

# **Field semantics and grammar-writing: Stimuli-based techniques and the study of locative verbs<sup>1</sup>**

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## **1. Introduction**

All grammatical description relies, at least to some extent, on semantics. Even where a semantic analysis is not the explicit goal of the field linguist, lexical and grammatical items still need to be glossed, grouped together into larger classes, and compared to other classes in terms of their meanings and functions. But many field linguists would go further and accord semantics a central role in the process of grammar writing, assuming that formal similarities and differences reflect semantic similarities and differences.

While the importance of semantics is generally accepted, semantic analyses are difficult to implement. Grammars often contain disclaimers stating that it was not possible to determine the meaning of an expression, or that two expressions could be used interchangeably without a change in meaning. For example, with reference to locative verbs, which constitute the topic of this paper, it is not uncommon to find statements like the following (taken from Seiler's grammar of the Papuan language Imonda): "[i]n their existential function they are devoid of meaning and only serve a linking purpose" (Seiler 1985: 157).

Many of the difficulties encountered in specifying the meaning of an expression arise from methodological problems: questions of how to distinguish between ambiguity and vagueness, how to establish sense relations such as hyponymy and superordination, or how to distinguish semantic entailments from pragmatic implicatures. While the semantic literature proposes a number of tests (see, e.g., Cruse 1986; Frawley 1992; Lyons 1977; Zwicky and Sadock 1975), all proposed tests rely crucially on native-speaker intuitions about the acceptability and the equivalence of expressions. Lyons (1977: 379), for example, states that "[w]hat we are

after is some intuitive notion of grammatical acceptability which native speakers have by virtue of their recognition of principles that are immanent in their own language-behaviour [...].”

The importance of native-speaker intuitions poses a problem for field linguists who, in many cases, are not native speakers of the languages they analyze. Field linguists thus have to resort to other types of data instead, notably to observational and elicited data. Yet, as illustrated by the following statements, semanticists often treat such types of data with skepticism:

... the identification of utterance-tokens as instances of the same utterance-type cannot be carried out in terms solely of external, observational criteria. (Lyons 1977: 28)

... and this [i.e., the intuition, B.H.] is something that we cannot get at directly by asking them [i.e., the native speakers, B.H.] whether a putative sentence is or is not grammatical. (Lyons 1977: 379)

In addition to this more general skepticism, two specific problems emerge in the analysis of little described languages. First, if the meaning of an expression is to be inferred from observing its use in context, a text corpus is needed. Since it is well known that many expressions occur only infrequently in natural language use and/or are restricted to certain registers and genres, this corpus has to be large and diversified to ensure some degree of representativeness (see, e.g., Biber 1995) – but corpora on this scale are usually not available for little described languages. Second, if the meaning of an expression is to be inferred on the basis of elicited grammaticality and acceptability judgements, the grammatical structure of the language has to be reasonably well understood. In the absence of comprehensive grammatical descriptions, it will be difficult to construct appropriate test sentences or to delimit larger semantic types on the basis of morphosyntactic criteria.

The considerations above give an idea of the methodological problems that need to be solved when conducting a semantic analysis under field conditions. This paper is concerned with such methodological issues. It does not aim at an exhaustive overview of possible techniques, but rather introduces, by way of an example, some techniques that were employed in analyzing the coding of locative relations in Goemai, a West Chadic language of Nigeria. It focuses on the possibilities and limitations of some data collection techniques, their interactions with each other, native speakers' reactions to them, and their influence on the analysis of the data.

The paper is structured as follows: section 2 introduces locative relations in Goemai, section 3 discusses data collection techniques, section 4 illustrates detailed analyses based on the collected data, and section 5 summarizes the discussion.

## **2. Locative relations and postural-type expressions in Goemai**

Goemai is a West Chadic language that is spoken in Central Nigeria by approximately 150.000 speakers. Available linguistic analyses include comparative phonological studies (Hoffmann 1975; Kraft 1981; Wolff 1959), two unpublished dictionaries (Sirlinger 1937, 1946), an unpublished grammatical sketch (Sirlinger 1942), and a small text corpus (Ohikere and Tiemsan 1999; Sirlinger 1931; Tiemsan 1999). The data, on which this paper is based, was collected during 10 months of fieldwork (distributed over the period from 1998 to 2001), which took place in the village of Kwande with speakers of the Kwo dialect of Goemai.<sup>2</sup>

One interesting and pervasive aspect of Goemai grammar concerns the coding of postural information: in different grammatical environments (i.e., in the demonstrative, locative and existential, presentative, progressive, ascriptive and different subtypes of serial verb constructions), Goemai speakers are forced to choose a postural-type classifier or verb that codes the position of the (animate or inanimate) referent in space. These postural-type expressions are listed under the heading of 'locative verbs' in table (1) below. While such a phenomenon has not been described for any other Chadic language, it is known to exist in a number of non-Chadic languages (e.g., in many Papuan, Australian, Guaykuran, Siouan and Germanic languages). Descriptive grammars of these languages tend to mention its existence, but they usually do not provide any details.<sup>3</sup> In fact, Sirlinger's (1942) excellent grammar of Goemai is a good example of the kind of information to be found: at various different places in his grammar, he gives the form of the postural-type expressions, their glosses (based on their occurrence with human subjects only), and their distribution across grammatical environments. But he does not address any semantic issues; and his description even conveys the impression that the choice of a postural-type expression is more or less arbitrary. He does not recognize that the choice of the right expression is just as important as, e.g., the choice of the right tense or aspect in other environments. As a result, he fails to make some important generalizations (see below).

Interestingly, the available grammars of closely related Angas-Goemai group languages do not mention the postural-type system at all. This is rather unexpected given that the languages otherwise share many grammatical and lexical features. Languages such as Angas (see Burquest 1973; Foulkes 1915; Jungraithmayr 1964), Mupun (see Frajzyngier 1991, 1993) or Mwaghavul (see Jungraithmayr 1963) even have forms that are cognate to the Goemai forms. For example, the cognate form to Goemai *lang* ‘hang/move’ is found in all languages, where it is given with the glosses ‘hang’ and/or ‘swim’ (see section 4.1 for the meaning of Goemai *lang*). And text appendices show that the cognate forms seem to occur in similar environments, e.g., like in Goemai, they are found in locative structures (as in 1a) as well as in second position of serial structures (as in 1b).

- (1) a. *Mbul*    *cε*    *pɔ*                    ***tɔng***    *n-tɔng* (...). (Angas)  
          pigeon    some    CONTINUATIVE    sit    LOC-tree  
          ‘A pigeon was sitting in a tree (...).’ (Jungraithmayr 1964: 124-125)
- b. *Mo*            *taa*            ***dεe***            *n-Pankshin*.                    (Mupun)  
          3Pl            fall            stay            LOC-Pankshin  
          ‘They stopped over in Pankshin.’ (lit. ‘arrived and stayed’)  
          (Frajzyngier 1993: 230)

It may be the case that the cognate forms do not play any role in forming locative statements in the other Angas-Goemai group languages (and are only used to describe the postures of animate subjects). But alternatively, it may be the case that their locative semantics has been overlooked: the published text material is not concerned with locative descriptions (but with the actions of human and animate participants); and the published elicited data does not take locative relations of inanimate subjects into account. Our current knowledge does not enable us to draw any conclusions here. In fact, it is argued in this paper that – in order to draw any meaningful conclusions – a certain type of data (i.e., stimuli-based data) is needed. The uses of such data are discussed in the following sections in more detail; and the remainder of this section outlines the coding of locative relations in Goemai.

Goemai expresses static location – i.e., the locative relation between an entity (a Figure)<sup>4</sup> and a reference object (a Ground)<sup>5</sup> – by means of the locative construction, exemplified in (2) below.

	<b>Figure</b>	<b>Verb</b>	<b>Preposition/Spatial Nominal</b>	<b>Ground</b>
(2)	<i>D'a</i> calabash	<i>t'wot (...)</i> sit(pl)	<i>nd'ûû</i> INSIDE	<i>nme.</i> barn
	'Calabashes sit (...) inside the barn.' [LIIT]			

The locative construction in (2) contains a Figure (*d'a* 'calabash'), a Ground (*me* 'barn') and a locative relation coded partly in a spatial nominal (*nd'ûûn* 'inside'), and partly in a verb (*t'wot* 'sit, pl.'). This verb element constitutes the focus of the present paper.

Unlike English, Goemai speakers do not use a semantically vacuous copula such as 'be', but select an appropriate verb from a set of approximately 35 verbs. These verbs belong to two different form classes that have been termed 'locative verbs' and 'dispositional verbs' respectively (see table 1 below). The class of locative verbs contains five verbs, which are not only – and not primarily – used to express human posture or movement, but which occur with a wide variety of inanimate entities (e.g., in 2 above, calabashes are described as 'sitting'). The other 30 or so verbs belong to the class of dispositional verbs, describing posture (e.g., *shuur* 'squat'), internal disposition (e.g., *lam* 'twist'), distribution (e.g., *fu* 'scatter'), or orientation (e.g., *k'oon* 'face down').

**Table 1.** *Locative and dispositional verbs*

<b>Locative verbs:</b>	
<i>lang</i> (sg), <i>leng</i> (pl) ‘hang/move’	
<i>t’ong</i> (sg), <i>t’wot</i> (pl) ‘sit’	
<i>d’yem</i> (sg), <i>d’yam</i> (pl) ‘stand’	
<i>t’o</i> (sg), <i>t’oerep</i> (pl) ‘lie’	
<i>d’e</i> ‘exist’	
<b>Dispositional verbs:</b>	
<i>byap</i> ‘lie prostrate’	<i>k’oon</i> (sg), <i>k’ab’an</i> (pl) ‘face down (on Figure’s usage space)’
<i>b’am</i> ‘stick’	<i>k’ut</i> ~ <i>k’wat</i> ‘crouch, roll up’
<i>b’eer</i> ‘scatter (of masses); plenty’	<i>k’wep</i> ~ <i>k’wop</i> ‘burrow, stick into’
<i>b’oot</i> ‘tie’	<i>lam</i> ‘twist’
<i>dap</i> ‘bend backward’	<i>maar</i> ‘pile up’
<i>dum<sub>1</sub></i> ‘bend forward’	<i>meet</i> ‘scatter’
<i>dum<sub>2</sub></i> (sg), <i>duk</i> (sg, pl) ‘upside down (on Figure’s solid top)’	<i>neep</i> ~ <i>nap</i> ‘hang downward’
<i>d’ak</i> ‘scatter’	<i>ruk</i> ‘short spaced to each other’
<i>d’ûûr</i> ‘located precariously, carry on head’	<i>sar</i> ‘at an angle’
<i>d’ûût</i> ‘lean’	<i>s’ang</i> ‘stretch’
<i>fu</i> ‘scatter’	<i>shuur</i> ‘squat’
<i>fum</i> (sg), <i>fûam</i> (pl) ‘fold’	<i>shyoot</i> ‘coil (around), encircle’
<i>guur</i> ‘hooked’	<i>sh’uut</i> ‘in form of a foliage, branch out’
<i>kab’al</i> ‘cross-wise’	<i>t’arat</i> ~ <i>t’arak</i> ‘in patches’
<i>kan</i> ‘incline, bend’	<i>yeng</i> ‘hang to side’
<i>koot</i> ‘stoop’	<i>yuut</i> ‘in large numbers, in a mass’
<i>ku</i> ~ <i>kur</i> ‘curl, heap’	<i>zaan</i> ‘in a line’

As illustrated below, the two form classes differ in (i) their lexical aspect, (ii) their argument structure and (iii) their distribution.

First, locative verbs are stative, and dispositional verbs are inchoative. For example, only a dispositional verb such as *k'oon* 'face down' – but not a locative verb – can occur in the main verb slot of the progressive construction (as in 3).

- (3) *Goe-k'wal*    *k'wal*    *men /*    *la*    *hok*    *d'e*  
 NOMZ-talk    talking    1Pl.Poss    child(sg)    DEF    PROGR(exist)
- t'ong*    ***k'oon***    *yi*    *goe*    *b'et*    *muk.*  
 PROGR    face\_down(sg)    PROGR    COM    belly    3Sg.Poss
- 'While we are talking, the child is getting face down on its belly.'  
 [P02\_59-A]

Second, locative verbs are intransitive. Furthermore, the Ground (although syntactically expressed as an adjunct) constitutes a semantic participant of these verbs. In Goemai, semantic participants (regardless of their syntactic expression) can only be omitted in certain contexts, e.g., whenever the prefix *N-* is present (as in 4a). Without this prefix, the participant needs to be overtly expressed (as *k'a gado* 'on the bed' in 4b). Dispositional verbs, by contrast, are labile, and they do not have a Ground participant.

- (4) a. *la*    *nnoe*    *ru /*    *de-goe*    ***n-t'o.***  
 child(sg)    LOC.ANAPH    enter(sg)    PUR    PUR-lie(sg)
- 'this child had come in to lie.' [FROG-C]
- b. *la*    *nnoe*    *ru*    *de-goe*    ***t'o***    ***k'a***    ***gado***  
 child(sg)    LOC.ANAPH    enter(sg)    PUR    lie(sg)    HEAD(sg)    bed
- 'this child had come in to lie on the bed' [C-07/12/00]

Third, the locative verbs or their derived classifiers obligatorily occur in a number of different environments. For example, *t'ong* 'sit' can occur as a classifier in the demonstrative (as in 5a), or as a verb in the ascriptive construction (as in 5b) (see also 3 above where *d'e* 'exist' fills the auxiliary verb slot of the progressive construction). None of the dispositional verbs is acceptable in any of these environments.

- (5) a. ***Goe-n-t'ong-nnoe*** *a* *toeb'al.*  
 NOMZ(sg)-ADVZ-Cl:sit(sg)-DEM.PROX FOC calabash  
 'This sitting one is a calabash.' [HAND\_7-J]
- b. *de goe t'ong yi kyoop.*  
 COMP OBL sit(sg) SUB health  
 'so that (the girl) should sit in health (i.e. be healthy).' [DIALECT]

The account given above is based entirely on naturally-occurring and elicited data. On the basis of such data, it thus proved possible to describe the form of the relevant construction, compile a list of expressions that can occur in it, and analyze their formal properties. Their semantic characterization, by contrast, had to remain very basic, and was largely restricted to providing translation equivalents. It is reasonable to assume that – in the different grammatical environments – speakers choose an expression on a semantic basis. However, the criteria that determine such a choice are far from obvious. In particular, the following two observations seem puzzling:

- (i) On the face of it, the two verb classes are semantically similar (e.g., the four pairs below seem to be more or less equivalent), in that both the locative and the dispositional verbs are concerned with the spatial arrangement of a referent. Given their apparent semantic similarities, it is surprising that Goemai grammar should distinguish formally between them.

Locative verb	Dispositional verb
<i>lang</i> 'hang/move'	<i>neep</i> 'hang downward'
<i>t'ong</i> 'sit'	<i>shuur</i> 'squat'
<i>d'yem</i> 'stand'	<i>d'ûut</i> 'lean'
<i>t'o</i> 'lie'	<i>byap</i> 'lie prostrate'

- (ii) Conversely, it does not seem possible to provide a uniform semantic characterization of the class of locative verbs: these verbs seem to express existence (*d'e* 'exist'), human-based posture (*t'ong* 'sit', *d'yem* 'stand', *t'o* 'lie'), as well as attachment and movement (*lang* 'hang/move'). Yet, despite their apparent semantic differences, Goemai grammar groups them together in one form class.

While the available naturally-occurring and elicited data can draw our attention to these two issues, they do not contain enough information to pursue further investigations: many verbs occur too infrequently, all verbs are found with a limited range of Figure and Ground objects only, and contextual information is sketchy or absent. For this reason, a different kind of data – stimuli-based data – was collected (see section 3 for details). This kind of data then led to the following analysis:

- It was possible to give a comprehensive characterization of the meaning of each verb (see section 4.1).
- It was discovered that locative and dispositional verbs are only superficially similar. There are considerable semantic differences that allow locative verbs (but not dispositional verbs) to assume existential and classificatory readings (see sections 4.2 and 4.3).
- It was found that dispositional verbs occur in the locative construction under certain marked conditions only (see section 4.4).

As a result of these discoveries, it became possible to give an adequate description of how existential statements are formed (see section 4.2), to discover the existence of a particular type of nominal classifier (i.e., classificatory verbs) (see section 4.3), and to explain the different distribution of locative and dispositional verbs (see section 4.4). In-depth semantic analysis thereby contributed directly to the grammatical description.

It is likely that, without such a semantic analysis, many aspects of the Goemai system would have been overlooked. A recent typological study (based on comparing data from different languages that were generated with a uniform set of stimuli) even argues that existential and classificatory uses are characteristic features of languages that use postural-type verbs for locative purposes (Ameka and Levinson in prep.-b). Yet, for most languages, the information that is necessary to prove or disprove this claim is not available: traditional grammars do not, and indeed cannot, address the relevant questions.

The following two sections illustrate in more detail possible techniques that help conduct semantic analyses in the field: techniques for collecting data (section 3), and techniques for handling the collected data (section 4). Note that this paper concentrates on postural-type systems. However, it is assumed that any area of grammatical description can benefit substantially from a comparable semantic approach.

### 3. Collection of extensional data

The first step in any semantic analysis is the compilation of a database that gives an overview of the referential range of an expression, i.e., of its extensions. The available natural texts may not contain enough material for this purpose (see also Samarin 1967: 210; Vaux and Cooper 1999: 181-191). For example, the verbs that are of interest to the present study all occur in the locative construction of Goemai – a construction that is found frequently in a variety of genres such as folktales, historical narratives, explanatory texts, descriptive texts or conversations. But although the construction itself occurs frequently, the distribution of verbs varies: a small number of verbs is responsible for most occurrences, while others are observed only infrequently. All verbs are found with a limited range of Figure and Ground objects only; i.e., for many conceivable locative relations, the linguistic data is not available. And, given the absence of negative information, it is unknown whether or not individual verbs are considered to be equivalent. Furthermore, the reference context is usually unknown, i.e., the position of the referent relative to its location in the real world cannot be reconstructed anymore.

These problems made it necessary to complement the naturally-occurring data with other types of data. Different methods were employed, but all relied on a common feature: the visual representation of locative relations in form of pictures, objects or videos,<sup>7</sup> and their presentation to consultants. Such a stimuli-based setup keeps some of the advantages of traditional elicitation (controlling for relevant parameters, standardization), but situates the responses in clearly defined and reconstructable contexts. Furthermore, the generated data are not translation equivalents, but rather naturalistic responses. Some of the tasks even allow speakers to converse freely amongst themselves, without being aware of the real nature of the task.

In particular, the following five properties make visual stimuli interesting to work with:

- First, visual stimuli provide speakers with possible contexts for their answers, and thereby minimize the risk of misunderstandings. Misunderstandings are likely to occur in any form of elicitation, as speakers tend to judge the acceptability of an utterance against its contextual use – and if such a context is not provided, they have to create it themselves. Lyons (1977: 420), for example, states that

“[w]hen our informants tell us that a particular utterance is deviant, anomalous, bizarre, etc., they may simply mean that they cannot immediately imagine the circumstances under which they would produce it.”

- Second, since the extra-linguistic context is clearly defined, it can be reconstructed in the process of analysis.
- Third, the procedure is flexible in that it allows the field linguist to probe for potentially relevant parameters as well as to systematically test hypotheses.
- Fourth, since the context and the tested parameters are held constant, the same task can be used with different speakers for purposes of comparison. It is even possible to use the same task with speakers of different languages, thereby making it possible to develop semantic typologies (see, e.g., Ameka and Levinson in prep.-a for a typology of locative verbs; Dunn and Meira in prep. for demonstrative systems; Pederson et al. 1998 for frames of reference).
- Fifth, traditional elicitation is usually carried out with few consultants only as it requires some amount of training and is time consuming. The game-like nature of the stimuli-based tasks, by contrast, makes it possible to run them with many different, untrained, consultants, thereby generating a large amount of relevant data in a short time. Furthermore, consultants are often fascinated by the visual stimuli. This does not mean that such stimuli work in all contexts, but, as a general guideline, they tend to be more interesting to consultants than questionnaires used during traditional elicitation (see also the discussion in Vaux and Cooper 1999: 55–59).

Like all methods of data collection, the presentation of visual stimuli has disadvantages as well. First, it is not always applicable in all cultures and circumstances (see the discussion in Du Bois 1980). Second, stimuli effects may arise because speakers are asked to make fine-grained distinctions. Although it is likely that they will resort to strategies that are available to them in their everyday usage of the language, there is no guarantee for such a behavior. Both disadvantages arise with all types of elicitation, though. They cannot be avoided altogether, but they can be minimized through combining different techniques. While some techniques may not be applicable in a given culture, others will. And while some may generate unnatural results, results from different techniques can be compared, their convergences and divergences analyzed, and the stimuli effects recognized.

The remainder of this section describes some techniques in more detail: picture book elicitation (section 3.1), matching games (section 3.2), and staged communicative events (section 3.3).

### Picture book elicitation

In the first type of stimuli-based task, consultants were presented with pictures of objects<sup>8</sup> in different locative relations. They were then asked a ‘where’ question (illustrated in figure 1 below).

	<p>question: <i>Wang d'e nnang?</i>  pot exist where  ‘Where is the pot?’</p>
	<p>typical answer: <i>K'oon n-yil.</i>  face_down(sg) LOC-ground  ‘(It) faces down on the ground.’</p>

Figure (1): Stimuli PHOTO-096

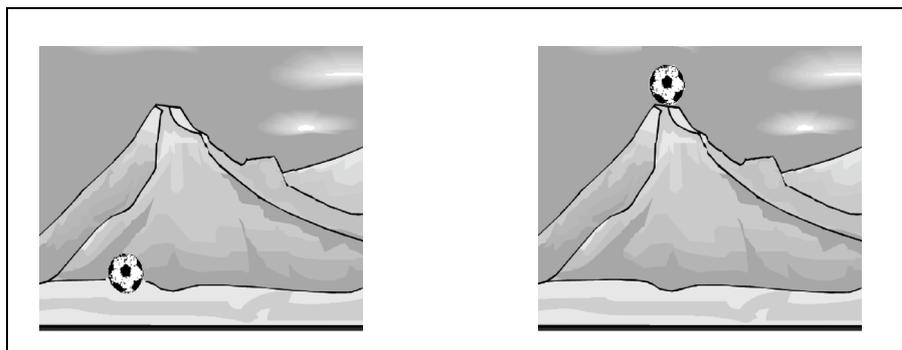
For each picture, the following answers were noted down: (a) the first answer of the consultant, (b) all spontaneous answers in the order in which they were given, (c) the acceptance and rejection of any form suggested by me, and (d) all other comments made by the consultant (suggesting alternative expressions, alternative contexts, folk explanations, etc.). Such types of answers are illustrated in table (2) below.

**Table 2** Some answers to stimuli PHOTO-096

speaker:	A	N
spontaneous answers:	1. <i>k'oon</i> 'face down' 2. <i>k'oon d'yem</i> 'stand face down'	1. <i>k'oon d'yem</i> 'stand face down'
elicited answers and comments:	1. <i>?d'yem</i> 'stand' (okay, but <i>k'oon</i> is better) 2. <i>*t'ong</i> 'sit' (not possible because pot is upside down) 3. <i>*t'o</i> 'lie' (pot is too tall) 4. <i>*duk</i> 'upside down' (the 'mouth' is not wide enough; would be possible with an upside down bottle)	1. <i>k'oon</i> 'face down' (better than <i>k'oon d'yem</i> ) 2. <i>*k'oon t'ong</i> 'sit face down' (pot cannot both 'sit' and be 'face down') 3. <i>k'oon t'o</i> 'lie face down' (good) 4. <i>*t'o</i> 'lie' (hesitated for a long time, then said that pot is too tall)

Picture books included the following kinds of objects in various locative relations with each other: a large number of both known and novel objects; the same object in different (stereotypical and non-stereotypical) positions and against different (stereotypical and non-stereotypical) Grounds; multiple objects; multiple objects in different positions; and objects in unknown positions. In the course of fieldwork, hypotheses about the semantic parameters relevant for the choice of a verb were constantly updated and tested, i.e., the set of stimuli was refined by adding new pictures and by removing others that had proven irrelevant.

For example, in the first set of stimuli a surprising use of the verb *lang* 'hang/move' was observed: a minority of speakers used this verb in reference to a tree located on top of a mountain, and some used it in reference to a stick located on a table. As a consequence, a new set of pictures was developed to systematically test whether *lang* 'hang/move' is used in reference to objects located in high places. The type of pictures used is exemplified in figures (2a) and (2b), and some responses are illustrated in table (3).

**Figure (2a):** Stimuli DRAW2-083**Figure (2b):** Stimuli DRAW2-040*Table 3.* The use of *lang* ‘hang/move’ with objects in high places

	object at foot of hill		object on top of hill	
	<i>lang</i> ‘hang/move’	other	<i>lang</i> ‘hang/move’	other
ball	-	5/5 <sup>9</sup> <i>t’o</i> ‘lie’	4/5	1/5 <i>t’o</i> ‘lie’
calabash	-	5/5 <i>t’ong</i> ‘sit’	3/5	2/5 <i>t’ong</i> ‘sit’
tree	-	5/5 <i>d’yem</i> ‘stand’	1/5	4/5 <i>d’yem</i> ‘stand’

Table 3 shows that speakers were, indeed, more likely to use *lang* ‘hang/move’ in reference to objects located in high places, although other parameters interfered. The exact semantic analysis is not relevant for the purpose of this paper. Of relevance is rather the kind of data such picture book tasks generate: the use of expressions in reference to a large number of real world situations (as illustrated in table 4, below); and the possibility of manipulating the parameters – both to probe for relevant semantic features and to test them systematically.

However, being a form of elicitation, speakers became quickly aware of the nature of the task and speculated about my interests. In particular, speakers implicitly and explicitly compared the depicted relations to potential other relations or to relations that they had seen in previous pictures. As a result, the following two response patterns emerged:

- (i) Speakers focussed on minute differences between pictures, often compressing a large amount of information into a single utterance (as in 6 below). As evidenced from natural texts, such descriptive utterances are not representative of everyday usage.

(6) *Lu*            *carrot* *hok*    *paat*    *t'oerep*    *nd'ûûn* *tasa*  
pile            carrot   DEF    five       lie(pl)    INSIDE  
plate  
  
*goeme.*  
one

'The five piles of carrots lie in one plate.' [DRAW2\_069-C]

- (ii) Speakers tended to give prescriptive answers and to reject alternative possibilities. They particularly rejected those possibilities that could not discriminate between pictures. The results obtained with picture book stimuli differ in this respect from the results obtained with other kinds of stimuli (see section 3.2 below for an example).

To compensate for these problems,<sup>10</sup> other methods were used to (a) check the reliability of the elicited data and to (b) collect additional types of data.

### 3.2 Matching games

Matching games are played by two consultants, one assuming the role of 'director' and the other the role of 'matcher'. In the course of the analysis, the following setup was used: the two players were screened off from each other and received a set of identical pictures. The director started by picking one of the pictures and describing it to the matcher, who had to pick the corresponding picture from his or her set. Since the two players could not see each other's pictures, they had to rely solely on verbal descriptions for this purpose. When they were convinced that the picture was correctly identified, both players put their pictures aside on a pile, and

Table 4. Extension of postural verbs

<i>lang</i> 'hang/move'	<i>t'ong</i> 'sit'	<i>d'yem</i> 'stand'	<i>t'o</i> 'lie'
moving person, mammal, reptile, insect, fish, bird;	sitting person, mammal; bird on ground;	standing person, mammal; bird in air; fish in water;	lying person, mammal; insect, reptile on ground;
moving car, bike, boat;	boat (on water, on ground);	car, bike;	
fruit, leaf in tree;	orange, pineapple, tomato;	tree (stump), millet, guineacorn;	fruit, leaf on ground; forest;
<i>s'oor</i> (calabash suspended from rafter); lamp on ceiling; fishing net, cloth on line;	container (calabash, bottle, plate); hat, <i>pepe</i> (woven cover); lamp, phone, radio, alarm clock; chair; coiled rope or cloth (headpad);	upside-down container; tall bottle; <i>wang/teen</i> (pot buried inground); table;	container on side; any object in a container;  rope, cloth, ribbon;

Table 4. cont... Extension of postural verbs

<i>lang</i> 'hang/move'	<i>t'ong</i> 'sit'	<i>d'yem</i> 'stand'	<i>t'o</i> 'lie'
hook on wall, handle on door;		inserted arrow or nail; hut, house, wall;	<i>zaal</i> (rope tied around tree); watch, bracelet, ring, belt; bark around tree;
		leaning ladder, flower in vase;	pencil, paper, spoon;
cloud, fog, smoke, wind, rain; sun, moon (also: <i>d'yem</i> );		smoke, moonlight, darkness (in one place); sun, moon (also: <i>lang</i> );	masses (grass, water, flour, sand, ashes, dust, rubbish); night, darkness;
hand, tail, wing; heart, kidney, lung, liver;		foot, horn, nose, ear, tooth; bone;	tongue, beard; vein;
landmark, settlement in distance	village, town	well, cave, lake, pond, mountain	sea, river, road, place

the director picked another one from the set. When all pictures were identified, the screen was removed, and the players compared their piles to check if they matched. Throughout the whole game, I stayed in the background, recorded the game (whenever possible on video, otherwise on audio), and took additional notes to keep track of matches and mismatches.<sup>11</sup> Figure (3) and example (7) below illustrate such a game and some of the data that was generated with it.

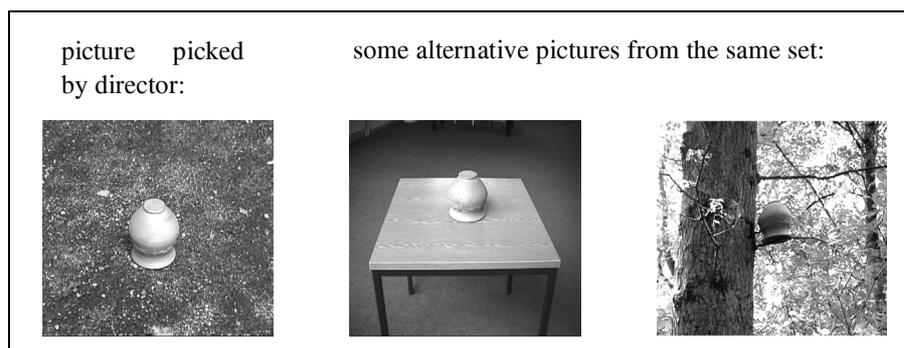


Figure 3. Matching game DIS-1

- (7-1) A: *A ndoe wang/ k'oon na n-d'yem. (...)*  
 FOC some pot face\_down(sg) PRES PRES-stand(sg)  
 'Behold, a pot is standing face down.' (...)
- (7-2) N: *Wang goenang nd'ûûn? (...)* *Goe-n-t'o-nnoe*  
 pot which(sg) INSIDE NOMZ(sg)-ADVZ-Cl:lie-DEM.PROX  
*a?*  
 INTERR  
 'Which pot among (them)? (...) (Is it) this lying one?'
- (7-3) A: *Goe-n-t'o dakd'ûe m-pe*  
 NOMZ(sg)-ADVZ-lie(sg) MIDDLE LOC-place  
*n-d'e-nnoe-hoe.*  
 ADVZ-Cl:exist-DEM.PROX-exactly  
 'This existing one (that is) lying in the middle of the place.'

- (7-4) N: *Oh.*      *Ai.*      ***K'oon***      ***t'ong***      *bi*      *muk.*  
 INTERJ    INTERJ    face\_down(sg)    sit(sg)    thing    3Sg.Poss
- T'ong***      *n-yil*      *ai?*  
 sit(sg)      LOC-ground      INTERJ
- ‘Oh. Right. (It) sits face down on its own. (It) sits on the ground, right?’
- (7-5) A: *Aha.*  
 INTERJ
- ‘Yes.’ [DIS\_1.3-A/N]

The picture sets paid attention to the following two types of contrasts: the same object in different positions (e.g., an upright pot contrasting with an upside down pot and a pot on its side) vs. the same object in the same position but at different locations (as in figure 3 above). These two types generated different response patterns. Whenever objects contrasted in their position, speakers used those expressions that differentiated best between the different positions – such responses were comparable to the results obtained with picture book tasks (see section 3.1). But whenever objects contrasted in their location, speakers only used a subset of the available expressions to shift the focus away from the actual position to the location. For example, *t'ong* ‘sit’ in (7-4) above does not describe the actual position of the upside down pot (see section 4.3). Notice that speakers A. and N. explicitly rejected *t'ong* ‘sit’ when they were presented with the same picture during a picture book task (see table 2 in section 3.1).

Having obtained these results with the first matching game, a second matching game was devised to specifically focus on the location. In every round, the two players were each provided with a background picture depicting eight objects in eight locations. The two players were screened off from each other and were instructed to compare their pictures. The pictures differed in some details, including the following crucial aspects: (i) sometimes an object was present in one picture, but not in the other, and (ii) sometimes an object was present in both pictures, but in different positions (e.g., upright in one picture, but upside down in the other). The responses of the second matching game confirmed the findings from the first: whenever the focus was on the location, certain types of verbs were used that did not describe the actual position of the referent. For the purposes of this paper, I call this type of use ‘classificatory’, and distinguish it from the ‘positional’ use that asserts an actual position (see section 4.3).<sup>12</sup>

Matching games are similar to picture book tasks in that the parameters of interest can be systematically varied. At the same time, though, they are more difficult to set up (two speakers are needed, screens have to be provided, and video recording is advisable), and they take more time. It is therefore much easier to use picture book tasks to generate large amounts of extensional data. But matching games have two advantages over picture book tasks. First, these games are not overtly concerned with the speech of the consultants, i.e., with lexical expressions – the task is rather to find the matching picture. Because of this setup, the risk of prescriptive language use reduces considerably. Second, being interactive genres, matching games generate a wealth of conversational data: negotiations between speakers take place, explicit judgements about the appropriateness of specific expressions in specific contexts are made, and interpretations and misunderstandings can be observed on-line.

While this game-like nature has its advantages, the following disadvantages were encountered. First, these kinds of games are not always appropriate in all cultures, or with speakers of all ages and sexes. Second, because of their competitive nature, they can be stressful to the players who feel under pressure to produce the ‘right’ picture. Interestingly, the artificiality of the task itself did not pose real problems for the naturalness of the data: the speakers had to communicate their intent and make themselves understood. In doing so, they resorted to strategies that were available to them in their everyday usage of the language. The same kind of data was observed in more natural genres, albeit with considerably less frequency.

### 3.3 Staged communicative events

At different occasions, Goemai speakers were asked to talk about topics, which, in all likelihood, would generate locative descriptions. Whenever possible, visual props were present in the speech context. Speakers produced procedural texts about the manufacture of objects, they discussed an array of handicrafts placed in front of them (see also Levinson et al. 2001), they talked about the surrounding flora, they described the spatial layout of compounds and towns (see also Kita et al. 2001), and they gave route directions. In addition, speakers were presented with picture books and video films and were asked to retell their contents to some other member of the speech community (see also Berman and Slobin 1994).

As illustrated in (8), such tasks consistently produced a large number of locative descriptions.

- (8) *Goe kat jap t'eng d'yam b'ak m-pe*  
 2Sgm find little(pl) tree stand(pl) here LOC-place  
*nnoe ngam.*  
 LOC.ANAPH many  
 'You find many small trees (and they) stand here in this place.'
- Goe-n-d'yem-nnoe a lemu*  
 NOMZ(sg)-ADVZ-Cl:stand(sg)-DEM.PROX FOC orange  
*goe-rok.*  
 NOMZ(sg)-become\_sweet  
 'This standing one is a sweet orange (tree).'
- Lemu goe-rok n-d'e-nnoe-hoe /*  
 orange NOMZ(sg)-become\_sweet ADVZ-Cl:exist-DEM.PROX-exactly  
*moe múak ni m-múak.*  
 1Pl lick 3Sg ADVZ-lick  
 'This existing sweet orange, we eat it.'
- Kuma / gurum moe-b'ang / múep (...) d'ûe*  
 also person NOMZ(pl)-become\_red 3Pl cause\_lying(pl)  
*nd'ûûn t'u*  
 INSIDE bottle  
 'And Europeans, they (...) lay (them) into bottles.' [TREE\_N]

Such kinds of events do not serve any communicative purpose other than that of producing data. Himmelmann (1998) labels them 'staged communicative events'. He also subsumes matching games of the kind discussed in section 3.2 under this heading. For the purposes of this paper, however, matching games and staged communicative events are differentiated, as the latter are less artificial and less invasive. They are usually easier to reconcile with the interests of speakers to talk about culturally relevant topics. In fact, the field linguist as an outsider is often considered to have a legitimate interest in, as well as a genuine lack of, knowledge about almost all relevant topics.

