Question embedding without *wh*-interrogatives: A unified account

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1. Introduction: The Puzzle

1. Introduction

The puzzle

- Akan (Kwa, Niger-Congo) has matrix *wh*-interrogatives, (1), but no embedded *wh*-interrogatives, (2).

(1) **Hena na** dii fufu no?
WHO FOC ate fufu the
'Who ate the fufu?'

Matrix *wh*-interrogative

(2) *Dufie nim [$_{CP}$ **hena (na)** dii fufu no].
Dufie knows WHO FOC ate fufu the
Intended: 'Dufie knows who ate the fufu.'

Embedded *wh*-interrogative

1. Introduction

The puzzle

- Akan (Kwa, Niger-Congo) has matrix *wh*-interrogatives, (1), but no embedded *wh*-interrogatives, (2).
- Instead, embedded questions must be expressed through a **relativized NP** (Saah 1994, 2010), cf. (3). We call such question objects **Q-NPs**:

(1) **Hena na** dii fufu no?
WHO FOC ate fufu the
'Who ate the fufu?' — Matrix *wh*-interrogative

(2) *Dufie nim [$_{CP}$ **hena (na)** dii fufu no].
Dufie knows WHO FOC ate fufu the
Intended: 'Dufie knows who ate the fufu.' — Embedded *wh*-interrogative

(3) Dufie nim [$_{NP}$ **nipa a** o-dii fufu no].
Dufie knows PERSON REL 3SG-ate fufu the
'Dufie knows *person who* ate the fufu (= *who* ate the futu).' — Relativized NP

1. Introduction

The puzzle

The Q-NP strategy is the only strategy across Q-dimensions and predicates:

- with the exception of rogative predicates like *bisa* 'ask', *hwehwɛmu* 'investigate' and *ka* 'tell', which accept both *wh*-embedding and Q-NPs

(4) **ɛhe (fa) na** Kofi dii fufu?
WHERE FOC Kofi ate fufu
'Where did Kofi eat fufu?' Matrix *wh*-interrogative

(5) *Dufie werɛ firii [$_{CP}$ **ɛhe (fa) (na)** Kofi dii fufu].
Dufie forgot WHERE FOC Kofi ate fufu
'Dufie forgot where Kofi ate fufu.' Embedded *wh*-interrogative

(6) Dufie werɛ firii [$_{NP}$ **bebi-a** Kofi dii fufu].
Dufie forgot PLACE-REL Kofi ate fufu
'Dufie forgot *place where* Kofi ate fufu (= *where* Kofi ate fufu).' Relativized NP

1. Research Questions

Research Questions

Akan Q-NPs are nominal objects, but they denote questions like English *wh*-interrogatives. This leads us to the following questions:

1. **How to derive a question meaning from NP-like objects in a compositional fashion?**
2. **Is it possible to give a unified analysis for embedded *wh*-interrogatives in English and for Q-NPs in Akan?**
3. **Do Akan Q-NPs share the same semantics as English Concealed Questions (e.g. *know the price*), or do they use another semantic mechanism?**

1. Research Questions

Research Question 1

How to derive a question meaning from NP-like objects in a compositional fashion?

$\Longrightarrow$ This question has been widely discussed in the literature on (English) Concealed Questions (CQs) like (7)

- cf. Heim 1979, Romero 2005, 2007, Frana 2017, Nathan 2006, Aloni & Roelofsen 2011...
- but, with the exception of Nathan (2006), mostly in connection with functional NPs without clausal substructure!

(7) Mary knows the temperature of the lake. = ... what the temperature of the lake is

1. Research Questions

Research Question 2

Is it possible to give a unified analysis for embedded *wh*-interrogatives in English and for Q-NPs in Akan?

$\Longrightarrow$ In principle: YES! see the analysis we propose in our talk!

1. Research Questions

Research Question 3

Do Akan Q-NPs share the same semantics as English Concealed Questions (e.g. *know the price*), or do they use another semantic mechanism?

$\Longrightarrow$ Akan Q-NPs differ semantically from CQ-DPs in English, suggesting that there are two different ways for nominal NP/DP-constituents to denote question objects.

1. General significance of the Akan data

1/2. Akan $\neq$ English

- In English, CQs are considered a marked alternative to embedded *wh*-interrogatives and in need of special interpretive mechanisms (i.e., covert typeshift-operators).
- But relativized Q-NPs in Akan are the ONLY way of expressing embedded questions. Moreover, they do not come with the interpretive restrictions observed for standard English CQs!

$\Longrightarrow$ **Akan Q-NPs involve a more general interpretation procedure for questions!**

1. General significance of the Akan data

2/2. Akan is one language among many

Akan is not the only language to express embedded questions through Q-NPs. This has been observed for many other languages from different families, among which:

- Hausa (Zimmermann 2018),
- Abaza (Arkadiev & Caponigro 2021),
- Kipsigis (Maria Kouneli p.c.),
- Atchan (Rebecca Jarvis p.c.),
- and even French and Spanish (Bombi & Lecavelier 2024)!

$\Longrightarrow$ **Need to account for this crosslinguistically well-attested phenomenon!**

1. Preview of the solution I

Towards a unified analysis

1. Akan functional elements (DEF, Q, EMPH) apply cross-categorially to NPs and clauses!
2. Relative NP-heads are indefinite NPs or pronouns expressing a restricted variable.
3. Q-operator abstracting over the restricted pronominal/NP-variable allows for a unified Baker (1970)-style analysis of Q-NPs:

(8) a. Kwame nim [**ɔmo**$_1$ aa ɔmo-huu Kofi] **1 Q**$_1$].
Kwame know 3PL REL 3PL-saw Kofi
'Kwame knows *persons who* saw Kofi (= *who* saw Kofi).' (Akan)

b. Kwame knows [Q$_1$ [**who**$_1$ saw Kofi]]. (English)

1. Preview of the solution II

Towards a unified analysis

4. The interpretive procedure in (9) derives a Hamblin-set of possible answers as the denotation of Akan Q-NPs.

   (9) $\lambda p.\ \exists x\ [p = \lambda w.\ x \text{ saw Kofi in } w]$

5. This is necessary in order to account for flexibility in EXH-interpretations; cf. Beck & Rullmann (1999).

1. Outline

2. **Akan Data**
3. **A Unified Analysis of Q-NPs and *wh*-interrogatives**
4. **Predictions and Extensions**
5. **Differences between Akan Q-NPs and English CQ-DPs**

2. Akan Data

2. Akan

- **Akan is a Kwa language from the Niger-Congo phylum**
  - Mainly spoken in southern Ghana
  - ≈10M native speakers
- **Our data come from fieldwork + an experiment conducted with 28 speakers of the Asante Twi dialect**

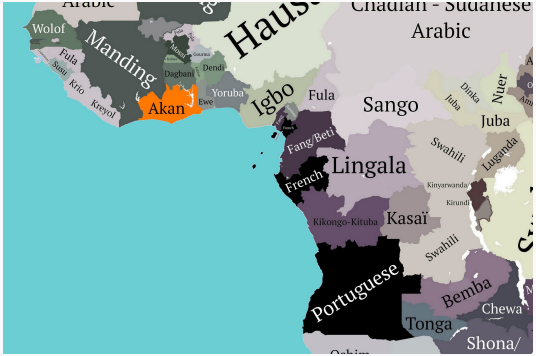


Figure 1: African Languages Map, Wikipedia (edited).

