

Parameters of Meaning in the Spatial Structure of Temporal Semantics:
An Investigation of Wolof Lexicon and Grammar

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Parameters of meaning in the spatial structure of temporal semantics: an investigation of Wolof lexicon and grammar*

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1. Introduction. This paper is about a particular schema of motion (depicted in Diagram 1) and how it is extended to temporal use in Wolof, a Niger-Congo language spoken in Senegal and Gambia. In addition to treating temporal semantics, this investigation reveals interesting descriptive facts about Wolof and contributes to the study of crosslinguistic lexicalization patterns in words and phrases that denote translational motion (i.e., motion from one location to another).

We will be primarily concerned with issues involving a particular cognitive strategy for extending the use of spatial vocabulary to the realm of time. This strategy, which we will call the *Moving Time* metaphor, is common crosslinguistically (cf. Traugott 1975, 1978), and is inherently of interest to the study of mind and language. A comparison of the way this metaphor manifests itself in Wolof and English suggests that for the most part it remains constant relative to lexical and grammatical phenomena in the two languages. This paper investigates how lexical and grammatical structures in Wolof interact with the metaphor. An appreciation of these issues allows us to make interesting observations about the Wolof language, about how English and Wolof are similar and how they are different, and about how metaphor works in language.

The investigation is situated in the framework of the theory of conceptual metaphor as developed by George Lakoff and his associates (e.g., Lakoff 1993, Lakoff and Johnson 1980). A metaphor in this theory is a structured ensemble of correspondences between two domains, or kinds of experience. One kind of experience, the Source, is held to play a role in the linguistic and conceptual structure of the other kind of experience, the Target. For the data we are considering, the Source experience is an experience of motion and the Target experience is an experience of time.

The Moving Time metaphor¹ can be exemplified for both Wolof and English with example 2a, *Kirismas mungiy ñów* 'Christmas is coming'. In this example, Christmas is talked about as if it were a thing, like the train in example 1a.²

(1) a. *saxaar gaangiy ñów*
train the:PRSTV:DUR come
'The train is coming.'

b. *saxaar gi agsi na*
train the arrive 3PERF
'The train has arrived.'

(2) a. *kirismas mungiy ñów.*
Christmas 3PRSTV:DUR come
'Christmas is coming.'

b. *noor agsi na.*
dry.season arrive 3PERF
'The dry season has arrived.'

Parts (a) and (b) of Diagram 1 are a schematic representation of the scenario -- e.g. a train moving to a destination -- that gives rise to the Source experience for the metaphor exemplified in 2. (The full three stages depicted in the diagram will become relevant later on when we examine verbs of "Passing." All of the predicators that we will examine have to do with the scenario in Diagram 1.)

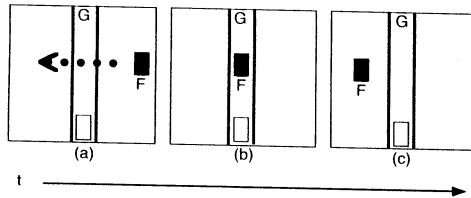


Diagram 1.

In the diagram, F stands for Figure, which is the entity whose location is in question. G stands for Ground, the entity with respect to which the location of the Figure is determined. Typically, the Figure is moving relative to a stationary Ground. The Ground is demarcated in the diagram by bold vertical lines. The white rectangle represents an entity, e.g. the speaker, located in the Ground region.

We now return to the discussion of the Source expression exemplified in 1a and the metaphorical (i.e., Target) expression in 2a. In the first stage of the Source scenario, represented by box (a) in the diagram, the Figure is located away from the Ground. The Figure then moves to the Ground, where we see it in the second stage, (b). In example 1a, the Ground is the location of the speaker and the train is moving toward this Ground. In the metaphor, a change in location of an object like the train corresponds to Christmas's change of status from future to present, as in 2a. From now on, I will use the word *Ego* to refer to the role played by the speaker in this example. More generally, the word *Ego* will denote the person who is having the experience of motion or time in question.

Metaphors are described in terms of specific correspondences in which elements of the Source *map onto* elements of the Target. Using this terminology, the Moving Time metaphor can be described as follows.

A moving thing (F) maps onto a time, for example Christmas in 2a. Ego's location (G) maps onto Ego's present moment. F's arrival at G maps onto the occurrence of the time. Continued motion, as in box (c), corresponds to a change from present to past.

