PREPOSITION-DETERMINER CONTRACTIONS: AN ANALYSIS IN OPTIMALITY-THEORETIC LEXICAL-FUNCTIONAL GRAMMAR WITH LEXICAL SHARING

Michael T. Wescoat

University of California, Davis

Proceedings of the LFG07 Conference

Miriam Butt and Tracy Holloway King (Editors)

2007

CSLI Publications

http://csli-publications.stanford.edu/

Abstract

I consider preposition-determiner contractions in various European languages and offer a uniform approach using optimality-theoretic Lexical-Functional Grammar with lexical sharing. Lexical sharing allows a preposition and a determiner to share a contraction, which is a single word; this predicts that contractions are disallowed if anything intervenes between the preposition and determiner. Constraints on the syntactic relationship between the preposition and determiner are handled with the mechanisms of Lexical-Functional Grammar. Optimality-theoretic constraints predict when contractions are required in place of independent prepositions and determiners and when they are not. I suggest that this combination of mechanisms may be useful in tackling phenomena beyond preposition-determiner contractions.

1 The problem

Various European languages exhibit *preposition-determiner* (P-D) *contractions*, in which a P and a D appear to coalesce, with idiosyncratic changes in shape. For instance, in the Italian paradigm in (1), mutations of P include *con* → *co*, *di* → *de*, and *in* → *ne*; changes to D include *il* → *l* and gemination of initial *l*. The German forms in (2) show elision of *d*V from D, feeding the loss of P-final *n* before *m*.

(1)

'the'	il	lo	l'	i	gli	la	le
a 'to'	al	allo	all'	ai	agli	alla	alle
con 'with'	col	collo	coll'	coi	cogli	colla	colle
da 'from'	dal	dallo	dall'	dai	dagli	dalla	dalle
di 'of'	del	dello	dell'	dei	degli	della	delle
in 'in'	nel	nello	nell'	nei	negli	nella	nelle
su 'on'	sul	sullo	sull'	sui	sugli	sulla	sulle

(2)

'the'	das	dem	der
an 'at'	ans	am	
auf 'on, onto'	aufs		
bei 'at, with'		beim	
für 'for'	fürs		
in 'in, into'	ins	im	
von 'from, of'		vom	
zu 'to'		zum	zur

Beyond the obvious morphological issues, P-D contractions pose significant challenges for syntax. I take the position that there is enough commonality among P-D contraction phenomena across languages to warrant a uniform syntactic analysis with minor variants. I focus on three issues that such an approach must address.

1.1 Adjacency

Riemsdijk (1998:651–667) argues that P-D contractions arise where a P and a D may occur side-by-side, as illustrated by the Italian data in (3). In (3a), the P-D contraction *nel* 'in the' occupies the same position as the P-D sequence *per il* 'for the.' Italian nominal syntax places the quantifier *tutto* 'all' between P and D, as in

(3b). When *tutto* is present, the P-D contraction *nel* becomes impossible, as (3c) and (3d) show. The Greek data in (4) display the same pattern.

(3) a. **nel** gruppo ∼ **per il** gruppo 'in/for the group'
b. **in** *tutto* **il** gruppo ∼ **per** *tutto* **il** gruppo 'in/for all the group'
c. *__nel__ *tutto* gruppo
d. **tutto* **nel** gruppo

(4) a. **sta** pedhiá ∼ **ghia ta** pedhiá 'to/for the children'
b. **se** *ola* **ta** pedhiá ∼ **ghia** *ola* **ta** pedhiá 'to/for all the children'
c. *__sta__ *ola* pedhiá
d. **ola* **sta** pedhiá (Riemsdijk 1998:664 and C. Condoravdi, p.c.)

For German, Riemsdijk appeals to the idiom in (5a). Note that the uninflected adverb *gut* 'well' cannot occur between *das* 'the' and *Drittel* 'third.' Adding *auf* 'on' to this idiom yields (5b), where *gut* separates P and D. As a result, the P-D contraction *aufs* 'on the' is impossible, as shown in (5c) and (5d). The adjacency condition on P-D contraction seems quite general and thus must be captured.

(5) a. *gut* **das** Drittel (*__das__ *gut* Drittel) 'a little more than one third'
b. **auf** *gut* **das** Drittel 'on a little more than one third'
c. *__aufs__ *gut* Drittel
d. **gut* **aufs** Drittel (Riemsdijk 1998:663)

1.2 Syntactic relationships between P and D

At times P-D contractions arise in contexts where P and D are not in the 'canonical' syntactic relationship, in which D is head of P's object. German exhibits contrasts according to the relationship between P and D. In (6), where D resides in an *adjunct* of the object of P, the P-D contraction *vom* 'of the' is unacceptable. In contrast, given a colloquial dative *possessor*, as in (7a), the P-D contraction *vom* may be used as in (7b); P takes the whole possessed phrase as its object (note that it governs the dative case of *seinem* 'his'), and D lies in the object's possessor. A grammar must distinguish the acceptable syntactic relationships between P and D.

(6) a. **von** [[**dem** König treu ergebenen] Dienern]
of the king faithfully devoted servants
'of servants faithfully devoted to the King'
b. *__vom__ König treu ergebenen Dienern

(7) a. [[dem Bürgermeister] sein Gehalt]
the mayor his salary
'the mayor's salary'
b. **vom** Bürgermeister seinem Gehalt (Riemsdijk 1998:655, 658)

1.3 When to use P-D contractions

Some languages allow P-D contractions and P-D sequences as stylistic alternates, e.g. in German, *ins Kino* ∼ *in das Kino* 'to the cinema.' Other languages favor P-D contractions over independent P and D, e.g. in Italian, *nel gruppo* ∼ **in il gruppo*

'in the group,' and in Greek, *sta pedhiá* ∼ **se ta pedhiá* 'to the children' (Riemsdijk 1998:664). However, languages that demand P-D contractions still allow 'contractible' P and D to occur separately in some circumstances. For instance, in *in tutto il gruppo* 'in all the group' and *se ola ta pedhiá* 'to all the children' P and D may occur independently, due to the intervention of a quantifier. A theory must be able to account for various intricacies concerning when P-D contractions are obligatory, optional, or disallowed.

1.4 Toward a solution

I address the above issues using *optimality-theoretic Lexical-Functional Grammar* (OT-LFG, Bresnan 2000) with *lexical sharing* (Wescoat 2002). In §2, I show that the adjacency facts follow from lexical sharing. I observe in §3 that LFG offers a means of regulating the syntactic relationships between P and D with functional constraints. In §4, I discuss how OT constraints provide insights into the issue of when to use P-D contractions. I conclude in §5 with observations about other phenomena where a similar combination of mechanisms prove useful.

2 Lexical sharing and adjacency

2.1 An empirical starting point

To grasp lexical sharing, it is useful to begin with the P-D contractions of French, shown in (8). Two definite articles lack corresponding P-D contractions, giving rise to the paradigms in (9a) and (9b), where the contractions *au*, *aux*, *du*, and *des* are juxtaposed with the P-D sequences *à la*, *à l'*, *de la*, and *de l'*. Other prepositional paradigms have only separate P and D, as in (9c). To achieve uniformity within and across the paradigms in (9), one might assume that all of the highlighted expressions comprise sequences of P and D. Along these lines, pedagogical grammars traditionally relate *au*, *aux*, *du*, and *des* to pairings of free P and D; Lancelot and Arnauld describe such forms as "a contraction of the particles *de* and *à*... with the plural *les* and the singular *le*" (1969 [1660]:53), and Condillac asserts that "*de le* changes into *du*... As for *de les*, it is always transformed into *des*, *à le* into *au*, *à les* into *aux*" (1986 [1775]:219). I take these observations as motivation for the working hypothesis that *au*, *aux*, *du*, and *des* involve sequences of P and D.