2. Data I

Formation of Q-NPs

Q-NPs always involve a pronominal head, (10), or a lexical NP (with the optional INDEF-marker *ko*), (11)-(12):

(10) Me-n-nim [NP **ɔmo aa** / **ne-a** dii fufu].
1SG-NEG-know 3PL REL / person-REL ate fufu
'I don't know who$_{pl/sg}$ ate fufu.' Pronominal head

(11) Me-n-nim [NP **mmerɛ aa** Kofi dii fufu].
1SG-NEG-know time REL Kofi ate fufu
'I don't know when Kofi ate fufu.' Lexical NP

(12) Me-n-nim [NP **krataa (ko) aa** Akua kan-n yɛ].
1SG-NEG-know book certain REL Akua read-PFV PFV.OBJ
'I don't know which book Akua read.' Lexical NP (with optional INDEF)

2. Data II

Embedding predicates

The Q-NP strategy is available under all rogative and responsive predicates, unlike English CQs (Dor 1992, Nathan 2006):

(13) a. Kwame **bisaa** [$_{NP}$ **deɛ** Akua kan-n yɛ].
Kwame asked thing.REL Akua read-PFV PFV.OBJ
'Kwame asked the thing that (= *what*) Akua read.'

b. English: *Kwame asked the book that Akua read.

(14) Abena **dwen ho** [$_{NP}$ **ne-a** odii fufu].
Abena wonders person-REL 3SG-ate fufu
'Abena wonders who ate fufu.'

(15) Kojo **ɛni agye afa** [$_{NP}$ **deɛ** Kofi noa yɛ].
Kojo is.happy thing.REL Kofi cook PFV.OBJ
'Kojo is happy about what Kofi cooked.'

2. Data III

Background: EXH-levels

English embedded *wh*-interrogatives come with different exhaustivity levels, depending on the embedding predicate (Heim 1994, Beck & Rullmann 1999):

(16) *Context: At a party that A, B, C, D and E attended, only A and B danced.*
John **knows** who danced.

a. Intermediate-Exhaustivity (IE) reading is true iff John knows that A and B danced; and he doesn't have false beliefs about C, D and E.
= complete knowledge of ***positive true answer space***

b. Strong-Exhaustivity (SE) reading is true iff John knows that A and B danced, and he knows that C, D and E didn't dance.
= complete knowledge of ***entire answer space***

2. Data III

Background: EXH-readings with embedded *wh*-interrogatives

English embedded *wh*-interrogatives come with different exhaustivity levels, depending on the embedding predicate (Heim 1994, Beck & Rullmann 1999):

1. We take *know* to give rise to Strong and Intermediate EXH-readings alike (cf. Cremers & Chemla 2016, Spector & Egré 2015, Zimmermann et al. 2022), pace Groenendijk & Stokhof (1982), George (2011).
   - This being said, there is a strong pragmatic preference for Strong EXH-readings, especially in introspective judgments.
2. Other embedding predicates, such as *predict* (Klinedienst & Rothschild 2011, Fricke et al. 2023) and *tell* (Theiler 2014), also give rise to both Strong and Intermediate EXH-readings.

2. Data III

Background: EXH-readings with embedded *wh*-interrogatives

English embedded *wh*-interrogatives come with different exhaustivity levels, depending on the embedding predicate (Heim 1994, Beck & Rullmann 1999):

3. Yet other embedding predicates, such as the speech-act predicates *shout*, *announce* etc., systematically allow for non-Strong EXH interpretations (e.g., Heim 1994).
4. Predicates such as *agree* do not even require access to the complete true answer (= Intermediate EXH) (e.g., Beck & Rullmann 1999).

2. Data III

Background: EXH-interpretation of English CQs

1. English CQs are typically analysed as denoting specificational questions, which is often cast in *Individual Concept*-analyses (Romero 2005, 2007, Frana 2017, i.a.).
2. These analyses are all built on a partition-semantics for questions (Groenendijk & Stokhof 1984), predicting Strong-EXH-readings only (Zimmermann 2018), (17):

(17) [The price of milk] is known to John. (Romero 2007: ex.44)

a. $\text{ANS}_{STR} = \lambda y_{<se>}.\lambda w.\lambda w'.\ y(w') = y(w)\ (y = \lambda w^*.\iota x[\text{price}(x,\text{milk},w^*)]\ )$

b. $[[\ [\text{ANS}_{STR}\ \text{the price of milk}]_{CQ}\ ]] = \lambda w.\lambda w'.\ \iota x[\text{price}(x,\text{milk},w')] = \iota x[\text{price}(x,\text{milk},w)]$

c. $[[\ [\text{ANS}_{STR}\ \text{the price of milk}]_{CQ}\ \text{is known to John}]] = \lambda w.\forall w' \in \text{DOX}_J(w)\ \iota x[\text{price}(x,\text{milk},w')] = \iota x[\text{price}(x,\text{milk},w)]$

2. Data III

English CQs *versus* Akan Q-NPs

As most of the CQ-inducing NPs in English are functional in nature, this does not seem to pose an empirical problem for the English data...

... but how about Akan Q-NPs, which seem to have the same distribution and unconstrained semantics as embedded *wh*-interrogatives in English?

2. Data III

Variability of EXH-readings in Akan Q-NPs: Introspective judgments

Same as English *wh*-interrogatives, embedded Q-NPs in Akan show variability in their exhaustive strength, depending on the embedding predicate

1. The speech-act predicate *tea mu ka* 'shout' allows for Intermediate-EXH readings, as demonstrated by the felicity of the follow-up in (18), which violates Strong-EXH

(18) a. Maame Akosua **tea mu kaa** [ɔmo a ɔmo-taee anoma]...
Mama Akosua shouted 3PL REL 3PL-ran.after bird
'Mama Akosua **shouted** who$_{pl}$ ran after a bird...'

b. **nanso** w-antea mu anka sɛ Yaw ne Akua n-taee anoma.
but 3SG-NEG.shouted COMP Yaw and Akua NEG.ran.after bird
'but she didn't shout that Yaw and Akua didn't run after a bird.'

