English finite auxiliaries in syntax and phonology

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1. Introduction

The behaviour of the English finite auxiliary (aux) contractions has engendered much debate over their status in syntax and phonology:

(1) a. John's probably just left.
b. [a picture of John]'s lying on the table

Most authors claim these forms are 'clitics' under some conception of the term. Some have claimed that 'cliticization' takes place in syntax (Bresnan 1971, Kaisse 1985), others, that cliticization is exclusively phonological (e.g. Nespor 1994). All these authors conceive of cliticization as restructuring of a hierarchical representation. For Bresnan, contracted aux procliticizes in syntax (2); for Kaisse, contracted aux encliticizes in syntax (3). Nespor also proposes enclisis (3), but claims that the representations are not syntactic but prosodic:

(2) [*John*] [*s*] [$_{VP}$ [*left*]] → [*John*] [$_{VP}$ [*s* + *left*]]

(3) [*John*] [*s*] [*left*] → [*John* + *s*] [*left*]

Considering either of these transformations to be syntactic is extremely problematic from the standpoint of current theory. As far as syntax is concerned, displacement of a category is an instance of move-α. Assuming (i) that moved α leaves a trace, and (ii) that a trace must be c-commanded by its moved antecedent, movement can only be to a c-commanding position. Neither transformation meets this requirement. (2) represents 'downward' movement of aux, i.e. movement to a *c-commanded* position. (3) represents 'sideways' movement: neither the landing site nor the launching site c-commands the other. This is clearer when complex cases like (1b) are considered:

(4) [$_{IP}$ [$_{DP}$ *a picture of* [*John*+aux]] [$_{I'}$ t_{aux} *lying* ...]]

Cliticization in syntax is generally conceived of as an instance of move-α, specifically of head movement (cf. e.g. Kayne 1991, Ouhalla 1991, Cardinaletti & Starke 1995 on clitic pronouns). If aux contractions are syntactic clitics, they are simply heads that move to a head-position higher in the clause—schematically (5):

(5) [*John* [X° [aux [$_{VP}$ *left*]]]] → [*John* [aux+X° [t_{aux} [$_{VP}$ *left*]]]]

Within recent approaches to phonology (prosody), restructuring transfomations of both types (2) and (3) are well-motivated. Indeed, central cases that motivate prosodic representations that are non-isomorphic to syntactic (S-structure) representations involve the outputs of such operations. It is certain that in the output (PF), at least one contracted aux—*'s* (= *is*, *has*)—is tautosyllabic with final segments of the word preceding it. Hence any analysis will have to assume (3) for this form at least. Given the c-command argument, (3) cannot be a syntactic transformation.

The question arises of whether prosodic encliticization is sufficient to account for the distribution of contracted aux, as claimed by Nespor (1994). I claim that it isn't. In the following, I propose a three-stage account, which involves both a syntactic stage 'head movement' (5) and a prosodic stage 'proclisis' corresponding to (2), prior to prosodic encliticization (3). Thus the account proposed here utilizes ingredients of previous approaches; however, contractions are argued to be special in both syntax and phonology in ways that differ from previous proposals.

English finite auxiliary verbs (including copula 'be') show similar properties to their counterparts in Serbian/Croatian (S/C)—in both languages, we find one weak (contracted/enclitic) form and two strong forms (positive/negative):

(6)	sam	jesam	nisam (= be.1SG)	/	cu	hocu	necu (= want.1SG)
	've	have	haven't	/	'll	will	won't

(7) a. Ja sam išao / Ja cu ici
b. I've left / I'll go

It has previously been proposed that the English contracted finite aux is a 'second position special clitic', i.e. a clitic (or weak element) with special syntactic properties, like the weak aux in S/C (Kaisse 1985, Cavar & Wilder 1995). This claim is substantiated in section 2. Support for the special syntactic status of contractions comes from their restricted distribution. The restrictions concern (i) word order, and (ii) distribution over clause-types. The same facts hold for the S/C weak auxiliaries, indicating that the auxiliary systems in the two languages share basic syntactic properties. The restrictions on the occurrence of weak forms are argued to reflect their being singled out for special treatment in syntax. In particular, contracted/clitic forms are only permitted to occur in certain clause types, and are subject to an obligatory movement transformation, corresponding to Baker's (1971) "Aux Shift" rule. Section 2 ends with a proposal to account for the distribution of weak and strong auxiliaries in terms of the presence or absence of a functional element Σ° in the clause structure.

The account in terms of Σ° only partially accounts for the distribution of English contractions: while the presence of Σ° is sufficient to exclude a contracted aux, the absence of Σ° is not sufficient to render contracted forms legitimate. There are many contexts where it is not reasonable to postulate Σ°, but where contracted aux is blocked (section 3). These contexts turn out to be the same ones that motivated Bresnan (1971) to postulate that contracted aux is a proclitic.

The claim that contracted aux is a proclitic seems to conflict with the fact that contractions are clearly enclitic on the surface. Nevertheless, I argue that Bresnan's idea is essentially correct. Contracted aux imposes requirements on its righthand context which must be expressed in phonological terms. Section 3 explores these (phonological) determinants of the distribution of contracted aux, within a model of the syntax-prosody mapping as outlined in Inkelas & Zec (1993). The conclusion is reached that the requirements on the righthand context are to be accounted for in terms of general properties of the syntax-prosody mapping, which feeds encliticization.

2. The syntax of finite aux

In this section, I review the arguments for treating contractions as morphologically distinct entities from non-contracted forms. Then I proceed to show that the distribution of contractions is restricted in a syntactically significant ways. Finally, a proposal is made to account for the syntax-form correlation in which the possibility for spelling out aux with a contracted form is controlled by a syntactic property.

2.1 Contraction vs. reduction

Like all monosyllabic function words, auxiliary verbs are capable of surfacing as unstressed elements or as phonological words, i.e. elements bearing word stress (the former possibility differentiates functional elements from lexical, i.e. open class, elements—cf. section 3 below). That is, for all English finite auxiliaries, it is possible to distinguish accented from accentless (phonologically reduced) forms. However, some of the finite auxiliaries have three distinct realizations, i.e. they have a contracted form that is distinct from the deaccented full form (cf. Kaisse 1985, Inkelas & Zec 1993, Nespor 1994). The three-way contrast can be be thought of in terms of two oppositions, as in (8), with contracted forms inherently unable to bear accent:

(8)

	accent	*contraction*
IS	+	–
is	–	–
's	–	+
(*)	+	+

Examples are shown in (9) (following Inkelas & Zec 1993:207). The contractions in (9a) are to be treated as morphologically distinct entities from their non-contracted counterparts, in contrast to the weak forms in (9a.) and (9b.). [1] As Inkelas & Zec point out, "full and reduced forms can be related by an independently motivated rule of vowel reduction in unstressed syllables", while "full and clitic forms cannot be related by .. any set of rules known to operate in the English lexicon" (cf. also Kaisse 1985).

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[1] The contracted forms for *have*, *would* and *had* lack schwa when preceded by a nominative pronoun or *who*, whereby the pronoun itself may be reduced or not: you've = [juwv], [jʊv]; he'd = [hijd], [hɪd]; etc. Cf. Kaisse (1985) for discussion.

(9)

		full (=stressed)	**reduced** (=unstressed)	**contraction**
a.	*is*	ɪz	ɪz	z
	am	ɛm,æm	əm	m
	are	ar	ər	r
	has	hæz	həz	z
	have	hæv	həv	əv
	will	wɪl	wəl	əl
	would	wʊd	wʊd	əd
	had	hæd	həd	əd
b.	*was*	wɔz	wəz	--
	do	duw	də	--
	does	dʌz	dəz	--
	did	dɪd	dɪd	--
	must	mʌst	məst	--
	can	kæn	kən, kn̩	--
	could	kʊd	kʊd	--

Vowel reduction reduces nonhigh vowels to schwa. Schwa can then disappear from schwa+sonorant syllables, cf. [ajkn̩] for *I can ... / icon*. Some dialects have initial h-deletion (*hat* → *'at*) that might account for *have* → *'ave*, but no dialect permits schwa to be removed from schwa+obstruent, to give *'ave* → *'ve*, or deletion of initial [w], as would be needed for *would* → *'d*.

This means that whereas reduced forms need not be listed separately from full forms, both full and clitic forms must be listed independently of one another. In other words, we are dealing with allomorphy.

It is also significant that distinctions among full forms are selectively neutralized in the 'contraction' column: [z] spells out *has* and *is* (but not *was* or *does*), and [d] spells out *had* and *would* (but not *did*, *could* or *should*). [2] Such neutralization also characterizes the relation between paradigms of clitic and full pronouns: cf. English *them / him* → *'m* [əm], French *moi* (Acc.) / *à moi* (Dat.) → *me* (Acc/Dat) (Cardinaletti & Starke 1995).

On the surface, nonsyllabic contracted forms (i.e. those lacking schwa) are enclitic, being integrated into the (coda of) the preceding syllable in the string. The clearest indicator for enclitic status is provided by [z] (*is*, *has*), which undergoes voicing assimilation with the preceding segment (i.e. [z] → [s], if preceded by a voiceless consonant): [3]

(10) a. Mary [z] left. b. Pete [s] left.

Voicing assimilation is used below to distinguish contractions from reduced full forms in otherwise unclear cases.

The evidence that that the contraction-full form opposition is relevant in syntax takes the following form:

(11) a. contractions can be used only in a subset of tensed aux positions.
b. the distribution of contractions is not coextensive with that of unstressed (reduced) full forms (the latter occur in positions forbidden to contractions)
c. the subset of positions (a.) forms a 'natural class' in syntactic terms

(11a) could in principle have a nonsyntactic (e.g. phonological) account. But the restrictions on contractions are not reducible to possibilities for deaccenting finite aux (11b), which rules out the most plausible phonological account; while (11c) points to a syntactic account.

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[2] Precisely these two contractions—[z] and [d]—are also homophonous with the finite affixes that attach to main verbs. This observation makes it tempting to seek a unified analysis of these contractions and finite affixation. However, to attempt this would require consideration of *do*-support, lack of agreement on modals, and other phenomena, which put it beyond the scope of this paper.

[3] More accurately, auxiliary /z/ behaves phonologically exactly like the verbal agreement suffix and the nominal plural suffix. Each surfaces as [ɪz] following a strident—cf. [bɔksɪz] in: *the box's over there = the boxes over there*, and in: *he boxes professionally*—and undergoes voicing assimilation elsewhere.

