

DELETING NAMED MORPHEMES*

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If the English informal style deletions (ISDs) illustrated in *((Are) you) going?* are analyzed as the result of a (late) syntactic rule, theoretical embarrassments ensue concerning the relationship of syntax and phonology, the notion of surface structure, and the separation of cliticization from other syntax. But ISDs can delete proper parts of (phonological) words and are even fed by morphophonemic rules; these facts argue that ISDs are themselves morphological, in fact morphophonemic. We propose that, in general, deletions of named morphemes, whether 'optional' (like the ISDs) or obligatory, are morphological processes (either morpholexical or morphophonemic), not syntactic operations, and we speculate that this conclusion can be extended to cover all free deletion rules. The proposal is supported with cases from Sarcee, Swahili, Welsh, and Swedish, as well as an English case (of *do* deletion) in addition to ISDs.

0. Introduction

Detailed analysis of almost any language gives evidence for rules freely deleting one or more specific morphemes, which must be named in a list associated with the rule. Some such deletions are obviously morphological. Others have been assumed to be syntactic rules. Many are 'optional' rules, subject to complex stylistic and contextual conditions; one such case is the deletion of a set of auxiliary verbs and subject pronouns in spoken English, illustrated in (1) through (5) below.

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- 1a) (Are) you going soon?
 1b) (You) going soon?
 2) Where (have) you been this week?
 3) (I) got in last night and still haven't unpacked.
 4) (It)'s really cold in here.
 5) (There)'s really no hope.

Supposing that these English informal style deletions (ISDs) are (late) syntactic rules leads to a number of embarrassments for virtually any theory of syntax, as we detail in section 3 below. All, however, are averted if the ISDs are not syntactic, but morphological; in section 4 we argue, in fact, that ISDs apply after *morphophonemic* rules, and hence (we assume) are themselves morphophonemic rules.

We propose that this is not just a conclusion about one case in English, but that deletions of named morphemes, whether 'optional' (like the ISDs) or obligatory, are morphological processes (either morpholexical or morphophonemic), not syntactic operations. In section 5 we support this proposal with a discussion of cases from Welsh, Sarcee, Swahili, English (involving deletion), and Swedish.

As background to this argument, we first discuss the notion 'free deletion' (section 1) and argue that the ISDs do in fact affect a small set of named morphemes (section 2).

Free deletions

We take the term 'free deletion' to denote a grammatically expressed requirement or permission for some constituent to be phonologically absent without any associated anaphoric dependency. In the light of recent developments in syntactic theory it proves to be impossible to talk about free deletions in a precise yet theory-neutral way; yet the phenomena in question are there for everyone, and we need a way to consider their implications while remaining minimally tied to specific current tendencies and factions. What we shall do in this paper, therefore, is to use the widely known 'standard' transformational framework as a lingua franca. We intend our conclusions to be intelligible within the TG context and to be translatable to very different frameworks.

'Free deletion' rules may well have complex and restrictive conditions on their application, so that the word 'free' does not necessarily imply 'context-

free' in the sense of being optimally stated ' $\alpha \rightarrow \emptyset$ '; but those conditions will not include a stipulation that the victim be identical in some specified respect to some other constituent, or in other ways tie the deletion to an anaphoric function.

Of course, various recently proposed grammatical frameworks claim that free deletions are the only kind of deletion in grammar: works such as Jackendoff 1973, Chomsky 1972, Chomsky and Lasnik 1977, and many other works by Chomsky and his students, reject all identity deletion in favor of using phonologically unrealized dummy constituents which undergo rules determining anaphoric linkage in much the same way as non-null anaphors do.¹ In terms of these frameworks, our claim would be about deletions tout court, rather than free deletions in particular.

Indeed, Chomsky and Lasnik (1977: 431) put forward a proposal that we wish to endorse: that rules of free deletion apply after all syntactic rules, "and are, in fact, of a rather different sort". The free deletions that have received attention in the syntactic literature are largely deletions of named morphemes, but one outstanding exception is the general rule of Subject Pronoun Drop (SPD) which operates in so many languages. We will argue below that in at least one language, namely Welsh, SPD is a morphological rule, a fact that suggests strengthening both our hypothesis and Chomsky and Lasnik's so as to predict that *all* free deletions are morphological.

Notice, incidentally, that it is quite natural to see deletions as morphological in all cases. The morphological component has the function of assigning an underlying phonological representation to each formative in its syntactic context; deletion rules are the ones that assign the null phonological representation (Fiengo 1974: 110).

