Chapter 23

Temporal remoteness and vagueness in past time reference in Luganda

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In this paper, we point out that past time operators (PTOs) in Luganda, a language that makes three past time remoteness distinctions, are vague and context-dependent, and provide an analysis whereby PTOs contain context-sensitive measure functions akin to gradable adjectives. We call the relevant PTOs RECENT, INTERMEDIATE, and DISTANT, respectively. Luganda PTOs give rise to borderline cases, where it is difficult to decide whether a past reference time (RT) counts as 'recent', 'intermediate' or 'distant'. What counts as 'recent', 'intermediate' or 'distant' is context dependent; e.g., there are contexts where REC is acceptable with an RT of a few weeks ago, and contexts where DIST is acceptable for an RT of a few minutes ago. We assume that like tenses in English, PTOs in matrix clauses in Luganda restrict the relation between utterance time (UT) and RT. However, while English past tense presupposes that RT precedes UT (e.g. Kratzer 1998), Luganda PTOs additionally encode as part of their meaning a vague, context-dependent measure function that compares the length of a time interval to a contextual standard.

1 Introduction

So-called 'graded tense' systems are cross-linguistically quite common (Comrie 1985; Dahl 1983; Mithun 1999; Nurse 2008). Such systems make use of multiple morphemes that make more fine-grained distinctions than simply 'past' or 'future'. Rather, they encode varying degrees of remoteness (e.g., recent vs. distant) from a reference point. Languages with such systems vary with respect to what distinctions are made, and how many.

However, grammaticalized temporal remoteness morphemes have only recently begun to attract attention within formal semantics (see e.g., Cable 2013 for Gĩkũyũ, Hayashi 2011 for South Baffin Inuktitut; Mucha 2014 for Medumba). We aim to expand upon this discussion here by investigating the paradigm of graded past tenses in Luganda (Bantu;

JE15). Luganda has three remoteness categories for past time reference. We refer to these as RECENT (1), INTERMEDIATE (2), and DISTANT (3). They are bound morphemes that are obligatory on verbs with past time reference, i.e., a speaker must choose one of these three forms for finite clauses with past time reference.

(1) **Nzinye**   (ku matya).
1SG.dance.REC.PST (LOC morning)

'I danced (this morning).'   RECENT PAST

> Template (REC.PST): AGR-∅-ROOT-**ie**

(2) **Nazinye**   (jjo).
1SG.dance.INT.PST (yesterday)

'I danced (yesterday).'   INTERMEDIATE PAST

> Template (INT.PST): AGR-**a**-ROOT-**ie**

(3) **Nazina**   (luli).
1SG.dance.DIST.PST (another.time)

'I danced (the other day).'   DISTANT PAST

> Template (DIST.PST): AGR-**a**-ROOT-**a**   (modulo irregular verbs)

The boundaries of the temporal delineations are often described in the literature as being quite precise, e.g., up to 4 hours ago; one day ago. In this connection, it is quite common for authors to use labels such as 'hesternal' or 'hodiernal'. Despite such characterizations, it is also often reported that the use of these morphemes can be rather flexible and context-sensitive (e.g., Hyman 1980 on Bamileke; Sharman 1956 on ChiBemba). Our primary objective in this paper is to show that the temporal remoteness morphemes[1] (TRMs) in Luganda display the hallmarks of vagueness found elsewhere in unrelated phenomena across languages (e.g., certain nouns and gradable adjectives); in other words, in certain contexts, even native speakers with full knowledge of the facts are unable to determine which TRM should be used. We provide an analysis of TRMs in Luganda that takes into account the properties of vagueness we observe. In doing so, we also compare the behavior of temporal operators cross-linguistically with that of relative and absolute gradable adjectives.

The paper proceeds as follows. In §2 we describe in more detail the use of TRMs in Luganda. In §3 we outline the behavior of vague expressions in general, and in §4 we show that Luganda TRMs indeed display the properties of vague expressions. Our analysis is presented in §5, and in §6 we draw a comparison between types of temporal operators on one hand and gradable adjectives on the other. §7 concludes and hints at areas for further research.

