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## Incorporating Contracted Auxiliaries in English

EMILY M. BENDER AND IVAN A. SAG

### 2.1 Introduction

Spencer (1991) and Sadler (1997) argue that there are two different phenomena that have been grouped together as ‘contracted auxiliaries’. On the one hand are the SYLLABIC reduced auxiliaries that are unselective in what they attach to. On the other hand, there are NONSYLLABIC reduced auxiliaries that exhibit lexical idiosyncrasy, stem allomorphy, and word-internal phonological processes. Sadler (1997:1–2) illustrates the two classes with data like those in (1)–(2):<sup>1</sup>

- (1) a. The tree’d \*/d/, /əd/ been burnt.  
 b. Bo’s flu’ll \*/l/, /əl/ be gone by tomorrow.  
 c. The kid who is laughing’ll \*/l/, /əl/ open the jar.  
 d. You and I’ve \*/v/, /əv/ tried to help her.
- (2) a. He’d /d/, \*/əd/ been waiting for you.  
 b. You’ll /l/, \*/əl/ be able to go home at two o’clock.  
 c. I’ll /l/, \*/əl/ be leaving tomorrow.  
 d. I’ve /v/, \*/əv/ taken several tables.

Spencer and Sadler both propose to treat the syllabic reduced auxiliaries (1) as clitics. Their proposal regarding the nonsyllabic reduced auxiliaries (2), on the other hand, is to treat them as affixes attached to the prior pronominal. Sadler also claims that the syllabic forms are not

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<sup>1</sup>Judgments of ungrammaticality reported in this paper are based on intuitions about ‘normal’ rate speech. In fast speech, some of the examples we starred may well occur. However, we believe that the intuitive contrasts still stand, if only in slower speech, and therefore must be accounted for.

available with non-coordinated pronoun subjects, so that in sentences like (2) only the nonsyllabic pronunciation is available.

Thus the syllabic auxiliaries in Sadler’s proposal are treated in a standard fashion—in terms of normal auxiliary verbs in the syntax, subject to a post-lexical prosodic process. For the affix-type auxiliaries, however, Sadler presents an analysis in terms of tense marking on the subject pronouns. Barron (1998) independently proposed essentially the same analysis for *have* contraction, in order to show how a lexicalist, movement-free analysis could account for facts that have been argued (Radford 1988) to motivate verb movement. For now, we will concentrate on Sadler’s analysis, but we will return to Barron’s analysis and the facts Radford cites below.

Taking advantage of the device of inside-out equations in LFG, Sadler writes lexical entries for these words as illustrated in (3) (1997:8):

- (3) you’ll: D  
 (↑PRED) = ‘PRO’  
 (↑PERS) = 2  
 ((SUBJ ↑) TENSE) = FUT

The effect of the last equation in (3a) is that when the form *you’ll* is used, it carries the information that the superordinate functional structure whose subject requirement it fulfills has the TENSE value FUT (future). This can be seen in the f-structure in (4b). The c-structure is shown in (4a). In this structure, the IP is exocentric. The LFG principle of economy of expression states that all c-structure nodes are optional and are not used unless required for expressivity or completeness. As there is no lexical item I, there is no position I.

- (4) a.
- 
- IP
- DP                      I'
- |                            |
- D                            VP
- |                            / \
- You'll                    like Sandy
- b.
- |       |                          |
|-------|--------------------------|
| PRED  | ‘like⟨ (SUBJ) (OBJ) ⟩’   |
| TENSE | future                   |
| OBJ   | [‘Sandy’]                |
| SUBJ  | [ PRED ‘PRO’<br>PERS 2 ] |

Sadler, following Spencer, cites various kinds of evidence that the combinations involving the nonsyllabic forms of the auxiliary, e.g., *you’ll*,

*we'll, you've, I'm, he'll* etc., are a morphological unit, rather than the result of a post-lexical cliticization. The arguments are sketched in (5).

