From conditionality to modality in Luganda (Bantu, JE15): A synchronic and diachronic corpus analysis of the verbal prefix -andi-

Deo Kawalya a, Gilles-Maurice de Schryver b, e, *, Koen Bostoen b

a School of Languages, Literature and Communication, Makerere University, PO Box 7062, Kampala, Uganda
b BantUGent –UGent Centre for Bantu Studies, Department of Languages and Cultures, Ghent University, Rozier 44, 9000 Ghent, Belgium
c Department of African Languages, University of Pretoria, 0002 Pretoria, South Africa

Abstract
This article offers a synchronic and diachronic analysis of the use and meaning of the verbal prefix -andi- in the Great Lakes Bantu language Luganda (JE15). On the basis of a text corpus of 4 million tokens, we show that the prefix, commonly described as a conditional marker, is primarily involved in the expression of modal meanings, specifically deontic necessity and epistemic possibility. Our thirteen-decade diachronic corpus analysis shows that there is a relationship between the increased use of -andi- outside syntactically complex conditional constructions, i.e. those having both a protasis and an apodosis, and an increase in its expression of modal meanings. Moreover, a reduction in the use of -andi- in complex conditional constructions goes hand in hand with a reduction in its expression of conditional meanings. It is further revealed that contrary to the common cross-linguistic tendency to rely on modality as a source for conditionality, the conditional meaning of -andi- is not post-modal. Instead it was primarily a conditional marker, which subsequently developed different modal meanings.

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1. Introduction

1.1. On the interplay between conditionality and modality

Several typological studies have dealt with conditionality as a meaning typically originating in modality (Bybee et al., 1994; Traugott, 1985), more specifically as a post-modal destination for either epistemic possibility or epistemic necessity (van der Auwera and Plungian, 1998: 98). In Bantu linguistics, the historical relationships between modal and conditional markers have not raised much interest so far. Modality and conditionality have at best each been dealt with in isolation. In this article, we show that the Ugandan Bantu language Luganda has a verbal prefix -andi- that is neither a dedicated conditional marker nor a dedicated modal marker, contrary to what has been described in the literature. As we show on the basis of a Luganda text corpus, it currently straddles the semantic domains of modality and conditionality. What is more, we argue, by means of a

* Corresponding author. BantUGent – UGent Centre for Bantu Studies, Department of Languages and Cultures, Ghent University, Rozier 44, 9000 Ghent, Belgium.
E-mail addresses: kawalyad@chuss.mak.ac.ug, kawalyad@gmail.com (D. Kawalya), gillesmaurice.deschryver@UGent.be (G.-M. de Schryver), koen.bos-toen@UGent.be (K. Bostoen).

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diachronic corpus analysis, that the conditional meaning of -andi- is not post-modal. Quite the contrary, it used to be primarily a conditional marker, which subsequently developed different modal meanings, such as deontic necessity and epistemic possibility. In other words, we present here language-specific counterevidence for the common cross-linguistic tendency to rely on modality as a source for conditionality.

1.2. On conditionality

Various definitions and typologies of conditionals exist (see Comrie, 1986; Dancygier, 1993, 1998; Declerck and Reed, 2001; Salône, 1979; Sweetser, 1990, among others). This is partly due to the large number of criteria that can be used to categorize and interpret conditionals. Formulating a precise and universally applicable definition of conditionals has proven to be extremely difficult, not to say impossible (Declerck and Reed, 2001: 8). Proposing such a definition is neither an aim nor a necessary condition for the current study. We have deemed it more meaningful to first present those typologies of conditionality that have informed our research on Luganda conditionals as it proceeded.

A classic and widely used distinction is the one between simple, hypothetical and counterfactual conditionals. It also underlies the work of Salône (1979) on Haya (JE22), a Tanzanian Bantu language closely related to Luganda, which is one of the rare dedicated studies on conditionals in Bantu, along with his subsequent dissertation on conditionals in Swahili (G42d) (Salône, 1983a). For simple conditionals, he states that “a proposition results if another proposition holds”, as shown in (1) and (2). Hypothetical conditionals, as in (3), on the other hand, are those “in which the antecedent introduces a hypothetical or

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Abbreviations and symbols

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPL</td>
<td>applicative</td>
</tr>
<tr>
<td>AUGx</td>
<td>augment of class x</td>
</tr>
<tr>
<td>CF</td>
<td>counterfactual(ity)</td>
</tr>
<tr>
<td>CONN</td>
<td>connective</td>
</tr>
<tr>
<td>DEMa</td>
<td>proximal demonstrative</td>
</tr>
<tr>
<td>DEMb</td>
<td>medial demonstrative</td>
</tr>
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<td>DeNe</td>
<td>deontic necessity</td>
</tr>
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<td>EPo</td>
<td>epistemic possibility</td>
</tr>
<tr>
<td>FV</td>
<td>final vowel</td>
</tr>
<tr>
<td>H</td>
<td>high tone</td>
</tr>
<tr>
<td>HYP</td>
<td>hypothetical(ity)</td>
</tr>
<tr>
<td>INF</td>
<td></td>
</tr>
<tr>
<td>IPFV</td>
<td>imperfective</td>
</tr>
<tr>
<td>LOCx</td>
<td>locative of class x</td>
</tr>
<tr>
<td>N</td>
<td>homorganic nasal</td>
</tr>
<tr>
<td>NEAR_FUT</td>
<td>near future</td>
</tr>
<tr>
<td>NEAR_PST</td>
<td>near past</td>
</tr>
<tr>
<td>NEG</td>
<td>negative</td>
</tr>
<tr>
<td>NEUT</td>
<td>neuter</td>
</tr>
<tr>
<td>NPx</td>
<td>nominal prefix of class x</td>
</tr>
<tr>
<td>Ø</td>
<td>zero/empty morph</td>
</tr>
<tr>
<td>OPx</td>
<td>object prefix of class x</td>
</tr>
<tr>
<td>PASS</td>
<td>passive</td>
</tr>
<tr>
<td>PFV</td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>plural</td>
</tr>
<tr>
<td>POSSx</td>
<td>possessive of class x</td>
</tr>
<tr>
<td>PPx</td>
<td>pronominal prefix of class x</td>
</tr>
<tr>
<td>PRS</td>
<td>present</td>
</tr>
<tr>
<td>RECP</td>
<td>reciprocal</td>
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<tr>
<td>REF</td>
<td></td>
</tr>
<tr>
<td>RELx</td>
<td>relative of class x</td>
</tr>
<tr>
<td>REM_FUT</td>
<td>remote future</td>
</tr>
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<td>REM_PST</td>
<td>remote past</td>
</tr>
<tr>
<td>SG</td>
<td>singular</td>
</tr>
<tr>
<td>SPx</td>
<td>subject prefix of class x</td>
</tr>
<tr>
<td>TA(M)</td>
<td>Tense, Aspect (, Modality)</td>
</tr>
<tr>
<td>UNR</td>
<td>the unreality marker -andi-</td>
</tr>
</tbody>
</table>
imaginary proposition (where that proposition is not assumed to be false). Counterfactual conditionals refer to “sentences in which the antecedent asserts a proposition which is assumed to be false”, as in (4). Saloné (1979) further adopts another common distinction, i.e. between ‘real’ and ‘unreal’ conditionals. Semantically, so-called ‘Unreality Conditionals’ include future simple conditionals (2), hypotheticals (3) and counterfactuals (4). Structurally, however, future simple conditionals (2) do not make use of a syntactic marker of unreality, unlike other semantic types of unreal conditionals. Hence, syntactically, they resemble semantically real conditionals, such as the simple present conditional in (1).

(1) If the sun shines, the birds sing.
(2) If you go to the store, I will cook.
(3) If I saw Sidney Poitier in person, I’d faint.
(4) If he had cooked, I would have eaten.
(Saloné, 1979: 65, 66)

Another often cited definition is the one by Comrie (1986: 78) who conceives conditionals from a logical perspective as “a relation between two propositions, the protasis (p) and the apodosis (q), such that either p and q are both true, or p is false and q is true, or p is false and q is false; excluded is the possibility of p being true and q is false.” In his attempt at a cross-linguistic characterization of conditionals, he adds, as a further restriction to his definition in natural language, that “the content of the protasis must be interpretable as a cause of the content of the apodosis” (Comrie, 1986: 80). He identifies four major parameters necessary for the description and categorization of conditionals; namely clause order, marking of conditionality, degrees of hypotheticality and time reference.

