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PHONOLOGY IN SYNTAX:
THE SOMALI OPTIONAL AGREEMENT RULE*

0. BACKGROUND

The proposal that syntax is free of phonology, in the sense that no syntactic rule in any language requires a statement making reference to phonological properties, has been defended and attacked in numerous works during the past two decades, but the issue can scarcely be said to have been uncontroversially settled.

Critics of the position (Hetzron 1972 and Rivero and Walker 1976, for instance) have adduced putative counterexamples of many different types, from a bewildering variety of languages. Advocates of the position (Zwicky 1969, for instance) have argued that the involvement of phonology in syntax is only apparent – that the claimed generalizations are spurious, that they involve tendencies in performance rather than rules of grammar, that they are explicable in terms of some cognitive domain other than language, or that they are to be described in some component of grammar other than syntax (in a morphological component, in the lexicon, in a set of surface filters, or in a special component devoted to cliticization and readjustment). Zwicky (1982) summarizes some of our current proposals on these matters.

Those who elect to defend the position that syntax is phonology-free may proceed in either of two ways: first, empirically, by examining data that have been alleged to constitute evidence of nonphonology-free syntax and showing that either the data or the analyses are wrong; and second, theoretically, by exhibiting and motivating the structure of a theory of language which will not permit reference to phonology in the syntactic component. Naturally, the two approaches are complementary, and ultimately both have to be pursued. The empirical analyses will be pointless quibbling over facts if no general concepts are being illuminated, and the theoretical construction will be fruitless dreaming if it cannot be shown that a satisfying mesh with detailed arrays of facts is obtainable. We wish to pursue both strategies simultaneously. Clearly such a task must be fragmented if it is to be tackled at all at the level of a journal article. We plan a presentation of our overall point of view, with detailed factual support, in a forthcoming book (Zwicky and Pullum forthcoming). But we would like to offer here, having established the general theoretical context,

* This work was completed while Zwicky was at the Center for Advanced Study in the Behavioral Sciences; he is grateful for financial support from the Spencer Foundation and for sabbatical leave from the Ohio State University.

a discussion of one particularly interesting set of facts that have been held to constitute a challenge to phonology-free syntax but, under our reanalysis, do not.

The facts are from Somali, a Cushitic language of East Africa. They are interesting because they illustrate (under our interpretation) a perhaps rather surprising diachronic development leading to a synchronic situation that initially appears to call for not only phonological reference in syntactic rules but 'transderivational' reference (a condition on one construction type referring to the existence in the language of some other construction type). The facts were uncovered by Hetzron (1972, pp. 259–261), where the apparently phonological nature of the needed generalization (but not the seemingly transderivational aspect) was noted and stressed. In brief, what Hetzron claims to have discovered in Somali is the existence of a rule of grammar that says roughly this:

Verbs in finite clauses agree with subject NP's in number and gender, except that if a sentence exhibits at the phonological level the properties that are typical of sentences with feminine singular subjects, it undergoes agreement as if it did have a feminine singular subject, regardless of what it actually has.

This would indeed be a strange agreement rule. It would not be formally statable in any theory of grammar that we know of. Hetzron refers to the phenomenon as 'playful agreement', because NP's that look as if they have feminine gender actually seem to play at being feminine under certain conditions. We shall show that the analysis of the relevant facts has implications for the theory of morphological features and the distinction between the form of a grammar and the explanation for its having that form, as well as for the question of the relative autonomy of the phonological and syntactic components.

Before turning to the empirical issues in Somali, we digress briefly on the theoretical support for the proposal that syntax is phonology-free. The general assumptions within which this proposal is located are those of high modularity (the theory prescribes that the grammar of any language consists of a fairly large number of components), nonuniformity (the theory also prescribes that the internal composition of these components differs considerably from one component to another, in the sense that the units appropriate to one component will be different from those appropriate to the other, as will the conditions on their cooccurrence and on their sequencing), and limited interfacing (the theory also prescribes that the principles governing the structures in one component will have limited access to the units and structures appropriate to the other). Granting high modularity, nonuniformity, and limited interfacing, many theories of grammar are still possible;

indeed, these assumptions inform stratificational, tagmemic, and standard transformational theories, as well as Bloch- or Harris-style structuralism and a number of current nontransformational approaches, for instance Generalized Phrase Structure Grammar. In fact, all the theoretical frameworks just named stipulate or entail that syntax is phonology-free, so that the position we are defending here is, in general terms at least, one of very wide acceptance (though it has rarely been argued on empirical grounds).