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[1]Following Cable (2013), we use the term 'temporal remoteness morphemes' so as not to prejudge their analysis as true tenses or something else, e.g., modifiers of events as Cable argues for Gīkūyū. We do, however, analyze them as tenses in §5.

2 Temporal remoteness morphemes in Luganda

Recall that Luganda has three remoteness categories in the past tense paradigm, which we label as RECENT, INTERMEDIATE, and DISTANT past in (1)-(3).[2] Ashton et al. (1954: 122–123) characterize these morphemes in the following way: the recent past "expresses the completion of an action and/or state entered upon within the immediate past"; the intermediate past "expresses an action actually finished and accomplished as an action, but confined or limited … , roughly speaking, to the past twelve hours"; and the distant past "denotes an action in the past, but is indefinite as to the exact time. … It corresponds to a Past Aorist." We spend time in this section going into more detail about the semantics and use of these morphemes.[3]

First, we argue that these morphemes are not aspectual, since they can freely combine with predicates of all Aktionsarten without coercing any aspectual interpretation. Witness (4)-(7).

(4) Statives:

    a. Babilie abadde   lubuto.
       B.   3SG.be.REC.PST NC11.pregnant.woman
      'Babilie was just pregnant.'

    b. Babilie yabadde   lubuto.
       B.   3SG.be.INT.PST NC11.pregnant.woman
      'Babilie was pregnant (a little while ago).'

    c. Babilie yali   lubuto.
       B.   3SG.be.DIS.PST NC11.pregnant.woman
      'Babilie was pregnant (a long time ago).'

(5) Activities:

    a. Kato azinye.
       K.   3SG.dance.REC.PST
      'Kato just danced.'

    b. Kato yazinye.
       K.   3SG.dance.INT.PST
      'Kato danced (a little while ago).'

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[2]Our data come from elicitation sessions with two native speakers of Luganda, bilingual in English, living in the United States. All elicitation sessions were conducted in English, and involved a mix of translation tasks and felicity judgements of grammatical sentences in particular contexts.

[3]Note that we restrict ourselves here to the three "simple" past time markers in matrix clauses. We also do not talk about so-called "special" and "compound" tenses of Luganda (see Kisubika-Musoke 1986). Grammars such as Ashton et al. (1954) have also cited future TRMs which similarly divide future time into nearer and more distant time zones. However, our consultants have indicated to us that these forms are not colloquial, and the commonly used future forms do not carry temporal remoteness inferences, so we do not discuss these here.

    c. Kato yazina.
       K.   3SG.dance.DIS.PST

       'Kato danced (a long time ago).'

(6) Accomplishments:

    a. Kato addusse   mairo biri.
       K.   3SG.run.REC.PST mile three

       'Kato just ran three miles.'

    b. Kato yaddusse   mairo biri.
       K.   3SG.run.INT.PST mile three

       'Kato ran three miles (a little while ago).'

    c. Kato yadduka   mairo biri.
       K.   3SG.run.DIS.PST mile three

       'Kato ran three miles (a long time ago).'

(7) Achievements:

    a. Ensuwa   eyatisse.
       AUG.NC9.pot NC9.break.REC.PST

       'The pot just broke.'

    b. Ensuwa   yeyatisse.
       AUG.NC9.pot NC9.break.INT.PST

       'The pot broke (a little while ago).'

    c. Ensuwa   yeyatika.
       AUG.NC9.pot NC9.break.DIST.PST

       'The pot broke (a long time ago).'

Second, certain TRMs in Luganda asymmetrically entail others. In particular, the intermediate past appears to be usable in any context where the recent past is. For instance in (8)-(9), the intermediate past is possible both with *tano emabega* 'five hours ago' and *satu emabega* 'three hours ago', while the recent past is possible only with the latter.