The data obtained with staged communicative events constituted a good compromise between natural and elicited data: the locative expressions

occurred with considerable frequency, the reference context could be monitored, and once the context was given, speakers talked freely about the specified topic. Wherever possible, conversations between native Goemai speakers were staged instead of monologues, thereby minimizing the problems involved in researcher-directed speech.

### 3.4 Summary

The three techniques outlined in sections 3.1 to 3.3 are situated somewhere between traditional elicitation and natural discourse. They have in common that the reference context can be monitored, i.e., the locative relation is observable. But they vary with respect to (a) the amount of control that the linguist can exercise over the parameters and (b) the degree to which speakers can talk naturally.<sup>13</sup> None of the three techniques alone can satisfy both variables equally well, but taken together they generate a fairly broad spectrum of relevant data. Their combination seems to be the best way to avoid the disadvantages of each technique, while retaining its advantages.

## 4. Analysis of extensional data

The techniques outlined in section 3 generate data on the use of linguistic expressions in reference to the real world, i.e., they generate extensional data. The data does not, without further interpretation, give information about sense and sense relations between expressions, i.e., about intensions. This section illustrates some possibilities of translating extensional data into intensional analyses. Notice that the section is not concerned with semantic analysis in general, but only with those types of analysis that directly relate to the extensional data collected with the techniques discussed above.

### 4.1 Semantics of *lang* 'hang/move'

First of all, the generated data can, of course, be used to conduct a detailed analysis into the meaning of an item, e.g., into the meaning of *lang* 'hang/move'. From table (4) above, it can be seen that *lang* is used in reference to a variety of locative relations, including:

- referents that are attached (e.g., leaf in tree, lamp from ceiling);
- referents that move (e.g., fish swimming in water, cloud floating in air);
- referents that are located in (high) places (e.g., tree on hilltop, distant landmark).

These three uses either correspond to different senses (and *lang* would be ambiguous), or else to one sense that is modified through contextual factors (and *lang* would be semantically general). It is difficult to differentiate between these two options, and it is not possible to solve this question on the basis of extensional data alone (see, e.g., Zwicky and Sadock 1975 who propose a number of tests). Nevertheless, the data contains relevant distributional information.

A comparison of the first two uses ('attachment' and 'movement') shows that they are not as different as expected. In its 'attachment' use, *lang* occurs with inanimate Figures that are suspended from the Ground, i.e., with Figures that (potentially) dangle or swing. Other forms of attachment (e.g., static attachment through insertion into the Ground, through being tied around it, or through being stuck to it), by contrast, generated the use of *d'e* 'exist'. In its 'movement' use, *lang* occurs with animates and natural forces that move within their natural habitats. Their movement is confined to a single location, and *lang* could not be used to express translocational motion. Given this distribution, the meaning of *lang* can be paraphrased as 'the Figure has the potential to move within the Ground'. The contextual reading then depends on other factors, e.g., on properties of the Figure: inanimate Figures would trigger an 'attachment' reading, while animate Figures or natural forces would trigger a 'movement' reading.

The database gives furthermore information about speaker variation: most speakers produced and accepted only *d'e* 'exist' in reference to static attachment scenarios (e.g., to hooks projecting off a wall), but some speakers systematically used *lang* in such cases. For these speakers, a second definition of *lang* becomes necessary (paraphrased as 'the Figure is attached to the Ground').

In its third use, *lang* occurs with Figures that are located in high places or in space (e.g., a pot located in a tree, as in 9 below). In such cases, speakers showed some variation: they either shifted to *lang* (as in 9-1), or they chose a locative verb that appropriately described the locative relation (e.g., in 9-2, *t'ong* 'sit' is used to stress that the pot supports itself autonomously in its location). Notice that, in the first case, *lang* is used together with the non-topological preposition *goe* ('location in a place'),

while in the second case, the appropriate locative verb is used together with the topological preposition *N-* ('location at an object').

- (9-1) *Goe-lang* / *goe* *pyak* *t'eng-hoe* *a?* (...)  
 NOMZ(sg)-hang/move(sg) PLACE fork tree-exactly INTERR
- (9-2) *Goe-f'yer* *nnoe* *t'ong* *m-pyak* *t'eng*  
 NOMZ(sg)-become\_big(sg) LOC.ANAPH sit(sg) LOC-fork tree
- zak-yit ai?*  
 again INTERJ

'(Is it) the one hanging in the tree fork? (...)

'This big one now sits in the tree fork, right?' [DIS\_6.4/5-A/N]

The use of *lang* with Figures located in (high) places was probably originally motivated by their similarity to Figures that have 'the potential to move': inanimate Figures tend to be suspended from above (i.e., in a high place); and animate Figures move in their habitats (i.e., in Grounds that can easily be construed as places). The choice of preposition would then have revealed whether the speaker construed the Ground as a place (using *goe*) or an object (using *N-*). In the meantime, however, *lang* has probably acquired the distinct sense of 'location in a place': in this sense, *lang* can occur (a) with Figures that do not have the potential to move, and (b) with Ground phrase elements that are semantically general over 'place' and 'object'.

There are certainly other ways of interpreting the extensional data, and more could be said about the semantics of *lang*. Such an analysis is, however, not the purpose of this paper: the discussion in this section is meant to illustrate that the stimuli-based techniques generate a large database that can be fruitfully exploited for analyzing the semantics of individual expressions (see Hellwig 2003 for details of the analysis).

#### 4.2 Privative oppositions (existential and postural verbs)

Often, there are some expressions that seem to be used interchangeably with other expressions. In such cases, it is usually very difficult to capture the semantic relations involved. For example, in elicitation sessions, Goemai speakers explicitly state that *d'e* 'exist' can replace any of the four postural verbs (*lang* 'hang/move', *t'ong* 'sit', *d'yem* 'stand', *t'o* 'lie'). Given this possibility, it could be assumed that the existential encroaches

onto the locative domain (as is the case in many different languages), and that it functions there as a semantically vacuous copula (similar to English ‘be’).

An analysis of the database, however, reveals a much more complex picture: it shows that (i) both the existential and the posturals are used to form existential statements and that (ii) the distribution of the existential is determined by its opposition to the posturals (i.e., it is not semantically vacuous). Both points are illustrated in the following paragraphs.

First, the posturals themselves are used to form existential statements. For example, in (10) below, speaker N. uses *t’o* ‘lie’ in the negative locative construction. He does not negate the position of the rope, but rather its existence in the specified location. Further analysis of the data indicates that the posturals only occur in contexts where the existence of a specific referent at a specific location is asserted or negated. As a consequence, sessions that merely elicit translation equivalents of English existential structures only ever generate Goemai *d’e* ‘exist’. In fact, without the techniques described in section 3, the grammatical description of existential statements in Goemai would have been restricted to the description of *d’e* ‘exist’ – while the role of posturals would have gone undetected.

- (10) A: *K’yang*      *goe-t’o*      *k’a*      *muk-hoe*  
          rope      NOMZ-lie(sg)      HEAD(sg)      3Sg.Poss-exactly  
          *fa?*  
          INTERR  
          ‘What about the rope that lies on its top?’
- N: *Kwai. (...)*      ***K’yang***      ***t’o***      ***k’a***      ***ba.***  
          no      rope      lie(sg)      HEAD(sg)      NEG  
          ‘No. (...) There lies (= exists) no rope on top.’  
          [COMP\_7-A/N]

Second, in locative contexts, the existential is only volunteered under one of the following conditions: the position of the referent is either unknown (e.g., because the Figure is hidden from view), or non-describable with a postural (e.g., because it is statically attached to the Ground; see section 4.1), or non-canonical (in the presentative construction only). In all other contexts, the appropriate postural is the preferred option. This distribution of the existential has consequences for its interpretation: upon hearing it, the addressee assumes that one of the above conditions holds. This

interpretation can be illustrated with the help of (11) below. The example is taken from a matching game, where speakers compare photos of bottles in different positions (upright, on side, upside down). Speaker A. picks a photo and introduces the bottle by means of *d'e* 'exist' in the presentative construction (11-1). In his response, speaker N. seeks clarification (11-2). Notice that he does not include the upright bottle in his response, but only the two non-canonically located bottles (the 'lying' bottle, and the 'standing', i.e., upside-down bottle). He apparently assumes that speaker A. would have used *t'ong* 'sit' if he had the canonically-located bottle in mind.