¹ Interestingly, Postal (1970) proposes something that is very similar to these later interpretive approaches, assigning a mark (his '[+DOOM]') to certain constituents during the cycle to identify them as surface null anaphors, and leaving deletion, at least in Equi cases, to a much later stage of derivation. He suggests (p. 489) a general constraint to the effect that an NP must be pronominal to be deletable, and adds that it "could well be a theorem following from principles which guaranteed that erasure rules in general, or at least those relevant to NP, must necessarily apply at or very near the ends of grammars". In fn. 29 (p. 492) he considers the possibility that deletion might in fact be argued to be purely an aspect of the phonological component, and thus prefigures rather clearly the position we shall take here.

2. Characteristics of the ISDs

In English casual speech and informal writing, a variety of elements may be absent that would be present in more formal styles. These include the auxiliaries in (1) and (2) and the pronouns in (3)–(5), the two cases of immediate interest to us, but also articles and possessive pronouns, as in (6)–(8); hortatory *let*, as in (9); the conjunctions *if* and *as*, as in (10) and (11); and perhaps some prepositions, such as *at* in (12). (Examples marked with T and an example number are quoted from Thrasher 1973; we do not necessarily agree with all of Thrasher's judgments.)

- (6) (The) Watergate affair just won't go away. (T34)
- (7) (A) friend of mine used to live in that building. (T35)
- (8) Bill, (your) wife's on the phone. (T40)
- (9) (Let)'s get out of here.
- (10) (If) milk prices ever go down, I might start drinking the stuff again. (T54)
- (11) (As) far as I can tell there's nothing to his claim. (T6)
- (12) (At) cherry blossom time the Japanese take a picnic and go view the blooms. (T7)

Some of these data have been reviewed in Schmerling 1973, Thrasher 1973 and Drachman 1974, for casual speech; brief mention of examples from informal writing is made in Zwicky and Zwicky 1981.

Our initial remarks are based on an insightful analysis of the auxiliary and pronoun data in an introductory text, Akmajian, Demers, and Harnish 1979: ch. 9 (hereafter ADH), where it is argued that the missing morphemes are in fact deleted. The deletion rules refer to specific morphemes; in particular, only a few auxiliaries – *are*, *have*, *do*, *did* – delete freely:

- (13) (Are) you happy with this idea?
- (14) Hey, (have) you been told about the crash?
- (15) (Do) you want to leave now?
- (16) (Did) you ever vacation in Italy?
- (17) *(Can) you eat peas on a knife?
- (18) *(Will) you give me the salt?
- (19) *(Must) you talk with your mouth full?
- (20) *(May) I go now?

Moreover, these deletions are positionally limited: auxiliaries and pronouns delete sentence-initially (with possibly a preceding interjection), as in (1), (3)–(5), and (13)–(16) above; and auxiliaries (but not pronouns) delete after a sentence-initial interrogative *wh* element, as in (2) above and (21)–(22) below. Compare these acceptable deletions with the unacceptable ones in

(23)–(26), where material is deleted sentence-internally, and in (27), where a pronoun is deleted after a sentence-initial *wh* element:

- (21) Who (are) you taking to Paris with you?
- (22) Whatcha [= what (do) you] wanna do?
- (23) You *(are) awfully happy this morning.
- (24) You *(have) been told not to do that.
- (25) I know *(you) gotta leave now.
- (26) When *(it)'s really hot in here, we open the windows.
- (27) Who're *(you) seeing?

It is implicit in ADH's treatment, and explicitly argued by Thrasher, that these deletions are not special cases of the discourse deletion examined by Morgan (1973), which creates sentence fragments:

- (28) Q. When are you going?
- A. At four.
- *(I) am going at four.
- *(Am) going at four.

There are important contextual effects, however, since (as Drachman emphasizes) the ISDs are favored in contexts in which the deleted material is recoverable and disfavored in contexts in which this material is not recoverable; thus, *he*, *she*, and *they* are not easily deleted in isolated examples:

- (29) *Look(s) like death warmed over.

but can delete when information is supplied contextually about the missing subject, either by a gesture on the part of the speaker toward the person(s) referred to, or by linguistic context:

- (30) Just saw Bert. (He) looks like death warmed over.

These effects need not concern us here.

It is significant for our immediate concerns that the deleted item must be *unstressed* in its sentence, an effect we can observe by manipulating the linguistic context; compare the acceptable (31a), where the deleted item is unstressed, with the less acceptable (31b), where the deleted item is contrastive, hence bears some stress:

- (31a) Well, you can stay if you want to. I can't. (I) have to leave now.
- (31b) Well, you can stay if you want to. ?(I) have to go now.

In line with this observation is the fact that existential *there* and dummy *it*, both of which bear no sentence stress, delete easily, as do *you* in questions and *I* in assertions, where they are relatively predictable and usually stressless. And then of course there is the fact that the list of items deletable in (1)–(5) and (6)–(12) consists entirely of words that are normally without sentence stress in English.