(8) Nzinye   saawa {satu/#tano} emabega.
    1SG.dance.REC.PST hour {three/five} behind

    'I danced {three/five} hours ago.'   (RECENT PAST)

(9) Nazinye   saawa {satu/tano} emabega.
    1SG.dance.INT.PST hour {three/five} behind

    'I danced {three/five} hours ago.'   (INTERMEDIATE PAST)

The distant past cannot as easily be used in contexts where the intermediate or recent past can, but there is some evidence that it is the most general past, and that the inference of 'distance' is due to scalar implicature. For instance, a question with a the recent or

intermediate past gives rise to an inference that the speaker has at least some knowledge about the temporal location of the event at issue – but a question with the distant past gives rise to no such inference. The contexts below are adapted from Cable (2013), who finds the same thing for Gĩkũyũ.

(10) Context: You have known Kato for a long time, but have never been to his house. You are finally invited over and you see that he often buys very old things for fun. He tells you he bought an old Apple computer from 1985 just a few hours before you arrived. You see his TV, which is also quite old, but you can't tell if he just recently bought it, or if he's actually had it since the 80's.

  a. Eno   TV wagigguladi?
      this.NC9 TV 2SG.SUBJ-NC9.OBJ-buy-DIS.PST-when
      'When did you buy this TV?'

  b. Naagigguzze   jjo.
      1SG.SUBJ.NC9.OBJ.buy.INT.PST yesterday
      'I just bought it yesterday.'

(11) Same context as above.

  a. Eno   TV wagigguzzedi?
      this.NC9 TV 2SG.SUBJ.NC9.OBJ.buy.INT.PST.when
      'When did you buy this TV?' (Suggests it happened recently)

  b. Naagiggula   luli.
      1SG.SUBJ.NC9.OBJ.buy.DIS.PST another.time
      'I bought it a while ago.' (Sounds contradictory)

  c. Speaker notes that one might precede the answer in 11b by saying "What makes you think I bought it recently?".

Crucially, the speaker notes that (11a) can be challenged, by saying something like "What makes you so sure I just bought it?", whereas (10a) *cannot* be challenged similarly, i.e., with something like "What makes you so sure I bought it a long time ago?". Thus we conclude that the inference of temporal distance that is produced by what we call the distant past is an implicature. But note that this implicature is vague and context-sensitive in exactly the same way that the semantic inferences of the recent and intermediate past are vague and context-sensitive. Thus for the following discussion we will not distinguish between implicatures and semantic inferences when discussing vagueness and context-sensitivity.

3 Vagueness in natural language

Certain expressions in natural language display *vagueness*, for instance certain 'scalar' nouns like *heap*, and relative gradable adjectives like *tall*. Vague expressions are those where the criteria of application are not clear-cut and can shift in different contexts of

use. Here we outline three properties of vague expressions and sentences that contain them (Fine 1975; Kamp 1975; Fara 2000; Kennedy 2007).

First, CONTEXT DEPENDENCE: what counts as a heap or tall varies from context to context. Consider the sentence in (12).

(12) Tom is tall.

In a context where Tom has a height of 165 cm, and is in the second grade, (12) is intuitively true. Meanwhile, in a context where Tom has a height of 165 cm and is a professional basketball player, (12) is intuitively false. Crucial here is the COMPARISON CLASS, namely the set of objects against which Tom's height is compared in order to judge whether (12) counts as true or not.

Second is the existence of BORDERLINE CASES. That is, there are certain cases where it's hard to judge whether a vague predicate holds or not. For instance, consider a context where Tom is a 12-year-old boy. Is (12) true or false? This case seems harder to judge one way or the other, compared with the previous contexts we considered where the judgements were more clear-cut.

The third property of vague expressions is that they give rise to the sorites paradox. Consider (13).

(13) P1: 1,000,000 grains of sand is a heap of sand.
      P2: A heap of sand less one grain is still a heap of sand.
      C: #One grain of sand counts as a heap of sand.

