1.3. Elementary remarks on Walbiri orthography, phonology, and allomorphy.

The consonants of Walbiri may be tabulated as follows:

<table>
<thead>
<tr>
<th>Bilabial</th>
<th>Apico-alveolar</th>
<th>Apico-domal</th>
<th>Lamino-alveolar</th>
<th>Dorsal-velar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stops</td>
<td>p</td>
<td>t</td>
<td>rt</td>
<td>j</td>
</tr>
<tr>
<td>Nasals</td>
<td>m</td>
<td>n</td>
<td>rn</td>
<td>ny</td>
</tr>
<tr>
<td>Laterals</td>
<td>l</td>
<td>rl</td>
<td>ly</td>
<td></td>
</tr>
<tr>
<td>Flaps</td>
<td>rr</td>
<td>rd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glides</td>
<td>w</td>
<td>r</td>
<td>y</td>
<td></td>
</tr>
</tbody>
</table>

The orthographic conventions represented in this chart are those introduced by the late Lothar Jagst, at Hooker Creek, and now employed by an ever-increasing number of Walbiri speakers involved in bilingual education in the Walbiri community. The orthography utilizes the symbol \( r \) in a variety of ways. Firstly, the \( r \)-symbol is used to represent the retroflex glide, a sound which is not unlike the more retroflex varieties of the \( r \)-glide in English. Secondly, it is used to represent the retroflex, or domal, articulation of the apico-domal stop, nasal, and lateral (/rt, rn, rl/). These latter constitute the set of retroflex consonants (often written \( tl, n, l \)) widely found in Australian languages. The \( r \)-symbol is also used to represent the retroflex feature characteristic of one of the two Walbiri flap consonants, namely, that written \( rd \). This flap is produced by allowing the tongue-tip to execute a rapid forward movement, starting from a position corresponding approximately to that of the retroflex glide /\( r \)/ and terminating in the neutral, tip-forward, position. In the course of this forward motion, the tongue-tip strikes the alveolar ridge, there-
by producing the acoustic effect characteristic of flaps. Finally, the r-symbol is also used in the digraph rr, which represents the ordinary apico-alveolar flap. This latter sound, sometimes a trill rather than a flap, is utterly devoid of retroflex quality. Its representation by r therefore constitutes a deviation from the logic which otherwise prevails in the writing system with regard to the use of the r-symbol.

The symbol y is also used in digraphs, where it represents laminal, as opposed to apical, articulation. However, it is so used only for the nasal and lateral (ny, ly/); the unitary symbol j (rather than a digraph, say ty) is used to represent the stop. Like the r-symbol, the y-symbol is also used autonomously -- to represent the palatal glide. It should perhaps be pointed out here that the lamino-alveolar stop in Walbiri, as in the majority of Australian languages, lacks the delayed (or fricative) release associated with lamino-alveolar affricates commonly found elsewhere in the world -- the Australian consonant is a pure stop, not an affricate.

The digraph ng, in accordance with widespread practice in the design of practical orthographies, is used to represent the velar nasal. The symbol g, like d, is not used autonomously in the Walbiri writing system.

An orthographic convention not reflected in the chart introducing the consonant inventory should be mentioned at this point. In word-initial position, there is no contrast between apico-domal and apico-alveolar articulations. That is to say, only one apical articulation is recognized in initial position. Initial apicals are evidently of the domal, or retroflex, variety. This is readily
appreciable in the case of the initial flap, which is very clearly
the retroflex /rd/ and not /rr/. It is less obvious in the case
of the apical stop, nasal, and lateral -- particularly in utterance-
initial position. But these are evidently also of the domal
variety, since in utterance-medial position they induce a percep-
tible retroflex quality in the final vowels of words preceding
them. Although it is the retroflex apical, rather than the plain
alveolar apical which appears initially, the orthography writes
\( \text{t, n, and l} \) in that position, suppressing the redundant r-symbol.
The r-symbol is not dropped from the initial flap, however, and the
latter is written rd, just as it is in medial position. Walbiri
speakers have expressed the view that this practice -- i.e.,
retention rather than suppression of the r-symbol in writing the
initial flap -- better reflects the articulatory peculiarities of
the consonant, i.e., the extreme retroflex attitude which is
assumed by the tongue-tip prior to executing its ballistic forward
motion.

Conspicuous allophony among Walbiri consonants is observable
only for stops. These are consistently voiced following nasals.
Elsewhere, they alternate between voiced and voiceless. The voiceless
variety is prevailingly lax and unaspirated, and it is the favored
variety at the beginning of the first or second syllable\(^\wedge\) -- that
is, where the stop consonant is in close proximity to the main
stress. The voiced variety is slightly favored in syllables removed
from the main stress. Thus, a word like /pakaka/ 'strike (imperative)'
is normally \([p\acute{a}kaga]\). Aspiration in stops is rare but sometimes
occurs at the onset of an emphatically stressed initial syllable.
A less conspicuous, but nonetheless noticeable, allophonic variation is to be observed in the production of the lamino-alveolar stop, nasal, and lateral. These are 'high' in Walbiri -- that is to say, the body of the tongue is relatively raised during the period of maximal constriction. Very commonly, however, the raising of the tongue-body does not persist beyond the release of the primary constriction, so that the high, y-like offglide so commonly associated with high lamino-alveolars is completely lacking. This results in a sound which is rather close, from both acoustic and articulatory points of view, to the lamino-dental consonants (sometimes called 'interdents') found in other Australian languages; and Walbiri regularly substitutes its lamino-alveolars for lamino-dentals in borrowings from Arandic languages -- e.g., Walbiri /wajirrki/ from Arandic [at̚t̚ark] 'greenery'. To unaccustomed ears, the Walbiri lamino-alveolars often sound like apico-alveolars, particularly before back vowels; this accounts for such European transcriptions as barada for /parraja/ 'coolimon, winnowing dish', wana for /wanya/ 'down feathers of emu', and wala for /walya/ 'earth, ground'.

We turn our attention now to the Walbiri vowel system. The following chart displays the three basic qualities which Walbiri distinguishes:

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<table>
<thead>
<tr>
<th></th>
<th>front</th>
<th>back</th>
</tr>
</thead>
<tbody>
<tr>
<td>high</td>
<td>i</td>
<td>u</td>
</tr>
<tr>
<td>low</td>
<td>a</td>
<td></td>
</tr>
</tbody>
</table>
```

This is a rather idealized picture, however. The high vowels, in particular, exhibit considerable variation in quality, and
all three vowels are typically more lax in their articulation than the 'cardinal' position assigned to them in the chart would suggest. They more closely approximate the qualities associated with the phonetic symbols \([\ell, \varepsilon, \lambda]\) than those associated with the symbols \([i, u, a]\). In general, the vowels show some degree of accommodation to the position of articulation of consonants which immediately follow them -- that is, wherever there is a significant disparity between the characteristic tongue position of the consonant and that of the vowel. This assimilation is most noticeable in the case of a vowel preceding an apico-domal consonant. Thus, in a sequence of the form CVC, the retroflex attitude of the tongue-tip is assumed as early as possible in anticipation of the apico-domal, so that the vowel itself is retroflex during most -- or all, depending upon the tongue position required by the first consonant -- of its duration. In a word like /karli/ 'boomerang', the /a/ is typically retroflex throughout its duration, since the initial consonant, being dorso-velar, does not inhibit retroflex articulation. The same is true in a word like /marlu/ 'kangaroo', with an initial bilabial. But in a word like /jarlji/ 'frog sp.', or /jarntu/ 'dog', there is a period, albeit an extremely brief one, during which the tongue-tip is required to move from the forward position characteristic of the initial lamino-alveolar /j/ to the upward position required by the retroflex lateral /rl/; even here, however, the /a/ is retroflex during most of its duration. In a word like /tarlti/ 'contents of animal's stomach', the /a/ is retroflex throughout its duration, since the initial, being retroflex itself (despite its graphic representation as \(t\), i.e., with redundant \(n\) suppressed), requires no readjustment on the part of the tongue-tip to achieve the retroflex attitude.
