

MUNDARI VERB CONJUGATION

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1. INTRODUCTION

Mundari, an important north Munda language spoken largely in southern Bihar and in neighboring portions of Orissa, India,¹ may be said at first glance to be a language with a rich verbal inflection, with only residual inflection in its nominal system. In traditional terms,² the Mundari verb agrees with both its subject and object in person and number. In addition, the verb is generally inflected for tense and transitivity, and morphemes indicating that the verb is passive, reflexive or reciprocal may be present, or there may be a morpheme present which indicates that the object of the verb with which it is agreeing is indirect rather than direct. Consider, for example, the verbal form:³

(1) *Udubamtanako*. 'They are showing it to you (sg).'

¹ Field work on Mundari was done by the author during the summer of 1962 under the Munda Languages Project of the University of Chicago. This paper, and one other "The copula in Mundari" in J. W. M. Verhaar, S. J. (ed.), *The verb 'be' and its synonyms*, pp. 74-99, forthcoming, are based in part on my unpublished manuscript "Fragment of Mundari syntax", cited in W. O. Dingwall, *Generative transformational grammar: a bibliography* (Washington, 1965), #422. For a comprehensive survey of recent work in Munda linguistics, including work on Mundari, see D. L. Stampe, "Abstracts of recent work in Munda linguistics", *IJAL*, 31 (1965), pp. 332-341; 32 (1966), pp. 74-80, 164-168, 390-397.

² The most comprehensive traditional grammar is by Rev. J. Hoffmann, S.J., *Mundari grammar* (Calcutta, 1903). Basing his work largely on Hoffmann's materials, Rev. W. A. Cook, S.J. has completed a dissertation *A descriptive analysis of Mundari* (Georgetown University, 1965). For a comprehensive historical and comparative study of the Munda languages, see H.-J. Pinnow, "A comparative study of the verb in Munda languages" in N. H. Zide (ed.), *Studies in comparative Austroasiatic linguistics* (The Hague, Mouton & Co., 1966), pp. 96-193.

³ The transcription used here is basically a transliteration of the Devanagari script used in standard Mundari orthography. Standard word division is also used. Note that *q* represents a glottal stop; *ŋ* a velar nasal; *ɳ* a palatal nasal; *c, f* voiceless and voiced palatal affricates; *y* a palatal glide.



which is made up of the elements:

- (1a) *udub* verb root meaning 'show'
- (1b) *a* particle indicating that what follows agrees with the indirect object
- (1c) *m* second person singular
- (1d) *ta* present tense
- (1e) *n* transitivity indicator, in this case indicating that an object agreement element does not follow it (the presence of this morpheme also 'signals' that the verb is not imperative)
- (1f) *a* indicator that the verb occurs in a main clause
- (1g) *ko* third person plural animate, agreeing with the subject

Similarly, one could give a detailed morphological analysis of every verbal form in the language, and draw up a paradigmatic analysis of the Mundari verb in which one summarized the myriad of possible forms into which particular verb roots could be inflected. In this paper, I shall discuss five different conjugational patterns according to which these verbal paradigms can be arranged. In addition, I shall discuss the various syntactic rules required to describe these patterns accurately, and shall argue that while it is indeed possible to describe these patterns using traditional linguistic models of morphological analysis, such as morpheme order charts, it is much more revealing to describe them using the apparatus of generative-transformational linguistic theory.

2. ENUMERATION OF THE BOUND MORPHEMES IN MUNDARI VERBAL FORMS

For clarity, it will be convenient first to enumerate and discuss briefly the bound morphemes which may appear in the fully inflected Mundari verbal form. Mundari has twelve subject/object agreement elements appearing in verbal forms; these same elements may also appear together with another and different bound morpheme as independent pronouns, and the third person elements may also function as a duffix to indicate grammatical number of animate nouns.⁴ These subject/object agreement elements are listed in Table 1.

⁴ At least for dual and plural number. The singular of animate nouns has no suffix; perhaps one can say that the singular animate suffix has zero form when attached to nouns. A syntactic feature analysis for the first and second person Mundari pronouns was given in my "Fragment of Mundari syntax", and was reproduced in full in Stampe's abstract of it (*IJAL*, 32 (1966), p. 79).

		Singular	Dual	Plural
1 pers.	Excl.		<i>ling</i>	<i>le</i>
	Incl.	<i>iĩ ~ ing</i>		
2 pers.			<i>lang</i>	<i>bu</i>
		<i>m ~ me</i>	<i>ben</i>	<i>pe</i>
3 pers.	Anim.	<i>eq</i> (subj.)	<i>king</i>	<i>ko</i>
		<i>i</i> (obj.)		
	Inanim.	Ø (subj.) (same for all numbers)		
		<i>e ~ Ø</i> (obj.)		

Table 1. Mundari subject/object agreement elements.

The phonological alternations observed in the singular agreement elements can be easily described.⁵ It will be observed that only for the third person singular (no number distinctions are made in the agreement with inanimate antecedents) elements, are there phonological differences between the subject and object forms of the singular animate element can be most easily understood from a historical perspective. The glottal stop appearing in the subject agreement element is historically related to the voiced palatal affricate *j*, and its loss in the object agreement form, however that is to be explained, accounts for the raising of the vowel from *e* to *i*.⁶

Mundari has seven phonologically distinct tense indicators, which I list in Table 2 together with a very approximate designation of their function and the conditions under which they may appear.