If we accept P1 & P2, then with enough iterations of P2 we should also accept C. Nevertheless, the intuition is that C does not hold, resulting in a paradox.

There are various proposals on the market for how vagueness comes about, and we do not wish to take a stand on this issue here.[4] However, we would like to highlight the following passage from Kennedy (2007: p. 42): "[V]agueness comes from epistemic uncertainty about where we actually draw the line and metalinguistic resistance to treating highly similar objects differently relative to the property expressed …Whether this analysis extends to an account of vagueness in other categories is an issue that must be addressed in future work." It is this last point that we aim to address in this paper, namely whether these properties of vagueness manifest themselves in temporal operators in natural language.

4 Vagueness in the Luganda past paradigm

In this section we show that Luganda TRMs display the same properties of vagueness that we find in vague nouns and adjectives. First, a methodological point: we presented discourse contexts to the consultant in English, which does not have TRMs, because we

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[4]See Fara 2000, Grinsell 2012, Soames 1999 and Williamson 1994 for various proposals.

wanted to avoid prejudicing the response given by the consultants by having a TRM in the prompt.[5]

Context-dependence: for many events, the restrictions on when certain TRMs can be used more or less follows the pattern described in Ashton et al. (1954). However, what counts as recent or distant can vary across contexts. For instance, the recent past can be used to talk about a time months prior to the utterance time (UT), as in (14). Likewise, the distant past can be used to talk about a time only a few minutes prior to UT, as in (15).[6] Thus, the notions of what counts as recent or distant can vary with the context, much like what counts as tall varies across contexts.

(14)   a.   Context: You plant your crops every year in February. It is now April, and I ask you what you planted this year. You tell me that you planted maize.

       b.   Nsimbye   kasooli.
           1SG.plant.**REC.PST** maize
           'I planted maize.'

(15)   a.   Context: We are at a party, and I ask you why you are not dancing to the song that's playing. You tell me that you danced a few songs ago.

       b.   Nazina   luli.
           1SG.dance.**DIST.PST** another.time
           'I danced a while ago (to another song).'

In other words, the use of a particular TRM seems to depend on a relevant comparison class, just like for predicates like *tall*. Here is a first stab at characterizing the relevant comparison class for TRMs: in (14) the comparison class is time intervals between UT and previous crop plantings, while in (15) the comparison class is time intervals between UT and previous songs.

Borderline cases: there are also cases where it is difficult to decide whether an event counts as 'recent', 'intermediate' or 'distant'. There is an interesting contrast here between TRMs in Luganda and gradable adjectives. Namely, for gradable adjectives, a speaker can refuse to make a judgment (e.g. "I'm not sure whether Bill would count as tall or not"). However, verbs in Luganda naming past events are *obligatorily* marked with TRMs - a speaker always has to choose one. Consider the following responses to the question "What have you been doing?"

(16)   Nzinye   saawa {satu/?nnya/#tano} emabega.
      1SG.dance.**REC.PST** hour   {three/four/five}   behind
      'I danced {three/four/five} hours ago.'   (RECENT PAST)

(17)   *Nazinye saawa {satu/nnya/tano} emabega.*
      'I danced {three/four/five} hours ago.'   (INTERMEDIATE PAST)

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[5]See AnderBois & Henderson (2015) for comments on choosing elicitation language in semantic fieldwork.
[6]One of our consultants finds (15) not completely natural, but does accept it.