2. Data III

Variability of EXH-readings in Akan Q-NPs: Introspective judgments

Same as English *wh*-interrogatives, embedded Q-NPs in Akan show variability in their exhaustive strength, depending on the embedding predicate

1. The speech-act predicate *tea mu ka* 'shout' allows for Intermediate-EXH readings, as demonstrated by the felicity of the follow-up in (18), which violates Strong-EXH
2. but *nim* 'know' appears incompatible with the same follow-up in (19), cf. parallel introspective assessments of *wh*-interrogatives embedded with *know* (**G&S 1984**):

(19) a. Maame Akosua **nim** [ɔmo a ɔmotaee anoma]...
Mama Akosua knows 3PL REL 3PL-ran.after bird
'Mama Akosua **knows** who$_{pl}$ ran after a bird...

b. #**nanso** o-n-nim sɛ Yaw ne Akua ntaee anoma.
but 3SG-NEG-know COMP Yaw and Akua NEG.ran.after bird
 # but she doesn't know that Yaw and Akua didn't run after a bird.'

2. Data III

An experimental investigation (Design)

- **Lecavelier et al. (2024) partially confirmed these introspective judgments in a 2x2 acceptability experiment (cf. methodology of Fricke et al. 2019, Szarvas et al. 2023), fully crossing the factors:**
  1. **predicate:** *nim* 'know' vs *tea mu ka* 'shout'
  2. **follow-up:** *Strong-EXH-violating* vs *unrelated* follow-up (compatible with Strong-EXH)
- **Linking Hypothesis**: Q-NP-embeddings that are acceptable with the *Strong-EXH-violating* follow-up allow for a weaker interpretation than Strong-EXH!

2. Data III

An experimental investigation (Results)

1. Strong-EXH-violating follow-ups were accepted under *tea mu ka* 'shout'
   $\Longrightarrow$ **Akan Q-NPs can accept intermediate EXH interpretations!**
2. The same follow-ups were not accepted to the same degree under *nim* 'know'
   $\Longrightarrow$ **The EXH-strength of Akan Q-NPs depends on the embedding predicate (just like English *wh*-interrogatives)**
3. But 17/28 participants accepted *nim* 'know' with Strong-EXH-violating follow-ups; cf. also Cremers & Chemla (2016)'s experimental findings for English *know*
   $\Longrightarrow$ **Akan *nim* 'know' shows the same Strong/Intermediate-EXH ambiguity as English *know***

2. Data III

Non-EXH readings in Akan Q-NPs

Further elicitation showed that other predicates can even raise **non-exhaustive** *(and even non factive!)* readings of Akan Q-NPs, cf. (20):

(20) *Context: the teacher said that some students failed the exam, without specifying how many, nor which. Kofi and Kojo both think that Kwame and Yaw failed the test. In reality, Yaw and Akua failed the test.*

(20) Kofi ne Kojo **gye too mu** [$_{NP}$ **ɔmo a** ɔmo-anyɛ ade wɔ nsɔhwɛ no mu].
Kofi and Kojo agreed on 3PL REL 3PL-failed thing at exam the in
'Kofi and Kojo agreed on who failed the exam.'

2. Data

Summary

1. Q-NPs always involve a pronominal head or a lexical NP with the optional INDEF-marker *ko*
2. They are available under all rogative and responsive predicates, unlike English CQs
3. They can give rise to weaker EXH-readings than Strong-EXH, depending on their embedding predicates, just like English embedded *wh*-interrogatives!

Q: So how to model the interpretive parallels in a uniform formal analysis?

3. Unified Analysis

3. Preliminary considerations

- The fact that embedded Q-NPs in Akan allow for not strongly EXH-readings directly rules out individual concept-based analyses, as proposed for English CQ-DPs in Romero (2007), Aloni & Roelofsen (2011), and Frana (2017)
- All of these involve a strong EXH-inducing partition semantics (Zimmermann 2018), see above.

$\Longrightarrow$ Instead, we will follow Beck and Rullmann (1999) and analyze Q-NPs as denoting the Hamblin-set (1973) of possible answers.

3. The plan

We proceed in two steps:

- **Step 1:** We derive a Hamblin-question meaning Q consisting of all possible answers from the relative Q-NP.
- **Step 2:** We derive the different EXH-levels of Q-NPs from lexical differences in the embedding predicates (Heim 1994, B&R 1999, Theiler et al. 2018).

3. Step I: A unified analysis of Q-NPs and *wh*-INTs

How to derive the Hamblin-set from a relative clause with pronominal head

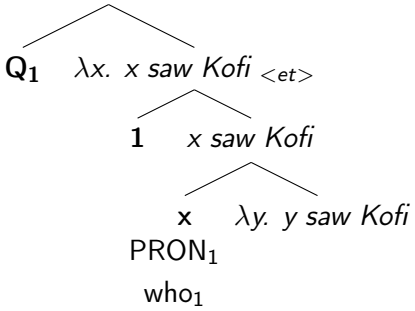
Two assumptions:

1. Unlike in English, Q-operators in Akan are cross-categorial and can attach to TPs and NPs alike: This is a SYNTACTIC difference, see below!
2. The relative head provides a restricted variable to be bound by the Q-operator, on a par with *wh*-pronouns (cf. Baker 1970, Reinhart 1997)

3. Step I: A unified analysis of Q-NPs and *wh*-INTs

The idea in a nutshell

(21)



3. Step I: A unified analysis of Q-NPs and *wh*-INTs

How to derive the Hamblin-set from a relative clause with pronominal head

The syntax of Q-NPs and *wh*-interrogatives:

(22) a. Akan Q-NP:

Kwame nim [[**ɔmo$_1$** aa ɔmo-huu Kofi] **1** **Q$_1$**].
Kwame know 3PL REL 3PL-saw Kofi
'Kwame knows who saw Kofi.'

b. English *wh*-interrogative:

Kwame knows [**Q$_1$** **1** [who$_1$ saw Kofi]].

NB: Akan is head-final in the DP- and CP-domain!!

