

1. Introduction

1.1 The Aim and Scope of the Study

The aim of this study is to restate in terms of generative phonology the fundamentals of Yawelmani phonology as described in Stanley Newman's *Yokuts Language of California*.¹ We are concerned mainly with the most systematic or regular part of verb derivation and the regular types of noun paradigms. More specifically, we shall consider verbs involving the “reduced stem” of the verb base ([N], p. 42) and the “normal stem” of the verb theme² ([N], p. 69) but not involving the other types of verb stem, and we shall treat nouns with a “regular stem” ([N], p. 170). In a few instances, however, forms outside this scope may be referred to, either because reference to them has some bearing on the treatment of regular forms or because they are explained automatically by the mechanisms needed for the explanation of the regular forms or finally because they are helpful in showing that sometimes only a small

¹ See Newman (1944) in References. Hereafter cited as [N]. Yawelmani is one of the six dialects of Yokuts described in [N]. It is the dialect from which most of the Yokuts material was gathered ([N], p. 66).

² In general, we exclude from our consideration of verb derivation those “petrified” verb themes that are not reducible to a verb base and suffixes ([N], p. 66). Thus, unless otherwise specified, “verb theme” refers to a verb theme consisting of a verb base and one or more suffixes.

addition is necessary to bring certain irregular forms into the scope of this description.

Besides Newman's book cited earlier, his unpublished list of Yawelmani nouns was also consulted to establish some of our phonological rules in a general form and also to determine the underlying representations of noun bases.

1.2 Remarks on the Exposition

The entire work is organized heuristically rather than descriptively; the material is arranged in such a way that the phonological rules are uncovered gradually, beginning with the more general ones and proceeding to the more specific ones. Chapters 2 and 3 deal mainly with verbs and nouns, respectively, but the description of each of these categories is not complete until the end of Chapter 4. The rules to be described in this work are introduced, revised, and brought into their final form in these three chapters. In Chapter 5, which is intended as a supplement, the underlying forms of suffixes are recapitulated, and remarks are made about certain "irregular" forms.

Examples of word forms, in particular those in verb paradigms, are not necessarily those actually attested in [N]. Some of them have been constructed from their stems according to the descriptive rules given in [N]. It may be that some of those forms are actually not permissible for syntactic or semantic reasons. For example, verbs glossed with intransitive or medial meanings may possibly not be followed by a suffix with the passive meaning. However, we have not been very cautious in this respect, since this point is not essential to the nature of our study.

In the course of presenting Yawelmani phonology, we shall have occasion to use the terms "morph" and "allomorph." These terms from descriptive linguistics are borrowed solely for the convenience of the heuristic exposition; they do not have any theoretical import in the scheme of generative phonology. The reason for this lack of official status is that within generative phonology the question of where in the phonetic speech form each morpheme begins or ends has no meaning, since there is apparently no motivation for a non-

arbitrary answer. Thus, in particular, within our framework there is no formal ground for assigning a vowel inserted between two morphemes to one of these two morphemes. This violation of the proposed principle of "morphemic analysis" that every utterance is composed entirely of morphs, we believe, reflects a fundamental characteristic of linguistic structure, operating from syntax to phonetics, that discrete structure on a higher level may be blurred by the application of later rules.³

When a new rule is introduced in the course of our exposition, we shall determine what ordering of the rules so far obtained is needed to generate the correct speech forms. This tentative ordering at each stage will be represented by means of a diagram, in which a rule R_1 is put to the left of a rule R_2 and connected by a line when R_1 has to precede R_2 . If their mutual order cannot be determined at that stage, the two rules are not connected by a sequence of lines leading from left to right.

1.3 Generative Phonology

Let us recall in outline the theory of generative phonology. The grammar of a language consists of three components: the syntactic, the phonological, and the semantic. The semantic component has no relevance to the present study. The syntactic component is a set of rewriting rules and transformational rules, which enumerates all the sentences of the language. As an output of the syntactic component, a sentence is a string of morphemes with a labeled constituent structure, where a morpheme is a terminal symbol, and a label is a nonterminal symbol appearing in the syntactic rules.⁴

The constituent structure on which the phonological component of a grammar operates is the so-called surface structure. It is

³ For the principle of "morphemic analysis" mentioned here, see, for example, Hockett (1947). There he points out that a rigorous adherence to such a principle is sometimes troublesome, and he cites an example of vowel insertion from Menomini, though, by doing so, he does not intend to raise any criticism against the general framework of morphemic analysis.