2.2 Word order

The first piece of evidence comes from word order facts first discussed in Baker (1971) (cf. also Bresnan 1971, Kaisse 1985). In simple declaratives contractions must appear to left of aspectual adverbs (*often, never*, etc.):

(12)	a.	Peter	d	never		read that	(d = would / had)
	b.	* Peter		never	d	read that	
	c.	Mary	s	often		(been) in London	(s = is / has)
	d.	* Mary		often	s	(been) in London	

This placement restriction singles out contractions from both stressed and destressed full forms. With full forms, the most natural orders are aux+adv, if aux is destressed, and adv+aux, if aux is stressed. However, both orders are possible for both variants (13)-(14), although contexts in which 'marked' orders are usable can be hard to access.

(13) a. (?) John IS often in his office (ok in context: "John isn't often in his office")
b. John is OFTEN in his office

A stressed aux can precede the adverb; (13a) is felicitous in a 'denial of the negation' reading, e.g. when used to deny the validity of a previous utterance, as indicated. [4]

While the order adv+aux is most natural for the stressed form (14a), it is also possible for the destressed full form (14b). The latter is most felicitous with stress placement on the adverbial, i.e. when the adverb bears a degree of focus: [5]

(14) a. John often IS in his office
b. ? John OFTEN is in his office.

(14b) contrasts with (15a): post-adverb placement for the contraction yields unacceptability in any context. There is no independent reason why *'s* may not encliticize to *often*, cf. (15b):

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[4] Contrary to the claim made in Baker (1971), repeated in Baker (1989:210). While many of the examples he cites are indeed infelicitous at first sight, this turns out to result from the lack of an appropriate or plausible context. In many cases, I do not share Baker's judgements. Baker (1971:171,note 8) himself notes counterexamples to his claim, involving 'epistemic' *may*:

i) You MAY never need that revolver.
ii) * You never MAY need that revolver.

As indicated, the reverse (otherwise unmarked) order seems to be ungrammatical in this case. There seem to be two independent factors at work here. Firstly, the surface order of adverb and aux determines relative scope in many cases, regardless of whether aux is stressed (cf. Baker 1989:):

iii) John often hasn't called us
iv) John hasn't often called us

Certain orderings may be filtered out by this factor; e.g. it seems that epistemics cannot fall into the scope of quantificational adverbs, as in (ii) or (v) :

v) * It often must rain here
vi) It must often rain here

Secondly, when aux is focussed, the clause implicates a 'denial of the negation' of its proposition, in additon to asserting that proposition. This reading is also associated with emphatic *do*-support (cf. section 2.8).

[5] The factors at play here are murky. Some such examples, e.g. (i)-(ii) seem downright impossible, but this may have to do with the length of the VP, as the contrast with (iii)-(vi) suggests. See also discussion in Baker (1971).

i) * John NEVER has swum. (ok: John never HAS swum)
ii) *? John ALWAYS is smiling. (ok: John always IS smiling)
iii) John NEVER has swum as well that before. [həz]
iv) John ALWAYS is smiling when I arrive.
v) John NEVER would have done that.
vi) There ALWAYS will have to be someone in the office. [wəl]

(15) a. * John often's in his office
b. How often's he here?

A suitable adverb for the 'voicing assimilation' test is *just*. In (16), the contrast between the destressed aux and the contraction is absolute:

(16) a. Jack's (only) just left [s]
b. ? Jack (only) just has left [həz]
c. * Jack (only) just's left [s]

The selective nature of this placement restriction makes a phonological account implausible; there is no obvious reason why contractions should not be possible where destressed aux is. On the other hand, it can be handled straightforwardly in syntax in terms of movement. This necessitates the assumption of two syntactically distinct variants of finite aux—call them aux_{weak} and aux_{strong}—related to the allomorphs as in (17). [6]

(17) a. contracted forms only realize the syntactic element aux_{weak}
b. aux_{strong} is only realized by full forms (unstressed, stressed)

(18) a. aux_{weak} must move in overt syntax to an Infl-head above the adverbial.
b. aux_{strong} may but need not raise.

Pollock (1989) has proposed that all finite auxiliaries raise out of VP to an Infl head (T°) in English. The aux-raising proposed in (18) is independent of Pollock's aux-raising rule. The operation (18a) targets only a subset of finite aux (aux_{weak}), which thus undergoes an obligatory raising rule in addition to Pollock's rule. The remaining finite auxiliaries undergo additional raising optionally (18b).

The question of landing site for the rule (18) depends on assumptions concerning (i) clause structure; and (ii) adverb positions. Pollock proposed the clause structure (19), with finite aux in the higher Infl-head (T°) at S-structure, Spec,TP the canonical subject position. The post-aux and pre-aux adverb positions correspond to adjunction to VP and adjunction to T' respectively:

(19) $[_{TP}$ SU $([_{T'}$ Adv$)$ $[_{T'}$ aux+T° $([_{NegP}$ Neg°$)$ $[_{AgrP}$ Agr° $([_{VP}$ Adv$)$ $[_{VP}$ .. V

If both Pollock's movement analysis (finite aux always raises to T°), and the proposal (18) to treat contraction placement as aux-raising are correct, then the clause must contain one Infl-head more than in (19), to serve as landing site for aux_{weak}. [7] In recent proposals (e.g. Chomsky 1991, 1993), TP is dominated by a second agreement projection. Its head (AgrS) is the obvious candidate for the higher landing site for aux: [8]

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6 Baker (1971) proposed a movement solution, in terms of an 'Aux-shift' rule, which preposes unstressed finite aux before an adverb, and an 'Aux-reduction' rule. The ungrammaticality of (15a) etc. was derived by making both the 'Aux-shift' and 'Aux-reduction' sensitive to stress properties of aux. The solution proposed here is to posit an independent weak-strong distinction in the syntax and to make both movement and selection of the contracted form sensitive to that distinction.

Baker identifies three degrees of stress, independent of contraction: low, nonhigh, and high. Nonhigh is distinguished from low according to whether vowel reduction has occurred; only low may undergo contraction:

(i)	hæz	həz	Aux-Shift	contraction
high	√	*	*	*
nonhigh	√	*	*	*
low	*	√	√	√

(ii)	Bill has always handed in on time.	([hæz] ; [həz])	low
(iii)	John has never handed in on time, but Bill ALWAYS has _.	([hæz] ; *[həz])	nonlow
(iv)	Bill ALWAYS has handed in on time.	([hæz] ; [həz])	

An aux is "nonhigh" when it precedes a VP-ellipsis and is preceded by a stressed adverb (iii). Vowel reduction is impossible in this case. However in the corresponding case with no VP-ellipsis, aux can reduce (iv), i.e. has low stress in Baker's terms. Thus Baker fails to capture the fact that aux cannot contract in examples like (iv).

7 The question of adverb placement with respect to contractions was not addressed by Pollock.

(20) a. $[_{AgrP}$ SU Agr° $[_{TP}$ aux+T° ... $[_{VP}$ t_{aux} $[_{VP}$ .. V
b. $[_{AgrP}$ SU [aux+T°]+Agr° $[_{TP}$ $t_{T°}$ ... $[_{VP}$ t_{aux} $[_{VP}$ .. V

In declaratives, aux_{weak} always directly follows the subject, preceding all preverbal adverbs. English thus displays an 'aux-second' effect in IP resembling more familiar 'V2-effects' found in English root *wh*-questions (finite aux second in CP), root clauses generally in Germanic V2 languages (finite verb second in CP), and finite declaratives in French (finite verb second in IP, directly following the subject). The proposal (17)-(18) has the 'second position' placement of aux_{weak} determined by syntax, just as in standard account of V2-effects. The canonical subject position is the highest specifier 'in IP', and the landing site for aux_{weak} is the head of that highest functional projection.

The syntactic account of 'second' effects depends on the specifier being adjacent to the head of its host projection, which in turn requires the assumption that adverbs do not adjoin to the relevant intermediate projections. This may reflect a general ban on adjunction to intermediate projections deriving from (whatever underlies) X'-theory. If Kayne (1994) is correct, each adverb must be adjoined to its own specifier-less host phrase. Alternatively, adverbs are permitted to adjoin to maximal projections containing specifier positions, but not to intermediate projections. Either way, once it is established that adverbs may not adjoin to intermediate projections, adverbs must follow weak aux, since aux has raised across all post-subject, preverbal X^{max} adjunction sites. [9]

2.3 Sentential adverbs and parentheticals

The above analysis predicts that an adverb may never intervene between aux_{weak} and the subject in simple declaratives. So far, it has only been shown that aux_{weak} must precede aspectual adverbs (cf. (12)). Sentence adverbs, which canonically precede aspectual adverbs, may precede or follow the subject+aux_{weak} nexus, as expected:

(21) a. Apparently, John's on drugs.
b. John's apparently on drugs.

But examples like (22) are also possible. In (22a), [z] syllabifies with the final vowel of *apparently*, indicating a contraction rather than a reduced full form: [10]

(22) a. John apparently's on drugs. [z]
c. John probably'll leave later. [əl]
d. John actually'd be a good candidate. [əd]

It can be shown that these are not ordinary sentential adverbs, but parentheticals; given this, the examples do not threaten the 'aux-second' proposal. Parenthetical expressions intervene easily between specifiers and heads in 'X-second' environments, e.g. between a preposed *wh*-phrase or neg-phrase and an inverted aux, positions which are are barred to genuine adverbials:

(23) a. Who, in your opinion, did Mary suspect?
b. Never, in my opinion, was so much owed by so many ...

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[8] I assume that each auxiliary heads its own VP, the lowest aux governing the VP of the main verb, the highest being the finite aux that raises.

[9] The present account is incompatible with Chomsky (1995:Ch.4), where it is proposed that adverbs may end up adjoined to intermediate projections, and furthermore, that 'second' effects of the type at issue are to be handled in the phonological component. Further questions arise in connection with adverb placement. More than one adverb may intervene between the subject and VP, and as is well known, different classes of preverbal adverbials underly strict relative sequencing constraints; sentential adverbs precede aspectual adverbs, which in turn precede 'completive' adverbs. Under Kayne's (1994) approach to adjunction, it becomes necessary to recognize more functional heads 'in IP' than indicated in (20). See Alexiadou (1994), Cinque (1995), for approaches in which the functional overlay of VP provides single dedicated specifier positions for different classes of adverbs.

[10] It is not possible to apply the voicing assimilation test, since all S-adverbs are vowel-final, ending on *-ly*.

Such data raise questions about specifier-head adjacency and the ban on adjunction to intermediate projections needed to derive it. But parentheticals are 'everyone's problem' in the wider sense that an account is lacking of how (if at all) they are integrated into syntactic structure. For present purposes, it is enough to show that the intervening adverbs in (22) must be analyzed as parenthetical expressions; then, they pose no problem specific to the 'second position' analysis of contractions.

