

The combination of indefinite and definite ‘determiners’ — a cross-linguistic study¹

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Abstract. In the West African languages Akan, Ga (Kwa), Ngamo, and Hausa (West-Chadic), definite familiarity markers and choice-functional indefinites can combine giving rise to a definite interpretation, which poses a puzzle for a compositional analysis of DPs. When combined, three different readings can arise: anaphoric, recognitional, or complement anaphoric reading, though the languages differ with respect to which reading is available. We propose that the available readings depend on (i) whether the definite is strongly or weakly familiar, and (ii) whether the choice-functional indefinite has a novelty condition or not. By that the paper contributes to the ongoing discussion on the interpretation of (in)definites, crosslinguistically.

Keywords: definiteness, indefiniteness, Akan, Ga, Hausa, Ngamo

1. Introduction

In Akan, Ga (Kwa), Hausa, and Ngamo (West-Chadic), it is possible to combine definiteness and indefiniteness markers, giving rise to a definite interpretation, as demonstrated in (1) with an example from Akan, posing a puzzle for a compositional analysis of DPs.²

- (1) AKAN: (Dufie and Priscilla go to a party. During the party, they watch one man dancing. On the following day, Dufie says to Priscilla:) *After the party, . . .*

Pàpá bí nó bìsá-à mè mè nó mà.
man INDF DEF ask-PST 1SG 1SG.POSS number
‘that certain man asked me for my number.’

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²The data presented in this paper were collected during our own fieldwork, following the methodology discussed in Matthewson (2004). Infelicity is marked with ‘#’. Thereby, ‘(# X)’ means ‘infelicitous with X’, ‘#(X)’ means ‘infelicitous without X’. ‘?’ means that we did not get clear judgments, (whereas ‘!’ indicates downstep of high tones). The following glosses are used: 1/2/3 = 1st/2nd/3rd person, CD = clausal determiner, COMP = complementizer, COND = conditional, COP = copula, DEF = definiteness marker, DEM = demonstrative, F = feminine, FOC = focus, FUT = future marker, ICP = intransitive copy pronoun, INDF = indefiniteness marker, IPFV = imperfective, LNK = linking morpheme, M = masculine, NLMZ = nominalizer, PERF = perfect, PFV = perfective, PL = plural, POSS = possessive, PROG = progressive, PRT = particle, PST = past, SG = singular, TOP = topic marker, VENT = ventive extension.

When definiteness and indefiniteness markers combine, three different readings can arise: an anaphoric, a recognitional, or a complement anaphoric reading. Interestingly, the languages differ with respect to which readings are available. We argue that these readings are compositionally derived from the respective readings available for the definiteness and indefiniteness markers.

The paper is structured as follows. In Section 2, we provide an introduction to the languages involved and to their (in)definiteness systems. In Section 3, we discuss the co-occurrence data and the different readings they give rise to. The compositional analysis for the three available readings is presented in Section 4. Section 5 summarizes the paper.

2. Definiteness and indefiniteness

2.1. The languages

Akan (Kwa, Niger-Congo) is spoken by over 8 million speakers in southern Ghana and some communities in the SE of Ivory Coast. The data here stems from the Asante Twi dialect (2.8 million speakers). Ga (Kwa, Niger-Congo) is spoken by over 745,000 speakers in the Greater Accra Region, Ghana. Ngamo (West Chadic, Afro-Asiatic) is spoken by about 60,000 speakers in Yobe and Gombe states in northeastern Nigeria. Hausa (West Chadic, Afro-Asiatic) is spoken by over 32 million people in northern Nigeria (and by 72 million across several countries). All four languages are SVO tonal languages, with a high tone (marked á) and a low tone (marked à).³

2.2. Definiteness

In all four languages, definiteness markers encode familiarity. However, whereas in Akan and Ga they indicate *weak* familiarity (Bombi 2018 for Akan and Renans 2016 for Ga), in Hausa and Ngamo they encode *strong* familiarity (Zimmermann 2008 for Hausa and Schuh 2005, Grubic 2015 for Ngamo; see Roberts 2003 for the distinction). This means that immediately prementioned individual can be referred to by a marked definite DP in all four languages, but a unique, mutually known individual such as *the sun* or *the president* can only be referred to by such a DP in Akan and Ga but not in Hausa and Ngamo, as demonstrated in (2)–(5), where the former kind of context is called ‘anaphoric’, and the latter kind of context is called ‘unique’.

