

# Lexical Selection and Strong Parallelism\*

David Teeple  
*University of California, Santa Cruz*

December 10, 2008

## 1 Theoretical Issues

### 1.1 Lexical selection

As demonstrated in a number of works (Tranel 1996; Mascaró 1996, 2005; Booij 1998; Yip 1998; Plag 1999; Steriade 1999; Ito and Mester 2004), the treatment of phonologically conditioned allomorphy in Optimality Theory (OT; Prince and Smolensky 1993/2004) is in many cases straightforward. It requires competing allomorphs to be listed in the input, with the optimal output being selected by the phonological constraints of the language. For instance, while the choice between *a* and *an* in English is certainly phonologically conditioned, one cannot say that both allomorphs correspond to the same input string of segments, precisely because the phonology of English predicts neither the insertion of an [n] as default in onset position nor the deletion of [n] from codas. Similarly, the Korean nominative suffixes /i/ (which follows consonants) and /ka/ (which follows vowels) cannot possibly correspond to a single input segment string, regardless that they represent the same set of morphosyntactic features. Carstairs (1989) documents scores of such examples from various languages. In every case, listing of multiple allomorphs in the lexicon seems to be a necessity, since the observed alternations cannot be attributed to a single underlying representation. This sort of alternation is dubbed *external allomorphy* or *phonologically*

---

\*Thanks to Judith Aissen, Ascander Dost, Simon Goldrei, Jorge Hankamer, James Isaacs, Junko Ito, Mike Kenstowicz, Armin Mester, Jaye Padgett, Paul Boersma, Kyle Rawlins, Sally Teeple, participants in the Winter 2006 Research Seminar at UCSC, and the audiences at LASC 2006 at UC Santa Cruz and WCCFL 26 in Berkeley.

*conditioned allomorphy* in much of the relevant literature. I will instead follow Mester 1994 in labelling it *lexical selection*, a term which remains neutral about whether competing forms are necessarily allomorphs. It turns out that in some cases they are clearly not, and this is exactly where the problems to be addressed in this paper lie.

Following the previous literature on lexical selection (Carstairs 1987, 1989; Mester 1994), there is a growing literature in OT on the subject (among others, Tranel 1996; Mascaró 1996, 2005; Booij 1998; Perlmutter 1998; Plag 1998, 1999; Yip 1998; Lapointe 2000; Steriade 1999; Ito and Mester 2004; Kenstowicz 2005). Though the details of these analyses are all somewhat different, they are fairly consistent in the claim that the morphosyntax can simply remain indecisive as to which allomorph from a given set should be preferred: all of the allomorphs can simply be listed in the input to the phonology, and the selection of any one of them will satisfy the faithfulness constraints of the language.

This is tantamount to claiming that the input itself consists of candidates under evaluation, and so there would at first seem to be little difference between a theory in which the phonetic output is selected from a set of *input* allomorphs on a phonological basis, and one in which the phonetic output is selected from a set of *output* allomorphs on a phonological basis. The former I will refer to as Serial OT, meaning that in that theory morphosyntax precedes phonology derivationally; and the latter I will call Strong Parallel OT. The two theories are illustrated in (2) and (3) (the input to (3) is semantic, a version of Lexical-Conceptual Structure (Jackendoff 1983, 1997)). I assume that there are infinite candidates generated for each allomorph, although here I consider only the most salient forms, i.e., those that are completely faithful.

- (1) a. ONSET  
Count a violation for any syllable node which does not dominate an onset.
- b. ALIGN-MWD, $\sigma$ ,L(following McCarthy and Prince 1993)  
Count a violation for any left edge of a morphological word which is not aligned with the left edge of a syllable.

- (2) Serial OT

	{/a/, /an/} /opera/	ONSET	ALIGN-(MWD, $\sigma$ ,L)
☞	a. [.a.no.pe.ra.]		*
	b. [.a.o.pe.ra.]	*!	

(3) Strongly Parallel OT

	INDEF( <i>opera</i> )	ONSET	ALIGN(MWD,PWD,L)
a.	/an/ /opera/ ☞ [.a.no.pe.ra.]		*
b.	/a/ /opera/ [.a.o.pe.ra.]	*!	

The analysis in (2) resembles Ito and Mester’s (2004) treatment of external allomorphy in Japanese verbs, as well as Plag’s (1999) analysis of English causativizing suffixes. Allomorphs are presented as input sets, from which the phonology must select only one. In the usual case, it is perhaps simple enough to assume that the morphosyntax has remained indecisive, as long as the competing allomorphs express the same content and correspond to identical syntactic structures. In the case of English *a* and *an*, the syntactic correspondent is invariably a D terminal node with the features [singular, indefinite]. The morphology maps two matches for this node from the lexicon, *a* and *an*, neither of which can be selected definitively without further information from the phonology. This analysis is unproblematic, but only because the competing forms are equivalent at every level of representation except the phonological one.

## 1.2 Serial OT vs. Strong Parallel OT

However, when competing forms differ at more than the phonological level, the two theories diverge in their predictions. Serial OT limits the scope of external selection to a single interface; that is, the phonology can only influence the selection of a morphological form. It cannot influence the selection of a syntactic form unless the input itself includes competing syntactic structures; and if this is allowed, then we essentially arrive at Strong Parallel OT.

Strong Parallel OT directly predicts that the phonology should be able to influence the selection of a syntactic structure. In this sense, it is similar to Bidirectional OT approaches to the syntax-semantics interface (e.g., Blutner 1999; Hendriks and de Hoop 2001; Beaver and Lee 2003; Aissen 2003). There are at least two different strains of Bidirectional OT – Strong and Weak – but they agree that the syntax and semantics are determined in parallel. There is some hope that Bidirectional OT

and the model I am proposing in this paper – where I have very little to say about the semantic component – could be merged into a single, unification-based model. Under such a view, an output candidate would be a unified representation integrating each of the traditionally separate linguistic modules. Such work would follow the lead of other unification-based models, among which are GPSG (Gazdar et al. 1985), HPSG (Pollard and Sag 1994), LFG (Kaplan and Bresnan 1982; also LFG-OT), MOT (Russell 1999), Autolexical Syntax (Sadock 1991), the theories of Jackendoff 1997, Ackema and Neeleman 2004, and various work by Paul Boersma and colleagues (Boersma 1998, 2007b,a; Apoussidou 2007; Boersma and Hamann 2008). I refrain from further comments on full unification, and limit myself to the interactions of morphosyntax and phonology with regard to lexical selection.

The crucial difference between Serial OT and Strong Parallel OT is that the former takes the grammar to evaluate each level of representation in sequence. This means that in the majority of cases only one output form will be selected as optimal at a given level and passed on to serve as input to the next level. In Strong Parallel OT, no level of representation is evaluated in isolation, nor is there ever an intermediate stage of derivation at which the baton is passed from one level to another.

In Serial OT, the semantics is first mapped to an optimal syntactic form. The optimal syntactic form is then provided a morphologically optimal correspondent. And finally, the morphological form is provided with its optimal phonetic correspondent. Alternative orders are often defended – for instance, reversing the order of morphology and syntax, or conflating the two as non-distinct; but these approaches generally agree that phonology should come last. In Strong Parallel OT, there is no first or last level of derivation.

Schematically, the difference between the two theories is illustrated in (4) and (5).

(4) Serial OT

a. First Level

Semantics:	B'	S1	S2
	[ <i>AP</i> A ]	*!	
Syntax:	[ <i>BP</i> B ]		*

b. Second Level

Syntax:	[ <i>BP</i> B]	M1	M2
	/a/	*!	
Morphology:	/b/		*

c. Third Level

Morphology:	/b/	P1	P2
	[b]	*!	
Phonetics:	[b']		*

Given the rankings  $\{S1 \gg S2\}$ ,  $\{M1 \gg M2\}$ , and  $\{P1 \gg P2\}$ , and the assumption that the derivation passes through each level in sequence, the phonetic output [b'] is the only possible outcome given an input denotation B'.

In Strong Parallel OT, the constraints of all of the levels of representation are ranked in a single hierarchy and evaluated in parallel (see Golston (1995) and Samek-Lodovici (2005), who propose the same sort of parallelism). This means that, even under the three rankings established so far, it is possible for the same semantic input to be mapped to a different phonetic, morphological, or syntactic representation. Consider the ranking  $S1 \gg S2 \gg P1 \gg P2 \gg M1 \gg M2$ <sup>1</sup>. This is consistent with the pairwise rankings in the Serial OT analysis, but now the phonological constraints outrank the morphological ones. A possible result might be the selection of a different morphological and phonological output, for instance, if [a'], the optimal phonetic correspondent of /a/, better satisfies the phonological constraints than does [b'].

---

<sup>1</sup>See Golston (1995), who claims that syntactic constraints outrank all phonological and morphological constraints.