It would be reasonable to ask why a theoretical framework should embody such assumptions as high modularity, nonuniformity, and limited interfacing, and why these assumptions should be realized in such particular interfacing hypotheses as the principle that syntax is free of phonology. This is not the place to elaborate a metatheoretical defense of interfacing assumptions in general, or of this particular interfacing assumption – even Zwicky and Pullum (forthcoming) will not undertake a task of this size – but the central point is clear enough: our aim is to increase the substantive content of linguistic theory by excluding, in principle, types of interaction that the record shows are never encountered. We are convinced that interference by phonology in syntax is never genuinely encountered. To increase the plausibility of this conviction in the eyes of other linguists, we need to scrutinize with great care the most suspicious-looking cases we can find. It is this that is our motivation in the present discussion of Somali.

Now to summarize what is to come: we survey the relevant Somali facts in sections 1 and 2. In section 3 we discuss Hetzron's presentation of the 'playful' optional agreement rule, and in section 4 we elaborate on his speculations about how it originated. In section 5 we offer our own remarks concerning the correct interpretation of the situation in Somali, and in section 6 we draw our conclusion.

1. NUMBER AND GENDER IN SOMALI

The relevant facts are fairly complex; we shall begin by following Hetzron's exposition, which is illustrated by intransitive sentences of the form

- (1) N-Det FP V

The N is the subject noun, Det its suffixed definite determiner, and V the verb. FP is focus + pronoun, the verb-focus marker *waa* in combination with an (optional) subject pronoun; the relevant combined forms are masculine singular *wuu* and feminine or plural *way*. An example:

- (2) baabuur- kii wuu tegay
truck the he left (3 sg. masc.)
(masc.)

The truck left.

The language has masculine and feminine gender, indicated in structures like (1) in four ways: the lexical classification of N, the form of Det (-**kii** ~ -**gii** ~ -**hii** for masculine, -**tii** ~ -**dii** for feminine, the allomorphs being phonologically determined), the form of FP (**wuu** or **wáy**), and in the suffix on V (in the past these are -**ø-ay** for the masculine singular, -**t-ay** for the feminine singular, and -**een** for both genders in the plural). A further (imperfect) indication of gender, which Hetzron alludes to but does not describe in any detail, is the tone pattern exhibited by N. A few gender pairs are differentiated by tone alone, as Armstrong's (1934) section on tone in Somali indicates:¹

- | | | | |
|-----|----|---------|----------------------------|
| (3) | a. | ʔinán | <i>daughter</i> |
| | b. | ʔinan | <i>son</i> |
| | c. | qaalin | <i>young camel (fem.)</i> |
| | d. | qáalin | <i>young camel (masc.)</i> |
| (4) | a. | ʔisláan | <i>old woman</i> |
| | b. | ʔislàan | <i>old man</i> |
| | c. | ʔaddóon | <i>slave (fem.)</i> |
| | d. | ʔaddòon | <i>slave (masc.)</i> |

The contrast in (3) is between a tonal accent on the second syllable, realized phonetically as two syllables with mid tone (the feminine pattern), versus a tonal accent on the first syllable, realized phonetically as a high/low (masculine) pattern; the contrast in (4) is between one (feminine) tonal accent on the second syllable, realized phonetically (as before) as two syllables with mid tone, and a different (masculine) tonal accent on the second syllable, realized phonetically as a mid-falling tone (Hyman 1981 treats this latter difference as involving a tonal accent on the second mora of a long vowel versus a tonal accent on the first mora of a long vowel). According to Armstrong, the pattern of (3a), (3c), (4a), and (4c) is always feminine; the pattern of (3b) and (3d) is mostly, but not exclusively, masculine; and the pattern of (4b) and (4d) is always masculine (so that **baabuur** in (2) above is necessarily masculine on the basis of its phonological shape). Other generalizations apply to monosyllables with long vowels or diphthongs; those with mid tone (tonal accent on the second mora) are nearly all feminine, those with falling tone (tonal accent on the first mora) are all masculine (but monosyllables with short vowels all have the same tone, phonetically mid, regardless of

¹ The tone markings have been altered to conform to the transcription system used by Andrzejewski (1964) and Hetzron (1972). A simple and more adequate description of Somali tone has recently been proposed by Hyman (1981). The transcription here follows Andrzejewski rather than Hetzron or Hyman. The transcription for vowels generally follows Andrzejewski, except that (as in Hetzron and Hyman) distinctions between a and æ, i and ɪ, e and ε, u and ʊ, o and ø are not indicated.

their gender). The lexical classification of nouns into the two genders is thus to some extent indicated by their phonological forms, and (of course) it is to some extent indicated by their meanings (**soddóh** 'mother-in-law' being feminine, **rág** 'the masculine sex, men' being masculine). These relationships between tone and gender are summarized in Table 1, which indicates in column 1 the location of the tonal accent in Hyman's scheme and in column 2 the transcription we are using here. Note that in Hyman's scheme feminine gender is associated with a tonal accent on the final V of a noun, while masculine gender is associated with a tonal accent on the penultimate V of a noun.