⁴ For the syntactic theory of transformational generative grammar, see Chomsky (1957), (1964), (1965).

assumed that the surface constituent structure of verbs and nouns in Yawelmani can be described by the following rules:⁵

$$\begin{aligned}\text{Verb} &\rightarrow \left\{ \begin{array}{l} \text{Verb Base} \\ \text{Verb Theme} \end{array} \right\} + \text{Final Suffix.} \\ \text{Verb Theme} &\rightarrow \left\{ \begin{array}{l} \text{Verb Base} \\ \text{Verb Theme} \end{array} \right\} + \text{Thematic Suffix.} \\ \text{Noun} &\rightarrow \text{Noun Base} \quad (+ \text{Case Suffix}).\end{aligned}$$

Note that the surface constituent structure is not the constituent structure that the rewriting rules of the syntactic component of the grammar assigns to the base forms of sentences. It is derived from the latter by means of transformations. The rules just given are not rules in the syntactic component, nor for that matter are they rules in the grammar. They are introduced here simply as an expedient device to describe the surface constituent structure. We assume that in these rules Final Suffix, Thematic Suffix, and Case Suffix are not nonterminal symbols to be rewritten, in the technical sense of phrase structure, by an appropriate suffix as a terminal symbol; rather, they are to be considered as variables ranging over each class of suffixes. In other words, the first rule, for example, does not actually represent one phrase structure rule but is rather a schema of rules with the variable Final Suffix ranging over the class of final suffixes. Accordingly, a verb consisting of a verb base V and a final suffix F has the constituent structure

$$[[V]_{\text{Verb Base}} + F]_{\text{Verb}},$$

and not

$$[[V]_{\text{Verb Base}} + [F]_{\text{Final Suffix}}]_{\text{Verb}}.$$

So far as phonology is concerned, morphemes are given in the dictionary in the form of a sequence of phonological segments. A phonological segment is, in turn, a set of specifications of

⁵ The constituent structure given here is virtually the same as the one assumed in [N]. The only significant difference is that we take the subjective case of a noun to be the noun base itself standing alone as a word; hence the optionality of Case Suffix in the last rule. Note also that the term "Noun Base" is used here instead of "noun theme" as in [N].

phonological features such as vocalicness, consonantalness, and rounding. Thus, a phonological segment can be represented as

$$\begin{bmatrix} + \text{vocalic} \\ - \text{consonantal} \\ + \text{round} \\ \text{etc.} \end{bmatrix}.$$

But for typographical convenience the usual phonetic symbols are generally employed to represent phonological segments. As will be explained later, Yawelmani phonological segments, for instance,

$$\begin{bmatrix} - \text{consonantal} \\ + \text{vocalic} \\ - \text{diffuse} \\ - \text{round} \\ - \text{long} \end{bmatrix} \quad \begin{bmatrix} - \text{consonantal} \\ + \text{vocalic} \\ - \text{diffuse} \\ - \text{round} \\ + \text{long} \end{bmatrix} \quad \begin{bmatrix} - \text{consonantal} \\ + \text{vocalic} \\ - \text{diffuse} \\ + \text{round} \\ + \text{long} \end{bmatrix},$$

will be represented by the letters *a*, *a'*, *o'*, etc. Furthermore, it is important to note that some phonological features may be left unspecified in a phonological segment. For example, the set of specifications

$$\begin{bmatrix} - \text{consonantal} \\ + \text{vocalic} \\ - \text{diffuse} \\ - \text{round} \end{bmatrix}$$

is to be considered as a well-defined Yawelmani segment in spite of the fact that no specification is given for the feature length.