Bresnan (1971) already pointed out that contractions may follow (but not precede) parentheticals (her examples (24a,b)). Here, the voicing assimilation test is conclusive (24c,e):

(24)	a.	John, my dear, 's a bastard	[z]
	b.	* John's, my dear, a bastard	(ok: John is, my dear, a bastard)
	c.	This one, dammit, 's gonna to make me rich.	[s]
	d.	* This one's, dammit, gonna make me rich	
	e.	This one, you idiot, 's in the wrong box!	[s]
	f.	* This one's, you idiot, in the wrong box!	

Thus the sequences in (25) are to be distinguished. The pre-aux sentence adverb gets there by virtue of being a parenthetical. The post-aux adverb cannot be a parenthetical, since contractions cannot precede parentheticals; hence, it is a sentence adverb in a canonical adverbial position:

(25)	a.	This one, apparently, 's in the wrong box.	← *parenthetical position*
	b.	This one's apparently in the wrong box.	← *adverb position*

Aspectual adverbs make bad parentheticals (cf. 26), hence (27) (=12b,d) are excluded.

(26)	a.	*Who, often, did you see?
	b.	*Only John, usually, did I see.

(27)	a.	* Peter, never, 'd read that	(would, had)
	b.	* Mary, often, 's (been) in London	(is, has)

Further evidence for the parenthetical analysis of (22) comes from the special behaviour of weak pronominals such as English *it*, German *es* (cf. Cardinaletti & Starke 1995). Just like 'aux-second' in IP, the V2 effect in German root CP gets obscured by post-subject parentheticals:

(28)	Er, {	wie es scheint /	jedoch /	anscheinend },	ist ein Idiot
	he,	as it seems	however	apparently	is an idiot

However, when the preverbal subject is *es*, the position between subject and finite verb is barred to parentheticals:

(29)	* Es, {	wie es scheint /	jedoch / ... },	war ein guter Kauf
	it	as it seems	however	was a good buy

Exactly the same effect is observed with English *it*:

(30)	a.	It's apparently in the wrong box	← *adverb position*
	b.	*It apparently 's in the wrong box	← *parenthetical*
	c.	*It, you idiot, 's in the wrong box	← *parenthetical*

In view of these shared properties, the second-effect with English contractions and V2 in German should have a common analysis. If V2 is syntactic, then so is 'aux-second'.

2.4 Serbian/Croatian clitic auxiliaries

With regard to placement, English contractions look remarkably similar to the weak (clitic) forms of finite auxiliaries in Serbian/Croatian. The S/C clitic aux must appear at the left edge of IP following the first constituent. As in English, this represents a subset of the positions available to the full forms of aux:[11]

(31) a. Ja **(sam)** c esto **(*sam)** citao knjigu
I be-1sg-cl often be-1sg-cl read book

b. Ja **(nisam)** cesto **(nisam)** citao knjigu
NEG-be-1sg

Several authors have argued for a syntactic account of the placement of clitic aux (cf. Wilder & Cavar 1994, Rivero 19xx, Roberts 1994), according to which a clitic aux undergoes head movement to a functional head high in clause (e.g. C°), independently of phonological properties, while a full aux may but need not move to that position.

While they may differ in detail (e.g. specific landing site for weak aux movement), the two cases are similar enough to warrant a common analysis. So arguments for a syntactic treatment of clitic aux placement in S/C also indirectly support the syntactic approach to weak aux placement in English.[12]

This point is reinforced by the observation that weak aux distributes in the same way across finite clause types within each language. Both languages

(i) express sentential negation in finite clauses with a negated finite aux, which is a strong form (cf. (6) above),
(ii) must use a strong form in emphatic assertions,
(iii) permit the weak form to be used in root wh-questions,
(iv) allow only the strong form in root yes-no questions.

These restrictions are discussed in the following sections.

2.5 Optionality

There is one respect in which English contractions appear to differ from S/C enclitic forms. The possibility to use an enclitic aux in a simple declarative (32) blocks use of the full form (33), with the result that the latter is only possible in an emphatic assertion (34)—aux must be focussed. The S/C paradigm thus patterns with the *do*-support paradigm which translates it. In English, on the other hand, the possibility to use a contracted form apparently does not lead to the exclusion of the full form:

(32) a. išali su
come-ptc be-3pl-cl
b. they came
c. they've arrived

(33) a. * jesu išali
be.3pl come-ptc
b. *they did come
c. they have arrived [həv]

(34) c. JESU išali
b. they DID come
c. they HAVE arrived

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[11] S/C is a pro-drop language with more freedom of constituent order than English. Even with noncanonical constituent orders (i)-(iii) , the weak aux is generally restricted to second position, while full forms are not so restricted (iv):

(i) knjigu (**sam / nisam)** cesto citao
(ii) često (**sam / nisam**) citao knjigu
(iii) * knjigu cesto **sam** citao
(iv) knjigu cesto **nisam** citao

On the contrast (v)-(vi), see Wilder & Cavar (1994):

(v) citao **sam** cesto knjigu
(vi) * citao **nisam** cesto knjigu

[12] Cf. Kaisse (1985:106), who claims that English contractions are 2P 'special clitics', like S/C clitic aux, taking 2nd position in S (IP) rather than S' (CP). The difference with respect to the present proposal concerns the nature of syntactic cliticization.. For Kaisse, it involves adjunction to (a word inside) a phrase in a c-commanding specifier, rather than head-movement to a c-commanding functional head (assumed here).

This contrast may simply reflect register-specific options. While the S/C enclitic and Engl. *do*-support paradigms are invariant across registers, formal (e.g. written) registers of English forbid the use of contractions. Conceivably, within the informal register permitting contractions, full forms (*I have arrived, he is out*) are restricted to emphatic assertions. Then apparent optionality of contractions reduces to optionality in choice of register. If this is so, then the paradigm divides into two:

(35)	*informal:*	they came	they've arrived
		* they did come	* they have arrived [həv]
		they DID come	they HAVE arrived
(36)	*formal:*	they came	---
		* they did come	they have arrived [həv]
		they DID come	they HAVE arrived

We have already seen one case where an unstressed full form is possible in simple declaratives, namely, where aux appears post-adverbially (37). Although aux is not focussed (the adverb is), the full form is used, as is expected since the contraction is independently excluded in this position:

(37) John NEVER is in his office.

Apart from these cases, there are two main environments that exclude contractions: negation and yes-no questions. We look at these before returning to the focussing effect in section 2.8.

2.6 Negation

Sentence negation is expressed in S/C by means of a prefix on the finite verb. In periphrastic constructions, it is the finite auxiliary that carries the neg prefix; the negation morpheme may not be realized on the main verb (38c). As indicated above, the negated form of the verb is a strong form, not a weak form. Weak forms of the finite aux are barred from negated sentences:

(38) a. Oni **ne**=kupuju knijgu
they neg buy-3pl book
b. Oni **ni**=su kupili knjigu
they neg-be.3pl buy.3pl book
c. * Oni su **ne**=kupili knigu

Similarly in English, sentence negation is realized by an morpheme attached to the finite verb (the suffix *n't*). The negative form is a strong form (can follow an aspectual adverb). As in S/C, the weak form may not cooccur with negation (39b):

(39) a. They (usually) have**n't** bought the book
b. * They've**n't** bought the book

In both languages, negated aux shows morphological peculiarities. While in English, the neg morpheme attaches to the strong form (cf. (39)), in S/C, the neg morpheme prefixes to the weak form of aux, never the strong form (e.g. *ni=su* vs. **ni=jesu*); though the result is not a weak form. Most combinations are morphologically transparent, formed with the prefix *ne-* that also attaches to main verbs. The negated forms of *biti* ('be'), however, contain an exceptional form of the prefix (*ni-*). In English, several neg-aux forms are opaque: *won't*, *shan't*, *aren't* for *am*+neg in inversion, dialectal *ain't*, etc.—cf. Zwicky & Pullum (1982).

The facts suggest that weak aux is barred from negative sentences. This is true of S/C; but for English, the picture is complicated by the possibility for weak aux to cooccur with the non-affixed negation particle *not* (I return to this difference below):

(40) I 've not bought the book

2.7 No contractions in yes-no questions

Bresnan (1971) claims that contractions can occur in initial position in yes-no questions, giving examples like (41):

(41) a. 's that so? [z] / * [s]
b. 'm I going with you?
c. 'd he go? (= Did he go?)

This is incorrect—the forms in (41) are not contracted aux. Rather, these reductions are the product of a different process—perhaps a 'fast speech rule'—which I call Left Edge Reduction. Further examples are given in (42)-(43):

(42) a. 's not true [s] / *[z] b. ~~it~~ [s] not true

(43) a. A: where's Pete? B: 's not here. [z] / * [s]
b. ~~he~~ [z] not here

In (41a), the initial reduced aux is obligatorily voiced. This fact is neutral with respect to the status of the aux (contraction or not). It does however indicate that devoicing is not available to aux in the absence of a potential host ending in a voiceless segment.

The voiceless initial segment of (42a.) shows that initial aux here *is* a contraction. It follows that phonological enclisis of contracted aux can precede Left Edge Reduction—the final [t] of *it* must be present at some stage in the derivation, in order for the segment spelling out aux to assimilate to it.

(42a) also tells us more about Left Edge Reduction. Contracted aux is the target of enclisis, i.e. 'prosodic restructuring'. For voicing assimilation to apply, encliticized [z] must follow a voiceless segment in the coda of the host syllable. The late deletion in (42) thus targets *part* of a syllable.

The impossibility of [s] in (43) is explained, if the response to the question must involve the pronoun *he*—which is deleted (as the initial part of its syllable) following enclisis of the contracted aux.

The data in (41) are thus amenable to analysis as late deletion of initial parts of unstressed syllables in string-initial position, stranding a consonant of the coda:

(44) a. ~~i~~[z] that so?
b. ~~a~~[m] I going with you?
c. ~~di~~[d] he go?