⁵ For the alternation in the first person singular element, see Stampe's abstract of my unpublished "Mundari phonology", *IJAL*, 32 (1966), p. 78. The second person singular is *me* after onn-consonantal segments and in the imperative when not attached to the negative element, otherwise *m*. The alternation in the third person inanimate element will be discussed in §4.

⁶ Cf. Pinnow's work cited in n. 2. The alternation between *e* and *i* before a voiced palatal affricate is still observable in Santali. The third person singular animate element is also pronounced *iq* after the demonstratives *in* and *han* and after *tan* in copula sentences (cf. my 'The copula in Mundari' for details on the syntax of the latter construction). This pronunciation can be accounted for, however, by the rules of vowel harmony, since in the same environments the plural third person animate element is pronounced *ku* rather than *ko*. This in particular indicates that the vowel *a* in Mundari can in certain cases act as a high (diffuse) vowel in the determination of vowel harmony. Another example is provided by the morpheme *bar* 'two', which in its extended form is *baria*. In other numerals, the first vowel of the extension suffix is *i* only after stems having diffuse vowels, and *e* after stems having non-diffuse vowels; cf. *upun*, *upunia* 'four', *gel*, *gelea* 'ten'. This suggests that Mundari really has a six vowel system, like Santali, with three harmonically diffuse vowels *i*, *ɨ* (pronounced *a*), *u*, and three non-diffuse vowels *e*, *a*, *o*.

- ta* Present in non-imperative sentences and in imperative sentences with transitive verbs.
aka Perfect.
le Anterior.
ke Past, not used with doubly transitive verbs.
a Past, used with doubly transitive verbs.
ja Aorist or indefinite present.
koq Present, only in the imperative of intransitive, or reflexive, reciprocal or passive verbs.

Table 2. List of Mundari tense morphemes.

Absence of a tense indicator in a verbal form indicates future or unspecified time. Imperfect aspect is indicated by adding the past tense of the copula to an otherwise fully inflected verbal form (for further discussion, see §3). Cooccurring with the tense morpheme in non-imperative sentences is a morpheme which more or less indicates the transitivity of the verbal form. Specifically, its phonological shape depends upon whether or not the object agreement element follows it. It has the shape *n* if it does not (as in example 1), and *d* if it does.

Every finite verb form in Mundari, except certain imperative forms, contains the predicator morpheme *a*. It may be said to indicate just that the verb form in which it appears is the main verb of the clause in which the verb form appears. Other bound morphemes which may appear in verbal forms include *og*, indicating that the verb is passive; *en ~ n*, reflexive; *-pV-*, reciprocal, infix after the first vowel of the verb stem (the vowel of the infix is identically that of the first vowel of the verb stem); *a*, indicating that the object agreement element which follows it agrees with the indirect object; *ka*, indicating politeness, only in imperative verbal forms.

3. PHRASE STRUCTURE RULES RELEVANT TO MUNDARI VERB CONJUGATION

For purposes of understanding the Mundari verb conjugational patterns, we may assume the following phrase structure rules for that language. We shall not attempt to state the full form of these rules and shall not explicitly state expansion rules, such as those of noun phrases, which do not figure in this discussion.⁷

⁷ These rules differ somewhat from those given in "The copula in Mundari" (cf. fn. 1); here I consider Neg to be a constituent of the sentence rather than of the verb

- PS1. $S \rightarrow NP \ VP \ (Neg)$
- PS2. $VP \rightarrow \left\{ \begin{array}{l} NP \\ AdjP \\ LocP \end{array} \right\} \ Copula \left\{ \begin{array}{l} (NP) \ (NP) \ Verb \end{array} \right\}$
- PS3. $Verb \rightarrow V \left(\left\{ \begin{array}{l} Tense \ Tr \ (Copula) \\ (Tense) \ Imperat \ (Polite) \end{array} \right\} \right) \ Pred$
- PS4. $Copula \rightarrow Cop \ Tense \ Tr$

Rule PS1 expands the sentence into a noun phrase, a verb phrase and optionally a negative constituent. Rule PS2 expands the verb phrase in one of two ways, into a string consisting of a noun phrase, adjective phrase or locative phrase followed by a copula form, or into a verbal form preceded by zero, one or two noun phrases. Rule PS3 expands the verbal form (Verb) into a verb stem (V) and the predicator, with certain constituents optionally intervening between them. The constituent Tr represents the transitivity element, while the Copula constituent appearing in the right-hand side of rule PS3 functions to make the entire verbal form imperfect in aspect. The tense of the copula form appearing inside the verb form must be past. Finally rule PS4 expands the copula form (Copula) into the copula root (Cop) followed obligatorily by the constituents of tense and transitivity. The properties of the copula form, its conjugation and its relationships with the other elements of Mundari sentences have been fully discussed in my paper "The copula in Mundari" (cf. n. 1); our attention in this paper will be focused entirely on the verbal form, the underlying structure of which is given by rule PS3.

It will be noted that these phrase structure rules do not provide a place for the elements of subject and object agreement, nor those which indicate reflexive, reciprocal, passive or indirect object. We shall maintain that these items are supplied transformationally.