Thrasher also considers, and dismisses, the possibility that the ISDs are simply fast speech phonological reductions carried all the way to complete deletion. Certainly there is no route to deletion through purely phonologically conditioned processes, since there are minimal contrasts between the deletable auxiliary *are* and the nondeletable possessive pronoun *our*, and between the deletable auxiliary *have* and the nondeletable preposition *of*: unstressed, both *are* and *our* can reduce to [r] and both *have* and *of* can reduce to [v], so that both examples in (32) below can begin with [ryu] and both examples in (33) can begin with [vyu]:

- (32a) Are *you* going to cook dinner?
 (32b) Our *use* for this idea is pretty limited.
 (33a) Have *you* seen *Manhattan*?
 (33b) Of *your* kids I only know two.

but only the (a) examples permit reduction to zero:

- (34a) *You* going to cook dinner?
 (34b) **Use* for this idea is pretty limited.
 (35a) *You* seen *Manhattan*?
 (35b) **Your* kids I only know two.

These observations reinforce our original position that the deletions are morpheme-specific. If they are to be considered 'phonological' rules of any sort, they must be *morphophonemic* rules, not natural processes. The possibility remains, of course, that they are not 'phonological' deletions in any sense, but rather are syntactic rules deleting named morphemes. In the next section we explore the (rather unpalatable) consequences of treating the ISDs as syntactic rules.

3. Embarrassing facts

Supposing that ISDs are syntactic rules (even if they can be characterized as applying 'late' in derivations) leads to difficulties for theoretical frame-

works in which linguistic rules are grouped into a number of components which interact with one another in particularly simple ways – frameworks like our own, as summarized in Zwicky 1982, and Chomsky's (in, say, Chomsky 1982), among others. The difficulties are especially striking for our own framework, where at least three theoretical embarrassments follow.

3.1. Phonology in syntax

We have observed that the ISDs affect only unstressed words. But our theoretical framework includes the Principle of Phonology-Free Syntax (Zwicky 1969), according to which syntactic rules cannot be conditioned or constrained by language-particular clauses making reference to phonology, whether segmental or prosodic. In our framework, the syntactic component can feed or bleed the 'phonological' components (we distinguish between the components of prosody, morphophonemics, and process phonology, though these refinements are irrelevant here), but the latter cannot feed or bleed the syntactic component. If ISDs are in the syntactic component for English, they are straightforward counterexamples to this assumption.

3.2. Syntax after surface filters.

ISDs were first discussed in the literature on generative grammar, by Schmerling (1973), in connection with a surface filter proposed by Perlmutter (1971: ch. 4):

- (36) *The Subject Requirement Constraint (SRC)*: Any sentence other than an Imperative in which there is an S that does not contain a subject in surface structure is ungrammatical.

Schmerling notes that the SRC was posited to provide a uniform account of (at least) three phenomena that seem to cluster together in languages: (a) "the impossibility of deleting unemphatic subject pronouns, even in cases where verb inflection prevents ambiguity" (p. 578); (b) the occurrence of dummy subjects, like English *it* and *there*; and (c) the inapplicability of Heavy NP Shift to subjects. Examples (37)–(39), taken from Schmerling, illustrate these points.

- (37a) *Am here.
 (37b) *Is a doctor.
 (38a) It's raining./*Is raining.

- (38b) There's a fly in my soup./ *Is a fly in my soup.
 (39a) I saw yesterday a hunchbacked old man who claimed to be selling copies of the Watergate files.
 (39b) *Arrived yesterday a hunchbacked old man who claimed to be selling copies of the Watergate files.

But then, as Schmerling observes, ISDs involving pronoun subjects, as *n* (1)–(5), yield structures straightforwardly in violation of the SRC. Rather than give up the SRC or label ISDs 'ungrammatical', Schmerling chooses to resolve the difficulty by ordering the ISDs *after* the level at which the SRC operates. One possibility would have been simply to claim that the deletions apply after surface filters, the SRC in particular. This Schmerling does not do, presumably because such a move makes hash of the notion 'surface structure'. We would want to resist this move in any case, since it orders syntactic rules (the ISDs) after surface filters, contrary to our general assumption that the syntactic component can feed or bleed the component of surface filters, but not vice versa.