TABLE 1. Tone-gender Association in Nouns

Tonal accent	Transcription	Gender
a. C ₀ V(V)C ₀ \check{V} C ₀	C ₀ V(V)C ₀ \check{V} C ₀	always feminine
b. C ₀ \check{V} C ₀ VC ₀	C ₀ \check{V} C ₀ VC ₀	mostly masculine
c. C ₀ V(V)C ₀ V \check{V} C ₀	C ₀ V(V)C ₀ \check{V} VC ₀	always feminine
d. C ₀ V(V)C ₀ \check{V} VC ₀	C ₀ V(V)C ₀ \check{V} VC ₀	always masculine
e. C ₀ V \check{V} C ₀	C ₀ \check{V} VC ₀	almost always feminine
f. C ₀ \check{V} VC ₀	C ₀ \check{V} VC ₀	always masculine
g. C ₀ \check{V} C ₀	C ₀ \check{V} C ₀	either

The system thus far is reasonably straightforward. The first complication arises in gender agreement in the plural: Somali, like a number of related languages, shows POLARITY with respect to the gender of determiners in the plural, masculine nouns normally taking feminine determiners (-**tii** ~ -**dii** in (1) above) and feminine nouns always taking masculine determiners (-**kii** ~ -**gii** ~ -**hii**). The plural version of (2) is therefore

- (5) baabuurrá- dii wáy tegeen
trucks the they left (3 pl.)
(fem.)

The trucks left.

(Polarity is not thoroughgoing, since one class of nouns shows no switch: monosyllabic masculine nouns like **nín** 'man', plural **nimán**, have masculine determiners in the plural as well as the singular.) Note that plurality is indicated in four ways in (5) – by a suffix on N, by a Det disagreeing in gender with N, by a plural FP, and by a plural suffix on V – while information as to gender is available only from the lexical classification of N and the disagreeing Det, the forms of FP and V being the same for masculines and feminines in the plural.

2. PLURALS AND SUB-PLURALS

A second complication arises in nouns with irregular plurals. To describe this complication we must first outline the classes of noun plural formations in Somali. Hetzron, following Andrzejewski (1964, pp. 142–6), divides these into two large groups, which Andrzejewski calls respectively PLURAL and SUB-PLURAL. All nouns which could reasonably be classed as regular fall into the 'plural' group; these show a variety of suffixes, distributed essentially arbitrarily – the vowel \ddot{o} ² with various alterations in the noun stem (suffix-**yō** in **ubahyō** 'flowers', from **úbañ**; gemination of the final consonant in **shabeellō** 'leopards', from **shabēel**; deletion of the last stem vowel in **hargō** 'hides', from **hárag**; no alteration in **sariirō** 'beds', from **sariir**), the suffix **-oyin** (in **waddóoyin** 'roads', from **wáddo**), the suffix **-yāal** (in **maroodiyāal** 'elephants', from **maroodi**), and so on. One 'plural' formation is not arbitrarily distributed: monosyllabic masculines (the exceptions to polarity already mentioned) have plurals of the shape **-aR**, where **R** represents a copy of the stem-final consonant: **wanān** 'names', from **wán**. Both forms in our initial discussion of Somali belong to Andrzejewski's 'plural' group: **babuurrá** 'trucks' (**babuurrá-dii** in (5)) is an assimilated form of **babuurrō**, showing **-ō** plus gemination of the stem-final consonant; and **nimán** 'men' has the **-aR** suffix, with a copy of the stem-final [m] of **nín** (from **ním-**; both **nín** and **nimán** show a regular morphophonemic shift of [m] to [n] in word-final position).

There are three types of sub-plural formations in Andrzejewski's scheme: those with special suffixes (the suffix **-iin** borrowed from Arabic, as in **nijaariin** 'carpenters', from **nijaar**; and the rare suffixes **-(a)an** accompanied by deletion of the last stem vowel, as in **qaghán** 'stones', from **qághāñ**); those with different stems in the singular and plural, following the pattern of the Arabic 'broken plurals' which are the source of this pattern in Somali (thus, **maraakiib** 'ships', from **márkab**, and **banaadúq** 'rifles', from **búnduq**); and those in which the only difference between singular and plural is that the tone pattern of the plural is one associated with feminines (monosyllable as in **áwr** 'male camels' or disyllable as in **díbi** 'oxen') while the singular has a masculine pattern (monosyllable as in **áwr** 'male camel' or disyllable as in **díbi** 'ox').