The vowels charted and described above are the short vowels of Walbiri. The three basic qualities have long counterparts as well, written as geminates in the current writing system: /ii, uu, aa/. The long vowels are typically lower in tongue height than the corresponding short vowels. Thus, /ii/ and /uu/ are normally only slightly higher than the cardinal mid vowels [e:] and [o:], and /aa/ is consistently the low [a:]. Like the short vowels, the long vowels are subject to the influence of retroflex articulation in immediately following consonants. Thus, for example, the vowels of /miirnta/ 'sickness, influenza', /muurlpa/ 'carefully', and /paarlpa/ 'calf of leg' are normally retroflex throughout their duration, which is approximately double that of a short vowel.

Long vowels occur in a number of loan words from English -- e.g., /kuurlu/ 'school', /jaaji/ 'church' -- and in a number of items which are very probably borrowed from other Australian languages -- such as /miirnta/ 'sickness, influenza', /kaarnka/ 'crow'. But they also appear in a large body of indigenous forms. In the vast majority of instances, these are historically derived from elements conforming to the canonical pattern CV:(C). It is quite likely that the vowel lengthening here is due to an original stricture, which appears to hold even now in a number of Australian languages, against short-vowel monosyllabic words. In modern Walbiri, these 'lengthened monosyllabics' occur in considerable abundance as bound pre-verbs -- e.g., /paarr-/ combining with /pardir- 'to emerge, start going' in /paarr-pardir-/ 'to take flight', /jaarn- combining with /karri- 'to stand' in /jaarn-karri-/ 'to overhand (as of a ledge)', /rdin- combining with /pu- 'to hit, act on' in /rdin-ru-/ 'to join it (to something)'. However, many occur as free forms as well. The free forms typically con-
tinue the original CV:C (i.e., consonant-final) pattern and are, therefore, phonologically extended by /-pa/ in obedience to another stricture, also shared outside Walbiri itself, against word-final consonants. Accordingly, these now have the shape CV:Cpa in modern Walbiri -- e.g., /nguurrpa/ 'larynx', /paarlpa/ 'calf of leg', /juulypa/ 'spinifex shoots', /jaalypa/ 'whispering'. With some exceptions, the augment /-pa/ is an inseparable part of the lexical items which exhibit it -- in contrast to the situation in certain other languages, among them Pitjantjara to the west and southwest of Walbiri, where augmentation of consonant-final words, by /-pa/, is a regular and completely general process in the synchronic phonology. While it was once the case, evidently, that the occurrence of long vowels was predictable in Walbiri -- being limited to roots of the canonical pattern CV:(C) -- the reanalysis of the augment has resulted in modern CV:Cpa roots in direct contrast to CVCpa roots. Thus, for example, the synchronically unanalyzable, previously monosyllabic roots /nguurrpa/ and /paarlpa/ now pair minimally with the equally unanalyzable, and probably always disyllabic roots /ngurrpa/ 'ignorant, not knowing' and /parlpa/ 'old man'.

Having presented the segmental inventory of Walpiri, we now offer a number of elementary observations concerning morpheme structure, beginning with morpheme-final position.

As the immediately foregoing discussion implies, whatever the situation may have been at some time in the past, there is a
phonotactic constraint in present-day Walbiri to the effect that no word may end in a consonant. In fact, this constraint extends as well to the inflectional base of the word — i.e., to that portion of the word to which inflectional endings are attached. The inflectional base is consistently vowel-final, as is the word. However, consonant-final morphemes do of course exist, although they are always 'dependent' in one way or another. These include, for example, a great many consonant-final bound pre-verbs — not only the 'lengthened monosyllabic' pre-verbs illustrated above but also di- and poly-syllabic ones, such as /waraly-/envin /waraly-karri-/ 'to hang, be suspended', /rurrury-/envin /rurrury-karri-/ 'to loosen and come off (as of a knob, or other fixture)', /purrjurl-/envin /purrjurl-pu-/'to chase him', and /karalyarr-/envin /karalyarr-karri-/ 'to slip, lose one's footing' — as well as other dependent elements appearing in recognizably composite lexical items, such as the attributive nominals formed with the ending /-pari/ — e.g., /pimpaly-pari/ 'knicked, blemished (as of surface)', /narntirn-pari/ 'bent, crooked', /lalpurr-pari/ 'splayed (as of emu's foot)', /mujuny-pari/ 'stumpy (as of cropped tail)', /lakarn-pari/ 'flaked, peeling' (cf. /lakarn-pu-/ 'to peel it off, unstick it', /lakarn-pardi-/ 'to come unstuck, open (as flower bud)'). Indeed, consonant-final morphemes are rather abundant in Walbiri. However, there are limitations on what consonants may appear in final position. No clusters are permitted finally, only single consonants, and these are limited to the coronal nasals (i.e., /n, rn, ny/), the laterals (/l, rl, ly/), which match the nasals exactly, and the apico-alveolar flap /rr/. Stops and glides are excluded entirely from final position, as is the retroflex flap /rd/, a recent and local development from an ancestral apico-domal stop at in
initial and intervocalic positions (see below).

Initial position presents the opposite picture entirely. There are no initial vowels. All Walbiri morphemes -- whether roots or suffixes -- are consonant-initial. The initial position of root morphemes excludes consonant clusters, so that root-initial syllables are consistently of the pattern CV(C). FN A few suffixes and enclitics, however, begin in consonant clusters -- e.g., the directional /-mpa/ 'past, across the line of vision', the ergative and locative alternants /-ngku/ and /-ngka/, the imperfective auxiliary /-lpə/, the posteriority enclitic /-lkə/ 'and then', the infinitive marker /-nja-/ , the imperative alternants /-ngka, -nja, -nta/, the second person object marker /-ngku/, and a few others. As mentioned earlier, the alveolar/domal opposition among apicals is neutralized, in favor of the domal, in initial position. This applies to roots only, however. Both types of apical are found initially in suffixes and enclitics -- compare, for example, the ergative alternant /-rlu/ with the plural subject marker /-lu/. The r-symbol is therefore not redundant in retroflex-initial suffixes like /-rlu/ and is, accordingly, retained in writing. In root morphemes, however, it is a fact that apico-alveolars are excluded from initial position. The lamino-alveolar lateral /ly/ is also excluded from that position. But any of the remaining consonants may appear initially.

