

Relationship between iconicity and grammatical integration as a product of the integrator¹

Samuel Kayode Akinbo^a and Alexander Angsongna^b

^aUniversity of Toronto, St George, ^bUniversity of Vienna

Abstract

Studies on the grammatical integration of ideophones suggest that the more ideophones are integrated into grammatical structure, the less iconic they become. In this study, we explore this hypothesis by describing a pattern of tonal alternation that targets both ideophones and non-ideophonic words in Nigerian Pidgin and Dagaare. To express that two elements are identical but distinguishable along a specific dimension, an ideophone is reduplicated, with the ideophone and its reduplicant assigned different tones. This tonal alternation aligns with a crosslinguistic pattern of iconicity, indicating that the relationship between iconicity and grammatical integration is conditioned by the properties of the integrator rather than by the process of grammatical integration itself. The derivational morphology in the two languages challenges the view that ideophones are incompatible with derivational affixes. Additional implications of these patterns are also explored.

Section 1: Introduction

Ideophones are “a member of an open lexical class of marked words that depict sensory imagery” (Dingemanse 2019:16). Due to their depiction of sensory imagery, ideophones tend to have iconicity, which is form-meaning resemblance (Perniss et al., 2010; Dingemanse et al., 2015). In linguistic literature, the recurrent theme about ideophones is their marked phonological and morphosyntactic properties (Akita and Dingemanse, 2019). This is because most documented cases of ideophones have phonological and phonetic properties that are absent elsewhere in the grammar (Childs, 1988; Olson and Hajek, 1999). Across languages, they also tend to be antipathic to inflectional and derivational affixes, and occur outside predicate structures (Andrason and Bernd, 2023; Heine, 2023). Partly due to the longstanding tradition that iconicity and expressive morphology exist at the margins of grammar, ideophones have been relatively underrepresented in grammatical analyses (Saussure 1974; Hockett 1960; Zwicky & Pullum 1987). However, an emerging perspective suggests that iconicity and arbitrariness play complementary roles in grammar, offering new insights into the place of ideophones within grammatical structures (Perniss et al., 2010; Dingemanse et al., 2015).

¹ Doug has had a profound and lasting impact on students—both undergraduate and graduate. His contributions to the personal growth and academic success of students at UBC and beyond have been enormous. It is in this spirit that we offer this paper as a tribute to his unparalleled mentorship and scholarly influence. As two of his former students—now actively advancing both independent and collaborative research in phonology and morphology, two of Doug's major research areas, as well as in other areas of linguistics—we are deeply honored to contribute to this celebration of his legacy.

Thank you, Doug, for being a great teacher and an honorable human being!

The emerging perspective has reignited interest in ideophones, particularly the relationship between grammatical integration and iconicity. Of specific interest here is the connection between the grammatical integration of ideophones and their expressiveness. Dingemanse and Akita (2017) suggest that the more ideophones are integrated into grammatical structures, the less expressive they become. The prediction, therefore, is that a grammatically integrated ideophone might lose its affective meaning and iconicity. At the morphological level, the emergence of ideophones as affix-bearing words is considered the final stage of their grammaticalization (Andrason & Bernd, 2023; Heine, 2023). The integration of iconicity into linguistic theory has also revealed that some phonological alternations arise from the structural mapping of real-world events and entities onto linguistic forms (e.g., Alderete & Kochetov 2017 on expressive palatalization across languages; Akinbo 2021 on root-vowel mutation in Fungwa, Akinbo & Ekiugbo 2024 on prosodic metathesis in Nigerian Pidgin; Akinbo & Bulkaam 2024 on tonal alternation in nominal constructions in Tal). For example, in Tal (West Chadic, Nigeria), the exponent of the distal nominal linker is a tone-lowering feature that spreads across a long phonological distance, whereas the proximal nominal linker exhibits tone-raising, restricted to the right edge of a word (see Akinbo & Bulkaam 2024). Thus, the exponent of the deictic linker and its locality align with magnitude iconicity (Ohala 1984, Dingemanse 2011, Knoeferle et al. 2017). While phonological alternations motivated by iconicity remain underexplored, those specifically targeting ideophones are even rarer.

In this work, our goal is to show that the relations between grammatical integration of ideophones and iconicity may not be determined by the process of grammatical integration but by the integrator's mode of signification. The empirical basis of this work is a pattern of tonal alternation that mostly targets base-reduplicant composite that are derived from ideophones. The empirical basis of this study is based on datasets from Nigerian Pidgin (Atlantic Creole, Nigeria) and Dagaare (Mabia, Ghana). The remainder of the paper is structured as follows. Section 2 gives a brief background of the languages under investigation. The pattern of tonal alternation that forms the basis of the exploration in this work is presented in Section 3. In Section 4, we present an account of tonal alternation. The discussion and conclusion are presented in Section 5. As a background to this work, we will present language background in the next section.

Section 2: Language background

The empirical basis of this study comes from two West African languages. The first is Dagaáare, a cross-border language spoken in northwestern Ghana and southern Burkina Faso by more than 1.5 million people. It belongs to the Mabilia subgroup (formerly known as Gur) of the Niger-Congo family. Dagaare is said to have four broad varieties: Northern Dagaáare [dàgà:à] (ISO code: dgi; Glottolog: nort2780), Southern Dagaáare [wá:lí], Western Dagaáare [bì:ífɔ̃] (ISO code: dgd; Glottolog: daga1272), and Central Dagaare [dàgáá:ri] (ISO code: dga; Glottolog: sout2789) (Angsongna & Akinbo, 2022, Angsongna 2023). The data forming the basis of this study come from the central variety spoken in the Nadowli-Kaleo district.

The second language is Nigerian Pidgin (iso code: pcm; glottolog nige1257), which is an English-based contact language spoken predominantly in Southern regions of Nigeria. The language has more than 80 million speakers in Nigeria (Faraclas 2002, Ihemere 2006), and it is considered the unofficial lingua franca of the country (Egbokhare 2021). The language is classified as a pidgin-creole, as it has more attributes in common with creoles than pidgin (Bakker 2008).

