LANGUAGE

JOURNAL OF THE LINGUISTIC SOCIETY OF AMERICA

VOLUME 59, NUMBER 2 JUNE 1983

PUBLISHED BY THE LINGUISTIC SOCIETY OF AMERICA
AT THE WAVERLY PRESS INC., BALTIMORE, MD., 21202

LINGUISTIC SOCIETY OF AMERICA

FOUNDED 1924 FOR THE ADVANCEMENT OF THE SCIENTIFIC STUDY OF LANGUAGE;
INCORPORATED 1940 IN THE DISTRICT OF COLUMBIA

LANGUAGE is published quarterly by the LINGUISTIC SOCIETY OF AMERICA, 428 East Preston Street, Baltimore, MD 21202. Second-class postage paid at Baltimore, MD, and at additional mailing offices.

Dues for personal memberships in the Society are $35.00 per calendar year. Library memberships are $50.00 per calendar year. Subscriptions are not sold without membership. Dues for student memberships are $15.00 per year, with proof of student status required. 75% of dues is for LANGUAGE and the *LSA Bulletin*.

MANUSCRIPTS for publication, exchange JOURNALS, and BOOKS for review should be sent to the Editor of LANGUAGE (William Bright, Dept. of Linguistics, University of California, Los Angeles, CA 90024). Manuscripts of articles (but not reviews) should be submitted in THREE copies; they will not be returned unless postage is provided by contributors. For instructions on manuscript STYLE, see the December *LSA Bulletin*.

REQUESTS FOR PERMISSION TO REPRINT from LSA publications should be addressed to the Secretary of the Society, and should include author's permission. For further details, write to the Secretariat, Linguistic Society of America, 3520 Prospect Street NW, Washington, DC 20007.

APPLICATIONS FOR MEMBERSHIP, library subscriptions, orders for current and back publications, change-of-address notices, etc., should be addressed to Membership Office, Linguistic Society of America, 428 East Preston St., Baltimore, MD 21202. Please allow six weeks advance notice for change of address.

ISSN: 0097–8507

KUNO, SUSUMU. 1971. The position of locatives in existential sentences. LI 2.333–78.
LIBERMAN, MARK. 1975. On conditioning the rule of SUBJ–AUX Inversion. NELS 5 (Cambridge, MA: Harvard University Linguistics Dept.), 77–91.
MCCAWLEY, JAMES D. 1971. Tense and time reference in English. Studies in linguistic semantics, ed. by Charles J. Fillmore & D. Terence Langendoen, 96–113. New York: Holt, Rinehart & Winston.
——. 1981a. An un-syntax. Current approaches to syntax (Syntax and semantics, 13), ed. by Edith Moravcsik & Jessica Wirth, 167–93. New York: Academic Press.
——. 1981b. Notes on the English present perfect. Australian Journal of Linguistics 1.81–90.
——. 1982. The non-existence of syntactic categories. In his Thirty million theories of grammar, 176–203. Chicago: University of Chicago Press.
MILSARK, GARY. 1972. Re: Double *-ing*. LI 3.542–9.
NATHAN, GEOFFREY. 1981. With the syntax of the situation being what it is, ... Paper read at LSA Annual Meeting, New York.
PULLUM, GEOFFREY K. 1974. Restating double *-ing*. Glossa 8.109–20.
——, and DEIRDRE WILSON. 1977. Autonomous syntax and the analysis of auxiliaries. Lg. 53.741–88.
RIEMSDIJK, HENK VAN. 1978. A case study in syntactic markedness. Dordrecht: Foris.
ROSS, JOHN ROBERT. 1972. Double *-ing*. LI 3.61–86.
RUWET, NICOLAS. 1978. Une construction absolue en français. Lingvisticae Investigationes 2.165–210. [Reprinted in his Grammaire des insultes et autres études, 94–146. Paris: Éditions du Seuil.]
SAKAKIBARA, HIROAKI. *With*-constructions in English. Studies in English Literature, 1982 English number, 79–95. Tokyo: English Literary Society of Japan.
STUMP, GREGORY. 1981. The formal semantics and pragmatics of free adjuncts and absolutes in English. Ohio State University dissertation.

[Received 22 June 1981;
revision received 16 March 1982;
accepted 28 April 1982.]

BEES ARE SWARMING IN THE GARDEN:
A SYSTEMATIC SYNCHRONIC STUDY OF PRODUCTIVITY

MORRIS SALKOFF

Laboratoire d'Automatique Documentaire et Linguistique, Paris

This is a systematic lexical study of a little-documented phenomenon, viz. the syntactic properties of the English verbs that can appear in sentence pairs such as *Bees are swarming in the garden* and *The garden is swarming with bees*. The result is more than a list of such verbs. Various phenomena have been uncovered related to a hitherto unnoticed phenomenon of sentence productivity: the verbs in these sentences can be replaced by others derived from them by metaphorical extension. These groups of verbs then form open classes, whose size at any given moment cannot be measured, and into which new verbs enter in a regular and productive way. Such new uses of existing sentence forms (not only of new word derivations) permit an explicit description of what is intuitively and loosely meant by productivity.*

The notion of productivity has been reserved until now for the coining of new words from the existing morphemic stock of the language, e.g. the creation of French *alunir* 'to land on the moon' (of spacecraft), from *lune* 'moon', on the pattern of *atterrir* 'to land on the earth' (of airplanes), from *terre* 'earth'. The productivity to which I shall refer here, however, does not involve the creation of new words, but rather the use of existing words in syntactic environments where they had not previously entered. This extension to new environments is controlled, of course, by the acceptability of the sentences so formed. The method I will use consists in a systematic search through the lexicon for the verbs that can enter into given sentence forms.

In the present study, pairs of sentences like the following will be investigated (L = 'locative'; T = 'transposed'):

(1) L: Bees are swarming in the garden.
= T: The garden is swarming with bees.

The notation to be used, based on that of Harris 1968, has been employed in Boons et al. 1976, where the same relation has been studied in French. The relation in ex. 1 can be schematized as follows:

(2) N_0 V PREP N_1 = N_1 V PREP′ N_0

P(REP) is here a locative preposition (*in, on, across, along, ...*), whereas P(REP)′ is usually *with*.

* It is a pleasure for me to acknowledge a debt of gratitude to Maurice Gross, without whose guidance and criticism this paper could not have reached its final form. In particular, it was he who brought to my attention the notion of productivity and showed me its importance for an understanding of the phenomenon investigated here. I am also grateful to an anonymous referee for valuable comments on some difficulties in §§7–8; his remarks allowed me to improve these sections.

I am indebted to William Bright for his comments both on the topic of acceptability and on an earlier draft of the paper, and to an anonymous referee for helpful remarks. I also wish to thank Peter Machonis (USA), Peter Freckleton (Australia), and Clive Purdue (UK) for their help with many examples.

The defining criterion of this phenomenon is the apparent transposition of the two noun classes associated with the verb—each appears as subject in one form, but as prepositional complement in the other. In what follows, I shall use Harris' notion of transformation: sentence pairs as in ex. 1 constitute a non-oriented relation, and the two members have a similar (though not identical) meaning. In Harris' theory, such a relation is considered to be a transformation. In generative grammar, the theoretical status of such pairs does not seem to have been settled yet. My study is meant to be independent of these different theoretical standpoints, as well as of the abstract properties of the relation between these sentences. However, in §8 I shall be led, by the weight of the data accumulated, to make the formal nature of this relation clearer by means of what Harris describes as equivalence relations between sentences.

The 'equals' sign is used, as in ex. 1, to mark the relation between a pair of L and T forms. This sign is to be interpreted as 'is related to', and not as the definition of a transformation.

Note that the transposition observed in ex. 1 is not possible for many verbs:

(3) Bees are flying in the garden.
*The garden is flying with bees.

Nor is this transposition possible for all verbs which, like *swarm*, refer to a grouping together of objects:

(4) The deer congregated in the glade.
*The glade congregated with deer.

Previous English grammars have not treated this phenomenon in detail, and the only systematic study of the construction that I know of is for French (Boons et al. 1976). Generative grammarians have studied it, notably in connection with Fillmore's theory of case (1968, 1977). Anderson (1971:387) remarks: 'Both Fillmore (1968) and Chomsky (1970) observe that while [1]T claims that the entire garden is full of bees, [1]L asserts only that some part of the garden has bees in it.' Chomsky (1972:174) suggests that such non-synonymy is 'rather typical, not exceptional.' Nilsen (1973:42, 163–4), in his study of the English instrumental case, notes that it can appear with *swarm, hang,* and *teem,* as well as with verbs of sound (*buzz, hum* etc.) This explanation in terms of cases has not been generally accepted as useful among linguists; and some are reluctant to term the relation between the L and T forms transformational, since the two forms differ in meaning.

I decided to proceed by studying this relation in its lexical extension, in order to determine just how productive it is. The purpose of the first part of this study is to give as systematic and complete a view as possible of the verbs which enter into this construction, as well as the detailed properties of these sentences. The results—a list of the verbs and a summary of the relevant properties—have been consigned to a table, which appears as Appendix D, below. A full description of the table is to be found in §5, below; until then, I shall refer to it occasionally as 'the data'.

Though it might seem at first blush that such a search would yield no more than a list of verbs, more complete than what is usually provided in transfor-

mational studies, the study in fact leads to more interesting results. Part of the sentences obtained do indeed consist of relatively fixed examples, containing verbs like *swarm*; but another portion contains verbs like *dance*, which can be replaced by closely related verbs:

(5) Enthusiasm danced in his eyes.
= His eyes danced with enthusiasm.

We can here substitute the related verbs *polka*, *waltz* etc., to obtain other acceptable sentence pairs. We shall see that verbs like *dance*, together with their semantic extensions *polka*, *waltz* etc., form open classes whose size cannot easily be measured or even guessed at (§6).

This productivity is a-priori unpredictable, and emerges only after the lexical search has been carried out. Note also that the productivity is controlled by the syntax: the verbs that can be added to a given class, such as *waltz* or *polka*, are chosen not only on the basis of their semantic proximity to *dance*, but also by their entering into acceptable sentences of type 1—just those into which *dance* can enter.

Let me add some remarks on method. Consider these sentences:

(6) a. Their kindness increased his embarrassment.
b. His embarrassment increased with their kindness.
c. *Their kindness increased in his embarrassment.

Here it might appear possible to include *increase* in the paradigm, if we accept 6a as an L form with P = ∅, and 6b as the related T form. But doing that raises the further question of how to distinguish 6b from a sentence obtained via what we can call the middle transformation. Relationships like the following are observed for verbs like *pile up*, *inflate*, and *load* (cf. §8):

(7) Max inflated the tube with {gas, increasing pressure}.
= (middle) The tube inflated with {gas, increasing pressure}.

Such a source is not available for deriving 6b:

(8) *Something increased his embarrassment with their kindness.
Cf. His embarrassment increased with their kindness.

However, the relationship between 6a–b is clearly that of a middle:

(9) Their kindness increased his embarrassment.
= (middle) His embarrassment increased.

Whatever may be the case, then, for 6, it is not the same as the one studied here (between L and T forms); thus *increase* does not appear in my paradigm.

Such problems make it difficult to decide whether or not a verb belongs to the paradigm. Hence, such decisions do not depend on a simple substitution into a frame, as in ex. 1, but require a careful examination of each verb (cf. §5.2).

In fact, a decision on the acceptability of the examples presented in the table was reached in a variety of independent ways. First, both literary sources and various dictionaries were consulted. Among the latter, I used in particular the Merriam-Webster 3rd (MW3) and the *OED*; among the former, modern American literature and current newspapers and journals furnished many examples.

Altogether, these sources yielded about one-third of the acceptable examples in the table. Remaining doubtful examples were submitted to the intuitions of three native English-speaking linguists (other than myself) in the Laboratoire d'Automatique Documentaire et Linguistique (L.A.D.L.)

So far as intuition is concerned, it has been the experience of linguists working on these problems in the L.A.D.L. (including my own) that intuition consistently UNDER-estimates the acceptability of examples. Thus an example given by an anonymous referee for this paper had initially been rejected by me: *The ballroom jostled with dukes*. Only the form *The ballroom was ajostle with dukes* had been listed as acceptable (cf. §2.1), and I had found an example of this latter type in a New York *Times* book review. Upon further examination, other examples of the same sort were detected, and changed to acceptable. I therefore expect that many of the 'minuses' (unacceptable) in my table may need to be changed to 'plus' (acceptable). However, some errors certainly remain, and some of the judgments reached can be criticized. At this point, the whole question of acceptability could be taken as the subject of sociolinguistic studies; but that is a matter with which I cannot concern myself at present.

1. THE LINGUISTIC FORMS. The properties of the L and T forms that have been considered in deciding on the acceptability of these sentences can be grouped as follows. In §1.1, a set of five semantic subclasses of nouns are used to describe the acceptable subclasses appearing in N_0 and N_1, as well as the syntactic and semantic properties of the relation. In §1.2, the classes of P appearing in the L form and the variants of *with* in the T form are discussed. All these properties must be considered in deciding whether a given verb represents only one usage, or more than one usage. Depending on the distribution of these properties among the sentences containing the verb, we see in §1.3 that some verbs indeed have two distinct uses. Finally, in §1.4, we see that some sequences of the type *be* + ADJ can appear in the verb position of the relation.

1.1. CONDITIONS ON THE RELATION AND THE NOUN CLASSES. In order to describe the distribution of nouns in the N_0 and N_1 positions, a group of five semantic subclasses of nouns can be used (cf. §5.1): N_{body} (parts of the body), N_{abs} (abstract), N_{anim} (animate, non-human), N_{conc} (concrete), and N_{hum} (human). The distribution of these subclasses with respect to the verbs appearing in the relation is obtained by examining their possibilities of occurrence in the L and T forms. We find that each verb takes a unique set of subclasses in these positions, together with some restrictions on possibility of occurrence.

Members of each subclass may occur as either N_0 or N_1, at least with certain verbs. Thus we find sentences with N_{conc} or N_{abs} in both positions:

(10) N_{conc}: Diamonds dazzled in the setting.
= The setting dazzled with diamonds.
N_{abs}: Difficulties bristle in the theory.
= The theory bristles with difficulties.

Other pairs of N_0 and N_1 are observed as follows:

(11) N_{abs}, N_{body}: Lust burned in her eyes.
= Her eyes burned with lust.
N_{abs}, N_{hum}: Excitement fluttered through her.
= She fluttered with excitement.
N_{anim}, N_{hum}: Vermin crawled over him.
= He was crawling with vermin.
N_{anim}, N_{conc}: Flies buzzed in the bottle.
= The bottle buzzed with flies.
N_{conc}, N_{body}: Drops of sweat dripped down his face.
= His face dripped with drops of sweat.

In addition, various restrictions are observed on the occurrence of certain subclasses in the L or T forms. Thus a countable N_{conc} in the prepositional phrase of the T form must be plural, but this is not true in the L form:

(12) A diamond dazzled in the setting.
*The setting dazzled with a diamond.[1]

If it is singular, N_{conc} must be a collective or a mass noun:

(13) Autumn foliage blazed in the forest.
= The forest blazed with autumn foliage.
Oil dripped down his back.
= His back dripped with oil.

Similarly, N_{anim} in the prepositional phrase of the T form must be plural or collective:

(14) Roaches crept in the wall.
= The wall crept with roaches.
Vermin crept in the wall.
= The wall crept with vermin.
A roach crept in the wall.
≠ *The wall crept with a roach.

The plural form of N_{abs} is not generally necessary in the T form:

(15) Emotion burned in him.
= He burned with emotion(s).

However, a few verbs like *ache, buzz, float,* and *reel* yield more readily acceptable forms if they contain a plural abstract noun:

(16) An hypothesis reeled through his head.
= His head reeled with hypotheses.
≠ ?His head reeled with an hypothesis.

A singular noun is possible if it is modified on the left (e.g. by an adjective) or on the right:

(17) A curious idea reeled through his head.
= His head reeled with a curious idea.

[1] A singular N_{conc} is possible here, if it is modified: *The setting dazzled with an extraordinarily brilliant diamond mounted so that* ... Cf. below for abstract nouns, and see also Boons 1974.

(18) An hypothesis about God reeled through his head.
= His head reeled with an hypothesis about God.

One group of verbs requires a plural subject in the L form, and hence in the T form. Examples are *swarm, teem, abound*:

(19) Fish abound in the lake.
= The lake abounds with fish.
*A fish abounds in the lake.
*The lake abounds with a fish.

If the subject is singular, then it may be collective:

(20) {Game, Foliage} abounds in the forest.
= The forest abounds in {game, foliage}.

Or it may be interpreted as having *kind of* or *type of* preceding it (generic interpretation):

(21) One (kind of) mistake abounds in the text.
= The text abounds with one (kind of) mistake.

The interpretation with *kind of* can be seen in a sentence like the following:

(22) {A mistake abounds in the text: / The text abounds with a mistake:} the author forgot to underline the formulas.