## (5) Strong Parallel OT

Semantics: B'		P1	P2	M1	M2
a.	Syntax: [BP B ] Morphology: /a/ ☞ Phonetics: [a']			*	
b.	Syntax: [BP B ] Morphology: /b/ Phonetics: [b]	*!			*
c.	Syntax: [BP B ] Morphology: /b/ Phonetics: [b']		*!		*

In Serial OT, [a'], which surfaces here as the optimal phonetic form, would never have been considered as a salient competitor in the phonology, because at the morphological level its correspondent /a/ is suboptimal, and cannot be passed to the phonological derivation. In Strong Parallel OT, where phonological constraints can outrank morphological ones, the phonological preference for [a'] over [b'] results in the selection of morphological correspondent /a/ over /b/.

Faithfulness between the output levels clearly has to play a role here, since otherwise we might expect a mapping between /b/ in the morphology and [a'] in the phonology. It will evidently be senseless to maintain the term input-output faithfulness, since here we need to calculate faithfulness between various levels of the output. What in Serial OT is called Faith-IO (McCarthy and Prince 1995) must in Strong Parallel OT be called Faith-MP – faithfulness between the morphology and the phonology. In addition, we will need at least constraints of the sort Faith-SM, which govern the semantic-morphosyntactic mapping. If we assume that the morphology and the syntax are indeed separate representations (following, for instance, Beard 1988; Anderson 1992; Halle and Marantz 1993), then a family of faithfulness constraints will be needed to govern that mapping. Here I remain agnostic as to whether this is necessary; I will generally refer to a level of 'morphosyntax', rather than speaking of both a syntactic and a morphological level, though nothing in my analyses hinges on this decision. Likewise, a family governing the semantics-phonology mapping may be called for, but no evidence presented here will bear upon the question.

Effects similar to those illustrated in (5) are possible in the syn-

tax. Consider a situation in which S1 and S2 are lowest ranked. In that event, the phonology and morphology could select what might have been a suboptimal form from a purely syntactic standpoint. Such cases seem to be harder to come by than those where the phonology determines morphological form, but we will see one such case in French prepositional phrases, where phonologically governed selection of a periphrastic preposition-determiner form over a portmanteau results in greater syntactic complexity, violating an independently needed constraint on syntactic economy.

## 2 French Portmanteaux

Here I provide the background of a more involved test-case which I think will serve as the most convincing support for SPOT over Serial OT. The SPOT analysis involves the parallel selection of a morphological and a syntactic form in French prepositional phrases, both of which are dependent in certain respects on the phonology.

The crucial pieces of evidence for the proposed SPOT analysis come from a non-standard variety of French, which is distinguished from Standard French principally by greater tolerance of prepositions taking wide scope over coordinate structures. Standard French is known to be fairly resolute in requiring prepositions to take narrow scope in coordinate structures (Miller 1992). The non-standard data were first noticed by Miller (1992), and are also discussed in Abeillé et al. (2003) and Tseng (2005). This variety of French is not known to be associated with a particular geographical region, but is probably associated with particular social strata.

In French, portmanteaux – lexical items which express the features of what would normally be two syntactic nodes, in this case preposition and determiner nodes – require less hierarchical structure than their periphrastic equivalents, and thus portmanteaux typically block periphrastics. This I take as evidence for a syntactic economy constraint. In non-standard French, vowel-final portmanteaux are blocked in pre-vocalic context, suggesting that ONSET plays a role in the choice of syntactic structure – in this case, a less economical structure.

## 2.1 Portmanteaux

In all dialects of French, the prepositions DE ‘of, from’ and À<sup>2</sup> ‘to’ fuse with the determiners LE (masc. sing. def.) and LES (pl. def.), yielding the four portmanteaux *du*, *au*, *des* and *aux*. In general, these portmanteaux block their periphrastic equivalents (cf. Kiparsky 2005).

- (6) a. (du/            \*de le)        père  
           (of.the(m)/ \*of the(m)) father  
           ‘of the father’
- b. (au/            \*à le)        père  
           (to.the(m)/ \*to the(m)) father  
           ‘to the father’
- c. (des/            \*de les)        Etats-Unis  
           (of.the(pl)/ \*of the(pl)) States-United  
           ‘of the United States’
- d. (aux/            \*à les)        Etats-Unis  
           (to.the(pl)/ \*to the(pl)) States-United  
           ‘to the United States’

However, portmanteaux are systematically unavailable for À + LE and DE + LE when a vowel follows. In this case, the periphrastic construction is selected, with the determiner appearing in reduced form.

- (7) a. (\*au/    à l’)    autre garçon  
           (to.the/ to the) other boy  
           ‘to the other boy’
- b. (\*du/    de l’)    autre garçon  
           (of.the/ of the) other boy  
           ‘of the other boy’

At this point, one might be tempted to claim that the choice between *à l’* vs. *au* is simply phonologically conditioned allomorphy (see, for instance, Carstairs 1989; Mascaró 1996; Ito and Mester 2004), with the syntax remaining constant. But as I will show in the next subsection, coordinate structure facts suggest otherwise: *à l’* is associated with two syntactic nodes, while, *au* is associated with one.

Portmanteaux are also unavailable for any preposition-determiner pair when a quantifier takes scope over the DP.

---

<sup>2</sup>Capital letters refer to the associated syntactic feature bundle; phonological realization varies.



- (8) a. à tous les garçons  
to all the(pl) boys  
‘to all the boys’
- b. (\*aux tous/ \*tous aux) garçons  
(\*to.the(pl) all/ \*all to.the(pl)) boys

## 2.2 Coordinate structures

As mentioned, the variety of French in question allows prepositions to take wide scope over coordinate structures. This is subject to the semantic restriction that the conjuncts must be interpretable as a collective or unit. As shown in the following examples, adapted from Tseng (2005:8), À can take wide scope (9a), but is blocked from doing so if any conjunct is headed by LE or LES (9b). In such cases, portmanteaux are selected; and, most importantly, wide scope is impossible (9c). The portmanteau is obligatory and every conjunct must have its own preposition (9d). The facts are comparable for DE.

- (9) a. à la mère et la fille  
to the mother and the daughter  
‘to the mother and the daughter’
- b. \*à le père et la mère  
to the father and the mother
- c. \*au père et la mère  
to.the father and the mother
- d. au père et à la mère  
to.the father and to the mother  
‘to the father and the mother’

Strikingly, the preposition and determiner need not be adjacent for a portmanteau to block its periphrastic counterpart, as shown in (10a) and (10b).

- (10) a. à la fille et (au/ \*le) fils  
to the daughter and (to.the/ \*the) son  
‘to the daughter and the son’
- b. à la fille et (aux/ \*les) fils  
to the daughter and (to.the(pl)/ \*the(pl)) sons  
‘to the daughter and the sons’

When portmanteaux are blocked, such as when LE precedes a vowel, or when a quantifier intervenes between the preposition and determiner, wide scope is again possible.

- (11) a. à la fille et l'autre fils  
to the daughter and the other son  
'to the daughter and the other son'
- b. à la fille et tous les fils  
to the daughter and all the(pl) sons  
'to the daughter and all the sons'

By comparison of examples like (11a) and (10a), we know that the competition between *à l'* and *au* is not simple phonologically conditioned allomorphy. If this were so, and the syntax of each form was identical, then (11a) should be ungrammatical, replaced in all instances by (12).

- (12) à la fille et à l'autre fils  
to the daughter and to the other son  
'to the daughter and the other son'

In other words, *à l'* and *au* are not morphosyntactic equivalents, because the former but not the latter is compatible with wide scope of the preposition.

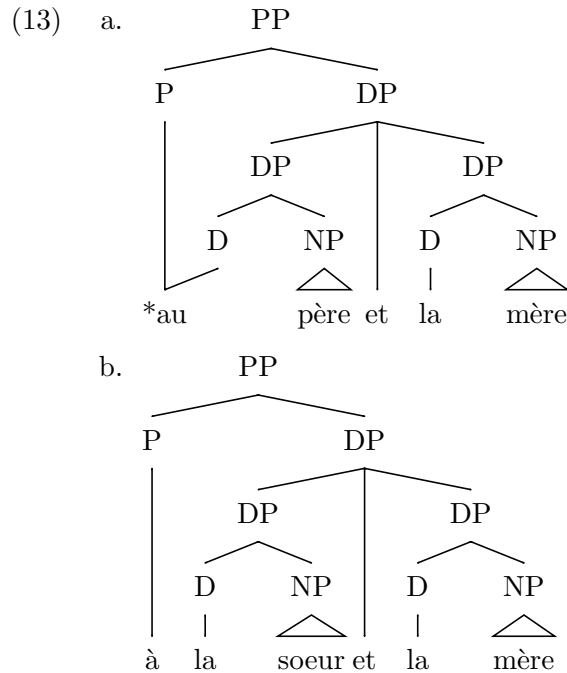
According to Miller (1992:161-162), who first noticed that wide scope was possible for some speakers under the conditions just outlined,

“there is much variation between informers as to the strength of this effect (my own intuitions on this have completely disappeared). I have chosen to ignore this problem in this study, for lack of any solid data. Note that if a substantive difference could be found between cases [where wide scope is acceptable and those in which it is not – *author*] such data would be problematic for any modular theory of grammar, since the possibility of not repeating the preposition would depend not only on whether it would contract with the following article, but also on whether it would have contracted with the article of the second conjunct if it had been repeated (i.e. *a priori* a transderivational constraint).” (Miller 1992:161-162).