3. OPTIONAL AGREEMENT

We are now ready to present the second complication in the Somali agreement system as it is presented by Hetzron (following Abraham 1964): sub-plural nouns may have the usual verbal agreement (a 3 pl. like **tegeen** in (5)) or ('more

² The tone mark $\acute{}$ in Andrzejewski's system is a variant of the tone mark $\grave{}$; the distinction indicates tone sandhi differences that do not concern us here.

preferably', according to Hetzron 1972, p. 259) a verb in the feminine singular; according to Andrzejewski (1964, pp. 28f.) the choice between a plural and a feminine singular verb form for sub-plurals is 'optional'. Hetzron's examples (5h) and (5i), repeated here as (6) and (7), illustrate the options for a sub-plural in *-iin*; his (5e) and (5f), repeated here as (8) and (9), for a sub-plural with a feminine tone pattern:

- (6) *nijjaar- kii wùu tegay*
 carpenter the he left (3 sg. masc.)
 (masc.)
 The carpenter left.
- (7) *nijaariin- tii³ wày tegtay/tegeen*
 carpenters the they left (3 sg. fem./3 pl.)
 (fem.)
 The carpenters left.
- (8) *dibi- gii wùu tegay*
 ox the he left (3 sg. masc.)
 (masc.)
 The ox left.
- (9) *dibí- dii wày tegtay/tegeen*
 oxen the they left (3 sg. fem./e pl.)
 (fem.)
 The oxen left.

Ordinary plurals do not have this option in agreement; contrast (5) with (10):

- (10) **baabuurrá- dii wày tegtay*
 trucks the they left (3 sg. fem.)
 (fem.)

How is this type of optional agreement in Somali to be described in a synchronic grammar of the language? How might it have come about historically? These are, of course, two separate (though not unrelated) questions.

Consider first the synchronic issue. A straightforward description would use an inherent lexical classification of nouns as [\pm Subplural] – as taking one of the special sub-plural formations or not. This feature would be analogous to

³ Hetzron (p. 261) has *-till*, presumably a misprint for *-tii*.

a feature like [\pm Irregular] for English nouns, intended to distinguish nouns with special plural formations (*mouse/mice, ox/oxen, leaf/leaves, sheep/sheep*) from those in which the stem is unaltered and the plural suffix has the form /z ~ s ~ əz/. In each case, the marked class – [$+$ Subplural] for Somali, [$+$ Irregular] for English – would be further divided according to the particular idiosyncrasies of the nouns in this class (some divisions representing subregularities). There may also be nouns capable of taking more than one plural formation, the choice depending upon linguistic context (as in *maple leaves* versus *the Toronto Maple Leafs*), distinguishing different shades of meaning (as in *brethren* vs. *brothers*), or constituting a stylistic option (*hooves* or *hoofs*, both available to many English speakers). For Somali, there are alternative plurals with different shades of meaning (Hetzron cites the tone-shifting sub-plural *dibi* ‘oxen’ versus the ordinary plural *dibiyö* ‘few oxen’) and others standing as stylistic options (Hetzron cites, from Abraham (1964: 36), the ‘broken’ sub-plural *banaadiix* ‘rifles’ for the Arabic loanword *buntux*, alongside the ordinary Somali plural *buntuxyö*). In such cases we have what amount to two slightly different lexical items, with identical phonological features but different morphological, syntactic or semantic features.

We are now confronted with several varieties of morphological features. There are intrinsic, lexical features, like [Subplural], [Irregular], [Gender], and [Declension], which are associated inherently with individual lexical items. There are ‘free’ extrinsic features, like [Plural] for English and Somali nouns, features which are not (in general) associated with individual lexical items and are not predictable on the basis of syntactic environment. And there are ‘determined’ extrinsic features, which arise from processes of government and agreement: case in nouns, number in verbs, and the like. Somali optional agreement involves all three sorts of features: when the subject noun of a finite clause is [$+$ Subplural] (an intrinsic feature) and [$+$ Plural] (a free extrinsic feature), the verb of that clause may either follow the usual principle of agreement (AGR) or show the features $\left[\begin{array}{l} + \text{Feminine} \\ - \text{Plural} \end{array} \right]$ (determined extrinsic features). Let us call the latter principle the Somali Optional Agreement Rule, or SOAR for short. SOAR stands in a disjunctive relationship to AGR, and for either agreement principle to be applicable both intrinsic features ([Subplural] for SOAR, [Feminine] for AGR) must be specified:

SOAR: Verbs in finite clauses having $\left[\begin{array}{l} + \text{Subplural} \\ + \text{Plural} \end{array} \right]$ subject NP's are
optionally marked $\left[\begin{array}{l} + \text{Feminine} \\ - \text{Plural} \end{array} \right]$.