Let me mention at this point that whereas space consists of three dimensions, the conceptualizations of time studied in this paper treat time as one dimensional. The diagram depicts the Source experience; in order to get a mental picture of the temporal phenomena that correspond to the diagram, one needs to imagine it in a single dimension.

There are several metaphors for time in Wolof. In this paper I will have opportunity to discuss only Moving Time.

2. Familiar patterns: coming, arriving, and passing. The English and Wolof versions of the examples in 2 are remarkably similar. This is presumably due to the universal availability of the Moving Time metaphor in human cognition

plus the high degree of similarity of the lexical semantics of Wolof *ñów* and *agsi* with the English *come* and *arrive*.³

In the examples in 3, some interesting differences between Wolof and English begin to show up. After a brief characterization of the semantics of the verbs involved, we will see what some of these differences are.

The verbs *romb* 'go by', *weesu* 'go beyond' and *jáll* 'get past' can all be used to denote variations on the schematic event depicted in Diagram 1, (a), (b), and (c). In the denotation of *romb* 'go by', the Figure simply goes by the Ground, without interacting with it. This is exemplified in 3a.

- (3) a. *romb na bunt bi/mburngël mi/tool yi/ doj wi*
go.by 3PERF door the/tunnel the/fields the/rock the
'S/he went by the door/tunnel/fields/rock.' (Not through or over it/them)

In the case of *jáll* 'get past', the Ground is a barrier, boundary, or passage. *Jáll* highlights the interaction of the Figure with the Ground. Example 3b exemplifies the fact that *jáll* forces the interpretation that its Ground is a barrier, boundary, or passage.

- (3) b. *jáll na basañ gi*
get.past 3PERF mat the
'#S/he went across/over the mat.' 'S/he got past the mat.' [The mat is construed as a barrier or a boundary.]

What *weesu* 'go beyond' denotes is the passage of the Figure from one to the other of two contrasting regions. This is exemplified in 3c, which is a proverb.

- (3) c. *yéeg du weesu xob.*
climbing DUR:NEG go.beyond leaf
'You don't climb beyond the leaves.' [Cissé et al. 1982:61]

The idea of the proverb is that activities have their natural limits beyond which they should not be continued. Here we are not concerned with how the proverb is understood but rather with the Source scenario it depicts -- the area of a tree with leaves and an area beyond without leaves. The Ground of *weesu* demarcates the boundary between two regions -- one in which climbing should be done and another in which climbing should not be done.

The meanings of *jáll* and *weesu* are based on the same core schema of motion as those of *romb*. What distinguishes *jáll* and *weesu* is that their semantics are elaborated in key ways having to do with the purposes and expectations of the participants in the motion scenario and/or the speech event. The semantics of *romb*, by contrast, is essentially the core schematic semantics of motion.

In some dialects of Wolof, it is *weesu* 'go beyond' and *jáll* 'get past' that are conventionally extended to temporal uses by the Moving Time metaphor, and not *romb* 'go by'. The reason for this is that the Source semantics of *weesu* and *jáll* are better suited to temporal concepts than are the semantics of *romb*. *Weesu* and *jáll*, each in its own way, construe the Figure exiting one region and entering another.

An important kind of case (exemplified in 4a below for both Wolof and English) in which people talk about temporal experience with expressions of Passing is that in which what is at issue is whether a particular temporal Figure is in the future,

3. Unfamiliar patterns.

3.1. *Fekk* 'become co-located with'. The Moving Time expressions that we have just examined are variations on patterns that are familiar from English. In the examples in 5, with the verb *fekk* 'become co-located with', we see some expressions that differ from the English pattern. The Source scenario for the *fekk* examples is depicted in Diagram 1, (a) and (b). The movement scenario for *fekk* consists of the same overall configuration as that for *ñów* 'come' and *agsi* 'arrive'; the essential difference is that *fekk* highlights the fact that what the Figure becomes co-located with is a preexisting configuration involving an explicitly denoted entity and its location. Thus, in the case of *fekk* the white rectangle in the diagram denotes a secondary figure (e.g. the bowl in 5a), which functions as part of the Ground at the level of the clause.

- (5) a. *sàmba fekk* *na*
Samba become.co-located.with 3PERF

bool ba ca waañ wa
bowl the PREP kitchen the

"Samba became co-located with the bowl in the kitchen." 'Samba came across the bowl in the kitchen.' [*Sàmba* is a personal name.]

- b. *bal ba fekk* *na ma ca kër ga*
ball the become.co-located.with 3PERF me PREP home the

"The ball became co-located with me at home." "The ball came across me at home." 'I was at home when the ball came flying in through the window.'