(2) WEAK FAMILIARITY, AKAN:

- a. Mè-tò-ò àtààdéé bí ènórà. **Àtààdéé nó** yé fè. (Anaphoric)
 1SG-buy-PST dress INDF yesterday dress DEF COP nice
 ‘I bought *a dress* yesterday. The dress is nice.’

³Downstepped high tones are marked with ‘!’ in addition.

- b. **Àwìà nó** ré-bò ènné. (Unique)
 sun DEF PROG-hit today
 ‘The sun is shining today.’
- (3) WEAK FAMILIARITY, GA:
- a. I read a book yesterday...
Wòlò !lé è-ɲòó wàà. (Anaphoric)
 book DEF 3SG-be-tasty very
 ‘The book was very interesting.’
- b. (I visited a Ghanaian national day celebration ceremony which was visited by the Ghanaian president. My friend asked me whether I saw any famous person there. I reply:)
Mì-nà mà̀hiènyìé́lò !lé. (Unique)
 1SG.saw president DEF
 ‘I saw the president.’
- (4) STRONG FAMILIARITY, HAUSA:
- a. I bought a book today, because I wanted something to read on my flight.
Littāfi-n yanà dà kyāu sòsai. (Anaphoric)
 book-DEF.M 3SG.M.IPFV with goodness very
 ‘The book is very good.’
- b. (Adamu and Bashir are talking on the phone. They have not talked about the king yet. Now Bashir says: *I bought a book yesterday. The book is very famous. I heard that...*)
 hař **sarkī(#-n)** yā kařàntā. (Unique)
 even king-DEF.M 3SG.M.PFV read
 ‘even the king read it.’
- (5) STRONG FAMILIARITY, NGAMO:
- a. A man entered.
Ngò=i ìmù làkǎfù. (Anaphoric)
 person=DEF.M do.1PL greet.NMLZ
 ‘The man greeted us.’
- b. Njelu woke up late at night. When he woke up, ...
 ... **tèrè (#=ì)** búlíní. (Unique)
 moon =DEF.M shine.ICP
 ‘... the moon was shining.’

For Hausa and Akan, the claims presented here are somewhat controversial. For example, Schwarz (2013, 2019) cites Akan as one of the languages in which a definite article is used only for strongly

familiar referents, while unique, mutually known referents are referred to using a bare noun. Arkoh and Matthewson (2013) provide a similar discussion for Akan, but conclude that the definite determiner in Akan is hearer-old in the sense of Prince (1992)— i.e., weakly familiar (see also Bombi 2018). For Hausa, Schwarz (2013), citing observations from Buba (1997) und Jaggar (2001), proposes that Hausa has two definite articles, *-n* encoding uniqueness and *din* encoding strong familiarity. Zimmermann (2008) suggests instead that they are both variants of a strongly familiar definite article, and that bare nouns are used in uniqueness contexts — and our own data seem to confirm this, since we do not find a difference between *-n* and *din* in the contexts that we tested.

2.3. Indefiniteness

In all four languages, marked indefinites are analyzed as choice functions (CFs) due to their ability to take (exceptionally) wide scope (see Bombi et al. 2019, Owusu 2019 for Akan, Zimmermann and Grubic 2010 for Hausa, and Renans 2018 for Ga). Note that there are two CF indefinites in Ga, *ko* and *kome*, as exemplified in (7).⁴ *Ko* and *kome* differ with respect to the different kinds of readings available with other operators (e.g., negation, and quantifiers; see Renans 2018).

- (6) AKAN: ([...] All elders are in favor of [a certain] law, but one of the elders is particularly powerful, while the others have less power. If this elder comes, the law will be passed. If only the other elders come, it is not certain. [...])

Sè òpànyín bí bá à, yè-bé-hyé m̀m̀rá nó.
 if elder INDF come COND 1PL-FUT-force law DEF
 ‘If a (certain) elder comes. we will pass the law.’

- (7) GA: (Four linguists chose one linguistic problem to work on. Linguist 1 chose the syntax of Ga, linguist 2 chose the syntax of Akan, linguist 3 chose the phonology of Ewe, linguist 4 chose the morphology of Avatime. Linguists 1, 2, and 3, but not 4, read all the analyses solving the respective problem.)

Òtsiámíí p̀i ékwé s̀s̀s̀m̀d̀j̀i s̀j̀i f́éé ní yèd̀ b̀òà s̀ànè k̀m̀é/ko
 linguist most have.looked analysis analysis every that help solve problem INDF/INDF
 ǹà̀b̀ò̀àm̀d̀.
 solve
 ‘Most linguist have looked at every analysis that solves some problem.’