- (5) a. The nonsyllabic auxiliary is highly selective about its 'host', attaching only to noncoordinate pronominal subjects.  
 b. The stem forms exhibit variation that is not predictable on purely phonological grounds, e.g.:
1. *we'll*: /wɪl/ for /wi:l/,
  2. *you've*: /yʊv/ for /yu:v/,
  3. *you're*: /yəɪ/, /yɔɪ/ for /yu:ɪ/,
  4. *we're*: /wəɪ/ for /wi:ɪ/,
  5. *they've*: /ðɪv/ for /ðe:v/,
  6. *they're*: /ðeɪ/ for /ðey:ɪ/,
  7. *I'm*: /əm/ for /a:m/
- c. the nonsyllabic auxiliary fails to take scope over a coordinate subject.

Moreover, Sadler argues that this analysis interacts with the LFG theory of blocking presented by Andrews (1990) to predict the ungrammaticality of the starred forms in (2). According to this theory, since the word *you'll* contains more information (about tense) than the word *you*, structures involving *you'll* will block otherwise equivalent structures involving *you* plus /əl/.

Note first of all that the kind of analysis proposed by Sadler and Barron could be directly incorporated within an HPSG grammar. All that would be required is the supposition of an unheaded clausal construction type similar to those familiar in the GPSG/HPSG literature (for example the one examined by Bender (2001, pp. 95–101)). Thus at the level of HPSG theory, little is at stake in the grammar of English auxiliary contraction. In this paper, however, we propose to replace the Sadler/Barron kind of analysis with a head-driven alternative in which the contracted forms are auxiliaries that have incorporated the subject pronouns. Our approach builds on Sadler and Barron's insight that these forms are best treated as single lexical items, but, as we will argue, it seems to provide a superior account of the relevant English data, once we consider functions of auxiliaries other than tense marking.

## 2.2 A Broader Perspective on the Data

Before presenting our analysis, we first consider the contraction data in a larger context. Spencer and Sadler present a picture in which the distinction between syllabic and nonsyllabic auxiliaries lines up with the distinction between lexicalized affixes and clitics. However, there are two ways in which things are actually more complicated. The first

has to do with /z/ contraction, that is, the contraction of *is* and *has*. Most speakers allow the non-syllabic form with hosts other than subject pronouns (Pullum and Zwicky 1997):

- (6) The sky over California's /z/ always blue.

Further, Pullum and Zwicky also find that there is massive variation across speakers with respect to when each auxiliary can contract all the way to its nonsyllabic form.

We take the interesting distinction within the class of contracted auxiliaries to be not syllabicity, but rather the possibility of a specific phonological rule, viz., the rule of laxing of tensed vowels that applies only to the vowels of pronouns in combination with contracted auxiliaries.<sup>2</sup> Thus while we can get the nonsyllabic forms /z/ and /v/ in both the a and b examples of (7) and (8), only the a examples allow laxing of the vowel.<sup>3</sup>

- (7) a. What do you mean he's /hi:z/, /hɪz/ already here?  
b. What do you mean B's /bi:z/, \*/bɪz/ a good grade?

- (8) a. I've /a<sup>i</sup>v/, /av/ already tried to help.  
b. You and I've /a<sup>i</sup>v/, \*/av/ already tried to help.

This distinction provides evidence for a lexical treatment of pronoun plus contracted auxiliary combinations, but not for all nonsyllabic contracted auxiliaries.<sup>4</sup>

A second problem with the way Sadler and Spencer present the data has to do with the issue of preemption. As observed throughout a hundred-year old tradition that begins with Sweet (1890) and includes Selkirk (1984), Zwicky, Pullum and others, reduced auxiliary forms do not preempt less reduced forms. Within this tradition, all of the variants in (9) and (10) are presumed to be alternate ways of saying the same thing.

- (9) a. They are /ðe<sup>i</sup> aɪ/ willing to go.  
b. They're /ðeyəɪ/ willing to go.