Abstract mass nouns as subjects for these verbs are discussed in §4.2.

With some verbs, N_{abs} can be subject only when preceded by *a bit of* or the like (cf. §4.2). An example is *dazzle*:

(23) A flash of humor dazzled in her eyes.
= Her eyes dazzled with a flash of humor.
*Humor dazzled in her eyes.

Note that this is not true for the semantically related verbs *sparkle* and *shine*, which require no such classifier:

(24) Humor {sparkled, shone} in her eyes.
= Her eyes {sparkled, shone} with humor.

1.2. THE PREPOSITIONS. The locative preposition which occurs most frequently in the L form is *in*, as in ex. 1. A small number of verbs can take any of several locative prepositions:

(25) Sweat dripped {off, along, down, across, on, over, ...} his face.
= His face dripped with sweat.

In the T form, the preposition is almost always *with*;[2] but some verbs can take a different preposition. In particular, the verbs *reek, stink, ...*, can take *of*:

[2] There are exceptions, e.g. *flare up* and *be short*. The first takes *into* and a rather dubious *with*:
Revolt flared up in the conquered nation.
= The conquered nation flared up {into, ?with} revolt.
Be short takes only *of* and *on* (cf. §5.3). The verbs *burst out* and *erupt* also take *into* and *with*:
Gay colors burst out over the field.
= The field burst out {with, into} gay colors.

(26) Garlic reeks in his breath.
= His breath reeks {with, of} garlic.

Some verbs take *in*:

(27) Joy swam in his heart.
= His heart swam {with, in} joy.
Fish abound in the lake.
= The lake abounds {with, in} fish.

That these other prepositions are indeed variants of *with* can be seen from the following analysis. Consider the two T forms *His heart swam with joy* and *His heart swam in joy*; here we cannot add *in delight* to the T form containing *with*:

(28) *His heart swam with joy in delight.

Hence the *in* phrase is not an independent prepositional group that can be added to the T form containing *with*. Thus the table lists such prepositions as *in* for *swim* and *of* for *reek* as variants of *with*.

However, for a verb like *smart*, which is listed in the table without any variants of *with*, the prepositions *under, from, over* and *at* seem to be such variants:

(29) The sudden realization of his situation smarted in his mind.
= He smarted {with, under} the realization of his situation.
The abrupt dismissal smarted in his mind.
= He smarted {with, from} the abrupt dismissal.
Their treatment of him smarted in his mind.
= He smarted {with, over} their treatment of him.
The candid criticism smarted in his mind.
= He smarted {with, at} the candid criticism.

However, each of these prepositions can co-occur with *with*, when the prepositional phrase is a sentence complement:

(30) He smarted with the insult under the sudden realization of his situation.
He smarted with the offense at their candid criticism of him.

Thus they have not been listed as variants of *with* in the data for *smart*.

Verbs like *resound, reverberate, echo, throb, twang,* and *beat* can also take the preposition *to* in the T form, but such forms are more constrained than those containing *with*. The latter can appear with an abstract noun:

(31) Wild music resounded in the hall.
= The hall resounded with wild music.

But the T form with *to* must have a classifier like *sound* (cf. §4.1):

(32) The sound of wild music resounded in the hall.
= The hall resounded to the sound of wild music.
*The hall resounded to wild music.

This restriction on *to* in the T form is duplicated in the L form containing *against*:

(33) The sound of wild music resounded against the wall.
= The wall resounded {with, to} the sound of wild music.
*Wild music resounded against the wall.

The sentence pairs in *against* and *to* are therefore related, as are the pairs containing *in* and *with*. The particular nature of this relation does not concern us here.

Other particular values of P are discussed in the following sections.

1.21. P = ∅. A group of verbs can take P = ∅ in the L form, as well as non-zero values:

(34) Resentment rankled {∅, in} him.
= He rankled with resentment.

Here both P = ∅ and P = *in* are possible. The problem of a derivation via the middle (as discussed above) does not arise; cf. *N_0 *rankled him with resentment*. Similarly for this sentence pair:

(35) Bubbles frothed {∅, on} his lips.
= His lips frothed with bubbles.

Note that the meaning of the L forms with P = ∅ and P = *on* is not the same: the former means that bubbles covered his lips, whereas the latter refers only to an activity of the bubbles in a certain place (*on his lips*). Both, however, are clearly related to the T form.

Another group of verbs can take P = ∅ or *with* in the T form:

(36) Sweat dripped {down, along, ...} his face.
= His face dripped with sweat.
= His face dripped sweat.

This is also possible for N_{abs} as subject:

(37) Sarcasm dripped from her voice.
= Her voice dripped with sarcasm.
= Her voice dripped sarcasm.

The T form without *with* is a different construction from the one containing it; i.e., it is not just a case of P = ∅ replacing P = *with*. We can see this, first, because another prepositional phrase can be added to the T form which does not have *with*:

(38) John's face dripped sweat all over his shirt.

Such a prepositional phrase cannot be added to the T form containing *with*:

(39) *John's face dripped with sweat all over his shirt.

Second, the two T forms differ in meaning. The one containing *with* characterizes the state of John's face, namely dripping with sweat. The one without *with* refers to a certain activity of John's face: that of making sweat drip somewhere.

For these reasons, the T forms without the preposition *with*, although related to those containing *with*, are nevertheless associated with a different construction from the paradigm under study. However, the value P = ∅ in the T form is of interest for further studies.

1.22. P = *into, out of*. The prepositions *into* and *out of* have been considered in a particular way, since some of their usages are not pertinent in the present framework. For example, they are both acceptable in the prepositional complement of almost every verb which appears where the complement is a locative preposition (P_{loc}) plus N;[3] e.g.,

(40) He {walked, hurried, ...} {into, out of} the house.

Now, some of the verbs in this study do indeed take the object P_{loc} N, and so occur with *into* and *out of*: *People {bustled, ran} {into, out of} the store*. Here, however, the T forms are related to

[3] Indeed, the very fact of appearing with *into* N and *out of* N may be a valid criterion for classifying these verbs as 'verbs of movement' (cf. Gross 1975); however, the point is not at issue here.

other instances of P_{loc}:

(41) Crowds bustled {through, down, ...} the streets.
= The streets bustled with crowds.
(42) Sweat ran {down, off, ...} his back.
= His back ran with sweat.

I have therefore not noted the appearance of *into* and *out of* systematically, when a verb (e.g. *bustle* and *run*) can take both of them. (An exceptional case, *flash*, is discussed in §5.3.) The use of *into* and *out of* has been taken into account in just two instances:

(i) The verb takes *into*, but not *out of*. There are four such verbs—*flow over*, *percolate*, *throng*, and *wash*:

(43) Fish flowed over into the barrel.
= The barrel flowed over with fish.

(ii) The verb takes both *out of* and *from*. In this case, *out of* seems to be a variant of *from*, as with *bleed*, *burst*, and *foam*:

(44) Frothy beer foamed {from, out of} the tap.
= The tap foamed with frothy beer.

That they are indeed variants may be seen from the fact that I found no verb taking *out of* which did not also take *from*. But several verbs take *from*, but not *out of*, such as *drip*, *echo*, and *radiate*:

(45) Romanticism drips {from, ?out of} this music.
= This music drips with romanticism.

1.23. P = *through*. For just a few verbs, *throughout* can be substituted for *through*:

(46) His voice {echoed, reverberated, rang, ...} {through, throughout} the hall.
= The hall {echoed, ...} with his voice.

For most verbs taking *through*, however, this substitution is not possible:

(47) Anger raged {through, *throughout} Max.
= Max raged with anger.
People bustled {through, *throughout} the streets.
= The streets bustled with people.

Hence only the occurrence of *through* has been noted in the data.

1.24. ADVERBIAL ADJUNCTS. Some verbs can take a second optional adverb in the L form; for many, this adverbial adjunct is *about* or *around*, e.g. with *buzz*, *swirl*, *echo*, and *slop*:

(48) Rumors are buzzing in town.
= The town is buzzing with rumors.
Rumors are buzzing {about, around} in town.
= The town is buzzing with rumors.
Leaves swirled in the forest.
= The forest was aswirl with leaves.
Leaves swirled {about, around} in the forest.

This property has been noted for these verbs in the data (cf. §5.1). Note also that *about* or *around* cannot be added for all values of the locative preposition in the L form; e.g., it can be added if P = *in* (as above) or *on*, but not if P = *through*:

(49) ?*Leaves swirled about through the forest.
?*Insects hopped about through the grass.

These cross-pairings of the preposition and the adverb have not been investigated.

In the same way, the adverbs *up* and *out* can appear in the L forms of some of the verbs:

(50) Water bubbled (up) from the fountain.
Anger blazed (up) in his eyes.

The investigation of these adverbial adjuncts to the L form would require a separate study; only the occurrence of *about* and *around* has been noted in the data.

1.3. MULTIPLE ENTRIES. Two frequently occurring cases of paired noun classes for certain verbs have been treated somewhat differently in the data.

1.31. For some verbs, the acceptable subclasses for N_0 and N_1 are paired in the following way: if N_0 is abstract, then $N_1 = N_{body}$, and if N_0 is animate, than N_1 is concrete. This is true for *swarm, creep,* and *flicker*:

(51) $N_0 = N_{abs}$, $N_1 = N_{body}$:
Ideas swarmed through his brain.
A feeling of fear crept along his skin.
Impatience flickered in her eyes.

(52) $N_0 = N_{anim}$, $N_1 = N_{conc}$:
Insects swarmed over the tree.
Termites crept in the walls.
Fireflies flickered across the meadow.

On the basis of this cross-pairing, it might seem desirable to separate these verbs into two usages each—one for each pairing. However, this particular pattern is regular for many of the verbs in the data; in such a situation, the two usages must be considered linked by a relation of metaphor, the precise nature of which is not clear at present. However, I have considered it unhelpful, in view of the probable existence of such a relation, to separate verbs like those above into two distinct usages.[4]

1.32. I have treated a similar group of verbs, e.g. *gush* somewhat differently. Sentences with concrete and abstract subjects for *gush* differ with respect to the adjectivalization relations that they accept. For this reason, I have assigned these sentences to two different verb entries. Indicating the two cases with subscripts, we have:

(53) Juice $gushed_1$ {through, in, down, along, from} the pipe.
= The pipe $gushed_1$ with juice.

(54) Sentimentality $gushed_2$ {through, from} him.
= He $gushed_2$ with sentimentality.

These two uses can be distinguished by more than the cross-pairing of the noun subclasses (like that discussed above). Comparing 53L with 54L, we see that $gush_1$ takes P = *in, down, along*; $gush_2$ does not. The derived adjective *gushy* (cf. §2.2) is related to the T forms with $gush_2$, but

---

[4] The data are actually more complex than appears from this brief description of a division between concrete uses (e.g. *Insects swarmed over the tree*) and abstract uses (e.g. *Ideas swarmed through his brain.*) Thus we find that the verb *reek* follows the cross-pairing between abstract and concrete subclasses of N_0 and N_1:

concrete: Garlic reeked on his breath.
= His breath reeked {with, of} garlic.

abstract: Suspense reeks through the novel.
= The novel reeks with suspense.

The semantically related verb *smell* behaves like *reek* in concrete environments; but in abstract environments, it lacks the L form:

concrete: Garlic smells on his breath.
= His breath smells {with, of} garlic.

abstract: *Treason smells in his acts.
Cf. His acts smell of treason.

Apparently the verb *smell* can be divided into two usages, whereas the semantically related verb *reek* need not be so divided.

It is because of such complexities that I have not separated these verbs into concrete and abstract entries, nor have I attempted to elucidate the nature of the relationship linking the two usages.

not to those with $gush_1$:

(55) He was gushy with sentimentality. (= 54T)
?The pipe was gushy with juice. (≠ 53T)

Differences like these have seemed to me a sufficient justification for separating a few verbs into two uses.

It is clear that the verbs discussed in §1.31 can also be separated into two (or more) uses, e.g. on the basis of differences in their nominalizations. However, I have made no such separation for those verbs, since studies of the relation between concrete and metaphoric (abstract) uses of them are not yet available.

Note that the verb *slop*, which is similar both syntactically and semantically to *gush*, nevertheless has no further differences in its adjectivalization relations between the cross-paired abstract and concrete uses:

(56) Soapy water slopped from the pail.
= The pail {slopped, was sloppy} with soapy water.
Sentimentality slops from that music.
= That music {slops, is sloppy} with sentimentality.

We see that the metaphorical relation between such cross-paired uses is lexically determined, and hence that a complete enumeration of the data is necessary.

1.4. FORMS IN *BE* + ADJ. During the investigation of these forms, I observed that certain adjectives can appear in sentences resembling the L and T forms:

(57) {Snow is, Gnats are} thick in the air.
= The air is thick with {snow, gnats}.
Responsibilities are heavy on his shoulders.
= His shoulders are heavy with responsibilities.

The criterion adopted for retaining these sentences as L and T forms is the difference observed when the prepositional phrase is omitted. With *be thick*, the L and T forms change their meaning entirely when P N_1 and *with* N_0 are omitted; with *be heavy*, the T form does not refer to the physical weight of the shoulders, as it does if *with responsibilities* is omitted.

Using this difference as a guideline allows me to include among the data adjectives like *lush* and *solid*. In studying the adjectives participating in this argument transposition, I have come up against the following difficulty (which is also encountered with the verbs of the paradigm, and is resolved in a different way; cf. §3). It is difficult to establish a relationship between the putative L, T forms, since one or the other of the forms is frequently missing. Thus we obtain data of the following type:

(58) big: ?Young are big in the deer.
The deer is big with young.
Soft drinks are big in the USA.
?The USA is big with soft drinks.
flush: ?Money is flush in {him, his pockets}.
He's flush with money.
rich: ?Gasoline is rich in the mixture.
The mixture is rich {with, in} gasoline.
?Humor is rich in the story.
The story is rich with humor.

?Grass is rich in the field.
The field is rich with grass.

These sentences show that *flush* and *rich* have no satisfactory locative forms; *big* has an unsatisfactory L form in the first and third pairs, precisely where the T form seems to belong to the paradigm (since the sentences *The deer is big* and *He is big* have entirely different meanings). Furthermore, in the sentences where *big* is acceptable, it seems to play an adverbial role:[5]

(59) Soft drinks are big in the USA.
Related to: Soft drinks go over {big, in a big way} in the USA.
He's big with his money.
Related to: He {acts, behaves} in a big fashion with his money.

Note that these sentences with adjectives can be improved if we replace *be* with some aspectual verb. Thus the L form with *be heavy*, above, is better with *lie*: *Responsibilities lie heavy on his shoulders*. In the same way, the *rich* sentences can be improved by using *grow*:

(60) Grass grows rich in the field.
= The field {is, grows} rich with grass.

Using aspectuals, however, extends this study considerably, and will not be undertaken here. For all these reasons, only a few of the *be* + ADJ forms have been included among the data, where there is no difficulty with the forms.

2. ADJECTIVALIZATION RELATIONS. The majority of the verbs in this study (about 75% of them) can be adjectivalized by a prefix or a suffix, most frequently in the T form:

(61) N_1 V with N_0 = N_1 is {a-V, V-a} with N_0

Here a-V is a word like *abuzz* or *aswarm*, and V-a contains a suffix like *-y* (*fizzy, bubbly*), *-ant* (*vibrant, radiant*), or one of a few others.

Some verbs can be adjectivalized in the L form by the prefix *a-*: *ablaze, abuzz, aglow, ...*, e.g. *Stars {blazed, were ablaze} in the sky*. This is also possible for a number of intransitive verbs not appearing in an L form:

(62) John slept.
= John was asleep.
John squatted on his heels.
= John was asquat on his heels.

The case of the prefix *a-* is discussed in §2.1, and that of the various suffixes in §2.2.

2.1. THE PREFIX *A-*. Many of the sequences a-V are not to be found in any current dictionary; e.g.,

(63) The tree is abud with green shoots.
The water is afizz with bubbles.
The room is aclatter with typewriters.
The grill is asplutter with oil.

[5] Such considerations have led me to include among the data only the form *The deer is big with young*, which seems clearly related to the T forms being studied.

This fact in itself can be interpreted as a sign of productivity. Indeed, that this prefixing by *a-* is still felt as a productive phenomenon can be seen in the rhetorical precaution sometimes taken when writing such forms. So long as these are felt as 'new', or unconsecrated by standard usage, they can be written a-V, with a hyphen between the prefix and the verb. Thus the *OED* (under A, prep1, §11) gives *ablaze*, but *a-wash* (the latter is now universally written *awash*). Similarly, Jespersen (1924:2, §14.15) writes: 'Some of these forms are nonce words', and then gives the following forms in citations from various authors: *a-buzz, a-squeak, a-dangle, a-dream, a-flame, a-glow, a-quake, a-quiver, astir, aswarm*. Only the last two are written without a hyphen in his text; today, all these forms are written without hyphens.