Fekk, 'to become co-located with', does not have a natural-sounding translation in English. While *fekk* is very similar to English *find*, there are crucial differences. The most important of these for our purposes is the following. *Find* predicates of an entity that it has the experience of becoming aware of something, typically but not necessarily by moving so as to encounter the found object in some location. *Fekk*, by contrast, predicates of an entity that it moves so as to occupy the same location as some previously situated entity, but the Mover need not have a cognitive experience and may in fact be inanimate.

These facts about the lexical semantics of *fekk* explain why some Source examples, like 5a, seem natural with a word-for-word English translation, while others, like 5b, do not. *Fekk* sentences with an experiencer subject seem natural, those with an inanimate subject seem odd or poetic when translated into English. Moving Time uses of *fekk* such as example 6 below, which are unmarked in Wolof, seem marked from the English point of view for the same reasons that the Source sentences (like 5b) with inanimate subjects and human objects seem marked.

- (6) *benn waxtu fekk* *na ko fa*
one hour become.co-located.with 3PERF 3OBJ there

"One o'clock became co-located with her there"; "One o'clock found her there." 'S/he was there at one o'clock.'

That is, example 6 foregrounds a time, construed metaphorically as an inanimate mover which arrives at the location of a person. The time is treated as the most prominent participant in the clause (by virtue of being the grammatical subject) and the person is treated as less prominent. By contrast, the corresponding unmarked English sentence, *She was there at one o'clock*, treats the person as more and the time as less prominent. (On the notion of *prominence*, cf. Langacker 1991.)

This discussion of *fekk* has shown how Wolof uses its lexical semantics to create an unfamiliar kind of expression using a familiar metaphor.⁶

3.2. *Jot* 'reach, obtain'. The final verb that I want to examine is *jot* 'reach, obtain'. *Jot* has many uses, only a few of which will be mentioned here. The use of *jot* that I take to be the most basic or central is exemplified in 7 below.

- (7) *jot* *naa téere bi ci kaw armoor bi.*
reach 1PERF book the PREP top cabinet the
 'I can reach the book on top of the cabinet.'

Some target uses are exemplified in 8 below. After we have examined the Target semantics, we will look at some more of the Source uses.

- (8) a. *benn waxtu jot na.*
 one hour reach 3PERF
 "One o'clock has (just now) reached." 'It's (exactly) one o'clock.'
 b. *fajar jot na*
 dawn reach 3PERF
 'It's dawn.'

Temporal uses of *jot* 'reach, obtain' such as those in 8 metaphorically instantiate a variation on the same schema in Diagram 1 that we looked at in connection with *ñów* 'come' and *agsi* 'arrive'. But there are some important differences in the temporal semantics of *jot* compared to *ñów* and *agsi*.

First, Wolof speakers report that in certain contexts *jot* denotes an instantaneous temporal occurrence; for example, in the appropriate context, 8a means that it is exactly one o'clock at speech time. *Ñów* 'come' and *agsi* 'arrive' do not have this property.

Second, constructions with *jot* 'reach, obtain' are an unmarked way of talking about the occurrence of a time. The *jot* expressions are ordinary in the same sense that their English translations in 8 with the "It's X" construction are ordinary. For example you can say *It's two o'clock* without any special context, but it would take a special context to say *Two o'clock has arrived*. The same observation pertains to the Wolof translations of these two sentences, with *jot* in the first sentence and *agsi* translating *arrive* in the second.

Textual evidence for the native speaker intuition just characterized was obtained by examining occurrences of *jot*, *agsi*, and *ñów* in four Wolof texts (totaling about 61,500 words).⁷ In the texts, Moving Time *jot* is used in a wide variety of situations without any contextual buildup. By contrast, Moving Time *ñów* 'come' requires special contextual conditions. These conditions often involve an element of expectation, corresponding to that part of the Source scenario where the Figure is coming but has not arrived yet.

Also, Moving Time *jot* occurs more frequently than Moving Time *ñów* or *agsi*. In the texts, there are no instances of Moving Time *agsi*. There are 29 tokens of Moving Time *jot* out of a total of 55 tokens of that verb. By contrast, there are just 13 tokens of Moving Time *ñów* out of a total of 171 tokens of that word.

In order to account for the semantic differences between *jot* and *ñów/agsi*, I propose a metaphorical mapping for *jot* which is slightly different from that of *ñów/agsi*. The Moving Time mapping for *ñów/agsi* is presented below, where the arrow, "-->", stands for 'maps onto'. (Cf. the description of the Moving Time metaphor in the introduction.)