What Schmerling does do is to reclassify the SRC as a filter applying at the level of *shallow structure* rather than surface structure. Shallow structure can be defined as the output of the cyclic rules (Pullum 1979: 154). Schmerling observes that the rules that must apply before the SRC are either clearly cyclic (*there* insertion, rules deriving dummy *it*) or can be assumed to be without apparent danger (Heavy NP Shift), so that there is no immediate problem in taking the SRC to be a shallow structure filter. We might add that the deletion of *you* in imperatives can also be postcyclic (and would have to be, given the proposals of Pullum 1979: ch. 4), so the statement of a shallow-structure SRC can be simplified by the removal of the rider dealing with imperative sentences.

Despite the attractions of Schmerling's proposal, we believe that it is not necessarily the correct solution. In particular, we shall argue in section 4 that though the SRC might well be a shallow-structure filter, ISDs do not in any way militate against a surface filter treatment of the SRC.

3.3. Syntax after cliticization

To expose the final difficulty, we must consider in some detail how the ISDs are to be stated. Consider first the somewhat simpler case of auxiliary deletions. ADH make the crucial observation: the deletable auxiliaries are those which can contract with the following subject, that is, those with reduced proclitic forms: *are, is, am, have, has, do, did*, but not *had, was,*

were, will, or any of the other modals, or any auxiliary already contracted with the negative *n't*:

- | | | | | |
|-------|----------------|---------------|--------------------|--------------------|
| (40a) | Are you going? | Is he 'going? | Have you finished? | Do you grow roses? |
| (40b) | 'Re you going? | 'S he going? | 'Ve you finished? | D'you grow roses? |
| | [ɹyʊ] | [zi] | [vyu] | [dyu] or [ʃu] |
| (40c) | You going? | He going? | You finished? | You grow roses? |

In (40) the (b) forms are versions of the (a) forms with the auxiliary proclitic to the following word, and the (c) forms are versions of the (a) forms with the auxiliary deleted.

For auxiliaries that cannot become clitic to a following word, the corresponding (b) and (c) forms are either impossible or are not versions of the (a) forms:

- | | | | |
|-------|--------------|---------------------|--------------------------|
| (41a) | Will he go? | Had you finished? | Don't you grow roses? |
| (41b) | *'Lɪ he go? | *'D you finished? | *N't you grow roses? |
| | [li] | [dyu] or [ʃu] | [n̩tyu] or [n̩tʃu] |
| (41c) | He go? | You finished? | You grow roses? |
| | = Did he go? | = Are you finished? | = Do/did you grow roses? |

The natural way to capture this implicational relationship between the proclisis of auxiliaries and their deletion is to assume that the first rule feeds the second, with the second formulated so as to apply only to forms that have undergone the first:

- (42) Delete a sentence-initial unstressed auxiliary if it is immediately dominated by N. [optional, subject to stylistic/contextual conditions]

On this analysis, the (a) forms in (40) do not involve procliticization; the (b) forms are derived by procliticization and subsequent reduction; and the (c) forms are derived by procliticization and subsequent deletion via (42). Deletion of auxiliaries after a *wh* element, as in (2), is dependent on cliticization in much the same way as deletion of sentence-initial auxiliaries, although it applies less freely for many speakers.

But now we have a cliticization rule feeding a putatively syntactic deletion rule, again contrary to the assumptions of our theoretical framework, in which the syntactic component can feed or bleed a component of cliticization and readjustment rules, but not vice versa.

3.4. To summarize

Supposing that ISDs are syntactic rules leads to three contradictions of our theoretical assumptions about interactions between components. First, we have a case of phonology constraining syntax. Second, we have a syntactic rule applying after what might be a surface filter. Third, we have a syntactic rule applying after a cliticization rule.

One might conclude from this that our theoretical assumptions, interestingly strong though they might be, are simply wrong. This would be a hasty conclusion. Notice that the three component-interaction assumptions we have mentioned in this section (syntax before phonology, syntax before surface filters, syntax before cliticization) are almost entirely independent of one another logically. One could abandon the Principle of Phonology-Free Syntax while maintaining the others, or abandon the others while cleaving to the PPFS. One could give up requiring that all syntax precede cliticization while insisting that all syntax precede the level at which surface filters apply. Consequently, it would be a fantastic coincidence that a single small set of data appeared to falsify all three hypotheses simultaneously. The weak point in the argument is, of course, the assumption that the ISDs are syntactic rules.

4. Morphophonemics

We have seen that the ISDs are subject to a condition referring to stress, that they might apply after a surface filter, and that they appear to apply after a cliticization rule. None of these observations would be in the least surprising if we were dealing with some sort of 'phonological' rule.² It now turns out that the deletion of sentence-initial unstressed pronouns can easily be seen to require the previous application of some morphophonemic rules in at least some cases. The crucial examples are like (4) and (5) above, repeated here:

- (4) (It)'s really cold in here.
 (5) (There)'s really no hope.

