Contour Tones in Igbo

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Abstract

Two contour tones are well attested in Igbo constructions. Studies in linguistics so far analyse the tonal contour properties in Igbo in terms of some syntactic conditions (Green and Igwe1963, Goldsmith1976, Emenanjo1978, Nwachukwu1995, etc.) involving grammatical functions and the tonal melody of subject-verb relations.

The present paper provides a parallel explanation on purely phonological grounds. The two tonal glides are discussed, Rising and Falling; and we demonstrate that the contour properties are the outcome of non-synchrony between level tones at the opposite sides of word boundary where the second word begins with a consonant, and also show that the licensing factors reflect the nature of elements of the segmental tier in multilinear phonology and assimilatory characterizations. By adopting a multilinear framework, this study also contributes to the pursuit of the implementation of the tenets of multilinear phonology.

Tonology, in particular, constitutes the bulk of evidence for multilinear phonology right from Goldsmith1976. The theory arose from attempts to overcome the inadequacies of the linear model of standard generative phonology in handling tonal phenomenon, particularly contour tones; hence this framework is adopted here. Our phonological account has advantages over previous attempts in its being able to handle a wider scope of data and in its elegance, being more explanatory, more straightforward and simpler, by which it shows apparent superiority over the rather woolly and winding analyses of the syntax based explanations. The study follows after previous attempts in using data drawn from the central dialects. We thus use the same set of data for this present study; and especially include expressions and names, which appear more resistant to dialect variations.

1.   Introduction

Igbo is one of the three major indigenous languages spoken in Nigeria. It is a member of the New Benue-Congo phylum (Williamson and Blench2000). Its phonology readily illustrates some of the conceptual problems arising from a linear analysis of prosodies, such as tone (cf. Goldsmith1976, 1990). In Igbo, three level tones are contrasted in lexical formations, namely, high, low and mid. The latter however has restricted distribution: It occurs only after a high tone and does

not occur as an initial syllable in a word; it does not also occur in monosyllabic CV roots, and may behave as a variant of the high tone in derivations. Below are some illustrations for tonal distinctiveness; a high tone is indicated with [´], a low tone with [`] and a mid tone with [¯]:

    i)   ákwà   'cloth"
            àkwá   'egg'
            ákwá   'cry'
             àkwà 'bed/bridge'

Others include

    ii)   égbé   'kite'
            égbè   'gun'

    iii)   ísí   'head'
           ísī   'to cook'
           ísì   'odour/fragrance'
           ìsì   'blindness'

       Igbo also attests some dynamic or contour tones in constructions; and this is the thrust of this study. Two contour types are discussed in the literature for Igbo (Goldsmith1976, Emenanjo1978, Nwachukwu1995, etc). Tones that involve a changing state are referred to as contour tones, tonal glides or dynamic tones (van der Hulst and Smith1982, Goldsmith1976, Clark1990, Fromkin1972, Nwachukwu1995, Ejele2003, etc.). Thus, while level tones involve constant or steady pitch, contour tones involve non-stationary or changing pitch directions (cf. Pike1948, Hyman1975). Level tones may be high, low, or mid, while contour tones may be falling, rising, rising-falling or falling-rising, etc. In chîmà 'personal name', for instance, we have the following patterning (ignoring vowel harmony):

       God   know
iv)   tʃi # ma → tʃima ' personal name'

      H   L   H L

Consider 2 also:

       God   possess
v)   tʃi # ŋwɛ → tʃiŋwɛ 'personal name'
      H   L   H L

It is thus, the HL in the derived structures above that is identified as contour tone. Theoretically, contour tones are characterized as a concatenation of level tones,

high-low for falling (as shown above), low-high for rising, etc. (Woo1969, Hyman1972; Goldsmith1976, 1990, Leben1971).

The phenomenon of contour tones in Igbo is not unknown; only that all proffered explanations so far hinge on syntactic information (Green and Igwe1963:6, Ogbonnaya1975:104, Emenanjo1978:17, Goldsmith1976:34, Clark1990:52, Nwachukwu1995:7). Emenanjo(1978:17), for example, reports on the occurrence of what he called "the high-falling-to-low-tone" (falling tone) and notes that its occurrence is grammatically motivated as it "always occurs on the last syllable preceding the verb in the indicative verb form, thus: ừlû gàwàrà ahía 'Ulu went to the market". Nwachwukwu identifies both falling and rising tones. Thus, in addition to three significant or contrastive tones (or tonemes), high, low and mid (stepped down high, diachronically speaking), the language shows evidence of contour tones which at the present level of insight appear only to mark certain grammatical functions (cf. Nwachukwu1995).

