

LOCATIONAL VERBS IN A LEXICON GRAMMAR OF ENGLISH

Hans Ulrich Boas

Pädagogische Hochschule Erfurt

Abstract: The claim of this paper - that the syntactic and semantic properties of lexical items can be captured almost completely independent of the theoretical biases of generative linguistic theories by making use of the descriptive devices developed in Gross' Lexicon Grammar approach - is substantiated by comparing the descriptions of French and English locational verbs given in Guillet/Leclère (1992) and Levin (1993).

Keywords: Lexicon Grammar, locational verbs, locative alternations, Harrisean transformations, generative linguistics.

In his paper „On the failure of generative grammar“ Gross (1979) criticized generative grammarians for satisfying themselves „with data of traditional grammar, only providing more details. In the best cases, they secure new constraints - but of a non-systematic nature, and on narrow families of examples. More generally, practically no GG specialist seems conscious of the fact that DEMONSTRATING THE EXISTENCE of phenomena is a prime necessity. Even if a clear difference of behavior has been observed in some sentences, the observation may constitute an artifact. Only comparison with a large number of cases can bring plausibility as to the presence of significant data.“ (863) In addition, he argued that „a concept of generality or of importance of facts is totally absent from GG, a linguistic example appears to be significant only if it allows one to choose between competing theories. In the last few years, the consequences of this view have become caricatural. Linguists, now well-trained in formalistic manipulations, know how to invent new theories at will, and don't restrain themselves.“ (866) Thus, if the extension of a proposed rule or theoretical construct is not verified by enumerating all instances to which it applies and by comparing their number with the number of counterinstances in the language, it is possible that the latter outnumber the former by far such that the generalization in question turns

out to be only a minor subregularity or to hold just in the other, opposite way, as it were.

It was obviously Chomsky's early position on exceptions to generalizations that favored an attitude which denies the necessity of enumerating all instances covered by a generalization:

There are, in fact, exceptions to many of the transformational rules given above, perhaps all. These will have to be separately listed, unless some more general formalization can be found to account for them as well. The discovery of such exceptions is in itself of little interest or importance (although the discovery of an alternative formulation in which exceptions disappear would be highly important). (Chomsky 1962: 244)

But neither comprehensive lists of exceptions to generalizations nor systematic lists documenting all instances of particular generalizations were set up by generative grammarians. Guided by the clear-cases principle, they either discovered alternative and more general formulations in which exceptions were generalized away or developed other strategies for getting rid of exceptions and counterinstances to their claims. (cf. Boas 1984: 64-65)

One of Gross' conclusions in (1979) was that „generative linguistics has grown into a field of abstract discussion of formal notations that undergo rapid and extensive variation with no sign of convergence; in its haste to generalize episodic observation, GG has left no room for the possibility of accumulating systematic data.“ (874)

It appears that in the meantime this deplorable situation has improved considerably, due to what might be called the long term effects of Chomsky's Lexicalist Hypothesis which, ironically enough was at least in part based on his ignoring the productivity and the lexical extension of important word formation processes in English (cf. Boas 1984: 89/90), but which engendered an increasing interest in lexicalist theories of morphology, the structure of lexical knowledge of native speakers and eventually the organization and representation of lexical items. Recently, there are even attempts that take to pieces the morphological components of lexicalist theories and try to reconstitute morphology as an integral part of syntax (cf. Lieber 1992).

Thus, as will be suggested below, the description of English locational verbs given in Levin (1993) is roughly comparable to the one presented in Guillet/Leclère

(1992) of locative transitive constructions in French within a lexicon-grammatical framework.

Levin's study implicitly meets three of the criteria set up in Gross (1994) for the construction of lexicon grammars: namely, that the linguistic unit of meaning is the elementary sentence, not the word; that verbs cannot be considered without their subjects and possible complements; and that internal syntactic properties of other constituents may depend on the main verb. (cf. 1994: 212-214)

Gross' requirement that „Verbs have to be described individually and not in terms of intensional classes“ (ibid.) is explicitly rejected by Levin.