² Exactly this analysis has been argued for by Labov (1969) with respect to the Black English copula deletion in sentences like *He sick*. Labov observes that the deletability of the copula is contingent on its contractibility and states both contraction and deletion as phonological (actually, morphophonemic) rules.

What is important here is that the short version of (4) has an initial /s/ - /srili/ - while the short version of (5) has an initial /z/ - /zrili/. What determines the voicing of the initial fricative is the phonological make-up of the deleted pronoun: an /s/ from /Its/, a /z/ from /ðerz/. That is, the morphophonemic rule of progressive voicing assimilation, which selects the /s/ or /z/ allomorph of the auxiliary *is*, applies *before* this ISD, which therefore must itself be located within the morphophonemic component of the grammar of English. Having placed one ISD there, we are free to place (42) there as well and avoid the unpleasant consequences of locating it within the syntactic component.

One might argue that all that the pronunciation facts of (4) and (5) show is that still another of our theoretical assumptions about components must be given up, namely the hypothesis that the syntactic component can feed or bleed the morphophonemic component but not vice versa. Taking this tack is tantamount to abandoning all interesting assumptions about component interactions. True, exactly this position has been taken by a number of linguists (for instance, Hetzron 1972), but it rather strains our credulity to realize that the data apparently destroying our fourth hypothesis is so closely related to the data that gave trouble to the other three.

The formulation of the ISD rule for unstressed pronouns presents a number of problems that do not affect our conclusions about the location of these deletion rules. As ADH point out, the deletion of pronouns is dependent on cliticization (of a following auxiliary to the pronoun, if there is a following auxiliary); but for pronoun deletion the cliticization is obligatory, whereas for auxiliary deletion cliticization is optional: (43a) can contract to (43b) or reduce to (43c), while (44a) can contract to (44b) but cannot reduce to (44c), the only possibilities for reduction being those in (45).

- (43a) Did you go?
 (43b) D'you go?
 (43c) You go?
 (44a) It is hot today.
 (44b) It's hot today.
 (44c) *Is hot today.
 (45a) 'S hot today.
 (45b) Hot today.

There are several possible analyses for these data, and for the further reduction of already reduced forms, as in (46), but the choice among them

- (46) Are you finished? → You finished? → Finished?

does not seem to bear on our proposal that the deletion rules are morpho-phonemic in character.

5. Other cases

We now turn to some of the other cases in the literature where a deletion rule has been classified as syntactic and argued to be subject to phonological conditions, hence to constitute counterexamples to the PPFs. In each case, the main assumption of this paper, that all free deletions of named morphemes (and perhaps all free deletions, period) are morphological, predicts that the problem lies not with the PPFs but with the classification of the rule as syntactic.

5.1. *Welsh mutation and free deletion rules*

Awbery (1975) has presented with great clarity some data which in her view challenge the 'interface model' of syntax-phonology interrelations, in which syntax is free of phonological conditioning and phonology is subject only to conditions referring to material in surface structure. These data may now be seen to provide instead some clear confirming evidence for our claims about free deletion rules.³

Awbery treats in some detail the phonology of the processes in Welsh known as Soft Mutation, Aspirate Mutation, and Nasal Mutation. Here it will suffice to keep in mind that in certain rather complex and heterogeneous lexical and syntactic environments, initial consonants of words undergo phonological changes; in particular, initial segments of direct objects undergo a process (Soft Mutation) which, *inter alia*, voices underlyingly voiceless stops, spirantizes underlying *b* and *d*, and deletes *g*.⁴

It is fairly clear that the basic order of constituents in Welsh clauses is VSO. The direct object of a clause can therefore be identified by reference to its position in the typical case: the context 'Verb NP _____' picks it out. Awbery proposes that this is the context to which the triggering of the

³ Essentially the same data are noted and discussed by Morin (1970). We discuss Awbery's (apparently independent) work because her paper is more accessible to the reader; we mention Morin's note only where it has additional relevant observations.

⁴ These are end results. As suggested by Zwicky (1974), and independently by Awbery, the deletion of *g* might be accomplished via an intermediate stage of spirantization. This is not relevant to the argument here.

mutation process on direct objects must be made sensitive. She then notes that the operation of SPD in Welsh causes problems for the analysis if phonological or morphological rules are assumed to apply to surface structures. She cites the examples in (47). The citation form for 'dog' is *ci* [ki:];

- (47a) *Gwelodd ef gi.*
 [gwelod̥ ev gi:]
 saw he (a) dog
 'He saw a dog.'
- (47b) *Gwelodd gi.*
 'He saw a dog.'

clearly the mutation process for direct objects has applied in (47b) despite the fact that *ci* is not in the direct object (second from the verb) position in surface structure.