(8)

'the'	le [lə]	la [la]	l' [l]	les [le(z)][1]
à [a] 'to'	au [o]	—	—	aux [o(z)]
de [də] 'of'	du [dy]	—	—	des [de(z)]

(9)

a. **au** garçon	b. **du** garçon	c. **pour le** garçon	'to/of/for the boy'
à la fille	**de la** fille	**pour la** fille	'to/of/for the girl'
à l'enfant	**de l'**enfant	**pour l'**enfant	'to/of/for the child'
aux enfants	**des** enfants	**pour les** enfants	'to/of/for the children'

[1] *Le*, *la*, and *l'* are singular; *les* is plural. *Le* is masculine, and *la* feminine; *l'* and *les* are gender-neutral. *Le* and *la* occur before consonant-initial words, and *l'* before vowel-initial ones.

I next focus on the smallest P-D contraction, *au* 'to the,' comprising the single segment /o/. Hockett remarks: "since /o/ is a single phoneme, it is hardly possible to make a cut and produce two morphs" (1947:333); i.e. discrete parts corresponding to P and D are lacking. In a generativist vein, one might attempt to derive *au* /o/ from *à le* /a lə/; however, there is no independent motivation for positing synchronic processes capable of effecting this mapping. Indeed, any such derivation would need to be constrained so as not to apply to complementizer-pronoun sequences in infinitivals, e.g. ***à le*** *faire* ∼ ****au*** *faire* 'to do it.' The only plausible relationship between *au* /o/ and *à le* /a lə/ is a historical one, mediated by the following processes (Pope 1934:154, 190, 323–325), which are no longer productive:

> *Enclisis*: Toward the beginning of the Old French period (mid ninth to early fourteenth century) unstressed masculine or neuter pronouns and articles preceded by a vowel-final word and followed by a consonant-initial word encliticize to the preceding word. E.g. *a lə mur* > *al myr*, 'to the wall.' By the end of the Old French period, most such enclitics are lost.
>
> *Vocalization*: By the early part of the twelfth century, preconsonantal *l* either is lost or vocalizes to *w*. E.g. *al myr* > *aw myr*.
>
> *Leveling*: By the latter part of seventeenth century, diphthongs are leveled to an intermediate vowel. E.g. *aw myr* > *o myr*.

From a lexicalist perspective, since *au* is properly regarded as a synchronically irreducible unit, it must be recorded in the lexicon. Having hypothesized earlier that *au* is associated with both P and D, I may now appear to be on the lip of a paradox, since a lexical item is traditionally linked to one syntactic category (Chomsky 1965:84). However, I have argued (Wescoat 2002) that some phenomena are best analyzed by assuming that lexical items may indeed be associated with multiple categories; these include noun incorporation in Hindi along with auxiliary contractions and pronominal determiners (see §5) in English. This leads to an unconventional notion about the relationship between words and constituency.

Two native relations among constituents are *containment* (e.g. a PP contains a P and a DP) and *precedence* (e.g. within a PP, the P precedes the DP). Consider now the relation between P and a word like *à* 'to.' It seems unnatural to say that P 'contains' *à*; rather this is a different type of relation, which Chametzky (1996:5) calls *instantiation* (e.g. *à* instantiates P). On this view, P contains nothing; a constituent that contains no other constituent may be described as *atomic*. I assume that each atomic constituent is instantiated by a word, which may be described as that constituent's *lexical exponent*; moreover, I assume that all words instantiate atomic constituents. Though explicit discussion of the matter is somewhat rare (see Chametzky 1996:5 and references therein, as well as Bresnan 2001:92), the majority of linguists seem to work under the tacit assumption that the instantiation relation is one-to-one. However, Gruber (1976) challenges this notion, portraying instantiation as one-to-many; thus, a word may instantiate more than one atomic constituent, or, equivalently, multiple atomic constituents may 'share' the same word as their lexical exponent. Thus, I call this state of affairs 'lexical sharing.' This view readily accommodates my two 'paradoxical' hypotheses; *au* is a lexical

item specified as instantiating both a P and a D.

I hypothesize that all the P-D contractions considered here involve lexical sharing; i.e. they originate in the lexicon as forms instantiating both a P and a D. Even though most P-D contractions are longer than *au* and arguably morphologically complex, they typically exhibit indications of a lexical source. For instance, the various morphophonological idiosyncrasies mentioned in connection with the Italian and German paradigms in (1) and (2) constitute such an indication. As for the instantiation of both a P and a D, one may adduce distributional arguments, since all P-D contractions of which I am aware exhibit some form of alternation with independent P and D. Facts about P-D contractions and coordination in §2.3 provide further evidence of the instantiation of both a P and a D.

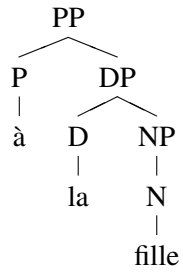
2.2 A formal model of lexical sharing

The fundamental architecture of LFG, which posits parallel *structures* related by *structural correspondences* (Kaplan 1995), provides the basis for a formal model of lexical sharing.

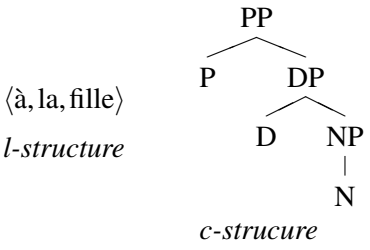
It is simplest to set the stage with an example involving no lexical sharing, like *à la fille* 'to the girl,' and approach the new proposal in steps, taking the conventional c(onstituent)-structure in (10a) as a starting point. In Kaplan's formulation, a c-structure comprises a set of *nodes* N, labeled with syntactic categories or words, and related by a *mother function* $\mathrm{M} : \mathrm{N} \rightarrow \mathrm{N}$ and a *precedence relation* $< \subseteq \mathrm{N} \times \mathrm{N}$. I propose to sever the nodes labeled with words from the c-structure, and to put those words into a separate representation called *l*(*exical*)*-structure*, as in (10b). Note that the nodes in c-structure are now labeled exclusively with syntactic categories. An l-structure, like $\langle \text{à}, \text{la}, \text{fille} \rangle$, consists of a linearly ordered set of words W.[2] Next one may identify the c-structure nodes that model atomic constituents; these are the members of the set of *terminals* T, comprising all non–mother nodes ($\mathrm{T} = \mathrm{N} - \mathrm{ran}\,\mathrm{M}$, where $\mathrm{ran}\,\mathrm{M}$ is the range of M). For instance, in (10b), T consists of the daughterless nodes labeled P, D and N. Now, to model the relation between atomic constituents and their lexical exponents, one may introduce a structural correspondence in the form of the *lexical exponent mapping* $\lambda : \mathrm{T} \rightarrow \mathrm{W}$, illustrated in (10c). To model the fact that all atomic constituents are instantiated by words and that all words instantiate atomic constituents, the function λ is total and onto; i.e. its domain is all of T, and its range is all of W. In the interest of transparency, (10c) follows a familiar mode of graphic representation for structural correspondences in LFG; parallel structures are side-by-side, and the correspondence mapping is rendered with curving lateral arrows. However, (10c) having served its purpose, I propose to adopt instead the more vertical format in (10d); elements of l-structure are spread out, without punctuation, below c-structure, and λ is rendered with descending arrows. The advantage of this scheme will become apparent.

[2] In fact, I assume that the 'words' in W are abstract elements which are 'labeled' with word-forms. Thus, for $\langle \text{à}, \text{la}, \text{fille} \rangle$, W might contain w_1, w_2, w_3, labeled *à*, *la*, and *fille*, respectively, and ordered $w_1 < w_2 < w_3$. The distinction between such 'abstract' words and their labels allows l-structures in which the same word-form occurs multiple times, as in $\langle \textbf{the}, \text{dog}, \text{chased}, \textbf{the}, \text{cat} \rangle$.

