

SOME PRODUCTIVE RULES IN LARDIL (MORNINGTON ISLAND) SYNTAX

KENNETH HALE

The purpose of this paper is to indicate certain features of an Australian language which can be handled in a reasonable manner only by a grammar which contains, as its principal component, a set of rules called transformations, which can operate on grammatical sequences produced by a set of phrase structure expansion rules and, from these sequences, produce new grammatical sequences by means of such processes as permutation, addition, and deletion. The term "rule" is used here to refer to two different types of operations:

(1) *expansion rules* apply to general terms and expand them, i.e. they enumerate their constituent parts or submembers, as in expanding a verb word as a stem plus suffix, or in expanding the general notion "verb stem" as a list of actual stems belonging to the class of verbs;

(2) a *transformational rule* manipulates, in one way or another, the elements in strings derived by rules of the first, or expansion, type. There are also transformational rules which operate simultaneously on two such strings to combine them, either by imbedding one into another or by conjoining one to the other.

The important discovery of the necessity for including a transformational component in any reasonable, scientific grammar of a natural language is to be credited to Noam Chomsky, whose book *Syntactic Structures* (1957) has quickly and deservedly become a classic in modern linguistic writings. Chomsky, and linguists inspired by him such as Lees, Halle and Postal, have given ample demonstration of the descriptive and explanatory power of transformational grammars. Their work has, significantly, concentrated most heavily on English, a language which is well known to all of them (see, for example, Lees' *The Grammar of English Nominalizations*, 1960). However, in recent years, similar work has been done on languages other than English, including

several American Indian languages. The more recent work, on a variety of languages, has provided nothing by way of counter-examples to the claims implicit in Chomsky's original formulation. Indeed, these investigations have strongly suggested that transformational rules are a universal for all human language.

One of the points consistently and convincingly made by transformationalists is that the set of rules comprising the grammar of a natural language can be adequately formulated on paper, only by grammarians whose knowledge of the particular language is essentially that of a native speaker - either the linguist must be virtually a native speaker, or the native speaker must be trained as a linguist. For Australian languages, perhaps only T.G.H. Strehlow has the qualifications necessary here.

Nonetheless, in the context of a transformational theory of grammars, it is possible for field linguists to say significant things about any new language which they encounter in the field and for which they have systematically assembled a sufficiently large corpus.

In the discussion that follows, I will present a number of examples in Lardil of productive rules which are best regarded as involving transformations; in the course of the discussion, the nature of transformations will, I hope, become clear.

The first example I wish to present involves stylistic permutation of elements in sentences of a rather simple type. The following type-sentence consists of a noun (**N**) (the subject of the sentence), a verb, and a complement (**Comp**) (the object of the verb). The verb and the complement are each composed of a stem (**V** and **N** respectively) followed by a suffix indicating tense (**T**).

(1) ɲata weRe-ɬu ma:ŋ-ku

I throw-future spear-future (I will throw the spear)

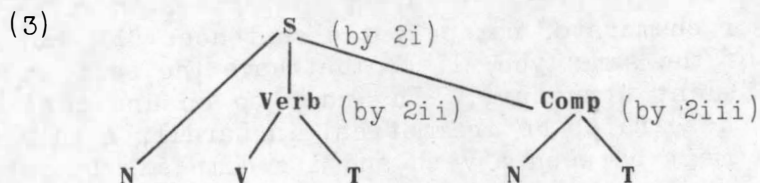
It is a simple matter to provide a finite set of expansion rules which will enumerate all sentences of exactly this structure. Each of the rules is of the type **X** ---> **Y**, i.e. rewrite **X** as **Y**, where **X** is some general, superordinate term, and **Y** is its constituent parts. In such a set, there is an initial rule which operates on the most abstract entity, sentence (**S**), and decomposes it into its immediate constituent parts; in the case of the Lardil sentence (1), these parts are: a noun, a verb, and a complement, in that order. A subsequent expansion rule operates in the same way on one of the constituents provided by the first rule, and

so on, until the maximum decomposition, into morpheme classes, is completed. The output of this subgrammar is a sentence profile, or terminal string, in which each ultimate constituent is represented by an abstraction (N for noun, V for verb, etc.) of the form class to which it belongs.

