This paper discusses nasal vowels in Esan. It re-evaluates prevailing assumptions about their status and proffers phonetic as well as phonological basis to justify the possibility that these so-called ‘nasal vowels’ may be a consequence of a diachronic phenomenon in the language. The postulation in this work is that the nasality of these ‘nasal vowels’ is not inherent, as currently believed (Ejele 1982, 1986, 1994, 2003; Kamelu 2003), but acquired from nasal consonants, which may have become redundant in the language. This re-appraisal of nasal vowels in Esan is carried out within the background of general linguistic theory and, more specifically, within the auto-segmental model of phonological analysis (Goldsmith 1976). The conclusions reached in this work would have implications for the linguistic history of Esan, as well as other Edoid languages, whose current phonologies feature these nasal vowels.

1. Introduction
This work examines the so called ‘nasal vowels’ in Esan. It re-evaluates their currently accepted status as inherently nasal segments (Ejele 1982, 1986, 1994, 2003; Kamelu 2003). This re-evaluation yields two novel proposals about this group of vowels in the language, as follows:

i. Prevailing assumptions about the status of nasal vowels in Esan cannot be sustained because they do not seem physically different from their nasalised counterparts.

ii. The so-called ‘nasal vowels’ in Esan are probably nasalised vowel segments, whose nasal quality derive from nasal consonants, which have become redundant in the language.

The arguments presented in this paper find clearer expression in the auto-segmental framework of phonological analysis (Goldsmith, 1976 ), which is suitable for the analysis of segmental as well as supra-segmental phenomena such as nasality. Tenets of general linguistic theory are also applied where relevant.

1.1 Esan Language and people
Esan is classified as a part of the North Central subgroup of the Edoid group of languages (Elugbe, 1979:88). It is spoken as the mother tongue in five local Government Areas of Edo state - Esan West, Esan Central, Esan North, Esan South East and Igueben. It has as its immediate neighbours on the classificatory chart, Edo (Benin) to the left, and the dialect cluster of Ora-Emai Iuleha to the right (Osiruemu, 2005:ix). Esan has a proposed orthography ( Okojie and Ejele 1987) and the language is taught in primary and post primary schools in Esanland. It is also used to relay local news and programmes in the state owned televison outfit.
1.2 Data source and analysis
The corpus on which this work was based comprised 40 Esan words which featured the five ‘nasal vowels’ attested in the language (see figure I), as well as words featuring their nasalized counterparts. Corpus was elicited in writing from 25 native speakers of Esan language with age range between 18 years to 70 years, using the direct interview method. The researcher, who was the sole field worker, and a native speaker of the language, transcribed available corpus in phonetic tradition using the IPA format of representation to arrive at the body of data for this study.

Data for this study were analysed within the auto segmental framework of phonological analysis and general linguistic theory. The perceived similarities and differences between the so called ‘nasal vowels’ and their nasalized counterparts, which formed a major part of this work, were deduced through simple comparisons between words featuring these 2 groups of vowel segments.

1.2.1 Auto segmental phonology
The choice of this framework is based on the premise that it was primarily created to account for the behaviour of suprasegmentals such as nasalisation. This framework proposes a more adequate characterization of phonetic and phonological representation of language than its preceding counterpart of generative phonology (Chomsky and Halle, 1968). The proposals of the autosegmental theory relevant to this work include its postulation that the features of a segment (which are claimed to be bundled together in matrices within generative phonology), do not always function together as a unit. The fact that certain features are often retained in some languages after the deletion of the segments of which they were supposed to be a part, is well known, and demonstrated in this work. Similarly, disyllabification resulting from some phonological processes such as glide formation and vowel elision, allows desegmentalised units of affected segments to be retained in a following V segment. These occurrences attest that these features are independent of the segments which bear them, making them autonomous. The advantage of this theoretical model for this work lies in the clarity it affords the processes which suprasegments undergo, as will be shown in this study which re-examines the current perceptions of nasal vowels in Esan.

1.3 Esan Sound System
Esan sound system comprises 25 consonant phonemes, 7 oral and 5 nasal vowels (Ejele 1994:69). As the thrust of this work is on the nasal vowels and other nasal sounds that may affect them, focus would be on them rather than on other sounds in the language.

The so-called ‘nasal vowels’ of the Esan sound system are presented in Figure I.