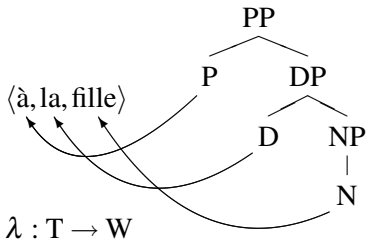
(10) a.



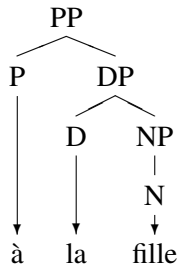
b.



c.

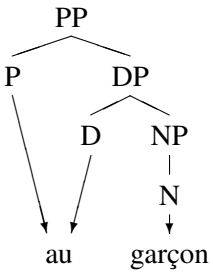


d.



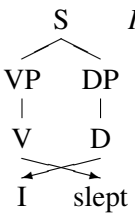
The task of representing lexical sharing is now straightforward. The mapping λ may be one-to-one, as in (10d), or it may just as easily map two or more terminals into a single word, as in (11), where the P-D contraction *au* 'to the' is the shared lexical exponent of P and D, and *garçon* 'boy' instantiates N.

(11)



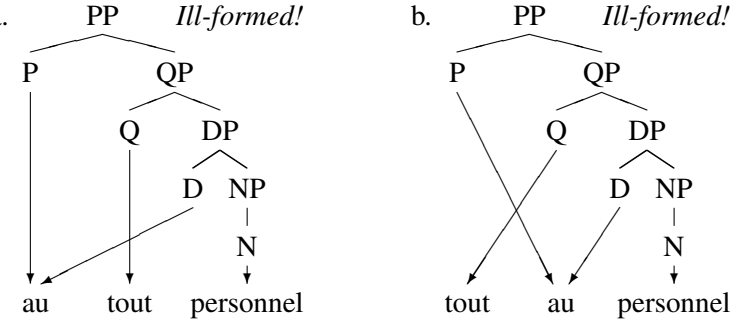
More must be said about ordering. For instance, nothing stated so far would prevent a monstrosity like (12), which appears to suggest that *I slept* may be analyzed as having verb-subject order in c-structure. Clearly there should be some consistency in ordering between c- and l-structure. This may be achieved with the introduction of the *order preservation axiom*: For all n_1 and n_2 in T, if $\lambda(n_1)$ precedes $\lambda(n_2)$, then n_1 precedes n_2. Let n_1 and n_2 be the nodes in (12) labeled D and V, respectively; $\lambda(n_1)$ precedes $\lambda(n_2)$, yet n_1 does not precede n_2, in violation of the order preservation axiom. Thus, (12) lies outside of the space of possibilities countenanced by the theory advanced here, so I have labeled the figure '*Ill-formed!*' Since both T and W are linearly ordered, and since an order-preserving mapping such as λ between linearly ordered sets is technically a *homomorphism*, I call the sort of ill-formedness found in (12) a *homomorphism violation*. One may now see the advantage of the vertical format introduced in (10d); it ensures that homomorphism violations are always rendered visually conspicuous by *crossing arrows*.

(12)



The homomorphic character of λ leads to the *homomorphic lexical integrity theorem*: Only sequences of adjacent terminals may share a lexical exponent.[3] The utility of this theorem may be seen in a class of empirical predictions that I call *intermediate constituent suppression effects*: If two atomic constituents, X and Z, share a lexical exponent, then any constituent Y which the grammar would normally constrain to occur between X and Z will be blocked. A case in point is the adjacency condition on P-D contraction discussed in section 1.1. French allows [$_{\text{PP}}$ *à* [$_{\text{QP}}$ *tout* [$_{\text{DP}}$ *le personnel*]]] 'to all the personnel,' in which the Q *tout* 'all' is constrained by the grammar to fall between P and D. If, however, P and D share the P-D contraction *au* 'to the' as their lexical exponent, the presence of Q between P and D leads to a homomorphism violation, as indicated by the crossing arrows in (13a) and (13b). In other words, a Q intermediate between P and D would violate the homomorphic lexical integrity of the P-D contraction, so it is suppressed. Thus, P-D contractions are predicted to be possible only for adjacent P and D; moreover, this is an automatic consequence of the lexical-sharing analysis proposed here.

(13)



For a grammatical formalism, I employ a context-free grammar, as in (14a), to describe c-structure and a lexicon comprising *lexical-exponence rules*, as in (14b), to describe λ. A lexical-exponence rule $w \leftarrow \text{X}_1 \cdots \text{X}_n$ (note the leftward arrow) permits λ to map n adjacent terminals labeled from left to right $\text{X}_1, \ldots, \text{X}_n$ into w.

(14)

a. $\text{PP} \rightarrow \text{P}\ \{\text{QP}|\text{DP}\}$
$\text{QP} \rightarrow \text{Q DP}$
$\text{DP} \rightarrow \text{D NP}$
$\text{NP} \rightarrow \text{N}$

b. $\text{à} \leftarrow \text{P}$ $\quad$ $\text{la} \leftarrow \text{D}$
$\text{au} \leftarrow \text{P D}$ $\quad$ $\text{le} \leftarrow \text{D}$
$\text{fille} \leftarrow \text{N}$ $\quad$ $\text{personnel} \leftarrow \text{N}$
$\text{garçon} \leftarrow \text{N}$ $\quad$ $\text{tout} \leftarrow \text{Q}$

[3]Proof: Let n_1, n_2, n_3 be terminals ordered $n_1 < n_2 < n_3$. Suppose the nonadjacent nodes n_1 and n_3 share w_1 as lexical exponent, while the intermediate node n_2 has a distinct lexical exponent w_2. Either w_1 precedes w_2, or vice versa; given the order preservation axiom, this contradictorily implies that n_2 should follow both n_1 and n_3 in the former case, and that it should precede both in the latter.

2.3 P-D contractions and coordination

Given a lexical-sharing analysis of P-D contractions, it is not surprising to find data like (15). A contraction is shared by a P and a D, with D heading the left-hand conjunct of a DP coordination, and with P taking scope over the entire coordinate structure, as depicted in (16). Lexical sharing permits the contractions to be treated as words, without necessitating any contortions of c-structure.

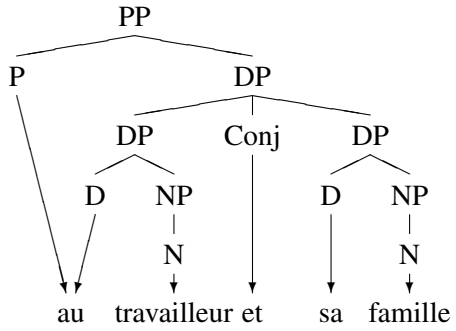
(15) a. [L]e fruit du travail revient **au travailleur et sa famille**. [Ve]
'The fruits of labor go **to the worker and his family**.'

b. [C]eux qui sont les plus informés quant **aux médicaments et leurs effets**... sont parmi les moins observants d'une thérapeutique prescrite. [Br]
'Those who are best informed with regard **to** [the] **medicines and their effects** are among the least heedful of a prescribed therapy.'[4]

c. [N]ous avons... employé tous les moyens qui pouvaient nous procurer le plus grand ordre... pour le retour **du roi et sa famille**. [Ba]
'We did everything possible to secure the utmost order for the return **of the king and his family**.'

d. La possession et la manipulation **des germes microbiens et leurs dérivés**, quelqu'en soit le but, sont strictement réglementées... [Fa]
'The possession and manipulation **of** [the] **pathogenic germs and their derivatives**, for whatever purpose, is strictly regulated.'

(16)



The analysis in (16) also applies to the Italian data in (17), where definite articles fill the position occupied by possessive pronouns in (15).