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<sup>2</sup>Given the many kinds of fast speech reductions that are available in English, it is conceivable that a purely phonological treatment could be developed, even for forms like /ðeɪ/ and /yʊv/. We are not aware of any such proposal, however, and accept Sadler and Simpson's conclusion that such forms are lexicalized.

<sup>3</sup>Note that the contrast involving the pronoun *I* is only interesting in dialects (like ours) that don't generally allow the pronunciation /a/ for this pronoun.

<sup>4</sup>The distribution of nonsyllabic forms beyond those that occur with pronouns is an interesting question. See Pullum and Zwicky 1997 for discussion.

- c. They're /ðe<sup>i</sup>ɪ/ willing to go.
  - d. They're /ðeɪ/ willing to go.
- (10)
- a. They will /ðe<sup>i</sup> wɪl/ do that.
  - b. They'll /ðeyəl/ do that.
  - c. They'll /ðe<sup>i</sup>l/ do that.
  - d. They'll /ðeɪl/ do that.

Sadler and Barron both claim that preemption of syllabic contracted forms such as (9b) and (10b) is a consequence of their analyses. However, it does not follow directly from the inflected-pronoun analysis alone, only from that analysis combined with a theory of blocking. What is required is a system that accounts for the distribution of the non-syllabic forms without necessarily blocking the syllabic forms in the same contexts. For varieties that do have such blocking, a separate mechanism is required. Further, it is not clear how /ðeɪl/ could block /ðeyəl/ without also blocking /ðe<sup>i</sup> wɪl/, as the three variants all have the same semantic content. Thus preemption is neither a desirable feature nor a necessary consequence of the inflected pronoun analysis.

In the following sections, we discuss an alternative to Sadler and Barron's analysis, and argue that it is better suited to the English data.

### 2.3 Analysis

As noted in the introduction, the kind of analysis suggested by Barron and by Sadler could be directly incorporated into an HPSG grammar of English with no consequences for any of the principles that are fundamental to HPSG's theory of headed constructions, i.e. the Valence Principle and the Head Feature Principle. Moreover HPSG's locality result, i.e. the locality of selection, head-marking agreement, role assignment and case assignment that is a consequence of current HPSG valence theory, would also remain unaffected by the supposition of a headless Sadler-Barron construction.

Consider the examples in (11), where a finite clause would have to consist of a tensed subject and a nonverbal element.

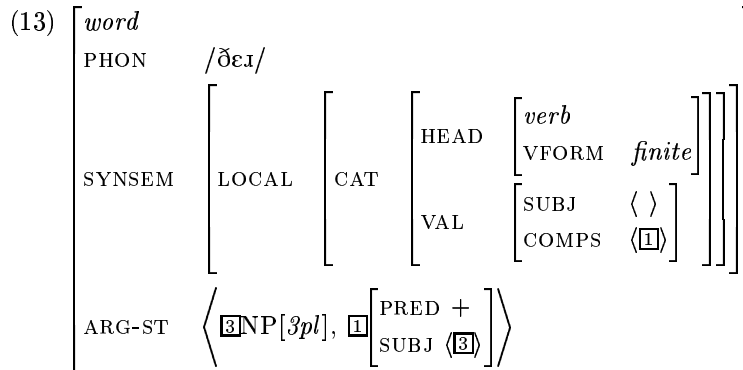
- (11)
- a. [They're [happy]].
  - b. [I'm [all ears]].
  - c. [You're [in the way]].

If these finite clauses were verbless, then a zero copula construction would allow a tensed S to be built from a 'tensed' subject and just those elements that are ordinarily selected by the lexeme *be*. But in our view, any analysis formulated along these lines (whether it is cast in HPSG, in LFG or in some other framework) will lead to unnecessary redundancy.

We argue that the lexical idiosyncrasy of nonsyllabic contracted auxiliaries can be accommodated in a way that is entirely consistent with the notion of ‘headed construction’ in current HPSG theory.

