The Use of Gedney Surveys in African Historical Linguistics

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Introduction

The late Tai-Kadai specialist William Gedney was known for exhaustively cataloguing the (CVC) roots of the languages on which he worked

The constrained root shape of these languages made this process possible

Many African languages share this characteristic

A “Gedney survey” has obvious use for lexicographers, but what about linguistic fieldworkers in general?
Introduction

I conducted a Gedney survey in my own fieldwork on Sereer (NW Atlantic; Senegal)

And its closest relative Fula, using published sources

The results proved extremely useful in tackling questions of historical linguistics
- Can provide additional evidence for proposed sound changes
- Gives evidence for sound changes which would otherwise be speculative or unnoticed
Sereer and Fula

Sereer is spoken in west-central Senegal
- ~1.2 million speakers (Ethnologue)
- One noteworthy lexical source (Crétois 1972)
- I conducted fieldwork on Sereer in Senegal and Berkeley, CA

Fula was originally spoken in northern Senegal
- Now over a large area of northern sub-Saharan Africa
- ~25 million speakers
- Extensive documentation, lexical and otherwise
Sereer and Fula

<table>
<thead>
<tr>
<th></th>
<th>labial</th>
<th>coronal</th>
<th>palatal</th>
<th>velar</th>
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<tr>
<td>egressive stop</td>
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<td>p</td>
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<td>nd</td>
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<td>ng</td>
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<td>n</td>
<td>ñ</td>
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<tr>
<td>lateral continuant</td>
<td>l</td>
<td></td>
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</tbody>
</table>

- Sereer-only phonemes in red
- Vowels of both languages: /i, e, a, o, u/, long and short
- The Saalum dialect of Sereer that I worked on does not have /h/
Sereer and Fula

They are each other’s closest relative
- But less than 20% of their lexica are cognate
- The mother language, Proto-Fula-Sereer (PFS) might have been spoken >2000 years ago

My main interest is reconstruction of PFS, and determining the sound changes into the modern languages
- Often, evidence from cognates alone for a sound change is limited
Conducting the Gedney survey

Basic aim is to ask about every phonotactically possible root shape

For Sereer, roots are basically CVC

25 possible consonants in C1, 31 in C2, 10 vowel nuclei
  • = 7750 roots

Caution: Don’t make too many assumptions about phonotactics!
  • You may find counterexamples to patterns you thought impossible
Complications

There may be reason to limit the survey to a particular type of root (e.g. verbal vs. nominal)
  • In Sereer and Fula, the consonant mutation system makes it impossible to determine the underlying shape of many nominal roots
  • I only looked at verbs

Affixation: some roots may only appear with a derivational affix
  • Still want to collect these
  • Checking each possible affixed form is probably unreasonable

Tone

Borrowings: for historical purposes, keep track of which roots are borrowings, if possible
Carrying out the survey

Basic workflow: say each hypothetical root, give consultant time to respond, move to the next root
  • I went one vowel at a time, one initial C at a time; could be randomized

Time is essential!

A carrier phrase and/or inflected form may be needed in some languages
  • For Sereer: “pat ... a pata”

Ideal to use the same (group of) consultant(s)

Avoid lengthy elicitation sessions
  • Consultant fatigue will happen faster than in normal elicitation
Carrying out the survey

Starting point: ~200 hrs of work on Sereer, about 2000 words collected

~300 CVC verb roots

After the survey: 1171 CVC verb roots

~20 hours of elicitation to complete the survey
  • hour-long sessions
  • avg. 10 sec per hypothetical root
Results!

A lot of new words

- *banj* ‘be very industrious in weeding a rice field’
- *ŋeed* ‘stand w/ the body and one leg perpendicular to the ground’
- *ŋaf* ‘for a tree to be unable to have its fruits shaken off’
- *faaf* ‘to have the power of bilocation when close to death’
- *gad* ‘to combine two smaller piles of peanut plants in to a larger pile’

A spreadsheet!
Results: Phonotactics

Existence of new patterns: I suspected that (most) $C_\alpha V C_\beta$ was impossible
  - Turns out these exist, e.g. $bof$ ‘strangle’

Able to make substantial claims about unattested patterns
  - “No roots start with /q/”

And relative frequencies
  - “Voiceless stops are the least common root-initial consonants”
Results: Diachrony
History of /h, x/

A number of proposed sound changes can be supported by frequency information.

In the Saalum dialect of Sereer, initial /h/ and /x/ have merged to /x/.