(17) a. Il problema «linguaggio e società» include questioni più particolari come quelle relative **alla storia della lingua e la storia del popolo**, ..., **alla lingua e la nazione**, e **al linguaggio e la cultura**, **alle lingue letterarie nazionali e i dialetti**, **alla normatività delle lingue e la cultura del discorso** ecc. [Fo]
'The problem of "language and society" includes more particular issues like those relating **to the history of the language and the history of the people**, **to** [the] **language and the nation**, and **to** [the] **language and** [the] **culture**, **to** [the] **national literary languages and** [the] **dialects**, **to the**

[4] Articles usually omitted from English translations are included in brackets to aid comparison.

prescriptivism of standard languages and the culture of speech, etc.'

b. La giovane evoca l'unione lontana **del padre e la madre**. [Gu]
'The girl evokes the distant union **of the father and the mother**.'

c. Il riformismo…riconosce le ingiustizie del crescente divario tra le condizioni della vita **nella campagna e la città**… [Mo]
'Reformism recognizes the injustices of the growing gap between living conditions **in the country and the city**.'

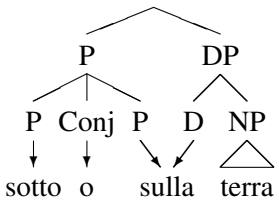
The pattern seen in (17) also arises in Catalan (A. Alsina, p.c.), Portuguese (Riemsdijk 1998:657n.), and Spanish (G.A. Broadwell, p.c.); compare (17b) with *del pare i la mare* (C), *do pai e a mãe* (P), and *del padre y la madre* (S) 'of the father and the mother.' Riemsdijk (1998:657) discusses similar German data.

Italian also allows coordinations like (18a) and (18b), pace Napoli and Nevis (1987:200). These too are readily analyzable in the lexical-sharing approach to P-D contractions, as shown in (19a) and (19b), respectively; (19b) exhibits right node raising, represented following the proposals of Maxwell and Manning (1996).

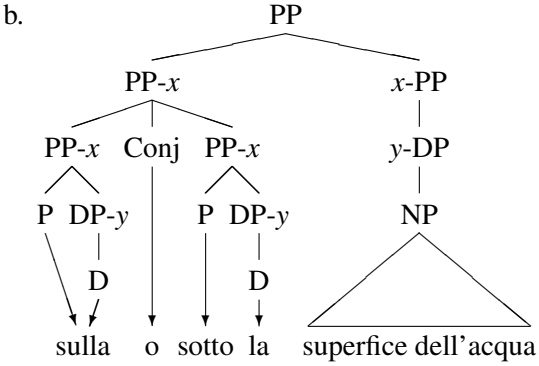
(18) a. [I]l poeta li immagina **sotto o sulla terra**… [Sc]
'The poet imagines them [=hell and purgatory] **below or on the earth**.'

b. Piante galleggianti **sulla o sotto la superfice dell'acqua**… [Ma]
'plants floating **on** [the] **or below the surface of the water**'

(19) a.



b.



Citing (20a), Abeillé et al. (2003) report that the pattern 'contraction NP "and" article NP' in (17) is not generally acceptable in French. However, *au roi et la reine* 'to the king and the queen,' in (20b), is well attested as a frozen form, presumably left over from a time when constructions like (20c) were in use (ca. 1283).

(20) a. *J'ai parlé **au père et la mère**. (Abeillé et al. 2003:142)
'I spoke **to the father and the mother**.'

b. [L]a nouvelle en vint jusqu'**au roi et la reine**. [Vo]
'News of it traveled all the way **to the king and the queen**.'

c. …en la maniere que les ventes **des bois et les prevostés et les fermes** ont esté acoustumees a baillier autrefois… [Be]
'in the manner in which it was customary to administer sales **of** [the] **woods and** [the] **provostships and** [the] **farms** in the past'

The analysis of Abeillé et al., anticipated in its broad outlines by Meigret (1888 [1550]:161–165), treats French P-D contractions as simple prepositions governing anarthrous objects. Associating determiners with NP, Abeillé et al. consider the determinerless objects to be instances of N′. They attribute the unacceptability of (20a) to coordination of unlike categories, [$_{N'}$ *père*] *et* [$_{NP}$ *la mère*] 'father and the mother.' However, the analysis relying on anarthrous objects runs into difficulties, since it predicts that the acceptable PP in (15a), *au travailleur et sa famille* 'to the worker and his family' should be no better than (20a), given that the object in (15a) would be the conjunction [$_{N'}$ *travailleur*] *et* [$_{NP}$ *sa famille*] 'worker and his family.'

The simplest explanation of the range of data seen here is that all the languages considered employ lexical sharing for their P-D contractions. This accounts for the pattern 'contraction NP "and" article NP' in Old French and other languages, as well as the pattern 'contraction NP "and" possessive NP' in Modern French, illustrated in (15), (17), and (20c). What remains to explain is the unacceptability of (20a); I return to this matter in §4.3, where I suggest that French has *reranked* a constraint, in the OT sense, giving rise to this pattern.

3 LFG and the syntactic relationship between P and D

3.1 LFG with lexical sharing and the statement of a functional constraint

Lexical sharing may be incorporated into LFG in three steps, which establish the relationship between l-structure and *f*(*unctional*)*-structure*, LFG's representation of grammatical functions. (*a*) The structural correspondence φ, originally envisioned as relating c-structure to f-structure (Kaplan 1995), is extended to include elements of l-structure in its domain; thus, $\varphi : N \cup W \rightarrow F$ is a mapping from nodes and words to members of the set F of f-structures. (*b*) For convenience, one may define the metavariable $\Downarrow$ as an abbreviation for $\varphi(\lambda(*))$ 'the f-structure of the lexical exponent of the current node [$= *$].' (*c*) Finally, the right-hand sides of lexical-exponence rules are furnished with functional annotations, as in (21).

(21) a. vom ← P
($\downarrow$ PRED) = 'OF⟨($\downarrow$ OBJ)⟩'
($\downarrow$ OBJ CASE) = DAT
$\Downarrow = \downarrow$

D
($\downarrow$ SPEC) = 'THE'
($\downarrow$ GEND) ≠ F
($\downarrow$ NUM) =$_c$ SG
($\downarrow$ CASE) =$_c$ DAT
($\Downarrow$ OBJ AF*) =$_c$ $\downarrow$

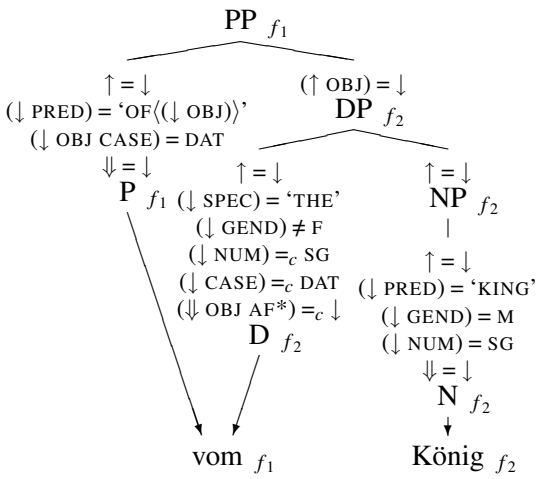
b. dem ← D
($\downarrow$ SPEC) = 'THE'
($\downarrow$ GEND) ≠ F
($\downarrow$ NUM) =$_c$ SG
($\downarrow$ CASE) =$_c$ DAT
$\Downarrow = \downarrow$

c. von ← P
($\downarrow$ PRED) = 'OF⟨($\downarrow$ OBJ)⟩'
($\downarrow$ OBJ CASE) = DAT
$\Downarrow = \downarrow$

d. König ← N
($\downarrow$ PRED) = 'KING'
($\downarrow$ GEND) = M
($\downarrow$ NUM) = SG
$\Downarrow = \downarrow$

Seen in (22) are c-, l-, and f-structures for the German *vom König* 'of the king.' (*Von dem König*, with independent P and D, would have the same c- and f-structures, except that the annotation $\Downarrow = \downarrow$ would replace ($\Downarrow$ OBJ AF*) =$_c$ $\downarrow$ in c-structure.) The annotations $\uparrow = \downarrow$ and ($\uparrow$ OBJ) = $\downarrow$ are due to universal principles (Bresnan 2001:103); the rest are provided by lexical-exponence rules in (21).