This concept of a phonological segment that is not fully specified corresponds to or generalizes the concept of archiphoneme. The example just given is the archiphoneme obtained by subtracting the feature length from the segments *a* and *a'*. Abbreviated symbols are also introduced for such segments when they are important in the phonological description. For example, the preceding Yawelmani archiphoneme will be represented by *a**.

Thus, all phonetic symbols used in the description of the phonological component must be defined in exact terms of feature specifications. The precise definition of the *vowel* segments of Yawelmani will be given later. However, since the exact feature specification of

nonvowel segments⁶ is irrelevant to the following discussion, we shall use the same phonetic symbols for consonants as in [N] without giving exact definitions in terms of feature specifications.

The sequence of phonological segments representing morphemes in the dictionary are called the dictionary forms, or the underlying forms, of the morphemes. The output of the syntactic component, then, is a sequence of dictionary forms with labeled constituent structure, and it may contain, for example, the following forms as its parts:

$$\begin{aligned} & [\#[xa^*t]_{\text{Verb Base}} + hn\#]_{\text{Verb}} \\ & [\#[hIdst]_{\text{Noun Base}} + In\#]_{\text{Noun}} \end{aligned}$$

Here the symbol # means word boundary, which is assumed to be inserted appropriately by a late transformational rule of the syntactic component.

The theory of generative grammar adopted here assumes that the phonological component consists of an ordered set of rules that apply cyclically in the following way. An output of the syntactic component is given, and these rules are first applied in the specified order inside the innermost parentheses. Then the innermost parentheses are erased, and the rules are again applied inside what have now become the innermost parentheses. Application of rules is repeated cyclically in this way until all parentheses in the given input are finally erased. A rule may refer to a syntactic label in its specification of the environment to which it applies. In this case the rule will have effect only during a cyclical application of the rules (or, in short, a cycle) inside a pair of parentheses labeled with that symbol, and it will be bypassed during the other cycles. A rule may be designated so that it is applicable only in the first cycle inside two morpheme boundaries. Such a rule is called a morpheme structure rule. In other cases, a rule may be designated so that it is applicable only at the level of word boundaries. Then the rule is bypassed until the cycles reach the word level and not applied at cycles

⁶ Here we understand by a vowel segment a segment that possesses the specifications —consonantal and +vocalic, and by a nonvowel segment one that possesses the specification +consonantal or —vocalic. We use the letters *V* and *C* to stand for a vowel segment and a nonvowel segment, respectively.

beyond the word level.⁷ Finally, a rule may refer neither to a syntactic symbol nor to the word boundary. Then the rule exerts its effect during any cycle provided its environment of application is satisfied.

A phonological rule may delete or insert a segment or may respecify certain features of segments. Or when certain features of some segments are unspecified, the rule may introduce specifications. But it is also to be noted that some new feature that is not specified for any segment may be introduced into phonological segments by a phonological rule. Thus, in Yawelmani the feature compactness is not needed in the dictionary but will be introduced later by a phonological rule. (See Compactness Redundancy Rule III in §2.2.)⁸

⁷ Such rules were once called postcyclic rules because it was conjectured that those rules were to be put, in the order relation of rules, after all the rules that apply cyclically or refer to a specific syntactic symbol. However, some postcyclic rules were found which have to precede cyclic ones (cf. Chomsky and Halle, 1967), and accordingly the name "postcyclic rule" became unsuitable. All rules except morpheme structure rules are assumed to be applied in each cycle, possibly vacuously, and in that sense they are all cyclic rules. But for convenience we retain the name "cyclic rule" to refer specifically to rules that are neither morpheme structure rules nor rules to be applied only once inside word boundaries.

⁸ This study of Yawelmani phonology is carried out in the theoretical setting adopted in the earlier stages of development of generative phonology. This theoretical framework may in the future be called naïve generative phonology, just as set theory as conceived in its earliest days is now sometimes called naïve set theory. No attention is paid to notions and formulations that have come to be investigated in more recent developments of the theory, for example, marked versus unmarked specification of features. For more detailed explanation and further sophistication of the theory of generative phonology, the reader is referred to Chomsky (1964), Halle (1959), (1962), and Chomsky and Halle (1967).