The Syntax of Questions in Moro

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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

kuku g.a.tað.o umja Kuku CL.MAIN.abandon.PERF boy '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 Kuku CL.MAIN.eat.PERF what 'What did Kuku eat?'
- (3) kuku g.a.tað.o **edʒəgaŋo** Kuku CL.MAIN.abandon.PERF **who** 'Who did Kuku abandon?'
- clause-initial wh-word
- (4) **ŋwəndəki** (nə).kuku (nə).g.ə.s.o (5) **ŋwədʒeki** (nə).kuku (nə).g.ə.tað.o.**ŋo what** (wh).Kuku (wh).CL.SUB.eat.PERF
 'What did Kuku eat?'
 who (wh).Kuku (wh).CL.SUB.abandon.PERF.RES
 'Who did Kuku abandon?'

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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- OUESTIONS

■ No subject *wh*- questions with *in-situ* forms

(6) *wande g.i.d.u (7) *edʒəgaŋo g.i.d.u what CL.MAIN.fall.PERF 'Who CL.MAIN.fall.PERF 'Who fell?'

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

(8) **ŋwəndəki** g.i.d.u (9) **ŋwədʒeki** g.i.d.u **what** CL.SUB.fall.PERF 'What fell?' **who** CL.SUB.fall.PERF '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

	<i>in-situ</i> form	clause-initial form
'what'	<u>wand</u> e	ŋ <u>wənd</u> əki
'who'	e <u>dz</u> əgaŋo	ŋwə <u>d</u> ʒeki

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

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V. EVIDENCE FOR PREDICATE PHRASE

Cleft morphology appears in clause-initial wh-words

- (10) **nw** damala.di d.e.s.o loana copula camel.DEM CL.SUB.eat.PERF corn 'It is the camel that ate the corn.'
- (11) **nw** udʒ.eki g.e.s.o loana copula person.DEM CL.SUB.EAT.perf corn 'It is the person who ate the corn.'
- (12) **nw**edgeki 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.<u>a</u>.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 loana] 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

ŋwədʒeki [$_{RC}$ 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

wh- Agreement Morphemes		
for object/adjunct extraction	n(ə)-	
for subject extraction	Ø-	

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

(a) object relative clause

umje.ki $[_{RC}$ (nə).kuku (nə).g.ə.tað.o] g.a.var.a boy.DEM $[_{RC}$ (WH).Kuku (WH).CL.SUB.abandon.PERF] CL.MAIN.cry.IMP 'The boy who Kuku abandoned is crying.'

(b) object wh- question

ŋwədʒeki (nə).kuku (nə).g.ə.tað.o.ŋo who (wh).Kuku (wh).CL.SUB.abandon.PERF.RES 'Who did Kuku abandon?'

(c) adjunct wh- question

ŋənd^woŋ (**n**).owa (**n**ə).g.e.s.a ŋaðamana 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

ud3i.ki [RC (*na).g.ə.tað.o kuku] g.a.var.a man.DEM [RC (*wh).CL.SUB.abandon.PERF Kuku] CL.MAIN.cry.IMP 'The man who abandoned Kuku is crying.'

(b) subject wh- question

ŋwədʒeki [RC (*nə).g.ə.tað.o

kuku]

who [RC (*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

VIII. WH- AGREEMENT WITH ADJUNCTS

- Adverbs are scope-marking, adjoining at different levels: CP, IP, VP
- *Wh-* scope selects eligible adverbs
- (18) **no agreement outside extraction domain** CP adjunction too high nwədʒeki [(nə).kuku (nə).g.ə.tað.o.no] (*n).ɛreka who [(WH).Kuku (WH).CL.SUB.abandon.PERF.3SG] (*WH).yesterday 'Who did Kuku abandon yesterday?'
- (19) **no agreement VP-internal** VP adjunction is too low nwodzeki [(nə).kuku (*n).ɛreka (nə).g.ə.tað.o.ŋo] who [(WH).Kuku (*WH).yesterday (WH).CL.SUB.abandon.PERF.RES] 'Who did Kuku yesterday abandon?'
- (20) **agreement on sentential adverbs** IP adjunction permitted nywodzeki [(n).ereka (no).kuku (no).g.o.tað.o.no] who [(WH).yesterday (WH).Kuku (WH).CL.SUB.abandon.PERF.RES] 'Who yesterday did Kuku abandon?'

IX. SIGNIFICANCE OF SYNTACTIC HEADS FOR WH- AGREEMENT

Agreement permitted on head of root clause (Infl)

(21) ŋwəndəki (nə).kuku (nə).g.ə.rm.o (*nə.)da.tu.t^j.e what (WH).Kuku (WH).CL.SUB.continue.PERF (*WH.)CL.IMP.be.IMP 'What did Kuku continue to be?'

[possible answer: 'king']

No agreement on modifiers

(22) *possessor

nwədʒeki (nə).nəni (*nə).n.umja (nə).n.ə.s.o.no
Who (WH).dog (*wH).GEN.boy (WH).CL.SUB.eat.PERF.RES
Who did the boy's dog bite?

(23) *adjective

nwəndəki (n).umja (*nə).ke.do.o (nə).g.ə.ker.o what WH).boy (*WH).CL.fat.PERF (WH).CL.SUB.break.PERF 'What did the fat boy break?'

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

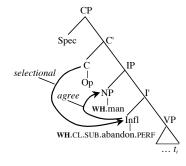
	Duala	Moro
agreement asymmetry for subject/object extraction	×	×
wh- agreement on verb	×	×
wh- agreement on verb or auxiliary verb only if head of root clause (Infl)		*
wh- agreement on subject		×
wh- agreement on sentential adverbs		×

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

• How is the operator-gap relationship expressed?

Figure 1. wh- agreement mechanisms in CP



- (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 \rightarrow agreement in wh- scope

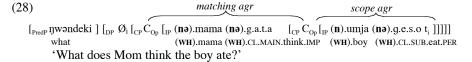
mama g.a.t.a <u>nwandaki</u> (n).umja (na).g.e.s.o
mama CL.MAIN.think.IMP what
'What does Mom think the boy ate?'

(MH).boy (WH).CL.SUB.eat.PERF

(27) Fully displaced wh- word \rightarrow full agreement from wh- word to gap

nwendeki (ne).mama (ne).g.a.t.a (n).umja (ne).g.e.s.o
what (wh).mama (wh).CL.MAIN.think.IMP (wh).boy (wh).CL.SUB.eat.PERF
'What does Mom think the boy ate?'

Two kinds of agreement



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

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Appendix

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

Advantages: headed relative clause; no need to stipulate null head

Problems with this account:

- Unexplained vowel reduction ('ud3' for 'person', 'əd3' for 'who')
- Unexplained vowel harmony unexpected across morpheme boundary ('wande' 'what' becomes 'wəndə' with demonstrative suffix 'iki')
- Nothing in (i) to force 'wəndəki' to move