Figure I – Esan ‘ Nasal Vowels ’

ĩ ũ ɛ ɔ ă
Esan also has four nasal phones: [m, n, p, r] (Ejele 1994).

1.4 The Nasal Phenomenon
The nasal phenomenon in speech production may be described as dynamic. This description stems from its characteristic of sometimes cutting across phonological as well as semantic thresholds of the grammar of some languages. This feature of nasals, like some language specific phenomena, if not rightly understood, could render communication, which is the major goal of language use, ineffective. Esan is one language in which the nasal phenomenon exhibits this aforementioned unique status of nasals.

A sound is termed nasal because in its production, the airstream is prevented from passing out through the mouth. It is however not dammed up, but is diverted through the nose due to the lowering of the velum, which keeps the nasal outlet in the mouth open. Thus, it is the absence of velic closure that is responsible for this nasal quality (Ambecrombie, 1980). For the purpose of the present work, a distinction is made below between nasal and nasalised segments.

1.4.1 Nasal versus Nasalised Segments
Following from the definition in 1.4, a nasal sound qualifies as such, when it has all the attributes of production of such a sound. These would include the presence of the following conditions:

a. A stricture of complete closure
b. The absence of velic closure.

In Esan, these sounds would include all the nasal consonant sounds, which sounds may therefore be said to be inherently nasal.

On the other hand, nasalised sounds are those sounds which derive nasality from their environment (Yul-Ifode, 1999:146-150). This means that with these sounds, nasality is a secondary feature brought about by the assimilation of the nasal quality by the affected segment. Hyman (1976:236) states that one primary necessity for determining nalisalisation in a segment is the establishment of the “directionality for nasal spreading”. In other words, if the nasal quality of a segment can be traced to its environment, that segment is nasalised and not inherently nasal. This distinction between nasal and nasalised segments forms the basis of the postulation in this work.

2. Re-evaluating the status quo
Our data reveal that in Esan, it is vowel rather than consonant segments that are nasalised. Two ways in which this may occur are through nasality spread and by stability of nasality. The former involves the assimilation of the nasal quality as hitherto explained (1.4.1) while the latter has its explanation in the auto-segmental tenet, which states that nasalisation (like other supra-segmental phenomenon) is autonomous, and may not be effaced even with the deletion of the segment which bore it. Rather, it relinks to the next Nasality Bearing Unit (NBU). These occurrences are also attested in Emai (Egbokhare, 1998:7-14, 1990:44) and Edo (Omozuwa 1996:193-
Osiruemu: Nasal Vowels in Esan

202). Data presented in figure II show examples of words in which nasalised vowel segments occur in Esan.

Figure II – Examples of words bearing nasalized vowel segments in Esan

i  [m ĩ nṉ ]  to squeeze
ii [m ĩ l ǐ ]  to swallow
iii [n ả ]  to narrate
iv [n ɔ n ũ ]  to drip slowly (of liquid)
v [n ὰ ]  to seek attention
vi [nèpè]  to compress
vii [m ὰ ]  to measure
viii [m ὰ m ὰ ]  to arrange
ix [m ù]  to carry

The diacritic [" ] on top of the vowel sounds in the words in figure II shows that they possess the nasal quality. Also, the acquisition of this quality is traceable to the nasal consonant which precedes each of these vowel sounds. They are thereby referred to as nasalized vowel segments. All vowel segments easily acquire nasality in a nasal environment, apart from the vowel segments /e o /, which are rarely nasalized in Esan.

2.1 The so-called nasal vowels
Like some other Edoid languages, Esan features what have been termed ‘nasal vowels’ (see figure I). Current works on these languages explain the long standing status of this group of vowels by stating that they are sometimes produced in such a way that the airstream passes out both through the mouth and the nose. The occurrences of this group of vowel sounds in Esan, are exemplified in figure III from our data.

Figure III – Occurrence of nasal vowels in Esan words

/'i/  /û/

x. /fkpè/  boa constrictor  xiii. /ũtù/  mushroom
xi. /ù/  to fly  xiv. /ãkû/  waist
xii. /èlè/  name  xv. /ádã/  bitter kola

/'ɛ/  /ɔ/

xvi. /èkpè/  respect  xix. /yɔõ/  to be happy
xvii. /hè/  to climb  xx. /is5/  feaces
xviii /hèlè/  fish  xxi. /ukpɔ/  cloth

/'ã/  

xxii /sã/  to jump  xxiii /stã/  squirrel
xxiv /tàlã/  to loosen
As shown in figure III, these vowels do not apparently occur in nasal environments. Thus, their nasality is not traceable to any ‘visible’ nasal segment in the environment. In the sections which follow, we however intend to show otherwise, i.e. that these so-called nasal vowels are in reality nasalized, and that their nasal quality is traceable to nasal segments which may have become redundant or in disuse in Esan, possibly due to a diachronic phenomenon in progress.