⁴Example (7) is an example of the intermediate scope interpretation, in which most linguists chose one problem to work on but the choice of problems varies with the linguists. In order to get this reading, the indefinite *sane ko/kome* ‘some problem’ has to scope out of relative clause.

- (8) HAUSA: Many people will come to the meeting, but...
 Ìdan **wani** **mùtùm** yā zō tārō-n, Mūsā zāi yi farin-cikì sòsai.
 if INDF.M man 3SG.M come meeting-DEF.M Musa FUT-3SG do happiness very
 ‘If some man comes to the meeting, Musa will be particularly happy.’
 (Comment: Regardless of whether many people come! It is a special person.)
- (9) NGAMO:
 Hāwwa ndā kēna à **siyasà=ì** **yo’otò**.
 Hawwa want.PFV marry one.who.is politician=LNK INDF.M
 ‘Hawwa wants to marry a certain politician.’
 (Comment: must be a specific person among the politicians)

The CF indefinites differ however with respect to whether they encode novelty or not. As shown in (10), taken from Grubic (2015), *yo’oto* DPs in Ngamo always introduce a novel individual, unlike an indefinite *bi* in Akan, as demonstrated in (11).

- (10) NGAMO:
 Kulè tedēnō kì ka ka’a **ngò(#=ì** **yo’otò)** tedēnō.
 Kule arrive.PFV.VENT because.of like.that person=LNK INDF.M arrive.PFV.VENT
 (intended:) ‘Kule arrived therefore a person arrived.’
 (Comment (‘yo’oto’): As soon as Kule arrives, somebody else follows. Two people arrive)
- (11) AKAN:
 Ama kò-ò fíé èntí ònípá **bí** bà-à fíé.
 Ama go-PST home therefore person INDF come-PST home
 ‘Ama went home, therefore, someone came home.’
 (Comment: Only Ama went home, not another person)

We argue that the similarities and differences found in the (in)definiteness system of the four languages are responsible for the three readings arising when the definite and indefinite determiners co-occur.

3. Co-occurrence data

The combination of the definite and indefinite determiner can give rise to three different readings: (i) an anaphoric reading, (ii) a ‘recognitional’ reading, and (iii) a complement anaphoric reading, discussed in detail below.⁵

⁵Note that for Ngamo, we only have evidence for the complement anaphoric reading, as we didn’t have the opportunity to test the other readings.

3.1. The anaphoric reading

In this case, there is an immediately prementioned indefinite antecedent, e.g., *wata mōtā* ('a certain car') in (12), and a DP with both the indefiniteness and definiteness marker is used to refer back to this individual. The contribution of the definite determiner here seems to be recent premention/anaphoricity.

This reading is available in Hausa and with *kome* in Ga, as shown in (12) and (13-a)-(13-b), respectively. As for the availability of this reading with *ko* in Ga, we got mixed judgments. While the reading is unavailable in (13-a), it is available in (13-b).⁶ This reading is not available in Akan, as demonstrated in (14) (but see Amfo 2010, 1797, who appears to suggest that the anaphoric reading is possible; see also Becker 2019, 33).

- (12) HAUSA: (At the beginning of a story:)
 Wannàn lābārī ne gāme dà [wata mōtā]_i. [**Wata mōtā-r**]_i tā fācì.
 DEM.M story COP.M about INDF.F car INDF.F car-DEF.F 3SG.F.PFV break.down
 'This story is about [a certain car]_i. [That certain car (just mentioned)]_i broke down.'
- (13) GA: (At the beginning of a story:)
 a. Mì-kánè wòlò. **Wòlò kòmé/?kó !lé** è-ɲòó wàà.
 1SG-read book book INDF/INDF DEF 3SG-be.tasty very
 'I read a book yesterday. The book was interesting.'
 b. Mì-hòó bànkú. **Bànkú kòmé/kó !lé** èɲòó wàà.
 1SG-cook banku banku INDF/INDF DEF 3SG-be.tasty very
 'I cooked banku. The banku was very tasty.'
- (14) AKAN: (At the beginning of a story:)
 Ama tò-ò àtààdéé bí. **Àtààdéé (#bí) nó** yé fé.
 Ama buy-PST dress INDF dress INDF DEF COP beautiful
 'Ama bought a certain dress. That dress is beautiful.'

3.2. The recognitional reading

In this reading, there is no immediately prementioned antecedent. Instead, the DP refers to a weakly familiar referent that has been mentioned or experienced long ago. The use of this DP suggests that the addressee has to make an effort to retrieve the referent (Himmelman 1996, Diessel 1999).

⁶We leave the issue of why it is so for future research.