Because some speakers do accept *À* and *DE* with wide scope as fully grammatical (see the Appendix for Google attestations), the analysis suggested by Miller is in fact motivated, although it is not necessarily transderivational. In SPOT, where there are no derivations in the intended sense, transderivationality is not a worry.

### 2.3 Syntactic assumptions

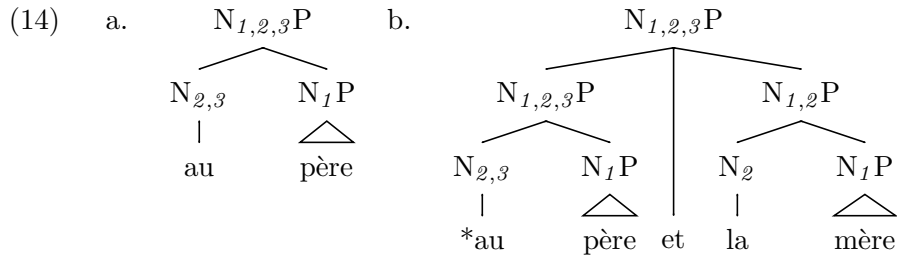
The coordinate structure facts suggest a structural analysis in which portmanteaux represent syntactic constituents, contrary to numerous lexical sharing analyses that have been proposed, such as Zwicky (1987); Sadock (1991); Stump (2001). The structure in (13a) is representative of these lexical sharing analyses, and is inconsistent with desired predictions; for while (13a) is ungrammatical, it is syntactically parallel to the grammatical (13b). If the two strings were truly syntactically parallel, then there would be no explanation for the difference in grammaticality.



However, if each portmanteau is a syntactic constituent, corresponding to a single syntactic node rather than two, then (13a) is obviously not a possible structure. Here I propose a non-movement analysis, though a

possibly viable alternative would be to assume syntactic raising or lowering, resulting in the a complex head (as in Distributed Morphology; Halle and Marantz (1993)). Opting for a movement analysis would not affect the arguments in the paper, since what is at stake is only the syntactic constituency or non-constituency of the preposition-determiner portmanteaux.

The structures I assume follow the theory of extended maximal projections (Grimshaw 1997, 2005). Each portmanteau has the category N (as an extension of the nominal extended projection). What differentiates them from simpler lexical items is that they unite two F-values, i.e., values that determine the syntactic scope of a given head within an extended projection. If we say that determiners would normally have an F-value of 2, and prepositions an F-value of 3, then French portmanteaux have F-values 2 and 3 combined. Here I label the portmanteau node  $N_{2,3}$ , but for the sake of exposition I will generally just label it P, which reflects its highest F-value.

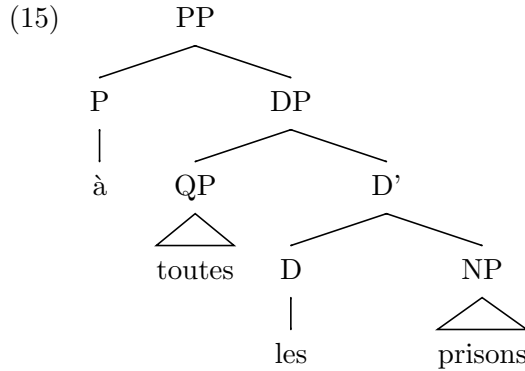


The structure in (14b) is ungrammatical simply because it conjoins phrases of different F-values – essentially, a prepositional phrase and a determiner phrase, which is not possible in any language, to the best of my knowledge.

Grimshaw (2005:53) additionally proposes that her model of Economy of Structure (Grimshaw 2001), based on Alignment constraints, could potentially select portmanteaux over periphrastics. I return to this point in the next section, and show that the Alignment constraint approach actually fails to provide a satisfactory account of the blocking effect.

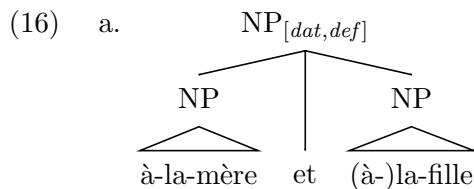
In the event that the DP takes a quantifier, a portmanteau is impossible. Within the extended projection theory, it could be argued that quantifiers have F-values that place them squarely in between determiners and prepositions within the extended nominal projection. This

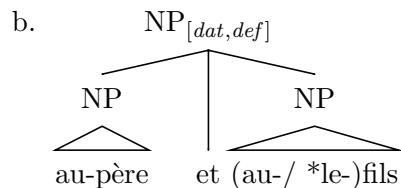
would, however, require quantifiers to be heads, despite evidence that they are phrasal: *à presque toutes les prisons* ‘to nearly all the prisons’. Whatever the final analysis may be, portmanteaux are ungrammatical here. I assume the structure to be that in (15).



I have located the quantifier in Spec, D, though it could also be adjoined. Either way, the structure suggests to us that a movement analysis for the portmanteaux would be untenable, since head movement across a specifier or an adjunct is generally tolerated in French.

A possible alternative structural analysis should be mentioned: Miller (1992) assumes that in Standard French  $\grave{A}$  and DE are not associated with syntactic nodes of their own, but are morphological case affixes realized on the first constituent of an NP; determiners, likewise, are only prefixes. If adopted for the variety of French under consideration here, this morphological approach would make it difficult to explain the difference between coordinate structures with only feminine articles, where wide scope is possible, and those with masculine or plural definite articles, where wide scope is not possible. The morphology would have to arbitrarily allow for optionality between *à la* and *la* in the expression of  $\grave{A}$  + LA (16a), but allow only *au* (and not *le*) in the expression of  $\grave{A}$  + LE (16b).





My analysis, I hope, provides a deeper explanation of this dichotomy: the difference in optionality is attributable to the availability of a portmanteau, and hence of a more economical syntactic structure. The purely morphological analysis cannot make such a connection.

### 3 The Analysis

The availability of a portmanteau makes a periphrastic preposition-determiner form ungrammatical, and in this way the syntactic structure associated with the periphrastic is blocked: *du père* (with two phrasal nodes) blocks *\*de le père* (with three). There is nothing inherently ill-formed about *\*de le père*; it is only the comparison to *du père* that rules it ungrammatical.

My analysis relies on a notion of syntactic economy which is formulated in terms of the constituent hierarchy: every projection above a head yields a violation of a constraint which I call *\*PROJECTION*. This is a reworking of an idea from Grimshaw (2001), who proposes that linear alignment of constituents within XPs can derive economy effects. I show that her proposal fails to account for the French facts.

#### 3.1 Syntactic Economy

Under my syntactic assumptions, portmanteaux require less hierarchical structure and are therefore syntactically more economical. This is the motivation for the constraint *\*PROJECT*. *EXPRESSIVITY* is essentially a faithfulness constraint, requiring that any semantic input have a morphosyntactic reflex. The definition is left intentionally vague by Kiparsky, and I follow him in this, since a more formal definition would rest on a very precise characterization of the units of semantic input.

- (17) a. *\*PROJECT*: For every lexical head, count a violation for every node projected above it.  
 b. *EXPRESSIVITY* (Kiparsky 2005): “Express meaning”.

When a portmanteau is available, so becomes a more economical structure. In (18), this portmanteau form is selected by the constraint \*PROJECT, since there is only one extra node projected above the NP, rather than two.

(18) *du gibet* ‘from the gallows’

from(the(gallows))	EXPRESS	*PROJECT
<p>a.</p> <pre>       PP      /  \     P   NP         / \     du  /  \         /    \        /      \       /        \      /          \     /            \    /              \   /                \  /                  \ /                    \ du                  gibet </pre>		*(NP)*(PP)
<p>b.</p> <pre>       PP      /  \     P   DP         / \     de  D  NP            / \         le /  \            /    \           /      \          /        \         /          \        /            \       /              \      /                \     /                  \    /                    \   /                      \  /                        \ de                        gibet </pre>		*(NP)*(DP)*(PP)!

When a portmanteau is unavailable, the more economical structure is also unavailable, as shown in (19).