But the hyphen is still in use, even today, for forms felt to be new, as in the following sentence from an article on the possibility of American wines being accepted in France (*Newsweek*, Sept. 1, 1980, p. 42): 'The signs of acceptance are even a-bud in Burgundy ...'. Indeed, *abud* is not in any modern dictionary, so its usage has in fact not yet been recorded.

The question of the definition of words containing the prefix *a-* has been treated both by the dictionaries and by linguists The *OED* (under A prep1, §11) remarks:

> 'the word governed by *a* was originally a noun, e.g. *life, sleep, work, float, ...*, but it has been in modern times erroneously taken as a verb, and used as a model for forming such adverbial phrases from any verb, as in *a-wash, ablaze ...*'

This is not entirely correct, since the prefix *a-* cannot in fact be used with any verb, e.g. **ascintillate, *aresonate, *ateem, *avegetate* etc.

Jespersen improves this definition considerably (vol. 6, §7.51):

> 'Nowadays, such words may be formed practically from any intransitive verb which is monosyllabic or else disyllabic ending in unstressed *-le, -er,* or *-en,* provided the new word does not coincide with an already existing word (*abound, across, amount* etc.) Neither can they be formed from verbs beginning with a vowel (*ask, ooze* etc.).'

This definition correctly predicts *abud* and *afizz*, as well as the forms given in his examples: *atremble, aflicker, aglisten* etc. However, many disyllabic verbs ending in the way he prescribes nonetheless form impossible or doubtful adjectives when prefixed by *a-*: **ahappen, *ahasten, *afalter, *ahover, ?*astumble, *adoddle, *arankle*. Furthermore, many monosyllabic intransitive verbs cannot take this prefix: **arage, *alapse, *alaze, *apause, *asag, *ateem*. What is required here is a systematic study of all English verbs with respect to the possibility of prefixation with *a-*.

The choice of words prefixed by *a-* that are included in dictionaries is quite irregular, as can be seen both from the variable number of such forms to be found in each dictionary,[6] and from the following considerations. The form *asqueal* is in MW2, but not *asqueak*; yet clearly both the following sentences

[6] I have counted these forms as follows: 162 in MW2, 104 in MW3, and 139 in the *OED*, including the recent supplement. These words have been collected in the table given as Appendix C, below. The table lists only forms consisting of a verb plus the prefix *a-*; but of course many more forms exist consisting of a noun plus *a-* (*aback, abaft, abeam* etc.)

are acceptable: *The hall was {asqueal, asqueak} with frightened mice.* It also contains *ayelp,* which is in the *OED* with the citation *The kennel's ayelp.* The related words *ayip, ayowl, ayap, asnarl,* which are not in any dictionary, also exist:

(64) Hungry dogs are {yelping, yipping} in the kennel.
= The kennel's {ayelp, ayip} with hungry dogs.

As noted above in §2, some verbs can be adjectivalized with *a-* in the L form; the adjective form a-V of some such verbs then appears in both the L and T forms:

(65) Stars are {blazing, ablaze} in the sky.
= The sky is {blazing, ablaze} with stars.
Flies {buzzed, were abuzz} in the bottle.
= The bottle {buzzed, was abuzz} with flies.
Fireflies {glowed, were aglow} in the field.
= The field {glowed, was aglow} with fireflies.

Restrictions exist on the possibilities of adjectivalization of the verb; and these have been used, as was noted in §1.3, to separate some verbs into multiple entries. If we consider only the categories N_{anim}, N_{conc}, and N_{abs}, then the verb either can (or must) or cannot be adjectivalized in the L or T form, according to which of these subclasses appears:

(i) In the L form, two restrictions are observed. First, certain verbs can be adjectivalized only if $N_0 = N_{anim}$ or N_{conc}, but not if it $= N_{abs}$:

(66) $N_0 = N_{anim}, N_{conc}$: {Butterflies, Kerchiefs} {fluttered, were aflutter} in the field.
$= N_{abs}$: Excitement {fluttered, *was aflutter} in her voice.
(67) $N_0 = N_{conc}$: Rubies {gleamed, were agleam} in the box.
$= N_{abs}$: Desire {gleamed, *was agleam} in her eyes.

This is the basis for two entries each for these verbs.

Second, some verbs can be adjectivalized both for $N_0 = N_{anim}, N_{conc}$, and for $N_0 = N_{abs}$:

(68) $N_0 = N_{conc}$: Dead fish {floated, were afloat} on the river.
N_{abs}: Rumors {floated, were afloat} in town.
(69) $N_0 = N_{anim}$: Insects were astir in the fields.
$= N_{abs}$: Thoughts of revenge were astir in his brain.

Since the possibility of adjectivalizing the verb is independent of which noun subclasses appear, only one entry is given for such verbs.

(ii) In the T form, the adjectivalized verb is optional for one choice of subclasses, but required for another. Thus the verb *dance* is divided into two lexical entries. For $N_0 = N_{abs}$, and $N_1 = N_{body}$, we have:

(70) Visions of success danced {in, through} his head.
= His head {danced, was adance} with visions of success.

But for $N_0 = N_{anim}$ and $N_1 = N_{conc}$, only the adjectivalized form is possible:

(71) Fireflies danced {in, among} the flowers.
= The flowers were adance with fireflies.
*The flowers danced with fireflies.

This case will be discussed more fully in §3.

The case of *flow*—which also requires two lexical entries—is somewhat different, in that the T forms with *flow* and *aflow* are complementary with

respect to abstract and concrete N_0, N_1:

(72) N_0, N_1 = N_{abs}: A haunting melody flows through the slow movement.
= The slow movement {flows, ?*is aflow} with a haunting melody.

(73) N_0, N_1 = N_{conc}: Muddy water flows through the pipes.
= The pipes {*flow, are aflow} with muddy water.

Still another group of verbs can appear in the T form only when adjectivalized by *a-*, for all acceptable subclasses:

(74) N_0, N_1 = N_{conc}:
Holiday mail washed {over, into} the post-office.
= The post-office {*washed, was awash} with holiday mail.

(75) N_0 = N_{abs}, N_1 = N_{hum}:
A wave of despair washed over Max.
= Max {*washed, was awash} {with, in} waves of despair.

For these verbs, two separate entries are unnecessary since the possibility of adjectivalization is independent of the subclasses; cf. *float, stir* in (i) above.

2.2. ADJECTIVALIZING SUFFIXES. About a quarter of the verbs in the study can be adjectivalized by *-ant* (as in *abundant, radiant, ...*), by *-y* (as in *bubbly, bulgy, crawly, ...*), or by some more specific suffix.[7]

The suffix *-y* is largely predominant over *-ant*: about 5% of verbs take the latter,[8] whereas about a third of them take the suffix *-y*. We shall see below that about half of the resulting adjectives in *-y* are unrelated to the paradigm. Three verbs take special forms: *brim, brimful*; *come out/forth, forthcoming*; *shrill* (verb), *shrill* (adjective).

With few exceptions, all the suffixed adjectives appear only in the T form:

(76) Rocks bulged in the bag.
= The bag {bulged, was bulgy} with rocks.
*Rocks were bulgy in the bag.
Vermin crawl in the cushion.
= The cushion {crawls, is crawly} with vermin.
*Vermin are crawly in the cushion.

But the adjective *abundant* can appear in both the L and T forms:

(77) Food for birds {abounds, is abundant} in the marshes.
= The marshes {abound, are abundant} with food for birds.

A few verbs of sound (cf. §4.1) like *tinkle* and *jingle* are adjectivalized principally in the L form:

[7] The suffix *-ing* is not included in this study—although many of the verbs studied here, when affixed by *-ing*, may be considered adjectives (and are so listed in many dictionaries): *bustling, choking, flaming, glaring, teeming* etc. The problem is that we have no clear criterion to use in deciding whether a given *V-ing* form, in whatever syntactic position it appears, is an adjective or a participle: is *glaring* in *His eyes were glaring with fury* an adjective or not?

[8] Some of these are *abundant, coruscant, effervescent, palpitant, pulsant, radiant, vibrant.*

(78) Bells {tinkled, were tinkly} in the square.
= The square {tinkled, ?was tinkly} with the sound of bells.

Some of the suffixed adjectives are more constrained than those with the prefix *a-* from the same verb. Thus *twittery* does not appear with N_{conc}:

(79) Swallows twittered in the eaves.
= The eaves were {atwitter, *twittery} with swallows.

But it does appear with N_{hum}:

(80) The gossips were {atwitter, twittery} with speculation.

In the same way, *vibrant* appears only with N_{body}:

(81) His voice was vibrant with indignation.
*The corridor was vibrant with the sound of violins.

Bristly, however, appears with N_{conc}, but not with N_{abs}:

(82) Sharp hairs bristled along the stem.
= The stem was {abristle, bristly} with sharp hairs.
Difficulties bristle in the theory.
= The theory is {abristle, *bristly} with difficulties.

About half the adjectives containing *-y* do not appear in any L or T form (this has been noted in the data; cf. §5.1). Thus *flashy* does not appear with, either N_{abs} or N_{conc}, which are the two acceptable subclasses of N_0 for *flash*:

(83) Anger flashed over her face.
= Her face {flashed, *was flashy} with anger.
Lights flashed across the sky.
= The sky {flashed, *was flashy} with lights.

For the verbs with two distinct lexical entries in the data (*drip, flutter, gush, ...*; cf. §1.3), only one use can be adjectivalized. Thus, for *drip* and *flutter*, only the second entries accept the adjectives *drippy* and *fluttery*:

(84) His face {dripped$_1$, was adrip, ?was drippy} with sweat.
This music {drips$_2$, is adrip, is drippy} with sentimentality.
The stadium {fluttered$_1$, was aflutter, *was fluttery} with handkerchiefs.
Mary {fluttered$_2$, was aflutter, was fluttery} with excitement.

Two verbs appear in the T form only if adjectivalized:

(85) Joy radiated from her face.
= Her face {*radiated, was radiant} with joy.
Animals thronged in the great hall.
= The great hall {*thronged, was thronged} with animals.

These two verbs present a problem in that they have both transitive and intransitive uses (cf. §1.2). The unacceptable T form containing *radiated* yields an acceptable transitive use if the preposition *with* is omitted: *Her face radiated joy*. Again, *throng* has both a transitive and an intransitive L form: *Animals thronged {Ø, in} the hall*. However, the transitive form has no passive (**The hall was thronged by the animals*); so the T form above can be analysed not as a passive, but rather as containing an adjective form *thronged*.

Note that the verb *mass*, which is semantically related to *throng*, seems to enter into this paradigm:

(86) Angry students massed in the plaza.
= The plaza {*massed, was massed} with angry students.

These sentences are superficially similar to those for *throng* above. However, *mass* also has a transitive use with double object, in which the objects can be permuted, with a change in the preposition (cf. §8.1):

(87) News of the dean's resignation massed the students in the plaza.
(88) News of the dean's resignation massed the plaza with students.

The L form in 86 is derived in this case from 87 via the middle transformation, and the T form from 88 by the passive transformation.

3. MISSING FORMS. The adjectivalization relations discussed above can be used to characterize the schema of Figure 1, in which the appropriate pairings

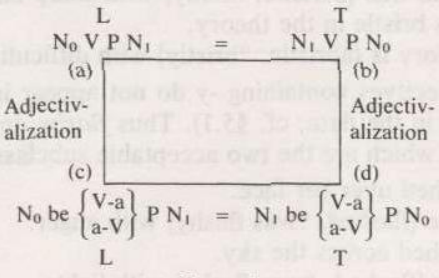


FIGURE 1

of related L, T forms are indicated. Points (a) and (b) of this schema are the related L,T sentences under study. Points (c) and (d) are similarly related, but each sentence has been adjectivalized: (c) is obtained from (a), and (d) from (b), by a relation of adjectivalization. Once (a) and (b) have been adjectivalized to yield (c) and (d), the latter are again related as L,T sentences.

This is clearly seen with the verb *blaze*, which yields a complete set of paired L,T sentences:

(89) a. Stars blazed in the sky.
b. The sky blazed with stars.
c. Stars were ablaze in the sky.
d. The sky was ablaze with stars.

For such a complete paradigm, the schema shows that there are two paths to get from 89a to 89d. The first path is:

(90) (a) Stars blazed in the sky.
= (b) The sky blazed with stars.
= (d) The sky was ablaze with stars.

The second path is (a), (c), (d).

This is the most general case; however, the data are not complete for all verbs in the paradigm. A problem then arises for such data: is the incomplete

set of sentences enough to ensure that they are indeed related L,T forms? The following criteria were used to decide whether or not to include a verb in the paradigm.

(i) All verbs for which no acceptable T sentence exists are excluded. Thus *squat* appears in acceptable sentences of types (a) and (c):

(91) The boys squatted on the floor.
= The boys were asquat on the floor.

But there are no corresponding T sentences:

(92) *The floor squatted with boys.
*The floor was asquat with boys.

This amounts to excluding all those locative verbs which are unrelated to the L,T paradigm.

(ii) Some transitive verbs can yield L and T forms via the middle transformation. Thus we find the following pair of sentences with *hang*:

(93) The boys hung lanterns {in, across, over, ...} the window.
The boys hung the window with lanterns.

The middle transformation acting on these sentences produces a secondary L,T pair:

(94) Lanterns hung {in, across, over, ...} the window.
The window hung with lanterns. (cf. Nilsen 1973:42)

This case will be discussed in §8; these verbs are not included in the paradigm.

(iii) For many verbs of the paradigm, only three of the four forms in the schema yield acceptable sentences, for particular noun subclass choices in N_0 and N_1. Two of these cases present no difficulty: an L,T pair exists in the three acceptable sentences, so that the verbs patently belong to the paradigm. Thus, if only (a), (b), and (d) yield acceptable sentences, the L,T pair (a)–(b) is present; these are just those verbs of the paradigm which cannot be adjectivalized in the L form. Similarly, if only (a)–(c) yield acceptable sentences, these are the verbs of the paradigm which cannot be adjectivalized in the T form.

A question arises, however, when the T form (b) is missing; the three acceptable sentences are the (a), (c), and (d) forms. This is true, for example, with *dance*, for $N_0 = N_{anim}$ and $N_1 = N_{conc}$:

(95) (a) Flies dance among the flowers.
= (c) Flies were adance among the flowers.
= (d) The flowers were adance with flies.
Cf. (b) *The flowers danced with flies.

Here there is no L,T pair (a)–(b); nevertheless, a path in the schema exists from the L form (a) to the adjectivalized T form (d), via (c). For this reason, I have included these cases among the data. Note that the problem does not arise for other choices of noun subclasses for these verbs; thus, for *dance*, if $N_0 = N_{abs}$ and $N_1 = N_{body}$, all four forms of the schema yield acceptable sentences. I have found no case of a verb which yields acceptable sentences in the (b)–(d) forms, but not in the (a) form.

(iv) In a few cases, an apparent (d) type sentence is entirely isolated; i.e., the sentences corresponding to the (a)–(c) forms are unacceptable, doubtful, or have a quite different meaning from the (d) form. Thus we find the following (d) type sentences:

(96) The cushion is alive with vermin.
The hotel is alive with little old ladies.

There seems to be no satisfactory L form associated with these apparent T forms. A putative source would be

(97) Vermin live in the cushion.
Little old ladies live in the hotel.

But these sentences do not imply that any vermin are actually present in the cushion, or that any ladies are present in the hotel. The apparent T forms, however, mean that the cushion is full of vermin, and the hotel full of ladies.

Note that, if the prepositional phrase is dropped in the T forms, we obtain *The cushion is alive* and *The hotel is alive*, which are quite different in meaning from the original sentences. This in turn indicates that the meaning 'be full of' that the verb *be alive* takes on in the original T sentences is closely linked with the presence of the prepositional *with* phrase. For this reason, I have accepted such verbs in the paradigm, in spite of the apparent absence of a satisfactory locative source. There are just four instances of this phenomenon among the data:

(98) be alive: The cushion is alive with vermin.
be big: The deer was big with young.
twitch$_1$: The poplars were atwitch with puffs of air.
twitter$_2$: The gossips are atwitter with speculation.

For some of these verbs, the problem of a missing locative form does not arise with other noun subclasses. Thus *twitter* yields three acceptable sentences corresponding to the (a), (c), and (d) forms, with the choice $N_0 = N_{anim}$, $N_1 = N_{conc}$:

(99) Swallows {twittered, were atwitter} in the eaves.
= The eaves were atwitter with swallows.

Twitch also yields (a), (b), and (d) forms with $N_0 = N_{abs}$, $N_1 = N_{body}$:

(100) Suppressed rage twitched in his cheeks.
= His cheeks {twitched, were atwitch} with suppressed rage.

These data are the basis for attributing two entries to *twitch* and *twitter*.