The recognitional reading of DPs with a definiteness and an indefiniteness marker is available in Akan and with the indefiniteness marker *ko* in Ga, as shown in (15)-(16); see also Bombi et al. (2019), Duah et al. (2020) for Akan. It is however dispreferred with the indefiniteness marker *kome* in Ga, as shown in (16), and not available in Hausa, see (17).

- (15) AKAN: Kofi and Kwame are talking about different people in their hometown Kumasi [...]. Kofi suddenly remembers another person that he wants to ask Kwame about:
 Wó kàé **tíkyàní bí nó?** Dèè ná Ama pé n'áséín nó?
 2SG remember teacher INDF DEF TOP PRT Ama like 3SG.POSS.matter CD
 'Do you remember that teacher? The one that Ama liked?'

 (16) GA: (same context as in (15))
 ò-káìð **tsòó!lò kó/kòmé !lé?** Mòní Ama òtá!wó é!kpéé !lé?
 2SG-remember teacher INDF/INDF DEF one Ama wanted marry DEF
 'Do you remember that teacher? The one that Ama wanted to marry?'
 (Comment: in the context in which it was long time ago, they were in school long time ago, the best option is *ko lé*)

 (17) HAUSA: Two friends are reminiscing about a trip that they took together 12 years ago. One of them asks:
 #Kin tunà **wata yārin yā=r?** Wandà tā biyō mù?
 2SG.F remember INDF.F girl=DEF.F the.one.F 3SG.F.PFV follow 1PL
 (intended:) 'Do you remember that girl? The one that followed us?'
 (Comment: '-r' should be deleted, then it means 'a certain girl')

In recognitional readings, the referent is discourse-new but hearer-old (mutually known to hearer and speaker). The speaker can identify the referent but is uncertain whether the hearer can correctly identify it as well. For that reason, the speaker usually provides subsequent additional information to make sure the referent is identified correctly.

3.3. The complement anaphoric reading

Under this reading, the resulting DP refers to a new individual of the same kind as a familiar one. This reading is possible in Ngamo and with *kome* in Ga, as shown in (18)–(19). It is not possible with *ko* in Ga, nor in Akan and Hausa, as shown in (19)–(21). In Akan the resulting DP does not necessarily refer to another individual. As (20) shows, in the case of a unique noun the use of the combination of both the indefinite and definite determiners may for example indicate sarcasm.

- (18) NGAMO: (There is only one politician in Mubi.)
 #Hàwwa ndà kèna à s̀iyasà=i yo'otò ye'è.
 Hawwa want.PFV marry one.who.is politician=LNK INDF.M DEF.M
 (intended:) 'Hawwa wants to marry the (specific) politician'
 (Comment: it means 'the other' – not possible here, there must be 2 politicians)
- (19) GA: (Priscilla went to a bookshop. She looked at two books. One of them was by Kwame Nkrumah...)
 Priscilla hé wòlò #kó/kòmé !lé.
 Priscilla bought book INDF/INDF DEF
 intended: 'Priscilla bought the other book.'
 (Comment: with *ko le*, it means that Priscilla bought Kwame Nkrumah's book, with *kome le*, it means that she bought the other book)
- (20) AKAN: (I visited a Ghanaian national day celebration ceremony which was visited by two presidents (the Ghanaian and the French one) there. My friend asked me whether I saw any famous person there. I reply:
 #Mè hù-ù òmànpànyín bí nó.
 I SG see-PST president INDF DEF
 'I saw that certain president.'
 (Comment: This could be a sarcastic way of referring to the Ghanaian president.)
- (21) HAUSA: Ibrahim has two daughters. Audu married one of them.
 #Mùhammad yā àuri wata 'ya=r.
 Muhammad 3SG.M.PFV marry INDF.F daughter=DEF.F
 'Muhammad married that certain daughter.'
 (Comment: for **wata 'ya=r**, you have to have previously talked about the girl. It is better to use *daya 'yar* [daya = 'one'].)

3.4. Summary

A summary of the data is given in Table 1. The combination of the standard CF and weak or strong familiar definite gives rise to anaphoric uses. In languages with a weakly familiar definite, it can also give rise to recognitional uses (since these readings involve weak familiarity). The availability of CF with the novelty requirement, on the other hand, is a prerequisite for a complement anaphoric reading. It remains an open question why the anaphoric reading is not available for the *bi+no* combination in Akan (nor the recognitional reading for *kome+le* in Ga).