The preceding shows that there is an analysis for the reductions in (41) compatible with the claim that contractions are barred from yes-no questions. An argument for that claim can be obtained by looking at environments where there is a potential host for enclisis and devoicing of a putative contraction. Such an environment is provided by coordination with *but*. A contraction initial in its declarative clause (45a) can encliticize to *but* and surface as [s]. In the same context, devoicing of *is* in a yes-no question is not possible (45b)—as expected, if contracted aux is independently barred:[13]

(45) a. a man who was here earlier, but's left again... [s]
b. John was here earlier, but's he left again? [z] / * [s]

Turning to S/C, we find that weak aux is barred in yes-no-questions in this language also (cf. Rivero 1992). The paradigm (46) illustrating this requires some explanation. Yes-no questions are formed using the particle *li*, which forms a part of the second position clitic cluster. Descriptively, when no other constituent precedes a clitic cluster (which can contain *li* and clitic pronouns, along with weak aux) the highest nonclitic verb precedes the cluster. Thus in the declarative containing a weak aux, the nonfinite main verb precedes the aux (46a). This is the 'Long Head Movement' construction (cf. Rivero 1991, 1993, Wilder & Cavar 1994). The exclamative construction illustrated in (21b) shows that nonfinite verb preposing is possible with *li*. No other constituent precedes *li* in yes-no questions. Hence if the weak aux were permitted, the expected pattern would be (46c). However, the only possibility is to use the full form of the auxiliary, which then preposes before *li* (46d.):

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13 The *'s*-orthography is meant only to indicate an unstressed form. Kaisse (1985:107) claims encliticization to conjunctions to be impossible, citing conjoined main clauses like (i). I do not understand why (i) is bad.:
(i) * Sandy left and's never coming back.

(46) a. Pio sam pivo.
drunk aux_{CL} beer "I drunk beer"
b. Pio li je pivo! "Did he drink beer!"
c. * Pio li sam pivo?
drunk Q aux_{CL} beer
d. Jesam li pio pivo ?
aux Q drunk beer "Did I drink beer?"

The ungrammaticality of (46c) can be attributed to the incompatibility of weak aux with the clause-type of yes-no questions.[14]

2.8 Weak aux and focus

This leaves two major root clause types that permit the use of weak aux—neutral declaratives and *wh*-questions:

(47) a. Oni su kupili knjigu b. They've bought the book
(48) a. Šta su kupili? b. What've they bought?

Where the weak form is possible, the use of the strong form is only possible if it is stressed (49)-(52). Given the problem with idealization to one register (sect. 2.5), this is illustrated for English with *do*-support for declaratives and *wh*-questions with a questioned root subject:

(49) a. * Oni jesu kupili knjigu
b. (*) They have bought the book
c. * They did buy the book

(50) a. * Šta jesu kupili?
b. (*) What have they bought?
c. * Who did buy the book?

(51) a. Oni JESU kupili knjigu
b. They HAVE bought the book
c. They DID buy the book

(52) a. Šta JESU kupili?
b. What HAVE they bought?
c. Who DID buy the book?

The use of the strong form in (51)-(52) brings with it a special contextual effect, which is due to the fact the finite aux is focussed (the facts described here for English hold equally for S/C). An assertion with focussed aux presupposes that the negation of the proposition it expresses is contextually salient. The use of (53a) is only felicitous in a context which the proposition expressed by (53b) is salient (e.g. (53b) may just have been uttered by another speaker). Hence (53a) appears to express the denial of (53b):

(53) a. They haven't bought the book
b. They HAVE bought the book (=51b)

The effect of focussing a constituent is to open up a set of propositions (the 'focus-set') defined by the meaning of the sentence containing the focus, and including the proposition expressed by the sentence (cf. Rooth 1985). The alternative propositions (i.e. those other than the proposition asserted) in the focus-set are then

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[14] This claim should be qualified; there is a form for yes-no questions which permits clitic aux to appear:
(i) dali sam pio pivo?
whether aux.cl drunk beer "Did I drink beer?"
This type is introduced by the non-clitic form *dali*, and does not involve raising of a full verb form. *Dali* functions otherwise as a complementizer introducing embedded *whether*-interrogatives. Weak aux is generally possible in embedded interrogstives.

implied to be false. When a finite aux is focussed in a declarative, the focus-set seems to contain merely the proposition expressed by the declarative and its negation:[15]

(54) {they've bought the book; they haven't bought the book}

The only alternative proposition is the negation of the proposition asserted—hence the effect described.

For *wh*-questions, the effect is more subtle. With focussed aux, a *wh*-question seems to require that a proposition of a certain type is salient in the context; (55b) for example is only felicitous if some proposition to the effect of (55c) is salient; (56b) similarly requires (56c). Without stressed aux, the question is 'neutral', in that it imposes no such demand on the context:

(55) a. What's he bought?
b. What HAS he bought?
c. "There is one (or more) relevant thing which he hasn't bought"

(56) a. Who bought the book?
b. Who DID buy the book?
c. "There is one (or more) relevant person who didn't buy the book."

The relation of the (b)-examples to the (c)-examples can be explicated with reference to the meaning of the questions. A *wh*-question does not assert a proposition—rather, its meaning can be thought of in terms of a set of alternative propositions, its 'answer set' (the set of potentially true answers to that question). Thus (56a) defines a set such as (57), and asks the hearer to identify the member(s) of the set that are true:

(57) { John bought the book; Mary bought the book; Bill bought the book; ...}

Focussing aux in a wh-question generates a second set (the 'focus-set'), which contains the negations of the propositions from the 'answer set' (58). The preceding context must then contain the *negation* of one or more of these propositions. (56b) would be felicitous, e.g., if (59) had just been uttered:

(58) { John didn't buy the book; Mary didn't buy the book; Bill didn't buy the book; ...}

(59) John didn't buy the book. (..nor did Mary, nor did Bill...)

The requirement imposed by focus is that at least one of the propositions in the focus-set be contained in the preceding context. (59) satisfies that requirement for (56b). Thus the effect of focussing finite aux in a wh-question is essentially the same as in a declarative.

The forced 'focussing' that accompanies the use of finite aux in simple declaratives and in wh-questions can be attributed to blocking. Suppose that the weak aux (or form without do-support) is 'in competition' with the strong aux; and that it is 'cheaper' than the strong form. Then, in (neutral) contexts in which the weak form is licensed, it will block the strong form. Only in contexts in which the weak form is not licensed (focus on aux) is the strong form licensed.

In other constructions (negation, yes-no questions), focussing aux brings similar contextual effects. Thus focus on negated aux brings requirement that the negation of the negation (i.e. the non-negated proposition) is present in the context, cf. (60):

(60) A: they've read the book. B: they HAVEn't read the book.

What is important here is that focussing is not an automatic consequence of using the full form in these constructions, and that this is bound up with the fact that use of the full form is the only option anyway.

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[15] This is a simplification. B's utterance in (i) is felicitous, indicating that the focus set may also contain modalized alternatives (thanks to J. Ouhalla for discussion on this point):
(i) A: they must have read the book B: they HAVE read the book
The truly infelicitous case is where the previous utterance realizes the same proposition as the sentence with focussed aux.
(ii) A: they've read the book B: # they HAVE read the book

2.9 The role of Σ

Appeal to focus might account for the occurrence of strong forms in neutral declaratives and wh-questions, but not the presence of strong forms in yes-no questions and negation. Rather, there is a grammatical determinant for the impossibility of the weak form in those cases. I propose that the same factor also excludes the weak form when aux is focussed.

The account involves Pollock's (1989) negation head. I assume that this head does not only host sentential negation; rather, that negation is paired with an affirmative element, with both instantiating a functional category 'Σ' (cf. Laka 1990). Thus negation is a feature value of a functional category Σ which projects in clause structure. While negation is realized as an overt morpheme, the affirmative morpheme is abstract:[16]

(61) a. Σ [+Neg] = *n't* b. Σ [–Neg] = ∅

The latter surfaces in non-negated declaratives when aux is focussed, as in *John DID come / Ivan JE došao*; and in non-negated yes-no questions. However, in neutral non-negated declaratives and *wh*-questions, I claim that Σ is absent. This forms the core of the analysis: the contexts requiring strong aux in S/C and English are clause-types in which Σ is projected; conversely, weak aux is limited to clause-types in which Σ is not projected.[17] The proposal involves a nonstandard view of negation, outlined briefly in the following.

The semantic function of Σ can be thought of in terms of sets of alternative propositions, in the sense just discussed in connection with focus and questions. Suppose that Σ triggers the association of the sentence with an 'alternative set'. This set contains propositions that differ with regard to their polarity; i.e. the proposition expressed by IP (without Σ), and the negation of that proposition.[18] Thus, both when Σ is [–Neg], and [+Neg], the clause is associated with a set containing the proposition expressed and its negation, which may enter into interpretation in various ways.

As discussed above, both questions and focus feed off such alternative propositions in interpretation. Consider (62):

(62) a. {John's arrived; John hasn't arrived}
b. John has+Σ arrived.
c. Has+Σ John arrived?
d. John has+n't arrived.
e. John's arrived. (no Σ)

Both the emphatic assertion and the yes-no question use the set (62a). As an emphatic assertion with focussed aux, (62b) asserts the non-negated proposition and presupposes the other to be salient. The corresponding yes-no question (62c) takes the set (62a) as its 'answer set'. In this sense, both focussed aux and yes-no questions require Σ to be projected in the clause.

A negated sentence such as (62d) does not, in the standard view, need an alternative set to express a negated proposition; rather, it expresses semantic negation directly, by virtue of containing a negative morpheme (it does requires the presence of Σ though, since Σ introduces the negative morpheme). The way I have phrased things, semantic negation is not expressible directly but only via the alternative set. The function of Σ is to introduce the polarity alternatives. Then the value [+Neg] serves to pick out the negated proposition as the proposition asserted.

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16 Pollock proposed that emphatic assertions may also involve a special morpheme, the affirmative counterpart to Neg, such that both are realizations of a single category (his "Ast"). The analysis of emphatic assertion in terms of an abstract morpheme in the Aux (Infl) complex goes back to Chomsky (1957:65).

17 This idea was proposed in Cavar & Wilder (1995). There, we suggested a different implementation, in which (i) the affirmative element (01b) is inherently emphatic (Chomsky's 1957 'Emph'-morpheme); and (ii) a third distinct Σ-morpheme occurs in yes-no questions ('Q'). Then, each instantiation of Σ can be associated with its own 'PF'—a stress-feature for EMPH, and the special rising intonation contour for Q. However, in that account it must be assumed that Σ can contain several instantiations simultaneously, e.g. 'Emph' and 'Neg' in an emphatic denial (*He DIDn't he leave*), 'Emph' and 'Q' in *DID he leave*? or even all three in *DIDn't he leave*? Here, only two Σ-morphemes are assumed. 'Q' and 'emph' are treated as independent factors; the former located in C, responsible for question interpretation, and triggering aux-raising, the latter simply being focus.

