

## SPECIAL ARTICLE

### SOCIAL PATHOLOGY OF CLEFT PALATE IN THE AFRICAN: MATHEMATICAL PRECISION OF PITCH GAPS IN TRIBAL TONAL LINGUISTICS

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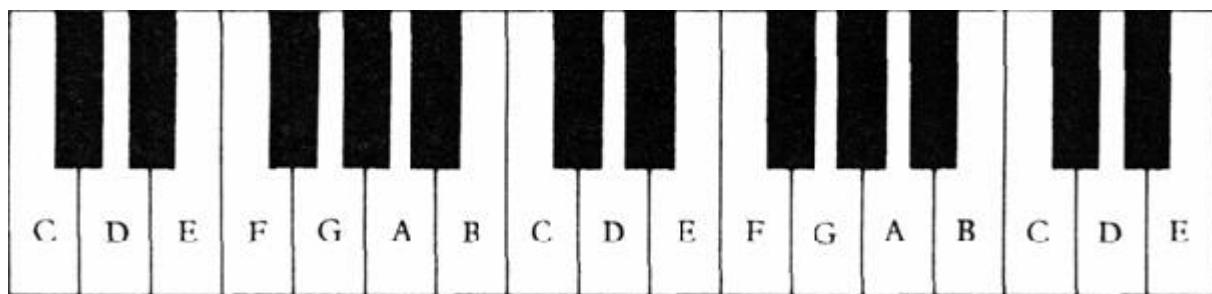
*Editor's Note:* Some of the characters in this article are in colour and best viewed in the web version

Much tribal knowledge can be shared if only we have the tools to disseminate it. Tonal linguistics is one such domain which non-natives have always struggled with. "The African" I once said "continued to admire attractive flourishes in someone else's language and wished he could say the same things the same way in his own language until suddenly it dawned on him that some expressions in his mother tongue were quite without aesthetic parallel in any other language of mortals".<sup>1</sup>

When I was a toddler one British Colonial Medical Officer, Cicely Williams, described a children's disease in Ghana and, using our tribal name *Kwashiorkor*, placed the condition in its socio-pathological context.<sup>2,3</sup> Paediatricians who later tried to define the disease without going back to the aetiology of the word, have erred in their interpretation of the pathology. They failed to realise *kwashiorkor* was a "sibling positional word"<sup>4</sup> with subsequent clinical connotations.<sup>5,6</sup>

tic gem resides. My mother tongue Krobo/Dangme/Gã, for instance, abounds in linguistic treasures, yet it is not mentioned once in David Crystal's *The Cambridge Encyclopedia of Language*.<sup>7</sup> I have devised a verifiable method of writing my mother tongue, using colour for the various pitches, the gaps between which are quantifiable to enable anybody to phonate it correctly. Normal human speech spans an octave, and the gaps between the pitches within the octave can be measured with *Tonic Solfa* precision. I have done this both in tribal tonal linguistics and in Queen's English.

Using my mother tongue (Krobo/Dangme-Gã) as an example, I define a tonal language as one whose vowel can impart up to six different meanings to the same consonant. What is written *ta* in my mother tongue has (without prolonging the vowel) 6 different meanings derived from 3 pitch positions of the vowel (high mid low) with each pitch possessing two possible quality modes, nasal and non-nasal.<sup>8-11</sup>



**Figure 1:** The piano keyboard. For C Clef, C in the middle is **d**, D is **r**, E is **m**,

Experts in linguistics have tended to interpret *tonal* linguistics with simplistic tools, and have sometimes failed to fathom the amazing depths where our linguis-