MOVING TIME MAPPING FOR *ñów/agsi* 'come/arrive'

A moving thing(F) --> A time.

Ego's location (G) --> Ego's present.

F's arrival at G --> The occurrence of a time.

The essential difference in the mapping for *jot* is that the occurrence of a time is construed in terms of something *making contact* with Ego rather than merely arriving at Ego's location. The mapping is stated as follows.

MOVING TIME MAPPING FOR *jot* 'reach, obtain'

A thing at a distance from Ego (F) --> A time that has not occurred.

Ego as a physical entity (G) --> Ego's present.

F's achievement of contact with G --> The occurrence of a time.

The proposed mapping motivates the semantics of "exactness" because the relation of physical contact is inherently more precisely specified than the relation of being in the same place. The unmarked character of *jot* expressions is motivated by the following two interdependent considerations. i) In the case of *jot*, attention is focused on only the final stage (i.e., the achievement of contact) of the scenario. The component of travel and expectation that is associated with *ñów* 'come' and *agsi* 'arrive' is not present. ii) The *ñów/agsi* scenario requires a previously established locative relation, the relation between Ego and her location. *Jot* does not require this extra layer of conceptual structure, and is thus appropriate to denoting the mere occurrence of a time, presented without invoking additional assumptions about the situation in which the time occurs.

Independent (morphosyntactic) evidence that the metaphorical Ground in *jot* expressions corresponds to Ego rather than Ego's location is found in sentences such as 9 below.

- (9) *fu fajar jot-e mungi ci teen bi.*
 where(ever) dawn reach-ADDARG 3PRSTV PREP well the
 "Wherever dawn reaches, s/he's at the well." (I.e., 'Whenever...'). 'S/he's always at the well at dawn.' [The ADDARG suffix on *jot* shows that the locative pronoun *fu* is not a canonical argument of *jot*. It is safe to assume that *jot*'s canonical argument remains implicit in this example.]

In 9, Ego's metaphorical location is coded as an argument added onto *jot*'s ordinary valence, suggesting that *jot*'s default object here is a (metaphorical) person, not a place.

In addition to 7 above (the basic/central use), the Source uses of *jot* that seem to be most closely related to the Moving Time use are those in 10 below. The notion

of *contact* is salient in all of them. The other component of meaning crucial to the Moving Time uses is that in which contact occurs as a result of the motion of a discrete entity, as in 10a, 10b, and 10d.

- (10) a. "Achievement of contact." The Reacher has come into contact with the Other. Neutral as to whether the Reacher or the Other moved:

jot na (ci) armoor bi
reach 3PERF (PREP) cabinet the
'S/he {got to/got} the cabinet.'

- b. "Arrive-reach." A minimal variant of (a) in which the Reacher is specified as a Mover and the Other as a Location:

jot na ndakaaru
reach 3PERF Dakar
'S/he has reached Dakar.'

- c. "Extent-reach." A minimal variant of the central use in which the Reacher is inanimate:

buum gi jot na
rope the reach 3PERF
'The rope reaches.'

- d. "Catch." A variant of (a) in which the Other is moving away from the Reacher:

gaynde gi jot na ko
lion the reach 3PERF 3OBJ
'The lion caught her.'

3.2.1. *Jot* 'reach, obtain' and Wolof grammar. We have seen two cases in which Wolof has temporal expressions that are markedly different from English. In the case of *fekk* 'become co-located with', the difference can be attributed to the lexical semantics of *fekk*. But there does not seem to be anything about the lexical semantics of *jot* that would account for why its Moving Time uses are unfamiliar to English speakers. Why should Wolof but not English have constructions like the temporal *jot* constructions?

I would like to point to three kinds of phenomena in Wolof grammar that play a role in motivating the temporal *jot* constructions: i) Parameters of subject selection. ii) Membership in the category *verb*. iii) Tense/aspect marking and lexicalization patterns involving aspect. What I want to motivate in this section is the fact that it is unmarked in Wolof to talk about the occurrence of a time with a construction in which a point or period of time is the subject of a transitive verb (i.e., *jot*).

Let's look at subject selection first. In certain cases in which there is an interaction between a human participant and something inanimate in her experience, Wolof requires that the inanimate take the grammatical role of subject and the person take the role of object. The point is that Wolof has ordinary ways of talking about experience, in addition to the *jot* constructions, that parallel the way *jot* predications construe a time as contacting a person. We have already seen one example of this phenomenon in the *fekk* constructions (examples 5 and 6), where movement overrides animacy as a criterion for subject selection. Another example involves *xeeñ* in 11 below, where a smell is the subject and the person who smells it is the object.