In contrast to Comrie’s basically semantic definition, Dancygier (1993: 403), whose work we have only discovered in the course of writing the current article, primarily defines a conditional in formal-structural terms as “a complex sentence composed of the main clause (q, or the apodosis) and a subordinate clause (p, or the protasis) introduced by a conditional conjunction, which in the majority of conditional sentences in English is if” (see also Dancygier, 1998: 1). Two parameters inform this English-based definition, viz. the presence of if, which signals the speaker’s non-assertiveness of the assumption in the protasis and the syntactic frame if p, then q, which signals a semantic or pragmatic relation between p and q, whereby q can only be asserted after assuming p. Dancygier further subdivides conditionals on functional grounds into predictive and non-predictive conditionals. Formally, predictive conditionals are characterized in terms of backshift, that is, “the time reference intended by the speaker is systematically later than the time referred to by the verb form in its prototypical (non-conditional) uses” (Dancygier, 1993: 406). Semantically, clauses in predictive conditional constructions are said to exhibit sequential and causal relations, such that the proposition in the protasis precedes the proposition in the apodosis (Dancygier, 1993: 412). All sentences in (1) to (4) above are classified as predictive in Dancygier’s typology; in addition to all of them exhibiting sequential and causal relations, (2) to (4) also exhibit backshift.

Sentence (5) is an example of a non-predictive conditional. In such conditionals, the kind of backshift exhibited in predictive conditionals does not occur. In this sentence, the verb forms refer to the time that they indicate; the verb in the protasis is in the present and it also refers to the present, while the verb in the apodosis indicates past and also refers to the past.

(5) If she is in the lobby, the plane arrived early.
(Dancygier, 1993: 415)

In non-predictive conditionals, there is also a lack of content relation between the assumptions expressed in the clauses. In conditional constructions like (5), where events are presented in reversed chronological order, causality cannot arise according to Dancygier (1993: 423), because no sequentiality of events is indicated by the sequence of clauses. Moreover, verb forms in the protasis of non-predictive conditionals are selected and interpreted in basically the same way as in independent sentences (Dancygier 1993: 421). This is unlike in predictive conditional constructions, where the choice of verb forms used systematically indicates the degree of unassertability introduced by the protasis: “the further the verb forms used go back in time, the lower the predictions are on the scale of assertability”. The provisionally assumed future truth of the assumption in the scope of if, is necessary for the prediction in the apodosis to be valid. Additionally, predictive statements can be presented hypothetically; the prediction in the apodosis is made despite the fact that the condition in the protasis is “not only predictable at the moment of speech, but also possibly unassertable or necessarily unassertable” (Dancygier, 1993). In the protasis of a non-predictive conditional, the type of unassertability expressed has rather to do with “the distance the speaker marks between his set of beliefs and an assumption which is contextually bound or represents the hearer’s perspective, rather than with any claim that the material in the protasis is in itself unassertable” (Dancygier, 1993).

Both Comrie’s semantic definition and the real vs. unreal conditionals can therefore be subsumed under Dancygier’s predictive type. Non-predictive conditionals are not considered conditionals under Comrie’s definition, for lack of causality, while Saloné considers them as part of real (simple) conditionals, although he provides no further explanation. Thus, Dancygier’s predictive type of conditionals cuts across the widely accepted distinction between real and unreal conditionals (see Comrie, 1986; Dancygier, 1993: 414; Parker, 1991; Saloné, 1979, 1983a, b).

Generally, studies of conditional sentences have paid more attention to the protasis and its markers than to the apodosis (Kumakiri, 2013: 155). Studies such as Haiman (1978) and Traugott (1985) are cases in point. Kumakiri (2013) attributes this
state of affairs to two reasons: (i) because well-studied languages, such as English, have a marker for the protasis, but not for
the apodosis, and (ii) because the sentence structure of the apodosis is usually the same as that of ordinary sentences, while
that of the protasis is not.
APart from the previously cited work of Salono on Haya and Swahili, dedicated studies of conditionals in Bantu only
existed until recently for Northern Sotho (S32), spoken in South Africa (Lepota, 2002; Taljard and Louwrens, 2003). A
2017 special issue on conditional constructions in African languages (Nicolle, 2017) also includes articles on the Bantu
languages Ndendeule (N101) from Tanzania (Ngonyani, 2017), Cuwabo (P34) from Mozambique (Guérois, 2017) and
Swahili from Eastern Africa (Mwamzandi, 2017), the latter study being based on the annotated Helsinki Corpus of
Swahili.

1.3. On modality

Modality has been defined in different ways in the literature. In its broad sense, it refers to “any kind of speaker
modification of a state of affairs” (Nuyts, 2006: 1; 2016: 32). So used, the term includes related notions, such as tense and
aspect. In this article, however, we use modality in its narrower sense to refer to a semantic subfield within the wider
tense-aspect-modality (TAM) domain. Although there is seemingly no consensus on the precise definition of modality,
especially in this narrower sense, possibility and necessity are generally regarded as core modal concepts (van der Auwera
and Plungian, 1998: 86). Within the framework of Nuyts (2006, see also Nuyts, 2016 for a more detailed account
and exemplification), three categories of modality are distinguished: dynamic, deontic and epistemic modality. Dynamic mo-
dality, further sub-categorized into participant-inherent, participant-imposed, and situational dynamic modality, is char-
acterized as an ascription of the capacity or ability, or necessity, to the first-argument participant in the state of affairs.
Traditionally defined in terms of ‘permission’ and ‘obligation’, deontic modality is treated in more general terms by Nuyts
(2006: 4) as an “indication of the degree of moral desirability of the state of affairs expressed in the utterance.” The last
type, epistemic modality, involves an estimation of the chances or the likelihood that the state of affairs expressed in the
clause applies in the world.

1.4. On the use of a corpus

Corpus studies in Bantu linguistics have steadily taken shape since their beginnings at the turn of the millennium (de
Schryver, 1999; de Schryver and Gauton, 2002). A recent statement of the various issues involved in corpus building for
the Bantu languages, especially with regard to the difficulties in building an oral component and topic/genre bias, may be
found in Nabirye (2016: 29–44). In the area of modality, studies such as Devos (2008), Bostoen et al. (2012), Mberamihigo
(2014), Kawalya et al. (2014) and Mberamihigo et al. (2016) have, either in part or entirely, relied on corpus data to derive
their hypotheses. van der Auwera and Diewald (2012) have underscored the usefulness of a corpus methodology in studies of
modality, especially if one’s investigation is to involve frequencies and diachrony, which are central objects in the present
study.

Our corpus contains 4 million running words and comprises material from 18 different topics and genres: agricultural
documents, cultural texts, environmental documents, financial texts, folktale, health documents, historical texts, inspira-
tional materials, instructional materials, legal texts, magazines, newspapers, novels, plays, political documents, radio news,
religious texts, and songs. In terms of period distribution, the material goes back to the earliest texts in Luganda, which date
from the end of the 19th century, and goes all the way to the present. An earlier version of this corpus (containing 1.5 million
running words) was used in a study of the modal verb -sóból- in Luganda (Kawalya et al., 2014).

1.5. On the structure of this article

The article is organized as follows. In Section 2 we review previous literature on Luganda in light of how they have treated
-ândi-, including a brief description of reality and unreality conditionals. In Section 3 we present a new corpus-based study of
the synchronic uses (i.e., in the 2000s and 2010s) of -ândi-, first in conditional constructions and then outside conditional
constructions. In Section 4, we subsequently subject -ândi- to a diachronic corpus analysis on the basis of thirteen time
periods, i.e. 1890s–2010s. A discussion and conclusions follow in Section 5.

2. Previous descriptions of -ândi-

A literature review of Luganda grammars, dictionaries and handbooks reveals that -ândi- has been predominantly treated
as a conditional marker. Those earlier descriptions of conditional constructions are unfortunately very unbalanced and
manifest many gaps. The analysis of -ândi- as a modal marker is even more problematic, not to say inexistent. It is precisely
these lacunae in the treatment of -ândi- that call for a careful reconsideration of its semantic categorization and delimitation,
as we do in this article through a corpus-based approach from Section 3 onwards. Before we start our review of earlier
accounts of -andi-, it should be mentioned that several sources also give the forms -ali- and/or -aku- as (older) alternatives to -andi- (see Crabtree, 1902; Gorju, 1906; Kirwan and Gore, 1951; Le Veux, 1914; Livinhac, 1885; Livinhac and Deneit, 1894; Livinhac et al., 1921; Nosova and Yakovleva, 1969). These allomorphs will not be considered in this article.

2.1. The use of -andi- as a conditional marker, and other conditionals

Often translated as ‘would’, the verbal prefix -andi- has previously been described as a conditional marker by various Luganda grammarians (see Ashton et al., 1954: 324; Chesswas, 1963: 85; Crabtree, 1902: 159; Kirwan and Gore, 1951: 69; Livinhac, 1885: 42ff; Livinhac et al., 1921: 72). It is reported as commonly occurring in the apodosis of conditional sentences, as in (6), but it may also be concurrently used in both the apodosis and the protasis, as in (7).

The same grammarians, however, describe other kinds of conditional structures that do not necessarily involve the use of -andi-. Table 1 summarizes conditionals as described in the literature on Luganda and categorizes them using typology of Dancygier (1993, 1998).