Language	Definite		Indefinite		Co-occurrence patterns		
	form	familiarity	form	meaning	anaph.	recogn.	compl.
Hausa	<i>-r./-n</i>	strong	<i>wata</i>	CF	✓	#	#
Akan	<i>no</i>	weak	<i>bi</i>	CF	#	✓	#
Ga	<i>lɛ</i>	weak	<i>ko</i>	CF	✓/?	✓	#
	<i>lɛ</i>	weak	<i>kome</i>	CF _{novelty}	✓	?	✓
Ngamo	<i>i/=ye</i>	strong	<i>yo'oto</i>	CF _{novelty}	–	–	✓

Table 1: Summary (✓ = felicity, # = infelicity, ? = weak infelicity, – = no data)

4. Analysis

We propose that the different readings yielded by the combination of the indefiniteness and definiteness markers arise due to two factors. First, it plays a role whether the definite article indicates weak or strong familiarity. In particular, the recognitional reading should only be possible with definites indicating weak familiarity. Second, additional readings of the choice-functional indefinite article (novelty, identifiability) matter, too. For example, we argue that the complement anaphoric reading is only possible with indefinite articles indicating novelty.

4.1. Anaphoric readings

We start with anaphoric readings, as exemplified in (22) from Hausa. In these readings the resulting DP refers back to an immediately prementioned individual introduced via a CF indefinite.

- (22) HAUSA:
wata mōta-ĩ
INDF.F car-DEF.F
‘that certain car (just mentioned)’

The CF, with its lexical entry in (23), contributes that somebody (usually the speaker) knows a way of picking out the individual out of a set. The definite determiner, on the other hand, contributes familiarity (i.e., in this case, recent pre-mention), as in (24) (Schwarz 2009, simplified version).⁷

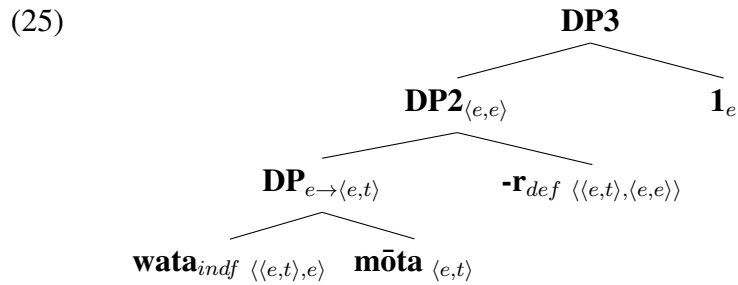
⁷The following is the non-simplified version, including situations:

- (i) ‘Familiarity’ article:
 $\lambda s_r. \lambda P. \lambda y. \iota x [P(x)(s_r) \ \& \ \mathbf{x=y}]$, defined iff $\exists !x [P(x)(s_r) \ \& \ \mathbf{x=y}]$

$$(23) \quad \llbracket \text{DET}_{CF} \rrbracket = \lambda P. f(P)$$

$$(24) \quad \llbracket \text{DET}_{familiar} \rrbracket^g = \lambda P. \lambda y. \exists! x [P(x) \ \& \ x=y]. \iota x [P(x) \ \& \ x=y]$$

The underlying structure of the DP is as in (25).



The noun *mōta* ('car') first combines with the choice-functional indefinite marker *wata* yielding an individual, for example the car individual that the speaker has in mind when uttering *wata mōta*.

$$(26) \quad \begin{aligned} \llbracket \text{wata } m\bar{o}ta \rrbracket &= [\lambda P. f(P)] (\lambda z. \text{car}(z)) \\ &= f(\lambda z. \text{car}(z)) \end{aligned}$$

In order to combine with the definite marker, an IDENT typeshift has to apply, yielding the property of being the car individual that the speaker has in mind.

$$(27) \quad \begin{aligned} \text{IDENT typeshift from } e \text{ to } \langle e,t \rangle \text{ (Partee 1986):} \\ \lambda x [x = f(\lambda z. \text{car}(z))] \end{aligned}$$

When (27) combines with the definite determiner in (24), the resulting function in (28) is of type $\langle e,e \rangle$. That is, it still requires an index of type e , which is applied to (28) in (29).

$$(28) \quad \begin{aligned} \llbracket \text{wata } m\bar{o}ta\text{-}\tilde{r} \rrbracket^g &= \\ &[\lambda P. \lambda y. \iota x [P(x) \ \& \ x = y]] (\lambda x [x = f(\lambda z. \text{car}(z))]) \\ &= \lambda y. \exists! x [x = f(\lambda z. \text{car}(z)) \ \& \ x = y]. \iota x [x = f(\lambda z. \text{car}(z)) \ \& \ x = y] \end{aligned}$$

$$(29) \quad \begin{aligned} \llbracket \text{wata } m\bar{o}ta\text{-}\tilde{r} \ 1 \rrbracket^g &= \\ &[\lambda y. \iota x [x = f(\lambda z. \text{car}(z)) \ \& \ x = y]] (g(1)) \end{aligned}$$