All the dataset presented in this work are in phonetic transcription. Our Dagaare dataset primarily comes from the intuition of the second author, who is a speaker of the language and supplemented with examples from Angsongna (2023) and Ali et al. (2021). The Nigerian Pidgin data set is from Akinbo (2025), Faraclas (1984, 2002), and the first author who is a speaker of both Yorùbá and Nigerian Pidgin. In the next subsections, we present aspects of the languages that are directly relevant to the discussion in this work.

Section 2.1: Tones

The majority of West African languages, including Dagaare and Nigerian Pidgin, have tone, which means pitch distinguishes lexical or grammatical meanings in these languages (Yip, 2002). Dagaare contrasts two tones, namely high and low, as illustrated in (1i). The tones can cooccur in any other. Similarly, Nigerian Pidgin contrasts high and low tones, as illustrated in (1ii). Nigerian Pidgin has a phrase-final lowering of a high tone (see Faraclas 2002).

(1). Tonal minimal pairs and cooccurrence

	i. Dagaáare		ii. Nigerian Pidgin		
a.	H	dá	‘blow (wind)’	fɔ	‘four’
	L	dà	‘buy’	fɔ̃	‘for’
b.	HH	pógó	‘woman’	kóndó	‘baton’
	HL	jírì	‘house’	mágà	‘foolish person’
	LH	wírí	‘horse’	kòlò	‘crazy’

As shown in the examples, high tone is marked with an acute accent and low tone with a grave accent. The tones can freely cooccur with each other. All the Dagaare and Nigerian Pidgin presented in this work are fully marked for tone.

In addition to lexical meaning, the tones also play crucial role in the iconic properties of ideophones. For example, ideophones that express low magnitude tend to have a high tone and those that express high magnitude tend to have a low tone, as illustrated in (2). This pattern of iconicity depicts the inverse relations between the magnitude of the vibrating body and its natural acoustic frequency (Ohala 1984). Similar properties are found in ideophones of other languages around the world (see Voeltz and Kilian-Hatz 2001).

(2) Magnitude iconicity

a.	Dagaáare	bɔ̃ŋgɔ̃lɔ̃ŋ	‘unwieldly big, heavy and round (e.g., log)’	bɔ̃ŋgɔ̃lɔ̃ŋ	‘round, light/not extremely big’ and light’
b.	Nigerian Pidgin	bémbé	‘small’	bèmbè	‘big’

Iconicity is not limited to lexical patterns in both languages but also plays crucial roles in the derivational morphology of the language. In the next section, we will present another pattern of iconicity and its role in derivational morphology. The pattern forms the empirical basis of our exploration in this work.

Section 3: Distinguishable identity

A crosslinguistic pattern of iconicity involves expressing semantic notions such as zigzag, fluctuation, or nonconformity by associating different prosodic features with adjacent linguistic units. Examples of this involve vowel-height disharmony of internally reduplicated words such [flɪmflæm] ‘zigzag’, [pɪʃpɑːʃ]

“pishposh (nonsense)” in English, [jin'jan] “yinyang” in Mandarin, [habhob] “careless, without directed effort or attention” and [lablob] “meaningless talk” in Tibetan (Yliniemi 2024), [plisti-plasta] “synchronized with up/down hand movement” and [zipirti-zaparta] ‘left, right, and centre’ in Basque (Ibarretxe-Antuñano 2017). In tone languages, this pattern of iconicity mostly involves a phonological form and its reduplicant bearing different tone melody. Examples of these are [wògò-wógó] “zigzag” and [jàmǎ-jámǎ] “messy, disorder” from Nigerian Pidgin (Akinbo and Chiemezie 2024), [wógò-wògò] “zigzag” and [jámǎ-jámǎ] “messy, disorder” from Yoruba, [rúrùrù] “staggering” [góbágòbàgóbá] “crippled” from Bini (Wescott 1973).

Yliniemi (2024) captures the meanings of the ideophones as expressing that instantiations or subcomponents of an entity are similar but different along a specific dimension (e.g., time, space, mass and energy). Akinbo (2025) categorize the meaning of this subset of ideophones as expressing irregularity, but Fordyce (1983) and Ibarretxe-Antuñano (2017) note that not all meanings of the ideophones in this group align with the semantic notion of irregularity. Based on insights from the findings of Yliniemi (2024), Akinbo and Chiemezie (2025) categorize the meanings of these ideophones as *distinguishable identity*.² Associating different feature values (or tone melodies) with similar phonological elements in the expression of distinguishable identity suggests a form-meaning resemblance, hence the iconicity of ideophones expressing distinguishable identity. We will show that this pattern of iconicity is found in Dagaare and Nigerian Pidgin.

Section 3.1: Distinguishable identity in lexical ideophones in Dagaare

The ideophones that express distinguishable identity in Dagaare have reduplication, such that a phonological form and its reduplicant bear different tones. In (3), we present examples of these ideophones.

(3) Distinguishable identity: Lexical ideophones in Dagaare

- a. gòlòŋgólòŋ ‘zigzag/meandering/winding (e.g., path/road)’
- b. vǎlǎnvǎlǎŋ ‘lanky/ungracefully tall and thin’
- c. bámbáŋ ‘unbearably hot (e.g., the sun)’
- d. ñàràñàrà ‘rough (e.g., surface)’

² The concept of distinguishable identity is a natural phenomenon which is often discussed in classical physics.

These ideophones aptly capture the same concept in physics, which is that identical quantum or classical particles are individuated along a physical dimension (Dieks and Lubberdink 2022).

- e. ʈíntʃáŋ ‘silent and confused’
 f. kpáŋkpáŋ ‘unbearably hot’
 g. póm্পón ‘extremely and unbearably stinky’

In (3a–b), the phonological form bears a low tone on its TBUs, while the reduplicant carries a high tone on its TBU. The third type of ideophone involves forms that bear a high tone on their TBUs. Some of these ideophones exhibit segmental disharmony, where the segments differ in their values for the feature [sonorant]. The vowel height disharmony observed between the phonological form and its reduplicant in (3e) indicates that phonological disharmony, as a property of distinguishable ideophones, is not limited to consonants but also extends to vowels. Another pattern of phonological disharmony attested in this subset of ideophones in Dagaare is the co-occurrence of obstruents and sonorants. In other words, Dagaare ideophones expressing distinguishable identity often show segmental disharmony involving the features [\pm sonorant] or [\pm high].

