelly 1998). The fact that blends commonly combine words with multiple shared segments and similar prosodic structures (Algeo 1977) obscures this issue in that, owing to the interaction between the segmental and prosodic constraints discussed below, choosing one head over another often has no impact on the phonological makeup of the output (i.e., the output in both cases is the same). Nonetheless, the data in (7) clearly show that the base elements may indeed be prosodically dissimilar, so that if one of them is to determine the ultimate prosodic shape of the blend, there must be a clearer, less stipulative way of deciding which one it will be, other than by making the choice in retrospect and simply marking whichever base is closest in shape to the blend itself as the head.

(7)   a.   breakfast + lunch > *brunch*, **breakfunch*, **lunchfast*
          b.   genetically + engineer > *genginéer*, **genétineer*
          c.   misspend + expenditure > *misspénditure*, **mexpend*, **mixpend*
          d.   nobody + daddy > *Nóbodàddy*, **naddy*, **nobaddy*

An alternative to this analysis is to abandon the idea of head-driven prosodic domination and adopt one in which the base elements influence the shape of the blend equally, relying instead on constraint interaction to process the prosodic information in the input and produce an output that is both maximally faithful and minimally marked. The difficulty with such an alternative, however, is that there are many cases where the blending mechanism does seem to have shown a preference for one of the bases during the evaluation. Perhaps the best examples of this phenomenon are found in adjective-noun blends like those in (8), which appear to invariably preserve the segments of the syllable bearing primary stress in the noun, even at the expense of the stressed segments in the adjective, which often loses is stress in the blend to avoid violating *CLASH (word stress is marked with an acute accent).

(8)   a.   *cybrárian* ← *cýber* + *librárian*
          b.   *Ebónics* ← *ébony* + *phónics*
          c.   *femcée* ← *féminine* + *emcée*
          d.   *magpíety* ← *mágpie* + *píety*

We can solve this problem by proposing that what appears to be an instance of head stress preservation is in fact an instance of faithfulness to the segments bearing primary stress in the phonological phrase immediately dominating the prosodic words contained by the input. This analysis preserves the intuitive notion of the head-based accounts that some base elements are more important than others, but it avoids the tricky issue of assigning headedness based on syntactic or semantic features, relying instead on a ranked hierarchy of stress faithfulness constraints to ensure the proper prosodic structure of the output. This claim is fully developed in Sections 3 and 4, where evidence is provided for limiting the syntactic domain of the blending mechanism to the p-phrase.

2. Blending in OT
2.1 Defining the Input

Although some characteristics of blends—most notably stress faithfulness and prosodic compression—can be captured in OT by OO-Correspondence, some characteristics cannot. Therefore, the following correspondence model for blending is proposed:

$$\text{Input: } /\text{LEX}_1\text{LEX}_2/$$
$$\updownarrow$$
$$\textbf{B}\text{ase}_1 \leftrightarrow \textbf{B}\text{lend} \leftrightarrow \textbf{B}\text{ase}_2$$

The key assumptions behind this model are that the input for a blend, like the input for a compound, is a string of lexemes, and that the blend itself corresponds simultaneously with multiple outputs (for the sake of illustration, the model above uses two, although this number is in principle unlimited). The sections above have focused on the phonological characteristics of the corresponding outputs, or bases, simply because they answer many of the unanswered questions posed in previous studies, e.g. which base functions as the head of the blend, but we still need Input-to-Output (IO) constraints to capture generalizations relating to anchoring, ordering, and segmental faithfulness.

2.2 Core Constraints

The most basic requirement of the blending process is that the final output constitute a single prosodic word, regardless of how many base elements it comprises. That the output should contain at least one prosodic word is expected; that it should constitute *only* one, however, is crucial in defining the prosodic limits of the output. Therefore, the constraint in (9) is proposed, and is suggested to be undominated with regards to blending.

(9) PRWD: The output must be a single prosodic word.

Inputs containing multiple prosodic words undergo stress reassignment to become blends, while those containing only one are simply passed through the evaluator and unchanged in the output. Just as importantly, we also need a constraint that ensures the blend retains at least one segment from each of the base elements. While there a few ways of doing this, it is helpful to begin by reviewing the constraint presented in (10), which was proposed by Bat-El (1996) to account for this same phenomenon in Hebrew blends.

(10)   MINCONTRIB: Each prosodic word must contribute a minimum of one segment to the blend.

Bat-El's decision to include (10) in her analysis is motivated by the need to have some way of preventing the blend from being phonologically identical to any of the base elements; without appealing to anti-faithfulness, the only way of doing this seems to be requiring outright that the blend contain at least part of each. The question remains, though, of whether it is possible to account for segmental faithfulness in blending without relying on a process-specific constraint like MINCONTRIB to push the base elements into the output. Before answering this question, we should consider the data in (11), which have some interesting segmental characteristics despite being prosodically well-formed.

(11) a. *chortle* ← *chuckle + snort*
      b. *slithy* ← *slimy + lithe*

Although both blends were invented by Lewis Carroll and might thus be considered products more of his linguistic creativity than of the grammar itself, they nonetheless conform to the prosodic requirements of blending mentioned above. What makes them somewhat unusual, though, is that the base elements are joined by more than one phoneme boundary: in both examples, syllables from the first base surround a single syllable from the second, a structure that is rare among blends attested in the *OED*. The reason for this apparent irregularity is that instead of prioritizing linearity over segmental faithfulness, which is suggested below to be the most common general constraint ranking, the blends in (11) exemplify the reverse, where maximizing material from the base elements has dominated the preference for joining them at a single switch point; for the sake of comparison, the alternative outputs for the bases in (11) are given in (12).

(12) a. *chort* ← *chuckle + snort*
      b. *slithe* ← *slimy + lithe*

What the blends in (11) do better than those in (12), then, is squeeze more segmental material from the input into the output, which we can straightforwardly account for by appealing to a basic faithfulness constraint like MAX-IO (Kager 1999). If such a constraint is active during the formation of the blends in (10), then it must also be active during the formation of the ones in (11), and the difference between the segmental content of the outputs should be attributable to its position in the hierarchy relative to any constraints requiring contiguity.

Introducing a general MAX constraint raises two interesting questions. First, should it operate between the input and the blend, between the blend and the bases, or both? As an IO constraint, MAX would push segments from both the bases into the blend equally, since the input, at least in the model proposed above, is a uniform string of segments and cannot be parsed to associate with either of the bases individually. As an OO constraint, however, MAX would apply to the separate correspondence relations between the blend and each of the bases, creating the same equal push as MAX-IO, but with the added advantage of penalizing candidates that do not include segments from both the bases. For this reason, this option is implemented here, and is introduced in (13) as a bundle of constraints linking the blend to each of its corresponding outputs (sub-n notation is used to formalize the notion that the number of bases is flexible, if not theoretically unlimited).

(13) MAX-BASEBLEND: Each segment of a **Base**$_N$ must correspond to a segment in the **B**lend

The second question introducing such a constraint raises is whether it is strong enough to force segmental material from each base into the blend; in other words, Bat-El's MINCONTRIB be replaced by a bundle of MAX-BB constraints? We can answer this question by considering the data in (14), which list some possible ungrammatical outputs for the blends *celebutante* and *acronymania*.

(14) a. *celebrity + debutante* → *celebutante, *cebutante, *cetante, *debutante*
      b. *acronym + mania* → *acronymania*, *acromania, *acrania, *mania, *acronym*
      c. *man + purse* → *murse*, *purse*

In both cases, the grammatical outputs include more segments from the bases than the ungrammatical outputs, which is a generalization we can clearly capture with a MAX constraint like the one proposed in (13) (prosodic factors, which are discussed below, rule out the longer candidates). However, where MAX fails, and where a constraint like MINCONTRIB succeeds, is in preventing the ungrammatical output in (14c) from surfacing. As shown by the tableau in (15), both forms incur equal violations of their respective MAX-BB constraints, which because of the correspondence relation between the bases and the blend must be unranked with respect to each other. Thus, the candidates tie, and we are left without a good answer to the question of why the one with segments from both bases should win out over the candidate with those only from one.

(15) Tableau for *murse* ← *man + purse*

/man$_1$+purse$_2$/	MAX-BB$_1$	MAX-BB$_2$
a. murse	**	*!
b. purse	***!	

MINCONTRIB avoids this ambiguity by placing a restriction on both bases simultaneously, correctly predicting that the winning candidate should be one containing segments from each, as shown in (16).