In their classification of locative transitive constructions Guillet/Leclère (1992) start out from the observation that the formal property of selecting a specific locative complement or preposition is not sufficient to base a classification on. Syntactic experiments involving permutations, additions and deletions in the Harrisian sense have to be carried out, on the one hand in order to determine all the different types of syntactic contexts in which a certain verb may occur in the language and on the other hand, to detect differences between sentential structures which look alike.

Thus, after having established the difference between locative complements of verbs and locative complements of sentences Guillet/Leclère assume for locative transitive constructions as in (1)

(1) Max pose le livre sur la table (cf. Guillet/Leclère 1992:18)

that the locative status of *sur la table* can be identified by the kind of preposition and by its being able to be questioned by *où*. Its status as a locative argument is verified by forming *support sentences* as in (2). Since (1) implies (2b), but not

(2) $N_{\text{argument}} \text{ est } Loc \ N_{\text{lieu}}$
 (a) Max est sur la table.
 (b) Le livre est sur la table. (ibid)

(2a), they conclude that the direct object *le livre* in (1) is the argument of the locative *la table*. Similarly, the *support sentence* (3) assigns to *le jardin* in (4) and (5)

(3) Les abeilles sont dans le jardin.
 (4) Les abeilles grouillent dans le jardin.

(5) Le jardin grouille des abeilles. (cf. 27-28)

the locative role and to *les abeilles* the status of a locative argument. The general method of lexicon grammar to investigate relations between sentences, not between words (cf. Guillet/Leclère (1992: 100) leads to the postulation of a number of *support* elements. (sentences and verbs)

In the case of (6), for example, the relation between N_i and N_j can be made explicit

(6) Relation Standard/Croisé:

- (a) $N_O V N_i \text{ Loc } N_j = N_O V N_j \text{ de } N_i$
- (b) Max a chargé des caisses sur le camion.
- (c) Max a chargé le camion de caisses. (1992: 112)

by means of a *support sentence* as in (7) where the support verb can be *être* or *mettre*. As in English (6c) has a holistic meaning. It can be paraphrased by (8a). For (6b), on the other hand, there is no such paraphrase (cf. (8b)).

(7) $N_i (\text{être, Vmt}) \text{ Loc } N_j$

(8)

- (a) Max a rempli le camion de caisses.
- (b) *Max a rempli des caisses sur le camion. (ibid.)

Using static support sentences with *être* to establish locative argument pairs in sentences denoting dynamic locative processes introduces, of course, a temporal component into the description, i.e. localization can be tested before (AVant), during (PEndant) and after (APrès) the process such that the change in localization characterizes complements of verbs (1992: 22-24) in terms of such concepts as Source, State and Goal (cf. 31)

For the six locative construction types used by Guillet and Leclère in classifying verbs this yields a priori three subclasses for each construction, i.e. a total of

(9) $N_{\text{arg}} V N_{\text{lieu}}$	AV	Max quitte la chambre
	PE	Max traverse la chambre
	AP	La fumée envahit la pièce
10) $N_{\text{arg}} V P_{\text{rép}} N_{\text{lieu}}$	AV	Max sort de la chambre
	PE	Max passe par la chambre

	AP	Max entre dans la chambre
(11) N _{lieu} V N _{arg}	AV	La cheminée crache de la fumée
	PE	La gouttière canalise l'eau
	AP	L'éponge absorbe l'eau
	AV	Max enlève le verre de la table
(12) N _O V N _{arg} L _{oc} N _{lieu}	PE	Max traîne la caisse sur le sol
	AP	Max pose le verre sur la table
	AV	Le vase déborde d'eau
(13) N _{lieu} V de N _{arg}	PE	Le jardin grouille d'abeilles
	AP	(La table se couvre de livres)
	AV	Max débarrasse la table des livres
(14) N _O V N _{lieu} de N _{arg}	PE	(Max parcourt la page du doigt)
	AP	Max couvre la table de livres
		(cf. 1992: 31)

18 subclasses, not all of which are attested as elementary locative sentences. (compare (9)-(14))

Chapters I and II list and discuss in detail the prepositions in locative complements and the relations between the two complements in terms of support sentences and complex prepositional phrases.