The tone melody and reduplication of distinguishable ideophones in Dagaare are closely similar to those of Nigerian Pidgin. Using the examples in (4), we illustrate this with the examples from Nigerian Pidgin.

(4) Distinguishable identity: Lexical ideophones in Nigerian Pidgin

- a. dzàgbàdʒántís ‘disorderly conduct’
 dzàgàdʒágá ‘haphazard’
 jàmàjámá ‘disorder’
 kàtàkátá ‘chaos’
 kròkró ‘rash’
 wùrùwùrú ‘fraud/roughness’
- b. màgòmágó ‘fraud’
 wògòwógó ‘crooked’
 ròfòrófó ‘mashy’

As expected, the lexical ideophones expressing distinguishable identity in Nigerian Pidgin are reduplicated forms. In this case, the phonological form bears a low tone on all its TBUs and the reduplicant bears a high tone on all its TBUs, as shown in (4). In addition to dissimilar tones on phonologically identical sequences of segments, the consonants in this set of ideophones tend to disagree in the [sonorant].

In general, the lexical ideophones expressing distinguishable identity tend to be in reduplicated forms, where a phonological form and its reduplicant are disharmonic in terms of their tone melodies. The ideophones might also contain segmental disharmony. As indicated earlier, the association of opposite feature values to similar phonological elements in the expression of distinguishable identity is a form of iconicity. In the next section, we will show that this pattern of iconicity and ideophones also play a crucial role in the derivational morphology of the two languages.

Section 3.2: Deriving distinguishable identity through tonal alternation

Section 3.2.1: Nigerian Pidgin

Nigerian Pidgin exhibits a pattern of derivational morphology that involves tonal alternation intertwined with reduplication. The examples in (5) illustrate the morphophonological and semantic relationships between reduplication and tonal alternation.

(5) Deriving distinguishable identity from verbs

a.	bórò	‘borrow’	kpètè	‘sound of mushiness’
b.	bórò-bórò	‘repeatedly’ borrowed’	kpèkpè-kpètè	‘intensely mushy’
c.	bòrò-bóró	‘borrowing incessantly’	kpèkpè-kpété	‘muddy or murky sanded water’

As illustrated in (5a), Nigerian Pidgin expresses iteration, plurality, or intensity through verb repetition. To indicate that the iterated event or its subcomponents occur in a dispersive or disorderly manner, the base form bears a low tone on all its TBUs, while the repeated form bears a high tone on all its TBUs. The meaning of the derived form can convey either a positive or negative affective value, depending on the specific word or the speaker's intention. This pattern of derivational morphology is not limited to the examples in (6) but also applies to other verbs in the language. Consider the examples in (6–7), which are organized according to syllable structure.

(6). Deriving distinguishability from verbs

	Root	Root-Root	Root-Root.DID	
a.	plé	plê-plê	plè-plé	‘play’
	tjé	tjê-tjê	tjè-tjé	‘tear’
b.	fóló	fólò-fólò	fòlò-fóló	‘follow’
	bóró	bórò-bórò	bòrò-bóró	‘borrow’
	kárí	kárí-kárí	kàrí-kárí	‘carry’
	tíé	tíè-tíè	tìè-tíé	‘tear’
	kópí	kópì-kópì	kòpì-kópí	‘copy’
	kóná	kónà-kónà	kònà-kóná	‘corner’
c.	hálà	hálà-hálà	hàlà-hálá	‘yell’
	nárò	nárò-nárò	nàrò-náró	‘narrow’
	kráà	kráà-kráà	kràà-kráá	‘cry’
	hévì	hévì-hévì	hèví-héví	‘heavy’
d.	wáká	wáká-wáká	wàkà-wáká	‘walk’
	dètí	dètí-dètí	dèti-détí	‘dirty’
e.	brék	brêk-brêk	brèkì-brékí	‘break’
	lúk	lûk-lûk	lùkù-lúkú	‘look’
	lík	lîklîk	lîkì-líkí	‘lick’
	púʃ	pûʃ-pûʃ	pùʃì-púʃí	‘push’

The expression of iteration through word repetition does not involve any tonal alternation, except for the lowering of the final high tone in some words. As shown in (6), the expression of distinguishable identity follows the same pattern of tonal alternation, regardless of the inherent tone or syllable structure of the verb. The derivation of distinguishable identity from closed-syllable verbs involves the insertion of a high

vowel at the end of the verb, as shown in (6e). In this case, the vowel [i] is inserted when the preceding consonant is palatal or post-alveolar, while [u] is inserted when the preceding vowel is [u] or the preceding consonant is labial. In all other contexts, the inserted vowel is [i]. This additional vowel is also copied in the expression of distinguishable identity.

(7). Deriving distinguishability from ideophones

Root	Root-Root	Root-Root.DID	
a. jàkàtà	jàkàtà-jàkàtà	jàkàtà-jákátá	‘falling flat’
b. dʒàbùràtà	dʒàbùràtà-dʒàbùràtà	dʒàbùràtà-dʒábúrátá	‘plentiful’
gbàgàdà	gbàgàdà-gbàgàdà	gbàgàdà-gbágádá	‘wide open
bèrèkètè	bèrèkètè-bèrèkètè	bèrèkètè-bérété	‘plentiful’
c. gídìgbà	gídìgbà-gídìgbà	gídìgbà-gídígá	‘standing firm’
d. vjà	vjà-vjà	vjà-vjá	‘zoom off’
tàwàj	tàwàj-tàwàj	tàwàj-táwáj	‘sound of slap’

The derivation of distinguishable identity targets not only verbs but also ideophones in the language, as illustrated by the ideophone examples in (7). In fact, the categorization of these ideophones as expressing distinguishable identity is particularly clear in this context. For instance, the lexical ideophone in (7a) describes a flat shape, while the derived distinguishable form expresses that a shape is distinguishably flat. Similarly, the derived distinguishable form in (7b) expresses distinguishably high magnitude. The derived distinguishable form mostly have affective meaning. For example, [lùkù-lúkú] “looking incessantly” is generally considered an insult, whereas [dʒàbùràtà-dʒábúrátá] “dispersively and unfathomably abundant” can be either positive or negative, depending on the referent.