4. CHARACTERISTICS OF FIVE MUNDARI VERB CONJUGATION CLASSES

Following Chomsky's theory of verb selection as given in *Aspects of the theory of syntax*, we may expect that verb stems may be strictly phrase, and that Tense and Tr do not together comprise a single constituent. There, the two constituents together are called Tense, and what is here called Tense is there called Te.

subclassified on the basis of the constituents which cooccur with the verbal form in the expansion of the constituent VP. And indeed we may distinguish among pure intransitives, which occur in the absence of nominal objects, singly transitive verbs, which occur with one object noun phrase, and doubly transitive verbs, which occur with two object noun phrases, both a direct and an indirect object. Examples of the first subcategory of verbs are *duram* 'sleep', *tain* 'dwell' and *senoq* 'go'; the second subcategory includes such stems as *nel* 'see', *dal* 'strike' and *maq* 'chop'; among the doubly transitive verb stems are *om* 'give', *udub* 'show' and *men* 'tell'. Since the conjugational patterns of these three subcategories of verbs differ markedly from one another, we have reason to speak of three conjugational classes of verbs, which correspond exactly with three subcategories of verb stems motivated on the grounds of their substitutability in phrase markers generated by the phrase structure component. Briefly, these three conjugational patterns have the following salient characteristics. Pure intransitive verbs show no object agreement, and select the present tense morpheme *koq* freely in the imperative; singly transitive verbs show object agreement, except of course in passive, reflexive and reciprocal sentences; doubly transitive verbs show object agreement with the indirect object (the second object noun phrase), which under certain circumstances is preceded by the indirect object morpheme *a* discussed in §2 and illustrated in example 1, and they select the past tense morpheme *a* rather than *ke*.

Before going on to consider the other two conjugation classes, let us first examine more closely the structural characteristics of these three classes and of the sentences in which they may occur. The following sentences illustrate the use of pure intransitive verbs in Mundari.

- | | | |
|------|------------------------------|-------------------------------|
| (2a) | <i>Hoḍoko dubakanako.</i> | 'The men have sat down.' |
| (2b) | <i>Hoḍoko dubakana.</i> | 'The men have sat down.' |
| (3a) | <i>Apedo ka duramtanape.</i> | 'You (pl.) are not sleeping.' |
| (3b) | <i>Apedo kape duramtana.</i> | 'You (pl.) are not sleeping.' |
| (4) | <i>Senoqaeq.</i> | 'He will go.' |

Given the phrase structure rules of §3 (along with a few others) and the Mundari lexicon, it is possible to derive these sentences, provided that we also have transformational rules which (1) move the negative morpheme *ka* to a position immediately preceding the verb, (2) add a subject agreement element as a suffix to the verbal form, (3) optionally move this subject agreement element to a position immediately before the verbal form (actually attach it as a suffix to whatever word immediate-

ly precedes the verbal form), and (4) delete the subject agreement element when it happens to be attached to the subject noun phrase. The subject agreement element is identical in form with the number constituent if the subject is an animate noun, as in example 2, or with the entire pronoun if the subject is a first or second person pronoun, as in example 3.⁸ In (4), we may suppose that the subject noun phrase has been deleted.

The reasons for deriving such simple sentences as those in 2-4 by such an elaborate transformational apparatus will become apparent in the following discussion. We now formulate the four transformational rules discussed informally in the preceding paragraph.⁹

T1. Negative placement (obligatory).

$$X_1, \left\{ \begin{array}{l} \text{Copula} \\ \text{Verb} \end{array} \right\}, \text{Neg} \\ 1 \quad 2 \quad 3 \rightarrow 1+3 \ 2 \ \emptyset$$

T2. Subject agreement (obligatory).

$$[X_1, \left\{ \begin{array}{l} \text{Pronoun} \\ \text{Number} \end{array} \right\}, X_2] \text{ NP } X_3 \left\{ \begin{array}{l} \text{Copula} \\ \text{Verb} \end{array} \right\} \\ 1 \quad 2 \quad 3 \rightarrow 1 \ 2 \ 3+2$$

T3. Subject agreement movement (optional).

$$X_1, \left\{ \begin{array}{l} \text{Cop} \\ \text{V} \end{array} \right\}, X_2 \text{ Pred}, \left\{ \begin{array}{l} \text{Pronoun} \\ \text{Number} \end{array} \right\} \\ 1 \quad 2 \quad 3 \rightarrow 1+3 \ 2 \ \emptyset$$

T4. Deletion of subject agreement element (obligatory).

$$\text{NP}, \left\{ \begin{array}{l} \text{Pronoun} \\ \text{Number} \end{array} \right\}, X_1 \\ 1 \quad 2 \quad 3 \rightarrow 1 \ \emptyset \ 3$$

It is possible to apply rule T3 to a particular sentence in two ways, with two different results. Suppose upon application of T1 and T2 we have a sentence such as:

⁸ Cf. n. 4 for comments on the morphophonemics of the singular animate element. The morpheme *do* in *apedo* is an emphatic element.

⁹ The elements of the structural analyses in the transformations given in this paper always comprise a sentence, unless otherwise specified. All transformations are viewed as combining the elementary operations of deletion (symbolized by ' \emptyset ') and adjunction (symbolized by '+') only.