It is also in line with grammatical constructions that explanations have been attempted: Nwachukwu's (1995) descriptions are in respect to grammatical functions; and he notes that such contour tones are induced by constructions. Some of his examples include subject relative clauses (eg Ógŭ nwére ego….'Ogu who has money…') and object relative clauses (eg. Ágwọ Ogŭ gbúru… 'the snake which Ogu killed'), monosyllabic noun collocations (eg àlă ji 'tilled portion for yams'),etc. Similarly, Goldsmith (1976) explains the occurrence of contour tones in Igbo in terms of the tonal patterns of subject-verb collocation in which a falling tone on the final vowel of the subject element is predicated on an anticipatory lowering, to synchronize the low tone of a following verb stem (eg. Àdhâ cì àkwá 'Ada was carrying eggs') Thus, "the tone associated with a vowel on the right -- here, the verb stem -- may associate with a vowel neighbouring on the left, causing a change in the right hand side of the latter vowel (Goldsmith 1976:35). This is agreeably a case of assimilation. He also adds that if the verb stem should be on a mid tone, then the falling tone of the subject's final syllable must fall to mid, rather than to low. See Ogbonnaya1975, Clark1990 for further explanations along similar lines. Generally, all explications concerning the contour properties in Igbo tonal data so far available are along syntactic lines, whether in respect of grammatical functions or the tonal melody of subject - verb relations, and so on.

The present paper provides a parallel explanation on purely phonological grounds, and assumes that syntactic considerations may not in themselves be crucial to the analyses. Precisely, we argue that the phenomenon is explicable without relying on the syntactic properties of the constructions or their component elements or words. We demonstrate rather that the contour properties are the outcome of non-synchrony between level tones at the opposite sides of word boundary where the second word begins with a consonant. These conditions

reflect the nature of elements of the segmental tier and assimilatory characterization in respect to tonal patterning, namely tonal assimilations of the anticipatory type (cf. Fromkin1972, Anderson1978, Ejele2003b). By this approach, the study offers a comparatively simple and straightforward explanation, and consequently hopes to dispense with the rather woolly and needlessly complicated syntax based accounts, or at least constitute its veritable alternative. We turn next to this new account.

2.0   **The Phonological Account**

Following earlier accounts, two contour types are identified namely, falling and rising, and we discuss them in that order. The general conditions may be schemed as follows:

  Tone Contour Conditions:

$$XV\#C\underset{\mid}{V}X \rightarrow XV(\#)C\underset{}{V}X \qquad \ldots\ldots\ldots Rule1$$

$$[\alpha T]\ [\beta T] \qquad [\alpha T]\quad [\beta T]$$

(where v is vowel, c is consonant, x is any other possible element of the grammar, T is tone, α and β represent contrasting tone values and # is word boundary)
The general conditions for the occurrence of the contours, thus, include

   a) a word boundary involving a final vowel to the left; and to its right another vowel preceded by a consonant; and
   b) that the tones on the those relevant vowels contrast.

2.1   **Falling tone**

      Our rule predicts that if a high tone is followed across word boundary by a low tone, a falling tone is realized, if the second word begins with a consonant. This sub-rule is formulated thus (deriving from the general conditions, in Rule 1):

$$X\underset{H}{V}\ \#\ C\underset{L}{V}X \rightarrow X\underset{H}{V}\ (\#)C\underset{L}{V}X \qquad \ldots\ldots\ldots\ldots Rule\ 2$$

The rule may be illustrated by the following samples whose realizations are generally not controvertible, either as sentential constructions of the subject-verb type or as names; since patterns of names common to dialect groups may not readily vary, going by native intuitions involving regional dialect speakers.