AGR: Verbs in finite clauses agree with subject NP's in number and gender.

This relationship between the various types of features is not particular to Somali or to subject-verb agreement; in general, agreement principles governing the distribution of determined extrinsic features must be able to refer to intrinsic features, free extrinsic features, or both, and such otherwise different frameworks for the description of inflectional morphology as Rhodes (1976), Lapointe (1979), Lieber (1980), and Anderson (1982) all have mechanisms for this sort of reference. Agreement principles must have access to certain types of (nonphonological) lexical features, and SOAR is in no way special in this regard; the same is true of noun-determiner agreement in German, noun-adjective agreement in French, object-verb agreement in Hungarian, and so on.

Hetzron (p. 261) maintains, however, that in Somali 'the subject-to-verb agreement must take place *after* the surface shape of the subject noun has been spelled out, after the choice of path for pluralization has been effectuated'. But SOAR as we have described it above does not support the conclusion that subject-verb agreement takes place only after the surface shape of nouns has been spelled out; abstract features must be available, but no case has yet been made that actual phonological shapes must be – that 'the realization of the agreement rule depends on the phonetic output of the pluralization' (Hetzron, p. 261). As we shall see in the next section, not only is an analysis referring to phonological shape not necessary, it is also inadequate.

Before passing to this discussion, we remark that the treatment of agreement we are proposing is in no way extraordinary. The main part of the analysis involves features associated with phrasal rather than lexical categories, but this is common to most formal treatments of agreement and government that have been suggested, regardless of theoretical framework: Gazdar and Pullum (1982) explore the formalism in Generalized Phrase Structure Grammar, while tracing it back to Zellig Harris; Vanek (1977) is perhaps the first extended development of the idea in transformational grammar, though this work owes much to Bierwisch (1967); and Babby (1980) uses the same idea within a rather different framework. There *are* interesting theoretical issues having to do with the extent to which the content of agreement and government rules is supplied by universal principles. It might, for instance, be sufficient for SOAR and AGR simply to state that VP's are marked for certain features in the presence of other features; the restriction to finite clauses, the fact that the determining features are to be found on subject NP's, and the fact that the determined features are realized morphologically on the verb might all follow from universal principles. But these possibilities do not bear directly on the

question at hand, which is the plausibility of rules like SOAR and AGR.

One further point, namely the interaction between SOAR and AGR, deserves brief comment. SOAR is in effect an exception clause to AGR, and so should take precedence over and block it. Exactly this interaction is required by Proper Inclusion Precedence (Koutsoudas, Sanders, and Noll 1974).

4. HETZRON'S MISCONSTRUAL ACCOUNT

The issue of actual phonological or phonetic shapes arises when we ask *why* there should be such a principle as SOAR and *how* the language could have come to have such a principle. Hetzron offers an ingenious account, which turns on a potential misconstrual of the subject noun phrase of sentences like (7) and (9). All sub-plurals have tone patterns associated with feminine nouns (Andrzejewski, in fact, groups them (pp. 32–3) in one declension with the most numerous class of feminine singular nouns), and two of the sub-plural types (borrowed 'broken plurals' like **banaadix** and the tone-shifting type exemplified by **dibi**) have no isolable suffix. Hetzron maintains that what all the sub-plural types share is

... the fact that they do not use a morph which is, in Somali proper, unmistakably labelled as a plural-marker. The shape they have could very well be analyzed as a feminine singular, unlike, for instance, **baabuurrö** with its plural ending -ö.

Hetzron observes that in sentences like (5) the plurality of the subject is unequivocal, because of the ending -ö on **baabuurrö**. The potential ambiguity of the FP **wày**, as 'she' or 'they', is resolvable in favor of the latter. In (7) and (9),

quite on the contrary, even though **wày** is UNDERSTOOD to be a plural pronoun imposed by semantic agreement with the subject noun, as far as the surface configuration is concerned, there is first a noun which LOOKS like a feminine singular [thanks to polarity in the Det], then **wày** 'she' or 'they', and the verbal agreement takes advantage of this surface ambiguity by making the verb a feminine singular.