(5a) *Hođoko ka duramtan taikenako.* 'The men were not sleeping.'

in which the verb form *duramtan taikena* contains both a verb stem *duram* and a copula stem *tai*. Then by rule T3, the subject agreement element *ko* can be shifted to a position immediately preceding *tai* or before *duram*, resulting in either:

(5b) *Hođoko ka duramtanko taikena.* 'The men were not sleeping.'

(5c) *Hođoko kako duramtan taikena.* 'The men were not sleeping.'

The same two possibilities would appear to be present for the application of rule T1 to the phrase marker underlying example 5a, but the negative morpheme must precede the verb. We may rule out the possibility of applying rule T1 to such phrase markers so as to place the negative morpheme before the copula which is functioning as an imperfect aspect indicator by claiming that since that constituent Copula is nested inside the constituent Verb, the sentence cannot be interpreted as being analyzable as X₁, Copula, Neg for purposes of rule T1.¹⁰

The conjugation of the pure intransitive verb *senoq*, for all persons and numbers in the present indicative is as follows:

(6)	<i>senoqtanaing</i>	'I am going'
	<i>senoqtanam</i>	'You (sg.) are going'
	<i>senoqtanaeq</i>	'He/she is going'
	<i>senoqtana</i>	'It/they (inan.) is/are going'
	<i>senoqtanaling</i>	'He/she and I are going'
	<i>senoqtanlang</i>	'You (sg.) and I are going'
	<i>senoqtanaben</i>	'You two are going'
	<i>senoqtanaking</i>	'They two (an.) are going'
	<i>senoqtanale</i>	'They (an.) and I are going'
	<i>senoqtanabu</i>	'You (non-sg.) and I are going'
	<i>senoqtanape</i>	'You (pl.) are going'
	<i>senoqtanako</i>	'They (an.) are going'

The inflection of singly transitive verbs is essentially the same as that of intransitive verbs, except that in addition it shows agreement with the direct object with respect to person and number. The object agreement element follows the constituents Tense and Tr if the Tense morpheme is not *ta*; if it is, then the object agreement element precedes these con-

¹⁰ Alternatively, we could formulate rule T1 explicitly to rule out its possible application in those cases in which it does not apply, but to do so would complicate its statement somewhat.

stituents. Consider the following examples (in all of which the subject agreement element has been moved to preverbal position by rule T3):

- (7) *Hoḍoko aleko nelakadlea.* 'The men have seen us.'
 (8) *Hoḍoko honkoko dalkotan taikena:.* 'The men were beating the children.'
 (9) *Daruing maqetana.* 'I am chopping down a tree/some trees.'
 (10) *Daruing maqkeda.* 'I chopped down a tree/some trees.'
 (11) *Daruing maqea.* 'I will chop down a tree/some trees.'

In example 7, the object agreement element *le*, which is identical with the independent first person plural exclusive pronoun, appears after the constituents Tense and Tr, and before Pred. Notice that the constituent Tr has the phonological shape *d*, which we expect since the object agreement element follows it. In example 8, however, the object agreement element *ko* precedes the constituents Tense and Tr and immediately follows the verb stem. Therefore the transitivity indicator has the shape *n*. In this example, too, it will be noted that although the subject agreement element is suffixed to a noun phrase, it is not deleted, because that noun phrase is the direct object, not the subject (this is true also of example 7). In example 9, the object agreement element also precedes the Tense and Tr constituents; in this case the direct object is the grammatically inanimate noun *daru* 'tree', and the inanimate object agreement element *e* is chosen. In example 10, we expect the object agreement element to follow Tense and Tr, since the Tense constituent is not *ta*, and indeed the transitivity indicator has the shape *d*, but it will be observed that in the verbal form of 10 there is no overt object agreement element present. We can handle these facts concerning the form of the inanimate object agreement element by assuming that there is a phonological rule which deletes the object agreement element *e* when it follows Tr. This rule must, of course, follow the morphophonemic rule which specifies the phonological shape of Tr. In example 11, in which the constituents Tense and Tr are not present, the inanimate object agreement element appears as expected as *e*.

There is one other important morphophonemic alternation in the conjugation of transitive verbs. When the first or third person singular animate object agreement elements follow the transitivity indicator *d*,

the latter is pronounced *q*, and if in addition the tense morpheme is *ke* or *le*, the vowel of that morpheme is assimilated to the vowel of the object agreement element, namely *i*.¹¹ Thus we have:

- (12) *Nelakaqĩnaeq.* 'He has seen me.'
 (13) *Nelkiqĩnako.* 'They saw me.'
 (14) *Nelliqiale.* 'We first saw him.'