     God   exist

1   Chukwu   # di → Chukwudi   'personal name'
         | | | | |\
        H   H   L   H   H L

         God   know
2.   Chukwu   #   ma → Chukwuma   'personal name'
         | | | | |\
        H   H   L   H   H   L

         God   do
3.   Chi # me → Chime   'personal name'
        | | |\
        H   L   H L

         God   give(pst)
4.   Chi # nyere →   Chinyere   'personal name'
        | | | |\ | |
        H   L L   H L L

         God   own
5.   Chi # nwe   →   Chinwe   'personal name'
        | | |\ |
        H   L   H   L

         child   exist/be
6.   nwa # di   →   nwadi   'personal name'
        | | |\
        H   L   H L

         More illustrations:

7.   Ada # chi # akwa →   Ada   chi   akwa   'Ada is carrying eggs'
        | | | | | | |\ | |
       L H   L   L H   L H   L L   H
        (cf. Goldsmith 1976:34; Clark 1990:52)
8.   agha # di   →   agha   di   'there's war'
        | | | | |\
       H H   L   H H   L

9.   ya   # mere →   ya   mere   'therefore'
        | | | |\ | |

```
          H     L L         H     L L
```

10.   ha # nwere ala →   ha nwere ala   'they have land'
```
       |       | | | |      |⸝⸝⸝⸝⸝⸝| | | |
       H      LL L L         H     L L LL
```

Following examples 1-10, falling tones are realized because the conditions required in rule 2 are satisfied. It follows that if any of the conditions is not satisfied contours are not generated. We may prove this further by introducing some control examples to verify the conditions. We may, first, start by violating the requirement for an initial consonant on the right side of the word boundary:

11.   head   land
```
       isi  #  ala →  isi  ala            'place name'
       | |      | |      | | | |
       H H     L L     H H L L
```
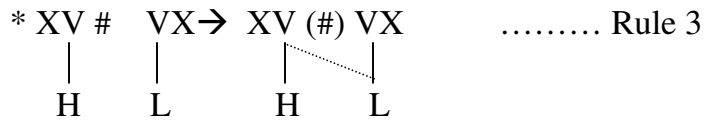
12.   edi   night
```
       edi   # abali →edi abali           'an animal'
       | |     | | |    | | | | |
       H H   L L L    H H L L L
```

13.   back   bag
```
       azu  # akpa  →   azu   akpa        'back of a bag'
       | |      | |       | | |  |
       L H     L L      L H L  L
```
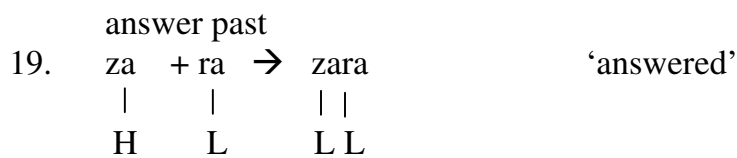
14.   child   eagle
```
       nwa  # ugo  →  nwa    ugo          'personal name'
        |      | |       |    | |
         H     L L        H   L  L
```

15.   eye   ụkpara
```
       anya # ukpara →   anya  ukpara         'eye of ụkpara' ( an insect)
       |  |   |  | |       |   |  |  | |
       H  H   L  L L    H  H L  L L
```

In 11-15 no contour is formed even though the samples meet the high-low environment across word boundaries. Note also that although such constructions may be analyzed along the lines of associative syntax (cf. Nwachukwu1995), they simply would not derive contour tones. The obvious reason is that the second word did not begin with a consonant. Rule 3, below, is ill-formed for this purpose.

$$* \text{XV \# VX} \rightarrow \text{XV (\#) VX} \qquad \ldots\ldots\ldots \text{Rule 3}$$

$$\begin{array}{cccc} | & | & | & | \\ \text{H} & \text{L} & \text{H} & \text{L} \end{array}$$

Similarly, no tonal glide is formed if other conditions are fulfilled but that of word boundary,#, in the input is not. The following examples involving morpheme boundaries appear useful to illustrate this:

buy   past
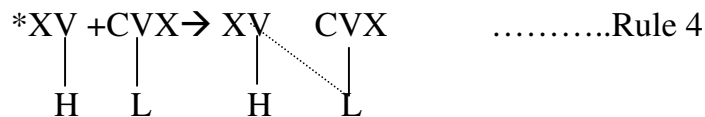16.   zu + ru → zuru   'bought'
       | | | |
       H   L   L L