$= \iota x[x = f(\lambda z. \text{car}(z)) \ \& \ x = g(1)],$
 defined iff $\exists! y[y = f(\lambda z. \text{car}(z)) \ \& \ y = g(1)]$

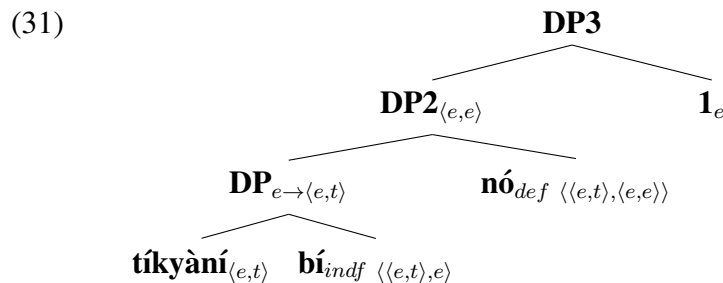
As a result, the full DP refers to the individual that is both (i) identical to the car individual that the speaker has in mind, and (ii) identical to the individual that index 1 is mapped to by the assignment function. It follows then that in this reading both the indefinite determiner and the definite determiner contribute their usual meanings.

4.2. Recognitional readings

In recognitional readings, the DP refers back to an individual known due to shared experience, i.e., the individual is **not** immediately pre-mentioned. Importantly, the speaker knows how to identify the individual, but is uncertain whether the addressee does, too. For that reason the identifying information is usually added afterwards, e.g., via a relative clause. See (30) for an example.

- (30) AKAN:
 tíkyàní bí nó
 teacher INDF DET
 “that teacher (remember?)”

We assume the derivation of the recognitional readings to be identical to the one shown above for the anaphoric reading, see (31)–(32).



- (32) $[[\text{tíkyàní bí nó } 1]]^{g,a} = \iota x[x=f(\lambda z.\text{teacher}(z))\ \& \ x=g(1)],$
 defined iff $\exists! y[y=f(\lambda z.\text{teacher}(z)) \ \& \ y=g(1)]$
 (and addressee lacks some identifying information)

There are however two differences in the semantics of the (in)definite markers which are responsi-

ble for yielding the recognitional reading (see also Duah et al. 2020). First, the definite determiner needs to be **weakly** familiar, otherwise it would not be possible for the full DP to refer to an individual that is not salient (that is, prementioned, perceptually salient, i.a.) in the immediate linguistic or non-linguistic context (see also Arkoh and Matthewson 2013 for discussion). Second, we hypothesize that the indefinite article additionally presupposes **uncertainty** that somebody (here: the addressee) possesses identifying information (see Owusu 2019). Owusu suggests that *bi* in Akan encodes epistemic uncertainty. Her example in (33) suggests that it can be epistemic uncertainty of the speaker (reading (i)) or of another person (reading (ii)). In the recognitional reading, it is the (anticipated) epistemic uncertainty of the addressee which is expressed by *bi*.

- (33) Nana gyé dí sé Ama á-wáré **professor bí.**
 Nana collect eats COMP Ama PERF-marry professor INDF
 ‘Nana believes Ama has married some professor.’
 (i) ‘Nana believes that Ama married some professor, I don’t know who.’
 (ii) ‘Nana believes that Ama married some professor, Nana doesn’t know who.’

That the referent is (weakly) familiar is contributed by the definite determiner. The epistemic uncertainty component of the indefinite determiner, on the other hand, leads to the inference that the speaker is uncertain whether the addressee knows who is meant.

4.3. Complement anaphoric readings

In the **complement anaphoric reading**, the DP refers to a **novel** (but definite / unique) individual which is related to a strongly familiar individual of the same kind (‘one politician... the other politician’), as exemplified in (34).

- (34) NGAMO:
 à sìyasà=ì yo’otò ye’è
 politician=LNK INDF.M DEF.M
 ‘the other politician’

This reading is derived by adopting the relational ‘familiarity definite’ in (36) proposed by Schwarz (2009) for bridging in examples like (35).⁸

⁸The non-simplified version additionally involves a so-called resource situation, specifying the situation in which the referent is assumed to be unique. We will ignore this here for reasons of simplicity.

