Nabak is a non-Melanesian language spoken by approximately 10,000 people in the Western Huon Peninsula, a few miles north of Lae, in the Morobe District.

In this paper, we will be concerned chiefly with the morphophonemic alternations involving consonants.

The basic syllable pattern of Nabak is \((C_1) V (C_2)\), where the brackets indicate that either or both consonants may be absent. \(C_1\) includes all sixteen consonants, all of which occur in word and syllable initial position. \(C_2\) includes only the voiced and voiceless stops (but not the labialized stops), the nasals, and /s/. However, only the voiceless stops and the nasals may occur in stem and word final position. We will call the latter class of consonants \(C_{2A}\), and it is with the consonants of \(C_{2A}\) that we will be chiefly concerned.

Of all the possible combinations of \(C_2 C_1\) consonant sequences that might occur across syllable boundaries, only about half actually occur. The following table gives the consonant sequences that have been found so far:

\[
\begin{array}{cccccccc}
\text{tp} & \text{kp} & \text{kt} & \text{bd} & \text{bg} & \text{bm} & \text{ks} & \text{kz} \\
\text{mb} & \text{md} & \text{mg} & \text{mn} & \text{ms} & \text{mz} \\
\text{nt} & \text{nd} & \text{ng} & \text{nm} & \text{nn} & \text{ns} & \text{nz} \\
\text{sk} & \\
\end{array}
\]

Note that the top half of the chart involving stops as the first consonant is less dense than the bottom half of the chart where nasals are the first member of a consonant sequence. /kw/, /w/, /w/, and /y/ never occur in any consonant sequences. Of the
members of $C_2$, /p/, /v/, /d/, and /s/ have very restricted distribution as the first members of a sequence. /k/, /gw/, and /g/ have limited distribution as second members of consonant sequences.

Most of the morphophonemic alternations involve the final consonants of roots and affixes when they are followed by other morphemes within the word.

We will begin with the nouns and their suffixes. The table below gives the possessor suffixes that are suffixed to nouns.

<table>
<thead>
<tr>
<th></th>
<th>singular</th>
<th>dual</th>
<th>plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Person</td>
<td></td>
<td>-nα-mα-ŋ</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Person</td>
<td>-ndi-v-ði</td>
<td></td>
<td>-qit-v-it</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Person</td>
<td>-qαv-mag</td>
<td></td>
<td>-gin-v-in</td>
</tr>
<tr>
<td></td>
<td>-ν-nag</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the previous chart, the first allomorph listed occurs with roots ending in vowels. Of those suffixes having two allomorphs, the second occurs following noun roots ending in a consonant. Of those suffixes with three allomorphs, those allomorphs beginning with bilabial, alveolar, and velar nasals occur with noun roots ending with a bilabial, alveolar, and velar consonant, respectively.

The allomorphs given on the chart are those that occur word-final, i.e. are not followed by further suffixes or clitics. When they are followed by another suffix or clitic, they often have shortened forms. The examples below show the various combinations of noun roots and suffixes.

Examples of roots ending with vowels;

\[ \begin{align*}
\text{bo-ŋ} & \rightarrow \text{bon} \\
\text{pig-my} & \rightarrow \text{'my/our pig'}
\end{align*} \]
bo-nit  →  bonit
pig-your2  →  'our2 pig'

bo-ndi  →  bondi
pig-your  →  'your pig'

bo-gan  →  bogan
pig-his  →  'his pig'

bo-git  →  bogit
pig-your2  →  'your2/their2 pig'

bo-git  →  bogit
pig-your3  →  'your3/their3 pig'

Roots ending with a voiceless stop have that stop voiced when followed by a voiced stop or a nasal:

bip-m  →  bibm
father-my  →  'my father'

kwit-n  →  kwidn
name-my  →  'my name'

sok-n  →  sog
grandmother-my  →  'my grandmother'

bip-di  →  bibdi
father-your  →  'your father'

zikat-di  →  zikadi
eye-your  →  'your eye'  (reduction of double consonant)

sok-di  →  sogdi
grandmother-your  →  'your grandmother'

When followed by a vowel, stem final stops undergo even more radical changes.