Rather than seeing the auxiliary as a tense affix on the pronoun, we propose to treat the pronoun as an incorporated subject of the auxiliary verb. That is, we posit lexical entries like (13) for *they’re* as it occurs in (12):

(12) They’re at school.



The word shown in (13) has two arguments, but it has an empty SUBJ list (we’ll come back to this) and a singleton COMPS list—i.e., it is looking to combine with just a predicative complement. It will do this via a head-complement construction, which in this case (as in the case of case-marking prepositions—see Pollard and Sag (1994), ch. 9) builds a saturated phrase (i.e., a saturated clause).<sup>5</sup>

The class of lexical entries that our analysis requires is small, but perhaps the regularity is worthy of a Lexical Rule. The Pronoun Incorporation Lexical Rule presented here takes two lexical entries as input, and provides as output a third entry that combines information from

<sup>5</sup>As Bob Levine points out to us, this kind of lexical entry might also be useful in dealing with the well-known agreement puzzle illustrated in (i)-(ii):

- (i) \*There is (believed to be) five people in the elevator.
- (ii) There’s (believed to be) five people in the elevator.

That is, if *there’s* is an independent lexical item, it can simply not require the normal number agreement that follows in (i) from the lexical properties of *is*.

both inputs.<sup>6,7</sup>

(14) Pronoun Incorporation LR:

$$\left\langle \left[ \begin{array}{l} word \\ PHON \langle [1] \rangle \\ SS|LOC [3]pr-local \end{array} \right], \left[ \begin{array}{l} word \\ PHON \langle [2] \rangle \\ HEAD [4] \left[ \begin{array}{l} verb \\ AUX + \\ VFORM fin \end{array} \right] \\ ARG-ST [5] \end{array} \right] \right\rangle \Rightarrow \left[ \begin{array}{l} PHON \quad FPI([1],[2]) \\ SUBJ \quad \langle \rangle \\ HEAD \quad [4] \\ ARG-ST \quad [5] \left\langle \left[ \begin{array}{l} aff \\ LOC [3] \end{array} \right], \dots \right\rangle \end{array} \right]$$

The LR output describes an auxiliary verb whose SUBJ list is empty, and whose phonological form is determined from the phonological forms of the inputs according to the multi-valued function sketched in (15).

(15)

$\phi_1$	$\phi_2$	$FPI(\phi_1, \phi_2)$
wi:	wɪl	wɪl
wi:	aɪ	wəɪ
yu:	hæv	yʊv
yu:	aɪ	yəɪ, yɔɪ
ðe <sup>1</sup>	hæv	ðɪv
ðe <sup>1</sup>	aɪ	ðeɪ
a <sup>1</sup>	æm	am

Finally, this function is simply undefined for any auxiliary verb form lacking a nonsyllabic (or idiosyncratic nonsyllabic) reduced form.

We have represented the phonological facts in terms of a function, but other analyses are compatible with the syntactic aspects of our analysis (viz., the SUBJ, HEAD, and ARG-ST values). In particular, one might consider positing a phonological rule of vowel laxing which applies to this class of words.

In the LR in (14), the first argument of the output has its LOCAL value determined by the pronominal input (*pr-loc* is the type of LOCAL

<sup>6</sup>We thank Arnold Zwicky for suggestions that led us to this analysis.