In general, Nigerian Pidgin derives distinguishable identity through a pattern of alternation targeting reduplicated forms derived from ideophones and, mostly, verbs. Specifically, the base form bears a low tone on all its TBUs, while the reduplicant bears a high tone on all its TBUs. In the next section, we will show that a similar pattern of derivational morphology exists in Dagaare.

Section 3.2.2: Dagaare

Dagaare derives distinguishable identity only from ideophones through reduplication and tonal alternation on both the base and the reduplicant. However, the tonal alternation only applies to ideophones with low tone. In (8), we illustrate this derivational morphology.

(8) Words with various tones

	Root	Root-Root.DID	
a.	fàlàlà	fàlàlà-fálálá	‘long, smooth and straight (e.g., tree)’
	fàràtà	fàràtà-fárátá	‘very tall and straight’
	bìlbàlàà	bìlbàlàà-bìlbáláá	‘extremely huge (lying down)’
	zìglèṅ	zìglèṅ-zígléṅ	‘huge and heavy’
	vàrikpàrà	vàrikpàrà-vàrkpàrá	‘very messy’
	làṅgbàràṅ	làṅgbàràṅ-làṅgbàráṅ	‘heavy sound (by falling of a long object, e.g., stick/ladder)’
	dùnfùrùṅ	dùnfùrùṅ- dùnfùrùṅ	‘huge and puffed up’
	bòròtò	bòròtò-bòròtò	‘large and round (e.g., bowl)’
b.	sémbéḷéṅ	sémbéḷéṅ- sémbéḷéṅ	‘so lean/thin and tall’
	kíléṅ	kíléṅ -kíléṅ	‘sound of a bell’
	dzírímíníí	dzírímíníí- dzírímíníí	‘very lean/thin’
	fánáná	fánáná- fánáná	“very clean”

As shown in (8a), to derive distinguishable identity, the low tone ideophone is reduplicated, such that the reduplicant surfaces with a high tone on all its TBUs. When a high tone ideophone is reduplicated, the ideophone and its reduplicant do not undergo any tonal alternation, as shown in (8b).

The meaning of the derived form involves multiple events or entities occurring in an indefinite manner – the events or entities may be ordered in a particular manner and/or location or disorderly scattered all over. For example, the form [fàlàlà-fálálá] “distinguishably long, smooth and straight”, which is derived from [fàlàlà] “long, smooth and straight”, expresses that there are intensely long, smooth and straight

entities that are distributed such that they occupy distinguishable spaces (or times)”. Similarly, the form [zìglèŋ-zìgléŋ], derived from [zìglèŋ] “heavy,” expresses the presence of multiple very heavy entities. The meaning of the derived form may carry either positive or negative affective value, depending on the context and intention of the speaker.

The morphophonology of the derived distinguishable identity in Dagaare is similar in the sense that both involve base and reduplicant, which are assigned different tones. The derivational morphology modifies the core meaning of the ideophones with semantic notions which can be captured as distinguishable identity. In both languages, the derived forms have affective meanings and plurality as their quantificational properties. In the next section, we account for the pattern alternation in the derivation of the distinguishable identity.

Section 4: Grammatical tones and derived distinguishable identity

The derivation of distinguishable identity in both Nigerian Pidgin and Dagaare consistent with grammatical tone, which is tonal operations that is limited to morphosyntactic contexts (Lionett 2022). To account for the tonal alternation in the derivation of distinguishable identity, we briefly discuss the components of grammatical tones and the two broad categories of grammatical tone.

Rolle (2018) identifies two broad categories of grammatical tones. In the first category, inflectional or derivational morphology is solely expressed through tonal operation (Ukaegbu 2017). As an example of *morphological* grammatical tone, consider the Berom dataset in (9). The language marks plural by replacing all the lexical tones of a noun with a high tone.

(9) Plural marking in Berom (Ukaegbu 2017:241)

	Singular		Plural	
Low-Low	ʃèhè	High	ʃéhé	‘root’
Low-High	jàná	High	jáná	‘louse’
High-Low	tʃâŋ	High	tʃán	‘relation’

The second category of grammatical tone occurs at the phrase level, as illustrated with the Nkoroo example in (9). In Nkoroo, the associative construction is formed by two nouns, where the second noun undergoes tonal alternation regardless of its tone in isolation. When the final tone of the first noun is low, the second noun surfaces with a low tone on all its TBUs, as shown in (10b). When the final tone of the first noun is

high, the second noun surfaces with a high tone on its initial TBU and a low tone on all other TBUs. The first noun does not undergo any alternation.

(10) Associative construction in Nkoroo (Akinlabi, Connell, & Obikudo 2009)

	N1	N2	N1's N2	
a.	ánáná	t̀kù	ánáná t̀kù	'sheep's child'
	námá	dí!mé	námá dí!mè	'animal's hair'
	kíní	òkpò	kíní ókpò	'human back'
b.	dímè	̀m̀gbòlì	dímè ̀m̀gbòlì	'palm nut'
	́árà	̀m̀gbá	́árà ̀m̀gbà	'arm bone'
	òkpò	̀m̀gbá	òkpò ̀m̀gbà	'backbone'

There are two main accounts of grammatical tones. One approach is that the trigger of grammatical tone is a segmentally null morpheme with only tone melody as its exponent. Morphological grammatical tone, such as the plural marking in Berom, is considered the effect of a segmentally null plural marker with only tone melody as its exponent. The trigger of phrasal grammatical tone can also be considered a morpheme with only tone melody as its exponents (Rolle 2018).

The alternative approach to *phrasal* grammatical tone or tune is that a syntactic construction or complement triggers a tonal operation (McPherson and Heath 2016, Rolle 2018). Using the Nkoroo example in (10) as an illustration, Rolle (2018) suggests that the associative construction can be considered the trigger of the grammatical tone which targets the nominal head (i.e., N2) of the construction. Given that the final high tone of the nominal modifier (i.e., N1) causes the nominal head to surface with a high-low melody, it can be considered the sponsor of the grammatical tone. As proposed by Rolle (2018), the concept of sponsor and trigger of grammatical tone are similar and be conflated into one in some patterns but may be differentiated in cases such that of Nkoroo. While the sponsor and trigger can be considered two separate entities in Nkoroo, they can be conflated in some cases, considering the sponsor and trigger of grammatical tone, as defined by Rolle (2018), are conceptually similar. For both the Berom and Nkoroo examples above, the *valuation window* of the grammatical tone is all TBUs of the host, which is also the

target. See section 2.1.4 of Rolle (2018) for more details on the components of the grammatical tone, namely *target, triggers, sponsor, host and evaluation window*.

The derivation of distinguishable identity in both Nigerian Pidgin and Dagaare is consistent with morphological grammatical tone, as they involve word formation. In the next section, we account for the derivation of distinguishable identity.

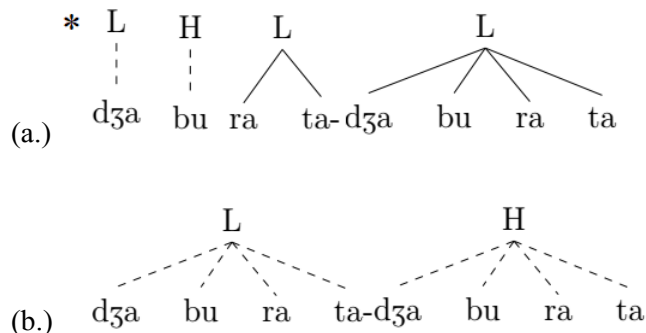
Section 4.1: Nigerian Pidgin

We account for the source of tonal alternation in the derivation of distinguishable identity from ideophones. Before presenting an analysis of derivational morphology in Dagaare, we first examine the pattern in Nigerian Pidgin. The description of this pattern indicates that tonal alternation applies only to a derived reduplicated form expressing the semantic notions of plurality, intensity, or iteration. Since the base and reduplicant are completely segmentally indistinguishable, we assume that the initial copy of the reduplicated ideophone (or, analogously, the verb) is the base, while the second copy is the reduplicant, following Faraclas (1984) and Akinbo (2025). Reduplication without tonal alternation—except for final lowering—is considered a strategy for expressing iteration, intensity, or plurality. Akinbo (2025) interprets reduplication in the expression of iteration as morphological doubling of a phrase, given that it involves the phrase-final lowering found in the language. In this work, we adopt the same account.

Our account is that the derivation of distinguishable identity involves a morphological grammatical tone, considering that the derivation of distinguishable identity from the form expressing iteration (analogously plurality) only involves the low-high tonal alternation on the base and reduplicant, respectively. The trigger of the grammatical tone is considered a segmentally null morpheme with only a sequence of low-high melody. In this case, the linear order is considered to be specified in the input. The target of the grammatical tone is the derived reduplicated forms.

The realization of the high and low tones of the grammatical tone on the base and reduplicant is straightforward in reduplicated forms derived from open syllable verbs, if we take into account that the language restricts the occurrence of low-high contour to question formation (see Faraclas 2002). Thus, one might argue that the realization of the low and high tones of the grammatical tone is due to the restriction of the low-high contour.

(11) Deriving distinguishable identity from [dʒàbùràtá-dʒàbùràtá] “iteratively abundant”



To better establish the host of the grammatical tone of the distinguishable marker, we have to look at reduplicated forms derived from verbs with more than one syllable, such as the example in (###). In this instance, the high and low tones of the grammatical tone could have been realized on either the base or reduplicant, such as the unattested form in (11a). The association of the grammatical tone is indicated by the dotted line. The attested form, which is presented in (11b), indicates that each tone of the grammatical tone melody is realized on a root morpheme. This suggests that a root morpheme is the host of each tone of the grammatical tone. Akinbo (2025) formalizes the realization of each tone, using a set of constraints similar to those in (12). The constraints require the tone of the distinguishable marker to have a correspondent at the leftmost and rightmost TBUs, a root morpheme, such as the conditions. Due to phonetic viability or grounding, the tone is also realized on the medial TBU. In other words, the realization of the tone on a medial TBU as a result of adjacency and precedence relations (Archangeli & Pulleyblank 1994). In this case, the low tone (analogously, the high tone) of the grammatical tone only has to be realized on every TBU of one root morpheme to fully satisfy the conditions.

(12) Phonological conditions on the tone of a distinguishable marker (following Finley 2009).

- (a) T-Anchor-DST-Left: the low tone of a distinguishable morpheme must align with the leftmost TBU of a root morpheme.
- (b) T-Anchor-DST-Right: the low tone of a distinguishable morpheme must align with the rightmost TBU of a root morpheme.

That association of the low tone to the base and the high tone to the reduplicant preserves the precedence and linear relationship between the two tones of the grammatical tone melody. The account of tonal alternation in Nigerian Pidgin can be extended to the pattern of tonal alternation and reduplication in Dagaare. In the next section, we present an account of tonal alternation and reduplication in Dagaare.

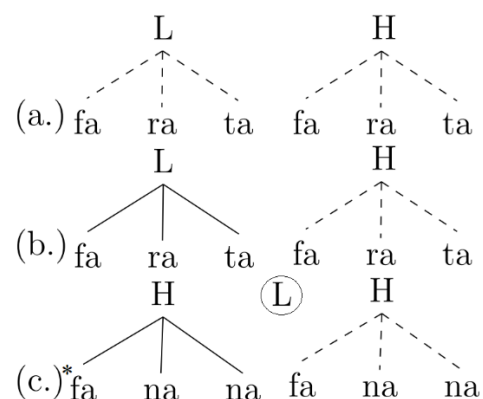
Section 4.2: Dagaare

The discussion in section 3.2.2 shows that Dagaare derives a distinguishable identity through morphological doubling and tonal alternation. Specifically, when a low tone ideophone is reduplicated, the reduplicant bears a high tone on all its TBU but the base does not undergo any alternation. However, the reduplication of a high tone ideophone in the expression of distinguishable identity does not result in any tonal alternation. We will account for the tonal alternation before turning the form without a tonal alternation. Given that the tonal alternation is restricted to the context of expressing a distinguishable identity, it can also be considered a grammatical tone. Now, we need to account for the trigger of the grammatical tone. One account is that the reduplicant is a distinguishable marker which triggers the grammatical tone. Under this account, the meaning of the distinguishable marker also includes plurality. The reduplicant would also have to serve as the host of the grammatical tone, given that only the reduplicant undergoes the tonal alternation.