(16)

/man$_1$+purse$_2$/	MINCONTRIB
a. ☞murse	
b. purse	*!

However, we could avoid appealing to the constraint entirely by simply proposing that the first and last segments of the blend are anchored to the corresponding segments of the input, which owing to the ordered structure of the input would achieve the same effect (i.e. because the input comprises an ordered pair of lexemes, the outside segments will always belong to different bases). Because we already need a bundle of anchoring constraints to preserve this ordering, this is the solution adopted here.

2.3   Anchoring, Linearity, and Contiguity
As discussed above, a major issue in developing a formal account of blending is deciding how the base elements should be ordered before undergoing constraint evaluation. As with the issue of uniqueness discussed above, there seem to be a number of interesting ways to solve this problem. One approach is to assume that the elements are arranged by the speaker (either

arbitrarily or otherwise) beforehand, and that this order is preserved in the blend; this, in fact, is the analysis proposed by Kubozono (1990) and supported by Bat-El (1996), who both numbered the base elements in the inputs to their tableaux. A similar approach to ordering the segments, and the one adopted here, is simply to anchor the segments at the right and left edges of the blend to the corresponding edges of the input, ensuring, for example, that the first half of a base does not end up as the second half of the blend. These constraints are formalized in (17) and are simply intended as a way of rendering Kubozono's analysis in OT.

(17) a. ANCHOR-IO (R,R): Anchor the rightmost segment of the blend to the rightmost segment of the input
       b. ANCHOR-IO (L, L): Anchor the leftmost segment of the blend to the leftmost segment of the input

The motivation for including two constraints instead of one is to prevent the ungrammatical forms in (18) from surfacing, capturing the theoretical distinction posited above between phonological blends and subtractive word formations that allow correspondence between medial segments in the input and final segments in the output, like the abbreviations in (19).

(18) a. *lamburger*, **lambham* ← *lamb + hamburger*
       b. *magalogue*, **magacata* ← *magazine + catalogue*
(19) a. *modem* ← *modulate + demodulate*
       b. *cyborg* ← *cybernetic + organism*

Likewise, the motivation for anchoring segments and not higher-order prosodic constituents like the syllable or foot is that because some base elements contribute only an onset to the blend, the anchoring mechanism must be able to target something smaller than the syllable; otherwise, successful candidates like *brunch* and *smog* would never surface because the conditions for anchoring would be unmet.

The tableau in (20) shows these two anchoring constraints at work on the input for the blend *lamburger* ← *lamb + hamburger*. Because anchoring is undominated with respect to blending, both constraints must be satisfied for a candidate to surface, which is precisely the case for the candidate in (a); the other candidates all do worse by comparison, with the last one violating both. As mentioned in Section 4.1, we can also see that for both constraints to be satisfied, a candidate must contain at least one segment from both of the bases, showing that they do in fact achieve the same effect as Bat-El's MINCONTRIB constraint.

(20) Ordering and segmental contribution in *lamburger*

/lamb$_1$+hamburger$_2$/	ANCHOR-IO (L, L)	ANCHOR-IO (R, R)
a. ☞ lamburger		
b. lambham		*!
c. lamb		*!
d. hamburger	*!	
e. hamlamb	*!	*

It is worth noting that although it preserves the edges of the input, anchoring does not prevent internal metathesis—indeed, a candidate like *lurgamber* would just as well satisfy the two constraints as the winning candidate in (a).

Descriptively, once the left edge of the blend is in place, we can think of it as being filled out with segments from the base elements. The order of the segments is preserved by the constraint LINEARITY, defined nicely by Kager (1999) and rephrased in (21).

(21)   LINEAR-BB$_N$: If S_1 and S_2 are strings standing in correspondence, then the precedence structure of S_1 is consistent with the precedence structure of S_2 and vice-versa

An important nuance here is that because LINEARITY works between the blend and its bases, and not between the blend and its input, it can only be violated if the precedence structure of one of the bases is changed in the blend—in other words, the base elements may be blended in any way, as long as the respective order of their individual segments is preserved. We can see evidence of this phenomenon in the tableau in (22), which shows two potential winning candidates with markedly different base-to-base ordering.

(22)   Linearity in *chortle ← chuckle + snort*

/chuckle$_{1+}$snort$_2$/	LINEARITY-BB$_1$	LINEARITY-BB$_2$
a. ☞chort		
b. ☞chortle		
d. chortsnuckle		*!
e. snucklechort	*!	