We now consider morpheme-internal positions. Firstly, there are no vowel clusters, assuming of course that the long vowels are not in fact vowel sequences. There are, however, medial consonant clusters, limited in length to two members. The canonical patterns of root morphemes, therefore, can be subsumed under the formula CV(C)(CV(C))ⁿ -- and, except for the appearance of consonants in
absolute final position which it permits, the same formula serves

to characterize the canonical shapes of inflectional bases and

autonomous words.

Medial clusters are of five main types: (1) nasal + stop,

(2) lateral + stop, (3) rr + stop, (4) nasal + nasal, and (5)

rr + nasal. Except for rare instances of /lw/ and /rrw/, glides
do not enter into clusters -- recall that digraphs like rt and

represent unit phonemes, not sequences. Nor does the retroflex

flap /rd/ appear in clusters, for historically understandable

reasons. Clusters of type-1 include all the homorganic possibilities:

/m+p, n+t, rn+rt (written rnt), ny+j (usually written nj), ng+k/. 

Heterorganic type-1 clusters include coronals before non-coronals:

/n+p, rn+p, ny+p; nj+k, rn+k, ny+k/; and apicals before laminal:

/n+j, rn+j/. None of the other theoretically possible type-1

clusters are permitted. The orthography -- in the usage of most

writers -- underdifferentiates slightly in that it represents

both /nyj/ and the more rare /nj/ as graphic nj.

Permissible type-2 clusters are precisely what one would

expect by analogy with type-1 -- i.e., homorganic: /l+t, rl+rt

(written rlt), ly+j (usually written lj)/; any lateral before

non-coronal stops: /l+p, rl+, ly+p; l+k, rl+k, ly+k/; and apical

before laminal: /l+j, rl+j/.

Clusters of the third type are /rr+p, rr+j, rr+k/ -- that is
to say, all except those in which the stop is apical. FN

Nasal clusters are all sequences of coronal before

non-coronal: /n+m, rn+m, ny+m; n+ng, rn+ng (sometimes written

rng), ny+ng/. And finally, the flap-nasal clusters are also with

non-coronal nasals: /rr+m, rr+ng/.

A final phonotactic comment is in order regarding the
retroflex flap /rd/. This developed from initial and intervocalic *ᵣ (i.e., our /rt/). The change, however, did not take place where the next consonant to the right was also retroflex — understandably, in view of the fact that the retroflex flap gesture culminates in a forward and lowered tongue-tip position maximally opposed to that which characterizes the approach to a retroflex consonant. Thus, *kaṭiti 'tooth' became Walbiri /kartirdi/, not */kardidi/, and *ṭunu 'assembled, mustered' remained Walbiri /turnu/, rather than becoming */rdurnu/. This results in partial complementarity between /rt/ and /rd/ — within roots, and discounting here the cluster /rnt/, the former appears primarily in the environment _VC, while the latter never does. The complementarity would be complete were it not for the existence of a number of borrowings, and probable borrowings, like /yarti/ (< English yard), /karti/ (< English card), /wapirti/ 'yam sp., Vigna lanceolata' (< Pintubi-Fitjantjara waputi), and /mirta/ 'narrow-type shield' (origin unknown, but referring to an item not indigenous to Walbiri culture). For some speakers, the prohibition against retroflex flap articulation before following retroflex consonants applies not only within morphemes, but across morpheme boundaries as well. To obey this restriction, those speakers have a rule according to which /rd/ is realized as a stop in the environment _VC. Accordingly, for example, they pronounce /marda-/ 'to hold it, have it' with a flap before the imperative ending /-ka/, but with a stop before the past tense ending /-rnu/. This is not normally reflected orthographically, hence one writes /mardaka/ and /mardarnu/.

Before leaving the topic of phoneme sequences altogether, it seems reasonable to make a few remarks about consonant clusters
across morpheme boundaries. These occur with considerable frequency in the combination of a consonant-final pre-verb with a verb stem (see examples above), and also as a result of reduplicating a consonant-final element (e.g., the cluster /nyng/ in /nyaanygaany-kiji-/ 'to breathe', and /rrr/ in /maarrmaarr-ma-/ 'to blink (of eyes), twinkle (of star)'). Often, of course, the clusters resulting in this way are identical to those which may appear internal to the morpheme. But some are not. Thus, for example, clusters of lateral before nasal are found, as in /julyurl-nguna-/ 'to lie in water or fire' (cf. /nguna- 'to lie, be lying down'); and the glides often appear as second members of such clusters. In the latter case, more often than not, the glide deletes -- e.g., /julyurl-(w)anti-/ 'to fall in water or fire' (cf. /wanti-/ 'to fall'), /warurr-(w)angka-/ 'to whirr (as of wings)' (cf. /wangka-/ 'to speak'), /wuruly-(y)a-/ 'to escape, go into hiding' (cf. /ya-/ 'to go'), /wuruly-(y)irra-/ 'to hide it, seclude it' (cf. /yirra-/ 'to put it'), /rurruny-(w)anti-/ 'to fall off', /rurruny-(y)a-/ 'to come off' (as hook of woomera'), /rdanjarr-(y)u-/ 'to supply him with necessities' (cf. /yu-/ 'to give it to him'). This deletion also happens, typically, when an initial lateral enters into an intermorphemic cluster -- e.g., /lakarn-(l)uwa-/ 'to peel or slice it off by hitting it with a missile' (cf. /luwa-/ 'to shoot, hit with missile thrown').

From a more global perspective, now, we consider the stress patterns exhibited by Walbiri words.

Primary stress is uniformly on the initial syllable. However, this does not exhaust the account of relative prominence
among syllables within a word. In di- and tri-syllables, it is in fact the case that relative prominence can be accurately characterized in terms of stressed (initial) and unstressed (non-initial):

OGVCV
ngurra 'home, camp'
ngápa 'water'
kurdu 'child'
kánnta 'woman'
ngárrka 'man'
wáti 'man (synonym of preceding)'
warlpa 'wind'
...
OOGVCV
maliki 'dog'
yápala 'father's mother, etc.'
mingkirri 'ant hill, termite mound'
jungunypa 'mouse'
wátiya 'tree'
ngárrka-ngku 'man-ergative'
kánnta-ku 'woman-dative'
ngápa-ngka 'water-locative'
...

