SIZE AND SHAPE IDEOPHONES IN NEMBE:
A PHONOSEMANTIC ANALYSIS

Omen N. Maduka
Imo State University

In Nembe ideophones, as in symbolic words in all languages
in general, there is direct connection between sounds and
the meanings they convey. For Nembe ideophones describing
the fields of size and shape, there are peculiar strategies
for accomplishing this connection. For size, medial alveo-
lars as well as vowels in the narrow set are used for small-
ness, while medial velars and vowels in the wide set are
used for largeness. For shape, on the other hand, consonant
and vowel melodies are used rather than single phonic units.
A sequence of three different consonants invariably refers
to crooked shape while a sequence of three consonants ending
in two identical liquids refers to straight shape, etc.
However, this whole neat pattern is complicated by the ex-
istence of hierarchies of phonosemantic suggestiveness where-
by certain phonosemantic units displace others away from
their legitimate values, leading to both the ability of oth-
erwise opposing psychomorphs to get into construction and the
ability of simultaneous multiple field representation by id-
eophones.

1. Introduction

The arbitrariness of the connection between sound and meaning in human

language is one of the principal assumptions on which modern linguistics is

based. Very often, however, evidence is presented indicating that this as-

sumption needs another critical look. For instance, Sapir [1929] has shown

the connection between the high, front vowel [i] and smallness for English

(as opposed to the high, back vowel [u] for largeness), just as Crockett

[1970] has done for the same vowel in Russian (as opposed to the low, back

vowel [a] for largeness). For consonants it is generally accepted that al-

veolars and dentals refer to smallness while velars refer to largeness

(Mathews [1970]; Crockett [1970]).

These more popular positions are, however, contradicted by some observa-
tions in a few other languages. For instance, Greenberg and Jenkins [1966],
using English nonsense forms, reached the conclusion that [r] and [k]
would suggest largeness and smallness, respectively. Also, Kim [1977] shows
that the change from [i] to [ε] in sound symbolic words in Korean carries
with it a connotation shift of smallness or intensity, or both. The same al-
ternation holds between [u] and [o], etc. In all cases, according to
Kim, what is involved is a vertical movement down on the Korean vowel tri-
angle. In other words, in Korean lower vowel height has a symbolic value of
smallness and/or intensity.

In African languages the same normal observation is the case. In Igbo,
the vowel i (= ι) has a phonosemantic connotation of smallness; vowel
change conveys pejoration; medial [g] suggests uprightness and singularity,
while medial [r] often suggests number [Maduka 1982, 1983-1984]. Awoyale
[1983-1984] observes a correlation between high tone and smallness on the one
hand, and low tone and largeness on the other in Yoruba, just as Maduka [1987]
observes a general conveyance of pejoration through tonal polarization in
most languages.

Nembe, a member of the Ijoid sub-family of the New Benue-Congo family of
languages (Williamson, forthcoming) is a versatile ideophone language. It
has adequately sophisticated facilities for painting verbal pictures in all
descriptive areas of perception, both sensory and mental. It often has 20,
30, or more ideophones for describing even the smallest fields in respect of
hardness or softness, smoothness or roughness, dryness or wetness, straight-
ness or crookedness, brightness or dullness, and so on. In this paper, we
take a look at the devices the language adopts for describing size and shape
perception using ideophones.

One of the milder problems with phonosemantic analysis (which deals with
the nature of sound-sense isomorphisms) is the existence of liaisons between
disparate sub-fields in ideophonic codification. Particular ideophones can
be observed to make focal contributions to size with supplemental support
from shape or vice versa. The dichotomy between shape and size ideophones

made here is based on principal areas of reference.

2. Data Sources

The principal source of data is Kaliai's [1964/1966] work, *Nembe-English Dictionary* (Parts I & II). A subsidiary source is a rich list of ideophones used in context, received from Professor Kay Williamson of the Linguistics Department at the University of Port Harcourt, Nigeria. New data were also received from (and old data tested on) native speaker informants.[1] Data are presented in the Appendix.

3. A Short Note on Nembe Sounds

3.1. Consonants. The following are the Nembe consonants: p , b , ɓ , m , f , v , t , d , ɗ , l , r , s , z , n , y , k , g , k͡p , g͡b , w .