Although the losing candidates are admittedly difficult to imagine ever being pronounced, simply because the base elements are so difficult to recover from the blend, the potential winners demonstrate the point made above, which is that LINEARITY allows metathesis so long as precedence structure of each base is preserved.

Contiguity also features prominently in blending, but it operates on a much smaller scale than it does in reduplication and other instances of OO-Correspondence. As it applies here, CONTIGUITY-BB, formalized in (23), prefers contiguous segments in the blend to be contiguous in a base.

(23)   CONTIGUITY-BASEBLEND(SEG): Two contiguous segments in the blend must also be contiguous in a base

The best candidates, then, are ones where each two-segment string in the blend corresponds to an identically-ordered string in a base, creating what appears to be segmental overlap between the bases; these are exemplified by the data in (24a-b). Because not all base pairs have segments in common, this constraint must also be gradient, or candidates including segments from both bases (one of the inviolable requirements of blending) would be excluded if the bases had no segments in common. The blends in (24c-d) demonstrate this point nicely, as they each incur a single violation of the constraint, and we can see from the blend in (e) that multiple violations are indeed possible, depending on its rank relative to MAX-BB.

(24)   a.   *filmania ← film + mania*

    b.   *druggister ← druggist + drugster*
    c.   *Muppet ← marionette + puppet*
    d.   *Muzak ← music + Kodak*
    e.   *chortle ← chuckle + snort*

In descriptive terms, the combination of anchoring and contiguity proposed here neatly captures the generalization that the two base elements for a blend should be joined at only one phoneme boundary, which is an essential characteristic of the blending process.

       In addition to the general CONTIGUITY constraint proposed above, we also need a more specific one to prevent breaks between the nuclei and codas of syllables in the bases. Although the internal structure of the syllable is under debate (Yip 2003), Kelly (1998) points out that there are no blends where the two base elements have been joined at the boundary between the nucleus and the coda, an observation supported by the data gathered for this study. The only way to capture this regularity would seem to be with a faithfulness constraint that specifically preserves the segmental contiguity of the rime, and while CONTIG-BB$_N$(SEG) prefers candidates with only a single switch point, it does not have the localized scope needed to rule out the forms in (25). Therefore, the constraint in (26) is proposed and suggested to be undominated with regards to blending.

(25)   CONTIG-BASEBLEND$_N$(RIME): A rime copied to the blend must comprise a contiguous string

(26)   a.   *brench ← breakfast + lunch*
          b.   *blune ← blue + green*
          c.   *spoork ← spoon + fork*

2.4   Summary of Segmental Constraints

The hierarchy of segmental constraints described above is provided in (27) and exemplified in (28) as the tableau for *brunch*, where the only crucial ranking is that CONTIGUITY-BB be dominated by constraints preserving anchoring and linearity.

(27)   Segmental constraint ranking:
        PRWD, CONTIG-BB(RIME), ANCHOR, LINEARITY >> CONTIG-BB(SEG)

(28)   Tableau for *brunch > breakfast + lunch*

/breakfast$_1$+lunch$_2$/	PRWD	CONTIG-BB(RIME)	ANCHOR(R,R)	ANCHOR(L,L)	LIN-BB	CONTIG-BB
a. feakbunch				*!	*!	*
b. ☞ brunch						*
c. lunch				*!		*
d. lunchfast			*!	*!		*
e. brench		*!				*
f. breakfast lunch	*!					

3.   Prosodic Constraints
3.1   Stress Faithfulness

Despite the theoretical advantages of framing blending in terms of OO-Correspondence, it does not provide a clear way to explain the process's characteristic truncation. Considering the data in (29a), we can see that blends are often much shorter than the concatenated string of their bases, and the data in (29b-d) show that we cannot rely solely on segmental overlapping (realized as the localized contiguity constraint in (30)) to account for this trend.