Following Dancygier (1993, 1998), previously described conditionals in Luganda generally fall under the predictive type, notwithstanding some cases of non-predictive as well as so-called ‘concessive’ conditionals (Dancygier, 1998: 160 ff; Dancygier and Sweetser, 2005: 142 ff; Declerck and Reed, 2001: 334 ff, 469 ff). Unlike English predictive conditionals, which are characterized by backshift, Luganda predictive conditionals seem to mostly not involve this phenomenon. For example, protases which indicate the past, as in (6), also refer to the past. There are, however, cases as (8) in which backshift is exhibited: although the verb in the protasis indicates the present, it refers to the future, since its hypothetical nature allows for the possibility of the hearer to speak Luganda every day at a point in the future.

Conditionals in Luganda can be introduced by different markers in the protasis. Their apodoses can also take different shapes. According to Ashton et al. (1954: 325), conditionals expressing “what could or would happen in the future, if a future condition were fulfilled” are introduced by the conjunction bwe ‘if’, as shown in (9). In this particular sentence, the verbs in the protasis and the apodosis are both marked for future tense, more specifically near and remote future respectively. If the protasis verb is in the near future, the verb in the apodosis can either be in the near future or far future. However, if the protasis verb is in the far future, the verb in the apodosis can only be in the far future. As can be seen from the translation, this sentence can also receive a temporal interpretation.

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1 The original orthography is maintained for quoted material, as well as the original translation, except when otherwise noted. The morphological parsing and glossing, for which a uniform orthography has been adopted, is ours throughout.

2 Our translation, as no translation was given.

3 In this example, the canonical order within a conditional sentence is reversed, with the apodosis coming before the protasis. This does not change the sequence if p, then q of the propositional content of the clauses.
Another common protasis introducer in Luganda conditionals is the conjunction singa ‘if’. In (10), taken from Bosa (1997), singa is used with a verb in the present while its conjunction-less apodosis also carries a verb in the present.4 In (11), taken from Pilkington (1901), singa is found both in the protasis and the apodosis, and is used with a present tense verb in both clauses.

In (11), taken from Pilkington (1901), singa is found both in the protasis and the apodosis, and is used with a present tense verb in both clauses.

According to Kirwan and Gore (1951: 70), bwe is used “only with future and present tenses” and singa is used “only with the present”. However, as already shown in a sentence like (6), singa can also occur in the protasis in conjunction with past tense verbs, while -andi- marks the verb in the apodosis. Such conditionals involving -andi- in the apodosis are, elsewhere, classified as ‘unreality conditionals’ and include hypotheticals and counterfactuals (Saloné, 1983b: 312). Both Dancygier (1993, 1998) and Comrie (1986) consider these as hypothetical conditionals with different degrees of hypotheticality. In both (6) and (8) -andi- in the apodosis (also called q) signals a prediction that is less strongly made because “the speaker holds other assumptions which contradict the assumption given in p” (Dancygier, 1993: 409). Traditional Luganda grammarians generally agree that such hypothetical conditional sentences are marked by the conjunction singa in the protasis and the verbal prefix -andi- in the apodosis (see Ashton et al., 1954: 324; Chesswas, 1963: 85; Crabtree, 1902: 36; Gorju, 1906: 38; Kirwan and Gore, 1951: 69; Le Veu, 1914: 187ff). Ashton et al. (1954: 324) describe these as sentences “which express what might have happened but did not” (counterfactual) or “what could have happened but has not” (hypothetical), as in (8), which the authors appear to have inappropriately translated as ‘If you had spoken Luganda every day, you would have quickly become an expert’. This translation portrays -andi- as marking counterfactuality, while it should be read here as conveying hypotheticality. The protasis verb is not marked for past tense, as in (6) above, where -andi- does express counterfactuality.

Apart from bwe and singa, Le Veu (1917), Kirwan and Gore (1951), Cole (1967) and Snoxall (1967) report other protasis markers, i.e. oba, obanga and nga. One of the most comprehensive lists is provided by Kirwan and Gore (1951: 70), from which (12) and (13) are taken. In (12) both the protasis and apodosis verb are zero-marked for present, while in

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### Table 1

<table>
<thead>
<tr>
<th>Protasis (marker and verb tense)</th>
<th>Apodosis (marker and/or verb tense)</th>
<th>Type of conditional</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>bwe ... future</td>
<td>future</td>
<td>Predictive</td>
<td>(9)</td>
</tr>
<tr>
<td>singa ... present</td>
<td>present</td>
<td>Predictive</td>
<td>(10)</td>
</tr>
<tr>
<td>singa ... present/past</td>
<td>-andi-</td>
<td>Predictive</td>
<td>(8)/(6)</td>
</tr>
<tr>
<td>obo ... present/future</td>
<td>agrees with protasis</td>
<td>Non-predictive</td>
<td>(12)/(13)</td>
</tr>
<tr>
<td>obanga ... present/future</td>
<td>agrees with protasis</td>
<td>Non-predictive</td>
<td>(12)/(13)</td>
</tr>
<tr>
<td>nga ... present/future</td>
<td>agrees with protasis</td>
<td>Non-predictive</td>
<td>(12)/(13)</td>
</tr>
<tr>
<td>ne bwe ... -andi-</td>
<td>-andi-</td>
<td>Concessive</td>
<td>(7)</td>
</tr>
</tbody>
</table>

(9) Bw’onómípa ndíjja.
   bwe o-no-N-yit-a N-li-jj-a
   ‘If or when you invite me, I will come.’
   (Ashton et al., 1954: 325)

(10) […] era singa nkikola, omulimu gwange nange guba gunfa.
   erá singá N-Ø-ki-kól-a o-mu-límu gu-ange
   and if SP1SG-PRS-OP7-do-IPFV AUG3-NP3-job PP3-POSS1SG
   ná-nge gu-Ø-bá gu-Ø-N-fá
   and-me SP3-PRS-be SP3-PRS-OP1SG-die
   ‘[...] and if I do it, I also lose my job (lit. ‘my job also dies me’).’
   (Bosa, 1997: 17)

(11) Singá ombúlira, singá nsányuka.
   singá o-Ø-N-buulir-a singa N-Ø-sanyuk-a
   ‘If you tell me, I shall rejoice.’
   (Pilkington, 1901: 85-86)

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4 This example is presented here to contrast it with example (8), even though it is not taken from a so-called traditional grammar, dictionary or handbook.
(12) Obá/obánga/nga ábba, ayónoon-a.
oba/obanga/nga a-Ø-bb-a a-Ø-onoon-a
If SP1-PRS-steal-IPFV SP1-PRS-do_wrong-IPFV
‘If he steals, he does wrong.’
(Kirwan and Gore, 1951: 70)

(13) Obá/obánga/nga alíbba, alyónoon-a.
ob/a/obanga/nga a-li-bb-a a-li-onoon-a
if SP1-REM_FUT-steal-IPFV SP1-REM_FUT-do_wrong-IPFV
‘If he (should) steal, he will be doing wrong.’
(Kirwan and Gore, 1951: 70)

In other conditionals, the protasis is introduced by a concessive conjunction *ne bwe* ‘even though, even if’ as seen in (7) above. In such constructions, -*andi*- may also occur in the apodosis, at which point it marks counterfactuality in both the protasis and the apodosis.

### 2.2. The use of -*andi*- as a modal marker

Kawalya et al. (2014) are the only ones to have explicitly called -*andi*- a modal marker. In their study, which deals almost exclusively with the modal verb -*sóbó*-,-*andi*- is shown to be the only marker (out of the six most important modal markers of possibility) that also expresses necessity. In some earlier sources, it is however used as a marker of modality, but not discussed, so its modal meanings need to be inferred from the few isolated examples (see Kiingi, 2009: xx; Le Veux, 1914: 208). Le Veux (1914), who provides several phrases like the one in (14), is no doubt the oldest source where it features as a modal marker. It was translated there as ‘*il se peut que*’ (*it may be that*).

(14) Nándibá.
N-andi-ba
Il se peut que je sois.
‘It may be that I am.’
(Le Veux, 1914: 208)

Kamoga and Stevick (1968) gloss -*andi*- as ‘might’, while Kiingi (2009), in the introduction to his monolingual Luganda dictionary, used it in the example in (15), in which it is clearly interpretable as conveying epistemic possibility.

(15) Kyandibá nga Olugánda lülíná mnántábilá mákábala omú yekká -lî.
ki-andi-ba nga o-lu-ganda lu-Ø-lin-a Ø-nnántabila
SP1-UNR-be that AUG11-NP11-Ganda SP1-PRS-have-IPFV NP1-verb
mákábala o-mu a-ekka -lî
genuine PP1-one PP1-only -lî
‘It might be (the case) that Luganda has only one genuine verb *-lî*.’
(Kiingi, 2009: xx)

### 3. A corpus-based study of the synchronic uses of -*andi*-

To be able to study the current uses of -*andi*-, we analyzed data from the two most recent time periods of our corpus, that is, the 2000s and 2010s. This sub-corpus contains 1,703,924 tokens (i.e., the ‘size’ of the corpus, counting all occurrences of all orthographic words) and 164,529 types (i.e., all distinct orthographic words).