(11-1) A: *Ndoe kwalba hok na n-d'e zak-yit.*  
 some bottle DEF PRES PRES-exist again

'Behold, another bottle is (here) again.'

(11-2) N: *Goenang nd'ûûn? Goe-t'o n-t'o*  
 which(sg) INSIDE NOMZ(sg)-lie(sg) ADVZ-lie(sg)

*nnoe a ko goe-d'yem*  
 LOC.ANAPH INTERR maybe NOMZ(sg)-stand(sg)

*n-d'yem?*

ADVZ-stand(sg)

'Which among (them)? (Is it) this one that lies lying,  
 or the one that stands standing?' [DIS\_14.5/6-A/N]

The distribution of the existential vis-à-vis the posturals can be explained by means of general pragmatic principles. The data suggests that they are in a privative opposition: the semantics of the existential are more general ('existence at a location') and are entailed by those of the posturals ('existence at a location in a specific position'). As suggested by a number of case studies, the distribution of expressions in privative oppositions is governed by the following pragmatic principle: the use of the less informative term (i.e., the existential) implicates that the more informative term (i.e., the relevant postural) is not applicable – if it were applicable the speaker would have used the more informative term in the first place (see Levinson 2000b for the general framework; see Hawkins 1991; Levinson 2000a; Wilkins and Hill 1995 for some case studies). In the case of Goemai, this general principle explains the restriction of the existential to unknown, non-describable or non-canonical locative relations.

## 4.3 Expressing non-canonicity

The database made it possible to discover and investigate different types of uses of one expression, e.g., of a postural verb. In all tasks, non-canonical locative relations generated two different usage patterns. In one pattern (labeled ‘positional’), the speaker used the postural verb most appropriate to the current locative relation. In the other pattern (labeled ‘classificatory’), the speaker used a so-called ‘default’ postural, i.e., (s)he used the postural that (s)he would have used if the referent were in a canonical relation. For example, calabashes and bottles would *t’ong* ‘sit’ by default.

Example (12) (taken from a matching game) illustrates a difference in how hearers interpret the two uses. In (12a), speaker A. uses the non-default postural *d’yem* ‘stand’ to focus on the non-canonical position of the calabash depicted in his picture (upside down). Speaker N. does not accept it because it does not adequately describe the calabash in his picture (upright). In (12b), by contrast, speaker A. uses the default postural *t’ong* ‘sit’ in reference to an upright bottle. In this case, speaker N. accepts it as an adequate characterization of the referent – even though the bottle in his picture is upside down.

- (12) a. A: *To / d’a n-d’yem k’a k’aram.*  
 okay calabash PRES-stand(sg) HEAD(sg) mat  
 ‘Okay, behold, a calabash is standing on the mat.’ (= upside down)
- N: *D’a- / d’a na n-d’e d’i*  
 calabash calabash PRES PRES-exist LOC.ANAPH  
*k’a k’aram. (...) M-maan t’ong*  
 HEAD(sg) mat NOMZ-1Sg.Poss sit(sg)  
*n-t’ong.*  
 ADVZ-sit(sg)  
 ‘The calabash-, behold, the calabash is being there on the mat. (...) Mine sits sitting.’ (= upright) [COMP\_12-A/N]
- b. A: *Goe na kwalba n-t’ong k’a kwati. (...)*  
 2Sgm see bottle PRES-sit(sg) HEAD(sg) box  
 ‘Behold, see a bottle sitting on the box.’ (...) (= upright)

N: *M-maan*                    *a*    *haam-yim*. *Ni t'ong*    *d'i*  
 NOMZ-1Sg.Poss    FOC    color-leaf    3Sg    sit(sg)    LOC.ANAPH  
*k'a*.  
 HEAD(sg)  
 'Mine is of green color. It sits there on top.' (= upside down)  
 [COMP\_3-A/N]

Similar differences in interpretation are found in all comparable situations, suggesting that the two uses have a different status. The difference can be captured with the help of a general pragmatic principle (see Levinson 2000b): to use a marked expression (i.e., a non-default postural) draws attention to a marked situation (e.g., the referent is non-canonically located). Upon hearing the non-expected postural, the addressee looks for some non-stereotypical property, and, as a consequence, does not repeat this postural if it does not match the current position (as in 12a). Upon hearing the unmarked default postural, by contrast, the addressee does not pay attention to the current position, but rather takes the postural to refer to the class of the referent (i.e., of objects that 'sit' by default). As a consequence, it is repeated, even if it does not match the current position (as in 12b).

Further semantic and pragmatic analysis shows that each nominal concept is assigned to one – and only one – default locative verb. The analysis thus establishes that expressions belonging to a major form class (i.e., to the class of verbs) can serve as nominal classifiers (i.e., in specific grammatical environments, they exhaustively divide the set of nominal concepts into mutually exclusive classes). Notice that it would not have been possible to prove the existence of the classificatory use on the basis of the naturally-occurring data alone. In the stimuli-based tasks, by contrast, the reference context (i.e., the current position of the referent) is known – and this makes it possible to distinguish the classificatory from the positional use, and to systematically investigate the conditions for its occurrence (see also section 3.2).

#### 4.4 Delimiting semantic fields (locative and dispositional verbs)

As mentioned in section 2, there are approximately 35 different verbs (belonging to two different form classes) that can occur in the Goemai

locative construction. But although verbs of both form classes can occur there, the database shows that their distribution differs considerably.

The data shows that a ‘where’ question nearly always results in a spontaneous response with a locative verb. Dispositional verbs, by contrast, occur only infrequently. Some speakers offer them as alternatives in their subsequent responses, but other speakers explicitly reject them. Interestingly, such speakers only reject dispositionals in the locative construction (as in 13a), but freely produce them in other constructions, e.g., combining with locative verbs in serial constructions (as in 13b). That is, although their occurrence in the locative construction is rejected, the dispositionals nevertheless seem to appropriately describe some aspect of the spatial situation. Furthermore, their co-occurrence with locative verbs could suggest that the two verbs code different, but complementary, aspects of the same situation.

(13a) \* *Tasa*    ***d’ûût***    *sek*    *t’u.*  
 plate    lean    BODY    calabash\_bottle  
 ‘The plate leans against the bottle.’ [DRAW\_05-A]

(13b) *Tasa*    ***d’ûût***    ***d’yem***    *sek*    *t’u.*  
 plate    lean    stand(sg)    BODY    calabash\_bottle  
 ‘The plate stands leaning against the bottle.’ [DRAW\_05-A]

Further analysis then shows that the dispositional verbs occur in the locative construction under one of the following conditions: the speaker has witnessed the state change that preceded the state (e.g., the speaker has observed a person getting into a leaning position), or the Figure is in a non-canonical locative relation (i.e., in a relation that is likely to be interpreted as the result of a prior state-change). That is, their distribution reflects their lexical properties: they code a state change, not a state (see section 2). But while they can be integrated into the locative construction (under the conditions specified above),<sup>14</sup> they always assert the current spatial disposition of the referent – unlike locative verbs, they can never be interpreted in either an existential way (see section 4.2) or a classificatory way (see section 4.3). As such, they constitute a marked alternative, drawing the hearer’s attention to a marked aspect of the situation.