18 This may be an oversimplification: maybe modalized alternatives are also involved. Cf. fn 15.

This suggests that a neutral declarative assertion could in principle also be expressed via Σ (as in (62b)). Σ introduces the alternative set, and the feature value [–Neg] serves to pick out the proposition asserted (in ths case, the non-negated proposition). However, this case differs from negation, in that the presence of Σ is not required. (62e), without Σ, can be used to express the same content. Here, the appeal to 'economy' comes in: the inclusion of Σ in the structure to express the neutral assertion would be unnecessary (since the same content would be expressible without Σ), hence excluded by a principle of economy.[19]

When aux is focussed, extra use is made of the alternative set to achieve an interpretive effect (presupposing the salience of the negated proposition) that is not expressible by the neutral assertion without Σ ; hence Σ[–Neg] is not blocked.

Finally, consider *wh*-questions. Like a yes-no question, a *wh*-question defines a set of alternative propositions which functions as its 'answer set'. However, unlike a yes-no question, a *wh*-question does not require alternatives differing in polarity value; but rather, alternatives differing in the value assigned to the variable corresponding to the questioned constituent. These alternatives are generated via the *wh*-word and not Σ. Consequently, a *wh*-question does not require Σ to be included in its clause structure, any more than a neutral assertion does. Hence the same 'obligatory focus' effect is induced by the full form of aux.

As far as syntax is concerned, the claim is that the presence of Σ blocks weak aux. Finite auxiliaries raise from VP to T (Pollock's *have-be* raising). Assuming that Σ is dominated by TP and governs VP, the auxiliary must first incorporate into Σ (by the Head Movement Constraint). Hence, negated clauses, clauses with focussed finite aux, and yes-no questions all share (63) as part of their derivation. Where Σ is [+Neg], the verb will pick up *n't* en route to T. Where Σ is [–Neg], the complex in T will contain the abstract Σ-morpheme.[20]

(63) Negation (emphatic affirmation, yes-no question, ...)

SU	Agr	[	T	[	Σ	[	V	[	V	...
			has-nt		t		t		come	
			HAS		t		t		come	
			JESAM		t		t		išao	

The corresponding structure for clause-types like neutral declaratives and wh-questions, which lack Σ, is (64):

(64) Neutral declarative (wh-question, ...)

SU	Agr	[	T	[	V	[	V	...
			has		t		come	
	's		t		t		come	
	sam		t		t		išao	

Given these assumptions, head-to-head movement of the highest verb to T° (only aux, in English) yields different complex heads (65), depending on whether the clause contains a projection of Σ or not. The analysis thus provides a syntactic basis for the distribution of weak and strong forms of aux. The former is a V-T complex lacking Σ, the latter a V-T complex incorporating Σ (which may be abstract). The former undergoes additional movement from T to AgrS (cf. (18) above):

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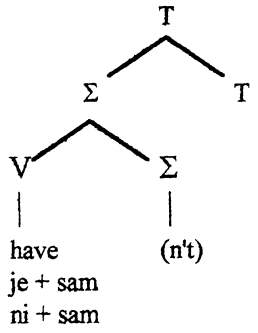
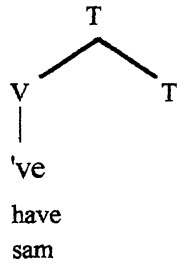
19 Technically, the blocking of Σ in neutral assertions should be a reflex of the principle of Full Interpretation ('economy of representation') rather than Last Resort ('economy of derivation'). The derivations of the structures with and without Σ would begin from different numerations in Chomsky's (1995) sense, hence would not compete with respect to derivational economy principles. However, appeal to FI (Σ[-Neg] does not contribute to interpretation) does not work either. Σ[–Neg] does contribute to interpretation, by making the alternative set it available, and picking out the non-negated proposition as the proposition asserted. The intuition that Σ is superfluous in the case of the neutral assertion is only expressible by referring to the existence of an alternative representation with the same interpretation that does not contain Σ. I leave this issue open.

20 If the S/C *dali*-type of yes-no question (cf. fn xx) involves Σ, then I suppose it to be located in *dali* itself, presumable an item of category C. This in turn suggests that the second position location for the clitic cluster (including the weak aux) must be a head distinct from (lower than) C.

(65) a.



b.



The central claim (17) about the correlation of contracted aux forms with the syntactic entity aux_{weak} is reformulated as (66):

(66) Contracted aux (Engl.), clitic-aux (SC) cannot realize a head containing Σ°.

This analysis requires that sentential negation can be expressed by other means than Σ governing VP. Consider the paradigm (67) (cf. sect. 2.6). Unlike *n't*, the contracted aux is compatible with *not*:

(67) a. John hasn't left yet (Σ = *n't* governs V(Aux))
b. *John s n't left yet
c. John s not left yet (Σ = *not* does not govern V(Aux))

I assume that *not* is not a head governing VP: rather, it is a phrasal satellite, like an adverbial. Crucially, there is no Σ-head that intervenes between VP and T in (07c). The distinction between *n't* (head) and *not* (phrase) mirrors two strategies for negation found cross-linguistically: Neg is a head (Σ) into which finite verbs incorporate in Romance, while it is an adverbial-like element that does not interact with V-movement in Germanic. The fact that *not* contrasts with *n't* in being able to appear in lower positions in the clause (68) is consistent with this view:

(68) a. John might have not left yet
b. *John might haven't left yet (cf. John mightn't have left)

The contrast follows if Σ has a fixed position (governing the highest VP) while *not* has the choice among several adverbial positions.

There is one reason for not making this distinction between *not* and *n't*— *not* triggers *do*-support just like *n't*. In this *not* differs from other adverbs, even negative ones like *never*:

(69) John {never; *not} arrived.

Σ correlates elsewhere with *do*-support: whenever Σ occurs with simple tenses, *do*-support is triggered. Hence it might be thought that (69) argues for analyzing *not* as Σ.

However, *do*-support is also obligatory in *wh*-questions, which are assumed here not to have to contain Σ. If the approach to Σ taken here is along the right lines, *do*-support is not directly tied to the presence of Σ above VP. Rather, some extra condition on *do*-support is needed to account for the fact that *do*-support is obligatory with *not* and non-subject *wh*-movement, both contexts permitting contracted aux (cf. Wilder & Cavar 1995 for a proposal):

(70) a. What's John taken? vs. * What John took?
b. Where's John going? vs. * Where John went?

3. Further distributional restrictions

In this section, I examine further restrictions on contracted forms, concentrating on *'s* (< *is*, *has*), as this form shows the relevant facts most sharply. It is shown that while contractions group with material to their left at surface, the righthand context influences the possibility for contracted forms to occur. The latter cannot have a plausible syntactic account (in terms of Σ or anything else); the relevant generalizations are phonological. Hence,

in addition to syntax, also phonological properties determine whether a contracted or full form is used to spell out finite aux.

3.1 Lefthand context

At the surface (PF, the level determining pronunciation), the contracted form enters a leftward phonological dependency, i.e. enclisis. The contraction forms a unit with material to its left in prosodic (i.e. syllable) structure—and not with material to its right:

(71) a. ($_\sigma$ Johns) ($_\sigma$ out) b. * ($_\sigma$ John) ($_\sigma$ sout)

The 'host' is whatever material stands linearly adjacent to aux in the ouput of rules that determine surface order (including trace-deletion and parenthetical placement). In syntactic terms, that host may be arbitrarily distant from aux, e.g. several clauses away (72a); possibly —depending on the account of parenthetical placement—not even a constituent of the same phrase marker (72b, c):

(72) a. the spoon that she told me I should stir the soup (withs) disappeared
b. this one, you (idiots) in the wrong box!
c. this one, believe it or (nots) in the wrong box!

3.2 Righthand context

Most of the data demonstrating the dependency of contractions on their righthand context was presented in Bresnan (1971), following Baker (1971), King (1970), Lakoff (1970). The most commonly discussed restriction is shown in (73). A contracted aux does not tolerate a gap immediately to its right, where this gap may be due ellipsis or movement of VP governed by aux, or of the nonverbal main predicate governed by copula *be*:

(73) a. * John isn't coming although Mary's [$_{VP}$ e] (ok: ...Mary is [$_{VP}$ e])
b. * bought the book though John's t_{VP} (ok: ...John has t_{VP})
c. * I don't know where John's t_{PP} (ok: ...John is t_{PP})
d. * I'm living with Mary and Bill's [$_V$ e] with Sue (ok: ...Bill is [$_V$ e] with Sue)
e. * she's a better doctor than he's [$_{AP}$ e] a lawyer (ok: ...he is [$_{AP}$ e] a lawyer)

The gap may result in aux standing in final position in its clause, though not necessarily, as shown by medial deletions in pseudogapping (73d) and comparative subdeletion (73e).

The effect arises only when the head of the complement of aux is deleted. A participial aux saves a contracted finite aux from the malign effect of the gap:

(74) a. John's often been arrested, although Mary's never been [$_{VP}$ e]
b. I don't know where John's been t_{PP}
c. she's been a better student than he's been [$_{AP}$ e] a teacher

The data in (73)-(74) thus support the generalization in (75):[21]

(75) The head of the complement of aux-clitic may not be empty

At this point, a syntactic account of (75) may seem plausible, which attributes ill-formedness in (73) not to the aux, but to the gap itself. Suppose that the gap must be licensed in certain ways. The intuition would be that weak aux is syntactically 'defective', and that such a defective element is insufficient to license the 'gap' in its complement. The paradigm (73)-(74) could then be explained in terms of the ECP.

(76) Empty Category Principle: [$_\alpha$ e] must be properly governed

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21 There is a question about whether subdeletion fits the generalization, since AP in a standard analysis (i) is not the head of the complement of the copula:
(i) ... than he is [$_{NP}$ [$_{AP}$ ~~that good~~] a lawyer]
Alternative analyses are imaginable in which the elided degree element heads the main predicate governed by the copula.

Assuming (i) that the gaps in (73)-(74) can be licensed via head government, (ii) strong aux counts as a proper governor, while weak aux does not, and (iii) there is no other proper governor for the gap in (73), those examples could be accounted for as violations of (76).[22] Such an account could then be implemented in terms of the presence vs. absence of Σ, under the proposal of section 2.9.

However, this line of analysis is doomed to fail. Additional facts noted by Bresnan (1971) show that the generalization (75) is incorrect. Firstly, in subject-aux inversion constructions, weak aux may appear even though the complement of aux is empty:

(77) a. Where's John? [z]
b. What's that? [s]
c. Why's Mary leaving, and why's John [$_{VP}$ e] ? [z]

There is no plausible option open to an ECP account to accommodate (77). These examples ought to be as ungrammatical as (73); the trace of weak aux should not count as a proper governor, just as weak aux in situ does not.[23]

Secondly, the ECP account does not generalize to data involving parentheticals. Recall from section 2.3 that parentheticals may intervene between subject and weak aux, but may not follow weak aux, even though the complement of aux is not empty (78a-c). The same effect is found in wh-questions (78d-f):

(78) a. John, my dear, 's a bastard
b. *John's, my dear, a bastard
c. John is, my dear, a bastard
d. What, my dear, 's a girl like you doing in a place like this?
e. *What's, my dear, a girl like you doing in a place like this?
f. What is, my dear, a girl like you doing in a place like this?