(18) #*Nazina saawa {satu/nnya/tano} emabega.*
      'I danced {three/four/five} hours ago.'   (DISTANT PAST)

According to our consultants, in the context in (16), the use of the recent past is definitely fine for '3 hours ago', definitely excluded for '5 hours ago', but borderline for '4 hours ago'.[7]

Sorites sequences: Luganda TRMs also give rise to sorites paradox effects, just like scalar nouns and gradable adjectives. Consider the party scenario in (19), and the subsequent sentences offered and rejected by our consultant to describe the scenario in (20)-(23).[8]

(19) Context: You are at a party, and they play the following songs (in order):
      Twist and Shout
      YMCA
      Dancing Queen
      Sweet Caroline
      Gangnam Style
      Blue Suede Shoes
      Don't Stop Believing
      Macarena
      Rollin' in the Deep
      Zamboni Driver

(20) a. Context as in (19). Peet comes to the party late, just as Zamboni Driver is finishing. He is always really interested in the music they play, so you want to tell him what songs were played.

      b. Baakubye   Twist and Shout.
          3PL.play.INT.PST Twist and Shout

          'They played Twist and Shout.'

      c. Observation: Speaker uses INT.PST discourse-initially in this scenario.

(21) a. Context: same as above

      b. # Baakuba   Twist and Shout.
            3PL.play.DIST.PST Twist and Shout

            'They played Twist and Shout.'

      c. Speaker's comment: "Sounds like it's a different party, another day."

(22) a. Context: same as above

      b. # Bakubye   Twist and Shout.
            3PL.play.REC.PST Twist and Shout

            'They played Twist and Shout.'

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    c. Speaker's comment: "That's like they just played it. That's like a couple of minutes ago. … Just missed it."

(23) a. Context: Immediately after uttering (20b)

    b. Baaziza-ko   YMCA.
         3PL.add.INT.PST-PART YMCA

        'Then they played YMCA.'
        ('They added on YMCA.')   (offered by speaker)

    c. Observation: Speaker uses INT.PST again for event immediately following the first

(24) a. Context: Immediately after uttering (20b) and (23b)

    b. *Baazizako Dancing Queen.*
        'Then they played Dancing Queen.'   INT.PST
        Judgment: Accepted by speaker

    c. *Baazizako Sweet Caroline.*
        'Then they played Sweet Caroline.'   INT.PST
        Judgment: Accepted by speaker
        ⋮

    d. *Baazizako Zamboni Driver.*
        'Then they played Zamboni Driver.'   INT.PST
        Judgment: Accepted by speaker

    e. Speaker's comment: "If you just played it, you would say *bazaako* [REC.PST]. … When you are coming towards the end, it has to be *bazaako*. … Because it's more recent than the other ones."

    f. Peet: "Can you be really sure about where you would switch?"
       Speaker: "No, the time difference is in your mind. … There is no obvious timeline to stop it."

A similar effect is observed in the following OCD friend scenario in (25)-(27).

(25) a. Context: Your (crazy) friend wants to know what songs were played on the radio in the last few days in order. Being an indulgent friend, you tell him what songs were played.

    b. Baakuba   Twist and Shout.
         3.SG.play.DIST.PST Twist and Shout

        'They played Twist and Shout.'

    c. Speaker's comment: "That's another day. That's not today."

(26) a. Context: Immediately after uttering (25b)

    b. Baakuba   YMCA.
         3.SG.play.DIST.PST YMCA

        'They played YMCA.'

(27)   a.   Context: Immediately after uttering (25b)

     b.   # Baakubye   YMCA.
          3.SG.play.INT.PST
         'They played YMCA.'

     c.   Speaker's comment: "No. It would be very awkward. … You never know when you switch to *baakubye* [INT.PST]. But that should be within a day or something like that. … There's no clear place where you would stop to apply it [the distant past form]."

Thus, we seem to have evidence that sorites sequences behave like expected for sentences containing vague expressions. Small differences in time don't prompt speakers to suddenly switch TRMs, and speakers are not sure when exactly it is appropriate to switch TRMs in these listing contexts.[9]

In sum, sentences containing TRMs in Luganda behave like sentences containing other vague expressions (in English).

5   Analysis

Following Kennedy (1997; 2007), we take simple relative gradable adjectives like *tall*, which in their positive (i.e., bare) forms are vague, to denote **measure functions**, i.e., functions from an object to a *degree*, an abstract unit of measurement. The denotation of *tall* on this basis is given below.