Again, the different distribution of locative and dispositional verbs would not have been noticed when taking only the elicited and the naturally-occurring data into account. The elicited data would have shown

that dispositional verbs can occur in the locative construction – without revealing the conditions for their occurrence, and without showing their marked interpretation. The naturally-occurring data would have shown the distribution of locative verbs – but given the infrequency of dispositional verbs in the locative construction, their occurrence may have been overlooked altogether. In the end, the traditional grammatical analysis of lexical properties (see section 2) and the semantic analysis converged and helped to establish the boundaries of the two semantic fields of locative and dispositional verbs. Furthermore, the locative construction constitutes the source for a number of other constructions, e.g., the demonstratives. Since the dispositional verbs constitute marked alternatives in the locative construction, it is not surprising that only the locative verbs were grammaticalized further to occur as classifiers in the demonstrative.

## **5. Summary and conclusion**

This paper focussed on the coding of postural semantics in Goemai grammar. Although Goemai grammar – just like the grammars of some other languages – pays close attention to the coding of such information, grammatical descriptions often have difficulties describing this phenomenon in an adequate way. It was argued that this difficulty largely results from a lack of suitable semantic data. The paper then illustrated and compared techniques employed in the collection of semantic data (section 3), and showed possibilities of how the extensional data could be taken as the basis for further semantic analysis (section 4). Although the presented analysis was cast in a specific framework (i.e., assuming a distinction between semantics and pragmatics, working with a monosemy bias, and assuming the existence of constructions as independent form-meaning pairings), the need for extensional data – i.e., for information about the usage of an expression, its distribution and its interpretation in context – is independent of the framework.

The stimuli-based techniques generated a database that made it possible to conduct a comprehensive semantic analysis. This analysis, in turn, is of importance to the grammatical analysis. Compare the analysis sketched out in section 2 (based on elicited and naturally-occurring data) with that in section 4 (based on stimuli data). In addition to developing an understanding of the semantics of each individual expression (section 4.1), the semantic analysis discovered a number of aspects that were previously

overlooked: section 4.2 showed that existential statements are formed by means of all five locative verbs (not only by means of the existential predicate *d'e*); section 4.3 showed that Goemai has a system of nominal classification coded in a set of five classificatory verbs; and section 4.4 showed that, under certain conditions, verbs of a different form class can occur in the locative construction – but they do not constitute its typical fillers, they receive a marked interpretation and they do not undergo the same grammaticalization processes as locative verbs.

All these aspects are relevant to the grammar of locative relations in Goemai. It is unlikely, though, that a non-semantic approach would have noticed them. Ameka and Levinson (in prep.-b), e.g., argue that some of the findings presented in section 4 are of relevance to other languages that have similar postural-type verb systems. Unfortunately, for most languages, the information that is necessary to prove or disprove their claim is not available – just as it was not available in the preliminary analysis in section 2.

While the grammatical analysis thus benefits from an in-depth semantic analysis, such an analysis may pose problems of a more practical nature: it is difficult and time consuming, and may therefore not be feasible for all parts of the grammar. This is a valid problem (but see also McGregor, this volume). Nevertheless, it will be worthwhile to conduct such an analysis for core parts of the grammar – very likely, other parts of the grammar will benefit as well. For example, in the case of Goemai, the analysis was not only concerned with a restricted set of five locative verbs, but also with the TAM system, verb serialization, lexical aspect and argument structure, non-verbal equational constructions, and the deictic system (as postural-type elements play an important role in all these areas). That is, the semantic analysis of five locative verbs made it possible to describe a large part of Goemai grammar from a semantic perspective.

## **Notes**

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3. In addition to the grammars, there are some studies available that investigate postural-type expressions from a semantic or cognitive angle. However, most of them are concerned with the well-described Germanic languages (but see, e.g., Ameka and Levinson in prep.-a; Lang 1975; Merlan et al. 1997; Newman 2002). Some of them employ methods comparable to the ones discussed in this paper, and some explicitly discuss questions addressed in this paper.
4. The terms 'Figure' and 'Ground' are adopted from Talmy (1985).
5. In rendering the Goemai phonology, I use an adapted version of the practical orthography developed by Sirlinger (1937). The following symbols may not be self-explanatory: p', t', k', f', s', sh' = non-aspirated obstruents (symbols without the apostrophe represent their aspirated counterparts); b', d' = implosives; oe = [ə]; û = [ɯ].

The abbreviations used in the interlinear glosses are as follows:

ADVZ	adverbializer	NEG	negation
Cl	classifier	NOMZ	nominalizer
COM	comitative	OBL	obligative
COMP	complementizer	Pl, pl	plural
DEF	definite	Poss	possessive
DEM.PROX	proximal demonstrative	PRES	presentative
FOC	focus	PROGR	progressive
INTERJ	interjection	PUR	purpose
INTERR	interrogative	Sg, sg	singular
LOC	locative preposition	SUB	subordinator
LOC.ANAPH	locative anaphor	/	intonation break
m	masculine		

The source of an example sentence is given in square brackets, following the free translation.

6. The semantic analysis is based on two underlying assumptions. First, it is assumed that an expression is monosemous unless the data forces an interpretation in terms of polysemy. Second, it is assumed that there is a distinction between semantics and pragmatics. Although the semantic analysis is cast in this particular framework, many of the methodological questions are independent of the adopted framework.
7. A domain such as space lends itself easily to visual representation, as physical entities move or are located in physical space. But comparable methods can be employed for non-spatial phenomena as well. The field manuals of the Language and Cognition group at the MPI for Psycholinguistics contain detailed suggestions (Danziger 1993; Danziger and Hill 1993; Wilkins 1995; 1999; Levinson and Enfield 2001). See also Levinson (1992) and Pederson et al. (1998) for further discussions. See Berman and Slobin (1994), Chafe (1980), and Givón (1991) for the use of video films. See Eisenbeiss et al.

- (1994) for stimuli-based methods in the study of language acquisition. See also the introductory text book by Samarin (1967).
8. A comparable method can be used with stimuli other than pictures: with video stimuli and with physical objects. In the analysis of Goemai, videos were used to generate data on the expression of caused and spontaneously emerging locative relations. Physical objects were used to complement the data generated with pictures. Consultants usually found relations easier to imagine when they were illustrated with objects. In addition, the use of objects allowed for more flexibility, as they could be manipulated on the spot. However, this method was less systematic, in that different consultants could not be presented with exactly the same task. In the end, it proved difficult to keep track of the contextual factors.
  9. To be read as 5 out of 5 speakers responded spontaneously with t'o 'lie' as their first answer.
  10. Notice that, for some studies, it may be desirable to generate contrastive uses. For this study, however, the picture book setup prevented the occurrence of one important type of use (see section 3.2).
  11. Other setups are possible as well, e.g., the two players need not be screened off. Matching games are a common method in psychological research. In linguistics, they are especially used by members of the Language and Cognition group at the MPI for Psycholinguistics (see also footnote 7).
  12. These two uses are labeled 'presuppositional' and 'assertional' respectively in (Ameka and Levinson in prep.-a).
  13. See Turnbull (2001) for a discussion of similar variables in the context of pragmatic studies.
  14. I am following a construction grammar approach here (see, e.g., Goldberg 1995), assuming that constructions are form-meaning pairings that exist independent of the lexical items that instantiate them, i.e., independent of their lexical fillers.

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