Another possible account is that the reduplication expresses plurality, and the distinguishable marker is a segmentally null morpheme with only tone as its exponent. There is robust evidence for this account, as the association of reduplication with a plurality of an entity (and analogously event) is the most widely attested pattern of iconicity. One can even argue that all documented languages have this pattern of iconicity (see Hurch 2005, Inkelas 2008). Notably, the morphological base of the distinguishable marker in Nigerian Pidgin is a reduplicative pattern expressing plurality. Under this account, the derivation of distinguishable identity in Dagaare is comparable to that of Nigerian Pidgin. To unify the account of the pattern in both languages, our account is that the reduplication marks plural, and the tonal alternation is triggered by a segmentally null morpheme with tone as its exponent. Specifically, the segmentally null distinguishable marker triggers the grammatical tone. Just as in the derived distinguishable forms in Nigerian Pidgin, the target of the grammatical tone in Dagaare is the base-reduplicant composite.

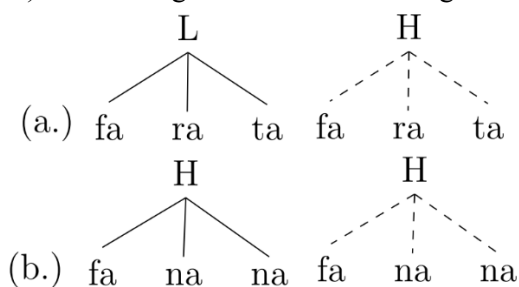
We now turn to the tonal exponent of the distinguishable marker. There are two main possibilities. One possible account is that the exponent of the grammatical tone is a sequence of low and high tones, which every TBU of the ideophone and its reduplicant are their respective valuation windows. The high tone would have to be hosted by the reduplicant, but it would remain ambiguous whether the low tone is realized on the ideophone or not, as shown in (13a–b). For distinguishable forms derived from a high-tone ideophone, it would be unclear whether the tone of the reduplicant or the ideophone is being overwritten. If the low tone of the grammatical tone were to float instead of being deleted, as illustrated the encircle L in (13c), we would expect the high tone on the reduplicant to be downstepped. The fact that this is not observed suggests that the grammatical tone does not consist of a low-high tone sequence.

(13). The distinguishable marker as a grammatical tone with only a low high tone exponent



The other possibility is that the exponent of the distinguishable marker is a high tone. Under the account that the exponent of distinguishable marker is a high tone, the host of the grammatical tone is the reduplicant. The valuation window of the grammatical tone is every TBU of the host. When the distinguishable identity is derived from a high tone ideophone, it is ambiguous whether the grammatical tone overwrites the reduplicant or not.

(14). The distinguishable marker as a grammatical tone with only a high tone exponent



As mentioned earlier, the realization of the grammatical tone melody in Nigerian Pidgin can be formalized, using the constraints in (12). Due to the similarities between the derivation of distinguishable forms in both languages, the account of Nigerian Pidgin can also be extended to Dagaare. However, the formalization cannot explain the similarity between the structural similarities between the derived distinguishable forms and the lexical ideophones that express the same semantic notions in the languages. In the next section, we compare the morphophonological properties of the derived words and lexical ideophones expressing distinguishable identity in the two languages.

Section 4:3 Iconicity as a motivation for the valuation window of the grammatical tones

We motivate the realization of the grammatical tone in this section by comparing derived distinguishable forms to the lexical ideophones that express similar meanings in the respective language. To this end, we first revisit the property of the lexical ideophones. The discussion in Section 3 indicates that lexical

ideophones that express distinguishable identity are typically reduplicated, and a phonological form and its copy are assigned opposite values for a specific phonological feature. For tone languages, such as Nigerian Pidgin and Dagaare, every TBU of a phonological form and its copy are assigned different tone melodies respectively. Specifically, for the lexical ideophones expressed in Nigerian Pidgin, every TBU of a phonological form bears a low and every TBU of its copy bears a high tone, as illustrated with the two examples in (13). Similarly, for the derivation of distinguishable identity from a low-tone ideophone, the ideophone and its repetition have opposite values for a feature. The association of opposite feature values with similar phonological forms to express that an event (or, analogously, an entity) is distinguishable from other similar events constitutes a form-meaning resemblance. In other words, the phonological disharmony in the expression of distinguishable identity is a form of iconicity. However, the derivation of distinguishable forms from a high tone ideophone in Dagaare suggests that not all instances of this derivation morphology is iconic in the language.

(13) Lexical ideophones expressing distinguishable identity

a. Nigerian Pidgin

dʒàgàdʒágá ‘haphazard’

wògòwógó “zigzag”

b. Nigerian Pidgin

gòlòŋgólòŋ “zigzag”

gòròmàgórámá swigly writing

The derived distinguishable forms are comparable to the lexical ideophones expressing the same meaning in Dagaare and Nigerian Pidgin. The only difference is that the polar tone melody and reduplication are inherent properties of lexical ideophones in both languages, whereas they serve as properties of pluractional (or plural) and distinguishable marking morphemes, respectively. Just as with the lexical ideophones, the realization of the low and high tones of the distinguishable can be considered a form of iconicity. Based on this similarity, we can say that the iconicity motivates the host of the grammatical tones in the language. In the next section, we explore the implications of the grammatical tones and their phonological conditions.

Section 5: Discussion and Conclusion

We have described and analyzed the derivation of distinguishable identity from ideophones in Nigerian Pidgin and Dagaare. The discussion shows that the two languages derive a distinguishable identity by assigning a low tone to every tone-bearing unit of an ideophone and a high tone to those of its reduplicant. The tonal alternation is the effect of a segmental null morpheme with only a sequence of low and high tones as its sole exponent in Nigeria but a high tone in Dagaare. Thus, the distinguishable marking involves a grammatical tone, which targets ideophones and their respective reduplicants in the two languages. The valuation windows for the low and high tones of the distinguishable marker in Nigerian Pidgin are every TBU of the ideophones and the reduplicant, respectively, whereas the valuation window for the grammatical H tone of the distinguishable marker in Dagaare is the reduplicant. The target of the grammatical tones and their host are consistent with a crosslinguistic pattern of iconicity, which involves associating different feature values to phonologically similar segments in expressing that two elements are identical but distinguishable. In this section, we explore the implications of the pattern for linguistic theory.