In order to handle the special properties of the conjugation of singly transitive verbs which are syntactic rather than morphological in nature, we need transformational rules which will (1) add an object agreement element directly before the predicator, and (2) move that agreement element to a position following the verb stem in case the tense *ta* is chosen. The object agreement rule is somewhat more difficult to state than the subject agreement rule, since we must provide agreement with an inanimate object as well as an animate one. We do so by supposing that the inanimate object agreement element really represents a copy of the syntactic feature [-Animate]. The rules of object agreement and of object agreement movement are therefore as follows:

T5. Object agreement (obligatory).

$$\text{NP } X_1 [X_2, \left. \begin{array}{l} \text{Pronoun} \\ \text{Number} \\ \text{[-Animate]} \end{array} \right\}, X_3]_{\text{NP}} X_4, \text{Pred}, X_5$$

1 2 3 4 5 → 1 2 3+2 4 5

T6. Object agreement movement (obligatory and Verb-local¹²).

$$V, \text{ta Tr}, \left\{ \begin{array}{l} \text{Pronoun} \\ \text{Number} \\ \text{[-Animate]} \end{array} \right\}, X_1$$

1 2 3 4 → 1+3 2 Ø 4

The domain of application of rule T6 is the constituent Verb, and for that reason we have chosen to state that rule as a Verb-local transformation. Chomsky's notion of local transformation seems ideally suited

¹¹ This is the only clear case of progressive vowel harmony in Mundari. All other cases of vowel harmony which extend across morpheme boundaries are regressive.
¹² For Chomsky's definition of the notion 'local transformation', see his *Aspects of the theory of syntax* (Cambridge, 1965), p. 215. A number of the transformational rules of "The copula in Mundari" are Copula-local, although that fact was not explicitly mentioned there.

for the expression of rules which operate within the domain of constituents which comprise only a part of a sentence, such as our rule T6. It provides a means for focusing the transformation directly on those elements which play a role in such rules, and eliminating reference to extraneous constituents.

We now give the conjugation of the verb stem *nel* in the present and in the past tense for all persons and numbers of direct objects, but holding the subject constant (we use the subject *ko* 'they'):

(15)	<i>neliñtanako</i>	'They see me.'
	<i>nelmetanako</i>	'They see you (sg.).'
	<i>nelitanako</i>	'They see him/her.'
	<i>neletanako</i>	'They see it/them (inan.).'
	<i>nellingtanako</i>	'They see him/her and me.'
	<i>nellangtanako</i>	'They see you (sg.) and me.'
	<i>nelbentanako</i>	'They see you two.'
	<i>nelkingtanako</i>	'They see them (an.) two.'
	<i>nelletanako</i>	'They see them (an.) and me.'
	<i>nelbutanako</i>	'They see you (non-sg.) and me.'
	<i>nelpetanako</i>	'They see you (pl.).'
	<i>nelkotanako</i>	'They see them (an.).'
(16)	<i>nelkiqiñako</i>	'They saw me.'
	<i>nelkedmeako</i>	'They saw you (sg.).'
	<i>nelkiqiako</i>	'They saw him/her.'
	<i>nelkedako</i>	'They saw it/them (inan.).'
	<i>nelkedlingako</i>	'They saw him/her and me.'
	<i>nelkedlangako</i>	'They saw you (sg.) and me.'
	<i>nelkedbenako</i>	'They saw you two.'
	<i>nelkedkingako</i>	'They saw them (an.) two.'
	<i>nelkedleako</i>	'They saw them (an.) and me.'
	<i>nelkedbuako</i>	'They saw you (non-sg.) and me.'
	<i>nelkedpeako</i>	'They saw you (pl.).'
	<i>nelkedkoako</i>	'They saw them (an.).'

The conjugation of doubly transitive verbs differs from that of singly transitive verbs (1) in the choice of *a* rather than *ke* to indicate past tense and (2) in the appearance of the morpheme *a* directly before the object agreement element when that element would otherwise follow the verb stem. Thus this morpheme *a* appears in the verbal form only in the absence of the Tense constituent, or when the Tense is *ta*. Compare example 1 with examples 17, 18 below:

- (1) *Udubamtanako.* 'They are showing it to you (sg.)'
 (17) *Udubakadmeako.* 'They have shown it to you (sg.)'
 (18) *Udubamako.* 'They will show it to you (sg.)'

In fully grammatical Mundari sentences, it is always the case that the indirect object is animate and the direct object is inanimate. With certain doubly transitive verbs it is possible to leave out the indirect object, this is especially the case with the verbs of speaking, such as *men* 'say', *jagar* 'talk', *kaji* 'speak, say'. In such sentences, the verb then agrees with the inanimate direct object (which may in fact be a direct quotation), and it is possible to use the past tense form *ke*.¹³ Compare:

- (19) *Kajikedaeq, or Menkedaeq.* 'He said something.'
 (20) *Kajiadkoeq, or Metaadkoeq.* 'He said something to them.'

To account for the special syntactic properties of the conjugation of double transitive verbs we need only a transformation which inserts the morpheme *a* before the object agreement element when the latter follows the verb stem. We formulate that rule as a Verb-local transformation taking advantage again of Chomsky's notion of syntactic feature.

T7. Insertion of indirect object element (obligatory and Verb-local).

$$V [+NP NP \text{ --- }], \left\{ \begin{array}{l} \text{Pronoun} \\ \text{Number} \end{array} \right\} X_1 \\ \begin{array}{ccc} 1 & & 2 \end{array} \rightarrow 1 a+2$$

We give now the conjugation of the verb stem *udub* in the present tense, using the third person plural animate subject. The form of the conjugation in all other tenses (except of course the tense which is the absence of Tense) is the same as that of the singly transitive verbs.

- (21) *udubaiñtanako* 'They are showing it to me.'
udubamtanako 'They are showing it to you (sg.)'
udubaitanako 'They are showing it to him/her.'
udubetanako 'They are showing it.'
udubalingtanako 'They are showing it to him/her and me.'
udubalangtanako 'They are showing it to you (sg.) and me.'
udubabentanako 'They are showing it to you two.'
udubakingtanako 'They are showing it to them (an.) two.'