2.3. Vowels. Nembe vowels are described in terms of feature values, thus:

	i	ι (= ι)	e	e (= ɛ)	a	o (= ɔ)	o	u (= ɷ)	u
high	+	+	-	-	-	-	-	+	+
low	-	-	-	-	+	-	-	-	-
back	-	-	-	-	-	+	+	+	+
wide	+	-	+	-	-	-	+	-	+

The feature values [+wide] and [-wide] are used in African languages to refer to vowels produced with expanded and constricted pharynx, respectively. Expansion of the pharyngeal space can be achieved through raising of the tongue root, lowering of the larynx, or both [Lindau 1975, 1979]. Constriction of the pharyngeal space can be achieved through the opposing processes of lowering the tongue root, raising the larynx, or both. Many African languages with the phenomenon of vowel harmony have it based on pharynx size specifications. Wide vowels would co-occur with other wide vowels just as narrow (constricted) vowels would co-occur with others so specified in roots

and occasionally in affixes as well. Often, in vowel harmony languages, there is one vowel that is neutral to the harmony system that can co-occur with either the wide or the narrow set. In Nambe this vowel is the low, non-back vowel [a].

3.3. <u>Tones</u>. Nembe has two basic level tone values: High (marked ´) and Low (unmarked). Tone glides when permitted can always be analysed as a sequence of level tones.

4.   Ideophonic Canonical Shapes and Melodies

Generally, there are four basic canonical templates in which Nembe size and shape ideophones are encoded. There are also restrictions on melodies, more in some than others.

4.1. <u>Canonical templates</u>. The four basic shapes are as follows:

(i) $C_1V_2C_3V_4V_5$: d͡ur͜ée

(ii) $C_1V_2C_3V_4 + C_1V_2C_3V_4$: buruburú , ɓoloɓoló

(iii) $C_1V_2C_3V_4C_5V_6V_6$: ɓagiríi   ɓogolóo

(iv) $C_1V_2C_3V_4C_5V_6 + C_1V_2C_3V_4C_5V_6$: kokoríkokori , kpokorokpokoró

Two proximate vowels are assigned to different syllables.

4.2. <u>Melodies</u>. Melodies can be stipulated in terms of statistical tendencies and absolute restrictions with respect to consonants, vowels, and tones.

4.2.1. <u>Consonant melodies</u>. For consonant patterns in 4-syllable (reduplicated) forms, nothing absolute can be said except that there is a very high tendency for C_3 to be alveolar. Patterns in 6-syllable forms are slightly more constrained as it appears that only grave sounds [g͡b , k͡p , g , k , ɓ] can be in the C_1 position. The C_3 and C_5 consonants can vary between a grave and a non-grave sound, with the non-grave invariably an alveolar. Finally, straight sequences of either grave or non-grave consonants are not simultaneously acceptable in C_1 , C_2 , and C_3 positions.

4.2.2. <u>Vowel melodies</u>. Statistically, a great number of ideophones are homogenous in their vowel melodies. For 4-syllable forms with polarized vowel

melodies, no easy pattern can be identified; however, for 6-syllable forms
the patterns are quite interesting. Vowel melodies can be homogenous or po-
larized. When homogenous, the vowels marked [-high] (e , e̱ , a , o̱ , ɔ)
are statistically favoured. When polarized, the differing vowel can be in
the V_6 position only, or in the V_2 position only. When V_2 is the odd vowel,
V_4 and V_6 are identical. V_2 and V_6 cannot be identical while V_4 is differ-
ent. The most favoured vowel in the V_2 position is the "neutral" vowel
[a] . The V_6 vowel, when causing polarization, is invariably a vowel marked
[+high] (i , i̱ , u , u̱) .

4.2.3. <u>Tone melodies</u>. There are seven basic tone melodies superimposed on
the cononical patterns identified above:

(i) $L_Q H$: buruburú , kpokorokpokoró

(ii) L_Q: ɓogoloɓogolo , mo̱go̱lo̱mo̱go̱lo̱

(iii) $L_Q HL_Q$: kagulúkagulu , kadigíkadigi

(iv) $L_Q HL$: ɓagiríi , gbogolóo

(v) $(HL)_Q$: gbódoróo , ké̱tu̱ké̱tu̱

(vi) $(HL_Q)_Q$: ɓákalaɓákala

(vii) $(LHL)_Q$: girísigirísi

Restrictions on tone melodies include the fact that in reduplicated forms,
a reduplicant cannot have more than one high tone, but may have none. If a
6-syllable ideophone has only one high tone, then this tone must occur on a
V_6 vowel, either of the first or the second reduplicant. In 4-syllable, 3-
consonant, non-reduplicated forms, the penultimate tone must be high and the
last low.

5. <u>Size Ideophones</u>

Ideophonic size description in Nembe can be either relative or absolute.
In relative size description, semantic values are not taken on the basis of a

general or even specific norm but on the basis of a direct comparison
with another object which may in itself be big or small. In absolute
size description, on the other hand, semantic values are relative to a
standard norm.

