Multidisciplinary research and GIS techniques in language history studies: from a project on the languages of Lower Fungom (NW Cameroon)

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Acknowledgments

• This research is part of a U.S. NSF-funded project “Towards an areal grammar of Lower Fungom” (BCS-0853981), PI Jeff Good (2010-2012).

• Funds ($1,500!) for starting up a GIS framework have come from the Digital Humanities Initiative at Buffalo.

• Data and results are the outcome of a team-based research: Jeff Good, Jesse Lovegren (UB), and Rebecca Voll (Leiden).
Political map 1

Distribution of kin groups acting corporately in matters of residence, marriage, economy, and, partly, politics.
Approximately 100 loosely-defined kin groups coalesce into 12 traditionally independent village-chiefdoms headed by a chief. Traditionally, villages/polities (used to) act as corporate groups mostly in ritual and judicial terms.
2 language clusters
3 one-village languages
2 languages connected with groups outside of the area
How to explain this highly diverse linguistic scenario?
Yemne-Kimbi group is referential non-genetic and, apparently, occupying a high node within Bantoid (same as Wide Grassfields).

How to explain YK “apartness” with respect to neighboring language groups?
• Locals’ perceptions: each village has its own language

• How to explain such extremely localist sociolinguistic attitude?

• Micro-area

• Expectedly rather “shallow prehistory”
Tackling the enigma: *multi*disciplinary research

“Our argument [...] has been carefully crafted to ensure that different lines of evidence are neither conflated nor used interchangeably. We consider each line of evidence separately and then compare them to assess accordance or discordance.” (Donohue and Denham 2010:248)
Tackling the enigma: linguistics

• Linguistic research:
  – Lovegren’s 6-month fieldwork on Mungbam
  – Voll’s 5-month fieldwork on Mundabli
  – Good’s several shorter visits for studying mostly Ajumbu, Koshin, and Naki
  – Mve and Nganguep Tchiemouo’s ongoing Master’s research on Fang

• Methodology: mostly elicitation sessions, some narratives (and verbal art performances in future)
## Tackling the enigma: the rest

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Collected through</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓  Topographic</td>
<td>GPS survey (ca. 200 km on foot)</td>
</tr>
<tr>
<td>✓  Ethnographic</td>
<td>Extensive survey</td>
</tr>
<tr>
<td>✓  Archaeological</td>
<td>Partial survey (ca. 15% of surface)</td>
</tr>
<tr>
<td>✓  Historiographical</td>
<td>Archival research (Buea, Berlin)</td>
</tr>
<tr>
<td>✗  Genetic</td>
<td></td>
</tr>
<tr>
<td>😞  Environmental &amp; Geo-morphological</td>
<td>Remote</td>
</tr>
</tbody>
</table>
Topography
Topography

- About 200km covered on foot
- All movements have been kept track of using a GPS system
Ethnographic research

• Goals
  – Check for cultural boundaries within Lower Fungom
  – Evaluate the degree to which cultural and linguistic boundaries may be seen to coincide

• Methods
  – Observation, interviews, and archival research
  – Establish a term of sociocultural comparison
Sociocultural map

- Features are not meant to capture diversity but degrees of closeness to an “empirical prototype” (Lower Fungom Canon, LFC)
The existence of language clusters in itself strongly suggests that some communities have been present in the area longer than others. This is further corroborated by the fact that societies speaking varieties of either of the two Yemne-Kimbi clusters (Mungbam and Ji) share important sociocultural features.
Ethnohistorical Landscape: earliest reconstructible scenario (ca. 1600)
Ethnohistorical Landscape: ca. 1750
Ethnohistorical Landscape: ca. 1830
Ethnohistorical Landscape: ca. 1860
Ethnohistorical Landscape: ca. 1900
Ethnohistorical Landscape: 1972
In most cases we see a progressive localization of these items of memory. Synoecism (crystallization)
Mufu 1600
Mufu 1830
Mufu 1900
Pre-1850

In many cases settlement pattern used to be rather dispersed. Shift from lowland dispersed to concentrated settlement on hilltops has economic and political (ideological) implications. We infer an earlier scenario dominated by non-centralized societies, dialect continua and lesser localist ideologies.
1850-1900

Crystallization = Ethnogenesis = Glottogenesis
Surprise!