In the first part of Chapter III, Harris' (1964) concept of transformational extension is adopted in making explicit the role of N_i in (10), which is called „une phrase de structure croisée“ (cf. (6c) above) by means of a

- (10) Max charge le camion de caisses vides.
- (11) Max charge le camion d'un chargement de caisses vides. (cf. 95)

verbal derivative (cf. (11)). The same extension works with (12), called „phrase de structure standard“. Compare (13) which is exactly parallel to (11).

- (12) Max charge des caisses vides sur le camion.
- (13) Max charge un chargement de caisses vides sur le camion. (ibid)

The second part of Chapter III studies in detail the motivation for various *support verbs*, namely *mettre* (= put), *faire* (= make), *donner* (= give), *lancer* (= throw),

donner Det apparence de (= give the appearance of) including privative ones such as *enlever*. (cf. 100-108)

Finally, the so-called *construction croisée* (see (6) above) is analyzed, in particular the distinguishing characteristics of the types of *de N₂* as in (14), (15) and (16).

- (14) Max charge le camion de caisses.
- (15) Max a tué le tigre d'une seule balle.
- (16) Max vide le camion des caisses. (cf. 110)

In Chapters IV, V, VI and VII Guillet/Leclère comment on further aspects of the principles of classification and subclassification. They discuss the specific syntactic and semantic properties (about 100) used in establishing the 16 main classes and their subdivisions. These yield about 2750 locative transitive readings or uses which are presented in 16 tables, each use accompanied by a sample sentence. Each table thus lists all verbs that can enter a particular syntactic-semantic construction frame and specifies for each verb further properties such as selectional restrictions on the nominal constituents of the construction frame, the prepositions it permits, the prefixes and suffixes it may take and its possible support verbs.

Levin (1993) classifies those English verbs whose members participate in diathesis alternations or show behavior that is closely related to that of other verbs found in particular alternations. (cf. Levin 1993: 18).

Her classification is based on about 80 properties ranging from transitivity alternations such as the Middle Alternation (cf. (17)) where the object of the transitive construction becomes the subject of the intransitive use to the Locative Preposition Drop Alternation (cf. (18)),

- (17) **Middle Alternation**
 - (a) The butcher cuts the meat.
 - (b) The meat cuts easily. (cf. 1993:26)
- (18) **Locative Preposition Drop Alternation:**
 - (a) Martha climbed up the mountain.
 - (b) Martha climbed the mountain. (cf. 43)

the Locatum Subject Alternation (cf. (19)) and the obligatoriness of passive (cf. (20))

(19) **Locatum Subject Alternation:**

- (a) Leslie staffed the store with employees.
- (b) The employees staffed the store. (cf. 119)

(20) **Obligatory Passive:**

- (a) It is rumored that he left town.
- (b) *They rumored that he left town. (cf. 107)

which affects only three items, namely *reincarnate*, *rumor*, *repute*. The total number of verb classes Levin arrives at is about 190.

The Locative Alternation itself is subdivided into five groups: the *Spray/Load* Alternation (50-51), the *Clear* Alternation (transitive) (51-53), the *Wipe* Alternation (53), the *Swarm* Alternation (53-55), and the *Clear* Alternation (intransitive).

Generally, the description of each alternation comprises a non-exhaustive list of alternating verbs, sample sentences exhibiting the alternation (cf. (21)), lists of non-alternating verbs, sample sentences illustrating the restriction (cf. (22), (23)) followed

(21) **Spray/Load Alternation:**

- (a) Jack sprayed paint on the wall (locative variant)
- (b) Jack sprayed the wall with paint. (*with* variant)

(22)

- (a) *June covered the blanket over the baby.
- (b) June covered the baby with a blanket.