2.2 Our arguments
We present our position in this work - that the so-called ‘nasal vowels’ in Esan are nasalized vowels – with the following points:

- Physical characterization of the ‘nasal vowels’
- Theoretical justifications
- Natural Evidence

A. Physical characterisation of ‘nasal vowels’

The physical characterization of the ‘nasal vowels’ in Esan as it concerns their production and representation, shows no physical difference in the manner of production between them and their nasalised counterparts. Both groups of vowels are produced in the same way as follows. During the production of these vowel sounds, the airstream passes out of the lungs both through the mouth and the nostrils. The absence of velic closure, which is a major factor of nasality, is present in the production of both types of vowel segments. Since there is no marked difference in the production of these sounds, the view in this work is that there is no justification for labeling or treating them otherwise.

The phonetic representation of these vowel segments in the same manner, further validates the point made above. The prevailing practice of marking both ‘nasal’ and nasalised vowel segments in Esan in the same manner by placing the diacritic [~] above each of them, suggests that the purported difference between them is nonexistent. This being the case, this differentiation between ‘nasal vowels’ and nasalised vowels would seem baseless, and should probably be discontinued.

B. Theoretical justification

To further buttress the position in this work – that ‘nasal vowels’ and their nasalised counterparts in Esan are the same and should be so treated – we examine two phonological processes which result in nasality deletion in these two groups of vowel segments. These processes are those of glide formation and vowel deletion respectively.

In autosegmental tradition, the autonomy of the suprasegments of tone and nasality is demonstrated by the property which allows them to remain stable irrespective of the fate of the segments which bear them. Our data reveal that the nasal quality of a nasalised vowel segment, as well as that of a ‘nasal vowel’, may be dissegmentalized in Esan. Put differently, the observation is that both types of vowels (nasal and nasalised) may lose their nasal quality in certain environments. This behaviour is perceived as suggestive of the fact that both ‘nasal’ and nasalised vowel segments possess the same status. The behaviour highlighted above is also attested in
Emai as earlier stated. Examples of this occurrence in Esan are presented from our data as follows.

1. **Glide formation**
The glide forming vowel segment [u] loses its nasal quality across morpheme boundary.

Figure IV – Examples of words in which [u] loses its nasal quality

<table>
<thead>
<tr>
<th>Full Word Form</th>
<th>By Glide Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>xxv. [mû # òkɔ possessions]</td>
<td>[mwókɔ]</td>
</tr>
<tr>
<td>to carry mortar</td>
<td>lift mortar</td>
</tr>
<tr>
<td>xxvi. [mû # ẹgbè]</td>
<td>[mwégbè]</td>
</tr>
<tr>
<td>to prepare body</td>
<td>to get ready</td>
</tr>
<tr>
<td>xxvii. [sù # ọlè]</td>
<td>[swɔlè]</td>
</tr>
<tr>
<td>to escort him/her</td>
<td>escort him/her</td>
</tr>
</tbody>
</table>

2. **Vowel elision**
An elided vowel segment loses its nasal quality, when in sequence with another nasality bearing vowel segment.

Figure V – Examples of words in which a deleted vowel segment in sequence with a nasality bearing vowel segment, loses its nasality

| xxviii. [tùù # òxù] | [tùòxù] |
| to lift up           | lift up  |
| xxix. [tɔnɔ # ẹgbè]  | [tɔnɛgbè] |
| to scratch body      | scratch body |

Two points relevant to the goal of this work arise from this common behaviour of ‘nasal’ and nasalised vowel segments in Esan. That these two vowel types are prone to nasality deletion, and, in the same manner, suggests, first and foremost, that their nasality status is not different. Secondly, that they are capable of losing their nasality – unlike the nasal consonants. These facts lay doubts on the claim that the nasality of ‘nasal vowels’ is inherent.