(29) a. *aviation + electronics → aviónics, *aviátionics*
      b. *genetically + engineer → géngineer, *genetinéer*
   c. *June + nineteenth → Junetéenth, *Juníneteenth*

 The blend in (a) is particularly interesting because the alternative output, despite being ungrammatical, is still prosodically well-formed, showing that the constraints favoring truncation must outrank the constraints favoring both segmental maximization and contiguity. Bat-El (1996) motivates this truncation primarily through her Designated Identical Segment Constraint (DISC), but the data in (29) show that sharing segments does not always produce the best blend, and blends formed from bases with no shared segments are just as likely to be shortened as those with them, so the truncation must be caused by prosodic factors, i.e. those relating to syllable structure and stress. Because the idea of overlapping plays such an intuitive role in blending, the solution proposed here is that the shortening is caused by stress contiguity, or the preference for the blend to preserve the stress contour of the bases; in other words, the bases prefer to share stress structure in the same way they prefer to share segments. This notion is formalized in (30) as a contiguity constraint between the blend and a single base, and the data in (31) show how it applies to various pairs of bases (the acute accent marks primary stress within the word and not the phrase).

(30) CONTIGUITY-BB$_N$(STRESS): A stress-bearing unit in the blend must be followed by an identically-stressed SBU as its correspondent in the base
(31) a. *ádvertìsement + antíque → àdvertíque*
      b. *Brítish + sítcom → Brítcom*
      c. *cýber + líbrary → cýbrary*
      d. *írritàting + èntertaínment → ìrritáinment*
      e. *prívilege + intèlligéntsia → prìviligéntsia*

The tricky part about proposing such a constraint is that the vast majority of attested blends are formed from bases that share segments, which makes it difficult to tease out the effects of segmental contiguity from those relating to stress. However, the data in both (29) and (31) reveal that regardless of the segmental structure of the bases, the blend preserves their stress patterns as much as possible, so long as other high-ranking constraints like *CLASH—assumed here to be undominated—and the stress maximization and identity constraints introduced below are unviolated.
        The tableau in (32) shows CONTIG-BB$_N$(STRESS) at work for the blend *celebutante*. Each of the syllables in the first candidate borders a syllable receiving the same stress as its corresponding syllable in the base, so it satisfies both constraints and wins. By comparison, the second candidate is eliminated because its final syllable is preceded by a stressed syllable when its correspondent in the base is preceded by an unstressed syllable.

(32)

/celébrity$_1$ + débutànte$_2$/	CONTIG-BB$_1$(STRESS)	CONTIG-BB$_2$(STRESS)
a. ☞ celébutànte		
b. celébtante		*!
c. cebutante	*!	*
d. celèbritydébutante	*!	

Crucially, the fourth candidate, which is segmentally identical to the concatenated lexemes of the input, loses out as well, since the final syllable of *celebrity* is followed by no material in the base but a stressed syllable in the blend. Requiring the stress patterns of the bases to be preserved in the blend leads to truncation in much the same way as the segmental contiguity constraints proposed above—because the unblended candidate, like the one in (32d), will always violate one of the constraints, there will always be a blended candidate that satisfies them better.

3.2   Constraint hierarchy and exemplification
The ranking for all our constraints, both segmental and prosodic, is provided in (33). While this order produces traditional blends, i.e. those anchored to the outer edges of the base elements with minimal internal metathesis and maximal contiguity, re-ranking the constraints allows us to account for non-traditional blends, like those created by Lewis Carroll; prioritizing MAX-BB(SEG), for instance, would push more segments from the bases into the blend, which explains how *chortle* ← *chuckle* + *snort* could win out over *chort* despite incurring an extra segmental contiguity violation.

(33)   *CLASH, ANCHOR-IO(R/L, R/L), CONTIG-BB(SEG), CONTIG-BB(STR), CONTIG-BB(RIME)
     >> IDENT-BB(STR) >> MAX-BB(SEG)

By making segmental and stress contiguity undominated, this ranking also reflects the earlier accounts of blending that sought to describe the process in terms of overlapping, which was one of the main goals of this analysis. The only crucial rankings are that IDENT-BB(STR) dominate MAX-BB(SEG), so that the prosodic structure of the blend is not affected by segmental maximization, and that IDENT-BB(STR) be dominated by the other CONTIG and MAX constraints.

4.   Conclusion
The main point of this paper was to demonstrate that phonological blending can be accounted for within the framework of OO-Correspondence using a combination of segmental and prosodic constraints. Moreover, although blending is something of a specialized phonological process, we do not need specialized constraints to predict its output, deriving its unique structural characteristics from the interaction of stress and segmental faithfulness constraints between a single input and three separate outputs (the blend and the two bases).

5.   References
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