¹³ The stem *men* has the form *mer* before vowels. This prevents homonymy from arising between the verbal forms meaning '(He) said something to him' and '(He) is'; the former being *Metaqia(eq)* and the latter *Menaqia*.

<i>udubaletanako</i>	'They are showing it to them (an.) and me.'
<i>udubabutanako</i>	'They are showing it to you (non-sg.) and me.'
<i>udubapetanako</i>	'They are showing it to you (pl.)'
<i>udubakotanako</i>	'They are showing it to them (an.)'

The two remaining conjugational patterns in Mundari that I wish to discuss are actually classifiable as subtypes; one of the singly transitive, and the other of the doubly transitive conjugational pattern. The first of these I wish to call semi-transitive; the verbal form always shows agreement with a third person inanimate object which does not necessarily overtly occur in the sentence. Such verbs typically indicate physical activity, such as *sen* 'walk', *nir* 'run' (this verb also occurs as a pure intransitive in the sense of 'flee, escape', and as an ordinary singly transitive verb in the sense 'free, let escape'), *kami* 'work'. In sentences in which the last of these occurs, an overt inanimate cognate *kami* 'work' can actually appear, and similar observations about many although not all of the verbs in this class can be made. The transitivity of *sen* is also observable in the fact that *senoq* 'go', which is morphologically the passive form of *sen*, appears in the language as an independent intransitive verb stem. Rather than give a complete conjugation of one of these stems, it suffices for us to give a few illustrative examples. One can view this conjugational class as comprising singly transitive verb stems which necessarily take inanimate dummy or cognate objects.¹⁴

Typical simple examples are:

- | | | |
|------|-------------------------|----------------------|
| (22) | <i>Nireaking.</i> | 'They two will run.' |
| (23) | <i>Senetanaeq.</i> | 'He is walking.' |
| (24) | <i>Kamiko kamikeda.</i> | 'They did the job.' |

The fifth conjugational class is perhaps the most interesting of all; it includes verb stems which indicate a bodily or mental state or sensation. Such verbal forms typically show indirect object agreement, but no subject agreement at all. There are a large number of such verb stems, two typical members of the class are *balbal* 'sweat' and *rasika* 'be happy, rejoice'. For lack of better term, I shall call such verbs psychosomatic. Thus:

- | | | |
|------|------------------------------|--------------------------|
| (25) | <i>Balbalaiñitana.</i> | 'I am sweating.' |
| (26) | <i>Hoqoko rasikaakadkoa.</i> | 'The men have rejoiced.' |

¹⁴ Our use of the term 'dummy' differs from that of Chomsky in *Aspects*, p. 122. Here we mean an underlying constituent which is phonologically unrealized in the actual sentence.

If we examine example 26, we find that the verb appears to be treating the noun phrase *hoḍoko* 'the men' as an indirect object rather than as a subject. If we take this to be in fact the case, we suddenly find ourselves in a position to account for the rather strange conjugational pattern exhibited by these verbs. Suppose that we maintain that in the underlying phrase markers for examples 25 and 26 there are identical animate noun phrases serving as subject and indirect object of the verbs *balbal* and *rasika*, and that we have a rule which deletes the subject noun phrases of these phrase markers. This formulation turns out to be correct, as we shall see below in §§ 5, 6, provided we consider this rule to be an optional one (and in fact non-applicable in imperative sentences). In any event, given the deletion of the subject noun phrase, it is obvious why the verb shows no subject agreement – there is no subject noun phrase for the verb to agree with! We state this subject deletion rule as T8.²⁵

T8. Deletion of subject of psychosomatic verbs (optional).

$$\begin{array}{ccccccc} \text{NP, } X_1 & \text{V} & [+ \text{Psychosomatic}] & X_2 & & & \\ 1 & & & 2 & \rightarrow & \emptyset & 2 \end{array}$$

Note that we must consider that psychosomatic verbs occur with dummy direct objects, to account for the fact that they show indirect rather than direct object agreement. Examples 25 and 26 above provide sufficient information about the conjugation of these verbs, so that I shall not state a complete paradigm for them here.

5. PASSIVE, REFLEXIVE AND RECIPROCAL SENTENCES

Corresponding to sentences in which a transitive verb occurs with its direct or indirect object, there are sentences in Mundari in which there is no object, and in which the 'logical object' is the subject, and in which the morpheme *oq* may be attached to the verb stem. The passive morpheme *oq* appears either when there is no Tense constituent or when that constituent is *ta*, that is in those verbal forms in which the object agreement element would have followed the verb stem if there were any. Thus:

²⁵ We assume as a linguistic universal that a major constituent such as NP can only be deleted if there is an identical constituent present in the phrase marker, so that explicit mention of the identical noun phrase in the statement of the transformation is not necessary.

- (27) *Daloqam.* 'You will be struck.
 (28) *Daru magoqtana.*¹⁶ 'The tree will be chopped down.'
 (29) *Hoḍo neloqtana.* 'The man is visible.'
 (30) *Rimbil hende nelkena.* 'They sky looked black.'
 (31) *Haḍamko kako ayumakana.* 'The old men have not been heard.'