5.1. Relative size. Relative size description is invariably encoded in id-
eophones that otherwise describe principal areas besides size, such as shape.
The following are a sampling (see Appendix, A for a longer list):

(1)   dégerée   'not too low (house)'
       dégerée   'low (house)'
       garakíi   '(standing) strong and erect'
       garakíi   '(standing) strong and erect (but of smaller object)'
       kágulúu   'twisted, rugged'
       kágulúu   'twisted, rugged (but of smaller object)'

     It can easily be observed that pharynx size value of critical vowels,
i.e. excepting [a] , determines semantic value of ideophones in the area of
relative size. Vowels produced with expanded pharynx (classified [+wide])
refer to larger or neutral size, while those produced with constricted phar-
ynx (classified [−wide]) refer to smaller size. If we adopt the following
formal feature representation,

       large, larger = [+LARGE(R)]
       smaller   = [−LARGE(R)]

then the relevant content of the data above can be formalized in terms of a
phonosemantic rule,

(2)   V   →   [αLARGE(R)]
       [αwide]

5.2. Absolute size. Absolute size ideophones are fundamentally designed to
describe size, but occasionally other subsidiary fields such as shape are al-
so represented. Phonosemantic description of absolute size is more complicat-
ed than was seen in the area of relative size as consonants also make contri-
butions in addition to the existence of certain restrictions based on a hier-

archical organization of phonosemantic suggestions. The following are a sample of absolute size ideophones (see Appendix, B for a fuller list):

(3) buruburú   'dusty, finely powdered like dust'
     buruburú   "
     duredure   'unexpectedly small (of many things)'
     gorogoró   'skinny, thin'
     kutekuté   'tiny'
     kétukétu   'dwarfish'
     nikonikó   'thin, slender, emaciated (person)'
     yegeyegé   'very large (artificial object)'
     boloboló   '(eyes) large and rounded, (writing) bold'
     bogolobogolo   '(of grain, writing, etc.) bold, big, large'
     bogolóo   "
     gbodogbodó   '(figures) bold'
     gbokogbokó   'very tall or long'
     sokosokó   'tall or high'
     sorosoró   'bulgy, swollen'

5.2.1. <u>Phonosemantic rules for size</u>. On the basis of general information on this and other items in the full list, we may establish the following (yet) tentative phonosemantic rules for absolute size in Nembe, with exceptions to the rules. A more elegant and total picture is presented in 5.2.2 below. The rules are formalized on the basis of the following formal feature specifications:

   large, long, tall, bulgy, bold, etc. = [+LARGE]
   small, thin, dwarfish, fine, fragmentary, etc. = [-LARGE]

(4) i → [-LARGE]
     e → [-LARGE] (exceptions: when C_3 = g)
     o → [-LARGE] (exceptions: when C_3 = k , g)
     u → [-LARGE]

(5) a → $\emptyset$ (i.e. has no phonosemantic value)

(6) i → [+LARGE] (exceptions: when C_3 = r)

    e → [+LARGE] (exceptions: when C_3 = r)

    o → [+LARGE]

    u → [+LARGE] (exceptions: when C_3 = r)

(7) r_3 → [-LARGE] (exceptions: when V = o)

    t_3 → [-LARGE] (exceptions: when V = o)

    d_3 → [-LARGE] (exceptions: when V = o)

    $ɗ_1$ → [-LARGE]

(8) l_3 → ∅ (i.e. has no phonosemantic value for size)

(9) k_3 → [+LARGE] (exceptions: when C_1 = ɗ or V = i)

    g_3 → [+LARGE] (exceptions: when V = i)

    $ɓ_1$ → [+LARGE]

    gb_1 → [+LARGE] (exceptions: when C_3 = r)

    s_1 → [+LARGE]

The following rule schemas can be used *generally* to represent the sets above: (10) for rule-sets (4) and (6), (11) for aspects of rule-sets (7) and (9), and (12) also for aspects of rule-sets (7) and (9).

(10) (= (3))   V   → [αLARGE]

              [αwide]

(11) C_3 → [αLARGE]

$$\begin{bmatrix} -\alpha alv \\ \alpha vel \end{bmatrix}$$

(12) C_1 → [αLARGE]

              [αgrave]

5.2.2. Phonosemantic hierarchy for size. Rather than present the case as above, with exceptions to rules, we can isolate a system of hierarchical organization inherent in the presentation. This is done below, with higher values for *n* representing a higher level on the hierarchy. Elements on higher levels displace others below them just in case they are in construction in a particular ideophone and their phonosemantic values (as assigned above) are in opposition.