This paradigm illustrates a restriction on the righthand context of the contraction that does not fall under the generalization (75). An account in which the illformedness of (77b,e) is due to the same factor as the one underlying (73) is to be preferred.

The paradigms (73)-(74) and (77-(78) are taken by Bresnan as evidence that contractions enter a dependency with material to the right, i.e. that contractions undergo proclisis. If contractions are proclitic, then the contexts which bar them can be explained as environments in which no host for proclisis is available. In implementing this account, we can appeal to a notion of a boundary (which I take to be prosodic) that intervenes between the aux and a potential host to prevent cliticization. In the extreme case, this boundary is the edge of the sentence; in (73a,b,c) proclisis is blocked, since there simply is no host to the right.[24]

In (73d,e), a medial syntactic gap intervenes between proclitic and potential host; in (78b,f), a parenthetical intervenes. In both cases, the assumption that they induce a relevant prosodic boundary is plausible. The effect of pseudogapping and subdeletion is to induce two prosodic constituents separated at the deletion site. This is intuitively clear in minimal pairs like (79): the second conjunct of (79a) is felt to induce two prosodic units in a way impossible for the string-identical copula sentence (79b):

(79) a. Sue's staying with Bill and John is # with Mary. (=John is ~~staying~~ with Mary)
b. John is with Mary.

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22 Such an account has been explored by Zagona (1982), and for similar facts in Serbo-Croatian and Old Spanish, by Lema/Rivero (19xx).

23 Alternatives that involve appeal to governors for the gap other than the immediate head governor fare no better. Suppose that aux-raising to C opens the possibility for the wh-moved phrase to govern, hence antecedent-govern, its trace in (6a,b). This option does not generalize to VP-ellipsis, where the wh-phrase is not the antecedent of the gap. The only other conceivable 'governor' for the gap when aux has raised would be the subject.

24 Bresnan's actual formulation is that proclisis destroys environment for the application of deletion rules; in the case of (73), VP-deletion, Subdeletion and Trace deletion; i.e. the reason for ill-formedness is failure to apply the relevant deletion rule, rather than failure to apply proclisis. In her model, proclisis is a cyclic rule in syntax, ordered before relevant deletion rules.

A similar prosodic effect distinguishes parentheticals from nonparenthetical adjuncts in postsubject position. In (80a), *apparently* can be prosodically integrated in the utterance in a way impossible for *apparently* in (80b), which is preceded by an at least 'implicit' boundary (= #), as is *my dear* in (80c):

(80) a. John's apparently on drugs.
b. John, # apparently,'s on drugs.
c. John, # my dear,'s on drugs.

The proclisis account thus permits a unification of these cases impossible under an ECP approach.

The account also correctly captures cases where contractions are possible. In (74), there is a gap that induces a boundary; but the auxiliary participle precedes that boundary and so can act as host for aux. In inversion (77), it is the subject NP that intervenes before the boundary, providing a host for the proclitic.

One further piece of evidence for the proclitic analysis is the '*it*-effect' noticed by Bresnan. In inversion constructions, weak aux does not tolerate a 'weak pronoun' to its right, if that pronoun precedes a gap:[25]

(81) a. What's that _?
b. * What's it _ ? (*Who's it? / *How's it? / ...)
c. What's it for _ ?
d. * What's it _ now?
e. What is it _ ?

The pronoun alone is not sensitive to the presence of a gap or edge to its right (81e). It is as if, while the subject in (81a) (cf. also (77)) 'protects' weak aux from the malign effect of the following gap, the weak pronoun is 'not strong enough' to protect weak aux, with the result that aux is exposed to the gap following the pronoun in (81b,d). In (81c), the gap is in the complement of *for* (which heads the main predicate), so that a 'host' intevenes between aux and the boundary induced by the gap. This means that *'s* and *it* procliticize together onto (stressed) *for*. (81d) is like pseudogapping: *'s* + *it* cannot procliticize onto *now*, since the gap intervenes.

The evidence just reviewed has shown (i) that the nature of the righthand context affects the distribution of clitic forms; and (ii) that a syntactic account (in terms of underlying distribution of strong/weak aux, i.e. presence/absence of Σ) is unlikely to work. Instead, an account that treats the auxiliary as a proclitic, i.e. an item dependent on a phonological host to its right, is more promising. Specifically, the claim is that aux must form a constituent with a 'host', i.e. a phonologically filled constituent, to its right at some level.

Bresnan assumed that there must be a proclisis transformation of the type (82a):

(82) a. ... [aux] [host] ... → ... [aux + host] ...
b. [*John*] [*s*] [*left*] → [*John*] [*s* + *left*]
c. [*where*] [*s*] [*John*] → [*where*] [*s* + *John*]

It is not clear that such a transformation is needed for (82b,c), as the syntactic structure already ensures that aux forms a constituent with material to its right in its sentence, namely I' or C'. Where that constituent contains no host, the example is ill-formed:

(83) a. John [$_{I'}$ s left]
b. where [$_{C'}$ s John]
c. *I don't know where John [$_{I'}$'s]

If however the proclisis requirement is interpreted as meaning that aux must form a word-level constituent with its host, then such a transformation is required, since aux is an independent word (X°-constituent) in syntax. This could not be the syntactic operation assumed by Bresnan, given the ban on downwards movement (cf. sect. 1.).[26]

Moreover, syntactic constituency is insufficient to account for cases with a medial gap. Here, reference must be made to the presence of a prosodic boundary between aux and potential host, to explain why clitic aux is blocked in some but not all cases where a potential host is contained in TP (the syntactic sister of aux):

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[25] The same effect is created by any unstressed subject pronoun—either the pronoun or the aux must be stressed: *where's HE ? / where IS he? / *where's he ?* . The effect is most obvious with *it*, since *it* has no homophonous strong counterpart; cf. Cardinaletti & Starke (1995).

[26] We can safely discount the possibility that 'procliticization' is the result of moving the host up to aux.

(84) a. ... [aux] # [host] ... –/→ ... [aux + host] ...
b. * I don't know where John ['s # now]
c. I don't know where John ['s been #]

In other words, the presence of a syntactic gap can induce a prosodic constituency that is non-isomorphic to syntactic constituency. The proclisis requirement of aux must be met in prosodic structure.[27]

3.3 Left-right paradox

The facts discussed in the last two sections appear to leave us with a paradox. The evidence for phonological proclisis (clitic aux forms a constituent with a host to its *right*) seems to contradict the evidence for phonological enclisis (clitic aux syllabifies with material to its *left*). This paradox has not been faced in previous work; 'proclitic' authors deny the 'enclitic' facts; 'enclitic' authors deny the 'proclitic' facts. Bresnan's assertion that "despite orthographic practice, ... Tense contraction is not encliticizing" is surely not supported by 'phonetic practice'. Kaisse (1985:41), arguing for syntactic encliticization, notes the paradigm (73), but claims it does not reflect proclitic status of aux, referring instead to Zagona's (1982) syntactic account in terms of ECP. Nespor (1994), arguing for phonological enclisis, does not address the 'proclisis' paradigms. Inkelas & Zec (1993) propose that unstressed full forms are proclitics, but explicitly exclude the 'enclitic' forms from that analysis.[28]

The paradox in assuming that something is both proclitic and enclitic arises from a basic premise about hierarchical linguistic representations. Neither syntactic nor prosodic trees admit "multiple motherhood", so that a node A cannot be daughter of two nodes B and C that are sisters. If the clitic aux is tautosyllabic with material of the preceding word, it cannot form a prosodic constituent with the following word; and vice versa.

However, in a derivational model, there need be no paradox. It is perfectly conceivable that aux could be proclitic at one stage of the derivation, and enclitic at another. Proclisis could be syntactic, but enclisis phonological; or they could reflect different stages of the phonological derivation.

It is neither desirable nor necessary to assume proclisis in syntax. While the 'proclisis paradigms' are partially syntactically conditioned, they have no direct syntactic explanation. They are best accounted for in terms of the syntax-prosody mapping. In the next section, I propose a two-stage account for left-right paradox:

(i) syntax-prosody mapping (proclisis effect)
(ii) late enclisis rule

Contractions that survive (i) are subject to (ii).

By locating both stages in the phonological component, it becomes possible to maintain the view that in *all* the examples discussed in section 3.2—declaratives and *wh*-questions—the finite auxiliary is (or can be) the syntactic element aux_{weak} lacking Σ, as predicted by the proposal of section 2.9. Whether or not the clitic form

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27 Inkelas & Zec (1993) propose a syntax that is isomorphic to prosodic structure in the case of medial gaps (pseudogapping, subdeletion). They claim that in all such cases, any subpart of VP that gets stranded to the right of the gap has in fact raised out of VP by S-structure, prior to deletion. A pseudogapped clause as in (i) then has the S-structure (ii):

(i) John is dating Mary, and Sue is, Bill,
(ii) [Sue [$_{VP}$ is ~~dating~~ t_j] $Bill_j$]

Theirs is a proclisis account of the ban on weak aux in such cases-see sect 4.below. Essentially, proclisis in (ii) is not possible, since the syntactic constituency does not provide a host for aux. These authors are concerned to establish that syntactic gaps do not induce prosodic boundaries. This issue is not central to the argument here; however, I do not think this view of the syntax of medial gaps is tenable. For arguments against such an analysis of pseudogapping, cf. Lasnik (1995).

28 In an appendix, Inkelas & Zec propose that righthand restrictions on contracted forms are due to a lexically specified requirement on the *syntactic* environment they appear in: "finite ... clitics require a phrasal sister to their right":

(i) [CL [ ]$_{XP}$]$_{XP}$ = syntactic requirement

Their assumption must be that ellipsis and trace sites are unable to satisfy (i) at some syntactic level. But if trace or ellipsis sites are syntactically represented (as required by the Projection Principle or its equivalent), (i) cannot account for the basic paradigm (73). Nor will (i) generalize to the parenthetical facts. I&Z propose that the enclitic nature of contracted aux is lexically specified as a 'prosodic subcategorization':

(ii) [[ ]$_W$ CL]$_W$ = prosodic subcat

It is possible that they restrict their proclisis analysis to reduced full aux out of the (mistaken) belief that extending it to enclitic aux could only lead to a representational paradox of the sort alluded to here.

can be used to spell out that weak aux will depend on factors governing the mapping of the syntactic representation to a prosodic structure in the phonological component.