(23)

- (a) Tamara poured water into the bowl.
- (b) *Tamara poured the bowl with water. (cf. 51)

by a comment section on special features of the alternation.

Given Levin's general assumption that „verbs in English and other languages fall into classes on the basis of shared components of meaning“ (11) and that „not all aspects of a verb's behaviour need to be listed in its lexical entry“ because „a

verb's behaviour arises from the interaction of its meaning and general principles of grammar", her verb classes start out from broad semantic headings such as *Verbs of Putting*, *Verbs of Removing*, *Verbs of Sending and Carrying* or *Verbs of Change of Possession*.

The *Verbs of Putting*, for example, are divided into ten subclasses (cf. (24))

(24) **Verbs of Putting**

1. *Put* Verbs: *arrange, place, put, stow*
2. Verbs of Putting in a Spatial Configuration: *dangle, hang, stand*
3. *Funnel* Verbs: *dump, hammer, push, squeeze, wipe*
4. Verbs of Putting with a Specified Direction: *drop, left, lower, raise*
5. *Pour* Verbs: *dribble, drip, spill*
6. *Coil* Verbs: *cure, roll, twist, wind*
7. *Spray/Load* Verbs: *brush, heap, pack, pile, smear, wrap*
8. *Fill* Verbs: *adorn, blanket, carpet, flood, litter, soak, tile*
9. *Butter* Verbs: *asphalt, brick, diaper, perfume, powder, sugar*
10. *Pocket* Verbs: *archive, bottle, cellar, kennel, trap*

If one wants to check the class membership of, e.g., *load* and its syntactic properties, the alphabetical index locates it in the *spray/load* class whose entry first gives bibliographical references, and then a list of class members, in this case 49 verbs. Their properties are documented as in (25)-(31) by a number of sample sentences from which the properties of individual verbs may be inferred.

(25)

- (a) Jessica loaded boxes onto/into/under the wagon.
- (b) Jessica sprayed paint onto/under/over the table.

(26) **Locative Alternation:**

- (a) = 21a above)
- (b) Jessica loaded boxes on the wagon.
Jessica loaded the wagon with boxes.

(27) **Causative Alternation** (based on locative variant; some verbs):

- (a) Jessica sprayed paint on the wall..
- (b) Paint sprayed on the wall.

(28) ***Causative Alternations** (based on *with* variant):

- (a) Jessica sprayed the wall with paint.
- (b) *The wall sprayed with paint.

(29) **Conative Alternation** (some verbs):

- (a) Jessica squirted /sprayed/splashed water at me.
- (b) *Jessica loaded/stuffed/crammed boxes at the truck.

(30) **Coreferential Interpretation of pronouns possible** (some verbs):
Jessica_i rubbed the lotion on her_i.

(31) **Zero-related Nominal** (some verbs):
a spray
a spray of paint/* a spray of the wall

In a comment section, *spray/load* verbs are characterized as relating to covering surfaces and putting things into containers and as exhibiting the „holistic/partitive“ effect. It is also mentioned that „the subset of these verbs that take a liquid or a set of small particles as the typical direct object in the locative variant show a slightly different set of properties from the remainder of these verbs. (cf. 1993: 118-119).

Let us now take a closer look at the verb *load* in order to find out whether there are additional properties that would have to be captured in a lexicon grammar approach. It should emphasize again that the lexicon-grammatical concept of 'syntactic property' includes transformational properties in the sense of Harris' notion of transformation as a none-oriented equivalence relation between surface sentence pairs (cf. Salkoff 1983: 288/89). Consequently most of Levins alternations correspond to such transformational properties.

Notice first that it is only into the *with* variant of (26b) that *full* can be inserted (cf. (32)), thereby confirming its holistic interpretation. There is furthermore a specific use

(32) **Full Insertion:**

- (a) Jessica loaded the wagon full with boxes.
- (b) *Jessica loaded boxes full on the wagon.