(19) *de la prison* ‘from the prison’

	from(the(prison))	EXPRESS	*PROJECT
a.	<pre> graph TD     DP --&gt; D     DP --&gt; NP     D --- la[la]     NP --- prison[prison]           </pre>	*!	**
☞ b.	<pre> graph TD     PP --&gt; P     PP --&gt; DP     P --- de[de]     DP --&gt; D     DP --&gt; NP     D --- la[la]     NP --- prison[prison]           </pre>		***

In coordinate structures, the portmanteau is also correctly selected. In (20a), there are four nodes projected above each lexical head, *prison* and *gibet*. Notice that two of these nodes – the PP node and the highest DP node – are counted twice. Structure (b) may only be said to be more economical than (a) in the sense that the lexical head *gibet* is dominated by less hierarchical structure in (b) than in (a): the word count and syntactic node count are identical; hence the need for counting nodes separately for each lexical head.



(20) *de la prison et du gibet* ‘from the prison and the gallows’

from(the(prison) ∧ the(gallows))	EXPRESS	*PROJECT
<p>a.</p> <pre>       PP      /  \     P    DP         /  \   de DP et DP      /  \ /  \     D  NP D  NP       / \    / \   la prison le gibet           </pre>		8!
<p>☞ b.</p> <pre>       PP      /  \  \     PP et PP    /  \ /  \   P  DP P  NP       / \    / \   de D NP du gibet       / \   la prison           </pre>		7

Interestingly, \*PROJECT fails to make a distinction between competing coordinate structures in exactly the cases where there is observed optionality. Namely, where a portmanteau is not available in either conjunct, both a coordinated PP structure and a coordinated DP structure are grammatical. For instance, example (21) is fine with the preposition taking wide or narrow scope.

(21) *de la mère et (de) la fille*  
 from the mother and (from) the daughter  
 ‘from the mother and the daughter’

(22) *de la mère et (de) la fille* ‘from the mother and the daughter’

from(the(mother) ∧ the(daughter))	EXPRESS	*PROJECT
<p>☞ a.</p> <pre>       PP      /  \     P    DP         /  \   de DP  et  DP      /  \  /  \     D  NP D  NP       / \    / \   la mère la fille           </pre>		8
<p>☞ b.</p> <pre>       PP      /     \     PP et  PP    /  \ /  \   P  DP P  DP     / \    / \ de D NP de D NP     / \    / \  la mère la fille           </pre>		8

This indecision is a strength of the analysis. Whereas \*PROJECT allows for the observed variation, analyses measuring economy in terms of edge-alignment (see Section 4.2), or in terms of the number of morphemes used (see Section 4.3), will incorrectly select only the wide scope structure, (22a).

### 3.2 Prosody-Syntax Interaction

We have just seen how syntactic economy prefers portmanteaux over periphrastics in French. Interestingly, the phonology can in turn override that preference, thus militating for the more complex syntax. This gives us real reason to believe that the phonology, the morphology and the syntax are evaluated in parallel. My analysis is inconsistent with Golston’s (1995) claim that the phonology and morphology cannot force violations of syntactic constraints.

The crucial facts requiring strong parallelism involve the selection

of the periphrastic, and hence the more elaborate syntactic structure, in pre-vocalic context. The periphrastic sequences *de l'* and *à l'* are selected pre-vocalically, in order to satisfy ONSET, and at the expense of \*PROJECT. Here I assume LE to have a lexically listed pre-vocalic allomorph, /l/, but a vowel deletion analysis would also be possible.

(23) ONSET: Count a violation for any syllable which has no onset.

(24) *de l'asile* 'from the asylum'

from(the(asylum))		ONSET	*PROJECT
a.	<pre>       PP      /  \     P    N              /dy/  /azil/              [.dy  .a.zil.]           </pre>	*!	**
☞ b.	<pre>       PP      /  \     P    DP          /  \         D    N                  /dœ/ /l/  /azil/                  [.dœ .l  a.zil.]           </pre>		***

There is also an argument that DEP-C, another phonological constraint, must outrank \*PROJECT. While epenthetic [t] is available as a hiatus resolver in certain morphological contexts in French, it is not invoked here as a means of satisfying ONSET and thereby saving the portmanteau structure.

(25) DEP-C (McCarthy and Prince 1995): Count a violation for any epenthesized consonant.

(26) *de l'asile* ‘from the asylum’

from(the(asylum))	DEP-C	*PROJECT
<p>☞ a.</p> <pre>       PP      /  \     P    DP    /  \  /  \   /    \ D    N  /dœ/  /l/  /azil/                   .dœ  .l   a.zil.] </pre>		***
<p>b.</p> <pre>       PP      /  \     P    N    /    \   /dy/   /azil/               [.dy  .ta.zil.] </pre>	*!	**

Because this constraint interaction requires evaluation of structures in different modules, it cannot be made to work in a theory where syntax precedes or is otherwise blind to phonology.

### 3.3 Summary

In this section, I have shown that SPOT can successfully model the competition between portmanteaux and periphrastics. Syntactic economy can select a portmanteau over a periphrastic. In turn, phonology can trump the syntax in selecting a periphrastic form over a portmanteau.

## 4 Competing Analyses

I now argue that four alternative approaches fail in one of two ways: descriptive adequacy or explanatory depth. The Serial OT approach fails to produce the correct French facts, as do two alternative SPOT approaches involving different kinds of economy constraints. Distributed Morphology (Halle and Marantz 1993) is capable of producing the correct facts, but does so at too great a cost to explanation; the only work-

able analyses within that theory require an unacceptable look-ahead mechanism.

#### 4.1 Serial OT

Serial OT cannot provide a satisfactory analysis of the French facts. Constraints governing syntactic well-formedness cannot interact with constraints on phonology, and therefore only syntactically equivalent forms can be evaluated by the phonology. It is important to keep in mind that the choice between portmanteau and periphrastic is not simply a matter of phonologically conditioned allomorphy, since the competing forms are associated with different syntactic structures.

(27) a. Serial OT, step 1: Morphosyntax

from(the(asylum))		*PROJECT
☛ a.	<pre>       PP      /  \     P    DP         /  \         D    N                 /dœ/ /l/  /azil/           </pre>	***!
☞ b.	<pre>       PP      /  \     P    N            /dy/  /azil/           </pre>	**

b. Serial OT, step 2: Phonology

/dy/ /azil/	ONSET	DEP-C	IDENT-V
☛ a. [dœ.la.zil]		*	*!
☞ b. [dy.ta.zil]		*	
c. [dy.a.zil]	*!		

Since the syntactic evaluation will settle on whichever lexical items afford the greatest structural economy, it wrongly decides on the structure associated with the portmanteau, before ONSET is ever given a chance to evaluate the competitors. Hence, the wrong result emerges:

the phonology receives the portmanteau as input, and makes the best it can of that input.

It would appear, then, that Serial OT cannot account for the French facts.

## 4.2 Economy by Alignment

Another competing analysis, within SPOT, involves an edge-alignment view of syntactic economy (Grimshaw 2001, 2005), rather than a hierarchical one.

Grimshaw formulates three constraints, all militating for left-edge alignment of elements within an XP: the specifier, the head, and the complement. The ranking of the three alignment constraints first of all determines the usual order of elements within an XP, and second, constrains the amount of structure within an XP. The more elements a structure contains, the greater the number of alignment violations there will be.

- (28) a. ALIGN ( $X^0$ , L, XP, L) (HEADLEFT)  
 Count a violation for any head X which is not aligned with the left edge of XP.
- b. ALIGN(SPEC, L, XP, L) (SPECLEFT)  
 Count a violation for any specifier of X not aligned with the left edge of XP.
- c. ALIGN(COMP, L, XP, L) (COMPLEFT)  
 Count a violation for any complement of X not aligned with the left edge of XP.

Structures with more elements rack up more violations of the above constraints, as shown in (29).

(29) Not a tableau

	HEADLEFT	SPECLEFT	COMPLEFT
[Head]			
[Spec Head]	*		
[Spec Head Comp]	*		**
[Head Comp Spec]		**	*

In the case of simple prepositional phrases, COMPLEFT selects the

correct candidate, since the portmanteau structure allows for fewer complements to be out of alignment with the edge of their containing XP.

(30) *du gibet* ‘from the gallows’

	from(the(gallows))	EXPRESS	COMPLEFT
a.	<pre> graph TD     PP[PP] --- P[P]     PP --- NP[NP]     P --- du[du]     NP --- gibet[gibet] </pre>		*
b.	<pre> graph TD     PP[PP] --- P[P]     PP --- DP[DP]     P --- de[de]     DP --- D[D]     DP --- NP[NP]     D --- le[le]     NP --- gibet[gibet] </pre>		**!