This result is also desirable from a cross-linguistic point of view. The 'proclisis' paradigms are specific to English. In Serbian/Croatian, the weak forms are usable in all *wh*-questions, regardless of the nature of the righthand context. Given that S/C is pro-drop, root *wh*-questions may surface with only two words, the second being the the weak auxiliary. (85a) is equivalent to saying *what's?* for *what is it?*, and so on—there is no trace of the '*it*-effect' found in English.

(85)	a.	Što	je *pro*?	b.	Tko	je *pro*?	c.	Kako je *pro*?
		what	be-3sg-cl		who	be-3sg-cl		how be-3sg-cl

A declarative may also be a two word sentence with the main predicate preposed around the clitic aux (86):[29]

(86)	a.	Pametan sam.	b.	Spavali su.	
		intelligent be-1sg-cl		slept	be-3pl-cl
		'I'm intelligent'		'They slept'	

By attributing the English proclisis effect and the contrast with S/C to properties of the phonological component, it is possible to maintain a uniform (non-parametrized) account of the syntactic determination of weak forms in terms of Σ for both languages. That the phonological component should be a locus for parametrization is expected in any case.

4. Finite aux in phonology

This section sketches an account of the prosodic restrictions on contracted aux within a model of the syntax-prosody mapping of the type found in much recent work (including Inkelas & Zec 1993, Nespor 1994, Selkirk 1995). Major assumptions are

(i) a sentence has a hierarchical prosodic representation distinct from its surface syntactic representation;
(ii) prosodic structure is mapped from syntactic structure (which partially determines it) by rules of the phonological component
(iii) prosodic structure is not necessarily isomorphic to surface syntactic structure
(iv) prosodic structure is built of phonological categories, hierarchically organised in line with the 'Strict Layer Hypothesis' (SLH).

The categories of the prosodic hierarchy adopted here are (bottom to top):

(87) a. syllable (= σ)
b. foot
c. phonological word (= *p-wd* or ω)
d. phonological phrase (= *p-phr* or *PPh*)
e. intonation phrase (= *int-phr* or *I*)
f. utterance (=*U*)

We will be concerned here mainly with the phonological word and the phonological phrase.

According to the SLH, any category must dominate at least one category immediately below it in the hierarchy (a foot must dominate a syllable; a p-wd must dominate a foot; etc). Additionally, any category (except the root U) must be immediately dominated by a category immediately above it in the hierarchy. In fact, some prosodic structures adopted below violate the SLH in selective fashion. Selkirk (1995) decomposes the SLH into four 'constraints on prosodic domination', of which two (Layeredness and Headedness) are inviolable, two (Exhaustivity, Recursivity) are selectively violable. I assume that substructures such as (89), which violate Exhaustivity (88a) without violating Headedness (88b), are licit:

(88) a, *Exhaustivity* (violable): No Ci immediately dominates Cj, j < i-1
b. *Headedness* (inviolable): Any Ci must dominate a Ci-1 (except if Ci = a syllable)

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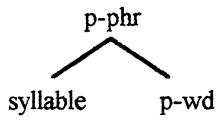
[29] These are instances of Long Head Movement, discussed in Cavar & Wilder 1994.

(89)



The p-phr immediately dominates at least one category immediately below it in the hierarchy, satisfying Headedness. That it also immediately dominates a syllable represents a violation of Exhaustivity.

With regard to the choice between contracted and full forms of aux, I adapt I&Z's account of the distribution of stressless ('reduced') and stressed full forms. In that account, stress properties depend on assignment of prosodic structure. A stressless form is possible iff aux is not exhaustively dominated by a p-wd node. Aux comes to be dominated by a p-wd node only by a default rule applying after phrasing rules. I assume that contracted forms are like stressless full forms in being possible only where not dominated by a p-wd. Where a contracted form is licensed syntactically (absence of Σ), contracted forms and full forms are 'in competition'. In that case, a contracted form is used where there is one, a stressless full form otherwise (i.e. contracted forms have priority over full forms). In this sense, allomorph selection is dependent on the prosodic environment.

4.1 Function words and phonological words

There is a fundamental distinction between functional (closed class) and lexical (open class) items with respect to the notion of 'prosodically dependent item' (phonological clitic): the only words that can be prosodically dependent are function words. All lexical words (**l-wds**) are p-wds, i.e. prosodically independent words that bear word-stress. Functional words (**f-wds**) can lack accent—many f-wds consist solely of an unstressed monosyllable. But while an l-wd might contain unstressed syllables, the sole syllable of a monosyllabic l-wd may not be unstressed. Hence we can have [fə] for *for*, but not [flə] for *floor*; [həz] for *has*, but not [jəz] for *jazz*; etc.

A standard line for encoding this fact exploits the assumption that phonology is split between a lexical and a postlexical component (e.g. Kiparsky 1982). Word stress is assigned to l-wds in the lexicon, so that these enter the postlexical component with the status of phonological words. F-wds enter the postlexical component lacking p-wd status, i.e. without stress properties. Stress, once assigned, cannot be removed. Then, the impossibility of 'reduction' of l-wds is due to lexical assignment of word-stress; and stresslessness is a basic property of f-wds as they enter the postlexical component, rather than the product of 'reduction' rules.

In the proposal of Inkelas & Zec, whether an f-wd surfaces as a stressed or stressless ('reduced') form is determined by the rules of the postlexical component that map syntactic structure to prosodic structure. In the unmarked case, the stresslessness of f-wds is preserved by that mapping. The operation that ensures this is the *phonological phrasing algorithm* (discussed directly) which constructs phonological phrases over pre-existing p-wds (i.e. l-wds). Only if an f-word acquires prosodic structure by a late rule, does it acquire stress.

I&Z propose that f-wds acquire prosodic structure by means of (90), a rule of the postlexical component:[30]

(90) Default Phonological Word Mapping: $[X^{\circ}\ \alpha\ ] \rightarrow (\ \alpha\ )_{\omega}$

F-wds undergo (90) as 'last resort', i.e. only if they cannot be integrated into the prosodic structure of a neighbouring l-wd. Once (90) has applied, an f-wd must have word stress, i.e. stressless forms (including contracted forms) are barred.

4.2 Phonological phrasing and 'proclisis'

Generally, an f-wd integrates with a lexical word to its right, when this is built into phonological phrase by the Phonological Phrasing Algorithm (PPA). This algorithm operates 'from the bottom up', in approximately the following fashion:[31]

(91) *Phonological Phrasing Algorithm* (PPA)

a. a p-wd is targeted, a p-phr is constructed over it

b. a stressless element α can be incorporated into the p-phr built over a linearly adjacent p-wd ß, if ß is contained within the syntactic sister constituent of α

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30 To avoid confusion with syntactic bracketing, round brackets are used to show prosodic structure.

31 The PPA may also group more than one p-wd under a phrase, if the two are adjacent and one is contained in the syntactic sister of the other. The exact formulation of the PPA depends on factors beyond the scope of this discussion, so I keep to an intuitive informal presentation. (91) differs from I&Z's formulation, partly since they make different assumptions about syntax.

In the simplest case, the l-wd is also the syntactic complement of the f-wd (92). The l-wd need not be the complement of the f-wd; the PPA enables a subject pronoun to be incorporated into the phrase built over the verb (93). Integration of more than one f-wd into a p-phr is also possible, as in (94):

(92) a. for (John)$_{\omega}$ → (for (John)$_{\omega}$)$_{PPh}$
b. is (leaving)$_{\omega}$ → (is (leaving)$_{\omega}$)$_{PPh}$

(93) it (rained)$_{\omega}$ → (it (rained)$_{\omega}$)$_{PPh}$

(94) a. for the (boss)$_{\omega}$ → (for the (boss)$_{\omega}$)$_{PPh}$
b. is it (raining)$_{\omega}$ → (is it (raining)$_{\omega}$)$_{PPh}$
c. is it a (problem)$_{\omega}$ → (is it a (problem)$_{\omega}$)$_{PPh}$

In each case, the p-wd base for p-phr construction is contained in the sister to the f-wd in the syntactic input configuration. In the output of the PPA, the f-wd is not dominated by a p-wd.[32] Hence, the f-wd does not acquire word-stress. Thus *for* in (92a) can be pronounced [fə].

The constituents created by the PPA in (92)-(94) match syntactic constituents. The PPA is also responsible for cases of non-isomorphism between syntactic and prosodic structure. Applied to (95), the PPA brackets aux together with the p-phr constructed over the subject. While the p-phr *in the kitchen* corresponds to a syntactic constituent, the p-phr *is the dog* does not. Hence in (95b), no prosodic constituent corresponds to IP in (95a):

(95) a. [$_{CP}$ is$_j$ [$_{IP}$ [$_{DP}$ the dog] [$_{I'}$ t$_j$ [$_{PP}$ in the kitchen]]]
b. (**$_{PPh}$** is the ($_{\omega}$ dog)) ($_{PPh}$ in the ($_{\omega}$ kitchen))

Although it produces outputs that do not match syntactic constituency, the PPA is still sensitive to the syntactic constituency of the input. If the syntactic sister of an f-wd is empty, then that f-wd cannot be integrated in stressless form, given (91b). This is this case where deletion or movement of the complement of an f-wd leaves that f-wd in final position in the string. Default Word Mapping (90) then applies to the 'stranded' f-wd. I&Z illustrate with preposition-stranding by *wh*-movement:

(96) a. Who did you buy the (book)$_{\omega}$ for ← input from syntax
b. (book)$_{\omega}$)$_{PPh}$ for ← PPA
c. (book)$_{\omega}$)$_{PPh}$ (for)$_{\omega}$ ← (90)

In (96), *for* cannot be reduced to [fə] since its is dominated by a p-wd node, and so must have word-stress.

The same account explains examples where aux is left in final position by deletion or movement. The PPA cannot integrate aux into a phrase, so that Default Word Mapping applies:

(97) a. I know where (John)$_{\omega}$ is ← input from syntax
b. (John)$_{\omega}$)$_{PPh}$ is ← phonological phrasing algorithm
c. (John)$_{\omega}$)$_{PPh}$ (is)$_{\omega}$ ← (90)

Since it is exhaustively dominated by ω in (97c), the aux *is* must have word-stress. It is for this reason, according to I&Z, that a reduced full form cannot appear in this position. I claim that for the same reason, the contracted form is barred.

The result of the PPA is proclisis—the f-word forms a constituent with a 'host' to its right, within which it can remain stressless. It is 'dependent' in the sense that it needs that 'host' to project a PPh within which it can shelter from the rule (90). Stressless f-wds are not 'proclitic' in the sense of forming a word-level constituent with their host. Nor are they 'inherently' proclitic. The fact that f-wds do not remain stressless when they are not 'proclitic' is due to the default mapping rule (90).