(In the canonical formulae here and hereafter, C stands for one or two consonants, as allowed by Walbiri morpheme structure.) But in words of four syllables, while the initial bears primary stress, as expected, it is not the case that the three remaining syllables are simply unstressed. Rather, the penultimate is more prominent
than its immediate neighbors -- we might paraphrase this by saying that the penultimate bears secondary stress, while the antepenultimate and final syllables are unstressed:

CVCVCVCV
máangkárра 'spinifex plain'
wárlawurruru 'eaglehawk'
wákulyarrri 'rock wallaby'
yatijarra 'north'
ngápakurlu 'water-having'
ngápangurlu 'water-relative'
ngápangkárlu 'water-locative-ergative'
malikírli 'dog-ergative'
jüngunypa-rlu 'mouse-ergative'
wátiyárla 'tree-locative'
kúrdújarrra 'child-dual'
kárntapatu 'woman-paucal'

It is tempting to speculate from these observations that what is involved is simple alternating stress -- stressing odd-numbered syllables, counting from the left, but not including the final, should that be odd -- with an adjustment reducing all non-initial stresses to secondary. And, in fact, this would be borne out in many cases of words containing five, six, seven, or more, syllables. For example:

pusírpusírpa 'marsupial mole'
mírlingirringirri 'ring-shaped, circular'
mírlingirringirri-rli 'circular-ergative'
mírlingirringirri-jarrra 'circular-dual'
mírlingirringirri-jarrra-rlu 'circular-dual-ergative'

The situation is not as simple as it would first appear, however. Words of more than four syllables, most of which are morphologically
complex, exhibit variability in the positioning of secondary stresses. The story can be adequately told in terms of words containing just five syllables. Two patterns predominate.

Penultimate:

\[
\text{CVCVCVCVCV}
\]

- yaparla-ngurlu 'father's mother-relative'
- maliki-kirli 'dog-having'
- maliki-pinki 'dog-etcetera'
- jungunyapa-ranglu 'mouse-also, mouse-even'
- jungunyapa-jarra 'mouse-dual'
- watiya-patu 'tree-paucal'
- watiya-rla-rlu 'tree-locative-ergative'
- yapa-ngku-rlangu 'person-ergative-also/even'

Antepenultimate:

\[
\text{CVCVCVCVCV}
\]

- yaparla-langlu-rlu 'person-also/even-ergative'
- ngapa-kurlu-rlu 'water-having-ergative'
- ngapa-mipa-ku 'water-only-dative'
- kartna-patu-ku 'woman-paucal-dative'
- kurdju-jarra-rlu 'child-dual-ergative'
- ngati-puraji 'mother-yours'

It is clear that the morphological make-up of words (indicated above by hyphenation) plays a role in determining the stress patterns which they exhibit. The correct stressing can be assigned by means of the following three principles:

(i) Lexical stress:

Di- and poly-syllabic morphemes are stressed on each non-final odd-numbered syllable, counting
from the left. This stressing may, in fact, be associated with such morphemes as part of their underlying, or lexical, representations.\textsuperscript{FN}

(ii) Penultimate stress:
At the word level, stress the penultimate of any sequence of three or more as yet unstressed syllables.\textsuperscript{FN}

(iii) Stress subordination:
Within a word, initial stress is primary; all others are secondary.

The first principle alone accounts for the difference in stressing between /yaparla-ngurlu/ [yáparlangur\textsubscript{lu}] and the segmentally identical /yapa-rlangu-rlu/ [yáparlàngur\textsubscript{lu}]. The penultimate stress principle is designed to account for the appearance of stress on certain syllables outside the domain of lexical stress. Consider, for example, such words as /ngapa-ngka-rlu/, /watiya-rla/, and /watiya-rla-rlu/. Lexical stress accounts only for the initial stress -- i.e., that on the initial syllable of the trisyllabic stem. The non-initial stress in these words is, therefore, assigned by the penultimate principle. Finally, subordination yields the actually observed stress patterns: [ngápengkár\textsubscript{lu}], [wátiyâr\textsubscript{la}], [ vátiyarlär\textsubscript{lu}].

As the reader can easily verify, the three principles will account for the stressing in more complex words as well, such as the following:

\begin{itemize}
\item júngunyapa-\textsubscript{a}jarra-rlu \quad 'mouse-dual-ergative'
\item wátiya-\textsubscript{a}patu-rla \quad 'tree-paucal-locative'
\item ngámirni-\textsubscript{a}puraji \quad 'uncle-yours'
\item ngáti-\textsubscript{a}puraji-rli \quad 'mother-yours-ergative'
\end{itemize}
Reduplication is an extremely prevalent phenomenon in Walbiri. It enters into word-formation as a partially to fully productive process -- as, for example, in the formation of color-attributives like /karntawarra-karntawarra/ 'yellow' (cf. /karntawarra/ 'yellow ochre'), /yalyu-yalyu/ 'red' (cf. /yalyu/ 'blood'); or the 'rapidity' verb forms like /paka-paka-/ 'to strike quickly' (cf. /paka-/ 'to strike'), /kiji-kiji-/ 'to toss, throw quickly' (cf. /kiji-/ 'to throw') -- and as an inherent property of certain lexical items -- as in /kumpakumpa/ 'foam, froth', /rdukurduku/ 'chest', /pujarrpujarrpa/ 'marsupial mole', /nyuturrnyuturrpa/ 'curly (of hair)', /jintirjintirpa/ 'willy wag-tail', /kirlilkirlilpa/ 'galah', and the partials in words like /karlingardungardu/ 'collarbone', /yirntilyapilyapi/ 'butterfly', /yalyapakirakira/ 'lung', /karrkalapayipayi/ 'insect gall on coolibah'. In either case, the interface between reduplicated material functions as a morpheme boundary for the purposes of lexical stress assignment. The effect of this can be seen, of course, only where it yields a result different from that obtained by blind application of alternating stress. For example, reduplications based upon trisyllabics exhibit the stress pattern

\[ CVC \overline{CV} CVC \overline{CV} CVC \overline{CV}, \]

i.e., with antepenultimate secondary stress, rather than the alternating pattern

\[ C \overline{CV} \overline{CV} CVC \overline{CV} \overline{CV} \overline{CV}, \]

which would result if the lexical stress principle applied without regard to reduplication. Hence:
ngapuru-ngapuru (breast-breast) 'multi-pronged spear'
murruru-murruru (hornet-hornet) 'swarm of hornets'
míŋkarra-míŋkarra (even-even) 'resolved (of dispute)'
jálangu-jálangu (now-now) 'nowadays'
pírilyi-pírilyi (charcoal-charcoal) 'black beetle sp.'

(In thoroughly perspicuous cases, like these, the writing system usually hyphenates reduplications.)

A final refinement must be made in the system outlined above. The lexical stress principle must be enriched to provide for the fact that certain monosyllables -- basically, those which are not suffixal -- are inherently stressed. These include: (1) monosyllabic preverbs, (2) monosyllabic verb stems, and (3) monosyllabic auxiliary bases.

Monosyllabic pre-verbs include not only the 'lengthened monosyllables' discussed earlier (and which may possibly, for the purposes of lexical stress assignment, count as disyllabic), but also the more rare short monosyllabic pre-verbs -- as in /tirl-pardi-/ 'to open (as eye)', /tirl-paka-/ and its near synonym /tirl-pu-/ 'to split it open', and /wily-paka-/ 'to beat severely'. The correct stressing of, say, the nonpast form of the verb last cited has main stress on the initial syllable -- that is to say, on the pre-verb /wily-/ -- followed immediately by secondary stress on the stem /paka-/: [wilypàkarní]. The suggested emendation of the lexical stress principle would accommodate this.

