Expletive agreement, evidentiality, and modality in Logooli

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We discuss and analyze two "expletive" subject agreement markers, *ga-* (class 6 agreement) and *e-* (class 9 agreement), in Logooli (Bantu, Kenya). Our data comes from our original fieldwork on the language. Although our consultant glosses these markers as expletive subjects, we show that *e-* and *ga-* in fact give rise to a variety of apparently evidential or modal interpretations. We propose a treatment of the Logooli data following Matthewson, et al. (2007)'s and Rullmann, et al. (2008)'s choice function analysis of modality and evidentiality in St'át'imcets, and extend their original proposal to account for novel data in Logooli. We show that these morphemes occur only with verbs that introduce modal bases, and propose that they differ in the size of the subset of worlds that they select from the modal base, which subsequently gives rise to different interpretations based on the modal base provided by the verb.

We discuss and analyze two verbal "expletive" subject agreement markers in Logooli (Bantu, Kenya). We show that the markers *ga-* (class 6 agreement) and *e-* (class 9 agreement) occur only with verbs that introduce modal bases, and show that they permit a variety of apparently evidential or modal interpretations. We propose a treatment of the Logooli expletive data following Matthewson, et al. (2007)'s and Rullmann, et al. (2008)'s choice-function analysis of modality and evidentiality in St'át'imcets (henceforth, RMD), and extend RMD's original proposal to account for novel data in Logooli. We suggest that *e-* and *ga-* differ in the size of the subset of worlds that they select from the modal base.

Data. In combination with **verbs of perception**, *ga-* appears to express **direct evidence** of the proposition and *e-* expresses **indirect evidence** of the proposition:

(1)   Context: The speaker sees Imali sniffling and coughing.

    ga-ror-ek-a   kuresia Imali   a-saal-a
    6-look-AC-FV like   1Imali 1-be.sick-FV

    'It$_{ga-}$ looks like Imali is sick.'

(2)   Context: The speaker doesn't see Imali, but sees tissues and cough drops by her bed.

    e-ror-ek-a   kuresia Imali   a-saal-a
    9-look-AC-FV like   1Imali 1-be.sick-FV

    'It$_{e-}$ looks like Imali is sick.'

With **verbs of thought or speech**, *ga-* conveys that the speaker considers the proposition to be **"general" knowledge** among the individuals the speaker identifies with, while *e-* conveys that a proposition is considered **"restricted" knowledge**:

(3)   *ga-many-ek-i   ndee Sira   ya-yaanz-a ma-ndazi*
    6-know-AC-FV that   1Sira 1-like-FV   6-mandazi

    'It$_{ga-}$ is known that Sira likes mandazi (doughballs).'
    Speaker's comment: "Many people know that he likes them."

(4)   *e-many-ek-i   ndee Sira   ya-yanz-a ma-ndazi*
    9-know-AC-FV that   1Sira 1-like-FV 6-mandazi

    'It$_{e-}$ is known that Sira likes mandazi.'
    Speaker's comment: "Not very many people know it."

With **modal verbs**, *ga-* conveys **universal quantificational force**, while *e-* conveys something **weaker**, potentially existential:

(5)   *ga-dukan-a ndee u-zi-ɛ   m-skolu   u-soom-e*
    6-require-FV that   2SG-go-FV in-school 2SG-study-FV

    'You must go to school and study.'
    Literally: 'It$_{ga-}$ is required that you go to school and study.'

(6)   *e-dukan-a   ndee u-zi-ɛ   m-skolu   u-soom-e*
    9-require-FV that   2SG-go-FV in-school 2SG-study-FV

    'You should go to school and study.'
    Literally: 'It$_{e-}$ is required that you go to school and study.'

We propose a unified analysis for these various semantic contributions of *e-* and *ga-*.

Analysis. Following treatments of St'át'imcets modality and evidentiality given by RMD, we propose that Logooli *ga-* and *e-* introduce choice functions f that select different size subsets of a (contextually ordered) modal base (MB). That is, they are of type $< st, st >$. The worlds within the selected subset are then universally quantified over so that $P = 1$ in all the selected worlds. We give the following basic denotation for a Logooli modal verb:

(7) ⟦ **MODAL VERB** ⟧$^{\text{W}}$ =
$\lambda P_{<st>}\lambda f_{<st,st>}$: the ordering source is appropriate for the modal base, and for any non-empty set A, $f(A) \subseteq A$. $\forall w'[w' \in f(\text{BEST}_{OS(w)}(\text{MB}(w))) \rightarrow P = 1$ in $w']$

Our proposal:

- *ga-* selects a **non-proper (non-empty) subset of the modal base**; that is, P is true in all of the worlds in the ordered MB. This amounts to universal quantificational force.
- *e-* selects a **(non-empty) subset of the modal base**; that is, there is at least one world in the MB in which P is true. This amounts to existential quantificational force. We further assume that the interpretation of *e-* is pragmatically strengthened by the application of an exhaustivity operator (*Exh*) in the spirit of Fox (2007) or Chierchia, et al. (2008). Here we assume that *ga-* is a stronger alternative to *e-*, and there are no stronger alternatives to *ga-*. This returns a strengthened reading of *e-* as "P is true in some, but not all worlds in the MB."