- (i) **Relational variant:**
 $\lambda s_r. \lambda R. \lambda z. \iota x. [R(y)(x)(s_r) \ \& \ y=z]$, defined iff $\exists !x [R(y)(x)(s_r) \ \& \ y=z]$

(35) I bought *a book* today. **The author** was French.

(36) DET_{fam} , **relational variant** (simplified):
 $\lambda R. \lambda y. \iota x [R(y)(x)]$, defined iff $\exists ! x [R(y)(x)]$

Schwarz' main idea for examples like (35) is that the noun is inherently relational. In the course of the derivation, the first argument position of the noun (the relatum argument) is filled by an index, leading to the interpretation that the product (here: the book) is salient/prementioned, as shown in (37).

(37) $[[1 \text{ The author}]]^g = \iota x [x \text{ is an author of } g(1)]$

The choice-functional indefinite involved in these readings has an additional novelty presupposition in (38), i.e., it requires non-overlap with y (the maximal given individual).

(38) $[[\text{DET}_{CF_{nov}}]]^g = \lambda P. f(P)$, defined iff $\neg [f(P) \circ y]$
 where $y = \sigma x [\text{GIVEN}(x)]$

Maximality is defined as in (39) and overlap of two individuals as in (40).

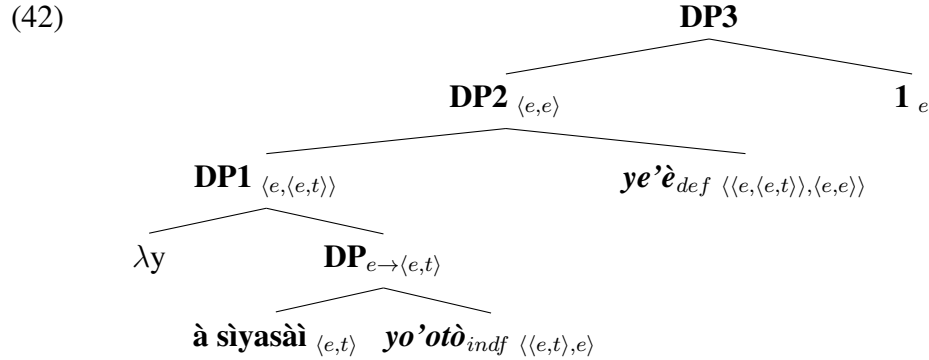
(39) *Maximality*
 $\sigma x [P(x)] = \iota x [P(x) \ \& \ \forall y [P(y) \rightarrow y \leq x]]$

(40) *Overlap (of two individuals a and b):*
 $a \circ b$ iff $\exists c [c \leq a \ \& \ c \leq b]$ (Dotlačil 2010, p. 40)

Givenness of individuals, on the other hand, is defined as in (41). An individual is GIVEN if it is in the range of the assignment function g or if all of its parts are in the range of the assignment function. For example, the plural individual ' $ali \oplus ben$ ' is GIVEN if it is recently prementioned or its parts *ali* and *ben* are recently prementioned.

(41) *Givenness (of individuals)*
 $[[\text{GIVEN}]]^g = * \lambda x. \exists i [i \in \text{Dom}(g) \ \& \ g(i) = x]$,
 whereby $*P(x) = 1$ iff $P(x) = 1$ or $\exists u, v [x = u \oplus v \ \& \ *P(u) \ \& \ *P(v)]$

When combined with a definite determiner indicating familiarity, a relational reading of the indefinite is coerced (Grubic 2015). The underlying structure of the whole DP (‘DP₃’) is shown in (42) and its derivation is discussed below:



The meaning of the DP $\grave{a} s\grave{i}yas\grave{a}i yo'ot\grave{o}$ is derived by composing the noun with the choice functional indefinite article $yo'oto$. The role of the choice functional indefinite is standard, i.e., it picks an individual out of a set of individuals in a certain way, with the difference that there is an additional presupposition that this individual does not overlap with an individual y .

(43) $[[\grave{a} s\grave{i}yas\grave{a}i yo'ot\grave{o}]]^g$
 $= f(\lambda z. \text{politician}(z)),$
 defined iff $\neg[f(\lambda z. \text{politician}(z)) \circ y]$

The meaning of the DP is then type-shifted by IDENT yielding the meaning in (44):

(44) IDENT typeshift yields:
 $\lambda x: \neg[f(\lambda z. \text{politician}(z)) \circ y]. x=f(\lambda z. \text{politician}(z))$

Subsequently, the variable y is bound in the course of the derivation, as demonstrated in (45). The resulting relation is an ideal input for the relational definite determiner in (36), as shown in (46)–(47).

