An underspecification approach to Hausa resumption

Berthold Crysmann
crysmann@linguist.univ-paris-diderot.fr

CNRS, Laboratoire de linguistique formelle (UMR 7110), Paris-Diderot

HEADLEX 2016, Warsaw
Introduction

- Hausa is a major Afroasiatic language (Chadic sub-branch) spoken by over 35 million speakers in Northern Nigeria and bordering Niger
- Unbounded dependency constructions (UDCs) in Hausa feature both
  - standard extraction (filler–gap dependencies)
  - resumptive pronoun strategy
- Resumptive elements include
  - free pronouns
  - bound pronominal affixes
  - zero anaphora (see below)
Resumption vs. gap strategy

- Choice of extraction strategy partially determined by the governing head
- Possessor complements of nouns only permit resumption

(1) \(wâ_i\) ka \(àuri\) ’ya-r \(-sâ_i\) / ’yā *\(\emptyset_i\)
\(wâ_i\) ka \(àuri\) ’ya-r \(-sâ_i\) / ’yā *\(\emptyset_i\)
who 2.M.CMPL marry daughter.F-of.F -3S.M daughter
‘Whose daughter did you marry?’ (Jaggar, 2001)

- Complements of true prepositions equally do not permit gap strategy

(2) \(sândâ_i\) sukà dÛkë shì dà \(\text{ita}_i\) / *\(\emptyset_i\)
\(sândâ_i\) sukà dÛkë shì dà \(\text{ita}_i\) / *\(\emptyset_i\)
stick 3P.CPL beat 3S.DO with 3S.F
‘It was a stick they beat him with.’ (Jaggar, 2001)
Human direct objects

- Direct objects of verbs, dynamic nouns, and verbal nouns can extract by way of a filler-gap dependency
- Overt resumptives are considered marginal

“Deletion is [...] the strongly preferred strategy for relativisation on direct objects.” (Jaggar, 2001, p. 534)

(3) a. yārònì dà sukà dòkà ₀ᵢ yanà àsìbitì
   boy REL 3P.CPL beat up 3.S.M.CONT hospital
   ‘The boy they beat up is in hospital’ (Jaggar, 2001, p. 534)

b. gà yārinyàrì dà nakè sô ₀ᵢ
   there is girl REL 1.S.CONT want.VN
   ‘There’s the girl I love.’ (Jaggar, 2001, p. 534)

c. ìnà littāfìnì dà kakè màganà ₀ᵢ
   where book REL 2.S.M.CONT talking
   ‘Where is the book you’re talking about?’ (Jaggar, 2001, 534)
Human direct objects

- Marginality of resumption in highest clause familiar from subjects in Hebrew (Borer, 1984) and Irish (McCloskey, 1990)
- Resumption fine for more deeply embedded human objects (non-islands)

(4) mùtumìn$_i$ dà dàlìbai sukà san [cêwā mālàma-r-sù
man REL students 3P.CPL know COMP teacher-L.F-3P.GEN
tanà sô-n-sà$_i$ / sô $\emptyset_i$]
3.S.F.CONT like.VN-L-3.S.M.GEN / like.VN
‘the man that the students know that their teacher likes’
(Newman, 2000, 539)
Human direct objects

- Resumptives also found in across-the-board extraction from coordination
- ATB extraction in Hausa allows mixing of gap and resumptive strategy

(5) \([\text{àbōkī-n-ā}]_i \text{ dà } [\text{[na zìyartà } \emptyset_i] \text{ àmmā [bàn sàmē shì}_i \text{ à gidā ba}]]\)  

‘my friend that I visited but did not find at home’  (Newman, 2000, p. 539)
Human direct objects

- Resumption required with long relativisation
  - from complements of non-bridge verbs
  - from relative (or wh) clauses

(6) gà yârânì dà Àli ya radà minì [wai ya there are children REL Ali 3.S.CPL whisper 1.S.IO COMP 3.S.CPL gan-ṣùi / *ganì Ø gida-n giyà] see-3P.DO / see Ø house-L beer ‘Here are the children that Ali whispered to me that he saw in the bar.’ (Tuller, 1986, 169)