It is quite obvious that no Somali will delude himself into believing that the subjects of [(7) and (9)] are actual singulars. The speaker of the language will always know what he is saying. The choice of a feminine singular verb looks like a conscious playful abuse of Somali morphology. Through constant use, it has become part of grammar. (260–1)

There are several ways of interpreting Hetzron's proposal that a 'playful abuse' has become grammatized. Exactly what Hetzron intends is not clear, because he does not say what the relevant section of the grammar of Somali looks like. One possibility is that he is claiming that feminine singular agreement is possible only when the subject looks like a feminine singular. This, of course, would be a transderivational rule (much like those discussed by Hankamer 1972). The factor triggering feminine singular agreement would be similarity to the form that is found in a distinct derivation that really does involve a

feminine singular. This account makes the prediction that nouns modified by adjectives would not have the feminine singular agreement as an option, since plurality in adjectives is clearly indicated morphologically; we have no direct evidence on the question. But this account is dubious on the basis of facts easily available in the literature on Somali. We note, first of all, that Hetzron waves away the Arabic borrowed plural ending *-iin*, which clearly indicates plurality but nonetheless permits feminine singular agreement. For Hetzron, this ending does not count as something that makes a noun 'look like' a plural. He limits his description to morphs 'in Somali proper', implying that a monolingual Somali speaker will not be able to recognize the morphological segmentation in *nijaariin* 'carpenters' (cf. *nijaar* 'carpenter'). Such forms cannot be regarded as unassimilated borrowings; they are phonologically impeccable in Somali. A similar problem arises with the sub-plurals in *-(a)an*: there are not many of them, but there is no reason to think they are unanalyzable.

The situation worsens when we look at the full set of ordinary plural types listed by Andrzejewski. In addition to the suffixed types Hetzron cites, there are two described by Andrzejewski (p. 145) as 'rare' or 'very rare' (respectively, *-yaw*, as in *nimanyāw* 'groups of men', from *nimān*; and *-aal* plus gemination of the stem-final consonant, as in *gallāal* 'scabbards', from *gāl*). Such suffixes should be on a par with the sub-plural *-(a)an* with respect to analyzability. Finally, there are some 'broken plural' borrowings that belong to the ORDINARY plural group and not to the sub-plural group, despite the fact that they equally 'look like' feminine singulars; Andrzejewski (p. 146) cites three such words, including *jarāaʿid* 'newspapers', from *jarīidād*. We conclude that PHONOLOGICAL, or even morphological, resemblance to a feminine singular is insufficient to explain why some plural subjects can optionally be treated as feminine singulars for the purposes of verbal agreement. Certainly a phonological account is inadequate: not every plural with a feminine singular tone pattern belongs to the sub-plural group (*jarāaʿid*, for instance, does not), so that tone will not suffice to pick out the class of forms for which SOAR is applicable; and 'lacking an unmistakable plural marker' (even if it successfully picked out the appropriate class of forms, which it does not) is a morphological, rather than phonological, property.

Hetzron's misconstrual account fares better as a description of an historical process that might have led to the addition of SOAR as part of the grammar of Somali. The inception of the process would depend on there being sufficiently many subject noun phrases which could be construed as plural or as feminine singular, these then serving as the basis of the analogical creation Hetzron describes. The analogy would not have to be conscious or playful in character, though such motives cannot be ruled out; there are simple examples of

morphological analogies – extensions of subregular patterns, in fact – arising both from conscious play on words (*shat* created as a past of the verb *shit*) and without apparent conscious design (as in the development of *brang* and *brung* as pasts of the verb *bring*). The analogy extended to a morphologically defined class of instances, $\left[\begin{array}{l} + \text{Subplural} \\ + \text{Plural} \end{array} \right]$ subjects, rather than to the class of instances exhibiting an ambiguity for perceptual purposes: *jaráaʔid* is an ordinary plural, despite its lack of a plural suffix, while *nijaariin* is a sub-plural, even though it has an easily detachable plural suffix.

An additional, or alternative, force for the development of SOAR comes from the agreement system of Qoranic Arabic, a language that has had profound effects on Somali. Qoranic Arabic (like many of the modern Arabic dialects) uses the feminine singular as an unmarked person in agreement, permitting feminine singular verb (and adjective) forms as alternatives to plural forms in various circumstances. Thus, we find Reckendorf (1921, pp. 21–8) listing the feminine singular as a possible agreeing category for predicates in many types of sentences with subject-predicate order: for broken-plural subjects denoting persons (although the plural forms are ‘besser’), for broken-plural subjects denoting male animals (the plural agreement here said to occur ‘selten’), and for nonhuman collective subjects, among others. It is also (pp. 24–6) a possibility for some predicates in sentences with predicate-subject order. And (pp. 58–9) Reckendorf gives a set of instances – basically, nonhuman plurals – in which an adjective appears in the feminine singular rather than showing the same number and gender as the head noun.⁴

Given the Arabic agreement system, it is no surprise that Arabic loans into Somali should permit optional feminine agreement in the plural, whether these loans are analyzable into stem + suffix or not. Arabic influence does not explain optional agreement for the tone-shifting masculines, of course. But multiple historical forces may be at play here.