(22)



$$f_1 \begin{bmatrix} \text{PRED} & \text{`OF}\langle f_2 \rangle\text{'} \\ \text{OBJ } f_2 & \begin{bmatrix} \text{SPEC} & \text{`THE'} \\ \text{PRED} & \text{`KING'} \\ \text{GEND} & \text{M} \\ \text{NUM} & \text{SG} \end{bmatrix} \end{bmatrix}$$

Recall from §1.2 that the felicity of German P-D contractions depends on the syntactic relationship between P and D. In (23a), *vom* 'of the' is blocked because D lies in an adjunct of P's object. *Vom* is acceptable, though, when D begins a dative possessor of P's object, as in (23b). Since recursion of possessors is allowed, as in (23c), P and D stand in a *long-distance dependency*, which may be regulated using *functional uncertainty* (Kaplan and Zaenen 1995). In (21a), the annotation ⇓ = ↓ on P says that the f-structures of P and *vom* are the same; it follows that an annotation on D can refer to P's f-structure by referring to the f-structure of *vom* with ⇓. Thus, the constraint (⇓ OBJ AF*) =$_c$ ↓ on D in (21a) requires that D's f-structure be reachable from P's f-structure via a path of attributes conforming to the pattern OBJ AF*, i.e. an OBJ followed by zero or more *argument functions*, which exclude ADJUNCT (Bresnan 2001:97). The usual analysis of modifiers would assign to (23a) an f-structure along the lines of (24), where P's f-structure would be f_1, and D's would be f_3. Note that f_3 is reachable from f_1 only via the path OBJ ADJUNCT OBL, which does not conform to the pattern OBJ AF*. Thus, (24) violates the above constraint, so (23a) is ruled out. Since possessors may express arguments, comparable violations would not arise in the cases of (23b) and (23c).

(23) a. ***vom** König treu ergebenen Dienern [=(6b)]
of [[[*the king*] *faithfully devoted*] *servants*][5]
[of servants faithfully devoted to the King]

b. **vom** Bürgermeister seinem Gehalt [=(7b)]
of [[*the mayor*] *his salary*]
'of the mayor's salary'

c. **vom** Hans seiner Mutter ihrem Freund seinem Geld
of [[[[*the Hans*] *his mother*] *her friend*] *his money*]
'of Hans's mother's friend's money' (Riemsdijk 1998:659)

[5]Since *vom* straddles phrase boundaries, I have bracketed the gloss as a proxy for the German.

(24)
$$\left[\begin{array}{ll}\textsc{pred} & \text{`OF}\langle f_2\rangle\text{'} \\ \textsc{obj}\ f_1 & \left[\begin{array}{ll}\textsc{pred} & \text{`SERVANT'} \\ \textsc{adjunct} & \left\{\left[\begin{array}{ll}\textsc{pred} & \text{`DEVOTED-TO}\langle f_3\rangle\text{'} \\ \textsc{adjunct} & \left\{\left[\textsc{pred}\quad \text{`FAITHFULLY'}\right]\right\} \\ \textsc{obl} & f_3\left[\begin{array}{ll}\textsc{spec} & \text{`THE'} \\ \textsc{pred} & \text{`KING'}\end{array}\right]\end{array}\right]\right\}\end{array}\right]\end{array}\right]$$

3.2 Dative possessors and problems for some alternative views

Some analyses of P-D contractions founder on examples with dative possessors. In one such approach, Hinrichs (1986) treats contractions as simple prepositions inflected for definiteness, gender, number, and case; he assumes such prepositions select an N′ object onto which those features are copied. However, inclusion of a possessor is generally assumed to be incompatible with N′ status. Moreover, when the possessor's gender differs from that of the object which contains it, as in (25), the inflected P agrees with the possessor, even though one would expect the P's features to be copied onto the object, not onto one of its subconstituents.[6] In contrast, the agreement pattern in (25) is unsurprising if P-D contractions instantiate both a P and a D. As shown in (21a), P governs only the CASE of its OBJ(ect), leaving D to regulate its own GEND(er), NUM(ber), and CASE; if D comes to head a possessor, then the overarching object may have different features.[7]

(25) a. zur$_{fem}$ Prinzessin$_{fem}$ ihrem$_{neut}$ Palais$_{neut}$
to the princess her palace
'to the princess's palace'

b. am$_{neut}$ Auto$_{neut}$ seiner$_{fem}$ Stoßstange$_{fem}$
on the car its fender
'on the car's fender' (Riemsdijk 1998:658)

I next consider movement-based theories, which assume the *Y-model*, where derivation begins with *overt syntax* and branches into computations of *Logical Form* (LF) and *Phonetic Form* (PF). Computation of LF after the LF/PF branching is *covert*, so audible contraction must be in one of the other components.

Riemsdijk (1998:651–667) ascribes P-D contraction to D-to-P *Raising* in overt syntax. However, this seems to clash with the *Minimalist* notion that movement "takes place only when forced (Last Resort)," being "driven by morphological considerations: the requirement that some feature F must be checked" (Chomsky 1995:235, 262). It is counterintuitive to treat optional P-D contraction in German as an operation of 'Last Resort.' More problematic is the fact that, in languages like French, Greek, or Italian, P-D contraction is generally obligatory but can be blocked by an intervening quantifier, in which case P and D occur separately; for

[6] One informant rejects differing genders for possessor and possessum; others do not.

[7] The overarching object must, however, share the possessor's dative case (Riemsdijk 1998:659n.).

instance, recall the Italian ***in*** *tutto* ***il*** *gruppo* 'in all the group' from (3b). If the purpose of D-to-P Raising is to facilitate feature checking, then failure to move should prevent the relevant feature from getting checked and thereby cause the derivation to 'crash.' The fact that P and D survive on their own when not adjacent challenges the idea that their feature-checking needs cannot be satisfied without movement, leaving one to wonder how Raising could be 'forced' when P and D are side-by-side. Thus, theory-internal issues cast doubt on an analysis in overt syntax.

The remaining component is the computation of PF after the LF/PF branching, which Embick and Noyer (2001) call *Morphology*. This is, they claim, where trees acquire 'left-to-right' ordering via *linearization*. Operations in Morphology consequently fall into two types: *Lowering* precedes linearization, so it is sensitive only to hierarchical relations; *Local Dislocation* follows linearization and operates on the basis of linear adjacency. Focusing on French, Embick (2006) notes that either operation could be responsible for P-D contraction. However, neither shows much promise of handling the corresponding German data. Embick's preferred analysis uses Lowering, "the process which adjoins a head to the head of its complement" (2006:16), to merge P with D. However, Lowering fails to account for all the data; it cannot adjoin P to the D of a dative possessor, as in (23b) and (23c), since that D is not the head of P's complement. The remaining operation, Local Dislocation, merges adjacent X^0 elements. Hence, it would adjoin P to an adjacent D, and in the case of (23b) and (23c), the D in question would be that of the possessor. However, Local Dislocation would also incorrectly adjoin P to the adjacent D in (23a), even though the D in question lies inside of an adjunct. "Local Dislocation . . . is sensitive to relations of adjacency and precedence between constituents" (Embick and Noyer 2001:564), and as far as adjacency and precedence are concerned, there is nothing to distinguish the ungrammatical (23a) from the grammatical (23b) and (23c). To capture the data in (23), one must simultaneously enforce adjacency while retaining the ability to regulate the syntactic relationship between P and D, as in the analysis employing LFG with lexical sharing. By associating sensitivity to adjacency and sensitivity to hierarchical syntactic relationships with different stages of derivation, Embick's (2006) approach seems to deny itself the necessary combination of tools for these data.