Using the WordSmith Tools software suite (WST, cf. Scott, 1996–2017) to query this synchronic corpus, we searched for words containing *‘andi’ and ‘andy’, the latter being intended to retrieve instances where -*andi*- is attached to vowel-
initial verb forms. The asterisks surrounding the search items are wildcards that represent any number of letters. Given the nature of the search items, the query was bound to generate many undesired forms. We therefore limited our search by excluding most of the undesired material (such as parts of roots like “*andika*, *andii* or *andi*, as well as full orthographic words like *atandise* ‘he/she has started’, *emirandira* ‘roots’, *okutandika* ‘to start’ or *awandikibwa* ‘he/she is registered’) through the “Advanced” feature in WST. Given that there are several thousand instances of *andi-* in the synchronic corpus, we used standard random sampling techniques within WST in order to obtain a manageable number of concordance lines (i.e., about one hundred per decade) to study. These lines were then exported to an Excel spreadsheet for analysis, tagging, glossing and translation.

The verbal prefix *andi-* was found to occur in four different structures, viz. in (i) complex predictive conditional constructions, (ii) complex non-predictive conditional constructions, (iii) single-clause predictive conditional constructions with an elided protasis, and in (iv) genuine modal single-clause constructions without an elided protasis. As shown in Fig. 1, *andi-* is mostly used in genuine single clauses. Extrapolating from the sample used, there are 1029 instances in which *andi-* is used as such (which corresponds to 65% of *andi-*’s overall count). It occurs 263 times (16%) in single-clause constructions where the protasis is assumed to be elided, and another 233 times (15%) in complex predictive conditional constructions. Finally, in 59 instances (4%), it occurs in complex non-predictive conditional constructions.

For the description that follows, genuine single-clause constructions, constructions with an elided protasis and complex non-predictive conditionals will together be considered as uses of *andi-* ‘outside canonical conditional constructions’ (Section 3.2), as opposed to ‘canonical conditional constructions’ which correspond to the complex predictive conditionals (Section 3.1).

### 3.1. The use of *andi-* in canonical conditional constructions

We consider here as canonical conditionals those constructions that adhere to both the syntactic and semantic criteria set in Comrie’s definition, thus excluding Dancygier’s non-predictive conditionals as well as the single-clause predictive conditionals, i.e. those whose protasis is elided (cf. the first category in the legend of Fig. 1). In Luganda canonical conditional constructions, *andi-* does indeed generally appear in the apodosis, as stated in the existing literature, with a conditional conjunction introducing its protasis. Our corpus study now allows us to look into the distribution of the actual constructions. In 169 instances out of the total number of canonical conditional constructions (i.e., in 72% of the cases), the conjunction introducing the protasis is *singa*, while in 30 instances (13%) the protasis is marked by the auxiliary *ba ‘be*. This use with *ba* was not mentioned in the literature. The protasis can also be introduced by the conjunction *nga ‘if*, which is the case in only 7 instances (3%). Finally, *andi-* was also observed to occur in the protasis itself, which is then marked by the conditional conjunctions *ne bwe ‘even if, even though’ or bwe ‘if*. There are 9 instances (4%) with *ne bwe*, and 18 instances (8%) with *bwe*. This distribution is presented in Fig. 2.

The corpus also allows us to look into the (distribution of the) different tense-aspect (TA) environments. As such, *singa* in the protasis can be used with a verb either in the remote past perfective, as in (16), or in the near past perfective, as in (17). As noted by Ashton et al. (1954: 324), such sentences “express what might have happened but did not […]”. Thus, following Dancygier (1993, 1998), in for instance (16), the possibility of leaving it at the Ministry of Water and hence also the possibility of other districts taking it, is completely excluded. In line with Section 2, we refer to such constructions as counterfactual. Whether *singa* is used with a verb in the remote past perfective or the near past perfective, *andi-* in the apodosis combines with a verb in the perfective. In Luganda, the perfective can be formed by suffixing either *-a* or *-ye* to the verb stem, but this

![Fig. 1. Environments in which *andi-* is found, as seen in the present-day corpus.](image-url)
can cause different changes to the verb-final segment depending mostly on the nature of the final consonant, but also on the length of the verb. Imperfective verb forms, on the other hand, end in -a.

In the protasis, *singa* can also appear with a verb in the present imperfective, as in (18). Here, *-andi-* in the apodosis again combines with a verb in the perfective. Unlike (16) and (17), in (18) the possibility of reverting to the traditional upbringing is not completely excluded, and therefore, the proposition marked by *-andi-* in the apodosis is still realizable. In Ashton et al.’s (1954: 324) view, sentences of this kind express “what could happen but has not”. In line with Section 2, we refer to these as hypothetical constructions.
What is common to sentences (16) and (17), both expressing counterfactualty, is that the verb in the protasis contains a past tense prefix -a-. On the other hand, the protasis of sentence (18), which expresses hypotheticalty, contains a verb with a zero tense prefix characteristic of the present tense. As Dancygier (1993: 410) shows, there is a relation between hypothetical and counterfactual interpretations and time reference. Where the verb in the protasis contains a past tense prefix as in (16) and (17), a counterfactual reading is triggered and in the absence of this, as in (18), an utterance expresses hypotheticalty.

In all these cases, -andi- is used with a verb in the perfective and it takes a H (high) tone on both its syllables, except where it is used with a negative marker, as in (19), in which case it carries a H and a L (low) tone, but is still marked for the perfective.

When -ba ‘be’ is used to mark the protasis of a conditional construction, it does so as an auxiliary that is followed by the main verb in the infinitive, as in (20), in which case -andi- always expresses counterfactualty. The verb -ba is deficient and can never be marked for remote past tense in Luganda. As an auxiliary marking the protasis of a counterfactual conditional, it can only be inflected for person. This is the only context in Luganda where the protasis verb is not overtly marked for past tense, but the sentence still conveys counterfactualty. Given that the effect of the auxiliary -ba is similar to that of an overtly marked past tense verb in the protasis of a predictive conditional construction, it may as well be argued that -ba has an inherent past time reference.

(18) [...] agamba nti singá tuddá kú ńunjulá ęy’èdda twándibáddé tufúna eégwánga eddlángi.

(19) Mugema yawéebwa ekitíibwa kiñene eky’óbwájjajja bwá Búgánda kubánga ssingá teyali ye Kimera teyándimanyiddwá n’íkatónó.

(20) Omusájjá ono abá kúbéerá múbísi ngá abálálá bé ndábyé eyo mpisê ennyúmbá yé yándígitímbé yéo mu bikkó obá ku mbálámá z’émmigga obá ennyána […]
The verb -ba is also found as a copula in theprotasis of conditional constructions whose apodosis verb is marked by -andi-, as in (21), where it is also inflected for person only. As in (20), it appears impossible to realize the proposition in the protasis. The reading of the sentence still remains counterfactual. No verb other than -ba is found in the protasis of a conditional construction in the absence of a dedicated conditional conjunction. In conditionals where -ba functions as a copula, the protasis appears to be inherently counterfactual. Declerck and Reed (2001: 100), following Goodman (1991), call these types of conditionals ‘counteridentical-P conditionals’; the protasis “identifies two incompatible entities with each other”.

(21) Nóólwekyo mbá ggwe nándígenzé néêkennéényá buli awáli ettéeka.

'nóólwekyo N-ba ggwe N-andi-gend-ye N-eekenneeny-a
therefore SP1SG-be you SP1SG-UNR-go-PFV SP1SG-search-IPFV
buli a-wa-li e-téeeka
every AUG16-PP16-be AUG1-NP5-rule
'Therefore if I were you, I would have looked wherever there was a rule.'
(Syntactical, Instructional Materials, 2010s)

The conjunction nga ‘if’, was found to be used in the protasis of a conditional sentence with a verb in the present imperfective, as illustrated in (22). However, contrary to previous examples with present tense verb forms, the entire sentence here is interpretable as expressing counterfactuality. This may be due to the fact that temporal reference of the verb is likely to be dependent on the type of the verb (Dancygier, 1993: 410); state verbs (in this case -li ‘be’) tend to have past time reference, while event verbs tend to refer to the present or future. Therefore, in (22) where a state verb (with past time reference) is used, nga introduces the protasis of a predictive counterfactual conditional, whereas in (12) and (13) where an action verb is used, it introduces the protasis of a non-predictive conditional.