- (11) *cere* *ji xeeñ* *na* *ma*
 couscous the smell 3PERF 1OBJ
 'I can smell the couscous.' [Munro and Gaye 1991:143]

Since time is a component of setting, temporal subjects of *jot* fit into a broader pattern whereby setting subjects are unmarked in Wolof. Note example 12.

- (12) *fii rafet* *na*
 here be.beautiful 3PERF
 '*Here is beautiful.' 'It's beautiful here'; 'This is a beautiful place.'

Furthermore, it is common in Wolof to treat time-expressions (e.g. *ci kanam* 'later', *ëllëg* 'tomorrow') in subordinate clauses as verbs, thus construing the denotatum of the time-word as a process rather than a thing. This is exemplified in 13 below. What this has in common with the *jot* constructions is that they are both unmarked ways of construing a time as doing something when it occurs.

- (13) *bu* "ten"-*ee*
 REL ten-COND
 "when it's ten o'clock"; "when it tens." 'at ten o'clock'

What we have just seen are arguments that apply to all uses of Moving Time *jot*. The following discussion pertains to *jot* as it is used in constructions like the one exemplified in 8a (*benn waxtu jot na* 'It's one o'clock'). This construction portrays the occurrence of a time both as a punctual event and as a transitory state that obtains at the moment of speech. What I want to discuss here is how Wolof grammar helps make it possible to use a punctual verb to talk about a present state. In addition to what we have already examined, two further phenomena of Wolof grammar are relevant here: the Wolof Perfect and a particular lexicalization pattern.

The first thing we should note about the Wolof Perfect is that it differs from the English Perfect in two interrelated ways: i) The Wolof Perfect does not encode tense; ii) The Wolof Perfect marks not only action verbs like *daanu* 'fall', but also state verbs like *baax* 'be good'. (See Anderson 1982 for a crosslinguistic characterization of the perfect.) What the Wolof Perfect marker marks is the verb root, not a participle. The Perfect-marked action verb typically denotes a past event. The Perfect-marked state verb typically denotes a present state. (Cf. Robert 1991.) This contrast is exemplified below.

- (14) a. *baax na*
 good 3PERF
 'It's good.'
- b. *daanu* *na*
 make.fall:MIDDLE 3PERF
 'It fell down.'

Next, we note a pattern whereby some Wolof verbs can encode either an event or the state that results from the event (cf. Jackendoff 1990, Talmy 1985:88-9). While investigation is still in progress, it appears that the class of Wolof verbs that have this alternation is much larger and covers a greater semantic range than the

corresponding English class. Notably, the Wolof class includes some verbs of translational motion, (e.g. *sore* 'get/be far from') as well as "quality" verbs like *forox* 'get/be sour'.⁸ The Wolof alternation is compatible with but not limited to occurrence with the Perfect. It is exemplified below.

(15) a. *dee na ca ja ba*
die 3PERF PREP marketplace the
'S/he died in the marketplace.'

b. *dee na*
die 3PERF
'S/he's dead.'

Because the Perfect can mark either a past event or a current state, and the verb root itself can denote either an event or its resulting state, it is possible for a construction to be indeterminate between a past-event and a current-process reading. This is exemplified below. (Cf. Vendler 1967:97-121.)⁹

(16) *gis naa ko.*
see 1PERF 3OBJ
'I spotted it and I see it.' 'I have caught sight of it now.'
'I saw it.' 'I have seen it.' 'I see it.'

Since Wolof does not encode tense in this construction, the temporal scope of predication can include both the punctual event and its immediately resulting state.¹⁰ The English Perfect is different in the case of punctual events in that it explicitly refers to something in the past. Whereas 16 above can mean "I have spotted it and I see it," this meaning is not so readily denoted by a simple, unmarked English clause. Because of these facts of Wolof and English grammar, Wolof is better disposed than English to use a punctual verb to refer to the present moment, and is thus better disposed to have an expression like the one in 8a (*benn waxtu jot na* 'It's one o'clock.') According to this analysis, the semantics of Moving Time *jot* has a punctual and a stative component, corresponding to the "spotting" and the "seeing" components of *gis* 'see' in 16. Thus 8a is well paraphrased as "One o'clock has struck and it's one o'clock," where *jot* denotes the punctual occurrence and the resulting state.