4 OT and when to use P-D contractions

4.1 OT and obligatory P-D contractions

OT assumes two components, GEN(eration) and EVAL(uation); GEN enumerates a set of potential outputs called *candidates*, and EVAL selects the *optimal* candidate as final output. EVAL compares candidates with respect to a hierarchy of violable constraints. One candidate is more *harmonic* than another, if for some constraint the former incurs fewer violations than the latter, while for all higher-ranking constraints the two candidates incur equal numbers of violations. The optimal candidate is more harmonic than any other. In OT-LFG, Bresnan (2000) offers a version of OT where GEN is an LFG; I assume this LFG uses lexical sharing, as in §3.1.

Obligatory P-D contraction, as in the French ***au*** *garçon* $\sim$ ****à le*** *garçon* 'to the boy,' appears to be a form of *Poser blocking*, where a single lexical item is chosen over an equivalent multi-word construction (Poser 1992). Here I speculate about how Poser blocking might be treated as a constraint in the EVAL component of an OT-LFG. As an OT constraint, Poser blocking penalizes failures to exploit opportunities to effect economies of expression at the word level. Instances of Poser blocking often seem to reflect language-particular idiosyncrasies incompatible with the notion of OT constraints as universals. However, I suggest that this is because the universal constraint is fed by interword relationships that are particular to the lexicon of each language.

Clearly, a lexical treatment of P-D contractions must acknowledge the relation between these forms and independent Ps and Ds. Compare the lexical-exponence rule in (26a) for the French P-D contraction *au* 'to the' with the rules for *à* 'to' in (26b) and *le* 'the' in (26c). The commonalities in syntactic categories and functional specifications must be captured by some form of redundancy rules; hence, the lexicon must contain a representation of the relevant interword relations. Here I am concerned not so much with the redundancy rules as with the existence of relations between lexically shared words like *au* and 'unshared' words like *à* and *le*; as a shorthand, I write *à*, *le* $\sim$ *au* to indicate that such a relation is present.

(26)

a. au $\leftarrow$ P D
($\downarrow$ PRED) = 'TO$\langle$($\downarrow$ OBJ)$\rangle$' ($\downarrow$ SPEC) = 'THE'
$\Downarrow = \downarrow$ ($\downarrow$ GEND) $=_c$ M
($\downarrow$ NUM) $=_c$ SG

b. à $\leftarrow$ P
($\downarrow$ PRED) = 'TO$\langle$($\downarrow$ OBJ)$\rangle$'
$\Downarrow = \downarrow$

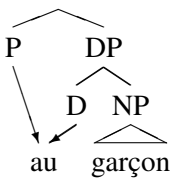
c. le $\leftarrow$ D
($\downarrow$ SPEC) = 'THE'
($\downarrow$ GEND) $=_c$ M
($\downarrow$ NUM) $=_c$ SG
$\Downarrow = \downarrow$

One application of Poser blocking (I assume there are others, some not involving lexical sharing) is fed by the lexical relation $w_1, w_2 \sim w_3$. In this instance, Poser blocking applies to sequences of terminals, n_1 and n_2, with syntactic categories such that they could be instantiated either separately by w_1 and w_2 or jointly by w_3. Empirically, it seems that the categories of n_1 and n_2 must be the most restrictive ones capable of accommodating the relevant lexical exponents; for the cases examined here, I assume the categories of preposition and definite article. Poser blocking penalizes failure to exploit the relation $w_1, w_2 \sim w_3$ to achieve economy of expression. Such a failure may take two forms, either ignoring w_3 and using w_1 and w_2 to instantiate n_1 and n_2, or using w_3 in such a way that no economy is achieved, i.e. by making w_3 the lexical exponent of one but not both of n_1 and n_2. Thus, given *à*, *le* $\sim$ *au*, one subcase of Poser blocking for French is (27).

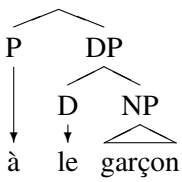
(27) For each sequence of terminals n_1, a preposition, and n_2, a definite article, count a violation if
   a. n_1 and n_2 are separately instantiated by *à* and *le*, or
   b. either n_1 or n_2 is instantiated by *au*, but not both.

Poser blocking readily predicts simple cases of obligatory P-D contractions. The LFG that enumerates candidates in GEN produces not only (28a), with lexical sharing, but also (28b) with independent P and D. In EVAL, however, (28b) violates Poser blocking—specifically, the subcase in (27a). Since (28a) incurs no violation of Poser blocking, or PBLK, it is the more harmonic candidate, as (28c) shows.

(28) a.



b.



c.

	PBLK
☞ **au** garçon	
à le garçon	*!

There are two ways to explain why usually barred combinations such as *à* 'to' and *le* 'the' arise in expressions like *à tout le personnel* 'to all the personnel.' First, Poser blocking applies to sequences of terminals, so the Q between P and D renders the constraint inapplicable. Second, the LFG in GEN cannot produce a candidate with a P-D contraction in this instance, as discussed in §2.2, so the structure with separate P and D is the only candidate, and by default the most harmonic.

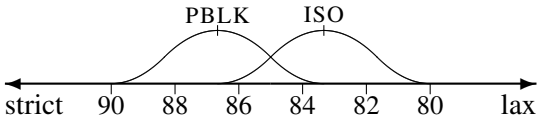
4.2 Optionality

Recall that in German, P-D contractions are optional: ***ins*** *Kino* ∼ ***in das*** *Kino* 'to the cinema.' This state of affairs can be modeled in *stochastic OT*, which would allow PBLK to stand in a reversible ranking with respect to a conflicting constraint, leading to variable outputs (Bresnan et al. 2001).

I speculate that the constraint that conflicts with PBLK is one which penalizes lexical sharing. At least in the languages considered here, most words instantiate a single atomic constituent; thus, λ tends toward being one-to-one. A one-to-one mapping between the linearly ordered sets T and W would be not just a homomorphism but an *isomorphism*. The tendency toward isomorphism can be captured with a constraint, say ISO, which is violated whenever lexical sharing arises.

In stochastic OT, a constraint's rank is a value on the continuous scale of real numbers. Upon evaluation, noise in the form a random value drawn from a normal distribution is added to each rank to produce an *effective rank*; the resulting effective ranks determine an evaluation-particular ordering of constraints. Shown in (29) is an artificial example of a scale, with bell curves representing the normal distributions of the effective ranks of PBLK and ISO. If two constraints have overlapping normal distributions, as in (29), the relative ordering of their effective ranks may vary from one evaluation to another. For instance, one evaluation may give PBLK and ISO effective ranks of 88.1 and 82.4, respectively, in which case PBLK ≫ ISO follows, as in (30a), or the relevant values may be 84.0 and 85.7, respectively, yielding ISO ≫ PBLK, as in (30b). Thus, if German has a ranking like (29), P-D contractions are predicted to be optional. For languages where P-D contractions are obligatory, PBLK outranks ISO by a greater interval, leaving no overlap between the respective ranges of their effective ranks.

(29)



(30) a.

	PBLK	ISO
in das Kino	*!	
☞ **ins** Kino		*

b.

	ISO	PBLK
☞ **in das** Kino		*
ins Kino	*!	