It would be possible to claim, of course, that this means the transformational model is wrong to require that identification of grammatical relations in derived structure be dependent solely on linear precedence relations.⁵ But if we do assume the standard transformational model, what is suggested by (47b) is that mutation is determined before SPD applies. This, Awbery assumes, invalidates the 'interface model'.

But this conclusion follows only if SPD is in fact a syntactic rule. If it is morphological, then there is no necessary difficulty about its applying after the processes of mutation, which are themselves morphological; they define a mapping from structures containing morphosyntactic information together with lexical representations of morphemes onto structures containing phonological representations.

Awbery's other evidence against the 'interface model' is similar in its import. She notes that the sentence-initial particles *fe* and *a*, marking

⁵ In our view, it is very likely indeed that this is the case. Morin (1970: 11) cites examples to which SPD would be irrelevant. These are cases involving stylistic reordering in which mutation seems to occur on the basis of grammatical relations despite disturbance of the basic order. Morin's examples are:

- (i) *Y dyn a welodd fachgen.* 'The man saw a boy.'
 the man saw boy [Soft Mutation]
- (ii) *Y dyn a welodd bachgen.* 'A boy saw the man.'
 the man saw boy [no mutation]

There are various hypotheses that might be considered here. Morin seems to favor the postulation of an abstract preposition *a'* which marks direct objects and is obligatorily deleted. But this position would similarly support the claim we make about free deletions, for the morphological mutation rule would clearly have to apply before *a'* was deleted under Morin's analysis.

assertion and interrogation respectively, may optionally be deleted; we shall call the rule involved Initial Deletion. Yet the Soft Mutation effect that they determine on the first segment of the verb that follows them is still seen in cases where they delete:

- (48a) Fe welodd Wyn y ci.
 [ve weloð wɪn ə ki:]
 ASSERTION saw Wyn the dog
 'Wyn saw the dog.'
- (48b) A welodd Wyn y ci?
 'Did Wyn see the dog?'
- (49a) Welodd Wyn y ci.
 'Wyn saw the dog.'
- (49b) Welodd Wyn y ci?
 'Did Wyn see the dog?'

Recall that the verb form 'he saw' generally has the shape *gwelodd* [gweloð]. The disappearance of the *g* is the mark of Soft Mutation, which *fe* and *a* are known to trigger. The form of the verb in (49) suggests that these particles can trigger mutation even where they are deleted by Initial Particle Deletion. (Intonation preserves their semantic or pragmatic content.)⁶ Again, there is no difficulty here if the deletion of the particles is morphological, which is just what we predict for a free deletion affecting two morphemes.

⁶ This aspect of the operation of Initial Particle Deletion gives evidence of an even clearer link between free deletion and phonology, but it is one we are convinced is not a matter to be treated in formal grammar. It is a pragmatic necessity to keep explicit such distinctions as declarative/interrogative and positive/negative. In the interrogatives, it is the existence of a characteristic intonation pattern that permits Initial Particle Deletion to apply without causing a confusing collapse of this illocutionary distinction. In the case of the positive/negative distinction, no intonation pattern uniquely characterizes one pole or the other in utterances, and so deletion of a marker of negation might be expected to be grossly confusing, and in most languages it is not permissible at all. But for some Welsh speakers, Initial Particle Deletion can apply to the negative particle *ni* in certain cases. *Ni* triggers the Aspirate Mutation, which turns voiceless stops into fricatives but does not affect voiced stops. Some informants tell us they permit deletion of *ni* just in those cases where the mutation visibly affects the immediately succeeding verb. To specify this formally, it would be necessary to invoke a transderivational constraint (since the notion of potential ambiguity through homophony with a cognate nonnegative sentence involves implicit quantification over derivations); but there is no need. The Gricean Cooperative Principle (Grice 1975) is a fully sufficient explanation for the refusal of Welsh speakers to let Initial Particle Deletion destroy the distinction between a statement and its negation.

5.2. Sarcee prefix deletion

Cook (1971b) has provided a thorough and carefully argued discussion of an interesting constraint on deletion in the Athapaskan language Sarcee. Sarcee has a complex eleven-slot system of verbal prefixes. Two of the pronominal elements in this system, namely *mi-* 'third person singular definite direct object' and *ni-* 'second person singular subject', are deleted in certain forms. Cook provides good argumentation in favor of a deletion rule. He shows, however, that there are mysterious conditions governing the application of the deletion process, which fails in various contexts where under a maximally general formulation it would apply. For example, in (50a) both *mi-* and *ni-* delete, whereas in (b) only *mi-* deletes, and in (c) only *ni-* deletes (*mi-* being reduced to *i-*).