Monosyllabic verb stems include /pu-/ 'to hit, kill', /yu-/ 'to give', /nya-/ 'to see', /ka-/ 'to carry', /ji-/ 'to
scold', /ya-/ 'to go', /ma-/ 'to take, get', and /nga-/ 'to eat, drink'. Thus, /ka-ngu-rра/ (carry-past-thither) has initial stress -- i.e., [kάngurra] -- not the penultimate it would presumably receive if the stem were not inherently stressed. Similarly, /purda-nya-ngu-rna/ (hear-past-1) 'I heard it', in which the verbal base consists of the pre-verb /purda-/ and the stem /nya-/, has antepenultimate secondary stress -- i.e., [pǔrdany'angurna] -- as is consistent with its morphological make-up, rather than the penultimate secondary stress which would appear on a corresponding construction based on a trisyllabic verb stem -- e.g., /wirnpirli-ja-rna/ (whistle-past-1) [wirnpirlijārna] 'I whistled'. And the verb form /tirl-pu-ngu/ (split-past), in which the verbal base consists of the monosyllabic pre-verb /tirl-/ and the monosyllabic stem /pu-/, has primary stress on the first syllable with immediately following secondary stress on the penult -- i.e., [tirlpǔngu]. This, again, is consistent with the morphological make-up of the word together with the revised version of lexical stress.

Finally, monosyllabic auxiliary bases include /ka/ 'present' and /lpa/ 'past imperfective'. When followed immediately by a monosyllabic person marking suffix, the auxiliary base itself bears stress, although that stress is always secondary. The stress reduction is due to the fact that an auxiliary constituent beginning in a monosyllabic or null base is always enclitic to a preceding word, forming a word-like phonological unit therewith (at least for certain purposes, including stressing).
Consider, for example, the stressing in \[warrurnulparnarla\] 'I was looking for it', in which the auxiliary constituent /lpa-rna-rla/ (imperfective-1-dative) is enclitic to the verb-word /warru-rna/ (seek-past). The antepenultimate secondary in this form follows automatically from the assumption that /lpa/ is inherently stressed. There is, however, a complication. If we assume that monosyllabic auxiliary bases are inherently stressed, then their stress must be removed (1) when they are followed by di- or poly-syllabic personmarkers, and (2) when they are not followed by any overt suffix. This stress deletion will, under the appropriate conditions, feed the penultimate stress rule -- hence the penultimate secondary in \[wirnpirljalpa\] 'he was whistling', in which the auxiliary is simply /lpa/ enclitic to the verb word /wirnpiri-li-ja/ (whistle-past).

It was hinted in the preceding paragraph that there are phonological processes in addition to stress subordination which indicate that an enclitic auxiliary forms a word-like unit with the 'host word' to which it is attached. The processes alluded to are two closely similar progressive assimilation rules whereby a high vowel in a suffix or enclitic assimilates totally to a final high vowel in an immediately preceding morpheme.

The assimilation of suffixal or enclitic /u/ to a preceding /i/ is virtually exceptionless. Thus, for example, the dative suffix /-ku/ -- appearing as such following /a/ or /u/, as in /karnta-ku/ (woman-dative) and /kurdu-ku/ (child-dative) -- assimilates its vowel to /i/ in /karli-ki/ (boomerang-dative), /maliki-ki/ (dog-dative), /nyalali-ki/ (girl-dative). With one striking exception, which will be discussed later in connection with the system of verbal conjugations, this progressive
assimilation applies generally to suffixes which satisfy its phonological condition -- e.g., the ergative case suffix /-ngku~ -rlu/, the allative case suffix /-kurra/, the proprietary /-kurlu/ 'having', etc. It also applies to enclitics, by which term we refer generally to elements which are phonologically dependent upon a preceding host word but are neither derivational nor inflectional and, moreover, are not limited in their attachment to particular parts of speech -- e.g., /-lku/ 'and then', /-juku/ 'still', etc.\footnote{FN}

Enclitic auxiliaries, like suffixes and enclitics generally, undergo the u-to-i assimilation. This can be observed, however, only under special circumstances. The auxiliary constituent consists, abstractly at least, of a base followed by suffixes indicating person, number, and grammatical relation (subject, object, indirect object) of the primary arguments of the verb. While these suffixes are, abstractly speaking, attached to the auxiliary base, the latter may in fact be phonologically null, in which case the suffixes will in actual effect attach to the word hosting the auxiliary as a whole. Thus, for example, the first person singular subject marker /-rna/, accompanied by the null base, is in effect attached directly to the host word /maliki/ in the sentence /maliki-rna nyangu/ (dog-I saw) 'I saw the dog'. This is the circumstance under which the progressive u-to-i assimilation can be seen to apply to enclitic auxiliaries. For instance, the plural subject marker /-lu/, combined with the null base, will assimilate its vowel to a final /i/ in the word hosting the enclitic auxiliary, as in
the sentence /wati-li nyangu/ (man-they saw) 'they saw the man! -- compare the following, in which /-lu/ retains its underlying vowel: /karnta-lu nyangu/ 'they saw the woman', /kurdu-lu nyangu/ 'they saw the child'. The same assimilation applies, of course, to the other person-number marking suffixes satisfying the phonological condition -- e.g., /-ju/ 'first person singular object', /-ngku/ 'second person singular object' (also appearing in the composite /-ngku-pala/ 'second person dual object'), and the composite /-nku-lu/ 'second person plural subject' -- as in: /maliki-rli-ji yarlkurnu/ (dog-ergative-me bit) 'the dog bit me', /maliki-rli-ngki yarlkurnu/ 'the dog bit you (singular)', and /maliki-nki-li luwarnu/ (dog-you-plural shot) 'you (plural) shot the dog'.

As the immediately preceding examples suggest, progressive assimilation applies throughout any uninterrupted sequence of suffixal or enclitic syllables containing /u/. Moreover, it applies without regard to the presence or absence of morpheme boundaries. Thus, for example, all of the vowels in the sequence /-krlu-rlu-lku-ju-lu/ (-having-ergative-then-me-they) assimilate to the final vowel of /maliki/ in /maliki-kirli-rli-lki-ji-li nyangu/ 'and then the ones with the dog saw me', to which compare /minija-krlu-rlu-lku-ju-lu nyangu/ 'and then the ones with the cat saw me', in which the underlying /u/ remains unaffected throughout the sequence of suffixes and enclitics.

The assimilation of /i/ to /u/ is similar in nature to the assimilation just described, except that it is severely restricted in its occurrence. Moreover, the i-to-u alternation
differs from the more regular u-to-i alternation in that it
is not common to all Walbiri dialects, being limited primarily
to the west and north. The elements which undergo the i-to-u
alternation include just the directional suffix /-rmi/ 'hither'
and the auxiliary-bound person-number markers beginning in the

etymologically identifiable first person non-singular element
/-rli/ -- to wit, /-rli/ itself, marking 'first dual inclusive
subject', and the etymologically composite /-rlipa/ 'first plural
inclusive subject' and /-rlijarra/ 'first dual exclusive subject'.