4. Conclusions. We started this investigation by examining a simple schema of movement and some of the ways that schema is elaborated by the Wolof lexicon, and we examined the role that this schema and its lexical elaborations play in the domain of temporal experience. We saw that an investigation of the Moving Time metaphor in Wolof yields some interesting results regarding the precise nature of the Source-Target correspondences involved in the metaphor. These results show up because of the way words like *romb* 'go by', *weesu* 'go beyond', and *jall* 'get past' interact with the metaphor. Finally, we looked at the interaction between the Moving Time metaphor and the lexemes *fekk* 'become co-located with' and *jot* 'reach, obtain'. I argued that the same fundamental metaphorical correspondences that yield familiar-sounding expressions in the former cases yield unfamiliar sounding expressions with *fekk* and (with slight modification) *jot*. In the case of *fekk*, this could be accounted for by a simple appeal to the lexical semantics of that

verb. In the case of *jot* it was necessary to take into account more general aspects of Wolof grammar. The findings reported here support the idea that a metaphor can function as a conceptual invariant relative to other conceptual and linguistic phenomena.

Notes

*Thanks to Paap Alassane Sow for data, guidance, and inspiration. And thanks to Stéphane Robert for inspiration and helpful suggestions. Also, this paper couldn't have been written without the help of the dissertation support group at U.C. Berkeley.

1. The Moving Time metaphor is equivalent to Special Case 1 of the metaphor Time Passing Is Motion in the terminology of Lakoff 1993.

2. The following abbreviations are used for the data: ADDARG: Added Argument; COND - Conditional; DUR - Durative; EMPHVERB - Emphatic of the Verb; NEG - Negative; OBJ - object; PRSTV - Presentative (similar to the English progressive in many uses); PRT - Particle; PERF - Perfect; PL - plural; PREP - Preposition (typically locative); REL - Relativizer. (On EMPHVERB, PRSTV, and PERF see Robert 1991.)

Examples are transcribed according to the official Senegalese transcription system (cf. Fal et al. 1990). Correspondences between the Senegalese system and the International Phonetic Alphabet are listed below, with the Senegalese symbol on the left and its IPA equivalent on the right. In all cases not mentioned, the Senegalese symbol has the IPA value. \acute{e} = e; e = ϵ ; \grave{e} = ə ; a = (a low central vowel); \grave{a} = a more open a ; \acute{o} = o; o = ɔ ; \tilde{n} = ɲ ; j = ʝ (voiced palatal stop); y = j. Capital and lower case symbols have the same value. Geminates are indicated by doubling the symbol in question except for *q* which represents [q:]. In the case of long vowels, a single diacritic modifies both symbols. For example, $\acute{o}o$ represents [o:]. Word-final stops are devoiced.

3. The word *agsi* is actually morphologically complex, consisting of the root *àgg* 'arrive' and the suffix *-si* which indicates that the subject of the verb comes to the deictic center to perform the action denoted by the verb. This fact does not affect the current analysis because in the Moving Time metaphor, whenever a time arrives, it arrives at the deictic center (in both Wolof and English).

4. Actually, I searched for both *wees* and *weesu*, treating them as variants of the same lexeme.

5. Jackendoff 1990 and Talmy 1991 are examples of important research on predicators of motion that do not touch on this issue. However, Talmy (1985 and elsewhere) briefly mentions some similar cases. Herskovits 1986 and Vandeloise 1991 deal with closely related issues for prepositions.

6. In addition to the kind of use described here, *fekk* appears in a range of constructions that introduce clauses which indicate that a certain state of affairs already obtained at a given point in the narrative. More on *fekk* can be found in Moore *in press*.

7. I counted both *àgg* and *agsi* and their morphological variants. Cf. note 3.

The texts are Caam 1989 (about 10,650 words), Jey 1992 (about 22,450 words), Kesteloot and Mbodj 1983 (about 19,500 words), and Ndaw 1993 (about 9000 words). Kesteloot and Mbodj 1983 is a collection of transcribed oral literature; the others are novelettes.

8. The investigation of this alternation has really just begun. *Forox* 'be sour' is the only quality verb I have investigated so far.

9. Comrie 1976:57, citing Welmers (1973:347-8) notes a similar phenomena in Kpelle, where "... even 'see' is expressed as a Perfect, i.e. *aa* 'kaa' can correspond to either 'he sees it' or 'he has caught sight of it.'"

10. The notion *scope of predication* comes from Langacker, e.g. 1987. In the case in question here, the temporal scope of predication is the span of time that the denotation of an expression pertains to.

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