(7) gà mútumìn j dà ka ga yārinyàrì [dà Øi ta here.is man REL 2.S.M.CPL see girl REL 3.S.F.CPL san shìɬ / *sanì Øj] know 3.S.M.DO / know Ø ‘Here’s the man that you saw the girl that knows him.’ (Tuller, 1986, 85)
Indirect objects

- Both resumption and gaps possible with indirect objects

(8) mutànên\textsubscript{i} dà sukà ki sayar musù / wà Ø dà àbinci men REL 3P.CPL refuse sell 3P.IO / IOM with food sukà fita 3P.CPL left

‘the men they refused to sell food to left.’ (Jaggar, 2001, 534)

- Resumption obligatory with long relativisation

(9) gà tābōbîn\textsubscript{j} dà Àli ya san mütumìn\textsubscript{i} [dà Ø\textsubscript{i} here.is cigarettes REL Ali 3S.M.CPL know man REL zài yī musù\textsubscript{j} / *wà Ø\textsubscript{j} kwālī] 3S.M.FUT do 3P.IO / IOM Ø box

‘Here are the cigarettes that Ali knows the man that will make a box for.’ (Tuller, 1986, 84)
Null pronouns

- Hausa has null subjects and null non-human direct objects

(10)  a. Kā  ga littāfî-n Mūsa?
2S.M.CPL see book-of Musa
‘Did you see Musa’s book?’

b. Ī, nā gan shì. / Ī, nā ganī Ø
Yes 1.S.CPL see 3S.M Yes 1.S.CPL see
‘Yes, I saw it.’

(Tuller, 1986, 61)

(11)  a. Kā  ga kanè-n Mūsa?
2S.M.CPL see brother-of Musa
‘Did you see Musa’s brother?’

b. Ī, nā gan shì. / *Ī, nā ganī Ø
Yes 1.S.CPL see 3S.M Yes 1.S.CPL see
‘Yes, I saw him.’

(Tuller, 1986, 62)

- Interpretation of zero arguments is specific (Jaggar, 2001; Tuller, 1986)
Null resumptives I

- Long relativisation out of relatives possible with pro-dropped arguments (subject and non-human direct object); cf. (Tuller, 1986)

12) mùtumìnᵢ dà ka san littāfìnᵢ [dà ולם ya man REL 2S.M.CPL know book REL 3S.M.CPL
rubûtā ולם]
write
‘the man that you know the book (he) wrote’ (Tuller, 1986, 81)

13) littāfìnᵢ dà ka san mùtumìnᵢ [dà ולם ya book REL 2S.M.CPL know man REL 3S.M.CPL
rubûtā ולם]
write
‘the book that you know the man who wrote (it)’ (Tuller, 1986, 81)
Likewise, argument-drop permits relativisation out of wh-islands

(14) mùtumìnᵢ dà ka san [mēⱼ 0ᵢ ya rubūtā 0ⱼ]
man REL 2S.M.CPL know what 3S.M.CPL write
‘the man that you know what (he) wrote’ (Tuller, 1986, 80)

(15) littāfınᵢ dà ka san [wâⱼ 0ⱼ ya rubūtā 0ᵢ]
book REL 2S.M.CPL know who 3S.M.CPL write
‘the book that you know who wrote (it)’ (Tuller, 1986, 80)

According to Tuller (1986), the pattern extends to

- clausal subjects
- complements of non-bridge verbs
Islands for wh-fronting I

- By contrast, wh-extraction cannot escape islands, e.g. relatives

(16) * wànè mùtûmᵢ ka bā nì littāfînj dà Øᵢ
which man 2s.m.cpl give me book REL
ya rubûtā Øᵢ
3s.m.cpl write
‘Which man did you give me the book that wrote’ (Tuller, 1986, 81)

(17) * wànè littāfîj ka san wài Øᵢ ya rubûtā Øᵢ
which book 2s.m.cpl know who 3s.m.cpl write
‘which book do you know who wrote’ (Tuller, 1986, 80)
Islands for wh-fronting II

- Overt resumptives do not improve island sensitivity of wh-phrases

(18) \[wā̀ j \ ka \ yi \ màganà \ dà \ shīj\]
who 2S.M.CPL do talking  with 3S.M
‘Who did you talk with?’ (Tuller, 1986, 158)

(19) \*[wā̀ j \ ka \ san \ màtâr_i [dà \ Ǿ_i \ ta \ yi \ màganà\]
who 2S.M.CPL know woman REL  3S.F.CPL do talking
dà \ shīj\]
with 3S.M
‘Who do you know the woman that talked to him’ (Tuller, 1986, 159)
Tuller (1986) cites a marginally acceptable example with triply nested relativisation

(20) ? gà mài tàₕi dà ka bā nì littāfín j dà here.is woman REL 2S.M.CPL give me book REL mài là mái sukà san mútùmìₕ k dà 0ₐ ta rubùtā teachers 3P.CPL know man REL 3S.F.CPL write wà 0ₖ 0ₗ for
‘Here’s the woman that you gave me the book the teachers know the man she wrote it for.’ (Tuller, 1986, 84)
Synopsis

- Partial overlap between resumption and gap type extraction
  - Resumption only:
    - Possessors
    - Complements of true prepositions
  - Gap-only:
    - Extraction of non-NP complements
    - Adjunct extraction
  - Both:
    - indirect objects
    - human direct objects
- Gaps and resumptives found in
  - wh- and focus fronting
  - relativisation
- Resumptives and gaps can foot the same UDC (e.g. with ATB)
- Extraction out of strong islands:
  - top of the dependency restricted to relatives
  - bottom restricted to resumptives
SLASH dependencies in HPSG

- Tri-partite non-local dependencies:
  - SLASH introduction at gap site (lexical)
  - SLASH percolation (head-driven)
  - SLASH retrieval (lexical/constructional)
SLASH passing in HPSG

- Unbounded dependencies in HPSG are mediated via a non-local set-valued feature SLASH, relating properties of the filler to properties at the gap site.
- Following Sag (1997); Ginzburg & Sag (2000), SLASH passing is:
  - lexical: gaps are introduced on the argument structure of the head.
  - head-driven: heads determine their SLASH value from those of their arguments.

(21) SLASH amalgamation (Ginzburg & Sag, 2000)

\[
\begin{align*}
\text{SYNSEM} & \left[ \text{NLOC} \left[ \text{SL} \ 1 \cup \ldots \cup \ n \right] \right] \\
\text{ARG-ST} & \left< \left[ \text{NLOC} \left[ \text{SL} \ 1 \right] \right], \ldots \left[ \text{NLOC} \left[ \text{SL} \ n \right] \right] \right>
\end{align*}
\]
Resumption in HPSG

- Most HPSG practitioners (Alotaibi & Borsley, 2013; Taghvaipour, 2005; Crysmann, 2012) agree, based on ATB facts, that resumption should be regarded as a slash dependency.

- HPSG scholars disagree as to whether resumptive and gap dependencies need to be distinguished by other means:
  - Island effects considered extra-grammatical.
  - Taghvaipour (2005) percolates UDC type in addition to local values.
  - Crysmann (2012) implements a weight distinction to capture difference w.r.t. island effects.
  - weight distinction similar to complement vs. relative clause extraposition (Crysmann, 2013).
Resumptive dependencies analysed as SLASH dependencies coindexing an element of a lexical head’s SLASH with the INDEX of an argument

- resumptive arguments are not themselves slashed
- modified version of SLASH amalgamation: elements of SLASH may correspond to an argument’s SLASH, or to the INDEX of an unslashed argument

Pro:

- Treats resumptive pronouns as ordinary pronouns

Cons:

- Fails to assign proper semantics for resumptive use: more than one relation per variable
- Replaces deterministic SLASH amalgamation with a non-deterministic, massively disjunctive constraint
- Fails to capture island effects in Hausa

- ATB suggests resumptives and gaps are compatible
- Hausa island effects show that
  - only relatives footed by a resumptive can escape islands
  - both gap dependencies and phrasal fillers are island-sensitive

- Distinguish gaps/resumptives and wh/relatives by the amount being minimally shared

INDEX (resumptive, relative) vs. LOC (gap, wh-filler)

\[(22)\]

\[\text{slashed} \]

\[
\begin{align*}
\text{LOC} & \left[\text{cont.hook.index} \ [1]\right] \\
\text{NLOC} & \left[\text{SL} \left\{\text{cont.hook.index} \ [1]\right\}\right]
\end{align*}
\]

\[(23)\]

\[
\begin{align*}
\text{local} & \left[\text{CONT} \ mrs\right] \\
\text{full-local} & \left[\text{CAT} \ cat\right] \\
\text{light-local} & \\
\end{align*}
\]
Crysmann (2012, 2015): Launching SLASH

- Standard gap-type dependencies are introduced by CELR
- Full reentrancy of SL element with a dependent’s LOC value (24) Complement extraction (e.g. human direct object)

\[
\begin{align*}
\text{SS} & \left[ \text{LOC} \left[ \text{CAT} \left[ \text{VAL} \left[ \text{COMPS} \left[ \llangle \right] \right] \right] \right] \right] \\
\text{DTR} & \left[ \text{SS} \left[ \text{LOC} \left[ \text{CAT} \left[ \text{VAL} \left[ \text{COMPS} \left[ \langle gap \mid \llangle \rangle \right] \right] \right] \right] \right] \right]
\end{align*}
\]

- Lexical rules for resumption are crucially underspecified: compatible with both wh fillers and relative dependencies (25) Resumption

\[
\begin{align*}
\text{SS} & \left[ \text{LOC} \left[ \text{CAT} \left[ \text{VAL} \left[ \text{COMPS} \left[ \llangle \right] \right] \right] \right] \right] \\
\text{DTR} & \left[ \text{SS} \left[ \text{LOC} \left[ \text{CAT} \left[ \text{VAL} \left[ \text{COMPS} \left[ \langle slashed \mid \llangle \rangle \right] \right] \right] \right] \right] \right]
\end{align*}
\]
Crysmann (2012, 2015): SLASH retrieval

- Two constructions for retrieval in Hausa:
  - classic filler-head structures (for wh- and focus fronting) identifies TO-BIND.SLASH with filler’s entire LOC value
    
    \[
    \begin{align*}
    \text{filler-head-rule} \\
    \text{F-DTR} & \quad [\text{SS|LOC } ] \\
    \text{HD-DTR} & \quad [\text{SS|NLOC } [\text{T-B|SLASH } ] ]
    \end{align*}
    \]

    (26)

  - relative complementiser identifies index in TO-BIND.SLASH with index of antecedent noun (in REL)
    
    \[
    \begin{align*}
    \text{rel-complementiser-lex} \\
    \text{SS} & \quad [\text{LOC|CAT|HEAD|MOD|LOC|CONT|INDEX } ] \\
    \text{HD-DTR} & \quad [\text{SS|NLOC } [\text{T-B|SLASH } ] ]
    \end{align*}
    \]

    (27)

- Strong Island constraint:
  
  \[
  \begin{align*}
  \text{HD-DTR|SS|NLOC|T-B|SLASH } & \rightarrow [\text{SS|NLOC|SLASH } \text{ set(light-local)} ]
  \end{align*}
  \]

  (28)
Summary of the baseline approach

» Features
  » Captures overlap between gap and resumptive strategies in Hausa
  » Accounts for islands
  » Semantics:
    » correctly distinguishes resumptives and ordinary pronouns
    » no spurious differences between gaps and resumptives

» Bugs
  » Duplication of
    » pronominal lexical items
    » pronominal affixation rules
    » zero pronoun rules
  » Misses McCloskey’s generalisation:
    in languages with resumption, resumptives are always the ordinary pronouns of the language
Resumption by underspecification

- Synthesis:
  - decision on function is property of governing head (cf. Borsley)
  - combine with underspecification of pronominal-synsem (generalises across bound and free pronouns)
  - Expanded hierarchy of synsem

```
expanded hierarchy of synsem

<table>
<thead>
<tr>
<th>synsem</th>
<th>LOC</th>
<th>full-local</th>
</tr>
</thead>
<tbody>
<tr>
<td>NLOC</td>
<td>non-local</td>
<td></td>
</tr>
</tbody>
</table>

slashed
LOC
CONT|INDEX [Ⅱ]
NLOC
SLASH {CONT|INDEX [Ⅱ]}

unslashed

pronominal
LOC|CONT|INDEX [Ⅱ]
ref-index

pronoun
LOC
CONT
RELs
[▌]
NLOC
SLASH {▌}

resump
LOC|CONT
RELs
[▌]
NLOC
SLASH {▌}
```
Argument realisation

- Two-ways distinction
  - local vs. nonlocal
  - mode of expression (zero/affix/word)

- Decision on locality of realisation decided on governing head (cf. Borsley)
  - Obligatory LR layer on nouns, verbs, and prepositions to disambiguate direct object (first member on COMPS) for slashed or unslashed realisation
  - Analogous LR on TAM/AGR markers for SUBJ

- Mode of expression distributed over
  - heads (zero/affix)
  - dependents (word)

Unifying property: synsem values

- Unification of locality and expression synsem types yields pronoun vs. resumptive readings (SLASH and semantics)
Adjuncts

- Current approach capitalises on privileged complement status
- Two remaining issues:
  - resumptives contained within adjuncts
  - resumptive adjuncts
- Resumptives contained within adjuncts
  - complement resumptives readily licensed by local head
  - adjuncts known to be permeable for index percolation, e.g. with relative extraposition (Kiss, 2005; Crysmann, 2013)
  - exceptional SLASH passing out of adjuncts attested by parasitic gaps (Pollard & Sag, 1994)
- Adjunct resumptives?
  - Hausa exclusively relies on gap type extraction for adjuncts
  - Coptic lacks complement gaps altogether, yet features gap-type extraction with adjuncts (Crysmann & Reintges, 2014)
  - Asymmetry expected, if adjunct extraction is syntactic (Levine, 2003), but complement extraction lexical
The place of island constraints

  - Hofmeister & Sag (2007), however, do not address resumption
  - Alexopoulou & Keller (2007) show on the basis of English, German, and Greek that resumptives
    - improve acceptability without island violations (deep nesting)
    - improve acceptability with weak islands (*that/whether* clauses)
    - do not improve acceptability with strong islands (e.g. relatives)

Clear-cut difference between strong and weak islands is explicitly related to grammar/performance distinction

- Hausa island effects
  - involve strong islands (wh and relative clauses)
  - difference between relative/resumptive vs. wh-filler or gap chains must be part of grammar
HaG sample analyses http://hag.delph-in.net/logon

UDCs Pronoun
Conclusion

▶ Underspecification approach
  ▶ provides an account of McCloskey’s generalisation, in contrast to Crysmann (2015):
    ▶ single lexical entry/morphological rule for pronominals
    ▶ differentiation of function on governing head
  ▶ assigns identical semantics to resumptives/gaps, in contrast to
    ▶ Alotaibi & Borsley (2013): no treatment of semantics, leading to “resource surplus”
    ▶ Asudeh (2004): extra glue manager resource to cope with “resource surplus”
  ▶ contextually differentiates semantics of resumptive vs. pronominal use
  ▶ keeps standard deterministic SLASH amalgamation
  ▶ integrates with grammatical account of island effects in Hausa
  ▶ fully implemented in DELPH-IN (LKB/Pet/ace)
Shi ke nan. Kurunkus.
References I