wait   past
13.   che + re → chere   'waited'
       | | | |
       H   L   L L

kill   past
18.   gbu + ru → gburu   'killed'
       | | | |
       H   L   L L

answer past
19.   za + ra → zara   'answered'
       | | | |
       H   L   L L
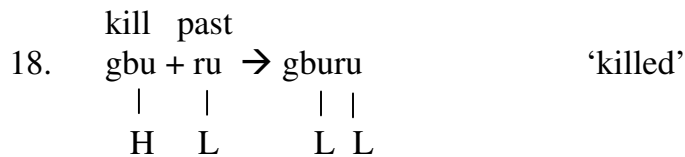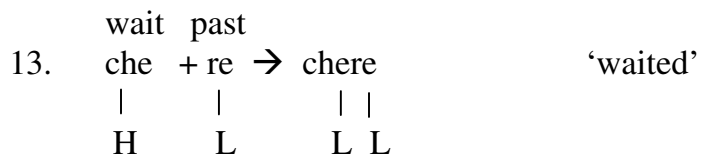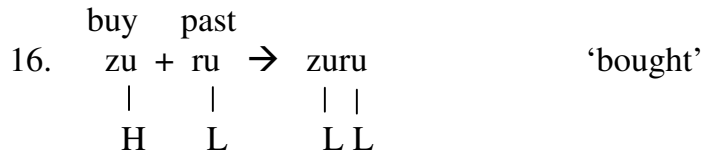
The low-toned –rv suffixes indicating 'past' are collocating with verb stems which are on high tone; and the high tones are lowered apparently in anticipation for the low tone of the suffixes. We obviously have here a case of complete anticipatory tonal assimilation. No contours are formed, as the rule predicts; since there are no word boundaries, but morpheme boundaries. (See Clark1990, for further details). Contrasting tones within words do not therefore generate contouring. Rule 4 is ill-formed for this reason:

$$*\text{XV +CVX} \rightarrow \text{XV CVX} \qquad \ldots\ldots..\text{Rule 4}$$

$$\begin{array}{cccc} | & | & | & | \\ \text{H} & \text{L} & \text{H} & \text{L} \end{array}$$

The next conditioning factor for verification is the involvement of tonal contrasts, since the rule requires that tones occurring at such word boundaries must be in contrast for contouring to occur. The following examples are drawn from Mbaise dialect of Igbo (Nwachukwu1995), which shows exceptional patterns probably because it permits a two-way tonal contrast instead of three:

20.　anyi　kwere ekwe　　　　'we agree'
　　　|　|　　| | |　|
　　　H　L　　L LL　H

21.　Azu　bu　ike　　　　'personal name'
　　　|　|　|　|　|
　　　L　H　H　H H

The string in 20, above, would read as 22 in standard Igbo and in other dialects, in which case the conditions of contrasting tones across word boundary will be realized, and contouring is therefore made plausible; but in Mbaise dialect formatives, no contouring is plausible because anyi 'we' is on a H-L tone in the speech of the Mbaise community.

22.　anyi　kwere ekwe
　　　|　|ˉˉˉ| | |　|
　　　L　H　　L L L　H

Similarly, 21 reads as 23 in Standard Igbo, among others.

23.　Azu　bu　ike
　　　|　|ˉˉˉ| | |
　　　L H　　L　L H

Thus, when like-tones occur across word boundary (other factors being constant) as in 20 and 21 no contouring occurs. In (20), for instance, we have two low tones each across word boundary and two high tones each across word boundary in (21), and no contouring is derived; because one of the tone contour conditioning factors, namely non-synchrony of level tones, is not fulfilled; hence Rule 5 is ill-formed:

　∗　XV #CVX→ XV(#) CVX　　　. . . . . . . Rule 5
　　　|　|　　　|　|
　　[αT] [αT]　　[αT]　[αT]

Next in this control experiment, we consider what happens when the order of the tones is reversed; that is, where we have low-high instead of high-low order of tones, if all other factors remain constant: the outcome of this suggests

additional evidence in support of the tone contouring conditions shown in Rule 1, and further buttresses Rule 2 in particular, as part of the general rule. This outcome however yields our secondary contour type, which is the subject of the next section:

2.2 **Rising Tone**

When a low tone is followed across word boundary by a high tone, a rising tone is formed if the second word begins with a consonant. This is formalized in rule 6, which derives from the general rule, Tone Contour Conditions:

$$XV \,\#\, CVX \rightarrow XV\,(\,\#\,)\,CVX \qquad\qquad ……….. \text{ Rule 6}$$