(45) $[[\text{DP}_1]]^g = \lambda y. \lambda x: \neg[f(\lambda z. \text{politician}(z)) \circ y]. x=f(\lambda z. \text{politician}(z))$

(46) $[[\text{DP}_2]]^g = \lambda y: \neg[f(\lambda z. \text{politician}(z)) \circ y]. \iota x [x=f(\lambda z. \text{politician}(z))],$ defined iff
 $\exists! x [x=f(\lambda z. \text{politician}(z))]$

- (47) $[[DP3]]^g$
 $= \iota x[x=f(\lambda z.\text{politician}(z))]$, defined iff
- (i) $\exists! x[x=f(\lambda z.\text{politician}(z))]$
 - (ii) $\neg[f(\lambda z.\text{politician}(z)) \circ g(1)]$

The indefinite article contributes the presupposition that the individual picked out by the choice function does not overlap with a salient individual $g(1)$. The definite article presupposes uniqueness. If defined, the full DP then refers to the individual picked out by the choice function.

5. Summary and Outlook

In the four languages under consideration, definiteness markers and indefiniteness markers can co-occur. The resulting DP is definite. Depending on the language, three readings are possible for this definite DP: (i) anaphoric, with an indefinite antecedent, (ii) recognitional, referring to a mutually experienced individual, and (iii) complement anaphoric, referring to a novel individual which is related to a salient antecedent. We argue that that the kind of available reading depends on whether the definite determiner expresses weak or strong familiarity (Roberts 2003), and on additional inferences of the CF indefinite (novelty, (hearer-)unidentifiability). In addition, we expect this kind of variation to occur, systematically, in languages where definiteness and indefiniteness markers can co-occur.

We would like to conclude this paper with questions and open issues for further research.

The first question concerns the notions ‘weak’ and ‘strong’ familiarity. Though Arkoh and Matthewson (2013) essentially argue that the definite determiner *no* in Akan is weakly familiar (refers to hearer-old, not necessarily discourse-old referents), they assume the same lexical entry as Schwarz (2009) for his strongly familiar definite determiner. There seems to be a need for a more fine-grained way to model (i) the different sources of knowledge (e.g., community membership, shared experiences, immediate linguistic context, immediate non-linguistic context, see e.g. Clark and Marshall 1981), (ii) and/or a more fine-grained way to model salience, e.g. using degrees of salience of the referent (see Grubic 2015, cf. also von Stechow 2013 for discussion). The latter builds upon the observation that different kinds of DPs differ with respect to the accessibility/salience of their antecedent (Ariel 1988, Givón 1983, Reinhart 1995, Grosz et al. 1995, i.a.).

An open empirical issue is the precise nature of the different choice-functional indefinites in the languages discussed here. Specific indefinites differ with respect to who is assumed to possess or lack identifying information (see, e.g., Ebert et al. 2011, Ebert and Hinterwimmer 2013, Arsenijević 2018, Owusu 2019, i.a.). For example, Ebert et al. (2011) and Ebert and Hinterwimmer (2013) argue that the two specificity markers *gewiss* and *bestimmt* in German differ in that *gewiss* always requires the speaker to possess identifying information, whereas *bestimmt* is compatible with somebody else possessing this information. Arsenijević (2018) notes that when they are

combined with a demonstrative article, the Serbo-Croatian indefiniteness marker *jedan* indicates identifiability by the speaker and *neki* indicates that the speaker **lacks** identifying information. Finally, as noted above, Owusu (2019) proposes that *bí* in Akan indicates that somebody (not necessarily the speaker) lacks identifying information. We need to investigate this systematically for all languages discussed here, in order to gain a better understanding of the available readings.

Further, we didn't fully address the syntax of these DPs in this paper. One idea would be to assume a split DP with distinct projections within the DP for specificity and definiteness (Alexiadou 2014, see also Julien 2005, Lohrmann 2011). We however need to test the predictions for such an account. Since in some of these languages, the definiteness marker can also co-occur with other (e.g., demonstrative) determiners, and the definite determiner can be doubled in Akan, determiner doubling in general needs to be investigated in the languages involved.

Another open question concerns the order of the determiners (Duah et al. 2020). In Akan, the reverse order *nó bí* is also possible, but receives a partitive reading, see e.g. (48) (from Amfo 2010, Becker 2019).

- (48) ñkòrɔ́fóó nó bì
 people DEF INDF
 'Some of the people'

A compositional semantic account of such examples is left for future work.

The last question concerns the general co-occurrence pattern. In the four languages we investigated, the DEF+INDEF-combinations always involved familiarity and specificity markers. The reasons for this co-occurrence pattern should be further investigated.

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