4.3 Coordination and across-the-board effects

I next return to the issue of Modern French P-D contractions and coordination, left unresolved in §2.3. Abeillé et al. (2003) offer the facts in (31), which collectively suggest that the Poser blocking effects discussed in this section apply *across-the-board* (ATB) to coordinate structures. Recall that Poser blocking applies to 'sequences' of terminals. ATB application of the constraint amounts to this: If the sequence overlaps the leading/trailing edge of a coordinate structure, then the portion of the sequence that extends into the coordinate structure is projected onto the beginning/end of each conjunct. All the PPs in (31) feature a P that takes scope over coordinated DPs headed by definite articles, so each case involves two 'sequences' of terminals to which Poser blocking is applicable; one sequence is the P and the D of the left-hand conjunct, while the other—the problematic sequence in (31b) and (31c)—comprises the P and the D of the right-hand conjunct. In (31b), the problematic sequence is instantiated by *au* 'to the' and *la* 'the,' violating Poser blocking—specifically subcase (27b)—because *au* fails to instantiate both of the relevant terminals. In (31c), the problematic sequence is instantiated by *à* 'to' and *le* 'the,' again violating Poser blocking—subcase (27a). In the remaining examples in (31), Poser blocking is satisfied with respect to both conjuncts. Due to the above violations, (31b) and (31c) are less harmonic than alternative candidates with coordinated PPs, as indicated in (32a) and (32b), respectively.

(31) J'ai parlé… 'I spoke…' (Abeillé et al. 2003:142)
- a. à la mère et la fille. 'to the mother and the daughter.'
- b. *au père et la mère. 'to the father and the mother.' [= (20a)]
- c. *à la fille et le garçon. 'to the girl and the boy.'
- d. à la fille et l'autre garçon. 'to the girl and the other boy.'

(32) a.

	PBLK
au père et **la** mère	*!
☞ **au** père et **à la** mère	

b.

	PBLK
à la fille et **le** garçon	*!
☞ **à la** fille et **au** garçon	

Recall from (15) that French allows analogs of (31b) with a possessive in place of the definite article of the second conjunct, as in *au travailleur et **sa** famille* 'to the worker and his family.' It appears that when Poser blocking is fed by a lexical relation like *à*, *le* ∼ *au*, the effect of the constraint is limited to sequences of prepositions and definite articles. As to why possessives in the latter position do not count, I suspect that the lexicon contains some representation of paradigms like (8), cor-

relating prepositions with definite articles, but omitting possessives and other categories, and I assume that Poser blocking constrains items figuring within the same paradigm. A more precise proposal will have to await further investigation.

Spanish offers a useful contrast, since its inventory of P-D contractions, in (33), partially parallels that of French. Despite the change from 'to' forms to 'of' forms, (34a) and (34b) are analogs of (32b) and (32c), respectively. However, the Spanish data are acceptable. This contrast follows from a difference in constraint ranking.

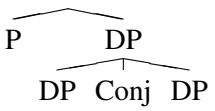
(33) [cf. (8)]

'the'	el	la	los	las[8]
a 'to'	al	—	—	—
de 'of'	del	—	—	—

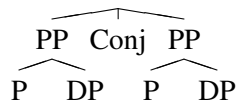
(34) a. [E]stos roles **del padre y la madre** no son exclusivos... [Bu]
'These roles **of the father and the mother** are not exclusive.'

b. Yo quería actualizar estos arquetipos **de la madre y el padre**. [Vi]
'I wanted to update these archetypes **of the mother and the father**.'

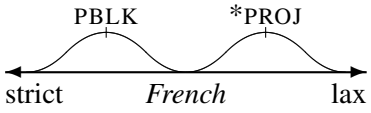
Consider a rendering of Bresnan's (2001:91) principle of *Economy of Expression* as an OT constraint 'avoid projections,' symbolized *PROJ, which is violated once for every non-X^0 node. Note that a P with a conjoined object, as in (35a), contains fewer XPs than does the equivalent conjunction of PPs, as in (35b). Thus, given competing candidates exhibiting the structures in (35a) and (35b), *PROJ favors (35a) over (35b), all other things being equal, while ATB application of PBLK sometimes picks (35b) over (35a), as has been seen in connection with (32). The consistent ATB application of PBLK seen in the French data in (31) may be guaranteed by assuming that PBLK outranks *PROJ by enough of an interval to ensure that the respective ranges of their effective ranks do not overlap, as suggested in (36a), thus yielding the tableau in (37a). In contrast, if there is an overlap, as proposed for Spanish in (36b), then depending on the evaluation, either PBLK ≫ *PROJ or *PROJ ≫ PBLK may follow, giving the results in (37b) and (37c), respectively. On those evaluations where the ranking *PROJ ≫ PBLK prevails, requiring the structure in (35a), violations of PBLK involving the second conjunct may be unavoidable, but nothing will prevent PBLK from being observed with respect to the initial conjunct.

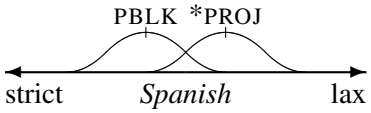
(35) a. 

n non-X^0s

b. 

n + 1 non-X^0s

(36) a. 

b. 

(37) a.

French	PBLK	*PROJ
au père et **la** mère / **à la** fille et **le** garçon	*!	6 × *
☞ **au** père et **à la** mère / **à la** fille et **au** garçon		7 × *

[8] *El* and *los* are masculine; *la* and *las* are feminine. *El* and *la* are singular; *los* and *las* are plural.

b.

Spanish	PBLK	*PROJ
del padre y **la** madre / **de la** madre y **el** padre	*!	6 × *
☞ **del** padre y **de la** madre / **de la** madre y **del** padre		7 × *

c.

Spanish	*PROJ	PBLK
☞ **del** padre y **la** madre / **de la** madre y **el** padre	6 × *	*
del padre y **de la** madre / **de la** madre y **del** padre	7 × *!	

In §2.3, I observed that Modern French differs from other languages discussed here. The available information suggests that Italian, Catalan, Portuguese, German, and Old French are like Spanish in that the ranks of PBLK and *PROJ are close enough to allow one or the other to prevail, depending on the evaluation. Modern French seems to have distinguished itself from this group by increasing the interval between the ranks of PBLK and *PROJ, so that the former is always dominant.

5 Conclusion

This study shows lexical sharing to be a useful basis for modeling P-D contractions in various languages. The contractions are treated as single words, yet they are linked to multiple elements of c-structure, yielding syntactic analyses confirmed by coordination data readily found in published sources. Lexical sharing may be incorporated into LFG, which provides effective tools for regulating the syntactic relationship between the c-structure elements associated with P-D contractions. OT extensions to LFG offer a means of predicting when P-D contractions are required, while affording insights into subtle cross-linguistic differences. The picture that emerges is one of a largely unified phenomenon with minor variations.

The proposal set out here employs a set of analytic tools that I believe may be usefully applied to other phenomena. In this regard, consider '*one*(*s*)-deletion,' discussed by Perlmutter (1970:236–237) and others, and illustrated in (38). Elsewhere (Wescoat 2002) I treat *mine* and similar *pronominal determiners* as instances of lexical sharing: *mine* ← D N. This predicts incompatibility with simple adjectives that fall between D and N as a case of intermediate constituent suppression. For many speakers, *my one* gives way to *mine* in the absence of a modifier.[9] This is suggestive of Poser blocking, requiring a single word in place of a phrase.

(38) a. **mine** b. ***my one** c. **my** blue **one** d. ***mine** blue e. *blue **mine**

Another area that may benefit from similar analytic tools concerns Danish definiteness marking. A definite suffix, e.g. *-et*, is used, unless there is a prenominal modifier, in which case an independent article is employed; see (39). If the definite suffix triggers lexical sharing, yielding *hus-et* ← D N 'the house' for example, then incompatibility with prenominal modifiers is predicted as another instance of intermediate constituent suppression. The fact that separate D and N like **det hus* 'the house' give way to suffixed forms like *hus-et* when prenominal modifiers are absent has been analyzed as Poser blocking by Hankamer and Mikkelsen (2002).