(28)   ⟦ *tall* ⟧ = $\lambda x.\textbf{height}(x)$ type $\langle e, d \rangle$

The above says that *tall* maps an individual to her height. Any simple adjective phrase, however, should ultimately denote something of type $\langle e, t \rangle$; i.e., should map an individual to true or false, depending on her height. So some assumption must be made about how the type of a bare adjective shifts when in its positive form. Kennedy's proposal is an abstract morpheme *POS* which has the following interpretation.

(29)   ⟦ *POS* ⟧ = $\lambda G_{\langle e,d \rangle}.\lambda x.G(x) \succeq \textbf{s}(G)$ type $\langle \langle e, d \rangle, \langle e, t \rangle \rangle$

Following Kennedy (2007), the function **s** is a contextually provided one which takes a measure function and returns the degree that that function would have to map an individual to in order for that individual to 'stand out', in terms of that property, in the context. If *tall* combines with POS rather than a degree modifier, the result is a vague predicate.

(30)   ⟦ *POS tall* ⟧ = $\lambda x.\textbf{height}(x) \succ s$ type $\langle e, t \rangle$

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[9]It has been suggested to us that these effects might be obviated if the list is given out of order. We have not been able to test this idea yet.

Thus a sentence like *John is tall*, which includes the positive form of an adjective, is true iff John's height stands out in the context, i.e., if it exceeds the determined standard.

On Kennedy's account, borderline cases arise because speakers are unsure about where the cut-off is for 'standing out'. Cases like the Sorites Paradox arise because given a context that contains any two objects that have gradable property *G* to very slightly varying degrees, neither one can 'stand out' with respect to the other.

Note that the reason that *tall* is not simply given the denotation in (30) above is that it may instead combine with degree modifiers or measure phrases, which do not necessarily involve comparison of superiority. However, Luganda TRMs do not compose with anything like degree modifiers, and so we need not commit to any account of the positive form of gradable adjectives.[10] We provide denotations for the Luganda TRMs below which build in the vagueness witnessed in the positive morpheme above.

Our denotations are built upon the following measure functions, which relate time intervals to degrees.

(31) **close**(t, t') assigns to a time t' a degree on a scale of closeness to t

(32) **far**(t, t') assigns to a time t' a degree on a scale of distance from t

We embed our analysis in a theory of tense which says that, like tenses in English, TRMs in Luganda in matrix clauses constrain the relation between an evaluation time and a reference time (RT), where that evaluation time is, at least in matrix contexts, utterance time (Reichenbach 1947; Klein 1994). However, cf. Cable (2013; 2015) for a different view of TRMs in Gĩkũyũ. Following Heim (1994) and Kratzer (1998) we assume that temporal operators constrain the relation between RT and UT by placing presuppositions on the reference of a temporal pronoun which corresponds to RT. Following Cable (2013) and others, we assume that TRMs do not denote this pronoun itself, but adjoin to such pronouns. Note that these are all assumptions, and moreover our analysis does not crucially hinge on any of them.

(33) $[\![\,\text{REC.PST}\,]\!]^t = \lambda t' : \textbf{close}(t, t') > \textbf{s(close)} \,\&\, t' < t \,.\, t'$
     Presupposition: the degree of closeness of t' to t exceeds a contextual standard

(34) $[\![\,\text{INT.PST}\,]\!]^t = \lambda t' : \textbf{far}(t, t') < \textbf{s(far)} \,\&\, t' < t \,.\, t'$
     Presupposition: the degree of far-ness of t' to t is less than a contextual standard
     Implicature: the degree of closeness of t' to t is less than a contextual standard

(35) $[\![\,\text{DIST.PST}\,]\!]^t = \lambda t' : t' < t \,.\, t'$
     Implicature: the degree of far-ness of t' to t exceeds a contextual standard.[11]

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[10]A reviewer suggests that temporal adverbs might be treated as degree modifiers under this view. We leave this intriguing suggestion for future work.