- (50a) /mi + si + ni + lit/ → [si-lit]
 PERF taste
 'You have tasted it.'
- (50b) /mi + ni + lit/ → [ni-lit]
 'You are tasting it.'
- (50c) /mi + ni + lit/ → [i-lit]
 'Taste it.'

Cook also shows that two modal-aspectual elements in the prefix system, namely *ni-* 'terminative' and *si-* 'perfective' also delete under some conditions, the deletion of terminative *ni-* being apparently obligatory. But here too there are cases in which the deletion is blocked by an overriding constraint. The single generalization which governs all four deletions is stated by Cook as (51):

- (51) The rule applies [only – GKP/AMZ] to a structure which will contain, after the deletion, at least one syllabic segment preceding the stem in surface structure.

Furthermore, Cook shows elsewhere (1971a: esp. 175–6) that in order for syntagmatic tone to be assigned correctly by general rules for tone in Sarcee, the deletion of perfective *si-* must take place *after* the application of all the tone rules.

Thus in two ways, the deletion rules of Sarcee would violate our assumptions about the interactions between components of a grammar if they were syntactic rules proper: they are under a phonological constraint referring

to syllabicity and segmental structure of verb forms, and they apply (at least in case of *si-*) after rules assigning tone, which are (in some sense) 'phonological'. Things are even worse than that; if the deletion rules were syntactic, they would also violate the general principle that syntactic rules never affect proper subparts of words, for the prefixes of Sarcee verb forms should certainly not be regarded as syntactically independent constituents, contra Cook's tree diagrams (1971a: 175-6). Cook does not show any evidence that some indubitably syntactic rule must apply after the free deletions he discusses. Our prediction is that there will be no such evidence within Sarcee syntax, and that everything in Sarcee grammar will be consistent with the claim that the prefix deletions are morphological.

5.3. Swahili prefix deletion

A case reminiscent of the Sarcee deletions is dealt with by Brandon (1975), who argues that the following generalization holds of Swahili morphology:

(52) *Disyllabic Word Constraint*: No deletion rule may apply to any segment of a two syllable word, where word is defined as #...#.

The constraint determines the applicability of three rules: 9/10 Adjective Affix Deletion, which removes a nasal consonant prefix from a class 9 or 10 adjective beginning with a voiceless stop; Class 5 Adjective Affix Deletion, which deletes the agreement prefix from a class 5 adjective that begins with a consonant; and Class 15 Affix Deletion, which allows for optional removal of the class prefix from an infinitival complement to certain aspectual auxiliary verbs.

Brandon makes the point that the effect of the constraint is to guarantee the integrity of disyllabic forms, not to maintain disyllables as such, for there are cases where even if deletion took place, the result would remain disyllabic. Constraint (52) still, and correctly, forbids the deletion:

(53a) ni-mc- kw-ish -a kw-end-a
I PERF 15 finish MV 15 go MV
'I have already gone.'

(53b) *ni-mc-kw-ish-a 0-end-a

the complement verb form *kwenda* in (53a) would still be disyllabic if its class prefix *kw-* (derived by a Glide Formation rule from *ku-*) were deleted, as in (53b); but this is not permitted by the constraint.

Since the constraint (52) clearly mentions a phonological predicate ('disyllabic'), it would be a violation of the PPFS if it applied to any syntactic rules. But although Brandon calls Class 15 Affix Deletion a syntactic rule because of the clearly morphosyntactic nature of its structural description, it is a free deletion rule affecting named morphemes, and therefore morphological under our proposals, and it deletes a proper subpart of a word, and therefore morphological in any case. Interesting issues remain about how the constraint is to be accommodated within the morphological component of the grammar of Swahili – for instance, Brandon gives some evidence that the definition of disyllabicity for the constraint applies to neither the phonetic level nor the underlying (morpho)phonological level, but to some intermediate stage – but its morphological nature is clear.

5.4. English *do* deletion

There are various reasons for assuming, contra Chomsky 1957, that the so-called 'supportive *do*' of English emphatic, negative, and interrogative sentences is an underlying and not an inserted element. An obvious reason is that no mechanism is provided within transformational grammar for creating a new constituent belonging to a lexical category by means of a transformation, so that an inserted *do* would presumably be a particle belonging to no category, and as a result its verbal morphology would not be easily explained (cf. Postal 1974: 393-4, fn. 15, citing Perlmutter). Some further arguments are provided in Pullum and Wilson 1977: sec. 3.2. Suppose it is assumed that *do* is present in underlying structure (as a verb, clearly). It shows up in emphatic, negative, and interrogative sentences if there is any pure (nonauxiliary) verb in the highest clause below it, regardless of what verb it is. Somehow it must be deleted from positive, nonemphatic, declarative sentences. If we accept this as a free deletion of a named morpheme, it should consequently be morphological, according to our proposal in this paper. The possibility that it is phonologically conditioned is entirely in line with this classification.