Level n :   o = LARGE; $\underline{i}$ = SMALL

Level n-1: б = LARGE: g_3 = LARGE; r_3 = SMALL

Level n-2: $\widehat{gb}_1$ = LARGE; d_1 = SMALL; $\underline{e}$ = SMALL

Level n-3: k_3 = LARGE

Level n-4: $\underline{o}$ = SMALL

Level n-5: (other consonants and vowels and their values as specified
in a comprehensive analysis)

On the basis of this hierarchical organization of elements and their pho-
nosemantic values we can explain the meanings of Nembe size ideophones. The
following are a sampling from the list, with appropriate comments in paren-
theses:

(13)   lekeleké   'thin, lean' ($\underline{e}$ displaces k_3)

gbokogbokó   'very tall or long' (k_3 displaces $\underline{o}$)

nikonikó   'thin, slender, emaciated' ($\underline{i}$ displaces k_3)

kutekuté   'tiny' (harmony, no displacements)

purupurú   'fine, small' (harmony, no displacements)

yegeyegé   'very large' (g_3 displaces $\underline{e}$)

sokosokó   'tall or high' (harmony, no displacements)

sorosoró   'bulgy, swollen' (o displaces r_3)

kpotokpotó   'bold, well-marked' (o displaces t_3)

yikayiká   'enormous, very large' (harmony, no displacements)

kiríkiri   'shallow, not deep' (r_3 displaces i)

yagiyagí   'tiny, bony' ($\underline{i}$ displaces g_3)

From the foregoing, we can safely conclude that the vowel and the C_m con-
sonant together are most responsible for conveying size. However, the ques-
tion must be asked what segments do after they have been displaced by other
segments higher in the hierarchy. It would appear as if displaced elements
nevertheless take value from another field affinitive and complementary to
the one from where they have been displaced. Consider, for instance, the id-
eophone sorosoró 'bulgy, swollen'. The following can roughly be said to
represent the displacement process:

	Phonosemantic unit	Context	Size Designation	Shape Designation
(a)	$V = o$	1. In isolation	LARGE	? $\emptyset$
		2. In construction with r_3	LARGE	? $\emptyset$
(b)	$C_3 = r$	1. In isolation	SMALL	? $\emptyset$
		2. In construction with o	$\emptyset$	ROUNDED,BLUNT

As a phonosemantic process this can be represented thus:

(14) $r_3 \rightarrow \left\{ \begin{array}{l} \text{[-LARGE]} \\ \text{[+ROUND] / o -- o} \end{array} \right\}$

In the same way, native speaker interviews show that $[k_3]$ in 4-syllable id-
eophonic forms when displaced from its primitive value LARGE (by $[\underline{i}]$ and
$[\underline{e}]$) refers to angular, thin, sharp-ended shape as opposed to the blunt-end-
ed, round shape suggested by a displaced $[r_3]$. A displaced $[k_3]$ (or in
fact $[g_3]$) would therefore refer to objects such as pins, thin sticks,
poles, etc., while a displaced $[r_3]$ (or perhaps $[l_3]$ in shape) would re-
fer to balls, pellets, and other rounded or oval shapes. Therefore the fol-
lowing adjusted rule for $[k_3]$ seems to be well-motivated:

(15) $k_3 \rightarrow \left\{ \begin{array}{l} \text{[+LARGE]} \\ \text{[+ANGULAR] / } \quad V \quad --- \quad V \\ \qquad\qquad \begin{bmatrix} \text{-low} \\ \text{-wide} \\ \text{-back} \end{bmatrix} \begin{bmatrix} \text{-low} \\ \text{-wide} \\ \text{-back} \end{bmatrix} \end{array} \right\}$

Finally, phonosemantic values of initial consonants are sometimes very
difficult to determine but a well-designed experiment will probably be able
to factor them out.

6. Shape Ideophones

Shape in Nembe ideophones can refer to straightness, crookedness, twisted-
ness, roundedness—in other words, to regular or irregular geometrical config-
urations. The following are a sample of shape ideophones (see Appendix, C
for a fuller list):

(16) ɓaguluɓagulu   'flexuous, undulating'

ɓaguluɓagulu   (same as ɓaguluɓagulu , but of a smaller object)

ɓagulúu   'flexuous, crooked'

ɓagulúu   (same as ɓagulúu , but of a smaller object)

ɓekeléɓekele   'tisted, uneven'

ɓákalaɓákala   'sinuous, tortuous, crooked'

ɓogoloɓogolo   'bold, big, large'

gbolológbololo   'straight (and wide/neutral)'

gbórorogboróro   "

gorórogoróro   "

gororógororo   'straight and narrow'

feleléfelele   'straight'

téletéle   'scattered'

salasalá   "

yarayará   'sharp and pointed'

yoroyoró   "