3. Step I: A unified analysis of Q-NPs and *wh*-INTs

How to derive the Hamblin-set from a relative clause with pronominal head

Deriving the meaning of the Q-NP in (22):

(23) a. $[[\ [\textbf{ɔmo}_{PL,1}$ aa ɔmo-huu Kofi] **1** $\mathbf{Q}_1]]^g =$

b. $[[Q]]\ (\lambda x.\ [[\textbf{ɔmo}_1$ aa ɔmo-huu Kofi$]]^{g[1\rightarrow x]}) =$

c. $\underline{\lambda P_{<et>}.\lambda p_{<st>}.\ \exists x\ [p = \lambda w.P(x)\text{ in }w]}(\lambda x{:}\textsc{hum}(x)\ \&\ \neg\textsc{at}(x).x$ saw Kofi$) =$

d. $\lambda p_{<st>}.\ \exists x_{\textsc{hum}(x)\wedge\neg\textsc{at}(x)}[p = \lambda w.$ x saw Kofi in w$]$

(24) $[[Q_1$ 1 who$_1$ saw Kofi $]]^g = \lambda p_{<st>}.\ \exists x_{\textsc{hum}(x)}$ [p $= \lambda w.$ x saw Kofi in w]

3. Step I: A unified analysis of Q-NPs and *wh*-INTs

Syntax: More on cross-categorial operators in Akan

Cross-categorial operators form an integral part of Akan grammar:

- The covert Q-NP-operator has a covert counterpart at the clausal level, which is realised by rising intonation.

(25) Kofi dii fufu/**?**
Kofi ate fufu
'Did Kofi eat fufu?'

3. Step I: A unified analysis of Q-NPs and *wh*-INTs

Syntax: More on cross-categorial operators in Akan

Cross-categorial operators form an integral part of Akan grammar:

- The covert Q-NP-operator has a covert counterpart at the clausal level, which is realised by rising intonation.
- The familiarity DEF-operator *nó* (Arkoh & Matthewson 2013) occurs on NPs and TPs alike (Bombi et al. 2019, Owusu 2022):

(26) [Kofi a-nya a-kɔ hu Dr. Abrefa] **nó**.
Kofi PERF-get CONS-go see Dr. Abrefa] DEF
'Kofi has gone to see Dr. Abrefa.'

$\Longrightarrow$ The clausal DEF in (26) marks the proposition as familiar/given = previously discussed.

3. Step I: A unified analysis of Q-NPs and *wh*-INTs

Syntax: More on cross-categorial operators in Akan

Cross-categorial operators form an integral part of Akan grammar:

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- The familiarity DEF-operator *nó* (Arkoh & Matthewson 2013) occurs on NPs and TPs alike (Bombi et al. 2019, Owusu 2022):
- Philipp (2023) likewise postulates the cross-categorial occurrence of the *emphatic* scale-sensitive operator *-ara* to account for universal and FCI/NPI-readings of the universal quantifier *biara* 'every, any' in Akan.
  - cf. also Zimmermann (2008, 2009) on Hausa (Chadic)

3. Step II: Deriving different EXH-readings

EXH-strength is governed by the embedding verb

The variability in EXH-strength follows from meaning differences in the lexical predicates, which all select for a Hamblin Q-set (Heim 1994, B&R 1999).

- For *nim* 'know', e.g., the basic semantic interpretation is the intermediate EXH-reading, following Uegaki (2015), Zimmermann et al. (2022), Onea & Zimmermann (2024), cf. (27):
- The strong EXH-reading follows as a pragmatic inference.

(27) $[[\textit{to know}]]^w = \lambda Q_{w \in \bigcup Q}.\lambda x.MAX^{SUBJ}_{ANS}(x, Q, w) = MAX^{OBJ}_{ANS}(O, Q, w)$
$\approx$ 'x knows p' is true in w iff the maximal subjective answer that x can give to Q in w is identical to maximal objectively true answer as given by an omniscient observer O. (Onea & Zimmermann 2024)

3. Comparison with Arkadiev & Caponigro 2021

Arkadiev & Caponigro (2021) on Q-NPs in Abaza (North Caucasian):

- Just like our analysis, A&C (2021)'s analysis involves λ-binding of a variable in the relativized NP, yielding an <et>-predicate.
- In A&C (2021), this predicate combines with a MAX-operator, intensionalized to yield an individual concept (<se>) (e.g., Romero 2007, Frana 2017).
- The MAX-operator yields the maximal set of individuals with the questioned property, thereby giving at least an IE-reading to the embedded question.
  - see also Nathan (2006), where MAX ranges over propositions

$\Longrightarrow$ **But Akan Q-NPs require a different treatment on at least 2 grounds:**

1. Non-exhaustive Qs are possible (e.g. with *gye tomm* 'agree' in (20)).
   Thus, the weaker Hamblin semantics in (23) is required for Akan Q-NPs!

3. Comparison with Arkadiev & Caponigro 2021

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- The MAX-operator yields the maximal set of individuals with the questioned property, thereby giving at least an IE-reading to the embedded question.
  - see also Nathan (2006), where MAX ranges over propositions

$\Longrightarrow$ **But Akan Q-NPs require a different treatment on at least 2 grounds:**

2. Q-NPs in Akan do not exhibit the typical restrictions observed for English CQs (Dor 1992, Nathan 2006), commonly attributed to their specificational semantics.

3. A unified analysis of Q-NPs and *wh*-INTs

Summary

1. A unified analysis of *wh*-interrogatives and Akan-style Q-NPs in terms of Q-binding of a restricted variable is possible and gives the correct semantic interpretations.
2. The weak Hamblin-semantics of the unified analysis accounts for the varying EXH-force with different embedding predicates.
3. The unified analysis of Q-NPs and *wh*-interrogatives captures the observable semantic differences wrt EXH-readings with English CQs:
   These come with different semantic properties and therefore require a different semantic analysis; see last section of our talk!

4. Predictions & Extensions

4. Predictions and Extensions

1. Prediction I

- The free (restricted) variable in the relative head should be subject to binding by other operators but Q in the nominal domain:
- BORNE OUT! λ-abstracted REL-NPs can also combine with the maximalising DEF-operator *nó* to yield an interpretation as a free relative, cf. (28):

(28) a. Kofi **dii** [$_{\text{NP}}$ **deɛ** Kojo noayɛ **no**].
Kofi ate thing.REL Kojo cooked DEF
'Kofi ate what Kojo cooked.'

b. [$_{DP}$ [$_{NP}$ **de**$_1$ a Kojo noayɛ] **1** **no**$_1$]

4. Predictions and Extensions

2. Prediction II

Our analysis accounts for the occurrence of the indefinite marker *ko* on content NPs in the REL-head (Zimmermann 2018).

(29) a. Me-n-nim [$_{NP}$ **krataa (ko)** **aa** Akua kan-n yɛ]
1SG-NEG-know book **certain** REL Akua read-PFV PFV.OBJ
'I don't know which book Akua read.'

b. [[[kraata (**ko**$_1$)] [REL Akua read]] **1** **Q**$_1$]

$\Longrightarrow$ Such cases constitute instances of NP-restricted variables à la Heim (1982), where the INDEF-marker *ko* explicitly marks the restricted (choice function) variable.

4. Predictions and Extensions

3. Extension to Hausa

Our analysis directly extends to Hausa (Chadic), which can express embedded questions either as Q-NPs or as *wh*-interrogatives, cf. (30-ab), without a discernible difference in meaning ("more or less equivalent") (Newman 2000:502).

(30) a. Musa yaa san [**wàa** / **wàanee** (nèe) ya tàfi Kano]
Musa 3SG.M.PFV know who.SG / WHO.SG.M FOC 3SG.M.PFV go Kano
'Musa knows who went to Kano.' *wh*-embedded

b. Musa yaa san [**wa-n-dà** ya tàfi Kano]
Musa 3SG.M.PFV know one.SG-DEF.M-REL 3sg.m.pfv go Kano
'Musa knows who went to Kano.' (lit.'... the one that went to Kano.) Q-NP

4. Taking stock before continuing

Our Research Questions

1. **How to derive a question meaning from NP-like objects in a compositional fashion?**
   $\Longrightarrow$ Q-operator derives a Hamblin-set of answers from NPs containing a variable!
2. **Is it possible to give a unified analysis for embedded *wh*-interrogatives in English and for Q-NPs in Akan?**
   $\Longrightarrow$ Yes, with our analysis!
3. **Do Akan Q-NPs share the same semantics as English Concealed Questions (e.g. *know the price*), or do they use another semantic mechanism?**
   $\Longrightarrow$ We will elaborate on this now!

5. Differences between Akan Q-NPs and English CQ-DPs

5. Akan Q-NPs *versus* English CQ-DPs

Akan Q-NPs, English *wh*-interrogatives, and English CQ-DPs

When comparing Akan Q-NPs to English question objects (embedded *wh*-interrogatives and CQ-DPs), two options are available:

1. English embedded ***wh*-interrogatives and Akan Q-NPs** vs CQ-DPs (as involving individual concepts)
2. English embedded *wh*-interrogatives vs **Akan Q-NPs and CQ-DPs** (as both involving individual concepts)

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Our analysis treats Akan Q-NPs and English *wh*-interrogatives on a par, contrasting from CQ-DPs, cf. option 1 over option 2.

$\Longrightarrow$ In the following, we will provide more evidence for option 1 over option 2 by pointing out more semantic differences between Q-NPs and CQ-DPs.

5. Akan Q-NPs *versus* English CQ-DPs

Standard diagnostics for English CQs (vs embedded *wh*-interrogatives)

1. English CQs appear with a restricted set of embedding predicates (Dor 1992, Nathan 2006)
2. *Individual-Concept* analyses (Romero 2007, Frana 2017) predict them to come with Strong-EXH readings
3. They come with a specificational interpretation only (no predicational reading), cf. Frana 2017
4. They display Heim's Ambiguity, cf. Heim 1979

5. Akan Q-NPs *versus* English CQ-DPs

Standard diagnostics for English CQs (vs embedded *wh*-interrogatives)

D1.	Constraint on embedding predicates:	**inconclusive diagnostic**
D2.	EXH-readings:	**Akan Q-NPs $\neq$ English CQs** *(on Individual Concept-analyses)*
D3.	Specificational readings:	**Akan Q-NPs $\neq$ English CQs**
D4.	Heim's Ambiguity:	**inconclusive diagnostic**

$\Longrightarrow$ We focus on D2 and D3, which conclusively show that Akan Q-NPs and English CQs differ semantically.

5. Akan Q-NPs *versus* English CQ-DPs

D2 EXH-readings again

The partition-semantics of Individual Concept-analyses (Romero 2005, Frana 2017) predicts English CQs to come with Strong-EXH-readings only.
This is not the case for Akan Q-NPs, as demonstrated in our talk. Our data showed that Akan Q-NPs come with flexible EXH-interpretations.
$\Longrightarrow$ **Akan Q-NPs do not behave like is predicted for English CQs!**

5. Akan Q-NPs *versus* English CQ-DPs

D3 Specificational readings I

English CQ-DPs are said to come with a specificational reading only, cf. (31-a). But Akan Q-NPs also accept predicational follow-ups, see (32).

$\Longrightarrow$ **Akan Q-NPs do not align with English CQs!**

(31) a. I will tell you John's murderer: #someone without a heart! CQ

b. I will tell you who murdered John: someone without a heart! *wh*-embedded

(32) *Context: Somebody killed Yaw, but nobody knows who the murderer is.*

(32) Mɛ-ka akyerɛ wo [**ne-a** **okum Yaw**]: ɛyɛ obi a onni akoma!
1SG-tell you person-REL killed Yaw COP sbdy REL NEG.have heart
'I tell you who murdered Yaw: it is certainly someone without a heart!' Q-NP

5. Akan Q-NPs *versus* English CQ-DPs

D3 Specificational readings I

English CQ-DPs are said to come with a specificational reading only, cf. (33-b). But Akan Q-NPs also accept predicational follow-ups, see (34).

$\Longrightarrow$ **Akan Q-NPs do not align with English CQs!**

(33) a. Kofi nim **[deɛ Tamale yɛ]**. ɛ-yɛ kurow fɛfɛ bi a ɛ-wɔ
Kofi knows thing.REL Tamale COP 3SG-COP town beautiful a REL
Atifi fam.
3SG-be.located North in
'Kofi knows what Tamale is. It is a beautiful town in northern Ghana.'

b. Kofi knows Tamale. $\neq$ Kofi knows what Tamale is.

5. Akan Q-NPs *versus* English CQ-DPs

D3 Specificational reading II

Furthermore, specificational readings presuppose EXISTENCE, cf. (34-ab), contra embedded *wh*-interrogatives, cf. (34-c).

(34) a. #I know John's purchase: he bought nothing. — CQ-DP

b. #I know what it is that John bought: he bought nothing. — specificational Q

c. I know what John bought: he bought nothing. — *wh*-embedded

5. Akan Q-NPs *versus* English CQ-DPs

D3 Specificational reading II

Furthermore, specificational readings presuppose EXISTENCE, cf. (34-ab), contra embedded *wh*-interrogatives, cf. (34-c).

- But there is no EXIST presupposition with Akan Q-NPs in (35).

$\Longrightarrow$ **Akan Q-NPs do not align with English CQ-DPs!**

(35) Kofi nim **[adeɛ a** (ɛ-yɛ a) ɔ-tɔɔ yɛ]. Obaa no
Kofi knows thing REL 3SG-COP REL 3SG-bought PFV.OBJ woman DEF
an-tɔ hwee.
NEG-bought nothing
'Kofi knows what (it is that) she bought. The woman bought nothing.' Q-NP

5. Two types of NP/DP-based question meanings

Akan Q-NPs differ semantically from English CQ-DPs: Akan Q-NPs denote normal Hamblin questions!

How to analyse question-denoting NPs/DPs in a cross-linguistic perspective?

Two possibilities:

1. Languages can either employ the unified question interpretation from (23) or the Individual Concept-analysis à la Romero (2007), Roelofsen & Aloni (2011), Frana (2017): *cross-linguistic parametrization*
2. All languages have both interpretive procedures, and the observable semantic differences between Q-NPs and CQs with functional nouns follow from syntactic and lexical differences: [+/−] clausal sub-structure; [+/−] functional NP

5. Two types of NP/DP-based question meanings

Some tentative evidence for Option 2

- Akan has CQs with functional nouns, too, cf. (36)
- The question-interpretation of these DPs cannot be derived by our unified question semantics in (23): Due to the lack of clausal sub-structure, the analysis would not yield a set of propositions.
- Open Question: Do the question objects denoted by functional nouns in Akan resemble their English counterparts in terms of specificational interpretation?

(36) Abena nim **krataa no buoɔ**.
Abena knows book the price
'Abena knows the price of the book.'

functional noun CQ

5. Two types of NP/DP-based question meanings

Two sources for NP/DP-based question denotations

1. A specification as functional NP in the lexicon: [+functional] gives rise to specificational questions
2. REL-clausal substructure: [+clause] gives rise to ordinary Hamblin-questions
3. Both features can also combine: [+clause, +function] in relative clauses with functional head NPs
4. No question meanings with only [−]-specifications.

5. Two types of NP/DP-based question meanings

Akan seems to instantiate all three feature-combinations with [+]

(37) Normal Q-NP [−function, +**clause**]
Akua nim nea noaa jollof.
Akua knows person.REL cooked jollof
'Akua knows who cooked jollof.'

(38) Function NP-CQ [+**function**, −clause]
Abena nim krataa no buo.
Abena knows book DEF price
'Abena knows the price of the book.'

(39) Q-NP with functional head [+**function**, +**clause**]
Yaw nim buo no a Kwame nim.
Yaw knows price DEF REL Kwame knows
'Yaw knows the price that Kwame knows.'

5. Two types of NP/DP-based question meanings

How about English?

(40) Function NP-CQ [+**function**, −clause]
James knows the price of the book.

(41) Q-NP with functional head [+**function, +clause**]
Anna knows the price that James knows.

(42) Normal Q-NP?? [−function, +**clause**]

a. ??Anna knows the ones who came to the party.

b. ??I know the way he feels about John.

Next steps

Further avenues of research

1. **Empirical question:** Similarities of CQs with functional nouns in Akan vs English? Special specificational semantics also in Akan? Are there proper Q-NP-objects in English?
2. **Theoretical question:** How close is our proposition-based analysis of Q-NPs to the one in Nathan (2006) for CQ-DPs?

Conclusion

- Akan embeds questions through relativized Q-NPs
- Akan Q-NPs are semantically unrestricted, denote Hamblin-sets and come with flexible EXH-interpretations = English *wh*-interrogatives
- A unified formal analysis of Akan Q-NPs and English *wh*-interrogatives is possible
- There are at least two ways in which DP/NP-objects can denote question objects in natural language: Q-NPs vs CQ-DPs

Medaase! *Thank you!*

References

References

Aloni, M., & Roelofsen, F. (2011). Interpreting concealed questions. *Linguistics and Philosophy* 34.

Arkadiev, P., & Caponigro, I. (2021). Conveying content questions without *wh*-words: evidence from Abaza. *Proceedings of Sinn und Bedeutung* 25.

Arkoh, R., & Matthewson, L. (2013). A familiar definite article in Akan. *Lingua* 123.

Baker, C. L. (1970). Notes on the Description of English Questions. The Role of an Abstract Question Morpheme. *Foundations of Language*.

Beck, S., & Rullmann, H. (1999). A flexible approach to exhaustivity in questions. *Natural Language Semantics* 7(3).

Bombi, C., & de Veaugh-Geiss, J. (2018). Quantitative Data in the field: Two case studies on Akan. Poster presented at *Linguistics Evidence*.

Bombi, C., Grubic, M., Renans, A., & Duah, R. A. (2019). The semantics of the (so-called) clausal determiner *no* in Akan (Kwa). *Proceedings of Sinn und Bedeutung* 23.

Bombi, C., & Lecavelier, J. (2024). Question embedding in Spanish and French: The definite strategy. Talk presented at the DFG-funded workshop *Definiteness across domains*.

Cremers, A., & Chemla, E. (2016). A psycholinguistic study of the exhaustive readings of embedded questions. *Journal of Semantics* 33(1).

References

Dor, D. (1992). Towards a semantic account of concealed questions. *Ninth Annual Meeting of the Eastern States Conference on Linguistics*.

Frana, I. (2017). *Concealed questions*. Oxford University Press.

Fricke, L., Bombi, C., Zimmermann, M. and Onea, E. (2019). New evidence for intermediate exhaustive readings of *wh*-questions. Talk presented at *XPRAG.it* 2019, Cagliari.

Fricke, L., Destruel, E., Zimmermann, M., & Onea, E. (2023). The pragmatics of exhaustivity in embedded questions: an experimental comparison of know and predict in German and English. *Frontiers in Psychology* 14.

George, B. R. (2011). *Question embedding and the semantics of answers*. University of California, LA.

Groenendijk, J., & Stokhof, M. (1982). Semantic analysis of *wh*-complements. *Linguistics and philosophy*.

Groenendijk, J., & Stokhof, M. (1984). *Studies on the Semantics of Questions and the Pragmatics of Answers*. Doctoral dissertation, University of Amsterdam.

Hamblin, C. (1973). Questions in Montague English. *Foundations of Language* 10.

Heim, I. (1979). Concealed questions. *Semantics from different points of view*. Springer, Berlin.

Heim, I. (1982). *The semantics of definite and indefinite noun phrases*. University of Massachusetts Amherst.

References

Heim, I. (1994). Interrogative Semantics and Karttunen's Semantics for 'know'. *Proceedings of the Israeli Association for Theoretical Linguistics* 9, R. Buchalla & A. Mittwoch (eds.). Jerusalem.

Klinedinst, N. & Rothschild, D. (2011). Exhaustivity in Questions with non-factives. *Semantics and Pragmatics* 4(2).

Lecavelier, J., Antwi, M. O., Jovovic, D., & Laryea, H. (2024). Exhaustivity levels in embedded questions: An experimental insight from Asante Twi. Talk presented at the *Annual Conference on African Linguistics* 55, University of McGill, Montréal (Canada).

Nathan, L. (2006). *On the interpretation of concealed questions.* PhD thesis, MIT.