The derivation of distinguishable identity from ideophones suggests that grammatical tones do not only target verbs, nouns and other prosaic word classes (see Rolle 2018) but also ideophones. As most documented ideophones across languages rarely bear derivational and inflectional morphology (Andrason and Bernd, 2023; Heine, 2023), the derivation of distinguishable identity presents a rare case of derivational affixes targeting ideophones. The fact that both ideophones and verbs undergo the same derivational morphology suggests that ideophones are integrated into the grammar of Nigerian Pidgin. We can also extend this perspective to the derivation of distinguishable identity in Dagaare. The iconicity of the distinguishable marker and their phonological conditions not only challenges the traditional perspective that iconicity occurs at the margin of grammar (Saussure 1974, Hockett 1960, Zwicky and Pullum 1987), but also supports the emerging perspective that both iconicity and arbitrariness play complementary roles in grammar (Perniss et al. 2010, Dingemanse 2018, Dingemanse et al 2015).

In cases where the iconic property of a lexical ideophone is a tone, the grammatical tone of distinguishable marker can overwrite such a iconic tone. Given that the realization of the grammatical tones in the languages are also motivated by iconicity, the derived form would gain a new pattern of iconicity. Thus, the derivation of distinguishable forms from ideophones has implications for the perspective that the degree of grammatical integration inversely correlates with the degree of expressiveness (Dingemanse and Akita 2017). This perspective predicts that ideophones that are more grammatically integrated may lose their iconic properties. However, this prediction does not hold for the derived distinguishable forms,

given that the tone melody and phonological conditions of the distinguishable marker are iconic. In addition to iconicity, affective meaning is another property of expressive property of the derived distinguishable marker. Therefore, the derivation of distinguishable forms supports the view that the property of the integrator, rather than the process of integration, determines the relationship between expressiveness and grammatical integration (Akinbo 2025), given that the iconicity of a grammatical property of a distinguishable marker.

To conclude, we have shown that ideophones are integrated into the derivational morphology of Nigerian Pidgin and Dagaare, particularly in the derivation of distinguishable identity. The pattern indicates the property of the integrator determines the relationship between expressiveness and grammatical integration. Considering this pattern of non-concatenative morphology is underdocumented, the derivation of distinguishable identity contributes to the typology of grammatical tones, with iconicity as their morphophonological property.

Reference

- Akinbo, Samuel Kayode & Bulkaam, Michael. (2024). Iconicity as the motivation for the signification and locality of deictic grammatical tones in Tal. *Glossa: a journal of general linguistics*, 9(1).
- Akinbo, Samuel Kayode & Chiemezie, Onyinye Anulika. (2025). Iconicity of grammatical tone polarity in the expression of distinguishable identity. Unpublished Manuscript.
- Akinbo, Samuel Kayode & Ekiugbo, Philip Oghenesuowho. (2024). Iconicity as the motivation for morphophonological metathesis and truncation in Nigerian Pidgin. *Open Linguistics*, 10(1), 20240013
- Akinbo, Samuel Kayode. (2021). Featural affixation and sound symbolism in Fungwa. *Phonology*, 38(4), 537-569.
- Akinbo, Samuel Kayode. (2025). Iconicity of grammatical tonal polarity and reduplication in Nigerian Pidgin. *Journal of Linguistics*, 1-26.
- Akinlabi, Akinbiyi, Bruce Connell, & Ebitare Obikudo. 2009. The Tonal Structure of Nkoroo Nominal Constructions. In *Language Development beyond Borders*, 447–66.
- Akita, Kimi and Mark Dingemans. 2019. Ideophones (mimetics, expressives). In *Oxford research encyclopedia of linguistics*, ed. Mark Aronoff. Oxford, UK: Oxford University Press. URL doi:10.1093/acrefore/9780199384655.013.477.
- Alderete, John and Alexei Kochetov. (2017). Integrating sound symbolism with core grammar: The case of expressive palatalization. *Language* 93(4): 731–766.

- Alderete, John, and Alexei Kochetov. (2017). Integrating sound symbolism with core grammar: The case of expressive palatalization. *Language*, 93(4), 731-766.
- Ali, Mark, Scott Grimm, and Adams Bodomo. (2021). A dictionary and grammatical sketch of Dagaare (Volume 4). Language Science Press.
- Alpher, Barry. (2008). Ideophones in interaction with intonation and the expression of new information in some indigenous languages of Australia. In *Ideophones* (pp. 9-24). John Benjamins Publishing Company.
- Andrason, Alexander and Heine Bernd. (2023). On the grammaticalization of ideophones. In *Different slants on grammaticalization*, ed. Sylvie Hancil and Vittorio Tantucci. John Benjamins: Amsterdam/Philadelphia, 237–262.
- Angsongna, Alexander and Samuel Akinbo. (2022). Dàgáàrè (Central). *Journal of the International Phonetic Association*, 52(2), 341-367.
- Angsongna, Alexander. (2023). Aspects of the morphophonology of Dagaare. PhD Thesis, University of British Columbia.
- Archangeli, Diana & Pulleyblank, Douglas. 1994. *Grounded phonology*. Cambridge, MA: MIT Press.
- Bakker, Peter. (2008). Pidgins versus creoles and pidgincreoles. In Kouwenberg, Silvia & Singler, John Victor (eds.), *The handbook of pidgin and creole studies*, 130–157. West-Sussex: Wiley Blackwell.
- Childs, G Tucker. (1988). The phonology of Kisi ideophones. *Journal of African Languages and Linguistics* 10(2): 165–189.
- de Saussure, Ferdinand. (1916). *Cours de linguistique générale*. Paris: Payot & Cie.
- de Saussure, Ferdinand. 1974. *Course in general linguistics*. London: Fontana.
- Dieks, Dennis, and Andrea Lubberdink. 2022. Identical quantum particles as distinguishable objects. *Journal for General Philosophy of Science*, 53(3), 259-274.
- Dingemane, M., Blasi, D. E., Lupyan, G., Christiansen, M. H., & Monaghan, P. (2015). Arbitrariness, iconicity, and systematicity in language. *Trends in Cognitive Sciences*, 19(10), 603-615.
- Dingemane, Mark, and Kimi Akita. (2017). An inverse relation between expressiveness and grammatical integration: On the morphosyntactic typology of ideophones, with special reference to Japanese. *Journal of Linguistics*, 53(3), 501-532.
- Dingemane, Mark. (2011). *The meaning and use of ideophones in Siwu*. PhD Thesis, Radboud University, Nijmegen.
- Dingemane, Mark. (2018). Redrawing the margins of language: Lessons from research on ideophones. *Glossa: a journal of general linguistics*, 3(1).