- (2) (i) **S** ---> **N + Verb + Comp**
 (ii) **Verb** ---> **V - T**
 (iii) **Comp** ---> **N - T**

(The symbol + indicates word boundary, and - indicates morpheme boundary within a word.)

The output of each expansion rule can be mapped onto a branching diagram or tree, in which the lefthand term in the expansion rule is a superordinate node dominating its constituents, the righthand terms in the expansion. If this is done for all the rules (2), the following constituent structure tree is derived.



The profile of the sentence is: **N + V - T + N - T**. The ordering of the rules and the derived branching diagram indicate the hierarchical constituent structure.

An additional component to the grammar, comprising the lexical rules (also in the form of expansions), would re-write each element in the terminal string as a list of actual morphemes.

- (4) (i) **N** --->
- ɲata I*
 - n^viŋki you, sg.*
 - ɲiya he*
 - taŋka man*
 - pinŋen woman*
 - kant^vin wallaby*
 - tunaɭ tree*
 - ma:ŋ spear*
 - kuRka paɲdja (swamp rush.corn)*
 - tupun pestle*
 - etc.

- (ii) $V \rightarrow$ weRe *throw*
 kuri *see*
 kele *cut*
 parke *chop*
 tuReme *pound*
 etc.
- (iii) $T \rightarrow$ -tu (with V) ~ -ku ~ -wu ~ -u ~ -R ~ -ŋku
 etc.
 (with N) *future*
 \rightarrow -kun (with V) ~ -in ~ -i ~ -n ~ -un ~ -ŋin
 etc.
 (with N) *non-future*

Together with the lexical rules, the expansion rules (2) generate, or enumerate, not only the sentences (1), but all sentences of the same type, i.e., that have the same profile and constituent structure. In order to ensure that the output of these rules be grammatical in Lardil, a rule for tense agreement between a verb and its complement must be included. Such a rule, which would precede the lexical rules, might be formulated, tentatively, as follows:

$$(5) \quad V - T_x + N - T \rightarrow V - T_x + N - T_x,$$

to be read, roughly: when a particular tense is chosen for a verb, choose the same tense for the noun which follows it. This ensures that (6i-iv) below will be included in the output of the grammar, but that (6v-viii) will be excluded.

- (6) (i) ŋata kupaRi-tu ma:ŋ-ku
 $N + V - T_{fut} + N - T_{fut}$
I will make a spear.
- (ii) ŋata kupaRi-kun ma:ŋ-i
 $N + V - T_{non-fut} + N - T_{non-fut}$
I made (or make) a spear.
- (iii) ŋiya parke-tu tunal-u
 (same profile as (i))
He will chop the tree.

- (iv) η iya parke-kun tu η al-in
 (same profile as (ii))
He chopped the tree
- (v) * η ata kupa η i-tu ma: η -i
 $N + V - T_{fut} + N - T_{non-fut}$
- (vi) * η ata kupa η i-kun ma: η -ku
 $N + V - T_{non-fut} + N - T_{fut}$
- (vii) * η iya parke-tu tu η al-in
 (same profile as (v))
- (viii) * η iya parke-kun tu η al-u
 (same profile as (vi))

All of the sentences (6) have the same constituent structure, but only (i-iv) are grammatical. Clearly, the grammar of Lardil must be formulated to include a tense agreement rule, and this is entirely within the scope of a grammar constructed on the model of the rules (2).

In order to demonstrate the essential inadequacy of such a grammar, it is necessary to examine Lardil sentences which differ in some way from (1) and (6), but which are related to them in some systematic way.

Consider the following grammatical sentences.

- (7) (i) η ata ma: η -ku weRe-tu
 (ii) ma: η -ku η ata weRe-tu
 (iii) ma: η -ku weRe-tu η ata
 (iv) weRe-tu ma: η -ku η ata
 (v) weRe-tu η ata ma: η -ku

All of these sentences have the same meaning as (1) (*I will throw the spear*), and all are equally grammatical, although some may be regarded by Lardil speakers as being somewhat more "usual" than others. They are stylistic permutations of one another, and are, therefore, closely interrelated - they contain precisely the same constituents and exhibit the same internal agreements (in particular, the tense agreement between the verb and its object).

Since the sentences (7i-v) are all grammatical, they must be enumerated by the linguist's grammar if the latter is to

satisfy even the most fundamental requirement of observational adequacy. The sentences differ from one another and from (1) in the arrangement of the constituents **V**, **Verb**, and **Comp**. It is clear, then, that they are not included in the output of the set of rules (2), nor are they included in the output of any single set of expansion rules similar to (2).