Newman, P. (2000). The Hausa Language. New Haven: Yale University Press.

Onea, E. & Zimmermann, M. (2024). On the role of verbal semantics in question embedding: the case of *to know*. *(submitted paper)*.

Owusu, A. (2022). *Cross-Categorial Definiteness/Familiarity*. Doctoral dissertation, Rutgers School of Graduate Studies, New Jersey.

Philipp, M. (2023). *Quantifier scope ambiguities in English, German, and Asante Twi (Akan): structural and pragmatic factors.* Doctoral dissertation, Potsdam University.

Reinhart, T. (1997). Quantifier Scope: How labor is divided between QR and Choice Functions. *Linguistics and Philosophy* 20.

References

Romero, M. (2005). Concealed questions and specificational subjects. *Linguistics and Philosophy* 28.
Romero, M. (2007). On concealed questions. *Proceedings of Semantics and Linguistic Theory* 16.
Saah, K. (1994). *Studies in Akan Syntax, Acquisition and Sentence Processing*. Doctoral dissertation, University of Ottawa.
Saah, K. (2010). Relative clauses in Akan. *Topics in Kwa syntax*.
Spector, B., & Egré, P. (2015). A uniform semantics for embedded interrogatives: An answer, not necessarily the answer. *Synthese* 192.
Szarvas, T., Bade, N., Bimpeh, A. A., & Lecavelier, J. (2023). On the markedness of number features in embedded free relative questions in Akan. Poster presented at the *Annual Conference on African Linguistics* 54, University of Connecticut.
Theiler, N. (2014). *A multitude of answers: Embedded questions in typed inquisitive semantics.*
Zimmermann, M. (2018). Embedded questions and concealed relative questions in Hausa and Akan. *Proceedings of TripleA* 4, Gothenburg.
Zimmermann, M., Fricke, L. & Onea, E. (2022). Embedded questions are exhaustive alright, but... *Language, Logic, and Computation: 13th International Tbilisi Symposium*.

Annexes

Annex I – Experiment (Lecavelier et al. 2024)

Design: Setting/Background

- Participants were exposed to stories, and they had to judge whether sentences were good in this context. All stories had the same characters, which were presented to the participants at the beginning of the experiment, see (43).
- **The experiment consisted of 6 blocs/stories. Each story had a theme, and was about the kids doing one of the following:**
  - Doing mischiefs
  - Playing outside
  - Cooking
  - Helping their mother
  - Going to the market
  - Being good kids

(43) *This is the story of Kojo, Abena, Akua, Yaw and Kofi. They are all sisters and brothers. They spend their days together, and sometimes they like to do a lot of things secretly! But their mother, Mama Akosua, usually knows more than they think. When the evening comes, she will tell Dad Kwame what she knows that the kids did. Because Dad Kwame is a bit deaf, she has to shout to talk to him.*

Annex I – Experiment (Lecavelier et al. 2024)

Design: Target items

- **PREDICATE:** *nim* 'know' **vs** *tea mu ka* 'shout'

(44) Maame Akosua **nim** / **tea mu kaa** [**ɔmo aa** ɔmo-paee ahwehwɛ]...
Mama Akosua know / shouted 3PL REL 3PL-broke mirror
'Mama Akosua **knew/shouted who$_{pl}$** broke a mirror...'

- **FOLLOW-UP:** *Strong-EXH-violating*, cf. (45-a), **vs** *unrelated (compatible with Strong-EXH)*, cf. (45-b)

(45) a. nanso [o-n-nim / wa-n-tea mu an-ka] sɛ Kofi **an-pae** **ahwehwɛ**.
but 3SG-NEG-know / 3SG-NEG-shouted COMP Kofi NEG-broke mirror.
'but she didn't know/shout that Kofi **didn't break a mirror**.'

b. nanso [o-n-nim / wa-n-tea mu an-ka] sɛ Kofi **paee kyɛnse**.
but 3SG-NEG-know / 3SG-NEG-shouted COMP Kofi broke bowl.
'but she didn't know/shout that Kofi **broke a bowl**.'

Annex I – Experiment (Lecavelier et al. 2024)

Design: Control items

- **Bad control:** contradictory sentence

(46) Maame Akosua nim / tea mu kaa ɔmo a ɔmo-duaa ntose, nanso
Mama Akosua know / shouted 3PL REL 3PL-planted tomatoes but
o-n-nim / wa-ntea mu an-ka ɔmo a ɔmo-duaa ntose.
3SG-NEG-know / 3SG-NEG-shout 3PL REL 3PL-planted tomatoes
'Mama Akosua shouted who planted tomatoes, but she didn't shout who planted tomatoes.'

- **Good control:** two unrelated clauses

(47) Maame Akosua nim / tea mu kaa sɛ Yaw kuu ntateɛ, nanso o-n-nim /
Mama Akosua know / shouted COMP Yaw killed ants but 3SG-NEG-know /
wa-n-tea mu an-ka sɛ Kofi kuu wansena.
3SG-NEG-shouted COMP Kofi killed flies
'Mama Akosua shouted that Yaw killed ants, but she didn't shout that Kofi killed flies.'

Annex I – Experiment (Lecavelier et al. 2024)

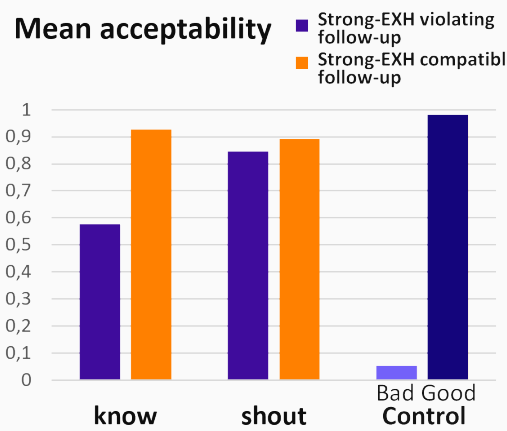
Design: Methodology

- **24 target items + 12 control items** $\Longrightarrow$ 6/condition, Latin Square design
  - Each bloc had 4 target items (1/condition) + 2 control items (1/condition)
- Native speakers designed the items ($\rightarrow$ only common activities for Ghanaian kids)
- **All items were displayed as audio stimuli** (cf. Bombi & de Veaugh-Geiss 2018's recommendations), recorded by a native speaker of Asante Twi
- **Participants had to give binary judgements**, 'Good' or 'Not good' (cf. Szarvas et al. 2023's findings that Akan speakers tend to only use ends of scales)
- **Participants: 34 native speakers of Akan** (Asante Twi dialect) were recruited through the University of Ghana and financially compensated.
  - 6 participants were excluded because they answered incorrectly for 3 control items or more.