5. REMARKS

Let us summarize this discussion of agreement in Somali. We have examined Hetzron’s claim that the language has a principle of agreement which applies to masculine plural subject noun phrases that are in some sense indistinguishable from feminine singular noun phrases. Hetzron maintains that some syntactic rule – the agreement principle, however it is to be formalized – is phonologically conditioned, because it must refer to the lack of any

⁴ We are indebted to Douglas Fuller for pointing out the Qoranic Arabic facts and for supplying us with references.

phonological mark distinguishing certain masculine plural noun phrases from possible feminine singular noun phrases. Unfortunately, Hetzron states no principles, so the nature of the claimed involvement of phonology is obscure. A reasonable interpretation of Hetzron's account refers to morphological distinctiveness. But, we argue, even this is inadequate; the most satisfactory solution we know of is an agreement rule (SOAR) that refers entirely to morphological features.

We then consider Hetzron's misconstrual (or ambiguity-of-interpretation) account as an outline of the historical forces that might have led to the development of SOAR. This we find plausible, though contact with the Qoranic Arabic agreement system may provide an alternative (or reinforcing) account. Phonological identity might well have played a role in the historical development of SOAR, *but* only through its involvement in the perceptual analysis of sentences and not (so far as we can see) as a formal condition on rules of grammars of any sort.

Throughout this discussion we have tried to keep separate the *motivations* for rules of grammar and the *forms* of these rules (following Grosu (1981) but contra Hetzron (1972, p. 261), who observes that 'the very motivation of the sg. 3f. agreement, the treacherous shape of plural nouns, appears only after phonology has been introduced'). A perceptual consideration that in some sense motivates the existence of a rule or condition does not necessarily predict the form this rule or condition will take. We have seen that from the perceptual point of view optional agreement in Somali both overapplies (by operating for some subjects with analyzable plural suffixes) and underapplies (by not operating for some 'broken plural' subjects), though for the most part optional agreement and the conditions for misconstrual of subjects fit very closely. The situation here is quite like other cases in which some principle of grammar is motivated perceptually, though not all the details of the grammatical principle can be predicted from its perceptual bases – as in the familiar example of the absence of the English complementizer *that* at the head of a complement clause. In most cases, *that* is optional:

- (11) We realized (that) penguins can't fly.

There are, however, situations in which the appearance of *that* is obligatory, among them *subject* clauses in general:

- (12) a. That penguins can't fly is really a shame.
b. *Penguins can't fly is really a shame.

Bever (1970, pp. 313–7) and Grosu (1972, Section 2.1.1) attribute the ungrammaticality of (12b) to the perceptual difficulty resulting from its

'erroneous closure', the initial string of words *penguins can't fly* constituting an independent clause by itself. We might go on to maintain that the grammatical principle governing the occurrence of *that* at the head of complement clauses (however it is to be stated) is in fact nothing more than the perceptual principle barring instances of erroneous closure. But, as in Somali, from the perceptual point of view the principle of *that* placement both overapplies and underapplies. The principle *requires* that *that* appear even in subject complements whose internal structure clearly marks them as subordinate, as in (13) and (15) (contrast (14) and (16) respectively):

- (13) a. That he ever drank a drop at all astonished us.
 b. *He ever drank a drop at all astonished us.
- (14) *He ever drank a drop at all.
- (15) a. That Margaret would care to buy your stork is dubious.
 b. *Margaret would care to buy your stork is dubious.
- (16) *Margaret would care to buy your stork.

And, on the other hand, it does *not* require *that* for object complements whose subjects could be erroneously interpreted as the objects of the main verb, as in (17b) and (19b) (which begin as in (18) and (20)), respectively:

- (17) a. We saw that kangaroos were not very bright.
 b. We saw kangaroos were not very bright.
- (18) We saw kangaroos.
- (19) a. Norman believes that his students' protestations have no basis.
 b. Norman believes his students' protestations have no basis.
- (20) Norman believes his students' protestations.

We conclude that we are faced here with a rule of grammar that could plausibly be claimed to be motivated by perceptual considerations, but whose form does not transparently reflect those considerations. We do not exclude the possibility that some phenomena are straightforwardly perceptual; we are merely observing that the analyst must be prepared to distinguish, on occasion, the form of a rule from its reasons for being.

