

Imperfective in Ga (Kwa, Niger-Congo)

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New data from Ga (Kwa, Niger-Congo) show that the meanings of both progressive (Prog) and habitual aspect (Hab) are derived from a general imperfective (Impf). Crucially, Prog aspect is realized by an interesting interaction between Impf, focus marking and a definite particle that to my knowledge has not been discussed in the literature yet. The data is analyzed in a situation semantic framework (Kratzer 2007, Schwarz 2009) showing that there is an intimate connection between a concept of exemplification (Kratzer 2007) and progressive interpretation.

BACKGROUND: Ga data support a unifying approach to Impf and Progr/Hab aspect (Bonomi (1997), Cipria & Roberts (2000), Ferreira (2005), Haquard (2006), Deo (2009), Rivero & Arregui (2010)). The proposed analysis of the Ga Prog combines Ferreira's approach to Impf with situation semantics (Kratzer 2007, Schwarz 2009). I argue that Prog interpretation arises when a sentence with Impf marking is interpreted with respect to the unique actual situation exemplifying the proposition denoted by the sentence.

DATA: Ga is a tenseless language with overt aspectual marking. Impf is marked by the suffix *-ɔ*. Sentences with this suffix almost invariably obtain Hab interpretation, as in (1). Interestingly, the addition of (i) the focus marker *ni* and (ii) the definite particle *le* give rise to a Prog interpretation, as in (2):

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| <p>(1) Kofi sele-ɔ.
 Kofi swim-Impf
 ‘Kofi swims.’</p> | <p>(2) Kofi *(ni) sele-ɔ le.
 K. FOC swim-Impf PART
 ‘It is Kofi who is swimming.’</p> |
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Prog interpretation arises only when **both** *ni* and *le* are present in an Impf sentence.

BASIC IDEA: Ferreira (2005) claims that Hab and Prog have the same temporal (and modal) components but they differ with respect to the number of the event variables being quantified over: in Prog a singular event is quantified over (a singular event is ongoing), whereas in Hab plural events are quantified over (a sequence of events is ongoing). Assuming this, I claim that there is an intimate connection between Prog interpretation and exemplification. Exemplification assures that there is nothing in a situation that is not needed to evaluate the truth of a sentence, e.g:

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| <p>(3) s₁: two dogs</p> | <p>(4) s₂: one dog</p> |
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Even though the proposition (a) *λs.there is a dog in s* is true in s₁, it is not exemplified by s₁. On the other hand, the proposition (a) is not only true in s₂ but also exemplified by it. Analogously, the proposition *λs.Kofi swim in s* is true in a situation with a multitude of swimming events but, crucially, it is not exemplified by this situation. I argue that (i) the Hab interpretation arises when the proposition denoted by a sentence is only true in the evaluation situation, whereas (ii) the Prog interpretation arises when the proposition denoted by a sentence is exemplified by the unique actual evaluation situation. The interpretation of (2) is restricted by *le* to the unique situation exemplifying the proposition *λs.Kofi swim in s*. Crucially, exemplification assures that there will be only one swimming event in the evaluation situation. Hence, it can only obtain the Prog interpretation. By contrast, there is no *le* in (1). Thus (1) does not have to be exemplified by an evaluation situation but it must be true in this situation. In this case, there may be a multitude of swimming events in the evaluation situation. Hence, (1) can obtain a Hab interpretation.

ANALYSIS OF THE GA DATA: I propose the following structure for (2):

$[_{Top} S_{topic} [Op_{TOP} [_{Asp} Imp [_{VP} Kofi\ ni\ sele]]]]$. (i.) $-o$ is a general Impf marker relating topic time to event time:

$$(5) \quad \llbracket -o \rrbracket^{t_{TOP}} = \lambda P. \lambda s. \exists e [t_{TOP} \subseteq \tau(e) \wedge P(e)(s)]$$

Bare Impf sentences in Ga require that the proposition denoted by a sentence is true in the given situation (not exemplified by the given situation). Hence they are compatible with both Hab and Prog interpretations. Because of the blocking principle, the default interpretation of (1) is Hab. (ii.) I argue that le is an overt spell-out of Schwarz's (2009) s_{topic} (where the *question extension* is the one proposed by Groenendijk & Stokhof (1984)):

$$(6) \quad s_{topic} = \iota s. EX(\text{question extension})(s) \wedge s \leq w_0$$