Annex I – Experiment (Lecavelier et al. 2024)

Results (1/2)

Participants accepted Strong-EXH-violating follow-ups with the predicate *tea mu ka* 'shout', but not (as much) with *nim* 'know'.



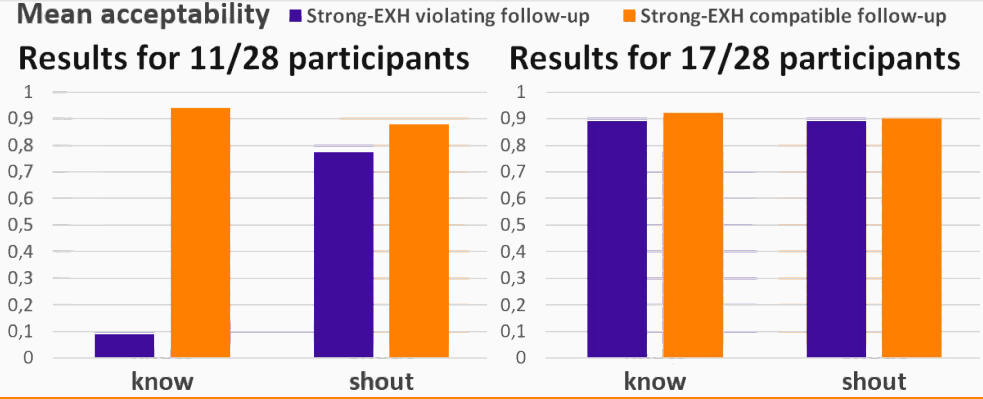
Analysis with Generalized Linear Mixed Models (package *lme4* on R) showed:

- **A significant effect of the interaction PREDICATE/FOLLOW-UP**
  (Estimate = 2.2992, z = 4.399, p<0.001)
- **A significant effect of PREDICATE**
  (Estimate = -1.8014, z = -5.670, p<0.001)
- **No significant effect of FOLLOW-UP**
  (Estimate = 0.4461, z = 1.245, p = 0.213)

Annex I – Experiment (Lecavelier et al. 2024)

Results (2/2)

- **Participants had strong judgements** for Strong-EXH-violations with *nim* 'know'
  - They all rated at least 4/6 items consistantly (and for 89%, at least 5/6 items)
- **11/28 speakers rejected them, 17/28 speakers accepted them!**



Annex II - Inconclusive CQ-Diagnostics

D1: Embedding predicate restrictions

English CQs only appear within a restricted set of embedding predicates:

1. But this is not the case for Akan Q-NPs, as demonstrated in our talk;
2. And cross-linguistically, other languages also allow for a wider range of predicates for CQs, see (48)-(49) (cf. Bombi & Lecavelier 2024).

$\Longrightarrow$ **This diagnosis is not telling for Akan Q-NPs!**

(48) Je me demande le prix du lait.
I myself ask the price of milk
'I wonder the price of milk.' *(French)*

(49) Agata se pregunta **los zapatos que ha comprado**.
Agata REFL wonders the shoes COMP has bought
'Agata wonders which shoes he bought.' *(Spanish)*

Annex II - Inconclusive CQ-Diagnostics

D4 Heim's Ambiguity (1/2)

Nested CQs as in (50) are ambiguous between two readings, A and B.

Prima facie, Akan Q-NPs appear to exhibit the two readings, see (51).

(50) John knows **the price that** Fred knows.

a. Reading A: John knows **the same price** that Fred knows.
Fred knows that milk costs $1, John knows that milk costs $1

b. Reading B: John knows **what is the price** that Fred knows.
Fred knows that milk costs $1, John knows that Fred knows the price of milk

(51) Kofi nim **dɛɛ** Kwame nim.
Kofi knows thing-REL Kwame knows
'Kofi knows what Kwame knows.'

a. Reading A: Kofi knows **the same thing** that Kwame knows.

b. Reading B: Kofi knows **what is the thing** that Kwame knows.

Annex II - Inconclusive CQ-Diagnostics

D4 Heim's Ambiguity (2/2)

But the ambiguity also shows with English *what* in (52), which could head a *free relative*: A-readings are only ruled out with unambiguously interrogative items, cf. (53). Likewise, (51) might be structurally ambiguous between a question- and free relative-construal, the latter giving rise to the A-reading.

$\Longrightarrow$ **This diagnostic might be inconclusive for Akan Q-NPs...**

(52) Mary knows **what** Nina knows.

a. Reading A: Mary knows **the same thing** that Nina knows.

b. Reading B: Mary knows **what is the thing** that Nina knows.

(53) Mary knows **which thing** Nina knows.

a. No Reading A!

b. Only Reading B: Mary knows **what is the thing** that Nina knows.

Annex II - Inconclusive CQ-Diagnostics

D5 Greenberg's distinction (1/3)

- **In English,** *wh*-embedded accommodate for indirect readings, but CQs accept direct readings only.

(54) *Context: John found out that his gardener was a much sought-after criminal known as* The Strangler , *but he did not find out that the guy actually murdered Smith.*

a. John found out who the murderer of Smith was. *wh*-embedded

b. #John found out the murderer of Smith. CQ

Annex II - Inconclusive CQ-Diagnostics

D5 Greenberg's distinction (2/3)

- **In English,** *wh*-embedded accommodate for indirect readings, but CQs accept direct readings only.
- **In Akan,** Q-NPs do not seem to accommodate for indirect readings, thus aligning more with CQs.

(55) *Context: Kwame is a spy who murdered Yaw a few months ago. His neighbor Kofi is suspicious about Kwame and decides to investigate Kwame's house. By doing so, he finds out that Kwame is a spy, but not that he murdered Yaw.*

a. #Kofi ahu [**nea** ɔ-yɛ Yaw wudifoɔ no].
Kofi saw person.REL 3SG-COP Yaw murderer DEF
'Kofi saw who was Yaw's murderer.' Akan Q-NP

b. #Kofi ahu **(Yaw) wudifoɔ no**.
Kofi saw Yaw murderer DEF
'Kofi saw the murderer (of Yaw).' Akan CQ

Annex II - Inconclusive CQ-Diagnostics

D5 Greenberg's distinction (3/3)

- **In English,** *wh*-embedded accommodate for indirect readings, but CQs accept direct readings only.
- **In Akan,** Q-NPs do not seem to accommodate for indirect readings, thus aligning more with CQs.

$\Longrightarrow$ **However, this diagnostic might not be conclusive, as:**

1. there is no way to verify that *wh*-embedded in Akan would accommodate indirect readings;
2. and indirect readings require complex contexts, so they might not be accepted by all speakers – we would need quantitative data before drawing a conclusion!