/p/ is replaced with /w/, /t/ is replaced with /l/, and /k/ is replaced with /g/.

bip-it  →  biwit
father-your2  →  'your2 father'

zikat-it  →  zikalit
eye-your2  →  'your2 eye'

sok-it  →  sogit
grandmother-your2  →  'your2 grandmother'
bap-en → bawen
floor-on 'on the floor'
set-en → selen
trail-on 'on the trail'
sisak-en → sisagen
beam-on 'on the beam (of a house)'
tu-en → tuyen
water-to 'to the river'

With suffixes or clitics which begin with a voiced stop, voiceless root-final stops are replaced with their voiced counterparts. Two identical stops reduce to one stop. The purpose clitic is -yet (following a vowel) and -gat (following consonants), and the directional clitic meaning 'from' is -yednaŋ (following vowels) and -gadnaŋ (following consonants):

tu-yet → tuyet
water-for 'for water'
mulup-gat → mulubgat
garden-for '(a fence) for the garden'
sed-gat → sedgat
foot-for '(medicine) for the foot'
sakokolok-gat → sakokologat
chicken-for 'for the chicken'
welili-yednaŋ → weliliyednaŋ
city-from 'from the city'

tu-yednaŋ → tuyednaŋ
water-from 'from the river'
ayonga-yednaŋ → ayongayednaŋ
moon-from 'from the moon'
gwidep-gadnaŋ → gwidebgadnaŋ
bridge-from 'from the bridge'
msat-gadnaŋ → msadgadnaŋ
  ground-from 'from the ground'

pusak-gadnaŋ → pusagadnaŋ
  hole-from 'from the hole'

wenzim-gadnaŋ → wenzimgadnaŋ
  star-from 'from the star'

didim-gadnaŋ → didimngadnaŋ
  bush-from 'from the bush'

The final /t/ of the possessive suffix is replaced with /d/ when it is followed by the locational clitic. The locational clitic, which is -en following a noun root, has the form -an when it follows a possessive suffix:

set-it-an → selidan
  trail-your2-on 'on your2 trail'

mulup-it-an → muluwidan
  garden-your2-too 'to your2 garden'

Some of the possessive suffixes have shortened forms when followed by the locational clitic. This is especially true of the third person singular suffix which often reduces to a single nasal consonant. Other suffixes lose their vowel:

mulup-man-an → mulubman
  garden-his-in 'in his garden'

mka-man-an → mkagán
  house-his-in 'in his house'

tu-ndi-an → tundan
  water-your-to 'to your water/river'

tu-nit-an → tundan
  water-our2-to 'to our2 water'

tu-nan-an → tuğan
  water-his-to 'to his water'

tu-n-an → tunan
  water-my-to 'to my/our2/our3 water'

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tu-nil-an  →  tunidan  'to your2/their2 water'
water-your2-to

tu-nil-an  →  tuginan  'to your3/their3 water'
water-your3-to

set-nas-an  →  sednan  'on his foot'
foot-his-an

ganzen-n-an  →  ganzennan  'near me/us2/us3'
nearness-my-to

kilamban-di-an  →  kilambandan  'beneath you'
area_beneath-your-to

kandan-roy-an  →  kandan  'at the base of it'
base-his-to

tungup-it-an  →  tunguwidan  'between the two of us'
between-our2-to

opala-nil-an  →  palandan  'on top of you2/Them2'
top-your2-to

sut-n-an  →  sudnan  'among us3/in our midst'
middle-your3-to

tibman-in-an  →  tibmannan  'below you3/Them3'
below-your3-to

When we look at the verbal system, we find that the final voiceless stops of verb roots
are changed even more than are the final stops of noun roots.