H   L   H   L
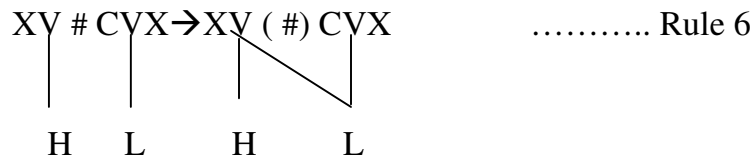
The following examples illustrate this rule:

```
        eagle     God
24.     ugo   #  chi   →  ugo!chi      'personal name'
        | |          |       |   |\ |
        L L          H       L  L  H


        public   yam
25.     oha  #  ji    →  oha!ji        'place name'
        | |        |        |  |\|
        L L        H        LL H


        king       yam
26.     eze  #  ji   →  eze!ji         'personal name'
        | |        |      |  |\|
        H  L       H      H L H


        portion  God
27.     oke  #  chi  →  oke!chi        'personal name'
        | |        |      |  |\ |
        L L        H      L L  H


        war       God
28.     ogu  #  chi →  ogu!chi         'personal name'
        | |         |     |  |\ |
        L L         H     L L  H
```

```
         land    yam
29.      ala   #  ji   →  ala!ji                 'tilled portion for yam cultivation'
         | |      |        | |⟍|
         L L      H        LL H
```

```
         wealth  God
30.      aku   #  chi  → aku!chi                 'personal name'
         | |       |       | |⟍|
         L  L      H       L L  H
```

```
         heart   husband  3rd pers
31.      obi  #  di  #  ya  → obi!diya  'personal name'
         | |      |       |      | |⟍| |
         H L      H       H      H L H H
```

The above examples satisfy the rising tone rule as shown in Rule 6; and rising tones are formed as predicted. In the output, it is observed that the phonemic high tone(s) of the word that occurs at the right hand side of the word boundary is realized as a down-step in the phonetic forms (signified by [!]).

This may not be unconnected with the effect of the application of down-drift rule in which, roughly, a high tone that follows a low tone is realized on a lower pitch than an earlier high tone; that is, not preceded by a low tone (cf. Kenstowicz1994). In example (31) for instance, the high tone on *di* 'husband' is stepped down after the tone glide formation and the tone of the pronoun, *ya,* is consequently stepped down as well, particularly because a mid – high sequence is not permitted in the language.

Of a more general application perhaps, is the possibility of an associative marker, *nkè*, which gets deleted, leaving a low-tone melody diachronically speaking. Consequently, a lowering is generated on neighbouring high tones, thus accounting for the lowering effect (Hyman1974, Omozuwa1996). It is not clear however how precisely the assignment of the effect is implemented. Notwithstanding the explanation for the down-step, the occurrence of a tonal glide is not obliterated; and this is the point and concern of the present study. More illustrations for the rising tone rule are shown below.

```
         one     child
32.      otu   #  nwa  → otu!nwa               '(an) only child'
         | |       |       | |⟍|
         H L       H       H L  H
```

```
        children  husband
33.     umu    # di   →  umu!di          'husband's relations'
        |   |     |        |    |⤸⤸|
        H   L     H        H   L  H


        thought  God
34.     uche   # chi  →  uche!chi         'personal name'
        |  |      |        |    |⤸⤸|
        H  L      H        H   L   H
```

Further to the evidence to buttress the rising tone rule, Rule 6, is the fact that, as already shown in rule 2, a high-low sequence of tones across word boundary would yield a falling tone, if the second word begins with a consonant, not a rising tone. Also, a high-high sequence of tones across word boundary, all other factors being constant, would not yield a contouring neither would a low-low sequence. The following illustrate these, 35 - 37 is with respect to a high-high tone sequence across word boundary and 38 – 40 is with respect to a low-low sequence:

```
        radical   yam
35.     ome # ji   →   ome!ji      'yam shoot/radical'
        |   |   |        |   |  |
        H   H   H        H   H  H


        daughter yam
36.     ada #  ji   →   ada!ji      'personal name'
        |  |    |         |  |  |
        L  H    H         L  H  H


        want     child
37.     uko  # nwa   →uko!nwa      'childlessness'
        |  |      |        |   |    |
        L  H      H        L   H    H


        fellow    do pst
38.     Ibe  # mere  →  Ibe mere       'personal name'
        |  |     |  |      |  |   |  |
        H  L     L  L      H  L   L  L


        land     exist
39.     ala  # di   →   ala di       'there's land'
        |  |     |        |  |  |
```

```
        L L    L     L L L


        father  hold
40.     nna # ji  →  nna  ji      'personal name'
        |  |    |     |  |  |
        H L    L     H L H
```