[11]Crucially the scalar implicature generated by comparison to the other tenses carries the same vagueness and context-dependence that those tenses do.

In the denotations above, t' corresponds to RT, i.e., the temporal pronoun that the TRMs adjoin to, while t corresponds to the evaluation time, which in matrix contexts is UT.[12]

Each of these morphemes is a partial identity function on RT, presupposing two things about it: First, that it is in the past relative to UT ($t' < t$), and second, its distance from t, denoted by the measure function and the comparative operator ($>$ or $<$).

Our analysis of these TRMs makes them comparable to the positive forms of relative gradable adjectives like *tall*. So our analysis captures the vagueness associated with these expressions. Note that this analysis does not commit us to one view of vagueness over another; since our analysis equates these expressions with positive gradable adjectives, whatever account can be made of gradable adjectives can be extended to TRMs.

6 Accounting for crosslinguistic variation: scale type and vagueness

Why are Luganda TRMs vague while English tenses are not? We suggest it is for the same reason that *relative* gradable adjectives are vague in their positive forms, while *absolute* gradable adjectives are not. Absolute adjectives, like **full**, are still perfectly gradable (36), but fail the tests described above for vagueness.

(36) This cup is more full than that one.

For example, for (37) to be true, the degree of fullness exhibited by the cup must simply be the maximum; there is no contextually determined standard.

(37) This cup is full.

Likewise, such adjectives do not have borderline cases or give rise to Sorites Paradoxes.[13] Kennedy (2007) attributes this to the differences between these adjectives in terms of their *scale structure*. In other words, while there is an inherent upper-bound to fullness, there is no inherent upper-bound for height. So for an object to 'stand-out' on the fullness scale it simply must occupy the highest point on said scale, while the same cannot be said for the height scale. Instead, since such scales lack obvious 'milestones' for determining what stands out, interlocutors must appeal to context. This in turn gives rise to vagueness.

English past tense is like an absolute gradable adjective; it does not exhibit vagueness because it does not depend upon context (not in the same way as a relative gradable adjective, anyway). We therefore predict that no language with a single past tense like English should exhibit vagueness either. We also predict that, if any languages with graded tense systems like Luganda actually do differentiate them in a rigid, diurnal way,

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[12] The same may also be true for embedded contexts; see Cable (2013)

[13] Note that, as Kennedy (2007) discusses, such adjectives may give rise to *imprecision*, e.g., in a case where a cup which is not strictly speaking full is called 'full' in a particular context; this is different from vagueness. See Kennedy 2007 for more discussion.

as Luganda was described to do by Ashton et al. (1954), then we also predict that those graded tense systems should not exhibit vagueness either. And finally, we predict that any graded tense system which is context dependent like Luganda's should also be vague.

7 Conclusion and future research

Contrary to descriptions like that of Ashton et al. (1954), the graded tense system of Luganda exhibits context dependence and vagueness. This finding expands the empirical domain for work on vagueness, which so far has been focused mostly on adjectives and other lexical categories.

Many questions remain. For example, Cable (2013) argues against treating TRMs in Gĩkũyũ as tenses, relying on data from adverbials and embedding. Tenses, according to Klein (1994), relate reference time to utterance time, while the relation between reference time and the event described by the verb is mediated by aspect. According to Cable, TRMs in Gĩkũyũ behave like neither tense nor aspect according to these definitions, instead relating utterance time directly to the event described by the verb. It remains to be seen whether Luganda TRMs are like those in Gĩkũyũ in this regard. This question is left for future research.

Abbreviations

1, 2, 3	first, second, third person	OBJ	object
AGR	agreement	PART	particle
AUG	augment	PST	past
DIST	distant	REC	recent
INT	intermediate	SG	singular
LOC	locative	SUBJ	subject
NC	noun class		

Acknowledgements

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