- Dingemanse, Mark. 2019. Ideophone as a comparative concept. In *Ideophones, mimetics, and expressives*, ed. Kimi Akita and Prashant Pardeshi, vol. 16. Amsterdam: John Benjamins, 13–33.
- Egbokhare Francis O (2021) The accidental lingua franca: the paradox of the ascendancy of Nigerian pidgin in Nigeria. In: Akande AT and Salami O (eds) *Current Trends in Nigerian Pidgin English: A Sociolinguistic Perspective*. Berlin: De Gruyter Mouton, pp. 67–114
- Elimelech, Baruch. 1976. A tonal grammar of Etsako. *UCLA Working Papers in Phonetics* 35.
- Faraclas, Nicholas G. (1984). Rivers pidgin english: tone, stress, or pitch-accent language? *Studies in the Linguistic Sciences* 14(2): 67–76.
- Faraclas, Nicholas G. (2002). *Nigerian pidgin*. London/New York: Routledge.
- Faraclas, Nicholas G. 2002. *Nigerian Pidgin*. London/New York: Routledge.
- Faraclas, Nicholas. 1984. Rivers pidgin English: Tone, stress, or pitch-accent language? *Studies in the Linguistic Sciences*. 14(2). 67–76.
- Faraclas, Nicholas. 2002. *Nigerian pidgin*. London/New York: Routledge.
- Finley, Sara. 2009. Morphemic harmony as featural correspondence. *Lingua* 119(3): 478–501.
- Fordyce, James F. (1983). The ideophone as a phonosemantic class: the case of Yoruba. In *Current approaches to african linguistics*, ed. Ivan R Dihoff, vol. 1. Dordrecht: Foris, 263–278.
- Harry, Otelemate G and Larry M Hyman. 2014. Phrasal construction tonology: The case of Kalabari. *Studies in Language* 38(4): 649–689.
- Heine, Bernd. (2023). *The grammar of interactives*. Oxford: Oxford University Press.
- Hockett, Charles F. 1960. The origin of speech. *Scientific American* 203(3). 88–97. DOI: <http://doi.org/10.1038/scientificamerican0960-88>
- Hurch, Bernhard, ed. 2005. *Studies on reduplication*. Berlin: Mouton de Gruyter.
- Ibarretxe-Antuñano, Iraide. (2017). Basque ideophones from a typological perspective. *Canadian Journal of Linguistics/Revue Canadienne de Linguistique* 62(2): 196–220.
- Ihemere, Kelechukwu U. (2006). “A basic description and analytic treatment of noun clauses in Nigerian Pidgin.” *Nordic Journal of African Studies* 15(3).
- Ihemere, Kelechukwu U. 2006. “A basic description and analytic treatment of noun clauses in Nigerian Pidgin.” *Nordic Journal of African Studies* 15(3).
- Inkelas, Sharon and Cheryl Zoll. 2005. *Reduplication: Doubling in morphology*, vol. 106. Cambridge, England: Cambridge University Press.
- Knoeflerle, Klemens, Jixing Li, Emanuela Maggioni, and Charles Spence. (2017). What drives sound symbolism? different acoustic cues underlie sound-size and sound-shape mappings. *Scientific Reports* 7(1): 1–11.

- Lionnet, Florian, Laura McPherson, and Nicholas Rolle. . (2022). Theoretical approaches to grammatical tone. *Phonology*, 39(3), 385-398.
- McPherson, Laura & Jeffrey Heath. (2016). Phrasal grammatical tone in the Dogon languages: The role of constraint interaction. *Natural Language & Linguistic Theory*, 34, 593-639.
- Nuckolls, Janis B. (1999). The case for sound symbolism. *Annual Review of Anthropology*, 28(1), 225-252.
- Nuckolls, Janis B. (2001). Ideophones in Pastaza Quechua. In *Ideophones*, eds. Voeltz, FK Erhard, and Christa Kilian-Hatz, 271–285. Amsterdam: John Benjamins.
- Ohala, John J. 1984. An ethological perspective on common cross-language utilization of F₀ of voice. *Phonetica*, 41(1), 1-16.
- Olson, Kenneth S and John Hajek. (1999). The phonetic status of the labial flap. *Journal of the International Phonetic Association* 29(2): 101–114.
- Perniss, Pamela, Robin L Thompson, and Gabriella Vigliocco. 2010. Iconicity as a general property of language: evidence from spoken and signed languages. *Frontiers in psychology* 1: 227.
- Salfner, Sophie. 2009. *Tone in the phonology, lexicon and grammar of Ikaan*. University of London, School of Oriental and African Studies (United Kingdom).
- Trommer, Jochen. (2023). The concatenative structure of tonal overwriting. *Linguistic Inquiry*, 55(1), 95-51.
- Ukaegbu, Nkechi M., Gideon S. Omachonu, and Benita C. Odii. (2017). An Autosegmental Analysis of Berom Tones and Tonal Processes. *Journal of The Linguistic Association of Nigeria*, 20(1).
- Voeltz, FK Erhard and Christa Kilian-Hatz, eds. (2001). *Ideophones*, vol. 44. Amsterdam/Philadelphia: John Benjamins
- Wescott, Roger W. (1973). Tonal icons in Bini. *Studies in African linguistics* 4(2): 197.
- Yip, Moira. (2002). *Tone*. Cambridge: Cambridge University Press.
- Yliniemi, Juha. (2024). Iconicity of modified reduplication in five Himalayan languages. *Linguistics of the Tibeto-Burman Area* 47(2): 161–253.
- Zwicky, Arnold M, and Geoffrey K. Pullum. 1987. “Plain morphology and expressive morphology.” In *Berkeley Linguistics Society: Proceedings of the Thirteenth Annual Meeting*, edited by Aske, Jon, Natasha Beery, Laura Michaelis, and Hana Filip, Vol. 13, p. 330–40. Berkeley, California: Berkeley Linguistics Society.