[9] C. Allen (p.c.) informs me that some speakers allow expressions like *my one*.

(39) a. hus**et** b. ***det** hus c. *store hus**et** d. **det** store hus
house-the *the house* *big house-the* *the big house*
(Sadock 1991:115)

In sum, the combination of tools arrayed here to analyze P-D contraction shows promise of offering insights into various phenomena, including some that I lack space to mention, and is consequently worthy of further investigation.

References

Abeillé, Anne, Olivier Bonami, Danièle Godard, and Jesse Tseng (2003) 'French *à* and *de*: An HPSG analysis.' In Patrick Saint-Dizier, ed., *Proceedings of the ACL-SIGSEM Workshop on The Linguistic Dimensions of Prepositions and Their Use in Computational Linguistics Formalisms and Applications*. Dordrecht: Kluwer, 133–144.

Bresnan, Joan (2000) 'Optimal syntax.' In Joost Dekkers, Frank van der Leeuw, and Jeroen van de Weijer, eds., *Optimality Theory: Phonology, Syntax, and Acquisition*. Oxford: Oxford University Press, 334–385.

(2001) *Lexical-Functional Syntax*. Oxford: Blackwell.

Bresnan, Joan, Shipra Dingare, and Chris Manning (2001) 'Soft constraints mirror hard constraints: Voice and person in English and Lummi.' In Miriam Butt, and Tracy Holloway King, eds., *Proceedings of the LFG01 Conference*. Stanford: CSLI, 13–32.

Chametzky, Robert A. (1996) *A Theory of Phrase Markers and the Extended Base*. New York: State University of New York Press.

Chomsky, Noam (1965) *Aspects of the Theory of Syntax*. Cambridge, MA: MIT.

(1995) 'Categories and transformations.' In *The Minimalist Program*. Cambridge, MA: MIT, 219–394.

Condillac, Étienne Bonnot de (1986 [1775]) *Cours d'étude pour l'instruction du Prince de Parme: Grammaire*. Stuttgart-Bad Cannstatt: Frommann-Holzboog. [Facsimile of 1st edn, Parma: Royal Stationery Office, 1775.]

Dalrymple, Mary, Ronald M. Kaplan, John T. Maxwell III, and Annie Zaenen, eds. (1995) *Formal Issues in Lexical-Functional Grammar*. Stanford: CSLI.

Embick, David (2006) *Linearization and Local Dislocation: Derivational Mechanics and Interactions*. [MS., University of Pennsylvania.]

Embick, David, and Rolf Noyer (2001) 'Movement operations after syntax.' *Linguistic Inquiry* 32, 555–595.

Gruber, Jeffrey S. (1976) 'Functions of the lexicon in formal descriptive grammars.' In *Lexical Structures in Syntax and Semantics*. Amsterdam: North-Holland, 211–367.

Hankamer, Jorge, and Line Mikkelsen (2002) 'A morphological analysis of definite nouns in Danish.' *Journal of Germanic Linguistics* 14, 137–175.

Hinrichs, Erhard W. (1986) '*Verschmelzungsformen* in German: A GPSG analysis.' *Linguistics* 24, 939–955.

Hockett, Charles F. (1947) 'Problems of morphemic analysis.' *Language* 23, 321–343.

Kaplan, Ronald M. (1995) 'Three seductions of computational psycholinguistics.' In Dalrymple et al. (1995:339–367).

Kaplan, Ronald M., and Annie Zaenen (1995) 'Long-distance dependencies, constituent structure, and functional uncertainty.' In Dalrymple et al. (1995:137–165).

Lancelot, Claude, and Antoine Arnauld (1969 [1660]) *Grammaire générale et raisonée*. Menston, Yorkshire: Scolar Press. [Facsimile of 1st edn, Paris: Pierre le Petit, 1660.]

Maxwell, John T., III, and Christopher D. Manning (1996) 'A theory of non-constituent

coordination based on finite-state rules.' In Miriam Butt, and Tracy Holloway King, eds., *Proceedings of the First LFG Conference*. Stanford: CSLI.

Meigret, Louis (1888 [1550]) *Le tretté de la grammęre françoęse*. Heilbronn: Gebr. Henninger. [1st edn, Paris: Chrestien Wechel, 1550.]

Napoli, Donna Jo, and Joel Nevis (1987) 'Inflected prepositions in Italian.' *Phonology Yearbook* 4, 195–209.

Perlmutter, David M. (1970) 'On the article in English.' In Manfred Bierwisch, and Karl Erich Heidolph, eds., *Progress in Linguistics: A Collection of Papers*. The Hague: Mouton, 233–248.

Pope, M. K. (1934) *From Latin to Modern French with Especial Consideration of Anglo-Norman*. Manchester: Manchester University Press.

Poser, William J. (1992) 'Blocking of phrasal constructions by lexical items.' In Ivan A. Sag, and Anna Szabolcsi, eds., *Lexical Matters*. Stanford: CSLI, 111–130.

Riemsdijk, Henk van (1998) 'Head movement and adjacency.' *Natural Language and Linguistic Theory* 16, 633–678.

Sadock, Jerrold M. (1991) *Autolexical Syntax: A Theory of Parallel Grammatical Representations*. Chicago: University of Chicago Press.

Wescoat, Michael T. (2002) *On Lexical Sharing*. Ph.D. dissertation, Stanford University.

Sources

[Ba] Report by Antoine Barnave, 1791, in vol. 3 of Guillaume N. Lallement, ed., *Choix de rapports, opinions et discours prononcés à la Tribune Nationale depuis 1789 jusqu'à ce jour*. Paris: A. Eymery, 1818: 129.

[Be] Philippe de Beaumanoir, vol. 1 of *Coutumes de Beauvaisis*, ed. A. Salmon. Paris: A. Picard, 1899: 41–42. (Extracted from the BFM—Base de Français Médiéval, UMR-ICAR, ENS-LSH, http://bfm.ens-lsh.fr, 30 August 2007.)

[Br] Catherine Breton, "Croyances médicamenteuses: Aller contre ou faire avec," in André Grimaldi and Julie Cosserat, eds., *La relation médecin-malade*. Paris: Elsevier, 2004: 187.

[Bu] Juan Manuel Burgos, *Antropología: Una guía para la existencia*. Madrid: Palabra, 2003: 316.

[Fa] Jean Favelier et al., *Manuel de prévention des risques associés aux techniques biologiques: Application à l'enseignement*. Paris: Elsevier, 1995: 170.

[Fo] Lia Formigari, *Marxismo e teorie della lingua: Fonti e discussioni* Messina: La libra, 1973: 357.

[Gu] Ernesto Guidorizzi, *Echi di Goethe in Italia* Venice: Cafoscarina, 1988: 87.

[Ma] Palmer Marchi et al., *Famiglie di piante vascolari italiane: 1–30*. Rome: Università degli studi La Sapienza, 2002: 10.

[Mo] Tommaso Morlino, *Le autonomie locali nella avanzata democratica*. Rome: Cinque lune, 1962: 115.

[Sc] Nicola Scarano, *Saggi danteschi*. Livorno: R. Giusti, 1905: 44.

[Ve] Jeannette Vermeersch, *Organiser les travailleuses qui occupent une place décisives dans la nation*. Paris: PCF, 1961: 39.

[Vi] Juan Villoro et al., *Certidumbre del extravío: Entrevista con Juan Villoro*. Colima: Universidad de Colima, 2001: 80.

[Vo] Voltaire, *Zadig, ou la destinée, histoire orientale*, in vol. 21 of *Œuvres complètes de Voltaire*. Paris, Garnier, 1879: 39.