For other verbs, there seems to be no justification for sentences which resemble a T form to be included in the paradigm. In these sentences, the preposition *with* has a causative meaning also found in *out of* or *from*:

(101) Max {trembled, shook, shivered, ...} with fear.

I do not analyse these as T forms, since the L form is doubtful (?*Fear trembled in Max*); and dropping the prepositional phrase does not radically change the meaning of the sentence.

However, for another choice of noun subclasses, these same verbs are indeed among our data. If the L form has N_{conc} for subject, then *with* in the T form does not have the causative meaning:

(102) Buds {trembled, shook, shivered, ...} on the branches.
= The branches {trembled, ...} with buds.

But semantically similar verbs, e.g. *cower, quail,* and *cringe* (as in *Max cringed with fear*), are not included here. These sentences have the causative meaning mentioned above; and no other choice of noun subclasses seems to yield L,T pairs (as for *tremble, ...*), since these verbs cannot take N_{conc} as subject.

Finally, I have found only one verb, *blush,* for which only the (c) and (d) forms yield acceptable sentences:

(103) (c) It was late spring, and roses were ablush in the garden.
= (d) It was late spring, and the garden was ablush with roses.

For this choice of N_0 and N_1, both the (a) and (b) forms are bizarre: ?*Roses blushed in the garden*; ?*The garden blushed with roses*. However, for another choice of N_0 and N_1, Alexander Pope could write 'the sky yet blushing with departing light' (quoted in MW3). Today, this choice yields sentences like *The last rays of daylight still blushed in the sky*; *The sky still blushed with the last rays of daylight*. Such a literary use of *blush* seems to me so unusual (though not deviant) that I have not included it in the data.

4. CLASSIFIERS AND MASS NOUNS. Some of the constraints observed in the L,T forms which contain verbs referring to sounds can be understood in terms of a missing classifier noun, like *sound*. Irregularities in other forms can be explained in terms of nominal determiners like *mass, bit,* or *piece*.

4.1. CLASSIFIERS. In T forms, verbs that refer to the production of sounds yield doubtful sentences that can be improved by adding the classifier *sound*:

(104) Drums {beat, vibrated} in the night air.
≠ ?The night air {beat, vibrated} with drums.
= The night air {beat, vibrated} with the sound of drums.

Such verbs include *beat, burble, crackle, explode, hum, rattle,* and *resound*. We can now see that all words referring to the production of sound by animals enter into the present paradigm if the T form contains the classifier *sound*:

(105) The birds {tweeted, chirped, warbled, hooted, ...} in the forest.
≠ ?The forest {tweeted, ...} with birds.
= The forest {tweeted, ...} with the sound of birds.

This is the case for all verbs of this kind: *caw, cackle, moo, snarl, ululate* etc. A representative group of such verbs appears below as Appendix A.

Note the following two contexts for verbs of sound:

(a) In concrete contexts, we have

(106) The band {bellowed, blasted, chimed, roared, piped, ...} in the square.
= The square {bellowed, ...} with the sound of the band.

(b) Many of the verbs of sound can appear in abstract contexts:

(107) Passion {blares, fulminates, roars, shrieks, ...} {in, through} the text.
= The text {blares, ...} with passion.

The correctness of the assertion that any verb of general sound can appear in these sentence pairs was checked by going through Roget's Thesaurus and a few similar collections. I was thus able to draw up a list of about 120 such verbs, given below as Appendix B. (This list is not meant to be complete; the question of completeness will be taken up in §6.) All these verbs can appear in the L,T forms discussed above, with the exception of a few that take only N_{hum} as subject, e.g. *guffaw, hurrah, halloo, ...*:

(108) The joyous crowd hurrahed in the stadium.
≠ ?The stadium hurrahed with the sound of the joyous crowd.

The improvement in the T forms which is obtained by the insertion of the classifier *sound* can also be obtained in two other ways:

(i) Some words can be classified by the word *sound*; i.e., they can appear in sentences of the form *X is a sound*:

(109) {Gay laughter, Music, The clanging of metal, ...} is a sound.

If such a word appears as prepositional object, the T form is acceptable without the explicit mention of the word *sound*:[9]

(110) The hall vibrated with {exotic music, gay laughter, the clanging of metal}.

Note that the use of the classifier *sound* is only an approximation to the specification of the words

[9] The solution proposed here, that of testing a word in the context *X is a sound*, is an operational version of the one used in generative grammar—that of assigning the abstract feature [+sound] to a word. Those assigned this feature will be precisely the ones that can appear in the sentence *X is a sound*.

which will improve the T forms under discussion. In fact, many more words can appear here than just those which can be classified by *sound*. If some source of noise can be established in N_1, or some relation between N_1 and the occurrence of noise, then the T form is acceptable. Hence, we have:

(111) *The hall resounded with soldiers.
Cf. The hall resounded with armor-clad soldiers.

Soldiers in armor would indeed be likely to make noise. A more detailed description of such words would require a study of the semantics of words referring to sound.

(ii) If the prepositional object is an abstract noun (as above for verbs of sound in abstract contexts), the T form is acceptable:

(112) The night air {reverberated, vibrated, ...} with {merriment, enthusiasm, ...}

When adjectivalized by *a-*, a verb referring to sound production does not require the classifier *sound*:

(113) The hall squeaked with {*mice, the sound of mice}.
The hall was asqueak with mice.
The hall twanged with {*guitars, the sound of guitars}.
The hall was atwang with guitars.

This is also true for the verbs indicating animal sounds (those that can be prefixed by *a-*):

(114) The courtyard cackled with {*geese, the sound of geese}.
The courtyard was acackle with geese.

It may be possible to use these data on the occurrence of classifiers to explain why certain verbs seem to appear in the T form only as a-V adjectives. Consider these sentences:

(115) *The field swayed with poppies.
The field was asway with poppies.

If we compare these with those above containing the classifier *sound*, it seems that the sentence containing *swayed* is unacceptable only for lack of an appropriate classifier:

(116) The field swayed with the {undulation, waving, ...} of poppies.

In the same way, appropriate classifiers can be found for other verbs of this type:

(117) The pipes {*flowed, were aflow} with muddy water.
Cf. The pipes flowed with the {course, motion, ...} of muddy water.
(118) The stone wall {*sweated, was asweat} with steam.
Cf. The stone wall sweated with the {humidity, dampness, ...} of steam.

However, for some of these verbs, it is not clear what the classifier would be:

(119) The culture {*thrived, was athrive} with germs.
The culture thrived with the {?activity, ?presence, ...} of germs.

With a few verbs, only the adjective form is possible:

(120) Snow drifted across the road.
= The road was adrift with snow.
*The road drifted with snow.

Here the insertion of a classifier does not help: *road* is not a possible subject of *drift* in a T form, whatever the continuation of the sentence.[10]

We thus see that determining the acceptability of putative L,T forms sometimes depends on the choice of a quite specific classifier. Hence a simple extraction of verbs from a dictionary, in order to find those entering into this paradigm—independently of the noun classes and possible classifiers associated with these verbs—does not guarantee the completeness of the verb list so obtained.

4.2. MASS NOUNS. A group of verbs normally take for subject a mass noun, N_{mas}, or else a particular word group indicating one portion or occurrence of an N_{mas}. For concrete mass words like *snow, beer* etc., this group is {*bit, drop*} *of*:

(121) {Hot water, A drop of hot water} spluttered on the griddle.
= The griddle spluttered with (drops of) hot water.
{Snow, A bank of snow} drifted over the road.
= The road was adrift with (banks of) snow.

Some of the verbs that can be used in this way are *boil over, bubble, drift, drip, fizz, foam, leak, slop, spout,* and *stream.*

Some verbs take only N_{mas} for subject, or the classifier *mass* itself, e.g. *be heavy, reek, shimmer*:

(122) {Rain, ?Raindrops, A mass of raindrops} is heavy in the clouds.
= The clouds are heavy with {rain, ?raindrops, masses of raindrops}.
{Garlic, *A bit of garlic} reeked in his breath.
= His breath reeked with garlic.
{Heat, Humidity} shimmered over the marsh.
= The marsh shimmered with heat.

Another group of verbs takes for subject an abstract N_{mas}, like *energy, passion,* or *love,* or else a portion (or occurrence) of N_{mas}, as indicated by {*a wave, a pulse, ...*} *of*:

(123) {Energy, A wave of energy} surged through the line.
= The line surged with {energy, waves of energy}.
{Hatred, A wave of hatred} flared in his eyes.
{Despair, A wave of despair} washed over him.

Some of these verbs are *erupt, fire, flare, flush, gush, pulse, surge, thrill,* and *wash.*

The zeroing of an appropriate word like *bit, drop* before an abstract N_{mas} may account for a particular use of certain verbs like *abound* and *teem,* discussed in §1.1. These generally require a plural subject; if the subject is singular,

[10] It is indeed curious that *road* is not a possible subject of *drift* in these L,T forms, though *field* is an acceptable subject of *sway* (as above). Intuitively, the sentence beginning *The field swayed ...* seems to be as bizarre as the one beginning *The road drifted ...*; yet the former admits of an acceptable continuation, whereas the latter does not. This appears to be a problem in the semantics of the verbs *sway* and *drift* that is not amenable to syntactic analysis.

it is interpreted as *one kind of N*. However, these verbs can nevertheless appear with a singular abstract N_{mas}:

(124) The text abounds with evidence of deliberate fraud.
Under a microscope, a drop of water teems with life.
His account brims over with audacity.

These can best be understood as having a zeroed *bit, piece* etc., before N_{mas}:

(125) The text abounds with {pieces of, items of} evidence of deliberate fraud.
A drop of water teems with bits of life.
His account brims over with acts of audacity.

5. THE DATA. The number of verbs and adjectives which appear in the L,T forms under study is around 300 (ignoring the question of productivity for the moment). The pertinent data on these sentence forms are summarized in Appendix D, the tabular format of which is explained in §5.1. This is perhaps not the most accessible way of presenting these data, from the point of view of the reader, who must reconstruct the sentences that are only schematized in the table. However, an explicit listing of these sentences would require much more space, and might not be as useful as a table for abstracting common features.

Some of the problems encountered in this kind of systematic lexical study are presented in §5.2, where we will see that the methods required for collecting this type of data are by no means obvious. In §5.3, I present various idiosyncratic data on some of the verbs that could not be accommodated in the format adopted for the table.

5.1. THE TABLE. With regard to the L,T forms schematized above, the table lists various properties of N_0, N_1, and V. Each column represents one property, i.e. one sentence form, which is indicated in an abbreviated fashion at the top of the column. However, the table is organized so as to be read horizontally, one line per verb. Wherever a line and column meet, there occurs either a plus, indicating that the verb in that line has that property (i.e. enters into that sentence form), or a minus, indicating that it does not. Most of these properties have already been discussed in the preceding sections, and will be reviewed only briefly in what follows.

I have used the following rough semantic noun subclasses in the table, which I define by example:

(126) N_{body}: mind, brain, conscience, ...; heart, eyes, hand, ...; nerve, bone, ...
N_{abs}: enthusiasm, joy, ...; energy, rhythm, ...; evidence, life, ...
N_{anim}: microbe, fly, insect, animal, ...
N_{conc}: table, forest, window, ...
N_{hum}: Max, council, committee, ...; population, people, ...

I have not attempted to give these subclasses a formal definition; nonetheless, they are useful for constructing the sentences of the paradigm, and for indicating important differences among the sentence forms. For example, the subclasses

N_{conc} and N_{abs} are used to distinguish *flower, table,* and *lamp* vs. *anger, excitement,* and *rumor.* The subclass N_{anim} is needed to distinguish a few verbs whose subject is usually an animal or an insect—*buzz, purr, be rampant, be rife* etc.; such verbs can take a human subject only by metaphorical extension. Also, we saw in §1.3 how the concrete vs. abstract distinction can be used to separate some verbs into multiple entries.

To the left of the column labeled VERB are to be found the acceptable semantic subclasses of N_0 (of the types just described), as subject in the L form. The columns for N_{conc} and N_{abs} are further subdivided by a column marked 'plural': a plus in this column means that N_{conc} (as subject) must be plural; a minus means that it can be singular (cf. §1.1). The following columns indicate the acceptability of nouns of type N_{anim} and N_{hum}. Thus the verb *live* is marked as taking only N_{anim} and N_{hum} for subject: *The cushion is alive with vermin*; *The hotel is alive with little old ladies* (cf. §3).

To the right of the column VERB are to be found: (a) a group of properties of the L form; (b) the values of the preposition in the L form; (c) the acceptable subclasses of N_1; (d) a group of properties of the T form; and (e) some further properties of N_0 in the T form (since these may differ from its properties in the L form). I take up each heading in turn.

5.11. The column N_0 V contains a plus for those verbs which can omit P N in the L form; e.g. *The flowers bloomed in the park,* and also *The flowers bloomed.* These are principally verbs taking a concrete subject (cf. §1.3). For those verbs taking both N_{abs} and N_{conc} for subject, a plus in this column refers to the possibility of dropping P N for a concrete subject, e.g. *blaze*:

(127) The stars blazed in the sky; The stars blazed.
Anger blazed in his face; *but* *Anger blazed.

The second column refers to the L form itself, and contains mostly plusses. A minus here means that no convenient L source exists for the occurring T form (cf. §3); an example is the verb *live* cited above: *The cushion is alive with vermin* ≠ *Vermin live in the cushion.* The third column, which is headed N_0 be a-V P N_1, contains a plus for those verbs that can be adjectivalized in the L form by the prefix *a-* (cf. §2.1, end): *The stars were ablaze in the sky.*

The fourth column, labeled *about/around,* refers to the property of taking these adverbial adjuncts in the L form, in addition to P: the column contains a plus for verbs having this property (cf. §1.2, end).

5.12. The columns headed by PREP contain the most frequently occurring locative prepositions; of these, *in* is preponderant by far. The verbs *come out* and *pop out* are exceptional, in taking *of* in the L form:

(128) A curious idea popped out of Max.
= Max popped out with a curious idea.
The truth came out of Max.
= Max came out with the truth.

Rather than set up a separate column labeled *of* for these two verbs, I have noted this occurrence of *of* for *come out* and *pop out* in the column labeled *into.* (Cf. §1.2 for an explanation of how the data on the prepositions *into* and *out of* have been represented in the table, and the meaning of the value Ø for P.)

5.13. The subclasses of N_1 include N_{conc} and N_{abs}, as for N_0. The subclass N_{hum} has an associated subclass 'plural', to account for a few verbs like *buzz* that require either a plural N_{hum} in N_1, or

an aggregate of humans:

(129) A strange rumor buzzed {through, in} the town.
A strange rumor buzzed {among, through} the population.
*A strange rumor buzzed {in, through} Max.

The subclass N_{body} is needed for some verbs that cannot comfortably take N_{hum} in N_1: *Excitement blazed in {Max's face, ?Max}*. Note that *buzz*, which in general requires a plural N_1 (as above), can take a singular N_1 if it is N_{body}:

(130) A strange idea buzzed through Max's {head, mind}.
A curious sensation buzzed along Max's {spine, arm, leg, ...}

5.14. As in the L form, some verbs in the T form allow the prepositional phrase P N to be omitted:

(131) John's face beamed with delight; John's face beamed.
The bushes blossomed with roses; The bushes blossomed.

This is indicated by a plus in the column headed by N_1 V.[11]

The next column contains a plus if a T form exists for this verb; a minus means that, for some (or all) subclasses of N_0 and N_1, the verb appears in the T form only if adjectivalized with the prefix *a-* (cf. §2.1).

The third column contains a plus if the preposition *with* can be dropped in the T form (cf. §1.2), as in *His face was dripping with sweat*; *His face was dripping sweat*.

The next three columns, all covered by the heading ADJ, list the two types of possible adjectivalization: by the prefix *a-*, noted as N_1 be a-V P N_0 (§2.1), and by a suffix, noted as N_1 be V-a P N_0 (where V-a = V-*y*, V-*ant* etc.; §2.2). In the suffixal case, the column headed by *V-y/V-ant* merely indicates whether or not such an adjective actually exists. When the second column has a plus, then a plus in the third column means that the adjective appears in the T form, and a minus means that it does not.

5.15. The acceptable subclasses of N_0 in the T form may differ from those observed in the L form. In particular, the classifier *sound* may be needed (§4.1)—or a plural noun, where a singular noun is acceptable in the L form (§1.1). If both the columns headed 'sound' and 'plural' have a plus, then N_0 must be a concrete noun: *The floor vibrated {with, to} the sound of drums*.

5.16. The last column in the table, headed 'Other PREP', indicates the prepositions observed in the T form in addition to *with* (or in place of it, e.g. *burst out*). Thus *abound* takes both *with* and *in*: *The lake abounds {with, in} fish*.

5.2. THE EXPERIMENTAL PROCEDURE: PROBLEMS OF CLASSIFICATION. The collecting of the data presented here is not merely a simple question of consulting a list of English verbs, as it might seem. It is also a problem of the discovery of certain of these sentences, whose existence and acceptability is not immediately obvious.