/p/ and /t/ undergo more changes than does /k/. /p/ and /t/ are dropped when followed
by a voiced stop, a sibilant, or /l/; are replaced with /l/ when followed by a vowel; and are
replaced with a voiced stop homorganic to a following nasal consonant. In all these environ-
ments, except /s/, /k/ is replaced with /g/, and when /l/ follows /g/, the /l/ is dropped.

tip-dik  →  tidik  'you are excreting'

excrete-you_pres
<table>
<thead>
<tr>
<th>Original</th>
<th>Transcription</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>kingat-dik</td>
<td>kinggaik</td>
<td>'you are afraid'</td>
</tr>
<tr>
<td>fear-you_pres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>aik-dik</td>
<td>aigdik</td>
<td>'you are finding it'</td>
</tr>
<tr>
<td>find-you_pres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tip-sap</td>
<td>tisap</td>
<td>'I will excrete'</td>
</tr>
<tr>
<td>exrete-he_imfut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>met-sem</td>
<td>mesem</td>
<td>'he will go'</td>
</tr>
<tr>
<td>go-he_imfut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>asek-sem</td>
<td>aseksem</td>
<td>'it will collapse'</td>
</tr>
<tr>
<td>collapse-he_imfut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tip-zin</td>
<td>tizin</td>
<td>'he is excreting'</td>
</tr>
<tr>
<td>excrete-he_pres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>kaput-zin</td>
<td>kapuzin</td>
<td>'she is sweeping'</td>
</tr>
<tr>
<td>sweep-he_pres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>alik-zin</td>
<td>aligziz</td>
<td>'he is scratching'</td>
</tr>
<tr>
<td>scratch-he_pres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tip-lup</td>
<td>tilup</td>
<td>'we2 are excreting'</td>
</tr>
<tr>
<td>excrete-we2_pres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>met-lup</td>
<td>melup</td>
<td>'we2 are going'</td>
</tr>
<tr>
<td>go-we2_pres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ondek-lup</td>
<td>ondegup</td>
<td>'we2 are meeting'</td>
</tr>
<tr>
<td>meet-we2_pres</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

//V is also dropped following /r/:

<table>
<thead>
<tr>
<th>Original</th>
<th>Transcription</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>weyaq-lup</td>
<td>weyaqup</td>
<td>'we2 are straightening it'</td>
</tr>
<tr>
<td>straighten-we2_pres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tip-nup</td>
<td>tidnup</td>
<td>'we3 are excreting'</td>
</tr>
<tr>
<td>excrete-we3_pres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>met-ne</td>
<td>medne</td>
<td>'let's go'</td>
</tr>
<tr>
<td>go-we3_imper</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The final /v/ of the progressive aspect prefix -tai- is subject to even different rules. It is replaced with a voiced stop homorganic to a following verb-root-initial nasal consonant; and is dropped when followed by any other consonant or vowel.

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>tat-nl-yap</td>
<td>'I am in the process of carrying'</td>
<td>tat-uap</td>
</tr>
<tr>
<td>tat-basanik</td>
<td>'you are in the process of sucking'</td>
<td>tat-basunik</td>
</tr>
<tr>
<td>tat-dunde-in</td>
<td>'we are in the process of being afraid'</td>
<td>tat-dunde-in</td>
</tr>
<tr>
<td>tat-kig-galap</td>
<td>'we are in the process of being afraid'</td>
<td>tat-kig-galap</td>
</tr>
</tbody>
</table>
tat-gaklu-lup →tagakilup
prog-die-we2.pres 'we2 are in the process of dying'
tat-sili-nup →tasilinup
prog-mend-we3.pres 'we3 are in the process of mending it'
tat-zakalu-ip →tazakaluip
prog-keep-you3.pres 'you3 are in the process of keeping it'
tat-leti-ap →taleliap
prog-stir-1.pres 'i am in the process of stirring it'
tat-walat-dik →tawaladik
prog-dig-you.pres 'you are in the process of digging it'
tat-yenge-in →tayengein
prog-spread-he.pres 'he is in the process of spreading it out'

When a morpheme ends with a nasal-consonant-plus-a-vowel syllable and the next morpheme begins with a voiced stop or /z/, another nasal consonant homorganic to the following voiced stop or /z/ is added to the end of the CNV syllable. Take, for example, the continuative aspect prefix ma-:

ma-zi-ma-be →manzimambe
cont-burn-cont-he_rmfut 'it will always burn'
ma-bute-ma-bap →mambuteambap
cont-awaken-cont-1_rmfut 'i will always awaken him'
ma-dundu-lup →mandundulup
cont-pray-we2.pres 'we2 are always praying'
ma-gabe-ma-banik →mangabemambanik
cont-carry-cont-you_rmfut 'you will always carry it (on your shoulder)'
ma-gakl-nite-mien →mangakintemien
cont-die-cont-they3_intpast 'they always died'

In the following example, the verb root sa 'give' has the allomorph a when it is preceded by a consonant.

ma-ga-sa-yap →mangayap
cont-to-you-give-1.pres 'i am always giving it to you'
There are several verb suffixes which have alternate shapes. One interesting group is those which begin with /bi/, such as the remote-past, the remote future, the contrary-to-fact, and the first person imperative suffixes. In these suffixes, the initial /bi/ is preceded by an /m/ if the previous morpheme ends with a C_N V syllable, and the /bi/ is replaced with a /w/ if the previous morpheme ends with a vowel not preceded by a nasal consonant.

\[
\begin{align*}
\text{kwiti-bi} & \rightarrow \text{kwitiwi} \\
\text{buy-I_imper} & \rightarrow 'I \text{ must buy it'} \\
\text{ek-bi} & \rightarrow \text{egbi} \\
\text{see-I_imper} & \rightarrow 'let me see it' \\
\text{ni-bi} & \rightarrow \text{nimbi} \\
\text{eat-I_imper} & \rightarrow 'let me eat it'
\end{align*}
\]

\[
\begin{align*}
\text{kek-ban} & \rightarrow \text{kegban} \\
\text{close-I_rmpast} & \rightarrow 'I \text{ closed it long ago'} \\
\text{ma-bien} & \rightarrow \text{mambien} \\
\text{live-they3_rmpast} & \rightarrow 'they lived long ago' \\
\text{kutu-banup} & \rightarrow \text{kutuwanup} \\
\text{fold-we3_rmfut} & \rightarrow 'we will fold it some day' \\
\text{mai̇n-bak} & \rightarrow \text{mai̇n bak} \\
\text{read-I_cont_to_fact} & \rightarrow 'had I read it' or 'if I had read it'
\end{align*}
\]

Several other verbal suffixes have two alternate forms:

\[
\begin{align*}
\text{-nte} & \rightarrow \text{te} \\
\text{-ya} & \rightarrow \text{-a} \\
\text{-nak} & \rightarrow \text{-dak} \\
\text{-p} & \rightarrow \text{-ep} \\
\text{-yo} & \rightarrow \text{-o} \\
\text{-nn} & \rightarrow \text{-n} \\
\text{-yan} & \rightarrow \text{-zan} \\
\text{-ya} & \rightarrow \text{-ga} \\
\text{-nik} & \rightarrow \text{-dik} \\
\text{-in} & \rightarrow \text{-zin} \\
\text{-k} & \rightarrow \text{-ak}
\end{align*}
\]

\text{pass continuative} \\
\text{1 singular immediate past} \\
\text{2 singular immediate past} \\
\text{3 singular immediate past} \\
\text{2 or 3 plural immediate past} \\
\text{1 plural immediate past} \\
\text{3 singular intermediate past} \\
\text{3 singular remote past} \\
\text{2 singular present} \\
\text{3 singular present} \\
\text{3 singular imperative}
-ndi -di  

1 dual imperative

In the above list, the first member of each pair is used with verb roots which end with a vowel, and the second with those which end with a consonant. Note that in the two columns of the list above, there is no uniform long or short variants pattern, no initial vowel versus initial consonant patterns.

And now we come to one of the most engaging and exciting grammatical processes in Nabak. It is reduplication. For example, the negative imperative is formed by reduplicating the last syllable of the verb root and adding the suffix -piŋ. This process can be described in five ordered steps:

Step I  Reduplicate the last syllable of the verb root:

\[\text{kutu-tu-piŋ} \rightarrow \text{kututupiŋ}\]

fold-redup-negative 'don't fold it!' 

Step II Eliminate the final consonant, if there is one, of the (initial) verb root:

\[\text{ek-ek-piŋ} \rightarrow \text{eekpiŋ}\]

see-redup-negative 'don't look!'

Step III Apply morphophonemic rules to the final consonant of the reduplicated syllable. Before the /p/ of the suffix, /p/ and /t/ are eliminated, but /k/ is not.

\[\text{kwat-kwat-piŋ} \rightarrow \text{kwakwapiŋ}\]

go-up-redup-negative 'don't come up!'

\[\text{tip-tip-piŋ} \rightarrow \text{titipiŋ}\]

excrete-redup-negative 'don't excrete!'

\[\text{sek-sek-piŋ} \rightarrow \text{sesekpiŋ}\]

carry-redup-negative 'don't carry it!'

Step IV Add a homorganic nasal consonant before an initial voiced stop or voiced sibilant of the reduplicated syllable.

\[\text{be-be-piŋ} \rightarrow \text{bembe-piŋ}\]

put-redup-negative 'don't put it!' 

\[\text{ande-de-piŋ} \rightarrow \text{andende-piŋ}\]

open-redup-negative 'don't open it!'

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mung guM guM-piN — mung guM guM piN
wind-around-redup-neg 'don't wind it around!'

za-za-piN —> zanzapiN
tie-redup-negative 'don't tie it!'

An exception to Step IV is the following verb:
kingat-gat-piN — kingagapiN
fear-redup-negative 'don't be afraid!'

Step V If a sequence of /m/+vowel+/m/+vowel... results from the reduplication, replace the second /m/ with a /b/:

met-met-piN — me-me-piN — mebe-piN
go-redup-neg 'don't go!'

mât-mât-piN — mâ-mâ-piN — mâbâ-piN
chase-redup-neg 'don't chase it!'

NOTES

1. Nabak is spoken in the Naba Census District of the Lae Sub-District of the Morobe District. The Nabak people live in an area from 10 miles north of Lae to 30 miles north-north-east of Lae. The research for this paper was carried out by Edmund and Grace Fabian at the Zinsalik village near the Kasanombe airstrip.

The principal authors of this paper are Mr. and Mrs Fabian. Dr. Peck acted as a consultant on part of the analysis. This is a tentative presentation of only a part of the total morphophonemic alternations in the language. It is expected that a more complete presentation of the morphophonemics will be presented later by Mr. and Mrs. Fabian.

The tentative phonemes of Nabak with their phonetic values are:

/p/ [p, \(p^h\)] /s/ [s, ts]
/t/ [t, \(t^h\)] /z/ [z, dz]
/k/ [k, \(k^h\)] /m/ [m]
/b/ [b] /n/ [n]
/d/ [d] /\(\partial\)/ [\(\partial\)]

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Abbreviations used in this paper are:

X-X morphemes joined in a word
X_X words joined together to translate a single morpheme
cont continuative
cont_to_fact contrary to fact
imfut immediate future
impast immediate past
imper imperative
inpt past intermediate past
neg negative
our2 First person dual possessive
our3 First person plural possessive
pres present tense
prog progressive aspect
redup reduplicated syllable
rmfut remote future
rmpast remote past
their2 third person dual possessive
their3 third person plural possessive
they2 third person dual
they3 third person plural
you second person singular
you2 second person dual
you3 second person plural
your second person singular possessive
your2 second person dual possessive
your3  second person plural possessive
we2   first person dual
we3   first person plural