This proposal accounts for the data in (1)-(6) as follows:

Verbs of perception: In (1), the speaker's MB contains worlds compatible with what they perceive (i.e., Imali sniffling and coughing). Their ordering source (OS) includes facts like "people who cough are sick." This "strong," direct visible evidence rules out worlds compatible with what the speaker knows to be true in which *Imali is sick* is false, and licenses the use of the stronger marker *ga-*. In (2), the MB contains worlds in which there are tissues and cough drops by Imali's bed. The OS includes facts like "people who use tissues are sick." However, since the MB does not include as "strong" of evidence as in (1), the speaker uses *e-* to select only a subset of the modal base. That is, there are worlds in the speaker's MB in which the embedded proposition *Imali is sick* is false (e.g. maybe she just has allergies).

Verbs of thought and speech: We assume an identical analysis with an added layer of **speaker-oriented genericity**. By uttering *It's thought/believed*/etc., the speaker speaks generically for the group of individuals they identify with (Moltmann 2010). In (3), the speaker believes that the proposition *Sira likes mandazi* is compatible with all of their own doxastic alternatives and the doxastic alternatives of the individuals they identify with. They therefore use *ga-* to make a strong claim that P is widely known. In (4), however, they do not believe that P is widely known. They therefore use *e-* to select only a subset of their MB, including worlds in which $P = 0$. Because they speak generically, the group of individuals they identify with may also contain people who either don't believe or do not know whether Sira likes mandazi. This gives rise to the "restricted knowledge" reading.

Modal verbs: In (5), *ga-* selects a non-proper subset containing all the worlds in the MB, resulting in universal quantificational force. In (6), *e-* (through exhaustification) selects a proper subset of the MB, resulting in weaker force.

Predictions. Our analysis makes a number of predictions, which are all borne out:

Prediction #1. *Expletive* g*a- and* e- *should only combine with predicates that provide a modal base.*

There are no weather-*it* constructions or similar expletive constructions in Logooli (e.g. *It$_{Exp}$ is raining*). We predict this, since these constructions do not supply a MB for the choice function to select from.

Prediction #2. *The worlds chosen by* f *should vary due to the speaker's background knowledge*.
We evaluate this with respect to verbs of perception. Given the same perceptual input for all speakers, *e-* and *ga-* can signal the speaker's confidence in evaluating the embedded proposition. In (8), both Imali and Maina have the same amount of perceptual information. The choice of *e-* or *ga-* therefore reflects the speaker's background knowledge. Their background knowledge determines how the worlds in their MB are ordered, which in turn alters the set of worlds that the choice function can select from:

(8)   Context: Imali and Maina are watching Roger Federer (a tennis star) play in a tennis match. Imali is a huge tennis fan and knows all the rules and statistics. However, Maina is only vaguely familiar with the rules, and otherwise knows nothing about tennis.

(9)   *ga-ror-ek-a   kuresia Federer a-kin-i   vurahɛ karono*
       6-look-AC-FV like   1Federer 1-play-FV well   today

       'It$_{ga-}$ looks like Federer is playing well today.'
       ✓if Imali says this, # if Maina says this.

(10)   *e-ror-ek-a   kuresia Federer a-kin-i   vurahɛ karono*
       9-look-AC-FV like   1Federer 1-play-FV well   today

       'It$_{e-}$ looks like Federer is playing well today.'
       # if Imali says this, ✓if Maina says this.

Imali uses *ga-* to assert that according to her expert knowledge of tennis, Federer is playing well. (Her OS contains the actual rules of tennis.) However, Maina can only felicitously use *e-*. Since he does not know what makes a tennis player "good" (i.e., his OS is empty), his ordered MB includes worlds which are compatible with Federer not playing well according to the actual rules of tennis.

Prediction #3. *The use of* e- *and* ga- *on verbs of speech and thought should vary according to the group the speaker identifies with, assuming Moltmann's 2010 analysis of genericity*.

(11)   Context: Imali is an expert on the life of Kurt Cobain.

(12)   *ga-many-ek-an-i   ndee Kurt Cobain y-aremban-a na   mkari w-evɛ*
       6-know-AC-REC-FV that Kurt Cobain 1-argue-FV   with 1wife 1-his

       'It$_{ga-}$ is known that Kurt Cobain argued with his wife (before he killed himself).'
       ✓if Imali says this to a Kurt Cobain expert, # if she says this to a non-expert.

(13)   *e-many-ek-an-i   ndee Kurt Cobain y-aremban-a na   mkari w-evɛ*
       9-know-AC-REC-FV that Kurt Cobain 1-argue-FV   with 1wife 1-his

       'It$_{e-}$ is known that Kurt Cobain argued with his wife (before he killed himself).'
       # if Imali says this to a Kurt Cobain expert, ✓if she says this to a non-expert.

These contrasts in felicity are consistent with Imali identifying with different groups of individuals, i.e., with Kurt Cobain experts in (12), and with non-experts in (13).

Conclusion. We provide evidence from Logooli, a typologically unrelated language, to support RMD's treatment of modality and evidentiality in St'át'imcets. Our data also indirectly supports the proposal that modality and evidentiality are not distinct categories, but rather realizations of the same theoretical phenomenon (argued by RMD, Palmer 1986, among others). Finally, this project is a first look at evidentiality in Bantu, a topic that is otherwise not well described or understood.

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