(22) Erá tújja kulágá éngérí ómálabe gy'ásémbérréddé né Káábáka waffe mu ngérrí
ey'ómbálabe érá etándisobóso nga Bugánda tééri mu Buwándbé
era tu-Ø-jj-a ku-lág-a e-N-geri
also SP1PL-PRS-come-IPFV NP15-show-FV AUG1-NP9-way
o-mu-labe gi-e a-Ø-sémbérr-e-ye ne Ø-kábáka
AUG1-NP1-enemy PP9-REL SP1-PRS-come_close-APPL-PFV with NP1-king
wa-affe mu N-geri e-a o-bu-labe
PP1-POSS1PL LOC18 NP9-way PP9-CONN9 AUG1-NP14-danger
era e-te-andi-sobok-ye nga Buganda
and SP1-NP-NEG-UNR-be_possible-PFV if Buganda
te-Ø-li mu bu-wambe
NEG-PRS-be LOC18 NP14-siege
'We will also show how the enemy has come close to our King in a dangerous way,
which would not have been possible if Buganda had not been under siege.'
(OccupiedBuganda_20061228, Political Documents, 2000s)

When -andi- occurs in the protasis of a conditional sentence, the apodosis can equally be marked by -andi-, as in (23), but it may also only occur in the protasis as in (24). In such sentences (where -andi- is used in the protasis), no other conjunctions than (ne) bwe are allowed. At the same time, when ne bwe occurs in the protasis, the sentence is semantically interpretable as a concessive conditional, whether or not it combines with -andi-. The combination with -andi- in (23), which appears to provide counterevidence to the fact that the player was on the team, makes the entire sentence counterfactual. In (24), bwe combines with -andi- to exclude the possibility of the proposition in the protasis, hence also rendering the entire sentence counterfactual.

(23) Mayánja yátégéézzzâ nti óbóolyáwo omuzànníy ono né ñewé yándibáddé ku ttíímu
eno tewáli ky’amáñíyy nnyó kyandikyusémú. Mayánja a-a-tegeez-ye nti óbóolyáwo o-mu-zannyi
Mayánja SP1-REM_PST-say-PFV that maybe AUG1-NP1-player
o-no ne bwe a-andi-ba-ye ku Ø-ttìímu e-no
PP1-DEMa even if SP1-UNR-be-PFV LOC17 NP9-team PP9-DEMà
te-wa-li ki-a ma-ànyi nnyó ki-andi-kyuk-ye-mu
NEG-PP16-be PP9-CONN NP9-value much SP1-UNR-change-PFV-LOC18
'Mayánja said that maybe even if this player had been on this team, nothing much
would have changed.'
(ED111010-Mayánja, Newspapers, 2010)
Table 2 offers a summary of our corpus-based account of -andi- in canonical conditional constructions, showing the specific structures in which it occurs together with their corresponding meanings.

Our systematic corpus analysis has thus revealed that in present-day Luganda, -andi- occurs in the apodosis of complex predictive conditionals with either the conditional conjunctions singa or nga, or with the auxiliary -ba in the protasis. In some cases, -andi- itself also appears in the protasis but only when it combines with the conjunctions bwe or ne bwe. The latter is moreover solely found in concessive conditionals.

In conjunction with singa in the protasis, its specific reading depends on the tense of the protasis verb: hypothetical when the latter is zero-marked for present tense, counterfactual when it is marked for past tense. A protasis verb zero-marked for present tense has been found to always be imperfective. The use of a present perfective verb in a protasis marked by singa, which would be grammatical and has previously been reported in Luganda grammars, as seen in (8), was not retrieved from the present-day corpus sample. As we will see in Fig. 5 further below, and the discussion accompanying it, this particular construction with -andi- has basically not been used anymore since the 1950s.

The protasis marker -ba as an auxiliary followed by the main verb in the infinitive always triggers a counterfactual instantiation of -andi-. Such is also the case when -ba is used as a copula.

For all these canonical conditional constructions, -andi- in the apodosis always combines with a verb marked for perfective aspect, carrying a H tone on both its syllables. Only one exception was found: when -andi- combines with a negative verb form, it carries a H tone on its first syllable and a L tone on its second.

From the foregoing discussion it can therefore be said that the use of a past tense with a conditional conjunction (as a marker of unreality) in the protasis triggers a counterfactual interpretation of -andi- in the apodosis and, indeed, of the entire conditional construction. As put by Dancygier (1993: 410), the past is associated with counterfactuality (strong hypotheticality), since “the past is certainly not subject to change.” It therefore appears impossible with a past tense marked protasis, to realize the assumption or proposition in the protasis. This is also the case with a present tense protasis verb which has a past time reference as in (20) and (21). With a present tense protasis verb, there is simply an unlikelihood (but not impossibility), whereby hypotheticality is triggered because the assumption in the protasis, and thus also the prediction in the apodosis, is still realizable.

3.2. The use of -andi- outside canonical conditional constructions

In addition to the use of -andi- in canonical conditional constructions, the verbal prefix -andi- is also used in sentences that structurally behave as conditional constructions but are considered by some as ‘pseudo-conditionals’, since they do not conform to the causal link criterion (between the protasis and the apodosis). These are equivalent to Dancygier’s non-predictive conditionals, of which there are 59 instances (cf. the second category in the legend of Fig. 1). In 27 of these instances, the protasis is introduced by singa used with a verb in the present imperfective, and in the other 32, the protasis is introduced by the conjunction bwe, also used with a verb in the present imperfective.

Table 2
Use of -andi- in canonical conditional constructions, as seen in the present-day corpus.

<table>
<thead>
<tr>
<th>Marker</th>
<th>TA of verb</th>
<th>Apodosis</th>
<th>Aspect of verb</th>
<th>Tone of -andi-</th>
<th>Type of conditional</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
</table>
| singa  | REM_PST PFV | PFV      | HH             | Predictive    | CF                | (16), (19)
| singa  | NEAR_PST PFV| PFV      | HH             | Predictive    | CF                | (17)    |
| singa  | PRS IPFV   | PFV      | HH             | Predictive    | HYP               | (18)    |
| -ba    | INF        | PFV      | HH             | Predictive    | CF                | (20)    |
| nga    | PRS IPFV   | PFV      | HH             | Counteridentical-P | CF | (21) |
| ne bwe | -andi-     | PFV      | HH             | Concessive    | CF                | (23)    |
| bwe    | -andi-     | [no -andi-] |                | Predictive    | CF                | (24)    |
In addition to these two types of pseudo-conditionals or non-predictive conditionals, there are 263 instances where -andi- is used in single-clause constructions whose protases are assumed to be elided (cf. the third category in the legend of Fig. 1). Of the 1029 instances where -andi- is used in genuine single-clause constructions without an assumed elided protasis (cf. the fourth category in the legend of Fig. 1), 779 verbs to which -andi- is attached are in the perfective, with another 250 in the imperfective. Fig. 3 provides a summary of this distribution.

In the case of non-predictive conditionals, the subordinate clause is considered as a pseudo-protasis, and the main clause, marked here by -andi-, as a pseudo-apodosis (see Kay and Michaelis, 2012 for a more detailed analysis). Examples are shown in (25) and (26), where the protasis is introduced by singa and bwe respectively. As may be seen, the protasis indeed takes a present imperfective verb, while -andi- in the apodosis marks, as usual, a verb taking the perfective ending. In addition to lacking a causal link, there is also no backshift. The present tense verb in the protasis refers to the present. Fig. 3 provides a summary of this distribution.

In the case of non-predictive conditionals, the subordinate clause is considered as a pseudo-protasis, and the main clause, marked here by -andi-, as a pseudo-apodosis (see Kay and Michaelis, 2012 for a more detailed analysis). Examples are shown in (25) and (26), where the protasis is introduced by singa and bwe respectively. As may be seen, the protasis indeed takes a present imperfective verb, while -andi- in the apodosis marks, as usual, a verb taking the perfective ending. In addition to lacking a causal link, there is also no backshift. The present tense verb in the protasis refers to the present. In a canonical conditional construction, the combination of -andi- in the apodosis with a present tense verb introduced by singa in the protasis would trigger hypotheticality. Here -andi- always expresses deontic necessity. As shown by Dancygier (1993: 417), there seems to be little or no relation between the two clauses of complex non-predictive conditionals; they appear to be formed independently of each other before they later form one construction. Although the protasis verbs in both (25) and (26) are in the present, this does not seem to affect the interpretation of -andi- as they could potentially be in the past or future with -andi- still expressing deontic necessity. Therefore, these constructions seem to only be structurally identical with complex predictive conditionals, but their interpretations are not based on this complex structure. Thus, the fact that -andi- expresses deontic necessity in these constructions, where it is always used with a verb in the perfective, could be due to a correlation between perfectivity and deontic modality as, for instance, hypothesized by Abraham and Leiss (2008: xiii). Quoting Bybee et al. (1994), Ziegeler (2006) and Narrog (2008), Squartini (2016: 56) suggests that deontics are future-oriented because they “refer to a state of affairs that does not exist at the present ...” and that since futurity and perfective aspect are correlated, there is “an indirect relationship between perfectivity and deontic modality via futurity”.5

5 NRM is short for the National Resistance Movement, a political party in Uganda.

(25) N’ábábáká bá P álamenti “abájéémera” ekibííná kyá NRM nabó teyábatalizza erá singá kísoboka nabó bándíyánguye “okwénényá” […]
ne a-ba-baka ba-a O-palamenti
and AUG2-NP2-representative PP2-CONN NP2-parliament
a-ba-jcem-er-a e-ki-bína ki-a NRM
AUG2-P2-disobey-APPL-IPFV AUG7-NP7-party PP7-CONN NRM
na-bo te-a-a-ba-taliz-ye era singa
and-them NEG-SP7-NEAR_PST-OP2-spare-PFV and if
ki-Ø-sobok-a na-bo ba-andi-yanguw-ye
SP2-PRS-be_possible-IPFV and-them SP2-UNR-hurry-PFV
o-ku-eneny-a
AUG15-NP15-apologize-FV
’And the MPs who disobey the NRM 5 party, he warned them too; and if it is possible, they should also apologize quickly […]’
(ED131014-Kino, Newspapers, 2010s)

(26) Bwe kába ng’akanyóólábíkyá káva ku ntáputá yá mátééká gá nsi, nsuubira Alúpo yándíddúkíddé mú ofiisi yá muwábúzi wá Gávúmênti ku by’ámátéékâ (Solicitor General).
bwe ka-ba nga a-ka-nyoolabikya ka-Ø-v-a
if SP12-be that AUG12-NP12-standoff SP12-PRS-come_from-IPFV
ku N-taputa y-a ma-teeka ga-a
LOC17 NP5-interpretation PP5-CONN NP7-law PP7-CONN
N-si N-Ø-suubir-a Alupo a-andi-dduk-ir-ye
NP5-country SP14G-PRS-think-IPFV Alupo SP1-UNR-run-APPL-IPFV
mu ofiisi y-a mu-wabuzi w-a gavumenti
LOC16 office PP5-CONN NP7-advisor PP7-CONN government
ku bi-a a-ma-teeka
LOC17 PP7-CONN AUG5-NP5-law
’If the standoff originates from the interpretation of the country’s laws, I think Alupo should go to the advisor on legal issues (Solicitor General).’
(BU130602-Minisita, Newspapers, 2010s)
Deontic modality is traditionally defined in terms of permission and obligation (Palmer, 1986). However, in order to pinpoint deontic uses of -andi-, it is necessary to consider deontic modality beyond this traditional sense. We therefore consider a more general understanding of deontic modality as an indication of the degree of moral desirability (Nuyts, 2006; Nuyts et al., 2010; Van Linden and Verstraete, 2011). Nuyts et al. (2010: 18) stress that deontic modality should be defined in terms of “an assessment of the degree of moral acceptability of the SoA [state of affairs]”, rather than in terms of permission and obligation, which are directive uses. Indeed, all the cases we consider to be deontic necessity uses of -andi- hardly involve any directivity or obligation, but are all the same still deontic, since they “are about things being ‘good’ or ‘bad’” (Nuyts et al., 2010: 18). Moreover, Nuyts et al. (2010) expound their use of the term ‘morality’ as not (only) involving generally accepted social or societal principles or ‘ethical norms’, but also involving personal opinions and principles, as many of our examples show.

Turning to -andi- in single-clause constructions, we first note that in such constructions it takes the same conjugations as those it takes when used in complex conditional constructions. It can occur with a verb in the perfective thereby carrying a H tone on both its syllables, but also with a verb in the imperfective, whereby it takes a L tone on both syllables. With a verb in the perfective, -andi- can trigger either counterfactuality, as in (27), or hypotheticality, as in (28). These constructions where -andi- triggers either counterfactuality or hypotheticality have much in common, at least semantically, with the conventional conditional constructions discussed in Section 3.1. Following Lazard (2001) and Van Linden and Verstraete (2008), we consider them to be conditional apodoses with an elided protasis (e.g. in (27), if the patient had got a blood transfusion, he would have got well quickly).

(27) Yee mu ddwâliro twâvûúddéyó jjo âtê tebabámutaddekó musâáyí nga tewâlî só kyândimûámbye okuwâa obùlûngi.

Yes we came out of the hospital yesterday and they didn’t give him blood because there was none, yet it would have helped him to get well.’

(Ekkomera eriggule 6, Plays, 2000s)

(28) Alúmû ekirúngó ekíyàmba okusála amas âtiyámbé gásìgálâ mu mubirí oàgûëzáa Òmûntú, naddálà ku ba-kàzi.

‘It contains a substance which helps to reduce fats that would remain in the body to make a person fat especially in women.’

(BU110325-Wayini, Newspapers, 2010s)
What is more, -andi- can trigger both counterfactual and deontic necessity meanings in one construction, as shown in (29). However, unlike in the above cases where an elided protasis is assumed, cases like these are simply single-clauses with no reason to regard them as conditional apodoses with elided protases. Van linden and Verstraete (2008: 1889) show that although there are many languages which structurally distinguish between simple counterfactuals (29) and conditional counterfactuals with an elided protasis (27), there are also languages where the two are structurally identical. In Luganda, these seem to be structurally identical and context, therefore, helps in differentiating between them. A conditional counterfactual with an elided protasis, as in (27), receives some kind of conditional interpretation.

Similar single-clause constructions (i.e., without an elided protasis) may also express only deontic necessity. An example of these is given in (30). In (29), in addition to the speaker giving an opinion or advice on how the situation ought to be (or to have been), i.e. planning for the people before chasing them, the utterance also emphasizes that there was actually no such planning for the people before they chased them. In contrast, in (30), the speaker is simply advising on what should be done, and not emphasizing what has actually not happened.

Finally, when -andi- occurs in single-clause constructions with a verb in the imperfective, as in (31), it expresses epistemic possibility. Epistemic possibility is a non-controversial category of modality in terms of its definition. It is generally understood as "expressing a speaker's lack of confidence in the proposition expressed" (Palmer, 2001: 34), or the expression of an uncertain judgment of the proposition by the speaker (van der Auwera and Plungian, 1998: 81). In (31), for example, the speaker thinks, but cannot commit him/herself to the truth of the fact, that in future there will not be people knowledgeable on important issues. Just as the world's languages commonly manifest a relationship between perfectivity and deontic modality (cf. supra), a similar link has been observed between imperfectivity and epistemic modality. At least in languages such as English, the (progressive) imperfective marker is reported to be triggering an epistemic reading due to its focusing on the "internal phases of the situation" (Squartini, 2016: 56).
Table 3 summarizes -andi-’s usage outside canonical conditional constructions, showing the structures in which it occurs together with their corresponding meanings.

4. A corpus-based study of the diachronic evolution of -andi-

Table 4 shows the composition of the 4-million-word diachronic corpus used for the historical analysis of -andi-. It comprises materials from thirteen time periods, i.e. 1890s–2010s.

Samples of about one hundred lines each were taken from and analyzed for each decade separately. The samples for the 2000s and 2010s are the same ones which, jointly, formed the basis for the discussion in Section 3.

Overall, and as seen in Fig. 4, we notice that although there are some fluctuations in the frequency distribution, with fewer occurrences of -andi- in the 1900s–1910s and 1970s, and more occurrences in the 1930s–1940s, the overall frequency of -andi- is rather stable.

For each decade anew, we looked at all possible structures in which -andi- is involved. The resulting diachronic structural distribution of -andi- is presented in Fig. 5. In this one single graph, the use of -andi- both in and outside canonical conditional constructions is shown using so-called ‘100% stacked columns’, meaning that the percentage contribution of each construction to the total per decade is shown. In Section 3 we observed the close correlation between structure and semantics, whereby the former implies the latter. In this section we can therefore suffice with a discussion of the structural level, bringing in semantics on the fly.

Studying Fig. 5, we notice that the use of -andi- in genuine single clauses (i.e., those labeled with ‘single-clause modal’) grows over time compared to the other uses. The use with a verb in the imperfective and thus expressing epistemic possibility, which is first attested in the 1940s, occurring about 0.7 times for every 10,000 words, occurs up to 1.5 times for every 10,000 words in the 2010s. With a verb in the perfective and thus expressing deontic necessity, its frequency is 1.8 times for every 10,000 words in the 1890s, while it is 5.4 times for every 10,000 words in the 2010s. Cases where -andi- is used in single-clause constructions but with an assumed elided protasis (i.e., those labeled ‘single-clause predictive’) have always been relatively frequent, namely about 2 times for every 10,000 words.

Conversely, cases in which -andi- is used in complex conditional constructions, either predictive or non-predictive, containing both a protasis and an apodosis, viz. all constructions in Fig. 5 apart from the latter three, reduce over time compared to the other uses.

The clearest case of a vanishing category is the top one in Fig. 5, i.e. the predictive counterfactual conditional whose protasis is marked by the conjunction singa and which has a verb in the remote past perfective (cf. Table 2). In the 1890s,
construction occurs 6.1 times for every 10,000 words and represents by far the principal functional context of -andi-, i.e. more than 50% of its usages. Overall, it has kept reducing over time and in 2010s it occurs only about 0.1 times for every 10,000 words.