It is generally assumed that the structural description of *Do* Deletion has to distinguish in some way between instances of *do* that are under emphasis and instances that are not. The question is, how. One way would be by reference to an actual morpheme that is present, in a certain linear position, in the superficial structure of emphatic clauses but not nonemphatic clauses. This is a familiar analysis within transformational grammar, and may have some merits. The emphatic morpheme, usually symbolized EMP,

might even be said to have a lexical realization as *too* for American dialects (though British dialects do not generally have such sentences as (54)).

(54) He does *too* like me.

A second way would be by direct reference to a semantic representation that indicated emphasized elements. (This would imply presence of 'supportive *do*' in semantic representations.)

A third way would be by reference to a phonological level of representation that contained stress values: a condition on the *Do* Deletion rule of the form '*do* is unstressed'.

It is not clear which is the correct analysis. We simply note that if something like the third analysis is correct, then *Do* Deletion is phonologically conditioned, a consequence that is consistent with its being a morphological, but not a syntactic, rule.

5.5. Swedish definite article deletion

A parallel situation (parallel also in that there are a number of alternative analyses) arises in the article system of Swedish. The relevant facts are from McClean 1947, a teaching grammar of Swedish, and Cooper 1981, an analysis in terms of generalized phrase structure grammar.

Definiteness is marked in two ways in Swedish: by suffixes on nouns (and adjectives), and by articles. The table in (55) summarizes the forms of the suffixes, the definite articles, and the corresponding indefinite articles.

(55)	Gender: common Number: singular	Gender: neuter Number: singular	Gender: either Number: plural
Definite suffix	-en (noun)	-et (noun)	-na (noun)
Definite article	-a (adjective)	-t (adjective)	-a (adjective)
Indefinite article	den	det	de
	en	ett	0

There are syntactic contexts in which only the suffix occurs, as in (56); contexts in which only the definite article occurs, as in (57); contexts in which the suffix and the article occur together, as in (58); and contexts in which neither occurs, even though the NP is understood definitely, as in (59).

(56a) hästen	} 'the horse'
(56b) *den häst	
(56c) *den hästen	
(57a) *professoren, jag menar	} 'the professor (that) I mean'
(57b) den professor, jag menar	
(57c) *den professoren, jag menar ⁷	
(58a) *gröna färgen	} 'the green color'
(58b) *den grön färg	
(58c) den gröna färgen	
(59a) *min vänen	} 'my friend'
(59b) min vän	

We will suppose that the occurrence of the suffixes depends on the operation of a rule or rules of agreement; nouns and adjectives are made to agree in definiteness (under a very complex set of conditions) with the article of their NP. Agreement fails to apply in (57) and (59), despite the presence of a definite determiner, for reasons we do not have to explore here. Agreement applies, straightforwardly, in (58). That leaves us with the case of unmodified nouns, as in (56), where the suffix occurs without the article. One attractive analysis of this case posits a definite article which is deleted when it is in construction with an unmodified noun. Obviously, this Definite Article Deletion applies after the agreement rule(s), so that it is a late rule. Our proposal predicts that it is in fact morphological.

As in the case of English *Do* Deletion, there is some reason to suspect that this deletion rule may be conditioned by stress. The crucial observation is that (56c), *den hästen*, is not actually ungrammatical; it is pronounced with stress on the *den* and it has a demonstrative sense, 'that horse'. It follows that Definite Article Deletion must be constrained so as not to delete *den/det/de* when they are understood demonstratively. The constraint could be stated in terms of syntactic features, semantics, or stress. We have no evidence that bears on the choice. But a stress constraint would not be prohibited, given our classification of Definite Article Deletion as a morphological rule.

⁷ The judgments in (57a) and (57c) are those of prescriptive grammarians. McClean (p. 123) reports fluctuation in the singular for such examples but maintains that the plurals are uniformly unacceptable.

6. Conclusion

For several specific free deletion rules, we have reviewed evidence that their formulation demands reference to phonology, or that it is reasonable to assume a phonological condition, or that the deletion rule applies to the output of a morphological or phonological rule. We suggest that this does not mean that in general we may expect syntactic rules to interact with phonological ones or be subject to phonological conditions. Rather, it seems to us that it has been a mistake to classify free deletions as syntactic rules. Those that delete named morphemes seem to be very clearly morphological, and we believe that the more general ones, like Subject Pronoun Drop, are also.

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