Both the directional and a person marker are exemplified in
/yani-rmu-rlujarra/ (went-hither-we) 'we (dual exclusive) came
here' -- compare /parnka-rami-rlujarra/ 'we (dual exclusive)
ran hither', in which these elements appear in their basic form.

The vowel alternations described above are explicable in
strictly phonological terms, since they are straightforward cases
of assimilation. In addition to this completely natural type,
Walbiri nominal and verbal morphologies exhibit alternations
which, from a synchronic point of view at least, lack any readily
obvious phonological rationale. Among verbs, this allomorphy
consists in the system of verbal conjugations. In the nominal
system, which we will discuss first, the allomorphy of concern
here is limited to the case endings /-ngku ~ -rlu/, marking
ergative and instrumental functions, and /-ngka ~ -rla/, marking
the locative (and appearing also in the composite endings
/ngka-jinta ~ -rla-jinta/ and /ngka-rni ~ -rla-rni/).

The selection of ergative-instrumental and locative
allomorphs is governed by an exceedingly simple principle, as
can be seen from the following partial paradigms:
<table>
<thead>
<tr>
<th>ergative-instrumental</th>
<th>locative</th>
</tr>
</thead>
<tbody>
<tr>
<td>karnta-ngku</td>
<td>karnta-ngka 'woman'</td>
</tr>
<tr>
<td>ngarrka-ngku</td>
<td>ngarrka-ngka 'man'</td>
</tr>
<tr>
<td>ngapa-ngku</td>
<td>ngapa-ngka 'water'</td>
</tr>
<tr>
<td>kurdu-ngku</td>
<td>kurdu-ngka 'child'</td>
</tr>
<tr>
<td>warlu-ngku</td>
<td>warlu-ngka 'fire'</td>
</tr>
<tr>
<td>kuyu-ngku</td>
<td>kuyu-ngka 'animal, meat'</td>
</tr>
<tr>
<td>pirli-ngki</td>
<td>pirli-ngka 'stone, hill'</td>
</tr>
<tr>
<td>karli-ngki</td>
<td>karli-ngka 'boomerang'</td>
</tr>
<tr>
<td>payi-ngki</td>
<td>payi-ngka 'wind, air'</td>
</tr>
<tr>
<td>watiya-rlu</td>
<td>watiya-rla 'tree, stick'</td>
</tr>
<tr>
<td>mardukuja-rlu</td>
<td>mardukuja-rla 'mature woman'</td>
</tr>
<tr>
<td>jintirrjintirrpa-rlu</td>
<td>jintirrjintirrpa-rla 'willy wag-tail'</td>
</tr>
<tr>
<td>nantuwu-rlu</td>
<td>nantuwu-rla 'horse'</td>
</tr>
<tr>
<td>warlawurru-rlu</td>
<td>warlawurru-rla 'eaglehawk'</td>
</tr>
<tr>
<td>nyalali-rlu</td>
<td>nyalali-rla 'girl'</td>
</tr>
<tr>
<td>yaparranji-rlu</td>
<td>yaparranji-rla 'child'</td>
</tr>
<tr>
<td>mijilijili-rlu</td>
<td>mijilijili-rla 'navel'</td>
</tr>
<tr>
<td>manirtirrpirtirripi-rl</td>
<td>manirtirrpirtirripi-rla 'mulga bird'</td>
</tr>
<tr>
<td>paarlpa-rlu</td>
<td>paarlpa-rla 'calf of leg'</td>
</tr>
<tr>
<td>nguurrpa-rlu</td>
<td>nguurrpa-rla 'larynx'</td>
</tr>
</tbody>
</table>

Clearly, the principle is this: the 'velar allomorphs' /-ngku, -ngka/ are attached to disyllabic bases, while the 'lateral allomorphs' /-rlu, -rla/ are attached to polysyllabics (i.e., bases which are trisyllabic or longer). Notice also that, from the point of view of this rule, a long vowel counts as two syllables -- thus, /paarlpa/ and /nguurrpa/ count as trisyllabics and, accordingly, select the lateral allomorphs.
The selection of the correct ergative-instrumental or locative allomorph depends upon the length (in number of syllables) of the entire base to which the ending is attached, not upon the length of the immediately preceding morpheme. Thus, for example, /ngapa/ 'water', being disyllabic, selects the velar allomorph of the locative (/ngapa-ngka/), but this locative form counts as trisyllabic for the purposes of selecting the correct ergative allomorph and, accordingly, selects the lateral allomorph (/ngapa-ngka-rlu/). Similarly, the peritive /-wana/ or the allative /-kurra/ when added to /ngapa/ produce a quadrisyllabic base, which again selects the lateral allomorph (/ngapa-wana-rlu, ngapa-kurra-rlu/). And, not surprisingly, the reduplication of a disyllabic produces a quadrisyllabic base for the purposes of the allomorphy being considered here—hence, while /kurdu/ 'child', being disyllabic, selects the velar allomorphs (/kurdu-ngku, kurdu-ngka/), the reduplication /kurdu-kurdu/ '(many) children' selects the lateral allomorphs (/kurdu-kurdu-rlu, kurdu-kurdu-rla/).

The simplicity of this overall picture is only slightly marred by exceptions. The observed exceptions are all of one type—namely, disyllabics which select the lateral allomorphs rather than the expected velar allomorphs. Moreover, the exceptions all belong to a category which could, very loosely, be designated 'determiners'. They are as follows: /nyampu/ 'this', /yali/ 'that (removed)', /yinya/ 'that (beyond)', /mirni/ 'that (removed, indefinite or invisible location)', /nyiya/ 'what', /kuja/ 'thus, in that way', and /nyarrpa/ 'how, in what way'.

FN
Tense, mood, and aspect are represented discontinuously in Walbiri sentences by the auxiliary base in concert with suffixes appearing in the verb word. Each of the suffixes involved in verbal inflection has a number of alternants whose selection is determined by what can conveniently be termed the 'conjugation membership' of the verb to which it attaches. We will be concerned primarily with the verbal conjugations in the ensuing paragraphs.

There are, superficially at least, five conjugations, which we will identify by means of roman numerals. The alternants of the nonpast, past, and imperative endings for the five conjugations are tabulated below, in combination with model verbs:

<table>
<thead>
<tr>
<th>Conjugation</th>
<th>Nonpast</th>
<th>Past</th>
<th>Imperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>wangka-mi</td>
<td>wangka-ja</td>
<td>wangka-ya</td>
</tr>
<tr>
<td>II</td>
<td>paka-rni</td>
<td>paka-rnu</td>
<td>paka-ka</td>
</tr>
<tr>
<td>III</td>
<td>nya-nyi</td>
<td>nya-ngu</td>
<td>nya-ngka</td>
</tr>
<tr>
<td>IV</td>
<td>nga-rni</td>
<td>nga-rnu</td>
<td>nga-nja</td>
</tr>
<tr>
<td>V</td>
<td>ma-ni</td>
<td>ma-nu</td>
<td>ma-neta</td>
</tr>
</tbody>
</table>

The irrealis mood is represented by an ending which is evidently a composite consisting of an initial portion, identical to the imperative, followed by the syllable /rla/ -- thus: I -yarla, II -karla, III -ngkarla, IV -njarla, V -ntarla. The infinitive ending, -- in effect a nominalizing element, and therefore not a part of the tense-mood-aspect system -- also has alternants whose selection is conjugation-dependent. The element /-nja-/ is constant throughout the infinitive alternants, but an additional increment precedes this in certain conjugations.