The presence of le restricts the interpretation of a sentence to the unique actual topic situation exemplifying the proposition denoted by the sentence. Following Schwarz (2009) I assume that the question extension in (6) is provided by the question under discussion (QUD). The topic situation of (2) is:

$$(7) \quad s_{topic} = \iota s. EX(\{s' | \text{the same person swim in } s' \text{ as in } s_{topicQ}\})(s) \wedge s < w_0$$

The proposition denoted by (2) is exemplified by the unique singular situation in which a maximal agent swims. Because of the particle le and Impf $-o$ (2) can be felicitously used only in a situation in which the unique topic situation exemplifying the proposition denoted by (2) is ongoing. Sentences with the Impf marker $-o$ and le invariably obtain an ongoing (progressive) interpretation. (iii.) The last puzzle is: What is the role of *ni*? Even though *ni* does not play a role in deriving Prog interpretation, (2) without *ni* is ungrammatical. Ni is a focus marker and it indicates question-answer congruence. Note that the *question extension* in (6) is provided by the QUD. I claim that *ni*, as the focus marker, indicates what the QUD is.

Summing up points (i.) – (iii.), the derivation of (2) is as follows:

- (8) a. $\llbracket Kofi\ ni\ sele \rrbracket^{t_{TOP}} = [\lambda s. \lambda e. sele(e)(s) \wedge Ag(Kofi)(e)(s)]$
- b. $\llbracket -o \rrbracket^{t_{TOP}} = \lambda P. \lambda s'. \exists e' [t_{TOP} \subseteq \tau(e') \wedge P(e')(s')]$
- c. $\llbracket Kofi\ ni\ seleo \rrbracket^{t_{TOP}} = \lambda s'. \exists e' [t_{TOP} \subseteq \tau(e') \wedge [\lambda s. \lambda e. sele(e)(s) \wedge Ag(Kofi)(e)(s)](e')(s')]$
 $= \lambda s'. \exists e' [t_{TOP} \subseteq \tau(e') \wedge (sele(e')(s') \wedge Ag(Kofi)(e')(s'))]$
- d. s_{topic} is introduced as an argument of the topic operator (Schwarz 2009):
 $\llbracket topic \rrbracket = \lambda p. \lambda s''. \lambda s'. s' \approx s'' \wedge p(s')$; ' \approx ' stands for the counterpart relation
the denotation of *Kofi ni seleo* is fed into the denotation of *topic*:
- e. $\lambda s''. \lambda s'. s' \approx s'' \wedge \exists e' [t_{TOP} \subseteq \tau(e') \wedge (sele(e')(s') \wedge Ag(Kofi)(e')(s'))]$
- f. $\llbracket Kofi\ ni\ seleo\ le \rrbracket^{t_{TOP}} = \lambda s'. s' \approx s_{topic} \wedge \exists e' [t_{TOP} \subseteq \tau(e') \wedge (sele(e')(s') \wedge Ag(Kofi)(e')(s'))]$
 \approx counterparts of the topic situation (the unique actual situation exemplifying the proposition that *Kofi swim*) in which there's an event of Kofi swimming, the running time of which includes the topic time

CONSEQUENCES AND OUTLOOK: There is a tight connection between exemplification and aspectual interpretation. Impf sentences that are exemplified by a topic situation give rise to the Prog interpretation, whereas Impf sentences that are true in the evaluation situation give rise to the Hab interpretation.

SELECTED REFERENCES: **Ferreira (2005)** *Event Quantification and Plurality* PhD Dissert. MIT, **Groenendijk, J. & Stokhof, M. (1984)**, *Studies on the Semantics of Questions and the Pragmatics of Answers*, PhD Dissert. UvA, **Kratzer, A. (1996)** Severing argument from its verb *Phrase Structure and the Lexicon*, **Schwarz, F. (2009)** *Two types of Definites in Natural Language*, PhD Dissert., UMass