<sup>7</sup>In order to translate this lexical rule into a purely type-based analysis, some way must be found to have derivational types make reference to two types at the same time.

value assigned to pronominals by Abeillé et al. (1999)), yet that argument is also specified as *aff*, which is a subtype of *noncan(onical)* (in the sense of Miller and Sag (1997)). In this analysis, the incorporated subject is similar to so-called ‘clitic’ pronouns in French, which Miller and Sag have argued are, in fact, affixal. On our approach, the first argument of the LR output is prevented from appearing on the output’s COMPS list by the fact that it is *noncan*. This effect is achieved because the Argument Realization Principle (shown in (16)) allows for *noncan* arguments that appear on the ARG-ST but not the COMPS list, and the SYNSEM values of all signs must be *canon(ical)* (as ensured by (17)):

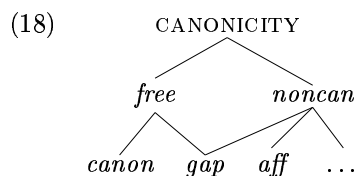
(16) Argument Realization Principle:

$$word \Rightarrow \left[ \begin{array}{ll} \text{SUBJ} & \boxed{1} \\ \text{COMPS} & \boxed{2} \ominus \text{list}(\textit{noncan}) \\ \text{ARG-ST} & \boxed{1} \oplus \boxed{2} \end{array} \right]$$

(17) Principle of Canonicity:

$$sign \Rightarrow \left[ \text{SYNSEM} \quad \textit{canon} \right]$$

If we said nothing more, the ARP would allow arguments to be freely instantiated as *aff* as they may be freely instantiated as *gap*, another subtype of *noncan*. One way to avoid this undesirable consequence (free incorporation of any argument) is to posit the subhierarchy in (18), and constrain the argument structures of lexemes as in (19).



$$(19) \textit{lexeme} \Rightarrow \left[ \text{ARG-ST} \quad / \quad \text{list}(\textit{free}) \right]$$

Thus all of the *synsems* on a lexeme’s argument structure are specified to be *free* (*gap* or *canon*) by default. Only when this default is specifically overridden, as in the lexical rule’s specifying the first element as *aff*, can they be of another type.<sup>8</sup>

<sup>8</sup>The ‘...’ under *noncan* in (18) signify that there may be other types of non-

The motivation for these concerns about ARGUMENT-STRUCTURE is binding theory. Since the pronominal inputs to the LR all bear agreement information, the first element on the argument structure will also bear this information. This allows binding theory violations like (20) to be ruled out in a systematic fashion.

(20) \*I've seen yourself.

If the incorporated subject did not appear on the ARG-ST list, then the analysis would make the wrong predictions about the binding facts.

There are other properties of these auxiliaries that are of interest, for example, their limited participation in Verb Phrase Ellipsis:

(21) a.\*They're not tall, but I'm.  
b. They're tall, but I'm not.

The same pattern appears with the non-lexicalized contracted auxiliaries (22) and the silent copula in African American Vernacular English (AAVE) (23) (Bender 2001).

(22) a.\*Kim isn't coming, but the student I met's.  
b. Kim's coming, but the student I met's not.

(23) a.\*The say he('s) wild and he  $\phi$ .  
b. They say they're best friends and shit but they not.

Bender's 2001 account of the AAVE facts involves a constraint on the COMPS value of the silent auxiliary which entails that its complements can be elided only if some complement is canonically expressed. Given our account of contracted forms like *I'm* as verbal, and therefore as selecting their complements, this account can be extended to the lexicalized (as well as non-lexicalized) contracted auxiliary forms.

## 2.4 Comparison

### 2.4.1 Similarities

Our account makes many of the same predictions as Sadler's:

- The restricted distribution of idiosyncratic nonsyllabic reduced auxiliaries is accounted for.
- Only the non-idiosyncratic reduced auxiliary occurs with a coordinate subject (this is the phonologically reduced form of the

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canonical synsoms. In particular, *PRO*, the type assigned to controlled subjects may be of type *noncan* (but not *free*) in English. In a general pro-drop language, *PRO* would be *noncan* and *free*.

auxiliary without incorporation). On our analysis, this is because such forms as (24) would involve the coordination of a noun (*you*) and a verb (*I've*), which is generally disallowed in coordination.

(24)\*You and I've /av/ already tried to help Kim.