(33) **With-PP Variant Optional:**

- (a) Jessica loaded the gun (with bullets).

(b) Jessica loaded bullets into the gun.

(34) ***Causative Alternation:**

(a) *Boxes loaded on the wagon
 (b) *The wagon loaded with boxes.

of *load* (cf. (33)) where the locative variant requires the presence of both complements whereas the *with* variant can do without its PP. Obviously, *load* doesn't participate in the Causative Alternation (cf. (34)). On the other hand, it exhibits the „positive properties“ in (35)-(43).

(35) Jessica loaded her/herself down with boxes.

(36) a load of boxes vs. * a load of wagon

(37) **Compound based on zero-related Nominal:**

a wagon loaad of boxes vs. * a wall spray of paint

(38) **Prefixal Combination:**

John unloaded the boxes from the wagon.

(39) **If modified there is a related participial adjective:**

An almost/partially loaded/unloaded wagon is in the barn.

(40) **Middle Alternation:**

(a) Such boxes load easily (onto the wagon).
 (b) This wagon loads easily with big boxes.
 (c) These boxes won't load onto the wagon on-end.
 (d) *Heavy boxes loaded the truck.

(40) **There-Insertion with Passive:**

There was loaded onto the wagon an old car.

(41) **Support verb *be*:**

(a) A load of boxes was on the wagon.
 (b) A spray of paint was on the wall.

(42) **Support verb *have*:**

(a) The wagon had a load of boxes on it.
 (b) The wall has a spray of paint on it.

(43) **Transformational Extensions:**

- (a) They loaded a load of boxes on to the wagon.
- (b) They loaded the wagon with a load of boxes.

The number and types of properties show that there is more to the explicit description of verbs than their participation in a small number of alternation patterns. Contrastive studies suggest moreover not only that languages may differ as to which semantic classes of verbs undergo specific alternations, but also that one language may require a more fine-grained semantic classification than the other (Frense and Bennett 1996).

In conclusion, it should be emphasized that, though Levin's classification of English verbs has enlarged the explicit knowledge of syntactic and semantic properties of English verbs, the research methodology she advocates contradicts nevertheless the lexicon-grammatical principle of describing verbs and other lexical entries individually and exhaustively by experimental procedures. (cf., e.g., Salkoff 1983 and Cowart 1997). Without having first enumerated all the facts she assumes in the generative vein that „the behaviour of a verb, particularly with respect to the expression and the interpretation of its arguments, is to a large extent determined by its meaning.“ (1993: 1). Despite her awareness that „native speakers can make extremely subtle judgments concerning the occurrence of verbs with a range of possible combinations of arguments and adjuncts in various syntactic expressions“, (2) she proposes that „the ideal lexical entry for a word should minimize the information provided for that word“ (11) because a verb's syntactic behaviour can be predicted from the interaction of its meaning components and general principles of grammar.

However, this belief seems to be widely shared in generative linguistics. Thus, after having dismissed two proposals for predicting the completive sense of sentences like *Bill loaded the truck with books/?*some books/the books* Jackendoff (1990: 173) argues that "the proper account of the completive reading is that it involves a distributive location: the books completely occupy the relevant space in the interior of the truck. Thus *load*, *pack* and *stuff* in this frame are elaborations of *fill*: "cause to come to be in _d" " Similarly, Pinker (1989:79) proposes "the locative alternation can now be stated simply: it is a rule that takes a verb containing in its semantic structure the core "Xcauses Y to move into/onto Z," and converts it into a new verb whose semantic structure contains the core "Xcauses Z to change state by means of moving Y into/onto it." Basically, it is a gestalt shift: one can interpret *loading* as

moving a theme (e.g. hay) to a location (e.g. a wagon), but one can also interpret the same act in terms of changing the state of a theme (the wagon), in this case from empty to full, by means of moving something (the hay) into it."