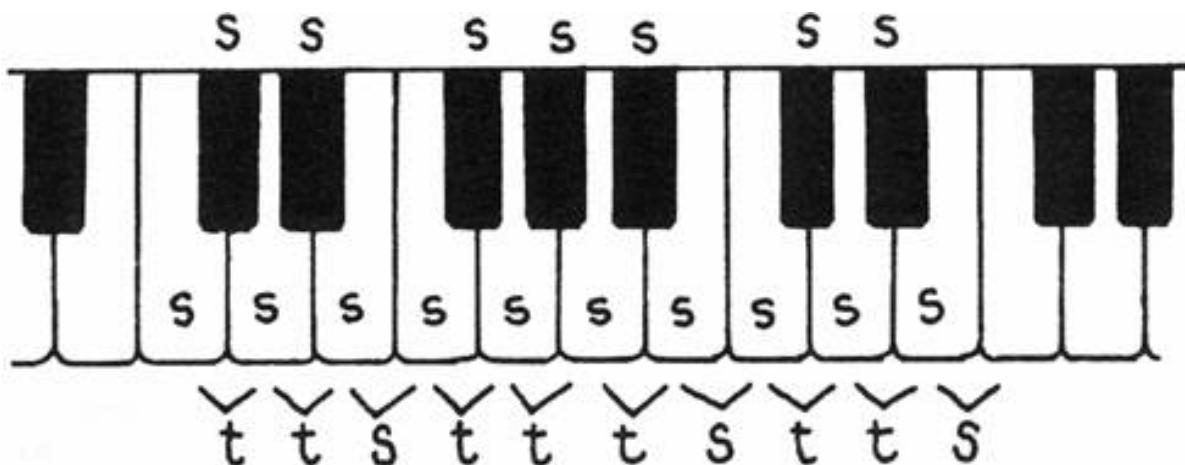
What is a Semitone? Look at the keyboard (Figure 1), or sing **d r m f s l t d**. One semitone I define simply as the 'distance' in pitch between one key on the pi-

ano/organ keyboard and the very next key black or white (Figure 2).

That mid pitch is 3 semi-tones below high pitch, which itself is a full octave above low pitch is easily demonstrable to anyone who is not tone deaf and who is familiar with the **d r m f s l t d** scale. Using 3 different pitches, try pronouncing CANADA slowly and deliberately to get *Ca* (high), *na* (mid) and *da* (low). Note the pitch of the second ‘a’ and you will find that it is 3 semi-tones below the first ‘a’ before hitting the low pitch of ‘da’. If *Ca* has the pitch of **s** on the **d r m** scale (ie G above middle C in Figure 1), then *na* becomes **m** on the scale (ie E below that G in Figure 1). If one chooses to make high pitch assume **d** (C octave above middle C) on the **d t l s f m r d** scale, then *na* (mid pitch) is **l** on that **d t l s f m r d** downward scale, – exactly 3 semi-tones below high pitch (Figures 1 & 2). One does not need a piano to prove that the gap between high and mid pitch is 3 semi-tones. Just sing the

But how can I confirm that low pitch is an octave below high pitch and vice versa? I use the musical phrase in *Handel’s Messiah* where the remarkable octaves produce exactly the *tonic solfa* pitch variations that we hear in our mother tongue. In his Alleluia Chorus, immediately after the double 5 “Alleluia”s we hear this remarkable tonic solfa phrase: **s: l t ddd: dt l: s**, then after another 4 “Alleluia”s we hear **d: r m fff: fm r: d**, which octaves are exactly what we hear phonated in the Ghanaian market when the women say **O’ sika** (“your money” in Krobo/Dangme) or **O’ shika** (in Gâ). These tribal octaves (high low high) accurately match Handel’s **ddd** and **fff** in his Alleluia Chorus.<sup>11</sup>

A 4<sup>th</sup> pitch that does not impart a different meaning to the consonant occurs rarely in the tribe just as is heard in English. My native ear enables me to hear 4 pitches in the word “Agriculture” in Queen’s English [high mid lower-mid low] where lower mid is exactly 2 semi-tones below mid pitch. In the tribe this lower-mid



**Figure 2** Tones and Semi-tones

*tonic solfa*. While this information can be ignored by those whose mother tongue is English, a language that makes perfect sense even when spoken in monotones, it is of vital importance in tribal tonal linguistics. While the context enabled my parents decipher whether *ta* meant ‘fish out’, or ‘war’, or ‘chew’, or ‘narrate’, or ‘giant ant’, or ‘palm tree’<sup>8</sup> later generations have found it increasingly difficult to read their mother tongue.