The other predictive counterfactual conditional construction with -andi- in the apodosis, involving the use of singa with a verb in the near past perfective in the protasis (cf. Table 2), i.e. the second one from the top in Fig. 5, is only seen in the 1890s, 1990s and 2010s, occurring respectively 0.5 times for every 10,000 words, 0.2 times for every 10,000 words and 0.1 times for every 10,000 words. Clearly, this is a very infrequent use overall, so rare that it was found to be used in just three decades and reappearing after a full century since its first appearance in the 1890s.

The third type of conditional construction where -andi- in the apodosis co-occurs with singa in the protasis, but this time with a verb in the present imperfective, i.e. the third and fourth ones from the top in Fig. 5, can be either predictive or non-predictive (cf. Tables 2 and 3). In the predictive ones, -andi- conveys hypotheticality; in the non-predictive ones, deontic necessity. The predictive ones occur from the 1890s onwards and remain relatively significant throughout the decades, although their frequency is shrinking overall. They occur 1.26 times for every 10,000 words in the 1890s and peak in the 1940s with 3.65 occurrences for every 10,000 words to then remain at only 0.65 occurrences for every 10,000 words in the 2010s. The non-predictive ones are very marginal. Prior to the 2000s, they are attested in only three decades, i.e. the 1920s, 1940s and 1950s, occurring 0.28, 0.33 and 0.19 times for every 10,000 words, respectively. They then resurface in the 2000s and 2010s, occurring respectively 0.25 and 0.10 times for every 10,000 words. The diachronic development of the use of this structure (i.e. singa with a verb in the present imperfective) in non-predictive conditionals seems to go in the opposite direction of its use in predictive conditionals. In the former usage, it is seen to reduce, such that after the 1960s, it only occurs
less than once for every 10,000 words, as if to give way to non-predictive uses for which there is no single attestation seen in eight out of the first 11 decades covered by the corpus.

Although the auxiliary -ba as a marker of the protasis in predictive conditional constructions with -andi- in the apodosis (cf. Table 2) was attested in ten out of thirteen decades, its overall frequency is rather low, always occurring less than once for every 10,000 words.

The conjunction bwe used together with -andi- in the protasis only, expressing counterfactuality as part of a predictive conditional (cf. Table 2), was found in three decades, viz. the 1960s, 1990s and 2000s, while its concessive counterpart ne bwe (cf. Table 2) was found in five decades, viz. 1930s, 1950s, 1960s, 1990s and 2010s. The former occurs about 0.5 times for every 10,000 words, while the latter occurs about 0.25 times for every 10,000 words, in each of those decades. The non-predictive conditional construction whose protasis is introduced by bwe and followed by a verb in the present imperfective and whose apodosis is marked by -andi- expressing deontic necessity (cf. Table 3), is attested in five decades, viz. 1890s, 1910s, 1920s, 1950s and 2010s, but in very low frequencies in all these decades, the highest being 0.4 times for every 10,000 words in the 1950s.

Then there are constructions which have basically stopped being used some time ago. A clear case is where singa in the protasis is used with a verb in the present perfective: while these are generally rare, they are attested in the earlier periods, from the 1890s through to the 1950s, where this construction still occurs 0.6 times for every 10,000 words. After the 1950s, this construction is only sighted again in a single decade, namely the 1990s, with an even lower frequency of 0.2 times for every 10,000 words. A corpus example from the 1890s conveying hypotheticality is given in (32); it corresponds with the one in (8) reported in Ashton et al.’s (1954: 324) grammar.

Similarly, the auxiliary -li was found as a protasis introducer to express counterfactuality, as in (33), only in the 1920s and 1940s, and in very low frequencies of about 0.3 times for every 10,000 words.

Another kind of construction that is not really in use anymore, involves nga in the protasis. The conjunction nga can be used with a verb either in the present imperfective in predictive counterfactual conditionals, as was seen in (22), or in the present perfective as in (34), which is a predictive hypothetical conditional. With a verb in the present imperfective, it was found, with very low frequencies, in five decades: 1890s, 1930s, 1940s, 1970s and 2000s. In the 1890s this kind of construction occurs 0.3 times for every 10,000 words and in the 2000s it occurs 0.1 times for every 10,000 words. However, with a verb in the present perfective, nga was attested only in the 1890s and 1960s, with frequencies of respectively 0.5 times and 0.2 times for every 10,000 words.
Lastly, when *obanga* is used in the protasis of a non-predictive conditional construction (cf. Table 1) with a verb in the present imperfective, as in (35), it was found only in the 1920s and 1940s, with frequencies of 0.3 times for every 10,000 words, and with a verb in the remote past perfective, as in (36), it was seen only in the 1910s with a frequency of 0.1 times for every 10,000 words. In both cases, *-andi-* in the apodosis conveys deontic necessity.

(35) Obánga tóyágála kubú’ta bwándíráyídwá, nga bwakamálá sábiti biri […].

\[
\begin{align*}
\text{obanga} & \quad \text{te-o-O-yagal-a} \\
\text{if} & \quad \text{NEG-SP}_{25C}-\text{PRS-want-IPFV} \\
\text{bu-andi-laaw-ibw-ye} & \quad \text{NGA NGA-UNR-castrate-PASS-PFV} \\
\text{bu-bu-ma} & \quad \text{bu-aka-mal-a} \\
\text{NP15} & \quad \text{SP15-OP14-kill-FV} \\
\text{NP10} & \quad \text{SP15-just-spend-IPFV} \\
\text{NP10-week} & \quad \text{two} \\
\end{align*}
\]

‘If you don’t want to kill them, they should be castrated when they have lived for just two weeks […]’

(Amagezi2, Agricultural Documents, 1920s)

(36) Erá obánga yali ayágála ókúbá Omulábirizi wénsi zoná, yândigámbye nti Nábálábirizi bë Rúmi nábó náté erá bansi zoná ngá yé.

\[
\begin{align*}
\text{era} & \quad \text{obanga} \quad \text{a-a-li} \\
\text{and if} & \quad \text{SP1-REM-PST-be} \\
\text{o-mu-labirizi} & \quad \text{wa-a} \\
\text{AUG1-NP1-bishop} & \quad \text{PP1-CONN} \\
\text{AUG10-NP10-nation} & \quad \text{PP10-all} \\
\text{a-andi-gamb-ye} & \quad \text{nti ne} \\
\text{SP1-UNR-say-PFV} & \quad \text{that also} \\
\text{Rumi na-bo} & \quad \text{ba-a} \\
\text{N-si} & \quad \text{zi-onna} \\
\text{PP2-CONN} & \quad \text{LOC23} \\
\text{PP10-nation} & \quad \text{PP10-all like him} \\
\end{align*}
\]

‘And if he wanted to be a bishop of all nations, he should have said that the Roman bishops are also for all nations, just like him.’

(Ebyafa mu kanisa, Religious Texts, 1910s)

5. Discussion and conclusions

In this article, we have offered a detailed description of the verbal prefix *-andi-* in Luganda, based on text corpus data. Our distributional corpus analysis has revealed additional constructions in which *-andi-* is used over and above those described in the existing literature on Luganda. In the literature *-andi-* was portrayed as mainly occurring in complex conditional constructions, in which the protasis is marked by especially the conjunction *singa* or *bwe*. Through a careful corpus analysis, however, we have seen that the structure of constructions with *-andi-* is much more complex. First of all, although the constructions mentioned in the literature are also found in the corpus, there are additional complex constructions that the corpus revealed, viz. those in which the protasis is marked by either the auxiliary *-ba* or *-li*. The corpus additionally revealed precise information relating to the tense and aspect of the protasis verb. Furthermore, while the existing literature is silent about the actual meanings beyond referring to them as ‘conditionals’, the corpus allows one to link specific constructions to meanings such as ‘counterfactuality’ or ‘hypotheticality’. Secondly, we were able to learn from the corpus that *-andi-* can also significantly be used outside complex predictive conditional constructions. This basically is the case in single-clause constructions where there is no protasis at all, but also involves conditional constructions where there is a subordinate clause whose meaning is not seen as causing the meaning of the main clause, i.e. non-predictive conditionals. While in Dancygier’s English-based typology the semantic distinction between predictive and non-predictive conditionals is seconded by a structural difference in terms of backshift, this is not necessarily the case in Luganda. Our systematic corpus study has revealed cases of predictive conditional constructions in which the verb forms used indicate the time they refer to in their prototypical (non-conditional) uses (Dancygier, 1993: 406).

Furthermore, although earlier grammarians of Luganda have characterized *-andi-* as a conditional marker, it more often marks modality than conditionality from a strictly synchronic point of view. Synchronically, if one opposes genuine single-clause constructions and the complex non-predictive conditionals, to complex predictive conditionals and semantic conditionals with an elided protasis, *-andi-* turns out to occur most frequently in the first two categories of clauses, where it conveys modal meanings, and not conditional meanings as in the second category of clauses.