Various problems are involved in the construction of the sentences of the paradigm under study. For example, at the outset, not all the possible syntactic relations between the sentence forms are evident. Thus, when testing the verb *swirl*, I considered these sentences:

(132) Leaves swirled {in, through} the forest.
= ?The forest swirled with leaves.

The T forms, as it stands here, is of doubtful acceptability. However, when the possibility of adjectivalization by *a-* occurred to me, it became clear that an alternative form was available for such dubious T forms: *The forest was*

[11] But not all values of N_0 allow P N_0 to be dropped. Thus, for *beam*, the phrase P N_{conc} cannot be dropped: *The sky beamed with lights*; but **The sky beamed*.

aswirl with leaves. With the clarification of the relationship between the adjectivalized verbs and the L,T pairs (§3), it became clear that *swirl* is indeed among the verbs of the paradigm.

Another problem is that many verbs which at first blush seem unacceptable in the paradigm, do in fact appear in it, in some metaphoric extension of an ordinary use. Once these metaphoric extensions are found, they can only be represented schematically, by means of the rough semantic classes defined in §5.1. Thus the verb *dance*, in its ordinary use, does not seem to enter into the paradigm:

(133) Couples danced {along, across, over, ...} the floor.
*The floor {danced, was adance} with couples.

Here, even adjectivalization with *a-* does not improve the acceptability. However, with a limited choice of abstract nouns, a metaphor results which yields acceptable forms (cf.§2.1):

(134) A vision of success danced {in, through} his head.
= His head {danced, was adance} with visions of success.

It now seems possible to schematize the proper usage of *dance* in this paradigm by the subclasses $N_0 = N_{abs}$ and $N_1 = N_{body}$. On further investigation, the T form in 134 is acceptable for various choices of $N_1 = N_{body}$: *His eyes danced with enthusiasm*; *His fingers danced with excitement*. Further, the T form in 133 becomes acceptable when *dance* is adjectivalized as *adance*, if we choose an animate noun for N_0, in the context of a metaphor on human dancing:

(135) Fireflies danced {among, over, ...} the flowers.
= The flowers were adance with fireflies.

Finally, the usage for *dance* can be schematized as $N_0 = N_{abs}$ or N_{anim}, and $N_1 = N_{body}$ or N_{conc}; and this is how it is listed in the table.

The following data could not be easily presented in the tabular form, and are discussed here.

(i) Some verbs taking the prepositions *in* and *through* (among others) can be adjectivalized in the L form with the prefix *a-*:

(136) Leaves swirled {in, through} the forest.
Leaves were aswirl in the forest.

This adjectivalization is not possible, however, if the preposition is *through*:

(137) *Leaves were aswirl through the forest.

Some of these verbs are *buzz, dance, gurgle, rustle, squeak, stir, swirl, tingle*, and *whir*.

(ii) Verbs taking $N_1 = N_{body}$ do not generally take $N_1 = N_{hum}$:

(138) Toys bulged in his pockets.
= His pockets bulged with toys.
*Toys bulged in Max.
*Max bulged with toys.

But a few of these verbs can take both $N_1 = N_{body}$ and $N_1 = N_{hum}$ in the T form only:

(139) Beer stank in his breath.
= {He, His breath} stank with beer.

These verbs are *beam, blaze, bubble, burst, drip, glow, reek, stink*.

5.3. NOTES ON INDIVIDUAL VERBS. Since it is difficult to present all the pertinent facts about these verbs in tabular form, I give here some data on various verbs that could not be easily fitted into the tables.

Bubble and *bubble over*: The exact relation between these is an open problem (cf. §8.2). The principal differences between them can be seen from the following pairs of sentences:

(140) Pixie malice bubbled in {his eyes, *Max}.
= {Max, His eyes} bubbled with pixie malice.
Enthusiasm bubbled over in {*his eyes, Max}.
= {Max, *His eyes} bubbled over with enthusiasm.

Both verbs take $N_0 = N_{abs}$; but *bubble* takes $N_1 = N_{body}$, and *bubble over* takes $N_1 = N_{hum}$. However, both verbs can take N_0, $N_1 = N_{conc}$:

(141) Hot soup bubbled in the pot.
= The pot bubbled with hot soup.
Cool water bubbled over {from, out of, ...} the fountain.
= The fountain bubbled over with cool water.

Bud: if the preposition is *over*, the subject must be plural:

(142) {Young shoots, *A young shoot} budded over the branch.

Three other verbs (plus *burgeon*, cf. below) which normally accept a singular subject also require a plural subject when P = *over*; they are *flutter*, *glow*, and *sprout*. Note that this is not true of many other verbs which can take a singular subject for P = *over*, e.g. *crawl*: *{A bug, Bugs} crawled over the cushion = The cushion crawled with bugs.*

Burgeon: This verb is identical to *bud* except that it cannot be adjectivalized by *a-*, as *bud* can: **aburgeon*.

Come out and *pop out*: These are the only verbs taking the preposition *of* (cf. §5.1), which seems to be a variant of *from*:

(143) The truth came out {of, from} Max.
= Max came out with the truth.
A curious idea popped out {of, from} Max.
= Max popped out with a curious idea.

Be dense: Note that the usage here is observed only in ordinary language, but not in mathematical usage:

(144) Underbrush is dense in the forest.
= The forest is dense with underbrush.
(145) This set is dense in the domain.
= ?The domain is dense with this set.

Drivel, drool: These may be synonymous verbs, since there is no difference between them here (they have identical entries), or in other sentences such as *He {driveled, drooled} on about his job.*

Echo: Curiously, the verb *re-echo* seems to occur in the paradigm only in company with *echo*:

(146) Their voices echoed and re-echoed down the hall.
= The hall echoed and re-echoed with their voices.
?The voices re-echoed down the hall.

Expand: The verbs *expand* and *swell*, which are semantically related, are both among the data—the former only in concrete contexts, and the latter only in abstract contexts:

(147) Gas expanded in the balloon.
= The balloon expanded with gas.
Pride swelled in his bosom.
= His bosom swelled with pride.

Cf. *smell* below, and the related verb *reek*.

Explode: The entry $N_0 = N_{hum}$ refers to an obligatorily plural subject in sentences like the following:

(148) ?Children were exploding from the house.
= The house was exploding with children.

The locative source is doubtful, but the T form is acceptable.

Fizz, fizzle: These two verbs are not identical, and the gross differences between them are indicated in the table. Thus only *fizz* can take $N_0 = N_{abs}$:

(149) Exhilaration {fizzed, *fizzled} through his hyperactive mind.
= His hyperactive mind fizzed with exhilaration.

Both verbs can take $N_0 = N_{conc}$, if the latter refers to gases:

(150) Bubbles {fizzed, fizzled} in the soda.
= The soda {fizzed, fizzled} with bubbles.

However, only *fizzle* can take an N_{conc} referring to liquids, and this cannot be indicated in the table:

(151) A drop of water {*fizzed, fizzled} on the hot stove.
= The hot stove fizzled with drops of water.

Flash: Takes both *into* and *out of* under conditions which indicate that these prepositions are not appearing in the same context as the one mentioned for *bustle* and *run* in §1.2 (under P = *into*). Thus, depending on the subclasses of N_0 and N_1, either *into* or *out of* is possible, but not both:

(152) Anger flashed {*into, out of} her eyes.
= Her eyes flashed with anger.
A curious idea flashed {into, *out of} her mind.
= Her mind flashed with a curious idea.

Note that *from* can be substituted for *out of* in the first sentence, and *across* for *into* in the second, without a substantive change in meaning.

Both *into* and *out of* can occur with *flash* in the following sentence, where N_0 and N_1 are concrete nouns: *Light flashed {into, out of} the room*. But note that the T form *The room flashed with light* seems to be related to the L form containing *across, in, along* etc.: *Light flashed {across, in, ...} the room*, rather than to the one above containing *into* or *out of*.

Flow over: The prepositions in the L form are *onto* and *into*. Since few verbs take *onto*, I have not included *onto* in the table, and have noted *on* instead.

Flower: There is an abstract use of this verb which I have not noted in the table:

(153) Classical references flower in his speeches.
= His speeches {?flower, are aflower, are flowery} with classical references.

However, this usage seems limited to such rhetorical statements. Note that the adjective *flowery* appears only here, and not in the concrete usage listed in the table.

Flush: The usage noted here is the intransitive one:

(154) Anger flushed through {Max, his face}.
= {Max, His face} flushed with anger.

There is also a transitive usage with double object that does not belong to the paradigm (cf. §8.1): *Someone flushed {water through the pipes, the pipes with water}*.

Note that the intransitive usage above cannot be related to the transitive one, since we do not have *{*Someone, Something*} *flushed anger through Max*.

Heave: The abstract usage ($N_0 = N_{abs}$) refers to quite specific expressions, like *ocean swell* and (*deep-felt*) *sigh*:

(155) A long swell heaved over the ocean.
= The ocean heaved with a long swell.
A sigh heaved through her bosom.
= Her bosom heaved with a sigh.

Jostle: In the L form, either *each other* or *about/around* is required:

(156) Scientists jostled {each other, about, ?Ø} in the room.
= The room {jostled, was ajostle} with scientists.

Light up: This verb has a transitive use which is complete (cf. §8.1), and hence does not appear in the data. The transitive incomplete use is the one which appears in the table:

(157) a. Stars lit up in the sky.
= The sky {lit up, was alight} with stars.
b. Joy lit up in his face.
= His face {lit up, was alight} with joy.

Sentence (a) has no transitive forms:

(158) *Something lit up stars in the sky.
*Something lit up the sky with stars.

Sentence (b) has just one transitive form:

(159) *Her praise lit up joy in his face.
Her praise lit up his face with joy.

Mist over: When the subject N_0 is N_{abs}, only $P = \emptyset$ is possible in the L form:

(160) Despair misted over {*across, $\emptyset$} his eyes.
= His eyes misted over with despair.

But if $N_0 = N_{conc}$, then P can take non-zero values:

(161) Humidity misted over across the windshield.
= The windshield misted over with humidity.

Pulse, pulsate: The principal difference between these two verbs is that *pulsate* takes only such $N_0 = N_{abs}$ as refer to a repetitive action:

(162) A weak vibration pulsated in the wall.
= The wall pulsated with a weak vibration.

But *pulse* can take concrete subjects as well:

(163) A warm liquid pulsed through the tube.
= The tube pulsed with a warm liquid.

Be rampant: This is one of the few verbs taking $N_0 = N_{anim}$, but not N_{hum}: {*French quail, *The Dutch*} *are rampant in Indonesia.*

Reel: This verb is listed only for an abstract use:

(164) Strange ideas reeled through his head.
= His head reeled with strange ideas.

Although this is probably to be derived from the concrete use of *reel,* the latter does not appear in our paradigm:

(165) Drunken dancers reeled across the floor.
*The floor reeled with drunken dancers.

Roll: Neither entry accounts for sentences like *That family is rolling in money*. This sentence is almost idiomatic, for only *money* or its synonyms can appear in it: *That family is rolling in* {*gold, dollars, ?estates, ?farmlands*}. For this reason, I have not included it in the data.

Run: The adjective *runny* has become specialized; it appears principally with *nose,* and is not in the present paradigm:

(166) Blood ran down his back.
= His back {ran, *was runny} with blood.

Seep: I have listed this verb as not taking the prefix *a-*. If this decision were changed, and *aseep* were considered acceptable, then *seep* should be divided into two entries. For N_0, $N_1 = N_{conc}$, *aseep* is acceptable in the T form; but for $N_0 = N_{abs}$, $N_1 = N_{hum}$, it is not:

(167) Water seeped from the cistern.
= The cistern {seeped, was aseep} with water.
Charm seeps from her.
= She {seeps, *is aseep} with charm.

Shine: Note that *with* $= \emptyset$ for the second entry ($N_0 = N_{abs}$), but not for the first entry ($N_0 = N_{conc}$):

(168) Her eyes shone with greed.
= Her eyes shone greed.
The sky shone with stars.
*The sky shone stars.

Be short: This is the only form expressing scarcity (in contrast with the number of verbs expressing great quantity—*abound, teem, crawl* etc.):

(169) Good meat is short in the shops.
= The shops are short of good meat.
?Ideas are short in the government.
= The government is short {of, on} ideas.

Semantically related words do not appear in the paradigm: *scarce, scanty, sparse* etc.

Shrill: The second entry has a rather doubtful L form:

(170) ?Bad temper shrilled in her voice.
= Her voice {shrilled, was shrill} with bad temper.

Slaver, slobber: The first verb appears in the data, but not the second, in spite of the semantic similarity. *Slobber* requires a human or animate subject in the L form; for these, there is no corresponding T form:

(171) Saliva slavered from his mouth.
= His mouth slavered with saliva.
{Max, The dog, *Saliva} slobbered over his food.

Sleet: In the L form, N_1 = *sky*; but in the T form, *sky* must be pronominalized, becoming *it*:

(172) Freezing red chemicals sleeted from a poisoned sky.
= {*The poisoned sky, It} was sleeting with freezing red chemicals.

Slop: For a comparison with *gush*, cf. §1.4, end.

Smell: Only the concrete use is represented in the table:

(173) Garlic smells on his breath.
= His breath smells {with, of} garlic.

There is an abstract T form, but no associated L form (cf. §1.3, fn. 4):

(174) *Treason smells in his actions.
Cf. His actions smell of treason.

Squeak: The adjective *squeaky* appears only in concrete contexts, where N_0, N_1 = N_{conc}:

(175) Rusty hinges squeaked on the door.
= The door {squeaked, was squeaky} with rusty hinges.

But if N_0 = N_{anim}, the adjective is no longer acceptable:

(176) Mice squeaked in the hall.
= The hall {squeaked, *was squeaky} with the sound of mice.

Stink: The L form of the second entry is doubtful:

(177) ?Wealth (fairly) stinks in this family.
= This family stinks with wealth.

Sweat: The L form of the second entry is doubtful:

(178) ?An oily liquid sweated {from, on, over} his face.
= His face {sweated, was asweat} with an oily liquid.

Be thick, thicken: The adjective *thick* is not the adjectivalization of *thicken*, as *aswarm* is of *swarm*. I analyse *be thick* as a separate entry, because it has more subjects in this paradigm than does *thicken*:

(179) The air was thick with snow.
*The air thickened with snow.
Defenders were thick on the ramparts.
*Defenders thickened on the ramparts.

Note that this is not true for *shrill*, whose adjectivalization is also *shrill*; e.g., *The grassy plain {shrilled, was shrill} with insects.*

Trickle: The L form can also take $N_0 = N_{abs}$, but then there is no corresponding T form (cf. §3):

(180) His thoughts trickled off the end of his pen (as he wrote).
*His pen was atrickle with his thoughts.
*His pen trickled with his thoughts.

Well: This verb can take the particle *up* only in the L form (cf. *buzz*):

(181) Tears {welled, welled up} in his eyes.
= His eyes {welled, *welled up} with tears.

This may account for the fact that *upwell* does not appear in the paradigm:

(182) Warm water upwelled from the lower ocean floor.
*The lower ocean floor upwelled with warm water.

Wiggle: The adjective *wiggly* appears only in a concrete context, with N_0, N_1 both $= N_{conc}$ (cf. *squeak* above):

(183) The page was {awiggle, wiggly} with wavy lines.
The can was {awiggle, *wiggly} with worms.

6. PRODUCTIVITY. We have already seen that the use of certain verbs in abstract contexts is related to some metaphor based on the concrete use of the same verbs. Thus, from the concrete use of *blaze* in 184, we obtain the less concrete use in 185:

(184) Hot coals blazed in the fireplace.
= The fireplace blazed with hot coals.
(185) Stars blazed in the sky.
= The sky blazed with stars.

A more abstract metaphor is:

(186) Anger blazed in his eyes.
= His eyes blazed with anger.

We shall now see that this is a productive process, and that such metaphors can be used to create open classes of verbs for L and T forms, starting from the more concrete uses of the verbs of the paradigm. Consider the verb *dance*, which appears in Appendix D with $N_0 = N_{anim}$:

(187) Fireflies danced among the flowers.
= The flowers were adance with fireflies.

This is already a metaphor on the normal use of *dance* with $N_0 = N_{hum}$. But *dance* also takes $N_0 = N_{abs}$, as a metaphoric extension of the subject:

(188) Enthusiasm danced in his eyes.
= His eyes danced with enthusiasm.

Now *dance* can be replaced here by *waltz, tango, polka, ..., skip, jig, romp, caper, curvet* etc., to yield acceptable sentences by the same process of metaphoric extension.[12] If we now vary the context in which 188 is embedded, the class of verbs is augmented considerably. Thus, in a context of ballet, all

[12] The acceptability of such sentences is not obvious, of course; and some of them can be understood only by comparison with the original sentence (188). Only when the latter is available can these substitutions be performed, and the resulting sentences tested for acceptability.

the following are acceptable:

(189) Enthusiasm did a {grand jeté, entrechat, balloné, ...} in his eyes.
= His eyes did a {grand jeté, ...} with enthusiasm.