Unfortunately, this ranking isn't decisive in coordinate structures (even in Standard French), since the same number of complements is out of alignment regardless whether the portmanteau or the periphrastic is selected. In each of the candidates below, three complements are out of alignment within their containing XPs, and thus neither structure is preferred over the other.

(31) *de la prison et du gibet* ‘from the prison and the gallows’

from(the(prison) ∧ the(gallows))	EXPRESS	COMPLEFT
<p>a.</p> <pre>       PP      /  \     P    DP          /  \     de  DP  et  DP          /  \ /  \         D  NP D  NP            ^    ^         la prison le gibet           </pre>		***
<p>☞ b.</p> <pre>       PP      /     \     PP  et  PP    /  \ /  \   P  DP P  NP      ^    ^   de D NP du gibet         ^      la prison           </pre>		***

Since Alignment fails to select the portmanteau in this case, there is no particularly strong reason to believe that it is responsible for the selection of portmanteaux even in simple cases. A more satisfying analysis would attribute the selection to a single principle in both competitions. And in any case, *some* principle must decide in the coordinate structure case. This can be achieved with a hierarchical measure of syntactic economy, such as that rendered by \*PROJECT.

### 4.3 Morphological Economy

Still another analysis within SPOT might be based on a morphological economy constraint, rather than a syntactic one. It is by now well-known that morphological blocking relations can hold not only between words and other potential words, but also between potential words and whole phrases or periphrastic expressions (McCloskey and Hale 1984;



Poser 1992; Sells 1998; Kiparsky 2005; Hankamer and Mikkelsen 2005). One might choose to model morphological blocking of this sort by appeal to a morphological economy constraint such as that defined in (32). This constraint attempts to give greater content to Kiparsky’s version of ECONOMY, which has the vague definition “Avoid complexity” (Kiparsky 2005:114).

- (32) ECONOMY  
 Count a violation for every maximal listeme employed.

Why listemes, rather than morphemes? First, the term *listeme* follows DiSciullo and Williams (1987), and refers to any item stored in the lexicon, whether it be a word, an affix, a phrasal idiom, or anything else that simply has to be listed. The reason I adopt this term in the formulation of ECONOMY is that we want to model the grammar such that stored lexical items – of whatever size and complexity – have preference over semantically equivalent neologisms, regardless of the number of actual morphemes involved. So, a lexicalized form like *syllabify* blocks \**syllabize*, not by virtue of the number of morphemes (since the number is equal), nor by virtue of different syntactic or semantic restrictions on the two affixes (they are the same; Plag 1999), nor even by virtue of phonological differences (\**syllabize* is in fact more faithful to the prosody of the base of affixation, *syllable*), but by virtue of the fact that *syllabify* is already stored as a unit in the lexicon, while \**syllabize*, at least for me, is not.

Why *maximal* listemes? Notice that the form *syllabify* consists of essentially three listemes: itself, *syllable* and *-ify*. The potential neologism *syllabize* consists of only two: *syllable* and *-ize*. But, in terms of maximal listemes, by which I mean the largest subpart that is listed in the lexicon, *syllabify* is more economical: it has one, while *syllabize* would again have two. In this way, newly coined forms are constrained to occur only when there is no competing form already in existence (Paul 1896; Aronoff 1976).

Selection of a portmanteau by ECONOMY is illustrated in table (33).


- (33) *du gibet* ‘from the gallows’

from(the(gallows))	EXPRESS	ECON
☞ a. <i>du gibet</i>		**
b. <i>de le gibet</i>		***!

ECONOMY prefers candidate (a), since the determiner and preposition features are expressed by a single maximal listeme, whereas in candidate (b), the same features are expressed by two separate listemes.


Selection of the periphrastic is modelled in (34). In candidate (34a), the semantic input has no morphological correspondent, thus there is a violation of EXPRESSIVENESS, providing a ranking argument for EXPRESSIVENESS  $\gg$  ECONOMY.

(34) *de la prison* ‘from the prison’

from(the(prison))	EXPRESS	ECON
a. la prison	*!	**
 b. de la prison		***

Unfortunately, the morphological analysis falters in accounting for portmanteau selection in coordinate structures. ECONOMY is not always decisive, as shown in (35).

(35) *de la prison et du gibet* ‘from the prison and the gallows’

from(the(prison) $\wedge$ the(gallows))	EXPRESS	ECON
 a. de la prison et du gibet		6
b. de la prison et le gibet		6

Here, the grammatical form employs just as many listemes, and presumably expresses exactly the same semantic content as the most salient ungrammatical competitor. ECONOMY is powerless to select the correct form. If it cannot do so here, then we need not entertain the notion that it ever selects the portmanteau over the periphrastic. The purely morphological economy analysis fails.

#### 4.4 Distributed Morphology

According to Kiparsky (2005), Distributed Morphology (DM; Halle and Marantz 1993) is unable to account for paradigms mixing both periphrastic and single-word forms. French portmanteaux fall within such a paradigm, and I in fact show in this section that DM is incapable of accounting for that paradigm, primarily for the reason that, like in Serial OT, morphosyntax precedes and is therefore blind to phonology.

First some background on the theory. DM takes word formation to be distributed among separate components of the derivation: the

Syntax, the Morphology, Vocabulary Insertion, and PF. The theory is essentially syntacticist, in that word structure is in large part built upon syntactic structure. A core tenet of the theory is that the syntax operates independently of the lexicon (or *Vocabulary*, in DM parlance), and that actual phonological exponence is provided only after all (non-prosodic) movement and manipulation of syntactic feature bundles – including lowering, fusion, fission, impoverishment, and local dislocation (for details, see Embick and Noyer 2001) – has ceased. This is known as late insertion (Anderson 1992). Upon vocabulary insertion, morphosyntactic feature bundles are replaced by phonological exponence, including a positional label (suffix, prefix, stem) and a string of phonemes/phonological features. Selection of vocabulary is determined according to the Subset Principle, as stated in (36).

(36) **Subset Principle** (Halle 1997)

The phonological exponent of a Vocabulary item is inserted into a morpheme in the terminal string if the item matches all or a subset of the features specified in the terminal morpheme. Insertion does not take place if the Vocabulary item contains features not present in the morpheme. Where several Vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

At its most extreme, DM makes available post-insertion readjustment rules, along the lines of Chomsky and Halle (1968), which allow any phonological string to be converted into any other. This tool has immense generative power, but essentially no predictive power. An example is the hypothetical conversion of *think-d* – two vocabulary items inserted into two nodes – to *though-t*, according to morphophonemic rules. Readjustment is easily the most *ad hoc* tool in the DM arsenal, basically serving as a patch when the myriad other tools fail to produce the correct forms. But if any string can be turned into any other, then there are no interesting generalizations to be made. Further, from the standpoint of acquisition, it is unclear that readjustment rules can be learned at all. They present potential difficulties far beyond anything in the derivational opacity literature. However, in most cases readjustment is unnecessary as a descriptive tool: DM already makes possible a competition between *thought* (as a vocabulary item) and *thought* – a

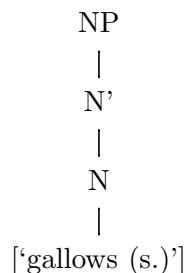
competition which the monomorphemic *thought* will of course win according to the Subset Principle. We therefore have no general use for readjustment rules, and since they are in any case far too powerful to make interesting predictions, we will abandon any analysis that relies on them.

Let us then construct a DM analysis of French portmanteaux. I assume a version of the theory in which Vocabulary Insertion applies cyclically: vocabulary items are inserted from the bottom up, and higher syntactic structure can be built following any round of insertion. Given this assumption, we could propose that nouns are inserted prior to the projection of DP and PP nodes. This would provide a phonological context to trigger the selection of a portmanteau or a periphrastic, and thus determine how much structure needs to be built above the noun.

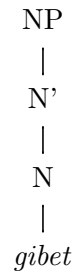
In the derivation in (37), Step 1 consists of building an NP, complete with semantic and morphosyntactic features, but without phonological exponence. Step 2 is a round of vocabulary insertion, which substitutes a concrete vocabulary item for a feature bundle. Since the inserted item is consonant initial, Step 3 is to build only as much structure as will be needed for a portmanteau, including its features. Step 4 is another round of VI, replacing those features with a concrete vocabulary item.

(37) DM analysis of portmanteau selection

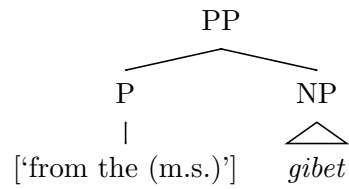
a. Step 1: Build NP



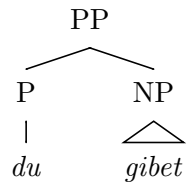
b. Step 2: Vocabulary Insertion



c. Step 3: Build one more projection (pre-C)



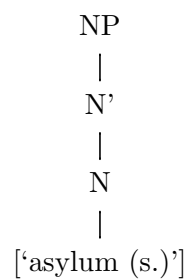
d. Step 4: Vocabulary Insertion



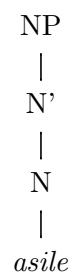
The analysis of periphrastics is similar, except that at Step 3 a pre-vocalic context triggers the addition of more syntactic structure, with the preposition and determiner features divided among two heads.