The infinitive alternants are as follows: I -nja-, II -rninja-, III -nja-, IV -rninja-, V -ninja-. FN

In addition to the endings listed above, which are a part of the productive core of Walbiri grammar in all communities, there exist also two verbal inflections of more marginal status in the current language. These are an immediate future tense, recorded with significant frequency only in the south, and an immediate present, or presentational present tense, recorded so far only in the west, and there only infrequently. FN Both of these inflections, although possibly obsolescent now, reflect future and present tense endings of widespread occurrence -- and, presumably, considerable antiquity -- in Australia generally. The immediate future alternants are as follows: I -ju, II -ku, III -ngku, IV -lkv (sometimes recorded as /-nk/) , V -nu. And the immediate present alternants are: I -nya, II -rninya, III -nganya, IV -rninya, V -nanya.

Besides the infinitive ending, which enters into an extremely wide variety of constructions and is itself, devoid of semantic content, there exists another nominalizing suffix with rather clear semantic force. Like the infinitive and the inflectional endings, it attaches directly to the verbal base, as expected, has conjugation-dependent alternants. These latter, except in the first conjugation, are identical to the past tense ending: I -ngu, II -rnu, III -ngu, IV -rnu, V -nu. FN Its semantic force is nomic, or generic, and it enters into the derivation of such nominal bases as /kuyu-pu-ngu/ (meat-kill-nomic) 'meat killer, good hunter (of person, or of dog)', based on the third conjugation verb /pu-/ 'to hit, kill', and /yapa-nga-rnu/ (person-eat-nomic) 'cannibal', based on the fourth
conjugation verb /nga-/ 'to eat'.

First conjugation verbs are all disyllabic or longer. They include /wangka-/ 'to speak', /purla/ 'to shout', /yula-/ 'to cry', /pali-/ 'to die', /wanti-/ 'to fall', /parnka-/ 'to run', /karli-/ 'to flow', /pardi-/' to emerge, arise, start going', /karrka-/ 'to go, proceed (not aimlessly)', /wapa-/ 'to move about, walk (without specific goal)', /yarnka-/ 'to start on a journey', /yuka-/ 'to enter', /karri-/ 'to stand', /parntarri-/ 'to be in a crouching stance (as the characteristic stance of a fly, one-story building, man crouching)', /ngarlarrri-/ 'to laugh', /wrnpirlri-/'to whistle'. All verbs formed with the inchoative suffix / -jarrri-/ 'to become' are first conjugation verbs -- e.g., /kulu-jarrri-/ 'to get angry', /lani-jarrri-/ 'to become frightened', /wiri-jarrri-/ 'to become large, to grow up', /palka-jarrri-/ 'to take form, substance, to be born'. Similarly, all morphologically complex verbal bases whose final constituent is a first conjugation verb are themselves first conjugation verbs -- e.g., /paarr-pardi-/ 'to fly off' (cf. /pardi-/ 'to start going'), /jaarl-parntka-/ 'to cut across, take a short cut' (cf. /parntka-/ 'to run'), /jupu-karri-/ 'to halt, come to a stop' (cf. /karri-/ 'to stand').

In the first conjugation, but only there, the nonpast ending may drop optionally -- thus, /wangka-mi/ (speak-nonpast) is often simply /wangka/. In fact, this deletion of / -mi/ is the preferred usage for many speakers when the verb is not accompanied by further suffixes or by enclitics. The first conjugation verbs /nyina-/ 'to sit' and /nguna-/ 'to lie, be lying down' have the peculiarity that the imperative and irrealis may be formed either with the second conjugation endings /-ka, -karla/ or with the first conjugation endings /-ya, -yarla/.
The number of first conjugation verbs is large. The majority of them are 'intransitive' (in the sense that their subjects are in the absolutive, or unmarked, case). A few, however, are 'transitive' (i.e., their subjects are in the ergative case) -- these include /karla-/ 'to dig up (as yam)', /nyurla-/ 'to knead', /purra-/ 'to burn, cook', /pura-/ 'to follow', /yilya-/ 'to send', /turlka-/ 'to pinch', /tirlpi-/ 'to flake by percussion (as in making a stone implement)'. And there is a pair of synonymous first conjugation verbs which function either as intransitive or as transitive -- namely /janka-, kampa-/ 'to burn (as fire burns, or as fire burns flesh)'.

Like verbs of the first conjugation, those of the second are all at least disyllabic in length. The second conjugation is also large in membership. Among its members are /paka-/ 'to strike, hit', /luwa-/ 'to hit with missile, to shoot', /paji-/ 'to cut', /panti-/ 'to spear, pierce', /kiji-/ 'to throw, cause to fall, drop', /yirra-/ 'to put', /jarnti-/ 'to scrape, scratch, trim (as in making a boomerang)', /mapa-/ 'to rub on, anoint (as with ochre, oil)', /yurrpa-/ 'to grind (as seed)', /kati-/ 'to press down on, weigh down, step on', /nganti-/ 'to build, erect (as house)', /marda-/ 'to hold, have', /warlapaji-/ 'to stop, cause to desist', /walaparri-/ 'to test, try out'. Any complex verbal base whose final constituent is a second conjugation verb is itself a member of that conjugation -- e.g., /jirri-kiji-/ 'to trip, cause to fall by tripping' (cf. /kiji-/ 'to throw, cause to fall'), /jirri-marda-/ 'to hold, secure, restrain' (cf. /marda-/ 'to hold'), /larra-paji-/ 'to split by cutting' (cf. /paji-/ 'to cut'). A number of second conjugation verbs are formed by means of an element /-jirri-/ , not attested as an autonomous verb -- e.g.,
Most second conjugation verbs are transitive (in the narrow sense of taking an ergative subject) — e.g., all of the verbs so far cited for this conjugation. A few, however, are intransitive (i.e., taking absolutive subject) — e.g., /mati-/ 'to go in a group', and the two-argument verbs /parda-/ 'to wait for' and /rdanpa-/ 'to accompany' (taking absolutive subject and dative object). The verb /warka-/ 'to climb, ascend, mount' is normally intransitive, but is also used as a transitive in the sense of 'to ride (as horse)'; in either case it is a second conjugation verb.

The second conjugation nonpast ending is, in the speech of some, /-ni/ rather than the retroflex-initial /-rni/.