These forms now suggest the following extension of 188:

(190) Enthusiasm did an Xd in his eyes.
= His eyes did an Xd with enthusiasm.

Here *Xd* is the name of any dance (or dance step): *mazurka, fandango, gigue, minuet, samba, mambo, ...* The substitution of any of these names for *Xd* in 190 yields a sentence that is acceptable in relation to a particular dance context.

But this in turn means that an estimation of the number of verbs of the type *do an Xd* is a task for encyclopedic research; all names of dances and dance steps, past and present, must be extracted from appropriate sources, in order to draw up a fairly complete list of *Xd*. Until such work is done, the size of the class of verbs *do an Xd* cannot even be guessed.[13]

We can now also see that the class of verbs *do an Xd* is open, and new members are created regularly. For example, it was only a few years ago that the following sentence became available: *His eyes did a frug with enthusiasm.* This was, of course, precisely when the dance was invented, and the new word *frug* was coined. Hence, although the class of verbs *do an Xd* is finite, it is also open; it will continue to increase in size, so long as people create new dance steps and coin names for them.

Another large class of verbs can be formed from words referring to an emission of light:

(191) The stars {flashed, glowed, glittered, ...} in the sky.
= The sky {flashed, ...} with stars.

The following extension of these sentences can be created by using the verb *emit* (*from*) as a support, much as *do* was used above with *dance*:

(192) Stars emitted Xl of $\{\emptyset, \text{ADJ}_{\text{col}}\}$ light in the sky.
= The sky emitted Xl of $\{\emptyset, \text{ADJ}_{\text{col}}\}$ light with stars.
Xl = a flash, a glow, a sparkle, ...; a halo, a nimbus, an aura, a sheen, a brightness, ...; rays, beams, fireworks, ...
ADJ_{col} = yellow, green, ...; amber, fawn, russet, ...; brick red, rust orange, canary yellow, ...

We see that *Xl* contains all the nominalizations of verbs of light emission (*glitter, glow, gleam, flash, ...*), all of which are in our paradigm. In this case, *emit Xl of light* is a paraphrase of these verbs: *emit a glow of light = glow*. But *Xl* also contains nouns which have no simple corresponding verb: *emit an aura of light* ≠ **to aura*, etc.

Each of the sentences containing *Xl of light* is multiplied by a large group of nearly identical sentences obtained by inserting any adjective of color before *light*:

(193) The stars emitted a halo of {blue, green, amber, ...} light in the sky.
= The sky emitted a halo of {blue, ...} light with stars.

[13] I am not suggesting that such an encyclopedic search is a proper task for linguists!

Now the class ADJ_{col} of names of colors is open, since new color words are occasionally created. Hence we have an uncountable number of acceptable sentences appearing in the paradigm.

Note that these sentences can be extended to include metaphors, as was done above with *dance*. Such metaphors are observed with many of the verbs of light emission:

(194) Greed {glowed, glittered, sparkled, ...} in her eyes.
= Her eyes {glowed, ...} with greed.

The verbal paraphrase similar to that used in 192 above can be substituted here for *glow, glitter* etc., to yield other acceptable sentences. The support verb is *give forth* (*from*):

(195) Greed gave forth Xl of $\{\emptyset, \text{ADJ}_{\text{col}}\}$ light from her eyes.
= Her eyes gave forth Xl of $\{\emptyset, \text{ADJ}_{\text{col}}\}$ light with greed.

A third class of verbs can be built on the example of the verbs of emission of sound, which appear in such sentences as

(196) The trumpets {resounded, rang, blared, ...} in the hall.
= The hall {resounded, ...} with trumpets.

On the model of *light,* I can now create a paraphrase of these verbs which yields expressions referring to the emission of sounds. These expressions can then be substituted for the verb in the sentences above, yielding other acceptable sentences:

(197) Trumpets made Xs of sound in the hall.
= The hall made Xs of sound with trumpets.
Xs = a din, a clangor, an uproar, a racket, a hue and cry, a hullaballoo, ...; a murmur, a burbling, a tremolo, ...

Just as for *light,* when *Xs* is a verbal nominalization, then *make Xs of sound* is a paraphrase of that verb: *to make a murmur of sound = to murmur.*

These paraphrases of verbs of sound yield acceptable sentences in the area of metaphors. The latter appear in sentences such as the following:

(198) Triumph rang in his voice.
= His voice rang with triumph.

Substituting the verbal paraphrase, we obtain

(199) Triumph made an Xs of sound in his voice.
= His voice made an Xs of sound with triumph.

The class *Xs* can be considered open, to the extent that various onomatopoeic expressions in the position *Xs* yield acceptable sentences:

(200) Violins made a {plinkety-plunk, oink-oink, scritch-scrotch, ...} of sound in the hall.
= The hall made a {plinkety-plunk, ...} of sound with violins.

Still other productive classes are represented in the data by only a few typical verbs. Thus, our table contains *hop* and *jump*:

(201) Little insects {hopped, hopped about} in the grass.
= The grass was hopping with little insects.

Merrymakers {jumped, jumped about} on the fairgrounds.
= The fairgrounds were jumping with merrymakers.

However, these two verbs represent a productive class containing, among others, *leap, bound, skip, spring, caper* etc. These can all appear in similar L,T forms, but have not been included in our data.

Similarly, the table contains *run*:

(202) Blood ran down his back.
= His back ran with blood.
Gold runs in the streets of Eldorado.
= The streets of Eldorado run with gold.

This is the representative of the productive class of verbs *race, trip, speed, gallop, scoot, trot,* and other verbs related to modes of running.

Note, however, that this process of metaphorical extension is not possible for every rough semantic class that can be extracted from the data. Thus there is a family of verbs which expresses the notion of great number, in which I find at least the following twelve verbs: *abound, brim over, burst, be dense, overflow, be populous, pullulate, be rampant, be rife, swarm, teem,* and *be thick*. However, I cannot imagine any procedure for extending this list using the method described above. There seems to be no verbal paraphrase available on which to base a productive list indicating great number.

Moreover, many verbs expressing the notion of great number cannot enter into the paradigm. Thus *be populous* is in the paradigm, but not *be numerous, be copious,* or *be plentiful*:

(203) Merrymakers were populous on the bridges.
= The bridges were populous with merrymakers.[14]
Merrymakers were numerous on the bridges.
*The bridges were numerous with merrymakers.
Mistakes are numerous in these texts.
*These texts are numerous with mistakes.

It must be concluded that the phenomenon of productivity is not predictable, and must be discovered in each case; i.e., it is as much a part of the data as the list of verbs itself.

The classes of verbal extension and paraphrases discussed here indicate the possibilities of creating new sentence forms, in a regular and productive manner, from the table of verbs of the paradigm. But two independent phenomena of productivity must be distinguished here. On the one hand, new words are created (e.g. names of dances) which then enter the paradigm in some verbal paraphrase; cf. the example of *do a frug*. On the other hand, some existing word may enter an observed sentence form in a novel way. This is the case with *waltz, polka* etc., which can replace *dance* in the sentences *Enthusiasm danced in his eyes = His eyes danced with enthusiasm*. This is a novel use of the words *waltz, polka* etc., but not a coining of new material.

[14] The T form of this sentence is to be found in Mark Twain's *The prince and the pauper*, Chap. 11; cf. a similar sentence cited in MW3, under *populous*.

7. PREVIOUS WORK. The question of the relationship that exists between the L and T forms cannot be adequately clarified by existing grammatical theories. Clearly, many of these forms are not close paraphrases of each other; the difference in meaning has already been pointed out by generative grammarians, in discussions of these sentences from the point of view of case theory.[15] If transformations are defined as meaning-preserving, as for example in some early theories of generative grammar, then the L and T forms are not in general transforms of each other. Of course, in more recent generative models, where abstract forms are the starting point of derivations, this meaning difference is not an impediment to relating the sentences. However, under the hypothesis that the meaning difference is to be treated by the transformational deletion of *part of* or *entire* (cf. fn. 15), difficult technical problems of recoverability arise.

[15] Chomsky 1972 and Fillmore 1968, 1977 have observed the difference in meaning between (a) and (b):

(a) Bees are swarming in the garden.
(b) The garden is swarming with bees.

Sentence (b) seems to indicate that the entire garden is full of bees, whereas (a) can mean that only part of the garden contains bees. That is, (a) may be considered a form reduced from either (a′) or (a″):

(a′) Bees are swarming in some part of the garden.
(a″) Bees are swarming in the entire garden.

But (b) seems to be related only to

(b′) The entire garden is swarming with bees.

However, the situation is actually more complex than these remarks suggest. If we vary the subclasses of the nouns and prepositions involved, we obtain a quite different result. Thus, if we use *splinters* and *hallway* in place of *bees* and *garden*, we have:

(c) Splinters are swarming in the hallway.
(d) The hallway is swarming with splinters.

Here both sentences mean that splinters fill the entire hallway, since splinters, unlike bees, cannot swarm in a small region (unless this is specifically stated). Similarly, if instead of *garden*, we choose a noun that has no definite physical extension, and so cannot easily be partitioned into separate regions, e.g. *the night air*, we obtain:

(e) Midges swarmed in the night air.
(f) The night air swarmed with midges.

Both sentences mean that the night air is filled with midges. In the same way, using an abstract noun removes the meaning difference observed between (a) and (b):

(g) Strange hypotheses swarmed in Max's head.
(h) Max's head swarmed with strange hypotheses.

Finally, if we change the preposition in the sentence containing *swarm*, the meaning difference disappears once more. Thus, for P = *over*:

(i) Bugs swarmed over the tree.
(j) The tree swarmed with bugs.

Note that we can re-introduce the meaning difference in question by changing *over* to *on*: thus *Bugs swarmed on the tree* might mean that some branches of the tree were swarming with bugs.

The question, then, of the nature and significance of the observable meaning difference between (a) and (b) surely cannot be settled without an examination of the data involved. I do not propose to do this here, but suggest only that the study of this meaning difference be carried out in a more systematic fashion than has been the case hitherto.

Harris' theory deals with two types of transformation: paraphrastic, or meaning-preserving; and incremental, where the meaning is not preserved because the transformation introduces some additional information-bearing elements (the increments). In view of the meaning difference observed between some of the L and T forms, these cannot be related by a single paraphrastic transformation, but rather by some incremental transformation. However, it is not clear what increments are to be the source of the meaning difference.

One possibility is the following: in the L and T forms, the increments may be the elements *part of* and *entire* (as introduced in fn. 15); and in the unacceptable T forms discussed in §4.1 (end) they may be the classifier nouns introduced to make these T forms acceptable. But if this is done, then two new questions arise: Why were just these elements chosen, and not any others? And what is the justification for deleting *part of* or *entire*, on the one hand, or the classifier noun, on the other hand, to produce the observed forms?

As to the first question, it suffices to observe that any elements similar to *part of* and *entire* can be used, so long as they account for the meaning difference. The particular choice can be considered as a representative of the class of possible elements. But the justification for the zeroing of *part of* and *entire* is more problematical. In generative grammar, such deletion raises quite difficult problems of recoverability; but in Harris' theory, such zeroing is of elements which he calls 'appropriate', and which, in a certain sense, are entirely ad-hoc. It should be emphasized that the ad-hoc character of these elements has nothing to do with his theory, but is rather an observable feature of natural language. Contraction and abbreviation are in fact observed in many specific contexts, but not at all in other quite similar contexts (cf. Gouet 1976).

Thus, in the compound noun *milkman*, the zeroing is of an 'appropriate' verb between *milk* and *man*, e.g. *deliver* or *sell*. This verb is considered by Harris to be appropriate in those contexts where *milkman* is used. Note that no such contraction is observed in a similar context like *The girl delivers milk*; thus we have no *milkgirl* (although *milkmaid* is possible in a different but related context).

However, no such appropriate elements seem to be available to justify reducing the L and T forms containing *part of* or *entire* (in fn. 15) to the observed forms. Consider the following derivation by zeroing of *entire*:

(204) The entire garden is swarming with bees.
= The garden is swarming with bees.

Nothing in the reduced form justifies the claim that *garden* stands for *entire garden*. Without some justification for this zeroing, the same reduction can be adduced as having applied to virtually any noun phrase, thus permitting us to derive instances of DET N from DET *entire* N:

(205) I read the entire book = I read the book.
I walked an entire mile = I walked a mile.

Thus there is no well-established way at present to explain the meaning difference between the L and T forms, or to derive the one from the other by an established transformational procedure.

8. EXTENSIONS. The data compiled here are far from complete, as was noted in connection with the observed productivity of sentence formation (§6). They do, however, suggest two directions for further study that will enable us to gather data on other schemata similar to these L and T forms: transitive verbs with double object (§8.1), and verbs with following particles (§8.2).

8.1. TRANSITIVE VERBS. It is striking that almost all the verbs in our data on the L and T forms are either intransitive (*foam, abound, teem, itch, ...*), or are transitive verbs with an intransitive use in the L form (*hum, flutter, pour, ...*) No purely transitive verb is found.

However, a similar paradigm exists for some transitive verbs with double object, in sentences of the form:

(206) N_0 V N_1 P N_2

For certain verbs appearing here, an object-reversal phenomenon is observed; N_1 and N_2 change places in the object, with a consequent change in the preposition, yielding

(207) N_0 V N_2 P′ N_1

Here P′ is usually *with*. Thus, for *pile up*, we have:

(208) a. Max piled up books on the desk.
b. Max piled up the desk with books.

If we now apply the middle transformation to each sentence, we obtain:

(209) a. Books piled up on the desk. = N_1 V P N_2
b. The desk piled up with books. = N_2 V P′ N_1

These resemble a pair of related L,T forms. The facts can be conveniently schematized as in Figure 2.

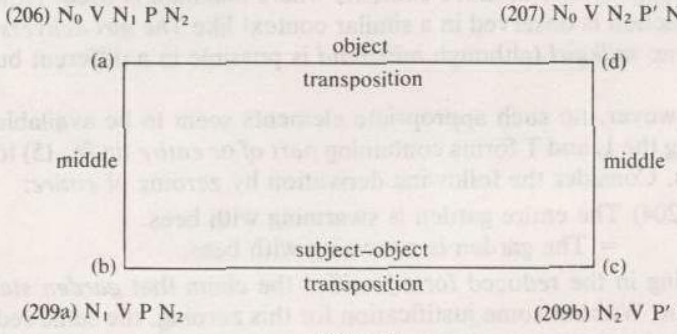


FIGURE 2.

In this and all the following diagrams, I shall use the framework of equivalence relations as proposed by Harris; hence, I work with unordered relations among sentences. However, it must be remembered that the choice between ordered and unordered relations among sentences is ultimately an empirical question; my diagrams constitute a contribution to the discussion of this problem.

The relationship labeled 'subject–object transposition' yields the L and T forms under study. If I now relabel the bottom line of the diagram with N_0 V P N_1 and N_1 V P' N_0, then the two cases in question here stand out more clearly. On the one hand, transitive verbs undergoing object transposition can yield secondary L,T forms, via the middle transformation which operates on each of the sentences containing the double object. On the other hand, pure intransitive verbs that undergo subject–object transposition, which are just those studied here, yield primary L,T forms that have no source via the middle.

The middle transformation is available for many verbs which take the argument transposition of 207; thus, for *light up*:

(210) Someone lit up the candles in the window.
= The candles lit up in the window.
Someone lit up the window with candles.
= The window {lit up, was alight} with candles.

A second use of *light up* is incomplete (§8.2), and this is the one which appears in our table (cf. §5.3).

Likewise, we have, for *snarl up*:

(211) Something snarled up seaweed in the net.
= Seaweed snarled up in the net.
Something snarled up the net with seaweed.
= The net snarled up with seaweed.

Similarly for *fluff up*, *clog up*, *cloud up* etc.

Other transitive verbs are *hang* (cf. §3), *fissure*, *flood*, *splash*, and *spray*:

(212) The open window flooded light over the table.
= Light flooded over the table.
The open window flooded the table with light.
= The table {?flooded, was aflood} {with, in} light.

Still other such transitive verbs do not undergo argument transposition in the object, yet both middle forms are acceptable. For *kindle*, the second form in *with* (resembling a T form) may contain the verb, or its adjectivalization *akindle*:

(213) Something kindled excitement in her eyes.
= Excitement kindled in her eyes.
*Something kindled her eyes with excitement.
Cf. Her eyes {kindled, were akindle} with excitement.

For other verbs, like *waft*, *tangle*, *splash*, *splatter*, *twirl* etc., this second form must contain the adjectivalized verb:

(214) Breezes wafted a perfume through the air.
= A perfume wafted through the air.
*Breezes wafted the air with perfume.
Cf. The air {*wafted, was awaft} with a perfume.[16]
The wind tangled locks of hair {over, across} her brow.
= Locks of hair tangled {over, across} her brow.