This is only an incomplete sketch of the configurations in which an f-wd can be integrated by the PPA. In section 3.2, cases were discussed (*wh*-movement, pseudogapping, subdeletion, parentheticals) that motivate the assumption of prosodic boundaries within syntactic constituents that block 'proclisis'. In terms of the PPA-analysis, these boundaries must be taken to close off p-phr construction.

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[32] The outputs thus violate the Exhaustivity constraint of the SLH. The f-wd generally has prosodic structure at levels lower than the p-wd, i.e.is dominated by syllable and foot nodes.

Assuming a 'Larsonian' approach, the structure of a complex VP that inputs the PF-component is as in (98a); a pseudo-gapped complex VP as in (98b). The PPA does not block proclisis in (98c), since *book* is the closest p-wd contained within the syntactic sister of aux, so that integrating aux into the p-phr constructed would satisfy (91b):

(98) a. John has [given [[a rose] [t [to Mary]]]]
b. ... and Sue has [~~given~~ [[a book] [t [to Bill]]]]
c. John's given a rose to Mary and Sue has, a book to Bill [hæz] / *[həz] / *[z]

The PPA can be prevented from including aux in the p-phr built on *book*, if a deletion site induces closure of the p-phr. Given the intonational grouping effect in such examples, it may be that the deletion site actually induces closure of an intonational phrase. On encountering a deletion site, the PPA must then close off the p-phr, to permit closure of the int-phr. The aux is 'stranded' and subject to (90), as in example (97).[33]

(99) ... and $(\text{Sue})_{\omega}$ has ~~given~~ $(_{\text{I}}\ (_{\text{PPh}}\ \text{a}\ (\text{book})_{\omega}\ )\ (_{\text{PPh}}\ \text{to}\ (\text{Bill})_{\omega}\ )\ )$

4.3 Enclisis

Not all f-wds that fail to be integrated via the PPA are subject to (90). Pronouns are f-wds that lack any l-wd complement. Object pronouns are frequently stressless, and in that case are enclitic to the preceding verb or preposition (cf. I&Z, Selkirk 1995):

(100) a. $(\text{need})_{\omega}$ + m → $(\text{need 'm})_{\omega}$ cf. "Needham"
b. will $(\text{need 'm})_{\omega}$ → $(\text{will}\ (\text{need 'm})_{\omega})_{\text{PPh}}$

This indicates that some f-wds can undergo special "encliticization" rules that apply early, so as to bleed both the PPA and default mapping. In (100a), the pronoun is incorporated into the lexical p-wd *need*. Subsequent application of the PPA integrates the f-wd *will* as a 'proclitic' in the p-phr built over the complex p-wd (100b).

Where an object pronoun is a syntactic sister of V, it could get integrated 'enclitically' into the p-phr of the verb via the PPA. But the PPA cannot capture the enclitic status of unstressed object pronouns in complex VPs and ECM-constructions. In (101), the pronoun is not a syntactic sister of the verb, rather, it is contained in its complement.[34] In (101b), the phrasing indicates that while the infinitive (*to be*) is proclitic on the main predicate, the accusative subject is enclitic on *believe*:

(101) a. ... [believe [[him] [to be sick]]]
b. ... $(\text{believe})_{\omega}$ 'm to be $(\text{sick})_{\omega}$ → ... $(\text{believe'm})_{\omega})_{\text{PPh}}$ (to be $(\text{sick})_{\omega})_{\text{PPh}}$

The pronoun could procliticize, according to (92b). Its behaviour in (101) is explained if *'m* encliticizes before the application of the PPA.

If a Larsonian syntax is adopted for (102), then the pronoun is in the specifier of the complement of V here, too. Following wh-movement of PP, it should end up getting p-wd status by (90). This is possibly the case for stressed pronouns, but unstressed pronouns clearly encliticize to the preceding l-word:

(102) ... where he [put [[it] t_{PP}]]]

A second case that motivates the assumption of an early enclisis rule is the English genitive *'s*-morpheme (POSS). This morpheme shows the same phonologically conditioned allomorphy as contracted aux *'s* (*is/has*). Obligatory voicing assimilation indicates that POSS is enclitic on the surface; phrasing indicates that the host belongs to a previous p-phr. Assming that in syntax this form realizes a functional head in the nominal extended projection (D° for concreteness), enclisis is a 'restructuring' rule:

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33 Proclisis not blocked in (i), indicating that the trace of head-movement of aux does not induce such a boundary:
(i) [is it _ [raining]]

34 This discussion presupposes that object pronouns do not encliticize in syntax. See Selkirk (1995) for a suggestion to the contrary.

(103) a. the boy from ((York's)$_{\sigma}$)$_{\omega}$)$_{PPh}$ ((book)$_{\omega}$)$_{PPh}$ [s] / * [z]
b. [$_{DP}$ [the boy from York] [$_{D'}$ [$_{D^{o}}$ s] [$_{NP}$ ...]]]

NP in (103a) can be emptied by deletion, with the result that POSS stands final in a p-phr or even final in the utterance, as in (104). POSS shows no trace of the proclisis effects discussed for contracted aux.

(104) a. You have my book and Mary has John's _
b. This book is the boy from York's _

If the PPA and default word mapping were permitted to precede enclisis of POSS, proclisis effects would be predicted, (104) should be barred.

To account for enclisis of POSS and of object pronouns, I assume that enclisis applies early to these forms, and so is able to bleed PPA and default word mapping.

4.4 Enclisis of aux and rule ordering

This discussion gives us the two rules we need to account for the behavior of aux. The PPA accounts for the 'proclisis paradigms'. In (105), aux is integrated into the p-phr built on the host l-wd (*John*):

(105) (where)$_{\omega}$ s (John)$_{\omega}$ → (where)$_{\omega}$ (s (John)$_{\omega}$)$_{PPh}$

An enclisis rule accounts for the integration of aux into a preceding word:

(106) (where)$_{\omega}$ s → (where s)$_{\omega}$ cf. "wears"

More needs to be said about the enclisis rule. There are two problems. Firstly, as we have just seen, enclisis can precede the PPA. Enclisis should be able to apply to aux in (105) as anywhere else; but if it is able to apply before the PPA, the aux will not be stranded by the PPA in (12). In other words, the account for the 'right-edge' effect in terms of default word mapping (90) is lost. Secondly, the 'proclisis' rule (PPA) must be prevented from determining the output for clitic-aux *'s*, since as pointed out in section 3.1, this form is always enclitic on the surface. The syllabification evidence indicates that encliticization is obligatory for this form at least.

The descriptive solution is to reverse the order of operations, and to make both obligatory. Proclisis 'feeds' enclisis. i.e. aux only encliticizes if it has "survived" by finding a host as a *proclitic*. While enclisis must apply early to POSS, it must apply late to aux. Whether there is a deeper account for this behaviour remains to be seen. At least, the complex patterns of section 3 can now be captured.

Consider the "it-effect" (107). The account suggested above was that weak pronouns like *it* cannot act as host for procliticization. This would follow if *it* is inherently unable to head a p-word; i.e. is never subject to default word mapping.[35] Then, the PPA cannot build a p-phr over *it* (this would be consistent with the behaviour of *it* over a wider range of constructions), aux fails to procliticize, and is subject to default word mapping.. Notice that when that happens, it is able to undergo enclisis onto aux (108):

(107) * what (s (it)$_{\sigma}$)$_{PPh}$
(108) what ((is)$_{\omega}$ it)$_{PPh}$

Now consider the neutralization of "it-effect" in *what's it for*. In this case, the preposition stranded by wh-movement gets p-wd status by default mapping. The PPA can then build a p-phr over *for*, to which aux can procliticize (109a), prior to encliticization (109b):

(109) a. (what)$_{\omega}$ s it (for)$_{\omega}$ → (what)$_{\omega}$ (s it (for)$_{\omega}$)$_{PPh}$
b. (what)$_{\omega}$ (s it (for)$_{\omega}$)$_{PPh}$ → (what s)$_{\omega}$ (it (for)$_{\omega}$)$_{PPh}$

It is unclear whether *it* remains procliticized as in (109b), or whether it encliticizes along with aux. That late enclisis is available to *it* is indicated by simple examples like *what IS it*?

Procliticization and encliticization of aux to *it* is asymmetric. We find no "it"-effect to the left of aux—(110b), shows that *it* may act as the sole host for enclisis of aux:

(110) a. * how difficult's it? b. it's difficult

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[35] Possibly, if *it* is targeted by default word mapping, it is replaced by its strong pronoun counterpart *that*..

The account of the righthand "it"-effect depends on the assumption of the non-p-wd status of *it*. *It* is never a p-wd, hence it either encliticizes (*did it*) on the basis of an early rule, or else procliticizes (*it did*) via the general phrasing algorithm. How is it that a proclitic can act as a host for aux in its enclitic guise (110b), while not in its proclitic guise (110a)?[36] The answer lies in the different hierarchical status of the host in each case. As a proclitic, aux requires a host that is a p-wd. *It* has syllabic structure, but is not a p-wd, hence *it* is inadequate as host for aux in (110a). As an enclitic, aux requires a syllabic host, hence *it* is adequate in (110b). The two examples are analysed in (111):

(111) a. * $(_{PPh}$ s $(\text{ it })_{\sigma})_{PPh}$ ----

b. $(_{PPh}(\text{ it })_{\sigma}$ s $(\text{ difficult })_{\omega})_{PPh}$ ← PPA
$((\text{ its })_{\sigma}$ $(\text{ difficult })_{\omega})_{PPh}$ ← Enclisis

In (111b), aux is encliticized to a proclitic.

Finally, consider the contrast between English and S/C. The absence of the 'proclisis' effects (e.g. in (112)) in S/C suggests that aux-enclisis bleeds "proclisis" (PPA) in S/C. Then, the contrast falls out from a a rule-ordering difference, which is a plausible 'low-level' phonological parametrization.

(112) Što je *pro*?
what be-3sg-cl

This account predicts that the whole rage of gaps that block contractions in English can immediately follow clitic aux in S/C. The prediction seems to be borne out. Like English, S/C permits VP-ellipsis and even pseudogapping. In (113), the verb-gap is immediately preceded by an enclitic aux, a situation completely excluded in English:[37]

(113) a. Ivan je tvrdio da Marija nije trudna a ja **sam** __ da je.
I. be-3sg-cl claimed that M. isn't pregnant but I be-1sg-cl that (she) is

b. * John's claiming that Mary isn't pregnant, but I'm _ that she is.

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36 Thanks to Hans-Martin Gärtner for raising this question.

37 Example due to D. Cavar (p.c.).

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