The distinction between motivations for a rule and the form of the rule is, of course, closely tied to the distinction between historical accounts of linguistic structure and synchronic descriptions. In the case of Somali optional

agreement, we have suggested that SOAR in the current language might have arisen through a kind of analogy based on the potential double interpretation of certain subject noun phrases. But we do not assume that, in general, an historical change (like this one) will be in any sense recapitulated in a rule of the grammar of some ensuing stage of the language. From the vantage point of this later stage, many aspects of the principles of grammar may seem arbitrary and unmotivated, though when their antecedents are traced the developments can be seen as quite reasonable. Arguing in this vein Kiparsky (1975, pp. 205–7) ('keeping the distinction between structure and change', as he himself says) has given brief historical rationalizations for two synchronically unmotivated features of modern English (the appearance of the verb *be* in the passive and the exceptional properties of adjectives of the type *asleep* and *alive*). The distinction is one that has been much discussed in phonology, of course, and efforts to keep structure and change distinct lie behind many of the criticisms of 'abstract' phonological analyses. We merely reiterate here that the analyst must be prepared to assert, on occasion, that certain principles are (synchronically) arbitrary, even when an historical rationalization is available.

Finally, having emphasized that form must sometimes be distinguished from motivation, and structure from change, we turn to the distinction between logical and psychological accounts of linguistic organization. We maintain that, in the first instance, a grammatical description is an account of the logic relating sound, meaning, and use in a particular language, and that a grammatical theory is (at least) a delineation of which systems of such relationships might occur in languages, of which systems are 'possible grammars' (as it is often put). An account of the mechanisms involved in the production or comprehension of speech in context – a truly psychological account, that is – might have quite a different shape from any such system, though we should expect there to be significant points of contact.

We realize that the issues here are thorny, and we are not proposing any theory of the relationship between linguistic structure and cognitive functioning, though we should point out, following Kiparsky (1968), that there is a difference between 'the psychological reality of the substance or content of a rule and the psychological reality of its form' (as it is put by Cena 1978, p. 8); and, with Cutler (1979, p. 79), that there is both a strong sense of psychological reality, in which 'the ultimately correct psychological model of human language processing will include stages corresponding to' some postulated analysis or process, and a weak sense, which 'implies only that language users can draw on knowledge of their language which is accurately captured by the linguistic generalisation in question'. Rather, we are content to warn against the naive identification of linguistic analyses with descriptions of sentence production or comprehension. We are concerned about the question because

some discussions of the interactions between syntax and phonology have been couched, explicitly or implicitly, in terms that identify the steps in a derivation (derivations being artefacts of particular approaches to the description of the logic peculiar to linguistic systems) with steps in the production (or comprehension) of utterances and attempt to draw conclusions on the basis of this identification. Hetzron (1972) is one such discussion. Speaking of the Somali optional agreement, he maintains that 'the case of **búntux** [with its two plurals, broken **banaadiix** and true Somali **buntuxyö**, presumably distributed by style and dialect] shows that even though the particular type of plural a noun takes is indicated in the lexicon, there is some option left to the speaker in some cases, and the agreement rules will refer to the particular pluralization process the speaker has decided to adopt'. The phrasings 'some options left to the speaker' and 'the particular pluralization process the speaker has decided to adopt' indicate that Hetzron treats the steps in a derivation as something a speaker *does*. This psycholinguistic interpretation of derivations leads to no confusion for the Somali case at hand (though some difficulty arises from Hetzron's assumption that the two plurals of **búntux** are not distinct from one another until they are actually spelled out phonologically in derivations; this assumption is in no way necessary, however, and in our earlier discussion of alternative plurals we assumed that **búntux** and similar nouns were associated in the lexicon with both the feature [+Subplural] and the feature [-Subplural]). In other cases serious misapprehensions result, as when Hetzron rejects the notion of surface structure constraints out of hand, because obviously 'past experience in the use of the language will teach the speakers to avoid paths with no outlet' (p. 258), rather than permitting them 'as an afterthought' to 'discard' unacceptable outputs.

6. CONCLUSION

The conclusion we draw from our extended discussion of the interesting descriptive problem Hetzron provides is that Somali offers no support to the view his paper defended: that syntax and phonology are partially intermingled domains. Merely letting the agreement rules of Somali have access to phonological properties of morphemes would not, in any case, suffice for the statement Hetzron would like to make; as we have seen, no phonological properties of the relevant strings can be used to predict the occurrence of 'playful agreement'; Hetzron does not even sketch a grammar-fragment that would achieve such prediction, and apparently this could not be done. An adequate account needs morphological features, and this does not need to make reference to phonology. Hetzron's point about the 'playful' character of the agreement possibilities with sub-plurals should really have been presented

as a hypothesis about the historical development of Somali – a study of psychophonetic factors in syntactic change. It is crucial, however, to see that this is not the same as a hypothesis about the grammar of Somali. Speakers may be influenced by the sound of the sentences in their language when they go along with a tendency that leads to a change in the grammar; but that does not mean that syntactic rules in the grammar of a language can have phonological conditions. We claim, in fact, that in no language does any syntactic rule show sensitivity to phonological properties.

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