(38) DM analysis of periphrastic selection

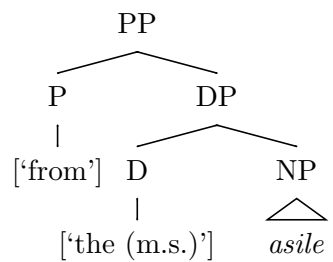
a. Step 1: Build NP



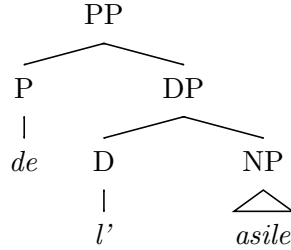
b. Step 2: Vocabulary Insertion



c. Step 3: Build two more projections (pre-V)



d. Step 4: Vocabulary Insertion



While it seems to be a descriptive success, this analysis has a gaping explanatory weakness. In the absence of a concrete vocabulary item, the fact that more syntactic structure is built pre-vocally cannot be motivated by phonology, but only by stipulation. That is, there is no information in a morphosyntactic feature bundle which can possibly be sensitive to its phonological context. Essentially, steps 3 in the derivations above require a look-ahead mechanism, in order to determine that the vocabulary items to be inserted will have the correct phonological characteristics for the given environment. Because of this need for look-ahead, the DM analysis appears to lack the desired explanatory power.

The Distributed Morphologist cannot even appeal to the last resort mechanism of readjustment. Suppose that, instead of the analysis just sketched, we assume that the sequence *à le* is simply inserted into separate P and D nodes. When this string is inserted before a consonant, a readjustment rule is triggered, resulting in *au* (phonologically, /o/); similar rules create the other three portmanteaux. Importantly, such rules cannot be synchronically phonological, since none of the morphologically blocked sequences constitutes an illicit phoneme string in French, and the resulting fused forms are not phonologically predictable on the basis of the input periphrastic forms. For instance, one would be forced to propose the derivation of *du* [dy] from *de le* /dœ læ/. Nowhere else in the grammar is a comparable readjustment attested, hence the readjustment itself will have to be vocabulary-specific. Moreover, DM allows a readjustment rule to apply only to a single terminal node. It cannot fuse two nodes into one, and therefore this *ad hoc* solution is not even available under standard assumptions. DM must therefore concede defeat.

## 4.5 Summary

In this section, I have shown that four competing analyses fail either to adequately describe the French facts (Serial OT, Economy by Alignment, Morphological Economy), or else to explain them in a satisfactory way (Distributed Morphology). Only my SPOT analysis employing a hierarchical economy constraint achieves both a correct description and a reasonable level of explanatory depth.

## 5 Restricting Phonology-Syntax Interaction

In order to accept that syntactic, morphological and phonological constraints are evaluated in parallel, we must be certain that parallel evaluation does not result in spurious typological predictions. There is an apparent danger of predicting patterns that violate the Principle of Phonology-Free Syntax (Zwicky and Pullum 1986; Pullum and Zwicky 1988; Miller et al. 1997); and even if my purpose in this paper is largely to show that the phonology can have a direct influence on the syntax, it is still clear that the PPFs is seldom violated by natural language.

I propose the fixed faithfulness ranking  $\text{FAITH-SM} \gg \text{FAITH-MP}$  to rule out these unwanted interactions. That is, the need to preserve information between the semantics and the morphosyntax must take priority over that between the morphosyntax and the phonetics, since otherwise we might predict implausible mismatches between meaning and form, as in candidate (*??e*), where a C-initial feminine noun *classe* ‘class’ is selected instead of the intended form *épée* ‘sword’. Under the fixed faithfulness ranking, ONSET can even outrank FAITH-SM without predicting these implausible mismatches: a FAITH-MP violation will always be preferable. One could even perhaps attribute this fixed ranking to the P-Map (Steriade 2002), since a phonological repair could be considered less ‘perceptually costly’ than one that obscures the intended meaning.

### 5.1 An impossible interaction

Consider a hypothetical phonology-syntax interaction which is likely to be unattested: A'-movement in satisfaction of ONSET. In (39), the word *Ann* would stand to gain an onset via A'-movement of the direct object DP *her cat*, with subsequent resyllabification.



- (39) a. Ann found her cat.  
 b. \*[Her cat]<sub>i</sub> Ann found t<sub>i</sub>.

This is a very unlikely motivation for A'-movement, but it becomes a possibility when the constraints STAY and ONSET are evaluated in parallel. If it were left to these two markedness constraints, candidate (40c) would be a possible outcome.

- (40) No A'-movement to satisfy ONSET

	'Ann found her cat'	ONS	STAY	F-SM	F-MP
☞	a. [ʔ]Ann.found.her.cat				*
	b. Bob.found.her.cat			*!	
	c. her.ca.tAnn.found		*	*!	
	d. Ann.found.her.cat	*!			

The fixed ranking FAITH-SM  $\gg$  FAITH-MP, however selects a phonological repair (here, glottal stop epenthesis) over either A'-movement or an even more drastic change, such as replacing the subject with one that has an onset. Replacing the subject clearly obscures the intended meaning, in violation of FAITH-SM. But what about A'-movement? In English, A'-movement of the object DP has the usual interpretation of topicalization. If topicalization is not intended, then A'-movement does indeed obscure the intended meaning, hence there is a violation of a FAITH-SM constraint; perhaps we might call it SPEC,C = TOPIC 'The specifier of C should be occupied by a constituent identified semantically as the topic'.

On this view, it turns out that the respective ranking of the markedness constraints, ONSET and STAY, is not crucial in determining the output. Faithfulness constraints do this work. It is my hope that the proposed fixed faithfulness ranking alone will curtail all unwanted phonology-syntax interactions in the desired way, though I have only addressed one such interaction here.

## 5.2 A previous solution: "Syntax outranks phonology"

Golston (1995), who also argues for strongly parallel evaluation, but makes no claims about the nature of the input or faithfulness constraints, provides a different solution to the general problem of restricting

phonology-syntax interactions. He claims that “syntax outranks phonology”; that is, all syntactic markedness constraints outrank all phonological ones. He additionally claims that all phonological markedness constraints outrank all morphological ones. On this view, the impossibility of A'-movement to satisfy ONSET is derived from the fixed ranking of STAY, a syntactic constraint, over ONSET, a phonological one.

Golston argues that the Phonology-Free derivational view (Zwicky and Pullum 1986; Pullum and Zwicky 1988), and the unrestricted bidirectional view of Zec and Inkelas (1990), are too extreme. He presents evidence that the phonology has the power to decide between equally grammatical but semantically equivalent syntactic structures. An example is the selection of a prenominal NP modifier or a postnominal PP modifier in English, as shown in (41). Both are syntactically acceptable, and according to Golston, have the same semantics; but a phonological constraint ANTI-HOMOPHONY rules out the form with a sequence of homophones, *the the*. As in all of Golston’s tableaux, the input is left empty.

(41) Anti-Homophony

	Syntax	Phonology
a. the <i>The Dead</i> video		*!
☞ b. the video of <i>The Dead</i>		

Golston’s case is strengthened by evidence from Greek. In Greek, center-embedded NPs are “systematically unattested when two homophonous articles would be brought together” (Golston 1995:350), but are otherwise fine.

- (42) a. [t-eèn [t-óu prosoóp-ou] phús-in]  
the-A:F the-G:M face-G:M nature-A:F  
‘the nature of the face’
- b. [t-à [t-óon póle-oon] prágmat-a]  
the-A:N:P the-G:M:P city-G:M:P affairs-A:N:P  
‘the affairs of the cities’
- c. \*[t-ées [t-ées pól-eoos] arkh-ées]  
the-G:F the-G:F city-G:F dominion-G:F  
Intended: ‘of the dominion of the city’

(42c) is unacceptable because of a high-ranking ANTI-HOMOPHONY. However, the phonology is only able to select from competing licensed

syntactic structures: a center-embedded structure and one with a post-posed complement. If these are truly syntactically equal competitors, then Golston seems to be correct in claiming that ANTI-HOMOPHONY does not force violations of syntactic constraints: blocking of the center-embedded structure is simply the emergence of the unmarked (McCarthy and Prince 1994). The evidence is consistent with, but not overwhelming support for, the fixed ranking of syntactic constraints over phonological ones.