6.1. Phonosemantic rules for shape. We may now proceed to formulate phono-semantic rules to account for the whole corpus, first for the 3-consonant mel-ody sequences. We may formalize the feature specifications thus:

crooked, twisted, rugged, etc.   =   [+CROOKED]

straight (but not round)   =   [−CROOKED]

And since the ideophones under consideration also incorporate relative size specifications, size values are also included where necessary:

(17) $\quad a_2 - a_4 - i_6 \quad \rightarrow \quad \begin{bmatrix} +\text{CROOKED} \\ -\text{LARGE(R)} \end{bmatrix}$

$\quad a_2 - i_4 - i_6 \quad \rightarrow \quad \begin{bmatrix} +\text{CROOKED} \\ -\text{LARGE(R)} \end{bmatrix}$

$\quad a_2 - u_4 - u_6 \quad \rightarrow \quad \begin{bmatrix} +\text{CROOKED} \\ -\text{LARGE(R)} \end{bmatrix}$

$\quad a_2 - a_4 - i_6 \quad \rightarrow \quad \begin{bmatrix} +\text{CROOKED} \\ +\text{LARGE(R)} \end{bmatrix}$

$\quad a_2 - i_4 - i_6 \quad \rightarrow \quad \begin{bmatrix} +\text{CROOKED} \\ +\text{LARGE(R)} \end{bmatrix}$

$$a_2\text{-}u_4\text{-}u_6 \quad \rightarrow \quad \begin{bmatrix} +\text{CROOKED} \\ +\text{LARGE(R)} \end{bmatrix}$$

(18) $a_2\text{-}a_4\text{-}a_6 \quad \rightarrow \quad \emptyset$ (i.e. has no phonosemantic value)

(19) $e_2\text{-}e_4\text{-}e_6 \quad \rightarrow \quad \begin{bmatrix} -\text{CROOKED} \\ +\text{LARGE(R)} \end{bmatrix}$ (exceptions: $C_3 \neq = C_5$)

$$o_2\text{-}o_4\text{-}o_6 \quad \rightarrow \quad \begin{bmatrix} -\text{CROOKED} \\ +\text{LARGE(R)} \end{bmatrix}$$

(20) $ɓ_1\text{-}g_3\text{-}l_5 \quad \rightarrow \quad [+\text{CROOKED}]$ (exceptions: $V = o$)

$ɓ_1\text{-}k_3\text{-}l_5 \quad \rightarrow \quad [+\text{CROOKED}]$

$gb_1\text{-}l_3\text{-}g_5 \quad \rightarrow \quad [+\text{CROOKED}]$

$k_1\text{-}d_3\text{-}g_5 \quad \rightarrow \quad [+\text{CROOKED}]$

$k_1\text{-}g_3\text{-}l_5 \quad \rightarrow \quad [+\text{CROOKED}]$

(21) $f_1\text{-}l_3\text{-}l_5 \quad \rightarrow \quad [-\text{CROOKED}]$

$gb_1\text{-}l_3\text{-}l_5 \quad \rightarrow \quad [-\text{CROOKED}]$

$gb_1\text{-}r_3\text{-}r_5 \quad \rightarrow \quad [-\text{CROOKED}]$

$g_1\text{-}r_3\text{-}r_5 \quad \rightarrow \quad [-\text{CROOKED}]$

These rules can be collapsed into two major sets of rules if we recognize that in general vowel-melody forms involving apophony (change in vowel quality from one syllable to the next) carry the meaning CROOKED, while those not involving apophony (with a sequence of identical vowels), with a few exceptions, suggest the meaning STRAIGHT. In the same way, consonant-melody forms involving assonance (change in consonant quality from the C_3-syllable to the C_5-syllable) carry the meaning CROOKED, while those not involving assonance (with identical consonants in the C_3 and C_5 positions), with a few exceptions, carry the meaning STRAIGHT. Rule-set (22) represents information in rules (17) and (19) above, while rule (23) represents information in rules (20) and (21):

(22) a. V–Melody   → $\begin{bmatrix} +\text{CROOKED} \\ \alpha\text{LARGE(R)} \end{bmatrix}$
$\begin{bmatrix} +\text{apophony} \\ \alpha\text{wide} \end{bmatrix}$

  b.   V–Melody   → $\begin{bmatrix} -\text{CROOKED} \\ \alpha\text{LARGE(R)} \end{bmatrix}$
$\begin{bmatrix} -\text{apophony} \\ -\text{low} \\ \alpha\text{wide} \\ \beta\text{round} \end{bmatrix}$

  exceptions: when C-Melody = [+assonance] and β = − .