All Lardil sentences of the type represented by (1) and (6) have potential permutations corresponding to the sentences (7i-v). It is obvious, then, that a grammar which contains only an expansion rule component is incapable of handling a rather simple feature of Lardil, since, in such a view of grammar, a separate set of expansion rules (amounting to a separate subgrammar) would be required for each of the sentences (7i-v), and the simple permutational relationship among these superficially dissimilar sentences would be entirely lost. The reality, for speakers of Lardil, of the close and obvious relationship among sentences which are permutations of one another becomes immediately apparent in field work; it is not uncommon to record all possible permutations of a string in the course of a single text, provided the occasion arises for sufficient repetition. (This phenomenon of stylistic permutation is well documented for a great many Australian languages; see e.g., Capell 1962, pp.4-8.)

It appears, therefore, that there is a productive rule in Lardil which operates at least on sentences of the type enumerated by the expansion rules (2) and produces new grammatical sentences by permuting among the elements **N**, **Verb**, and **Comp**. Such a permutation rule, clearly indicated by the study of Lardil, is one of a set which comprises the transformational component of the grammar.

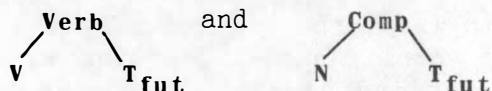
(8) Transformational rule, stylistic permutation:

N + Verb + Comp	\Rightarrow	(i) N + Comp + Verb , or
		(ii) Comp + N + Verb , or
		(iii) Comp + Verb + N , or
		(iv) Verb + Comp + N , or
		(v) Verb + N + Comp .

The relationship among the sentences which are the output of rule (8) is a formal one. These sentences are related transformationally as permutations of a single source string, the output of the set of expansion rules (2).

Transformational rules are best regarded as being defined on a domain of fully derived constituent structure trees or branching diagrams. Rule (8), defined on a tree of the type given earlier as the output of the rules (2), operates on

the branches labelled **N**, **Verb**, and **Comp**. By operating on the node labelled **Verb**, the rule keeps the constituents **V - T_x** together as a unit; similarly, by operating on the node labelled **Comp**, the rule keeps the constituents **N - T_x** together. Since transformational rules apply to fully derived trees, they apply *after* agreement rules such as (5). Since this is the case, such agreement rules need to be stated once only, and the correct agreements will be inherited by the output of any transformational rules which changes the sequential arrangement of elements between which agreement dependencies obtain. For example, if, in a given derivation, **T_{fut}** is chosen for the verb, rule (5) will select the same tense for the noun which follows. Rule (8) will then be able to move the subtrees



without disturbing the tense agreement, thereby eliminating any necessity to repeat the simple tense agreement rule for sentences in which the verb follows its object.

Surely, the principal metracriterion for the choice of one grammar over another is one of simplicity. That is, a grammar which allows for the greatest generality in the application of rules is more highly valued than a grammar which fails to do so. By recognising a transformation which permutes elements in a string after agreement rules have been stated, the agreement rules themselves are made maximally general, i.e., for a particular agreement, say tense in Lardil, a single rule can apply to all sentences containing a verb and a complement, not just to those in which the latter constituents are in a particular order. (For an excellent discussion of generality, see Chomsky, 1962.)

The phrase structure expansion rules provided earlier enumerate the members of a large set of grammatical sentences in Lardil. They are formulated in a way which makes the application of the permutation rule simple. However, there are a great many other productive rules in Lardil; many of these require modification of and addition to the expansion rules as given in order to ensure that their output include only grammatical sentences. It will be necessary in an adequate grammar of Lardil to distinguish between transitive and intransitive verbs, animate and inanimate nouns, etc.

I will briefly consider two additional types of construction which are best viewed as involving transformations:

- (1) passive sentences, and
 (2) complex nominals composed of nouns and modifiers of a particular type.

Consider the following pair of sentences.

- (9) (i) pinŋen tuReme-tu kuRka-ŋku

The woman will pound pandja.

- (ii) kuRka tuReme--tu pinŋen-ŋan

The pandja will be pounded by the woman.

The first of these sentences has the same profile and constituent structure as the sentences (1) and (6); it is therefore, included among the output sentences of the expansion rules (2). The second sentence, however, has a different profile - specifically, it contains a passivising suffix added to the verb (and actualised as lengthening of the stem-final vowel), and it contains an agent suffix attached to the second noun. It is related to the first sentence in a formal way - it contains the same major morphemes, i e, the same nouns and verbs, but these are in a new structural arrangement, what was the object of the active sentence is the subject of the passive, and the subject of the active sentence is the agent of the passive. It is true for Lardil that for all transitive sentences of the type enumerated by the expansion rules (2), there is a corresponding passive having the same structure as (9ii). There is a definite relationship between active sentences and corresponding passive sentences which would be lost if passives were regarded as being derived by a separate set of expansion rules independent of those by which actives are derived. This relationship could, however, be captured by the grammar if the latter included a transformational rule by means of which passives are derived from actives. Such a rule would require that transitive sentences be distinguished from intransitive sentences. There is, for example, no passive for sentences of the type represented by (10) below, a sentence which, on the surface, appears to be of the same structure as an active transitive sentence.

- (10) pinŋen wan^yt^yi-tu walma:n-ku

$N + (\text{intransitive}) V - T_{\text{fut}} + N - T_{\text{fut}}$

The woman will climb up.

If the phrase structure expansion rules failed to distinguish transitive verbs from intransitive verbs, the rule for forming passives would include in its output such non-sentences as the one represented by (11) below.

- (11) *walma:n wan^yt^yi--tu pinŋen-ŋan
(Up will be climbed by the woman.)

Related to sentence (9i) is a complex nominal (12).

- (12) kuRka tuReme-n pinŋen
Woman who pounds pandja

And generally, for transitive sentences, there are corresponding agentive nominals. But consider the following

- (13) kuRka tuReme--n tupun
Pestle by which pandja is pounded

The structures of (12) and (13) are superficially similar, but (13) contains a passive verb tuReme-: *be pounded*, while (12) contains an active verb tuReme *pound*. While (12) comes directly from an active sentence, (13) comes from a passive sentence of the type represented by (14).

- (14) kuRka tuReme--T_x tupun-Ag_x
Pandja (was, will be) pounded by the pestle

(Ag_x represents the agent suffix, which must also agree in tense with the verb which precedes.)

Sentence (14), in turn, comes from the active sentence (15).

- (15) tupun tuReme-T_x kuRka-T_x
The pestle (did, will) pound the pandja

It is true for Lardil that for any transitive active sentence there is a corresponding agentive nominal. It seems appropriate, therefore, to regard these complex nominals as being transformationally derived. It happens, however, that the rule for forming agentive nominals can be applied directly to active transitive sentences only where the subject of such a sentence is animate (as is pinŋen woman). If the subject is inanimate (as is tupun pestle) the sentence must first be made passive, and the rule for forming agentive nominals must apply to that passive. The phrase structure expansion rules must, therefore, distinguish animate and inanimate nouns (a classification not otherwise obviously marked in Lardil) in order to ensure that ungrammatical nominals, of the type represented by (16) below, be excluded from the output of the grammar rules.

- (16) *kuRka tuReme-n tupun

It seems clear from these examples that the notions "transitive verb", "animate noun", etc., become real in

Lardil only in relation to some one or other productive rule. This suggests strongly that the primary concern of a field worker investigating a language in the field should be that of discovering, or better, learning, the productive rules, not the morpheme classes as defined according to immediate morphological environment. The notion "morpheme class" is dependent upon the total set of productive, or transformational, rules. The correct classification of morphemes can be arrived at only when the productive rules are known - it would be virtually impossible to know that Lardil makes a formal distinction between animate and inanimate nouns without first knowing, among other things, how agentive nominals are formed.

The purpose of this paper has not been to present a fully formalised subpart of Lardil grammar, but rather to demonstrate that, were such a grammar to be formulated, it could be done most reasonably and convincingly by recognising a transformational component. Three Lardil grammatical phenomena, most reasonably handled by transformations, were considered. These constitute only a small percentage of the productive rules of the language; but they indicate, I believe, that with regard to such notions as "productive rule", Lardil is not fundamentally different from better known languages for which detailed grammars are now being written.

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I wish to thank Professor R. B. Lees for many helpful suggestions.