The logical question which our arguments above generate is: where then is the source of the nasality of the so-called nasal vowels? For, as revealed from data presented, the nasality of the nasalized vowel segments in Esan is traceable to the environment in which they occur. If, as we argue in this work, the ‘nasal vowel s’ are not physically different from their nasalized counterparts, what remains to be shown is the source of their nasality.

Sequel to answering this question, we postulate that the sources of the nasality of these ‘nasal vowels’ may be syllable and or word final nasal consonants, which have
gone into disuse in Esan with time, and the subsequent evolution of the language. In other words, as earlier suggested in this paper, the loss of the nasal consonants, which we suspect are responsible for the nasality of these ‘nasal vowels’, may be due to a diachronic phenomenon in the language. These so-called ‘nasal vowels’ are apparently traces of the previous existence of these now extinct syllable final nasal consonants. We also propose that the particular nasal consonant which has become extinct may be reconstructed by looking at the nature of the sounds which constitute the word in question.

In this final section, we present what may be termed ‘Natural evidence’ as a clue to the sources of the nasality of nasal vowels in Esan.

C. Natural evidence

Previous works on Esan attest to its possession of the bilabial [m], alveolar [n], labiodental [ŋ] and palato-alveolar [ɲ] nasal phones in its consonant sound inventory. It is on this ground that the suspicion of the previous possession of the velar nasal phone [ŋ] is built. Coupled with the fact that its place of articulation precedes that of the palato-alveolar nasal [ɲ], our position is strengthened by the occurrence of the velar stop phones [g, k, ɣ, x] in the Esan sound inventory.

Given the argument above, it does appear more natural that the velar nasal sound was at sometime, a part of the Esan sound system. Specifically therefore, there is a strong suspicion that it is this sound – the velar nasal – that preceded by the so-called “nasal vowels” and subsequently spread its nasality to the former, which in turn assimilated it and became nasalized. Consider the following data in figure VI.

Figure VI

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>xix</td>
<td>[ákògá]</td>
<td>‘bat’</td>
</tr>
<tr>
<td></td>
<td>[èýɔyɔ]</td>
<td>‘happiness’</td>
</tr>
<tr>
<td>xii</td>
<td>[úxɔ]</td>
<td>‘navel’</td>
</tr>
<tr>
<td>xiii</td>
<td>[ékèhè]</td>
<td>‘cough’</td>
</tr>
<tr>
<td>xvi</td>
<td>[ìgè]</td>
<td>‘feather’</td>
</tr>
<tr>
<td>xv</td>
<td>[ákɔ]</td>
<td>‘teeth’</td>
</tr>
<tr>
<td>xvi</td>
<td>[ègè]</td>
<td>‘between the thigh’</td>
</tr>
<tr>
<td>xvii</td>
<td>[ikpi]</td>
<td>‘boa constrictor’</td>
</tr>
<tr>
<td>xviii</td>
<td>[òkú]</td>
<td>‘sea’</td>
</tr>
</tbody>
</table>

As shown in figure IV i – ix, these ‘nasal vowels’ are preceded by velar sounds. This environment suggests that the nasality of these vowels are traceable to the velar nasal sound [ŋ] which, as argued earlier, may have at sometime been in use in Esan. Therefore, the probable earlier forms of the data in figure VI are probably as presented in figure VII.

Figure VII – Probable earlier linguistic forms of data in figure VI.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>xxix</td>
<td>[ákògán]</td>
<td>‘bat’</td>
</tr>
<tr>
<td>xl</td>
<td>[èýɔŋyɔŋ]</td>
<td>‘happiness’</td>
</tr>
</tbody>
</table>
3. Conclusion
This examination of prevailing assumptions about the purported ‘nasal vowels’ in Esan was carried out in this paper. Our arguments point to the possibility that these nasal vowels and their nasalized counterparts, both of which had always been treated as different sound segments in the language, may in reality possess identical status. The position in this work is that, like the nasalized vowel segments, the ‘nasal vowels’ were at sometime also nasalized, which nasal quality is a consequence of their occurrence in the environment of the velar nasal consonant. Evidence provided in this paper suggests that the loss of the velar nasal consonant sound in Esan is a consequence of a diachronic phenomenon, which gradually resulted in the loss of this sound from the phonology of the language. Further investigation of this phenomenon may yield results which would no doubt have far reaching effects for the phonology of Esan, as well as those of other Edoid languages, which feature this group of vowel segments.

References
Osiruemu: Nasal Vowels in Esan