[16] Curiously, the word *awaft* is in MW2, but not in MW3, or in the *OED*.

*The wind tangled her brow with locks of hair.
Cf. Her brow {*tangled, was atangle} with locks of hair.

Some of these verbs undergo argument transposition, yet neither sentence accepts the middle transformation. Thus for *sprinkle,* we have:

(215) Max sprinkled classical citations in his thesis.
= Max sprinkled his thesis with classical citations.

But neither middle form is acceptable:

(216) *Classical citations sprinkled in his thesis.
*His thesis sprinkled with classical citations.[17]

Other verbs undergo the argument transposition, but only one of the two sentences accepts the middle transformation:

(217) Max spread a cloth {on, over} the table.
= Max spread the table with a cloth.
A cloth spread over the table.
*The table spread with a cloth.

All the verbs above which appear in incomplete paradigms raise again the question of how to deal with missing forms. The discussion of this problem below will clarify somewhat the relation between the transitive and intransitive verbs under study.

8.2. MISSING TRANSITIVE FORMS. Just as there are missing forms among the intransitive verbs (§3), so we find incomplete diagrams for transitive verbs. There are four possibilities for unattested forms, since object transposition and subject–object transposition can each give rise to two unacceptable forms.[18] Thus, for the verbs *echo* and *pearl,* we obtain transitive diagrams in which the object transposition relation is incomplete; see Figures 3 and 4. The sentences

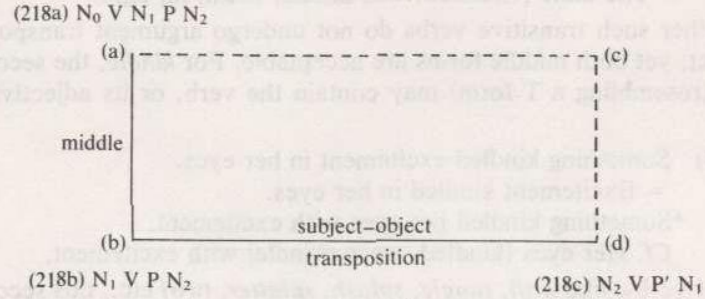


FIGURE 3.

[17] Except perhaps in a somewhat dubious sentence with the adjectivalized verb: ?*His thesis is asprinkle with classical citations.*

[18] However, it is not impossible that sentences may be found for some verbs which correspond to two points that are diagonally opposite in the diagram, e.g. the (a) and (c) forms: N_0 V N_1 P N_2; N_2 V *with* N_1. For these verbs, the other two forms, (b) and (d), give rise to unacceptable sentences. The existence of such pairs would emphasize the need to consider required products of transformations.

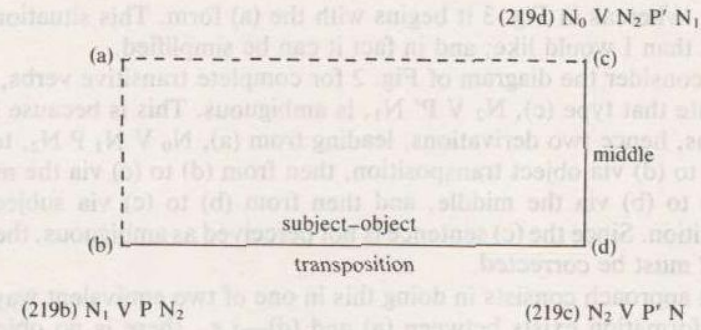


FIGURE 4.

corresponding to these figures are the following:

(218) a. The walls echoed the sound down the hall.
b. The sound echoed down the hall.
c. The hall echoed with sounds.
d. *The walls echoed the hall with sounds.

(219) a. *The muggy heat pearled sweat over his forehead.
b. Sweat pearled over his forehead.
c. His forehead pearled with sweat.
d. The muggy heat pearled his forehead with sweat.

Note that the derivation of (c) from (a) in Fig. 3, or the derivation of (b) from (d) in Fig. 4, corresponds to introducing an orientation in the diagram, so that the middle transformation applies before subject–object transposition.

If the subject–object transposition is incomplete, we obtain a diagram like Figure 5 for *spread*, corresponding to these sentences:

(220) a. Max spread a cloth over the table.
b. A cloth spread over the table.
c. *The table spread with a cloth.
d. Max spread the table with a cloth.

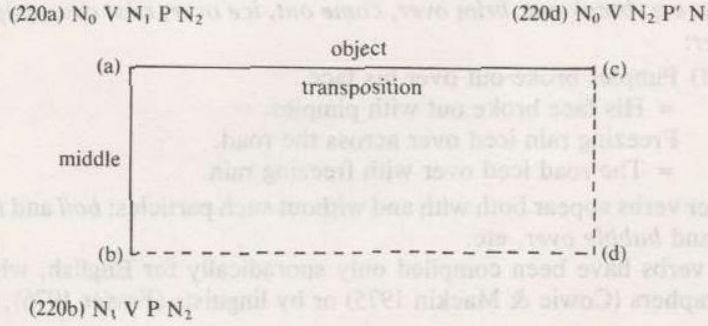


FIGURE 5.

In order to derive (b) from (d), Fig. 5 must be oriented so that object transposition applies before the middle. Moreover, the derivation begins with the

(d) form, whereas in Fig. 3 it begins with the (a) form. This situation is more complex than I would like; and in fact it can be simplified.

If we consider the diagram of Fig. 2 for complete transitive verbs, it seems to indicate that type (c), N_2 V P' N_1, is ambiguous. This is because there are two paths, hence two derivations, leading from (a), N_0 V N_1 P N_2, to (c): i.e. from (a) to (d) via object transposition, then from (d) to (c) via the middle; or from (a) to (b) via the middle, and then from (b) to (c) via subject–object transposition. Since the (c) sentence is not perceived as ambiguous, the diagram of Fig. 2 must be corrected.

A first approach consists in doing this in one of two equivalent ways: either no transformation exists between (a) and (d)—i.e., there is no object transposition transformation—or else no subject–object transposition transformation exists between (b) and (c). In either case, one of these two transformational links is removed, and only one path remains from (a) to (c). But then there is no way to derive all the sentences illustrated in the incomplete diagrams of Figs. 3–5: either the path from (a) to (d), or the one from (b) to (c), is missing. Hence some sentences cannot be related to each other via a transformation.

Thus this approach fails, and only one possibility remains: that object transposition and subject–object transposition are two facets of one and the same thing—let us say, the noun-phrase transposition transformation. In that case, Fig. 2 is commutative, and the two paths from (a) to (c) are equivalent, so that the derivation of (c) is unambiguous.

The two problems discussed here—that of the orientation of the incomplete Figs. 3–5, and that of the unitary nature of the two relations indicated in these diagrams—cannot be resolved without a more complete study both of the transitive verbs entering into these relations,[19] and of the choice between ordered and unordered relations among sentences.

As a temporary measure, I have included in the paradigm under study here those transitive verbs which appear in Figs. 3–4. These include *echo, pearl, kindle* etc., which appear in either the (a) or the (d) form, but not in both.

8.3. VERBS WITH PARTICLES. Some of the verbs in our data are followed by particles. e.g. *break out, brim over, come out, ice over, mist over, pop up*, and *spill over*:

(221) Pimples broke out over his face.
= His face broke out with pimples.
Freezing rain iced over across the road.
= The road iced over with freezing rain.

Still other verbs appear both with and without such particles: *boil* and *boil over, bubble* and *bubble over*, etc.

Such verbs have been compiled only sporadically for English, whether by lexicographers (Cowie & Mackin 1975) or by linguists (Fraser 1976); thus it is

[19] Fillmore 1968 mentions this relation for the verbs *smear* and *paint*; cf. also Fraser 1971 for a short discussion of this type of verb. To my knowledge, a more extended study of these verbs has not as yet been undertaken.

impossible to consult a relatively complete list of such constructions. The present study must thus be understood as a systematic search through the lexicon of simple verbs of English; no doubt many more verbs of the paradigm will be found when the study is extended to include a systematic search of combinations with particles.

Appendix A: Verbs of animal sound

The verbs followed by an asterisk are also verbs of sound, to be found in Appendix B.

baa	churr	honk	squall
bark	clack*	hoot*	squawk*
bay	clang*	howl*	squeak*
bell	cluck	hum*	squeal*
bellow*	coo	low	stridulate
blat	creak*	mew(l)	trumpet*
bleat	crick	meow	tweet
bray	croak	moo	twitter*
burr*	cronk	neigh	ululate
buzz*	croon	nicker	wail
cackle	crow	peep	warble*
caterwaul	cuckoo	pipe*	whicker
caw	drone	pule	whimper
chatter	fream	purr*	whine*
cheep	gabble	quack	whinny
chirp	gnar(l)	rattle*	whistle*
chirr	gobble	roar*	whoop*
chirrup	growl	scream*	woof
chitter	grunt	screech*	yap
chuck	hee-haw	sing*	yelp
chuckle*	hiss*	snarl	yip
		snort	yowl

Appendix B: Verbs of sound

The verbs followed by an asterisk are also verbs of animal sound, listed in Appendix A.

babble	chime	crinkle	hurrah
bang	chitter	cry	jangle
beat	chortle	din	jingle
beep	chuckle*	ding	knell
bellow*	chug	drum	knock
blare	clack*	fizz	moan
blast	clang*	fizzle	mumble
blubber	clank	flute	murmur
bluster	clap	fulminate	mutter
bombinate	clash	grate	patter
bong	clatter	groan	peal
boom	click	grumble	ping
brattle	clink	guffaw	pipe*
brawl	clip-clop	gurgle	plink
burr*	crack	halloo	plop
buzz*	crackle	hiss*	plunk
carol	crash	hoot*	pop
chant	creak*	howl*	purl
cheer	crepitate	hum*	purr*

quaver
rap
rasp
rattle*
ring
ripple
roar*
roll
rumble
rustle
screak
scream*
screech*
shake
shout
shriek
shrill
sibilate
sigh
simmer
sing*
sizzle
skirl
slam
snap
snore
snuffle
sough
spang
splash
squall
squawk*
squeak*
squeal*
susurrate
swish
tap
tattoo
thrum
thud
thump
thunder
tick
ting
tinkle
titter
toll
toot
tootle
trill
trumpet*
twang
twitter*
vroom
warble*
whang
wheeze
whine*
whir
whirl
whish
whisper
whistle*
whiz
whoop*
wind
yammer
yawp
yell
yodel
zing

Appendix C: Forms in a-V

The occurrence of forms in MW2, MW3, and the *OED* are registered in the respective columns.

	MW2	MW3	OED		MW2	MW3	OED		MW2	MW3	OED		MW2	MW3	OED
abask	+		+	adream	+	+	+	aglisten		+	+	apout			+
ablare		+		adrift	+	+	+	aglitter	+	+	+	aprick			+
ablaze	+	+	+	adrip	+	+	+	aglow	+	+	+	aprickle	+	+	
abloom	+	+	+	adroop	+	+	+	agrin	+	+	+	aprowl		+	
ablow	+	+	+	adrowse	+		+	agroan	+			apulse	+		
ablush	+	+	+	afaint	+	+	+	agrope	+			aquake		+	
aboil	+	+	+	afire	+	+	+	agush	+		+	aquiver	+	+	+
abrim	+	+	+	aflame	+	+	+	ahum	+		+	areek	+		+
abristle		+	+	aflare	+	+	+	ahunger			+	areel	+		
abrood		+		aflash			+	ahunt	+	+	+	aridge	+		+
abubble		(a)		aflaunt	+		+	ahush	+		+	aripple	+	+	+
aburst	+	+	+	aflicker	+	+	+	ajangle	+	+		aroar	+	+	+
abustle		+		afloat	+	+	+	ajingle		+		aroast	+		
abuzz	+	+	+	aflow	+	+	+	ajitter		+		arock	+		
achatter		+	+	aflower	+	+	+	ajog	+	+	+	arustle	+		
achill	+		+	aflush	+		+	ajostle			+	asearch	+		
achime	+		+	aflutter	+	+	+	akindle	+			aseethe	+	+	+
acloud	+			afoam	+	+	+	aleak	+	+	+	ashake	+	+	+
acock		+	+	afrown	+		+	alight	+	+	+	ashimmer	+	+	+
acrawl	+	+	+	agallop	+	+	+	alisp	+			ashine	+	+	+
acreak	+			agape	+	+	+	alist		+		ashiver	+	+	+
acream	+			agasp	+		+	alive	+	+	+	asimmer	+	+	+
acrow			+	agaze	+	+	+	alurk			+	askip	+		
adance	+	+	+	aglance			+	amutter	+		+	aslant	+	+	+
adangle	+	+	+	aglare	+	+	+	amuze	+			aslaver	+		
adawn	+		+	agleam	+	+	+	aperch	+			asleep	+	+	+
adazzle	+	+	+	aglimmer	+	+	+	apinch	+		+	aslop	+		
adoze	+		+	aglint	+	+	+	apoise	+	+		aslope	+	+	+

APPENDIX C: (*Continued*)

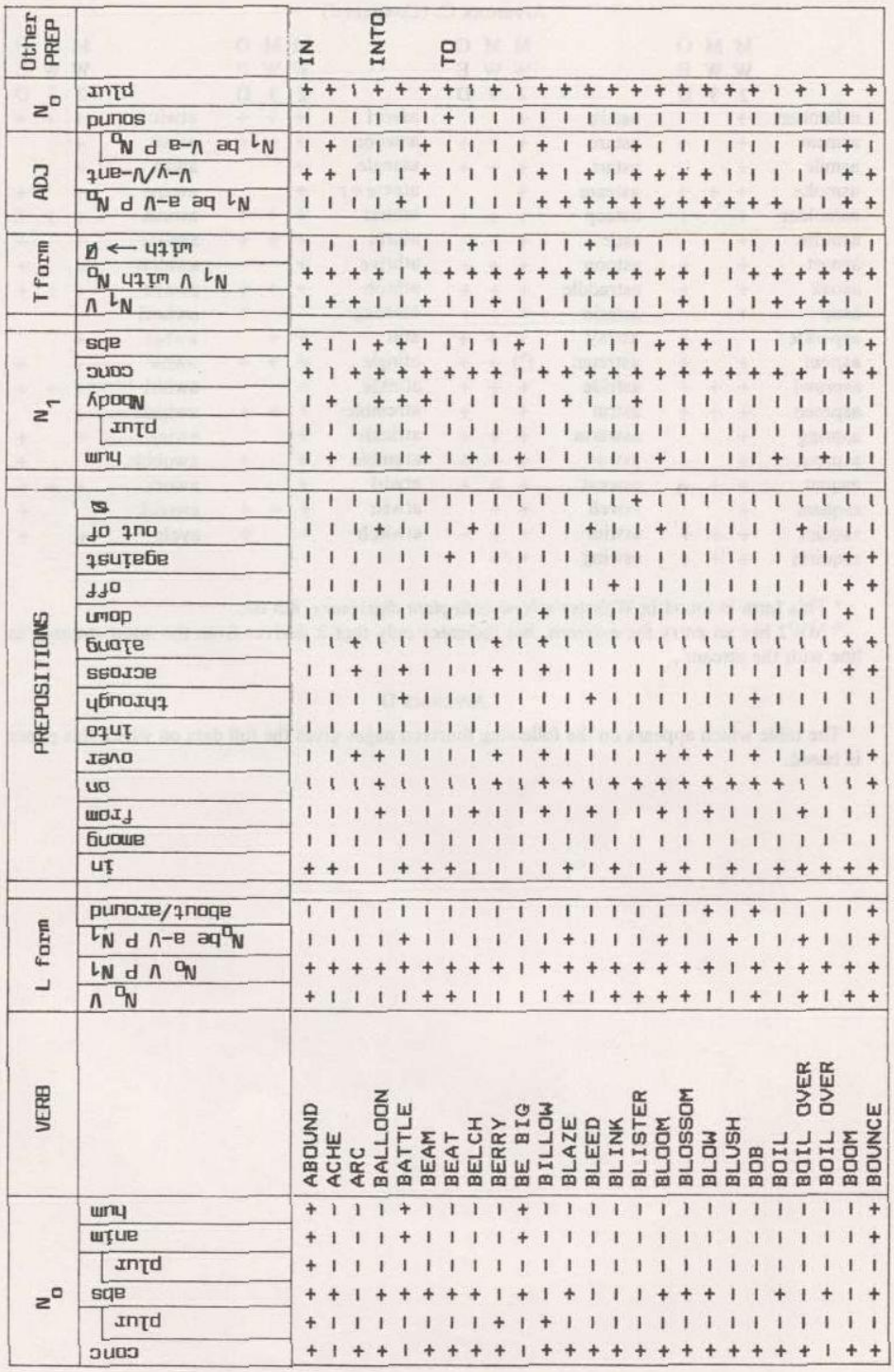
	MW2	MW3	OED		MW2	MW3	OED		MW2	MW3	OED		MW2	MW3	OED
aslumber	+			astalk	+			aswirl	+	+	+	atwitter	+	+	+
asmear	+		+	astare	+	+	+	aswoon	+	+	+	awaft	+		
asmile	+			astart	+	+	+	atangle	+			awag	+		
asmoke	+	+	+	asteam	+			ateete+r	+			awane	+		+
asmolder	+		+	asteep	+	+	+	athirst	+	+	+	awash	+	+	+
asniffle	+			astir	+	+	+	athrill	+	+	+	awaste	+		+
asnort	+		+	astoop	+	+	+	athrive	+			awatch	+		+
asoak	+		+	astraddle	+	+	+	athrob	+	+	+	awave	+	+	+
asop	+			astrain	+	+	+	athrong	+		+	awheel	+		
asparkle			+	astray	+	+	+	atilt	+	+		awhet	+		
aspout	+		+	astream	([b])	+	+	atingle	+	+	+	awhir	+		+
asprawl	+	+	+	astride	+	+	+	atinkle	+			awhirl	+	+	+
aspread	+	+	+	astrut	+		+	atremble	+	+	+	awiggle	+		
aspring	+			aswarm	+	+	+	atrickle	+			awink	+		+
asprout	+		+	asway	+	+	+	atumble	+		+	awobble			+
asquat	+	+	+	asweat	+	+	+	atwirl	+			awork	+	+	+
asqueal	+			aswell	+	+		atwist	+	+	+	awreck			+
asquint	+	+	+	aswim	+	+	+	atwitch	+		+	ayelp	+		+
asquirm	+	+	+	aswing	+	+									

[a] This form is found in Webster's *New collegiate dictionary*, 8th ed.