The conjugation of passive forms of transitive verbs is thus exactly like that of intransitive verbs, except for the restriction on the occurrence of *oq*.¹⁷ Because of certain syntactic complexities found in passive sentences I am unable at the moment to formulate the 'passive transformation' for Mundari or even to assert for sure that there is any such rule. The restriction on the occurrence of the passive morpheme is, however, suggestive.

Reflexive sentences in Mundari arise if the subject and object (indirect object, if there is one) are identical, in which case the object is deleted and the reflexive morpheme *en ~ n* is added to the verb stem in case there is no Tense constituent or in case the Tense is *ta*.¹⁸ Thus:

- (32) *Ayumenam.* 'You will hear yourself.'
 (33) *Hoḍo nelentana.* 'The man is looking at himself.'
 (34) *Honko dalkena.* 'The children beat themselves.'

Note that example 34 is in fact ambiguous; it may also mean 'The children were beaten.' We can formulate a reflexive transformation as follows, one which accomplishes both the deletion of the object and the addition of the reflexive morpheme:

T9. Reflexive transformation (obligatory).

$$[X_1 [+Animate] X_2]_{NP} X_3, NP, X_4 V, \left\{ \begin{array}{l} (ta \text{ Tr}) \\ X_5 \end{array} \right\} \text{Pred } X_6$$

$$1 \quad 2 \quad 3 \quad 4 \rightarrow 1 \emptyset 3 + \left\{ \begin{array}{l} \text{Rfl} \\ \emptyset \end{array} \right\} 4$$

Now consider sentences in which a psychosomatic verb is used. Suppose rule T8, which we claimed above was optional, was not applied. Then

¹⁶ Note the form of the stem *maq* 'chop' in this example. Mundari avoids the sequence of two glottalized vowels in the same word by replacing the first glottal stop by *g* (but by *j* in the one stem *goeq* 'die'). This doubtless reflects a historical relationship between *q* and *g* in Mundari.

¹⁷ Thus proving that the stem *senoq* 'go' is not the passive of *sen* 'walk', since the form *senoq* remains invariant in all tenses.

¹⁸ The form *en* is added to stems ending in consonantal segments, and *n* to stems ending in non-consonantal segments (vowels and glides). According to Hoffmann, the reflexive morpheme also occurs before the aorist tense *ja*.

such sentences are candidates for the reflexive transformation; applying T9 rather than T8 to the phrase markers underlying examples 25, 26 results in the equally grammatical and synonymous sentences:

- (35) *Balbalentanaing.* 'I am sweating.'
 (36) *Hoḍoko rasikaakana.* 'The men have rejoiced.'

Finally, reciprocal sentences are formed by infixing the syllable *pV* after the first vowel of the verb stem; the subject of a reciprocal sentence must be dual or plural and the verb must be transitive to begin with, although the conjugation of reciprocal verbs is that of intransitives. Typical simple illustrations are:

- (37) *Hoḍoko nepelkena.* 'The men saw each other.'
 (38) *Kudiking lijaqing opomtana.* 'The two women are giving each other a cloth.'
 (39) *Dapalako.* 'They will strike each other.'

There are no restrictions between the occurrence of the reciprocal infix and the Tense constituent, as there are with the passive and reciprocal affixes.

6. IMPERATIVE SENTENCES

Our discussion of the Mundari verbal form thus far has been limited to non-imperative constructions. As can be seen from rule PS3, the imperative constituent may be chosen with or without the constituents Tense and Polite. In fact, any Tense, except perhaps *ja*, can cooccur with the constituent Imperat. This gives the language a very rich system of imperative forms, and most of the tenses in imperative sentences appear to have taken on specialized meanings, so that only imperatives without Tense or with the tenses *ta* and *kog* are used as ordinary 'commands'. It should be pointed out from the outset of this discussion that the constituent Imperat has no phonological shape of its own.¹⁹ In negative sentences it combines with Neg to form a prohibitive element *alo* 'don't'. It should also be noted that imperative sentences differ from non-imperative ones in that rules T3 (subject agreement movement) and T6 (object agreement movement) do not apply to imperatives, since their structural analyses are not satisfied by them; the constituents Pred

¹⁹ Compare the status of the imperative element in English according to J. Katz and P. Postal, *An integrated theory of linguistic descriptions* (Cambridge, 1964), p. 76.

and Tr are missing in them at the point of application of these rules. Similarly rule T9 does not add the reflexive morpheme to reflexive imperatives when the present tense is chosen. Finally, note that to form first or third person imperatives, the constituent Polite must be chosen.

To see what additional transformational apparatus is required to handle the special facts of imperative sentences, consider the following examples.