From the above data, no contouring occurs as predicted, because tonal synchrony is involved instead of non-synchrony required by the rule. Compare *n̄ này̌jiy̌* in 40 with a related name, *n̄ nē jiy̌*: both names derive from *n̄ này̌* 'father' and *n̄ nē* 'mother' respectively. While no contouring occurs in the former, it occurs in the latter, because the mid tone of *n̄ nē* contrasts the low tone of *jiy̌;* it behaves like an allophone of a high tone, resulting in a falling tone being realized on the vowel of *n̄ nē*.

It may also be observed that in examples 24 to 34, a 'down-step' tone occurs in the phonetic output. This however bears no consequence on the thrust of the present study, but appears to arise from the presence of preceding low tone(s) diachronically, as earlier noted. This also occurs in 35 to 40.

Thus, having no overt tones to account for their occurrence, a floating tone is suggested in diachronic parlance as earlier shown. Similar explanations are due to Hyman1974, in which a historical low tone is said to float a low tone melody that licenses tone lowering within the environment, in synchronic data. This low tone melody may have been left behind by the associative morpheme, /ŋ̀kè/, when elided, whose influence accounts for the down stepping of neighbouring high tones (cf. Peters1973). Similarly, in Edo, Omozuwa1993 postulates a floating tone in which the elision of an associative marker, /óɣé/, leaves a high tone melody which influences adjacent tones.

Conclusion

It is shown that Igbo contrasts three level tones in lexical formations; and also attests two contour or dynamic tones in constructions. The dynamic tones are either Falling or Rising, as so far investigated. These contour tones are derived in definable phonological contexts; and this is elegantly schemed in our Tone Contour Conditions. The conditions specify that tonal contours or dynamic tones are derived, if two vowels occurring respectively across word boundaries bear contrasting tones, and if the second word begins with a consonant. These conditions reflect the nature of elements of the segmental tier and assimilatory characterization in respect to tonal patterning, namely tonal assimilations of the anticipatory type. The assimilation that yields the dynamic tones are not complete;

hence the contouring. The elegance provided by the multilinear framework enables a more facile demonstration of these facts.

As demonstrated, dynamic tones are derived whenever those conditions specified in the tone contour rules are fulfilled. It is also clearly shown that the conditioning factors are purely phonological; no syntactic factors are of consequence to the formation of contour tones, in contradistinction to previous studies. In other words, the licensing factors are not syntactically conditioned. It might as well be a mere coincidence that some of the constructions may be parsed as subject-verb relations, noun-noun associative constructions or the likes.

We adopted the procedure of previous accounts in drawing data from the central dialects, vaguely defined, in which two contour types are identified namely, falling and rising. We have relied on empirical evidence to justify each feature pertinent to contour formations and provided further proof by verifying the variables by a set of control examples. No syntactic properties of the collocating entities are required, whether as subject-verb relations or indeed any other, making it clear that we can account for such contours on purely phonological terms, with recourse neither to syntactic nor to semantic information.

This parallel account stands in its own right and has its own merit as an alternative model to the earlier syntactic account. It is also more elegant, providing more straightforward explications; and accounts for a wider scope of data as well, including those in associative constructions involving gliding tones, and those constructions described in terms of subject-verb relations or so, where contour tones are also derived. In other words, our phonological approach is more productive, since it offers explanations for data that fall within the syntax frame of earlier accounts as well as those which fall outside the frame, which would therefore otherwise be inexplicable.

Following earlier studies, considerations for contour tones in Igbo appear limited to constructions, within which they are shown to be derived. Thus, contour tones at lexical levels appear unknown, at least for the standard and the central dialects from where the data are drawn. This claim however may not be sustained for Igbo in general, when other regional dialects are taken into consideration (see Ugorji2003, 2007); and we consider this a phenomenon for further research.

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