It is difficult to see how all the specific syntactic-semantic properties of *load* listed above can be derived by Jackendoffs' or Pinkers' general rules. Another generative approach, however, seems to be on the right "lexicon-grammatical track": "What allows the alternation ... is the interaction of the verbal semantics with the semantic information from the complement itself." (Pustejovsky 1995:12)

REFERENCES

Boas, H. U. (1984). *Formal versus Explanatory Generalizations in General Transformational Grammar*. Niemeyer, Tübingen.

--- (1991). Linguistic Prerequisites for Machine Translation. In: *Computer und Sprache. Papiere des Workshops Universität Saarbrücken 23. - 25.11.1989.* (Innsbrucker Beiträge zur Kulturwissenschaft - Anglistische Reihe Band 3). (M. P. Line and J. Wallmannsberger (eds.)). Innsbruck.

Caroli, F. (1984). Les verbes transitifs à complément de lieu en allemand. In: *Linguisticae Investigationes 8*. 225-265.

Chomsky, N. (1962). A Transformational Approach to Syntax. In: *The Structure of Language*. (J.A. Fodor and J.J. Katz (eds.)(1964)). 211-245.

Collins Cobuild (1996). *Grammar Patterns 1: Verbs*. Harper Collins, London.

Cowart, W. (1997). *Experimental Syntax. Applying Objective Methods to Sentence Judgements*. SAGE Publications. London.

Davis, A. (1997). *Lexical Semantics and Linking in the Hierarchical Lexicon*. Unpublished Ph. D. dissertation. Stanford.

Fagan, S. M. (1992). *The Syntax and Semantics of Middle Constructions. A Study With Special Reference to German*. Cambridge University Press, Cambridge.

Frense, J. and P. Bennett (1996). Verb Alternations and Semantic Classes in English and German. In: *Language Sciences 18*. 305-317.

Goldberg, A. E. (1995). *Constructions. A Construction Grammar Approach to Argument Structure*. The University of Chicago Press. Chicago.

Gross, M. (1975). *Méthodes en syntaxe*. Hermann. Paris.

--- (1979). On the Failure of Generative Grammar. In: *Language 55*. 859-85.

--- (1988). Methods and Tactics in the Construction of a Lexicon-Grammar. In: *The Linguistic Society of Korea. Linguistics in the Morning Calm 2*. 177-197. Seoul.

--- (1994). Constructing Lexicon-Grammars. In: *Computational Approaches to the Lexicon*. (Atkins, B.T.S. and A. Zampolli (eds.)). 213-263. Clarendon Press, Oxford.

Guillet, A. and C. Leclère (1992). *La structure des phrases simples en français. Constructions Transitives Locatives*. Genève.

Harris, Z. S. (1964). The Elementary Transformations. In: (1981) *Papers on Syntax (Edited by Henry Hiz)*. 211-235. Dordrecht.

Jackendoff, R. (1990). *Semantic Structures*. MIT Press, Cambridge, Mass.

Koch, W. and I. Rosengren (1996). Locative Alternations in English and German: Different Lexicalisations of the Same Conceptual Structure. In: *Sprache und Pragmatik* 43. 1-79.

Levin, B. (1993). *English Verb Classes and Alternations. A Preliminary Investigation*. The University of Chicago Press, Chicago.

Lieber, R. (1992). *Deconstructing Morphology. Word Formation in Syntactic Theory*. The University of Chicago Press, Chicago.

Olsen, Susan (1994). Lokativalternation im Deutschen und Englischen. *Zeitschrift für Sprachwissenschaft* 13. 201-235.

Pinker, S. (1989). *Learnability and Cognition. The Acquisition of Argument Structure*. MIT Press, Cambridge, Mass.

Pustejovsky, J. (1995). *The Generative Lexicon*. MIT Press, Cambridge, Mass.

Salkoff, M. (1983). Bees are Swarming in the Garden: A Systematic Synchronic Study of Productivity. In: *Language* 59. 288-346.