Monomorphemic members of the third conjugation are all monosyllabic. They are /nya-/ 'to see', /pu-/ 'to kill, hit, bite (i.e., to inflict injury or damage according to the mode characteristic of the entity denoted by the subject — 'to hit (of a person)', 'to bite (of a dog)', 'to cause discomfort or illness (of the wind)', etc.)', /ka-/ 'to carry', /yu-/ 'to give'. The ranks of the third conjugation are increased somewhat by complex verbal bases built upon the four monosyllabic verbs — e.g., /parda-nya-/ 'to hear, feel', /parnti-nya-/ 'to smell'; /rdilyki-pu-/ 'to break', /tirl-pu/ 'to split open'; /jarna-ka-/ 'to carry on the shoulders (as slain animal)'; /rdanjarr-(y)u-/ 'to supply, provision'. Occasionally in complex verbs of this
sort, the semantic force of the basic monosyllabic is lost or greatly attenuated -- e.g., /wlyingki-ka-/ 'to irritate (as of smoke irritating the eyes)'; /wajili-pu-/ and its synonym /purrjurl-pu-/ 'to chase'. And while third conjugation verbs are typically transitive, a few are intransitive -- e.g., /juurl-pu-/ 'to jump', and /pirrmarn-pu-/ 'to rebound, bounce'. The synonym pair /yura-ka-, wurruru-ka-/ 'to stalk, sneak up on' has been recorded variously as taking ergative or (most frequently) absolutive subject, but consistently with dative object.

The fourth conjugation boasts a single monomorphemic member -- to wit, the monosyllabic /nga-/ 'to eat, drink'. There exist also a number of complex verbs based upon this monosyllabic -- e.g., /kuny kuny nga-/ 'to suck on, puff on (as on pipe), to bite (as of flies biting eyes)', /kawurr nga-/ 'to crunch with the teeth'. These verbs are transitive. However, /nga-/ also appears, with original force lost, in a few complex bases which are intransitive -- e.g., /karalyarr nga-/ 'to slip, slide', /kinyirr nga-/ 'to leap back in alarm'.

As in the second conjugation, the fourth conjugation nonpast ending is sometimes /-ni/ rather than /-rni/.

The fifth conjugation has just three monomorphemic members. Again, these are monosyllabic as well: /ma-/ 'to get, take', /ji-/ 'to scold', and /ya-/ 'to go'. Complex verbal bases built upon these are also members of the fifth conjugation -- e.g., /jakurr ma-/ 'to lift, pick up', /warlkurr ji-/ 'to bark at', and /wuruly-(y)a-/ 'to escape, go into hiding'.

A suffix /-ma-/ 'causative' is involved in the productive derivation of causatives from nominals -- e.g., /wiri ma-/ 'to enlarge, to raise (as child)', /ngurrju ma-/ 'to cause to be
good, to make, fix', /kirrirdi-ma-/ 'to lengthen, make long or tall', /ngarrka-ma-, wati-ma-/ 'to initiate, make into a man'.

The derived causatives, like the verb /ma-/, are fifth conjugation verbs. The causative suffix /-ma-/ is the transitive counterpart of the first conjugation inchoative suffix /-jarri-/ (see above).

A number of intransitive verbs having to do with the production of sound end in /ma-/ and are also members of the fifth conjugation -- e.g., /warlkurr-ma-/ 'to bark (of dog, dingo)', /kirlwirr-ma-/ 'to produce a squeaking sound', /taarl-ma-/ 'to produce a sharp report or click', /murnturr-ma-/ 'to roar (as of an engine)'. The intransitive /pirri-ma-/ 'to alight, sit down' is also a member of this conjugation.

The verb /ya-/ 'to go' is intransitive, as are most complex verbs built thereon. However, the verb is involved in the productive derivation of progressives, consisting of infinitives attached as pre-verbs to /ya-/.

The transitivity of a progressive is determined by the infinitive verb, not by /ya-/. Thus, /paka-rninja-ya-/ (strike-infinitive)-go) 'to strike while going along' is transitive, while /wangka-njia-ya-/ (speak-infinitive)-go) 'to speak while going along' is intransitive.

There is an additional derivational suffix, which we will gloss 'inceptive', involved in the productive derivation of fifth conjugation verbs. The transitivity of inceptives, like that of progressives, depends upon the transitivity of the verb to which the suffix attaches. The suffix is quite possibly a blending, historically speaking, of the infinitive and ancestral /ya- 'to go'. The shape of the modern suffix varies according to the conjugation of the verb to which it attaches: I -nji-, II -rminji-, III -nja-, IV -rminji-, V -ninji-. For example: /wangka-njia-/ 'to go and
The inceptives inflect like ordinary fifth conjugation verbs, with the following exception: the imperative and irrealis ending for inceptives derived from third conjugation verbs are /-nka/ and /-nkarla/, instead of the usual /-nta/ and /-ntarla/ - e.g., /nya-nja-nka/ 'go and see, imperative', beside 'regular' /ma-ninji-nta/ 'go and get, imperative'.

In addition to the conjugation-dependent alternations described in the foregoing, Walbiri verbal morphology also includes alternations of a straightforward phonological nature. Within the verbal system, there is a regressive vowel assimilation according to which /i/ in the verbal base assimilates to an u-vowel in a past tense or nomic ending. Thus, for example, the final vowels of /panti-/ 'to spear', /nganti-/ 'to build', /paji-/ 'to cut', and /ji-/ 'to scold' are assimilated to /u/ in the past (and homophonous nomic) forms /pantu-rnu/, /ngantu-rnu/, /paju-rnu/, and /ju-nu/. Regressive assimilation, like the progressive assimilation described earlier, will apply throughout an uninterrupted sequence of syllables containing underlying /i/, except that it will not extend into a pre-verb. Thus, both vowels in /kiji-/ 'to throw' are assimilated in /kju-rnu/; all of the vowels in /kiji-rninji-/ 'to go and throw' and /kiji-kiji-/ 'to toss, throw quickly' are assimilated in /kju-rnu/; but the pre-verbs in /pirri-kiji-/ 'to scatter' and /kinyirr-jirri-/ 'to startle' remain unaffected in /pirri-kju-rnu/ and /kinyirr-jurru-rnu/. This regressive assimilation is restricted entirely to verbs, and it is triggered only
an /u/ in the past or nonpast endings. The progressive u-to-i assimilation is the pervasive one in Walbiri as a whole, showing up in verbal inflection, for example, in the immediate future forms — e.g., /panti-ki/ (spear-future), with underlying /-ku/ assimilated (cf. /paka-ku/ (strike-future), in which /-ku/ retains its basic vocalism). It is perhaps worth noting that the switch, so to speak, from progressive to regressive in past tense forms achieves the effect of high-vowel harmony without, at the same time, obliterating the past/nonpast distinction, as would be the result if the more pervasive progressive assimilation applied indiscriminately in Walbiri.

There exists an additional, extremely marginal regressive assimilation, restricted to the two u-stems in the third conjugation, according to which /u/ is fronted to /i/ before laminal-initial suffixes — e.g., /pi-nyi/ (hit-nonpast), /pi-nja-/ (hit-infinitive), and /pi-nja-/ (hit-inceptive), beside /pu-ngu/ (hit-past) and /pu-ngka/ (hit-imperative). Precisely the same alternation is observed in the case of /yu-/ 'to give'.