As far as I can tell, the only syntactic constraints Golston considers are inviolable tree well-formedness conditions, which must be ranked in GEN, while the only phonological constraints he considers are violable ones. This gives us a skewed picture of the interaction between syntax and phonology. An alternative candidate in the English case, \**The Dead video the*, where the determiner branches to the right, satisfies ANTI-HOMOPHONY but is ruled out by inviolable syntactic tree-licensing conditions of English. ANTI-HOMOPHONY, on the other hand, is clearly a violable phonological constraint, given words like *bonbon* and sequences like *that that* (complementizer demonstrative). The comparison of inviolable syntactic constraints to a single violable phonological constraint hardly warrants the conclusion that all syntactic constraints outrank all phonological ones, although the broader point is well-taken that generally it is the morphology or phonology that yields under phonological pressure, and not the syntax. What is needed, though, is a comparison of violable constraints from the syntax and phonology, to determine what the possible interactions are.

We know, at the same time, that every language must have phonological constraints in GEN. In English, FTBIN, which requires that every foot have at least two moras, must be in GEN, since it is never violated. If both FTBIN and the various syntactic tree-licensing conditions specific to English are located in GEN, then that is evidence enough that syntax does not universally outrank phonology: all constraints in GEN are equally ranked. Furthermore, if the phonology and the syntax are evaluated in parallel, then FTBIN must outrank every violable syntactic constraint, for instance Grimshaw's (1997) HEADLEFT: "The head is leftmost in its projections". The fact that FTBIN and HEADLEFT are unlikely to interact much is immaterial; they do not fit Golston's fixed ranking, Syntax  $\gg$  Phonology  $\gg$  Morphology.

Further, the Spanish and French analyses above relied on the notion

that a morphological markedness constraint, CONCORD, both outranks and is outranked by various phonological constraints. If those analyses are correct in that assumption, then phonological constraints cannot outrank morphological ones absolutely, as Golston claims. And indeed, under the assumption that syntax outranks phonology, no sensible analysis of the relevant facts seems to be possible.

### 5.3 Summary

I have proposed, then that a fixed ranking, FAITH-SM  $\gg$  FAITH-MP, will rule out unattested syntax-phonology interactions. The competing theory, that syntactic markedness constraints outrank all phonological ones, fails to allow for attested cases of lexical selection in which the competitors are not morphosyntactic equals.

## 6 Conclusion

Throughout this article, I have tried to emphasize that, while forms competing for lexical selection are not always allomorphs, the winning form is never selected arbitrarily. It is always a form that differs minimally in feature specification from the morphosyntactically expected form, but which better satisfies certain phonological restrictions. In the case of true allomorphs, the minimal difference in specification is of course zero. But the difference can be greater, as I have shown. One of the major insights of OT is that the constraints of a language cannot all be equally satisfied, and therefore satisfaction of one constraint may be sacrificed for satisfaction of a more important one. In the cases I have presented here, morphological and syntactic constraints are subordinated to phonological constraints.

All of the more convincing evidence in the paper has come from French and Spanish, although other languages show comparable effects. German, for instance, has portmanteaux very similar to the French ones. English comparatives and superlatives could be argued to behave in a similar way (e.g., *hotter* blocks *\*more hot*). Further, we have seen some of Golston's (1995) evidence from Greek that syntactic constraints and phonological constraints can be ranked respectively. And there is a great deal of evidence in the literature which suggests that morphological operations are contingent upon phonological conditions.

Evidence for rankings of this sort pushes us to consider a greater level of parallelism in the evaluation of the various levels of grammatical structure. In SPOT, it is assumed that there is at most one input to a derivation: the meaning. But work in Bidirectional OT suggests that we could leave meaning open to evaluation, as well. We may then be led to a system in which there simply is no input in the standard sense. In that event, the grammar would simply be a filter on inter-representational mappings, capable of comparing candidates which have the same representation at a given level – any level. I leave that to future work.

## 7 Appendix: Google attestations

Translations refer only to the italicized portions. Italics are mine.

“La présente Convention s’applique aux politiques et aux mesures adoptées par les Parties relatives à *la protection et la promotion* [‘to the protection and the promotion’] de la diversité des expressions culturelles” – <http://unesdoc.unesco.org/images/0014/001429/142919f.pdf>

“En Angleterre, le contenu des émissions diffusées à *la télévision et la radio* [‘on the television and the radio’] est contrôlé par le Broadcasting Standard Commission (BSC)”

– [www.culture.gouv.fr/culture/actualites/communiq/aillagon/rapportBK.pdf](http://www.culture.gouv.fr/culture/actualites/communiq/aillagon/rapportBK.pdf)

“La Plateforme estime nécessaire de soutenir et de prolonger en France l’action de mouvements de la société civile palestinienne et de la société civile israélienne en faveur des droits des Palestiniens, *de la justice et la paix* [‘of justice and peace’] ainsi que le dialogue entre eux” – <http://www.france-palestine.org/article6115.html>

“Tableau d’affichage *de la musique ancienne et la musique baroque* [‘of ancient music and baroque music’]”

– <http://www.goldbergweb.com/fr/magazine/30930.php>

“...*de la rénovation urbaine et la promotion du travail manuel* [‘of urban renovation and the promotion of manual labor’]”

– <http://www.iledefrance.fr/les-dossiers/logement/des-logements-etudiants-tout-confort/>

“Les cultivateurs *de la côte équatorienne et la forêt* [‘of the equatorial coast and the forest’]”

– <http://www.tela-botanica.org/actu/article1299.html>

“La Fable *de la Cigale et la Fourmi* [‘of the grasshopper and the ant’]”

– <http://www.lafontaine.net/lesFables/afficheFable.php?id=1>

“ceci permettra aux conquérants des cîmes ‘d’observer la biodiversité et la variété’ *de la faune et la flore* [‘of the fauna and the flora’] afin d’en révéler tous les secrets”

– [http://www.temoignages.re/article.php3?id\\_article=21867](http://www.temoignages.re/article.php3?id_article=21867)

## References

- Abeillé, Anne, Olivier Bonami, Danièle Godard, and Jesse Tseng. 2003. The syntax of French *à* and *de*: an HPSG analysis. In *Proceedings of the ACL-SIGSEM Workshop on the Linguistic Dimensions of Prepositions and their Use in Computational Linguistics Formalisms and Applications*, ed. Patrick Saint-Dizier, 133–144. Toulouse: IRIT.
- Ackema, Peter, and Ad Neeleman. 2004. *Beyond morphology: Interface conditions on word formation*. New York: Oxford University Press.
- Aissen, Judith. 2003. Differential coding, partial blocking, and Bidirectional OT. In *Proceedings of BLS 29*, ed. Pawel Novak and Corey Yorquelet.
- Anderson, Stephen. 1992. *A-morphous morphology*. UK: Cambridge University Press.
- Apoussidou, Diana. 2007. The learnability of metrical phonology. Doctoral Dissertation, University of Amsterdam.
- Aronoff, Mark. 1976. *Word formation in generative grammar*. Cambridge, MA: MIT Press.
- Beard, Robert. 1988. On the separation of derivation from morphology: toward a lexeme/morpheme-based morphology. *Quaderni di Semantica* 9:3–59.
- Beaver, David, and Hanjung Lee. 2003. Input-output mismatches in OT. In *Optimality theory and pragmatics*, ed. Reinhard Blutner and Henk Zeevat, 5–7. Palgrave/Macmillan.
- Blutner, Reinhard. 1999. Some aspects of optimality in natural language interpretation. In *Papers on Optimality Theoretic Semantics*, ed. Helen de Hoop and Henriette de Swart. Utrecht: Utrecht Institute of Linguistics.
- Boersma, Paul. 1998. Functional phonology: formalizing the interaction between articulatory and perceptual drives. Doctoral Dissertation,