The frequencies of initial voiceless fricatives are consistent with this change:

\[
\begin{array}{ccc}
  f & s & x \\
  68 & 100 & 104
\end{array}
\]
History of /h, x/

But what happened in final position?
  * Other dialects don’t seem to have /h/ non-initially

Possibilities:
  * Non-initial *h and *x merged in all dialects
  * Non-initial *h disappeared in all dialects
  * The proto-language had no *h/x distinction non-initially

Distribution of root-final voiceless fricatives:

\[
\begin{array}{ccc}
  f & s & x \\
  61 & 80 & 45 \\
\end{array}
\]

Suggests that the first possibility is not what happened
Reconstruction of *ɣ

I reconstruct *ɣ and *g for PFS, based on two distinct sound correspondences:

- *g > Sereer /g/: Fula /g/
- *ɣ > Sereer /g/: Fula /w, y, ?/

This requires a somewhat uncommon sound change *ɣ > g in Sereer

Some of the existing literature (e.g. Anderson 1976) speculates that many Fula sound patterns are the result of lenition, and *ɣ would not have been present in the proto-language, or was always derived from *g

Frequency information supports reconstructing two phonemes which merged to /g/ in Sereer
- /k/ is the least common of the voiceless stops (21%), while /g/ is the most common voiced stop (30%)
Origin of voiceless implosives

The Sereer voiceless implosives have an interesting origin

- They correspond to geminate implosives in Fula

<table>
<thead>
<tr>
<th>Sereer</th>
<th>Fula</th>
<th>PFS</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>gof</td>
<td>wodd-</td>
<td>*yodd-</td>
<td>‘be far’</td>
</tr>
<tr>
<td>jaf</td>
<td>jadd-</td>
<td>*jadd-</td>
<td>‘prop up’</td>
</tr>
<tr>
<td>tof</td>
<td>todd-</td>
<td>*todd-</td>
<td>‘make cracking sound’</td>
</tr>
<tr>
<td>raɓ</td>
<td>raɓɓ-</td>
<td>*raɓɓ</td>
<td>‘be short’</td>
</tr>
<tr>
<td>xoɓit</td>
<td>hoɓɓit-</td>
<td>*xoɓɓit</td>
<td>‘strip/deshell’</td>
</tr>
<tr>
<td>toc’e</td>
<td>toy’y-</td>
<td>*toy’y</td>
<td>‘crack open’</td>
</tr>
</tbody>
</table>

Hypothesis: all voiceless implosives come from geminates in the protolanguage
Origin of voiceless implosives

The basic PFS root shape is *CV(C)C

Roots of the shape *CVVCC are *not* reconstructed for PFS— a long vowel cannot precede a geminate/cluster

So we expect that CVV{þ/þ/þ} should not exist in Sereer, if all voiceless implosives came from geminates

Before conducting the survey: 4 roots of this shape; perhaps some odd exceptions

After the survey: 50 CV{þ/þ/þ} roots vs. 31 CVV{þ/þ/þ} roots
  • e.g. ñaab, ñeel, luuþ, siif
Origin of voiceless implosives

These 31 roots can’t all be exceptional
  • There must be some other origin for some of these voiceless implosives

It turns out there are a number of correspondences in Fula for these roots

<table>
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<tr>
<th>Sereer</th>
<th>Fula</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ŋaaf</td>
<td>ŋad-</td>
<td>‘wail’</td>
</tr>
<tr>
<td>biić</td>
<td>biy-</td>
<td>‘squeeze out’</td>
</tr>
<tr>
<td>tuuf</td>
<td>tuud-</td>
<td>‘bend/lean’</td>
</tr>
<tr>
<td>looc’</td>
<td>looy-</td>
<td>‘gag’</td>
</tr>
<tr>
<td>laac’</td>
<td>lamy-</td>
<td>‘stick out tongue/lick lips’</td>
</tr>
</tbody>
</table>

New hypothesis: in *C₁VC₂C₃ roots, C₂ could have a number of different effects, including loss w/ compensatory lengthening, and devoicing of a following implosive
  • The development of these CC clusters is much more complicated than we thought
Fula *Cd__ > Cy\-

One particularly interesting cognate set:

Sereer siif = Fula siry- ‘spit through the teeth’

What explains the discrepancy in POA of the final implosive stop?

We could reconstruct *sird, and propose a sound change *Cd__ > Cy\- in Fula
  • But this is rather odd, and supported by only this one cognate set

When we look at all Fula CVCC roots in Seydou (1998), we find an encouraging pattern:

In the final consonant of CVC_αC_β roots, 23 roots with /y/, and only 1 with /d/!
  • Note that overall, /y/ is much less common than /d/ in Fula

*Cd__ > Cy\- must now be seriously considered
Conclusion

Conducting a Gedney survey was very helpful to me in understanding the diachrony of Sereer and Fula

Even with limited time in the field, if you’re interested in these sorts of issues in your own languages, this can be a worthwhile endeavor

Thanks to my main consultant El-Hadji Malick Loum, and Peter Jenks for telling me who William Gedney is

References: