The Syntax of Questions in Moro
Hannah Rohde
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hannah@ling.ucsd.edu

Goal: to present and analyze wh- questions in Moro

I. BASICS OF MORO

- Kordofanian language, spoken in Sudan, SVO word order, head-initial, rich agreement morphology (grammars: Black & Black 1971, Baker et al. 2005); tone-marking in this handout has been omitted

1. declarative sentence

(1) Kuku g.a.tað.o umja
   ‘Kuku abandoned the boy.’

- Two question formation strategies: wh- word in-situ or a clause-initial form

II. OBJECT WH-QUESTIONS

- in-situ

(2) kuku g.a.s.o wande (3) kuku g.a.tað.o edʒaɡʊo
   Kuku CL.MAIN.eat.PERF what Kuku CL.MAIN.abandon.PERF who
   ‘What did Kuku eat?’ ‘Who did Kuku abandon?’

- clause-initial wh- word

(4) nwəndæki (n), kuku (n), g.a,s.o (5) edʒaɡʊo (n), kuku (n), g.a.tað.o, o, gə
   what (WH) Kuku (WH) CL.SUB.eat.PERF who (WH) Kuku (WH) CL.SUB.abandon.PERF,RES
   ‘What did Kuku eat?’ ‘Who did Kuku abandon?’

Abbreviations: CL: class agreement, MAIN: matrix clause, SUB: subordinate, PERF: perfective, IMP: imperfective, RES: resumptive pronoun, WH: wh- agreement, parentheses indicate optionality

III. SUBJECT WH-QUESTIONS

- No subject wh- questions with in-situ forms

(6) *wande g.i.d.u (7) *edʒaɡʊo g.i.d.u
   what CL.MAIN.fall.PERF who CL.MAIN.fall.PERF
   ‘What fell?’ ‘Who fell?’

- Subject wh- questions with clause-initial wh- word

(8) nwəndæki g.i.d.u (9) edʒaɡʊo g.i.d.u
   what CL.SUB.fall.PERF who CL.SUB.fall.PERF
   ‘What fell?’ ‘Who fell?’

Comparison: in-situ and clause-initial question formation strategies differ in wh- agreement, main/subord. verbs, and resumptive pronouns, but the in-situ and clause-initial forms do share similar morphology

Table 1. Moro wh- question words

<table>
<thead>
<tr>
<th>in-situ form</th>
<th>clause-initial form</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘what’ wande</td>
<td>nwəndæki</td>
</tr>
<tr>
<td>‘who’ edʒaɡʊo</td>
<td>nwəndæki</td>
</tr>
</tbody>
</table>

IV. OVERVIEW OF ANALYSIS

- Problems raised:
  - What is the nature of these clause-initial wh- questions?
  - Given that languages are expected to choose either an in-situ or fronting strategy for wh- questions (Cheng 1997), how come Moro appears to use both?

- Proposal:
  - Moro does not have wh- movement
  - Clause-initial wh- questions consist instead of a predicate and headless relative clause (cf. Potsdam to appear) – wh- cleft structures are common in African Languages (Nguni, Sabel & Zeller 2006; Sesotho, Demuth 2003; Edo, Omoruyi 1989; inter alia)

- Outline
  - Compare properties of Moro’s other cleft and relative clause structures
  - Wh- agreement patterns for subject/object extraction
  - Additional agreement data: modifiers and larger structures
V. EVIDENCE FOR PREDICATE PHRASE

Cleft morphology appears in clause-initial wh- words

(10) ṣw ɗamala.ɗi ɗ.e.s.o loana
copula camel.DEM CL.SUB.eat.PERF corn
'It is the camel that ate the corn.'

(11) ṣw ɗik.ek.e g.e.s.o loana
copula person.DEM CL.SUB.eat.perf corn
'It is the person who ate the corn.'

(12) ɗwɔdʒeki g.e.s.o loana
who CL.SUB.eat.PERF corn
'Who ate the corn?' ('Who is it that ate the corn?')

VI. EVIDENCE FOR RELATIVE CLAUSES: VOWEL CHANGE

Like verbs in relative clauses (Weidman 2005), verbs in questions undergo vowel fronting

(13) indicative
umja g.a.s.o loana
boy CL.MAIN.eat.PERF corn
'The boy ate the corn.'

(14) relative clause (RC)
umje.ki [RC g.e.s.o] g.a.var.a
boy.DEM [RC CL.SUB.eat.PERF corn] CL.MAIN.cry.IMP
'The boy who ate the corn is crying.'

(15) clause-initial wh- question
ɗwɔdʒeki [RC g.e.s.o] loana
who [RC CL.SUB.eat.PERF corn ]
'Who ate the corn?'

VII. EVIDENCE FOR RELATIVE CLAUSES: wh- AGREEMENT

Like relative clauses, questions bear wh- agreement in extraction domain

wh- Agreement: use of agreement to mark the domain of extraction (evidence of agreement on complementizers (Irish, McCloskey 1979) and verbs (Chamorro, Chung 1994)

Table 2. Moro wh- agreement

<table>
<thead>
<tr>
<th>wh- Agreement Morphemorphes</th>
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<tbody>
<tr>
<td>for object/adjunct extraction</td>
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<tr>
<td>for subject extraction</td>
</tr>
</tbody>
</table>

(16) overt agreement for object (and other non-subject) extraction

(a) object relative clause
umje.ka [RC (nə).kuku (nə).g.a.taɗ.o] g.a.var.a
'The boy who Kuku abandoned is crying.'

(b) object wh- question
ɗwɔdʒeki (nə).kuku (nə).g.a.taɗ.o.ŋo
who (WH).Kuku (WH).CL.SUB.abandon.PERF.RES
'Who did Kuku abandon?'

(c) adjunct wh- question
ɗɔnd'ŋoŋ (nə).owa (nə).g.e.s.a ɗədəmana
when (WH).woman (WH).CL.SUB.eat.IMP beans
'When does the woman eat beans?'
(17) **no overt agreement for subject extraction**

(a) **subject relative clause**

udʒi.ki [\_\_ (\_\_).kuku] g.a.var.a


‘The man who abandoned Kuku is crying.’

(b) **subject wh-question**

ŋwəɗʒekɪ [\_\_ (*n\_).g.a.taɗ.o] kuku

who [\_\_ (*WH).CL.SUB.abandon.PERF Kuku]

‘Who abandoned Kuku?’

**Interim Summary:**

- Clause-initial wh-word acts like a cleft
- Material following cleft contains a relative clause
  - Parallels relative-clause vowel fronting
  - Parallels relative-clause wh-agreement
- Wh-agreement acts as wh-scope marking

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**IX. SIGNIFICANCE OF SYNTACTIC HEADS FOR WH-AGREEMENT**

- Agreement permitted on head of root clause (Infl)

(21) ŋwəndəki (n\_).kuku (n\_).g.a.rm.o (*n\_).da.ta.tu.f.e


‘What did Kuku continue to be?’

[possible answer: ‘king’]

- No agreement on modifiers

(22) **possessor**

ŋwəɗʒekɪ (n\_).ŋəŋi (*n\_).ŋ.umja (n\_).ŋ.ɔ.s.o.ŋo


Who did the boy’s dog bite?

(23) **adjective**

ŋwəndəki (n).umja (*n\_).ke.do.o (n\_).g.a.ken.o


‘What did the fat boy break?’

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**X. COMPARISON TO WH-AGREEMENT IN RELATED LANGUAGE**

Duala, Bantu language spoken in Cameroon, appears to use a similar pattern of *wh*-agreement (Epée 1976)

Table 2. Comparison of Moro & Duala *wh*-Agreement

<table>
<thead>
<tr>
<th></th>
<th>Duala</th>
<th>Moro</th>
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</thead>
<tbody>
<tr>
<td>agreement asymmetry for subject/object extraction</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td><em>wh</em>-agreement on verb</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td><em>wh</em>-agreement on verb or auxiliary verb only if head of root clause (Infl)</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td><em>wh</em>-agreement on subject</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td><em>wh</em>-agreement on sentential adverbs</td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>
XI. PROPOSED MECHANISM FOR WH- AGREEMENT

- Generalization: base-generated wh- word that combines with a (headless) relative clause; agreement marks intervening material between wh- operator and gap

(24) \[ \text{PredP} \overset{\text{wh-}}{\text{w}} \text{ndeki} \] \[ \text{DP} \overset{\text{CP}}{\text{i}} \text{who (WH).man (WH).CL.SUB.abandon.PERF.RES} \]

‘Who did the man abandon?’

- How is the operator-gap relationship expressed?

Figure 1. wh- agreement mechanisms in CP

<table>
<thead>
<tr>
<th>CP</th>
<th>Spec</th>
<th>C</th>
<th>IP</th>
<th>Op</th>
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</table>

(i) CP-IP: complementizer selects for IP headed by +WH Infl
Head of root clause (Infl) bears agreement (verb or auxiliary)

(ii) Spec-Head agreement Infl-NP to induce agreement on subject
Subject and verb already share person, number, noun class features
[Spec-Head agreement Infl-AdvP also induces agreement on IP-adjoined sentential adverbs]

XII. MULTIPLE CLAUSES – SHOW EXTENT OF AGREEMENT

- Agreement permitted only between wh- word and extraction site.

(25) In-situ wh- word → no agreement
mama g.a.t.a umja g.a.s.o wande
mama CL.MAIN.think,IMP boy CL.MAIN.EAT.PERF what
‘What does Mom think the boy ate?’

(26) Intermediate wh- word → agreement in wh- scope
mama g.a.t.a \( \text{nwandi} \) (n).umja (na).g.e.s.o
mama CL.MAIN.think,IMP what (WH).boy (WH).CL.SUB.eat.PERF
‘What does Mom think the boy ate?’

(27) Fully displaced wh- word → full agreement from wh- word to gap
\( \text{nwandi} \) (na).mama (na).g.a.t.a (n).umja (na).g.e.s.o
‘What does Mom think the boy ate?’

- Two kinds of agreement

(28) matching agr
\[ [\text{PredP} \overset{\text{wh-}}{\text{w}} \text{ndeki} \] \[ \text{IP} [\overset{\text{CP}}{\text{i}} \text{what (WH).mama (WH).CL.MAIN.think,IMP (WH).boy (WH).CL.SUB.eat.PERF} \]

‘What does Mom think the boy ate?’

See Clements (1984) for similar data with verbal wh- agreement in Kikuyu marking extraction domain – constraints for which were later attributed to the c-command relation between the wh- operator and the head of the root clause (Haik 1990)
XIII. CONCLUSIONS AND OPEN QUESTIONS

- Moro provides novel data for wh-agreement:
  - wh- scope (CP-IP)
  - wh- matching (CP-CP)
  - subject/object agreement asymmetry

- Summary of analysis:
  - [Cleft + relative clause] structure to distinguish clause-initial wh-questions from in-situ constructions
  - Similarities between clause-initial wh-questions and relative clauses: vowel-fronting and wh-agreement
  - wh-agreement signals the domain of extraction

- Open Questions:
  - Optionality – where wh-agreement is permitted, it is never required
  - Resumptive pronouns – unlike relative clauses, wh-questions use resumptive pronouns, suggesting additional structural differences
  - Composition of question word – separable cleft or bound lexical item

Acknowledgements
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References
Black, K. Mr. and Mrs. 1971. Linguistic Monograph Series #6. Sudan Research Unit, Faculty of Arts.

Appendix
An alternative analysis takes the morphology of the clause-initial wh-words as direct evidence of their syntactic structure:

(i) [pred.řy] [dp wändskí, [cP, COp [IP (n).uaří (n2).g.e.s.o tř]], copula what.DEM (WH).man (WH).CL.SUB.eat.PERF
‘What did the man eat?’

(ii) [resqřy] [dp ạdš.eki, [cP, COp [IP (n).uaří (n2).g.e.s.o tř]], copula who/person.DEM (WH).man (WH).CL.SUB.abandon.PERF.RES
‘Who did the man abandon?’

Advantages: headed relative clause; no need to stipulate null head
Problems with this account:
- Unexplained vowel reduction (‘uaří’ for ‘person’, ‘ạdš’ for ‘who’)
- Unexplained vowel harmony – unexpected across morpheme boundary (‘wändé’ ‘what’ becomes ‘wændá’ with demonstrative suffix ‘iki’)
- Nothing in (i) to force ‘wändskí’ to move