- University of Amsterdam, The Hague: Holland Academic Graphics.
- Boersma, Paul. 2007a. Cue constraints and their interactions in phonological perception and production. Rutgers Optimality Archive 944.
- Boersma, Paul. 2007b. Some listener-oriented accounts of h-aspiré in French. *Lingua* 117:1989–2054.
- Boersma, Paul, and Silke Hamann. 2008. The evolution of auditory dispersion in bidirectional constraint grammars. *Phonology* 25:217–270.
- Booij, Geert. 1998. Phonological output constraints on morphology. In *Phonology and Morphology of the Germanic Languages*, ed. Wolfgang Kehrein and Richard Wiese, 143–163. Tübingen: Niemeyer.
- Carstairs, Andrew. 1987. *Allomorphy in Inflection*. London: Croom Helm.
- Carstairs, Andrew. 1989. Some implications of phonologically conditioned suppletion. In *Yearbook of Morphology 1988*, ed. Geert Booij and Jaap van Marle, 67–94. Dordrecht: Foris.
- Chomsky, Noam, and Morris Halle. 1968. *The Sound Pattern of English*. New York: Harper and Row.
- DiSciullo, Anna-Maria, and Edwin Williams. 1987. *On the Definition of Word*. Cambridge, MA: MIT Press.
- Embick, David, and Rolf Noyer. 2001. Movement operations after syntax. *Linguistic Inquiry* 32:555–595.
- Gazdar, Gerald, Ewan Klein, Geoffrey Pullum, and Ivan Sag. 1985. *Generalized Phrase Structure Grammar*. Cambridge, MA, and Oxford: Harvard University Press and Basil Blackwell's.
- Golston, Chris. 1995. Syntax outranks phonology. *Phonology* 12:343–368.
- Grimshaw, Jane. 1997. Projections, heads, and optimality. *Linguistic Inquiry* 28:373–422.
- Grimshaw, Jane. 2001. Economy of structure in OT. Available on ROA.
- Grimshaw, Jane. 2005. *Words and Structure*. Stanford: CSLI Publications.
- Halle, Morris. 1997. Distributed Morphology: impoverishment and fission. In *Research in Afroasiatic Grammar: Papers from the Third Conference on Afroasiatic Languages*, ed. Jacqueline Lecarme, Jean Lowenstamm, and Ur Shlonsky, 125–149. Amsterdam: John Benjamins.
- Halle, Morris, and Alec Marantz. 1993. Distributed Morphology and

- the pieces of inflection. In *The View from Building 20: Essays in linguistics in honor of Sylvain Bromberger*, ed. Kenneth Hale and Samuel Jay Keyser, 111–176. Cambridge, MA: MIT Press.
- Hankamer, Jorge, and Line Mikkelsen. 2005. When movement must be blocked: a reply to Embick and Noyer. *Linguistic Inquiry* 36:85–125.
- Hendriks, Petra, and Helen de Hoop. 2001. Optimality theoretic semantics. *Linguistics and Philosophy* 24:1–32.
- Ito, Junko, and Armin Mester. 2004. Morphological contrast and merger: *ranuki* in Japanese. *Journal of Japanese Linguistics* 20:1–17.
- Jackendoff, Ray. 1983. *Semantics and Cognition*. Cambridge, MA: MIT Press.
- Jackendoff, Ray. 1997. *The Architecture of the Language Faculty*. Cambridge, MA: MIT Press.
- Kaplan, Robert, and Joan Bresnan. 1982. Lexical-functional grammar: a formal system for grammatical representation. In *The Mental Representation of Grammatical Relations*, ed. Joan Bresnan, 173–281. Cambridge, MA: MIT Press.
- Kenstowicz, Michael. 2005. Paradigmatic uniformity and contrast. In *Paradigms in Phonological Theory*, ed. Laura Downing, T. Alan Hall, and Renate Rafflesiefen. UK: Oxford University Press.
- Kiparsky, Paul. 2005. Blocking and periphrasis in inflectional paradigms. In *Yearbook of Morphology 2004*, ed. Geert Booij and Jaap van Marle, 113–136. Dordrecht: Springer.
- Lapointe, Steven. 2000. Stem selection and OT. In *Yearbook of Morphology 1999*, ed. Geert Booij and Jaap van Marle, 263–297. Dordrecht: Kluwer.
- Mascaró, Joan. 1996. External allomorphy as emergence of the unmarked. In *Current Trends in Phonology: Models and Methods*, ed. Jacques Durand and Bernard Laks, 473–483. Salford, Manchester: European Studies Research Institute, University of Salford.
- Mascaró, Joan. 2005. External allomorphy and lexical representation. Ms., Universitat Autònoma de Barcelona.
- McCarthy, John, and Alan Prince. 1993. Generalized alignment. In *Yearbook of Morphology 1993*, ed. Geert Booij and Jaap van Marle. Dordrecht: Kluwer.
- McCarthy, John, and Alan Prince. 1995. Faithfulness and reduplicative identity. In *University of Massachusetts Occasional Papers: Papers in Optimality Theory*, ed. Jill Berman, Laura Walsh Dickey, and Suzanne



- Urbanczyk. GLSA, UM Amherst.
- McCloskey, James, and Kenneth Hale. 1984. On the syntax of person-number inflection in Modern Irish. *Natural Language and Linguistic Theory* 1:487–533.
- Mester, Armin. 1994. The quantitative trochee in Latin. *Natural Language and Linguistic Theory* 12:1–62.
- Miller, Philip. 1992. *Clitics and Constituents in Phrase Structure Grammar*. Outstanding Dissertations in Linguistics. New York: Garland Press.
- Miller, Philip, Geoffrey Pullum, and Arnold Zwicky. 1997. The Principle of Phonology-Free Syntax: four apparent counterexamples in French. *Journal of Linguistics* 33:67–90.
- Paul, Hermann. 1896. Über die Aufgaben der Wortbildungslehre. In *Sitzungsberichte der philosophisch-philologischen und der historischen Classe der k.b. Akademie der Wissenschaften zu München*, 692–713.
- Perlmutter, David. 1998. Interfaces: explanation of allomorphy and the architecture of grammars. In *Morphology and its Relation to Phonology and Syntax*, ed. Steven Lapointe, Diane Brentari, and Patrick Farrell, 307–338. Palo Alto, CA: CSLI Publications.
- Plag, Ingo. 1998. Morphological haplology in a constraint-based morphophonology. In *Phonology and Morphology of the Germanic Languages*, ed. Wolfgang Kehrein and Richard Wiese, 199–215. Tübingen: Niemeyer.
- Plag, Ingo. 1999. *Morphological Productivity: Structural Constraints on English Derivation*. Berlin and New York: Mouton de Gruyter.
- Pollard, Carl, and Ivan Sag. 1994. *Head-Driven Phrase Structure Grammar*. Chicago: University of Chicago Press.
- Poser, William. 1992. Blocking of phrasal constructions by lexical items. In *Lexical Matters*, ed. Ivan Sag and Anna Szabolcsi, 111–130. Palo Alto, CA: CSLI Publications.
- Prince, Alan, and Paul Smolensky. 1993/2004. *Optimality Theory: Constraint Interaction in Generative Grammar*. Malden, MA: Blackwell.
- Pullum, Geoffrey, and Arnold Zwicky. 1988. The syntax-phonology interface. In *Linguistics: The Cambridge Survey*, ed. Frederick Newmeyer, volume 1, 255–280. Cambridge and New York: Cambridge University Press.
- Russell, Kevin. 1999. MOT: Sketch of an OT Approach to Morphology. URL ROA 352–1099, available on ROA.

- Sadock, Jerrold. 1991. *Autolexical Syntax: A Theory of Strong Parallel Grammatical Representations*. Chicago: University of Chicago Press.
- Samek-Lodovici, Vieri. 2005. Prosody syntax interaction in the expression of focus. *Natural Language and Linguistic Theory* 23:687–755.
- Sells, Peter. 1998. Optimality and economy of expression in Japanese and Korean. In *Japanese/Korean Linguistics 7*, ed. Noriko Akatsuka, Hajime Hoji, Shoichi Iwasaki, Sung-Ock Sohn, and Susan Strauss, 499–514. Palo Alto, CA: CSLI Publications.
- Steriade, Donca. 1999. Lexical conservatism in French adjectival liaison. In *Proceedings of the 25th Linguistic Colloquium on the Romance Languages*, ed. M. Authier, B. Bullock, and L. Reed, 243–270. Amsterdam: John Benjamins.
- Steriade, Donca. 2002. The phonology of perceptibility effects: the P-Map and its consequences for constraint organization. Ms., UCLA.
- Stump, Gregory. 2001. *Inflectional Morphology: A Paradigm Structure Approach*. Cambridge: Cambridge University Press.
- Tranel, Bernard. 1996. French liaison and elision revisited: A unified account within Optimality Theory. In *Aspects of Romance Linguistics*, ed. Claudia Parodi, Carlos Quicoli, Mario Saltarelli, and Maria-Luisa Zubizarreta, 433–455. Washington, D.C.: Georgetown University Press.
- Tseng, Jesse. 2005. Prepositions and complement selection. Loria University, France.
- Yip, Moira. 1998. Identity avoidance in phonology and morphology. In *Morphology and its Relation to Phonology and Syntax*, ed. Steven Lapointe, Diane Brentari, and Patrick Farrell, 216–246. Palo Alto, CA: CSLI Publications.
- Zec, Draga, and Sharon Inkelas. 1990. Prosodically constrained syntax. In *The Phonology-Syntax Connection*, ed. Sharon Inkelas and Draga Zec, 365–378. Chicago: University of Chicago Press.
- Zwicky, Arnold. 1987. French prepositions: no peeking. *Phonology Yearbook* 4:211–227.
- Zwicky, Arnold, and Geoffrey Pullum. 1986. The Principle of Phonology-Free Syntax: Introductory remarks. *Ohio State University Working Papers in Linguistics* 32:63–91.