These two rules may be collapsed (ignoring certain details) into:

  c.   V–Melody   → $\begin{bmatrix} \alpha\text{CROOKED} \\ \beta\text{LARGE(R)} \end{bmatrix}$
$\begin{bmatrix} \alpha\text{apophony} \\ \beta\text{wide} \end{bmatrix}$

(23)   C–Melody   → $[\alpha\text{CROOKED}]$
   [αassonance]

6.2. Phonosemantic hierarchy for shape.

Once again, the facts above can be presented in a more elegant and yet formal way in terms of a hierarchy of phonosemantic values, thus:

Level n: V–Melody   = STRAIGHT + αLARGE;   C–Melody   =   CROOKED
$\begin{bmatrix} -\text{apophony} \\ -\text{low} \\ +\text{round} \\ \alpha\text{wide} \end{bmatrix}$ [+assonance]

Level n–1:   V–Melody   = CROOKED + αLARGE;   C–Melody   =   STRAIGHT
$\begin{bmatrix} +\text{apophony} \\ \alpha\text{wide} \end{bmatrix}$ [+assonance]

Level n–2:   V–Melody   = STRAIGHT + αLARGE
$\begin{bmatrix} -\text{apophony} \\ -\text{high} \\ -\text{low} \\ -\text{round} \\ \alpha\text{wide} \end{bmatrix}$

On the basis of the foregoing, the meanings of the following ideophones

can be justified:

(24) ɓekeléɓekele   'twisted, uneven' (ɓ-k-l displaces e-e-e)

ɓákalaɓákala   'crooked' (ɓ-k-l only takes meaning)

gororógororo   'straight and narrow' (harmony, no displacements)

gbororógbororo   'straight (and wide/neutral)' (harmony)

kadigíkadigi   'twisted (and large/neutral)' (harmony)

feleléfelele   'straight' (harmony)

ɓogoloɓogolo   'bold, big, large' (o-o-o displaces ɓ-g-l)

mũgurúmũguru   'plump' (u-u-u displaces m-g-r)

kpokorokpokoró 'bold, well-marked' (o-o-o displaces kp-k-r)

gbalagígbalagi   'winding, twisting (and large/neutral)' (harmony)

It is interesting to observe what happens at the highest level (Level n) in this hierarchy. The two meaning-bearing units, a straight sequence of round (back) vowels and a sequence of two different consonants in the C_3 and C_5 positions, are directly in opposition, none higher in status than the other. They therefore cancel each other out, leaving as residue the other value αLARGE(R) conveyed by the vowel. A detailed investigation using native-speakers indicates that forms satisfying the two conflicting conditions (such as kpokorokpokoró , ɓogoloɓogolo , etc.) refer invariably also to rounded, oval-shaped objects rather than to angular-shaped objects. Therefore, rule (22) can be adjusted to take care of this fine detail, thus:

(25)   V-Melody   → $\left\{ \begin{array}{l} \begin{bmatrix} -\text{CROOKED} \\ \alpha\text{LARGE(R)} \end{bmatrix} \\ [\alpha\text{ROUND}] \ / \quad \text{C-Melody} \\ \qquad\qquad\quad [+\text{assonance}] \end{array} \right\}$

$\begin{bmatrix} -\text{apophony} \\ -\text{low} \\ +\text{round} \\ \alpha\text{wide} \end{bmatrix}$

This together with rule (23) and stated hierarchy above leads to the following ultimate residue:

[αLARGE(R) + αROUND]

This, in addition to the suggestion made by C_1, will constitute the full meaning of the appropriate ideophone. As stated earlier, C_1 values are often difficult to fathom. However, with the entries in (26),

(26) m_1 → [+SOFT]

$\widehat{kp}_1$ → [+WELL-MARKED]

$\widehat{gb}_1$ → [+WELL-MARKED]

the following ideophones, for instance, have the ultimate meanings stated:

(27) kpokorokpokoró   LARGE(R) *and* ROUND *and* WELL-MARKED

gbódoróo   LARGE(R) *and* ROUND *and* WELL-MARKED

mõgolomõgolo   SOFT *and* SMALL *and* THIN

mũgurúmũguru   SOFT *and* LARGE *and* ROUND

These constructions can be compared with their dictionary entries shown in the Appendix.