• All the maps you have seen so far were produced using ArcGIS, a software for building and handling Geographical Information Systems (GIS).

• By combining representations of items of knowledge (a database) with a computer mapping system, a GIS is able to store and handle datasets coming from a number of different sources (disciplines) concerned with the same area and to integrate them along with real-world information.
Functionalities of GIS

Four keywords:

• Thematization
• Contextualization
• Spatial analysis
• Reliability check
Thematization

- Thematization = selection of one or more variables (i.e. fields of a DB) in order to display items on map according to that variable.
- Thematic maps facilitate the discovery of systematic spatial correlations between apparently unrelated datasets and, hence, the interpretation of spatial patterns within the data.
Feature 24A: Locus of Marking in Possessive Noun Phrases
by Johanna Nichols and Balthasar Bickel
get URL for the map currently displayed

Legend:
- Head marking: 78
- Dependent marking: 98
- Double marking: 22
- No marking: 22
- Other: 6

Map of the world showing the distribution of marking in possessive noun phrases.
Locus of Marking in Possessive Noun Phrases and Obligatory Possessive Inflection

get URL for the map currently displayed

show legend

Map Satellite
Locus of Marking in Possessive Noun Phrases and Obligatory Possessive Inflection

get URL for the map currently displayed

Legend

- **Head marking**: Exists 17
- **Head marking**: Absent 46
- **Dependent marking**: Exists 3
- **Dependent marking**: Absent 81
- **Double marking**: Exists 4
- **Double marking**: Absent 15
- **No marking**: Exists 5
- **No marking**: Absent 18
- **Other**: Absent 6
LL-Map
(www.llmap.org)
LL-Map
(www.llmap.org)
Detroit linguistic diversity
(Veselinova and Booza)
Contextualization

- Provide existing data with a broad context within which to visualize and interpret spatial relationships between items.
Contextualization

- In GIS framework contextualization means not only “providing content with its own container”
- Goal is to produce tools for understanding the ways in which our items interact in real world AND how they interact WITH environment
- Landscape perspective
Landscape

“‘Landscape’ means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”

Landscape is an “essential component of people’s surroundings, an expression of the diversity of their shared cultural and natural heritage, and a foundation of their identity”.

(European Landscape Convention art. 1,a and 5,a)
Landscape

• Is not “space”, a neutral background over which we can visualize items
• Nor “territory”, which emphasizes the physical-geographical nature of environment
• Rather, it is the result of a complex interaction and, importantly, goes beyond objectivity
• This is why we have proposed a “ethnohistorical landscape”
Spatial analysis in a GIS framework

At the heart of any GIS is a DEM, a numerical model expressing altitude above sea level. The DEM allows us to derive other numerical maps. Slope (i.e., incline of a surface) is an instance of such maps: different colors represent different slope gradients. These maps serve to highlight steep vs. plain areas and to identify areas more suitable to agricultural exploitation.
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Our current hypothesis draws on ethnohistorical claims:
• Ngun one of the oldest villages
• No recollections of disparate origins of Ngun patrilineages
We want to check whether this is tenable and what role this might play in reconstructing the linguistic prehistory of the area. If it is true, then Ngun may have been an early center of cultural irradiation in LF (“source” of Mungbam).
Reliability check

- GIS allows continuous check on reliability of one’s data (provided the DB is built accordingly).
- This is also important to set the research agenda (field trips and their goals).
- Also peculiar to “fully GIS approach”.
GIS and its limits in research on Linguistic prehistory

• GIS can handle and facilitate analysis of data coming from multiple disciplines and hence can offer fruitful research tools but
• GIS is not an end in itself: it provides research tools for further (and GIS-independent) interpretation
• It has limits. Particularly evident from an African standpoint are: how to represent multilingualism? Language ideologies?
• How to build a GIS expressly directed towards linguistic prehistory, and hence how to develop its features in this perspective, is the central theme of a proposed ESF Exploratory Workshop, which will hopefully take place in February 2012 at Leiden (co-applicants Hombert, Zeitlyn, and Di Carlo)
Publications about Lower Fungom

- Di Carlo, Pierpaolo “Lower Fungom linguistic diversity and its historical development: proposals from a multidisciplinary perspective”. Africana Linguistica, 17 (2011): 39-86. (*here the research method is clearly outlined, but GIS is absent*)

Thanks!

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