Our account also makes the same predictions as Barron's with respect to Radford's (1988) putative argument in favor of traces. In brief, Radford's argument runs as follows: *Have* can reduce to /v/ attached to a preceding pronoun as in (25).<sup>9</sup>

(25) You've /yu:v/ won.

However, in cases like (26b) *have* contraction is blocked, presumably because it cannot apply across the gap left by the gapping of *could*.<sup>10</sup>

- (26) a. I could have been playing tennis, and *you could have* been playing football.  
 b. = I could have been playing tennis, and *you φ have* been playing football.  
 c. ≠ I could have been playing tennis, and *you've* been playing football.

Similarly, contraction is not possible when the pronoun and *have* have been brought together by inversion:<sup>11</sup>

(27) Would *you have*/\**you've* wanted to come with me?

Radford argues that this shows that there is also some empty element between *you* and *have* in (27), presumably the trace left by verb movement. Our account of these facts is essentially the same as Barron's: the contracted form involves finite *have*, and in both (26b) and (27) *have* is non-finite.

Sadler and Barron cite preemption (e.g., blocking of the syllabic form as in (2)) as a further prediction of their analyses. As noted above, this is not in fact a desirable consequence. However, preemption follows not

<sup>9</sup>In fact, this applies only to vowel-final pronouns, as Radford and Barron note.

<sup>10</sup>Examples from Radford 1988:408.

<sup>11</sup>Example from Barron 1998:224.

from the specific analysis of lexical items such as *you've*, but from a theory of blocking that allows such items to preempt phrasal counterparts. That is, the theory of blocking would work in exactly the same way with the lexical entries that we have posited. Thus, rather than differentiating between the two types of lexicalist analysis, this issue poses a problem for Andrews's (1990) theory of blocking (which is criticized on entirely independent grounds by Blevins (1995)).

#### 2.4.2 Differences

We have seen that our analysis makes much the same predictions as Sadler's or Barron's for the data that they consider. The primary difference between the two analyses lies in which element is the head of the sentence. Under the inflected-pronoun analysis, the tense inflection is treated as a morpheme attaching to a noun that does not head the sentence, though the inflection contributes to the outermost level of the sentence's f-structure projection. Under our subject-incorporation analysis (which also rejects the morpheme-based view of morphology assumed by Barron and Sadler), the fused lexical element is a verb that heads its clause. In this section, we will argue that that is the preferable state of affairs for English because English auxiliaries (contracted and non-contracted) are more than just tense/aspect markers.

First we should note that Barron briefly considers the issue of which node in the c-structure the inflected pronouns belong to. She argues that placing them in I would be "tantamount to claiming that this phenomenon of Standard English is an instance of pro-drop" and that "the inflected pronoun and the VP can be interrupted by conventional IP adverbials, such as *probably*, etc." (1998:240) First, no argument is offered for why this phenomenon should not be identified with pro-drop in other languages. Secondly, if *probably* can occur after contracted *have*, it can also appear after full-form *have*, and so has no bearing on the issue.

- (28) a. I've probably seen it.  
b. I have probably seen it.

Turning now to the syntactic functions of English auxiliaries, the first piece of evidence for subject incorporation comes from the morphological dependency between auxiliaries and their complement VPs. For example, as is well known, *have* cooccurs with past participles and *will* with base form verbs. The same is true of the contracted forms /v/ and /l/.

- (29) a. You have/you've been there.  
b.\*You have/you've be there.  
c. You will/you'll go there.

d.\*You will/you'll gone there.

That is, in addition to providing tense/aspect information, /v/ and /l/, like *have* and *will*, select complements with a particular morphological form.

Contraction of *be* presents an even more interesting case. *Be*, including contracted forms, can appear in at least the following valence patterns:

- (30) a. **As a raising verb with a predicative complement:**  
 They're doctors/in a meeting/busy all the time.  
 They're likely to be available.
- b. **In existentials of various types:**  
 There's a unicorn in the garden.  
 There's no such thing as unicorns.  
 There're two good reasons to believe that.
- c. **In identity sentences:**  
 You're the one who painted the barn.
- d. **In *it*-clefts:**  
 It's Kim that Sandy saw eat the cake.
- e. **In various collocations and idiomatic constructions:**  
 It's because they refused to do it.  
 It's just that things won't be the same.

Two things can be concluded from this evidence: First, given that any valence pattern of *be* that can have a pronoun subject is possible with contracted *be*, this regularity should be captured somehow within an adequate grammar.<sup>12</sup> Our lexical rule, which creates incorporated verb forms by fusing pronouns to verb forms, appears to be more natural from the perspective of English grammar, which has a whole class of lexical rules that map auxiliary verbs into other, somewhat modified, auxiliary verbs. The Barron/Sadler alternative would appear to require a lexical rule that creates nominal affixes from inflected verb forms, a type of rule which is otherwise unparalleled in English grammar. Such observations are at best suggestive, however, as both lexical rules are technically feasible.

Second, we conclude that auxiliaries in English serve syntactic functions beyond tense marking. They impose morphological constraints on

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<sup>12</sup>Note that even expletive-selecting uses of *be* exhibit irregular forms, e.g., (i).

(i) There're (/ðe:ɪ/) five reasons to be suspicious.

the main verb and in certain cases (notably, the verb *be*) license a range of valence patterns, including patterns with multiple complements.

In HPSG, these properties motivate the treatment of auxiliaries as the head of the sentence. In LFG the notion of head is relativized to the different levels of structure recognized within the framework. At c-structure, the head (if there is one) of a constituent is the element that determines the category of the constituent, according to X-bar theory. At f-structure, the head is the element that contributes the PRED value. The equations that relate c-structures to f-structures generally put the heads in correspondence, but exceptions are possible (e.g., in the case of exocentric c-structure constituents).

The additional level of m-structure proposed by Butt et al. (1996) provides a way of representing morphological dependencies that is independent of other aspects of head-dependent structure. This opens up the possibility that certain elements may place morphological restrictions on other words in the sentence but otherwise show no head-like properties. In fact, this is precisely what Butt et al. claim to be the case for auxiliaries in English, French and German. Their analysis implies a c-structure rule such as the following:

$$(31) \quad \text{VP} \rightarrow \begin{array}{cc} \text{AUX} & \text{VP} \\ \uparrow=\downarrow & \uparrow=\downarrow \\ \mu \text{ M}^* = \mu^* & (\mu \text{ M}^* \text{ DEP}) = \mu^* \end{array}$$

The first line of equations establishes that the mother and both daughters correspond to the same f-structure. The second establishes that the mother and the AUX daughter correspond to the same m-structure, in which the m-structure corresponding to the VP daughter is the value of the feature DEP(endent). The auxiliaries are lexically specified so as to contribute TENSE information to f-structure and to select for dependents of the appropriate form in m-structure. Thus, if English auxiliaries only provide tense information and a morphological dependency, there is no requirement that they be c- or f-structure heads.

However, as argued above, auxiliaries do not only impose morphological dependencies on their arguments. In certain cases (existentials, identity sentences, etc.) it is clear that they license the occurrence of those arguments. In LFG terms, this means that the arguments of the auxiliary bear grammatical functions. But grammatical functions can only be licensed by a PRED value. Therefore, auxiliaries, contracted or otherwise, must be able to contribute PRED values, i.e., they must be able to head f-structures.

Now, following the way that Sadler and Barron use Nordlinger's

(1998) Principle of Morphological Composition to enable tense inflection to contribute information to the higher f-structure, one could in principle do the same thing with PRED information. For example, the suffix /z/ on *there's* could have an entry like this:

- (32) ((SUBJ ↑) TENSE) = PRES  
 ((SUBJ ↑) PRED) = 'be⟨ XCOMP ⟩(SUBJ)(OBJ)'  
 (↑FORM) = there  
 ...

Thus it is technically feasible to account for all of the head properties of contracted auxiliaries without assigning them to a head position in c-structure. In the absence of a precise proposal, however, this possible alternative is difficult to evaluate.

## 2.5 Conclusion

It is not surprising that the idiosyncrasy of the finite auxiliaries *have* and *be* can be handled in more than one way in HPSG. Much the same is true of other frameworks. Indeed the subject-incorporation analysis put forth here could also, as far as we can see, be directly expressed in LFG.

Work in LFG is exploring various hypotheses about headedness, many of which embody a relaxed notion of locality. For example, there is nothing in current LFG theory that prevents one from positing the existence of a lexical item that selects for functional information at a particular arbitrary depth (e.g., verbs specified as in (33)).

- (33) a. (↑XCOMP COMP FORM) = fin  
 b. (↑COMP COMP OBJ CASE) = acc  
 ...

Work in HPSG, on the other hand, has pursued a uniform cross-linguistic conception of valence which, because only *synsem* objects of dependents can be selected, excludes the possibility of such lexical entries. Indeed, the uniform behavior of selection, head-marking agreement, role assignment and case assignment across languages makes it highly desirable to have such a theory of valence—one that predicts the absence of nonlocal selection.

In this paper, we have tried to show that the 'inflected subject' analysis of auxiliary contraction should be replaced by the subject-incorporation analysis we presented in section 2.3. Our account allows the basic insights of Sadler and Barron to be preserved, but it also deals with relevant data that appears problematic for their proposals. Our analysis thus illustrates how contracted auxiliaries in English conform

to HPSG's strong assumptions about headedness, locality and the cross-linguistic nature of headed constructions.

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### References

- Abeillé, A., D. Godard, and I. A. Sag. 1999. French relative clause constructions. Stanford University.
- Andrews, A. 1990. Unification and morphological blocking. *Natural Language and Linguistic Theory* 8:507–558.
- Barron, J. 1998. *Have* contraction: Explaining “trace effects” in a theory without movement. *Linguistics* 36(2):223–251.
- Bender, E. M. 2001. *Syntactic Variation and Linguistic Competence: The Case of AAVE Copula Absence*. Ph.D. thesis, Stanford University.
- Blevins, J. P. 1995. Syncretism and paradigmatic opposition. *Linguistics and Philosophy* 18(2):113–152.
- Butt, M., M.-E. Niño, and F. Segond. 1996. Multilingual processing of auxiliaries within lfg. In D. Gibbon, ed., *Natural Language Processing and Speech Technology: Results of the 3rd KONVENS Conference*. Berlin: Mouton de Gruyter.
- Miller, P. H. and I. A. Sag. 1997. French clitic movement without clitics or movement. *Natural Language and Linguistic Theory* 15:573–639.
- Nordlinger, R. 1998. *Constructive Case: Evidence from Australian Languages*. Stanford, CA: CSLI.
- Pollard, C. and I. A. Sag. 1994. *Head-driven Phrase Structure Grammar*. Chicago: Chicago University Press.
- Pullum, G. K. and A. M. Zwicky. 1997. Licensing of prosodic features by syntactic rules. Paper presented at the 1997 Linguistic Society of America meeting, Chicago.
- Radford, A. 1988. *Transformational Grammar: A First Course*. Cambridge: Cambridge University Press.

- Sadler, L. 1997. English auxiliaries as tense inflections. Version of November, 1997. To appear in the *Special Issue of Essex Research Reports produced on the occasion of the retirement of Keith Brown*.
- Selkirk, E. O. 1984. *Phonology and Syntax: The Relation between Sounds and Structure*. Cambridge, MA: MIT Press.
- Spencer, A. 1991. *Morphological Theory*. Oxford: Blackwells.
- Sweet, H. 1890. *A Primer of Spoken English*. Oxford: Clarendon Press.