(40)	<i>Senoqme.</i>	'Go away.'
(41)	<i>Senoqkoqme.</i>	'First go away.'
(42)	<i>Hoqoko nelkome.</i>	'Look at the men.'
(43)	<i>Hoqoko neltakome.</i>	'First look at the men.'
(44)	<i>Alom senoqa.</i>	'Don't go away.'
(45)	<i>Alom senoqkoqa.</i>	'Don't first go home.'
(46)	<i>Alom nelkoa.</i>	'Don't look at them.'
(47)	<i>Alom neltakoa.</i>	'Don't first look at them.'
(48)	<i>Alom nelkoqa.</i>	'Don't be first being looked at'; 'Don't first look at yourself.'
(49)	<i>Senoqkame.</i>	'Please go away.'
(50)	<i>Senoqkoqkame.</i>	'Please first go away.'
(51)	<i>Hoqoko nelkokame.</i>	'Please look at the men.'
(52)	<i>Hoqoko neltakokame.</i>	'Please first look at the men.'
(53a)	<i>Alom senoqka.</i>	'Please don't go away.'
(53b)	<i>Alokam senoq.</i>	'Please don't go away.'
(54a)	<i>Alom senoqkoqka.</i>	'Please don't first go away.'
(54b)	<i>Alokam senoqkoq.</i>	'Please don't first go away.'
(55a)	<i>Alom nelkoka.</i>	'Please don't look at them.'
(55b)	<i>Alokam nelko.</i>	'Please don't look at them.'
(56a)	<i>Alom neltakoka.</i>	'Please don't first look at them.'
(56b)	<i>Alokam neltako.</i>	'Please don't first look at them.'
(57a)	<i>Alom nelenka.</i>	'Please don't look at yourself.'
(57b)	<i>Alokam nelen.</i>	'Please don't look at yourself.'
(58a)	<i>Alom neloqka.</i>	'Please don't be being looked at.'
(58b)	<i>Alokam neloq.</i>	'Please don't be being looked at.'
(59a)	<i>Alom nelkoqka.</i>	'Please don't first be being looked at;' 'Please don't first look at yourself.'
(59b)	<i>Alokam nelkoq.</i>	'Please don't first be being looked at;' 'Please don't first look at yourself.'

- (60) *Nelkokaing.* 'Let me look at them.'
 (61a) *Hodoking aloking nelkoka.* 'Don't let the two look at them.'
 (61b) *Hodoking alokaking nelko.* 'Don't let the two men look at them.'

From an inspection of these examples, it can be determined that the following rules are necessary: (1) to delete Pred following Polite, (2) to attach Imperat, optionally Polite, and the subject agreement element to the constituent Neg (the combination of Neg plus Imperat being realized as *alo*), and (3) to delete Pred after Imperat. The rules may be stated as follows:

T10. Deletion of Pred after Polite (obligatory and Verb-local).

$$X_1 \text{ Polite, Pred, } X_2 \\ 1 \quad 2 \quad 3 \rightarrow 1 \emptyset 3$$

T11. Negative imperative attraction (obligatory).

$$X_1 \text{ Neg, } X_2, \text{ Imperat, (Polite), } X_3, \begin{cases} \text{Pronoun} \\ \text{Number} \end{cases} \\ 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \rightarrow 1+3+4+6 \quad 2 \quad \emptyset \quad \emptyset \quad 5\emptyset$$

T12. Deletion of Pred after Imperat (obligatory and Verb-local).

$$X_1 \text{ Imperat, Pred, } X_2 \\ 1 \quad 2 \quad 3 \rightarrow 1 \emptyset 3$$

Rule T11 must intervene between the two Pred-deletion rule to insure that the predicator is not deleted just in the case of a negative imperative sentence without the Polite constituent. In all other imperative sentences Pred is deleted. There are, however, dialects of Mundari for which it is possible to state T10 and T12 as one rule following T11. In those dialects the predicator does occur in negative imperative sentences in which the Polite constituent has been attracted to Neg.²⁰ For such a dialect we may renumber rule T11 as T10', and state T10 and T12 in a 'combined' form as follows:

T11'. Pred deletion in imperative constructions (obligatory and Verb-local).

$$X_1 \begin{cases} \text{Imperat} \\ \text{Polite} \end{cases}, \text{ Pred, } X_2 \\ 1 \quad 2 \quad 3 \rightarrow 1 \emptyset 3$$

²⁰ Hoffmann in *Mundari grammar*, pp. 170-171 describes such a dialect in his account of imperative constructions.

The imperative of psychosomatic verbs deserves special mention; in the derivation of imperative sentences containing such verbs, rule T8 cannot apply (so that rule T9 must apply). Thus we have:

- (62) *Rasikanpe!* 'Rejoice, all of you!'
 (63) *Rasikakoqpe!* 'First rejoice, all of you!'

This observation suggests that rule T8 be reformulated to prevent its application to the phrase markers underlying examples 62 and 63. We can do so most simply by addition of the condition that X_2 in that rule cannot contain Imperat; i.e. that $X_2 \neq X_3$ Imperat X_4 .

7. CONCLUDING REMARKS ON COMPLEX MORPHOLOGICAL SYSTEMS

The reader who is convinced of the efficacy of morpheme order charts for displaying the facts of a complex morphological system are advised to attempt to formulate such a chart for the Mundari data presented in this paper. I am reasonably convinced that no such formulation will be a match for the generative-transformational statement given here (inadequate as it is at various points) for displaying the intricate interconnections among the various patterns found in the Mundari verb conjugation. And really it must be admitted that the morphology of the Mundari verbal form is not nearly as complex as that of many languages. There is relatively little fusion and a minimum of morphophonemic alternation. The phenomena which are found, however: copying of information from other parts of the sentence (agreement), deletion, and reordering of constituents is naturally and readily describable within the generative-transformational framework. We have also seen here how to make good use of a conception devised by Chomsky for other purposes, the local transformation, for the description of certain kinds of phenomena found within complex morphological systems.

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