Diachronically, we have shown that, overall, the frequency of complex predictive conditional constructions involving *-andi-* has basically decreased over time with some constructions even having completely gone out of use in present-day Luganda. Conditional meanings of *-andi-* associated with these constructions have, therefore, also greatly reduced over time. Single-clause
constructions with an elided protasis, which also express conditional meanings, have remained constant. Genuine single-clause constructions, in which -andi- expresses modality, have been increasing over time. This clearly suggests that complex conditional constructions in which -andi- expresses conditionality, have been giving way to genuine single-clause constructions in which -andi- expresses modality. In other words, there is an indication of a diachronic process involving the emergence of modal meanings from conditional ones. This kind of diachronic development has been reported in a wide range of languages, especially as an instance of the phenomenon of insubordination (i.e., the recruitment of main clause structures from subordinate structures) (cf. Evans, 2007: 394; Evans and Watanabe, 2016: 2).

However, the case of -andi- does not involve insubordination since, as corpus evidence has shown, -andi- predominantly occurs in the apodosis of conditional constructions and in constructions that are structurally genuine single clauses. The emergence and development of -andi- as a modal marker is thus correlated with its growing use outside complex conditional constructions, not to say due to it,7 taking into account the causal link there appears to exist between the structure of the clause constructions in which it is used and the meaning it conveys.

The hypothesis for this diachronic development is that the rise of single clauses from complex conditional constructions, and hence the emergence of -andi- as a modal marker from its primary use as an unreality conditional marker, involved three major stages7:

A. The original use of -andi- in the apodosis of canonical or predictive unreality conditionals to convey the notions of either counterfactuality (when the protasis verb has past time reference) or hypotheticality (when the protasis verb has no past time reference);
B. The extension of its usage to non-predictive conditionals, which are structurally similar to predictive conditionals in terms of the conjunctions (singa and bwe) and verbal aspect (imperfective) of the protasis, but differ semantically in that (i) there is no causal link between the contents of the protasis and the apodosis, and (ii) the apodosis conveys the modal meaning of deontic necessity and not the conditional meaning of hypotheticality;
C. The deletion of the protasis of non-predictive conditionals, which was facilitated by the absence of a causal link with the apodosis and resulted in the emergence of single clauses expressing deontic necessity.

This three-step evolution can only remain a hypothesis, which cannot be substantiated with direct empirical evidence from our diachronic Luganda corpus, because the constructions representing each of the three stages are already attested in the language from the 1890s onwards. Relying on Dancygier’s model, however, the evolution of predictive conditionals first into non-predictive conditionals and then into single clauses is plausible from both a structural and semantic point of view. The semantic shift from counterfactuality and hypotheticality (conditional) to deontic necessity (modal) can easily be motivated through the more generic notion of ‘unreality’ which underlies these different meanings. The existence of single clauses in Luganda that may convey simultaneously counterfactuality and deontic necessity further stresses this semantic relatedness. The origin of such constructions is not clear, but they possibly resulted from a structural and semantic conflation of predictive conditionals expressing counterfactuality whose protasis is elided or assumed, which are also attested since the 1890s, and single clauses expressing deontic necessity originating from non-predictive conditionals. Furthermore, it needs to be reckoned that in certain theories all modality has been taken as conditional, because possibility and necessity are always relative to something else, i.e. a sufficient condition which is left implicit because it can be inferred from the context (cf. Kratzer, 1978; van der Auwera, 1978: 177ff). Even if conditionality tends to develop as a post-modal meaning in the world’s languages, it is therefore not so surprising to find examples of markers that semantically evolved in the opposite direction, such as -andi- in Luganda. The fact that in some languages like Korean and Japanese, deontic modality is conventionally expressed by conditional sentences further highlights the strong link existing between conditionality and modality in natural language (Clancy et al., 1997: 48–49).

Even if we cannot substantiate it empirically, our diachronic corpus does indicate that the emergence of genuine single clauses expressing deontic necessity from non-predictive conditionals with an apodosis conveying the same meaning must have started well before Luganda appeared in writing. While adoptions of innovations in language are generally believed to follow an S-curve trajectory (Blythe, 2016; Blythe and Croft, 2012), which “amounts to the qualitative observation that the change starts slowly, accelerates and ends slowly” (Ghanbarnejad et al., 2014), the sparseness of our data points does not allow us to draw such an S-curve. However, assuming that our window of observation is on the acceleration phase, which looks like a reasonable assumption given the occurrence frequencies seen, we may approximate that phase with the straight middle section of the S-curve. An attempt to illustrate this with our diachronic corpus data is presented in Fig. 6, in which the emergence and growth of the use of -andi- as a modal marker is set out. A linear trendline for the data from the 1890s to the 2010s is extrapolated back into time, which suggests that modal uses would have appeared at least half a century prior to the start of our diachronic corpus, perhaps around a century earlier.

In the 1890s -andi- was still very marginal as a modal marker. It is only during the subsequent decades that our data show a complete reversal of this situation. Nowadays, -andi- has become predominantly a modal marker and is used much more rarely in conditional constructions, and definitely so in canonical predictive conditionals. This may be seen from Fig. 7, in

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6 Thanks are extended to one of the anonymous referees for stressing this point.
7 Many thanks are due to the same anonymous referee for suggesting a three-stage hypothesis.
8 We wish to thank Johan van der Auwera for pointing this out during the doctoral defence of the first author, which took place at Ghent University on November 23, 2017.
which the trendlines for the four different usage environments of \(-andi\)- show the interplay of increasing usages of modality versus reducing usages of conditionality. In actual fact, the normalized data show that the latter two are one another’s mirror image. (The focus of the S-curves is again on the straight — and by approximation ‘linear’ — middle sections.) Moreover, the use of complex non-predictive conditional constructions, in which \(-andi\)- always triggers a deontic necessity interpretation, has been rather sporadic but stable throughout the decades, and is still attested today. The use of \(-andi\)- in single-clause predictive constructions with an elided protasis, where it expresses counterfactuality and hypotheticality, as it does in complex predictive conditional constructions, has likewise been stable across the entire time span looked at.

The only true historical shift that could be empirically captured in our diachronic corpus is the rise of \(-andi\)- as a marker of epistemic possibility that happened from the 1940s onwards and was seconded by a structural change, i.e. its combination with imperfective aspect instead of perfective aspect associated with its use as marker of deontic necessity. It remains unclear, however, why instead of \(-andi\)- developing into an epistemic necessity marker following its use as a deontic necessity marker as should be expected (van der Auwera and Plungian, 1998: 98), it ends up expressing epistemic possibility meanings. It could be because Luganda already had a well-established epistemic necessity marker, i.e. \(-t\text{eekw}\)- ‘must’, and therefore it was not necessary for another marker to perform the same function. It also appears that there are degrees of certainty or probability covered by the three markers used to express speakers’ opinions in Luganda, namely \(-yînz\)- ‘may’, \(-andi\)- and \(-t\text{eekw}\)-, with \(-andi\)- taking an intermediate position between \(-yînz\)- and \(-t\text{eekw}\)-, the latter two carrying the lowest and highest degree of certainty respectively. However, a more comprehensive investigation into this remains necessary.

To conclude, the historical relationship between the structure and semantics of \(-andi\)- reconstructed in this article presents a departure from existing typologies of language change in the area of modality, viz. we are dealing with an uncommon
modality path where modality is developing from conditionality, and thus not a path where post-modal meanings develop out of modality as presented in, amongst others, van der Auwera and Plungian’s (1998: 91ff) semantic map of modality.

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References


Deo Kawalya is a Lecturer at Makerere University, in the School of Languages, Literature and Communication. He obtained his PhD at Ghent University, while at the UGent Centre for Bantu Studies (BantUGent). His main interest is in corpus studies of modality for the Bantu languages in general, and for his native language Luganda in particular. His earlier work covers Bantu lexicography, both practical and theoretical.

Gilles-Maurice de Schryver is a research professor of African linguistics in the department of languages and cultures at Ghent University, and a member of BantUGent. He holds an MSc in microelectronic engineering (1995), as well as an MA (1999) and PhD (2005) in African languages and cultures. In 2002 he co-founded TshwaneDe HLT, and in 2006 he was a founding member of African Language Technology. His main research interests are in the fields of Bantu lexicography and Bantu corpus linguistics. He is the author or co-author of about 300 books, book chapters, journal articles and conference papers within these fields.

Koen Bostoen is a research professor of African linguistics in the department of languages and cultures at Ghent University, and a member of BantUGent. His field of research is the historical, comparative and descriptive study of Bantu languages. Some of his specific domains are diachronic phonology, diachronic semantics, lexical reconstruction, verbal derivation and argument structure, and information structure. He has published widely in all these fields. Over the past fifteen years he also developed a special interest for the integration of language data into interdisciplinary approaches to the African past in general and the Bantu Expansion in particular.