To aid Adult Education programmes in the tribe I use the usual wriggle above the vowel to distinguish nasal quality, and for pitch I have used colour, making high pitch ‘red’, low pitch ‘blue’, and mid pitch ‘green’. Thus Canada is phonated **Canada**. Green is 3 semi-tones below red, which itself is an octave above blue.

pitch (**r** [D] below **m** [E] in key C major) is merely decorative, and is often assigned to the definite article “the” when mid pitch is already occupied by a vowel. Corresponding to the pitch of ‘cul’ in **a gri cul ture** I assign this pitch the colour light green hence **a gri cul ture**, where green is 3 semi-tones below red and 2 semi-tones above light green. Blue is an octave below red for the same person in normal human speech.

Watching the following colour sequence, it becomes obvious therefore that the term **proto-agriculture** phonates exactly like the tribal **korkordeney ler for** (“the frog’s fat” in Gâ).<sup>10 11</sup> When the two terms are hummed rather than spoken, there is no acoustic pitch difference between Ghanaian and English, though the significance of pitch in the former outweighs by far

that in the latter. It is a remarkable fact that my entire Krobo/Dangme tribe has perfect mid pitch, that is to say mid pitch is locked in the brain and assigned to several words, like reserving the pitch of ***na*** in **Canada** to specific words<sup>9-11</sup>. This phenomenon is unheard of in English, and is not mentioned in David Crystal's encyclopedia.<sup>7</sup> Words like **bo** (cloth), **je** (world), **to** (keep), **yo** (hill), **ho** (honey), **gaga** (tall) are all mid pitch specific. To pronounce them with other than mid pitch gives an entirely different meaning to each word. Ability to pronounce (or rather phonate) the name of our elegant Krobo mountain **Yogaga** ("hill tall"), maintaining mid pitch throughout, is a feat I dare European readers to try.

Significance of vowel quality is even greater in the tribal situation. Indeed, this cannot adequately be demonstrated without using the invaluable Ghanaian word **tafracher** I was at pains to introduce into medical parlance some 33 years ago.<sup>1</sup> 'Tafracher' not only pre-empts but also effectually negates the vulgarity and crudeness of a succeeding utterance. "The more respectable the speaker the less vulgar in speech he is expected to be, and the more likely he is to use 'tafracher' when he has to mention something he thinks is not pleasant to the ear."<sup>1</sup> The word is repeated if the offending succeeding sentence is really awful. Thus while a Ghanaian would quite happily say **e sa** [low high] meaning "she/he scrubbed" in Krobo/Dangme, [**e sha** in Gã], when using the nasal quality of the second vowel at the same pitch, Ghanaian Africans are always expected to say "**Tafracher, tafracher e sa**" or "**Tafracher, tafracher e shã**" being interpreted (even while on a ward round discussing a post-laparotomy patient), to mean: "Do please, please, excuse me when I have to say: she passed wind". Nasalizing the vowel, when it should not be nasalized can be a linguistic nightmare for the African.

It is, therefore, a social disaster of enormous proportions if, when an African desires to say she scrubbed she is rather heard to say unmentionable things like she passed wind, because of cleft palate. The need for early correction of this defect cannot be over-emphasized. Any African baby born with cleft palate stands in great danger of being ostracised in later life, and should be helped immediately. Pregnant women need to be put on Folic acid early; a mere 500 micrograms daily is known to prevent cleft palate.<sup>12</sup> Expatriates going to my tribe to teach, or even preach, need to be screened for cleft palate. They really need to be disqualified as teachers or preachers even when they can speak the

Krobo language fluently, because an undesirable lasting impression can be left on us natives when a foreign teacher, because of cleft palate, is unable to differentiate between scrubbing and, *tafracher*, passing wind.

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