The analysis above is in respect of forms with 3-consonant melodies. We have shown that such forms can refer to regular (straight, round) and irregular (crooked) shapes. However, 2-consonant melodies do also make reference to shape, namely regular (straight, round) and irregular (scattered) shapes. This can be represented with rule (28) if we formalize values, thus:

scattered   = [+SCATTERED]

straight, sharp and pointed, etc. = [-SCATTERED]

(28) C_3 → [αSCATTERED]

$\begin{bmatrix} \alpha\text{lateral} \\ +\text{liquid} \end{bmatrix}$

Thus we can justify the meanings attached to the following ideophones (see Appendix, C):

(29) teletelé   'sporadic, scattered'

kúlakúla   'strewn, scattered'

salasalá   'protruding, scattered'

karákara   'straight, without curve, vertical, upright'

yoroyoró   'sharp and pointed'

yarayará   "

7.   Conclusions

In Nembe ideophones, size and shape descriptions are very closely inter-
connected probably owing to the affinity existing between these two sub-
fields. For relative size, pharynx size in vowels is used for conveying
meaning. Large (expanded) pharynx size vowels are either neutral or refer to
large(r) sizes while small (constricted) pharynx size vowels refer to small
(er) sizes. For absolute size, consonants (especially medial (C_3) conso-
nants) also make contributions in addition to vowels seen in the case of rela-
tive size description. Alveolars generally refer to smallness while velars
generally refer to largeness.

However, in this area of absolute size description, there is included in
the sound symbolic network a hierarchy of phonosemantic suggestiveness by
which certain meaning-bearing units displace others lower in the hierarchy.
Displacements leave residues that ultimately participate in meaning construc-
tion. Highest on the size hierarchy are the vowels [o] (for largeness) and
[i] (for smallness). These would displace (cancel out contributions from)
any other elements if opposition arises from their separate contributions.
Next on the hierarchy are [g_3] (for largeness) and [r_3] (for smallness)
and perhaps also [$ɓ_1$] (for largeness), and so on. Least clear or relevant
contributions to meaning are in general those made by C_1 (initial) consonants.
Very carefully planned and executed experiments will be needed to clarify
their phonosemantic behaviour.

For most of shape ideophones, on the other hand, consonant and vowel melo-
dies, as opposed to lone segments, make relevant contributions. Consonant
melodies involving assonance or polarization in the C_3 and C_5 positions sug-
gest crookedness, while those not involving polarization, i.e. with identical
C_3 and C_5 consonants, suggest straightness. In the same vein, vowel melodies
involving apophony or polarization suggest crookedness, while those not in-
volving polarization, suggest straightness. The two processes can really be
viewed as one ontological phenomenon representable by the following rule:

(30)   Prosodic Melody   →   [αCROOKED]

        [αpolarized]

Once again, however, a system of hierarchy controls ultimate phonosemantic values of segments in construction. Highest on the shape hierarchy are a straight (non-polarized) sequence of back (round) vowels (for straightness) and a polarized C_3-C_5 consonant sequence (for crookedness). The other meaning-bearing melodies exist at a lower level. As is not clearly evident for size ideophones, it is seen that in addition to pure displacement interactions, there could also be mutual cancellation (or liquidation) interactions between opposing units at the same strength level on the hierarchy. Thus the two topmost meaning-bearing phonosemantic units can have both opposing phonosemantic suggestions (STRAIGHT and CROOKED) liquidated. Since the fundamental aim is to describe shape, it does appear that nevertheless some shape residue is invariably activated or incorporated that is different in kind from the meaning suggestions liquidated. It will be very interesting to pursue this matter further to establish generalizations pertaining to this kind and other interactions.

In our opinion, discovering hierarchies is as important as discovering meaning-bearing units ("psychomorphs") themselves and each is an authentic psychological phenomenon. Hierarchies should logically exist if iconism is at all a reality. Units make suggestions on the basis of physical and/or spatio-temporal relationships between sign and signification. In the nature of such relationships, certain suggestions are bound to be more evocative (and therefore more memorable) than others. In situations where a conflict arises, it is only logical that more evocative suggestions should hold sway over less evocative ones. Besides, because of the inevitable existence of residues, this amounts to a smart strategy for fully exploiting the sound inventory and phonotactic possibilities in a language for conveying the much more wide-ranging field of semantic notions. The discovery of phonosemantic hierarchies is, in our opinion, the most significant step yet toward the elucidation of phonosemantic phenomena.

APPENDIX

A. Ideophones of relative size

dégerée	'not too low (house)'
d<u>é</u>g<u>e</u>r<u>ée</u>	'low (house)'
garakíi	'(standing) strong and erect'
garak<u>í</u>i	" (but of smaller object)
gororóo	'straight (and wide)'
g<u>o</u>r<u>o</u>róo	'straight and narrow'
gbalagígbalagi	'coiling, winding, twisting'
gbalag<u>í</u>gbalag<u>i</u>	" (but of smaller object)
kagulúkagulu	'crooked'
kag<u>u</u>l<u>ú</u>kag<u>u</u>l<u>u</u>	" (but less emphatic or smaller in size)
kágulúu	'twisted, rugged'
kágu<u>l</u>úu	" (but of smaller object)

B. Ideophones of absolute size

buruburú	'dusty, finely powdered (like dust)'
b<u>u</u>r<u>u</u>b<u>u</u>rú	"
búrẽbúrẽ	'not thick, scanty (of hair or brush)'
ɗokoɗokó	'slim, narrower at base'
ɗureɗure	'unexpectedly small (of many things)'
ɗúrée	'unexpectedly small'
gir<u>í</u>sigir<u>í</u>s<u>i</u>	'gritty'
g<u>o</u>r<u>o</u>góró	'skinny, thin'
gburugburú	'sedimentary'
gb<u>u</u>gb<u>u</u>rúu	'unexpectedly small'
kelukelú	'dwarfish, stunted (esp. mangrove)'
kétuk<u>é</u>t<u>u</u>	'dwarfish'
kiríkiri	'shallow, not deep'
kokorikokori	'not deep (not fleshy)'
kokorókokoro	'shallow'
ku<u>t</u>ekuté	'tiny'
mõg<u>o</u>l<u>o</u>mõg<u>o</u>l<u>o</u>	'willowy, thin'
nikonikó	'thin, slender, emaciated'

ỹẽgiỹẽgí	'very fine and small (writing)'
petepeté	'tiny, very small'
purepuré	'fragmentary'
purupurú	'fine, small (grains), fragmentary'
wenewené	'fine, thin, tiny (sand)'
yaglyagí	'tiny and bony (fish)'
lekeleké	'thin, lean'
ɓagiríi	'robust, big'
ɓogoloɓogolo	'bold, big, large (grain, writing, etc.)'
ɓógolóo	"
ɓoloɓoló	'large and rounded (eyes), bold (writing)'
ɓuleɓulé	'bulgy (eyes)'
ɓúlelée	"
ɓuleɓulé	"
gódogbóo	'huge, very large, stout'
gbodogbodó	'bold (figures)'
gbódogóo	'extraordinarily large'
gbódoróo	'bold, well-marked (writing, wound)'
gbógboróo	'thick, muscular'
gbogolóo	'noticeably large'
gbokogbokó	'very tall or long'
kpokorokpokoró	'bold, well-marked (numerous)'
kpókoróo	'bold, well-marked (single), stout'
kpotokpotó	'bold, well-marked'
mũgurúmũguru	'plump'
sokosokó	'tall or high'
solosoló	'long'
sorosoró	'bulgy, swollen'
wolowoló	'large (meshes), very wide'
wokowokó	'very high and full (spring tide)'
yikayiká	'enormous, very large'
yegeyegé	'very large'

C.   <u>Ideophones of Shape</u>

ɓaguluɓagulu	'flexuous, undulating (stick, road, rope, etc.)'
ɓaguluɓagulu	(same as ɓaguluɓagulu , but of a smaller object)
ɓagulúu	'flexuous, crooked (stick, road, *rope)'
ɓagulúu	(same as ɓagulúu , but of a smaller object)
ɓákalaɓákala	'sinuous, tortuous, crooked (road, stick)'
ɓakaláa	'twisted (road, stick, *rope)'
ɓekeléɓekele	'twisted, uneven'
gbalagígbalagi	'coiling, winding, twisting'
gbalagígbalagi	(same as gbalagígbalagi , but of a smaller object)
kadigíkadigi	'twisted, covered with protuberances'
kadigíkadigi	(same as kadigíkadigi , but of a smaller object)
kagulúkagulu	'very uneven, crooked (road, wood surface)'
kagulúkagulu	(same as kagulúkagulu , but of a smaller object)
kágulúu	'twisted, rugged'
kágulúu	(same as kágulúu , but of a smaller object)
yakayaká	'ripply'
kúlakúla	'strewn, scattered'
téletéle	'sporadic, scattered, fallen wide apart'
salasalá	'protruding, scattered (bones)'
ỹ̃ege̋ỹ̃egé	'distended'
feleléfelele	'straight (road)'
felelée	"
gbolológbololo	'straight (and wide/neutral)'
gbololóo	"
gbórórogbóróro	"
gbororóo	"
gorórogoróro	"
gororóo	"
gororógororo	'straight and narrow (stick, legs)'
gororóo	"
yarayará	'sharp and pointed'
yoroyoró	"
karákara	'straight, without curve, vertical, upright'

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