[b] MW2 has an entry for *astream*, but indicates only that it derives from the noun *stream*: 'in line with the stream'.

APPENDIX D

The table which appears on the following fourteen pages gives the full data on which this paper is based.


Other PREP
IN
INTO
TO
N0
plur
sound
ADJ
N1 be V-a P N0
V-y/V-ant
N1 be a-V P N0
Tform
Ø ← with
N1 V with N0
N1 V
N1
plur
Nbody
conc
abs
PREPOSITIONS
Ø
out of
against
off
down
along
across
through
into
over
on
from
among
in
L form
about/around
N0be a-V P N1
N0 V P N1
N0 V
VERB
ABOUND
ACHE
ARC
BALLOON
BATTLE
BEAM
BEAT
BELCH
BERRY
BE BIG
BILLOW
BLAZE
BLEED
BLINK
BLISTER
BLOOM
BLOSSOM
BLOW
BLUSH
BOB
BOIL
BOIL OVER
BOIL OVER
BOOM
BOUNCE
N0
hum
anim
plur
abs
plur
conc

N_o						VERB	L form				PREPOSITIONS														N_1					T form			ADJ			N_o		Other PREP
conc	plur	abs	plur	anim	hum		N_o V	N_o V P N_1	N_o be a-V P N_1	about/around	in	among	from	on	over	into	through	across	along	down	off	against	out of	Ø	hum	plur	Nbody	conc	abs	N_1 V	N_1 V with N_o	with → Ø	N_1 be a-V P N_o	V-y/V-ant	N_1 be V-a P N_o	sound	plur	
–	–	+	–	–	–	BOUND	–	+	–	–	+	–	–	–	–	–	+	–	–	–	–	–	–	–	–	–	+	–	+	–	+	–	–	–	–	–	–	
+	+	–	–	–	–	BREAK OUT	+	+	–	–	–	–	–	+	+	–	–	–	–	–	–	–	–	–	–	–	+	–	–	+	+	–	–	–	–	–	+	IN
–	–	+	–	–	–	BREATHE	–	+	–	–	–	–	+	–	–	–	+	–	–	–	–	–	–	–	–	–	–	–	+	–	+	+	–	–	–	–	–	
+	–	+	–	–	–	BRIGHTEN	+	+	–	–	+	–	–	+	–	–	–	–	–	–	–	–	–	+	–	–	+	+	+	+	+	–	–	+	+	–	+	
+	+	+	+	–	–	BRIM (OVER)	+	+	–	–	+	–	+	–	–	–	–	–	–	–	–	–	–	–	+	–	+	+	+	+	+	–	+	+	+	–	+	
+	+	+	+	–	–	BRISTLE	+	+	–	–	+	–	–	+	–	–	–	–	+	–	–	–	–	–	–	–	+	+	+	–	+	–	+	+	–	–	+	
+	–	+	–	–	–	BUBBLE	+	+	–	–	+	–	+	–	–	–	–	–	–	–	–	–	+	–	–	–	+	+	–	–	+	–	+	+	+	–	+	
+	–	+	–	–	–	BUBBLE OVER	–	+	–	–	+	–	+	–	–	–	–	–	–	–	–	–	+	–	+	–	–	+	–	–	+	–	–	–	–	–	–	
+	–	+	–	–	–	BUD	+	+	+	–	+	–	–	+	+	–	–	–	–	–	–	–	–	–	+	+	+	+	–	+	+	–	+	–	–	–	+	
+	–	+	–	–	–	BUD OUT	+	+	–	–	–	–	+	+	+	–	–	+	+	–	–	–	–	–	–	–	–	+	+	–	+	+	–	–	–	–	+	
+	+	+	+	–	+	BULGE	–	+	–	–	+	–	+	–	–	–	–	–	–	–	–	–	+	–	–	–	+	+	+	+	+	–	+	+	+	–	+	
+	–	–	–	–	–	BURBLE	+	+	–	–	+	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	+	–	+	+	–	+	+	+	–	+	
+	–	+	–	–	–	BURGEON	+	+	–	–	+	–	–	+	+	–	–	–	–	–	–	–	–	–	–	–	+	+	–	+	+	–	–	–	–	–	+	
–	–	+	–	–	–	BURN	–	+	–	–	+	–	–	–	–	–	–	–	–	–	–	–	–	–	+	–	+	–	–	–	+	–	–	–	–	–	–	
+	–	+	–	–	–	BURST	–	+	–	–	–	–	+	–	–	–	–	–	–	–	–	–	+	–	+	–	+	+	+	+	+	–	+	–	–	–	+	
+	+	–	–	–	–	BURST OUT	+	+	–	–	+	–	–	+	–	–	–	–	–	–	–	–	–	–	–	–	–	+	–	–	+	–	–	–	–	–	+	INTO
–	–	+	–	–	–	BURST OUT	+	+	–	–	+	+	+	–	+	–	+	+	–	–	–	–	–	–	+	+	–	–	–	–	+	–	–	–	–	–	+	INTO
–	–	–	–	–	+	BUSTLE	–	+	–	+	+	–	–	–	+	–	+	+	+	+	–	–	–	–	–	–	–	+	–	–	+	–	+	–	–	–	+	
+	–	–	–	+	–	BUZZ	+	+	–	+	+	–	–	+	–	–	–	+	+	–	–	–	–	–	–	–	–	+	–	–	+	–	+	–	–	–	+	
–	–	+	–	–	–	BUZZ	–	+	+	–	+	–	–	–	–	–	+	+	–	–	–	–	–	–	+	+	–	–	–	+	+	–	+	–	–	–	+	
+	–	+	–	–	–	CANKER	–	+	–	–	+	–	–	+	–	–	–	–	–	–	–	–	–	–	+	–	+	–	–	+	+	–	–	+	+	–	+	
–	–	+	–	–	–	CAROM	–	+	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	–	+	–	–	–	+	–	–	–	–	–	+	
+	+	+	+	–	–	CASCADE	–	+	–	–	–	–	+	–	+	–	–	–	+	+	–	–	–	–	–	–	+	+	–	–	+	+	–	–	–	–	+	
+	–	–	–	–	–	CHAFE	+	+	–	–	–	–	–	+	–	–	–	–	–	–	–	+	–	+	+	–	+	–	–	–	+	–	–	–	–	–	–	
+	+	–	–	–	–	CHAIN-REACT	+	+	–	–	+	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	–	–	+	–	–	–	–	–	+	

VERB	N_o conc	N_o plur	N_o abs	N_o plur	N_o anim	N_o hum	L form N_o V	L form N_o V P N_1	L form N_o be a-V P N_1	L form about/around	in	among	from	on	over	into	through	across	along	down	off	against	out of	Ø	N_1 hum	N_1 plur	N_1 Nbody	N_1 conc	N_1 abs	T form N_1 V	T form N_1 V with N_o	T form with → Ø	ADJ N_1 be a-V P N_o	ADJ V-y/V-ant	ADJ N_1 be V-a P N_o	N_o sound	N_o plur	Other PREP
BE CHOCKA-BLOCK	+	+	+	+	-	+	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+	
CHOKE	-	-	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-	+	+	-	-	+	+	-	+	
CHURN	-	-	+	-	-	-	-	+	-	+	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	+	
CLATTER	+	-	-	-	-	-	+	+	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	+	+	+	-	+	
CLOY	+	-	+	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	+	-	+	-	-	-	-	-	-	
CLUSTER	+	+	-	-	+	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	+	
COIL	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	+	
COME OUT	-	-	+	-	-	-	+	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	+	+	-	-	+	
CONGEAL	-	-	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	INTO
CORUSCATE	+	-	+	-	-	-	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	+	-	+	+	-	-	+	
COURSE	+	-	-	-	-	+	-	+	-	-	+	-	-	-	+	-	+	+	+	+	-	-	-	+	-	-	+	+	-	-	+	-	-	-	-	-	+	
CRACKLE	+	-	+	-	-	-	+	+	-	-	+	-	-	+	-	-	+	-	+	-	+	+	-	-	-	-	-	+	+	+	+	-	-	+	+	+	+	TO
CRAWL	-	-	-	-	+	-	+	+	-	+	+	-	-	+	+	-	+	+	+	+	-	-	-	-	+	-	-	+	-	-	+	-	+	+	+	-	+	
CREAM	+	+	-	-	-	-	+	+	-	-	-	-	+	+	+	-	+	+	+	+	+	-	-	-	-	-	-	+	-	-	+	-	+	+	+	-	+	
CREEP	-	-	+	-	+	+	-	+	-	+	+	-	-	+	+	-	+	+	+	+	-	-	-	-	+	-	+	+	-	-	+	-	-	+	+	-	+	
CREST	+	-	-	-	-	-	+	+	-	-	-	-	-	+	+	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	+	-	+	
DANCE	+	-	-	-	+	-	+	+	+	+	+	+	-	+	+	-	-	+	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	+	
DANCE	-	-	+	-	-	-	-	+	+	+	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	-	+	
DARKLE	+	+	+	-	-	-	-	+	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	+	-	-	-	-	-	+	
DAZZLE	+	-	-	-	-	-	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-	+	-	+	
DELIQUESCE	-	-	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	+	+	-	+	+	-	-	-	
BE DENSE	+	+	+	+	-	-	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-	-	-	-	+	
DIMPLE	+	+	-	-	-	-	-	+	-	-	-	-	-	+	+	-	-	+	+	-	-	-	-	+	-	-	+	+	-	+	+	-	+	+	+	-	+	INTO
DRIBBLE	+	-	-	-	-	-	-	+	-	-	-	-	+	-	+	-	-	+	+	+	+	-	+	-	-	-	+	+	-	+	-	+	-	-	+	-	+	

N_0						VERB	L form				PREPOSITIONS														N_1					T form			ADJ			N_0		Other PREP
conc	plur	abs	plur	anim	hum		N_0 V	N_0 V P N_1	N_0 be a-V P N_1	about/around	in	among	from	on	over	into	through	across	along	down	off	against	out of	Ø	hum	plur	Nbody	conc	abs	N_1 V	N_1 V with N_0	with → Ø	N_1 be a-V P N_0	V-y/V-ant	N_1 be V-a P N_0	sound	plur	
+	+	-	-	-	-	DRIFT	+	+	-	+	+	-	-	+	+	-	+	+	+	+	-	-	-	-	-	-	-	+	-	-	-	-	+	+	-	-	+	IN
+	-	-	-	-	-	DRIP	-	+	-	-	-	-	+	+	+	-	-	+	+	+	+	-	+	-	-	-	+	+	-	+	+	+	+	+	-	-	+	
-	-	+	-	-	-	DRIP	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	+	+	+	+	-	-	
+	-	-	-	-	-	DRIVEL	-	+	-	-	-	-	+	-	+	-	-	+	+	+	+	-	+	-	-	-	+	-	-	+	+	+	+	-	-	-	+	
+	-	-	-	-	-	DROOL	-	+	-	-	-	-	+	-	+	-	-	+	+	+	+	-	+	-	-	-	+	-	-	+	+	+	+	-	-	-	+	
+	-	-	-	-	-	DROOP	+	+	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	+	+	-	-	+	
+	-	-	-	-	-	ECHO	-	+	-	+	+	-	+	-	-	-	+	+	+	+	+	+	-	-	-	-	-	+	-	-	+	+	-	+	+	+	+	TO
-	-	+	-	-	-	ECHO	-	+	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	+	-	-	-	
+	+	+	-	-	-	EFFERVESCE	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	+	+	+	-	-	+	+	-	+	
+	-	-	-	-	-	EFFLORESCE	-	+	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	-	-	+	+	-	-	
-	-	+	-	-	-	BE ELECTRIC	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	
+	-	-	-	-	-	ERUCT	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	+	+	+	-	-	-	-	+	
+	-	+	-	-	-	ERUPT	-	+	-	-	+	-	+	+	-	-	-	+	-	-	-	-	+	-	+	-	+	+	+	+	+	+	-	+	-	-	-	IN, INTO
+	-	+	-	-	-	EXPAND	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	+	+	-	-	-	+	+	+	+	-	-	+	-	-	-	INTO
+	-	+	-	-	+	EXPLODE	+	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	+	-	+	-	-	+	+	-	+	-	-	+	-	+	+	IN, INTO
+	-	+	-	-	-	FERMENT	+	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	-	-	+	+	-	-	-	-	+	
+	-	+	-	-	-	FESTER	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	+	+	-	+	-	-	-	+	
-	-	+	-	-	-	FIBRILLATE	-	+	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	
-	-	+	-	-	-	FIRE	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	+	-	+	-	-	-	-	-	+	+	-	-	-	
+	-	+	-	-	-	FIZZ	-	+	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	+	+	+	+	+	-	+	+	+	-	+	
+	-	-	-	-	-	FIZZLE	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	-	+	-	-	-	+	
+	-	-	-	-	-	FLAME	-	+	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	+	-	-	-	+	
-	-	+	-	-	-	FLAME	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	+	-	-	-	+	-	+	-	-	-	-	
+	-	-	-	-	-	FLAP	+	+	+	+	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	+	-	+	-	-	-	+	
+	-	+	-	-	-	FLARE	+	+	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	+	+	-	-	+	+	+	-	-	-	+	

VERB	N_0 conc	N_0 plur	N_0 abs	N_0 plur	N_0 anim	N_0 hum	L form: N_b V	L form: N_b V P N_1	L form: N_b be a-V P N_1	L form: about/around	PREPOSITIONS: in	among	from	on	over	into	through	across	along	down	off	against	out of	Ø	N_1 hum	N_1 plur	N_1 Nbody	N_1 conc	N_1 abs	T form: N_1 V	T form: N_1 V with N_b	T form: with → Ø	ADJ: N_1 be a-V P N_b	ADJ: V-y/V-ant	ADJ: N_1 be V-a P N_b	N_0 sound	N_0 plur	Other PREP
FLARE UP	−	−	+	−	−	−	+	+	−	−	+	+	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	−	−	−	−	−	−	−	−	−	−	INTO
FLASH	+	−	+	−	−	−	+	+	−	−	+	−	+	+	+	+	+	+	+	+	−	+	+	−	−	−	+	+	−	−	+	+	+	+	−	−	+	
FLICK	−	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	+	+	+	−	−	−	−	−	+	−	+	−	−	−	+	−	−	−	−	−	−	
FLICKER	+	−	+	−	+	−	+	+	+	−	+	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	+	+	−	−	+	−	+	+	+	−	+	
FLITTER	+	−	+	−	+	−	−	+	−	+	+	−	−	−	+	−	+	+	−	+	−	−	−	−	+	−	+	+	−	−	−	−	+	−	−	−	+	
FLOAT	+	−	+	−	−	−	+	+	+	+	+	+	−	+	−	−	+	−	−	−	−	−	−	−	+	+	−	+	−	−	−	−	+	+	−	−	+	IN
FLOP	−	−	−	−	+	−	+	+	−	+	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	−	+	+	−	−	+	
FLOW	+	+	−	−	−	−	+	+	−	−	+	−	+	−	+	−	+	+	+	+	−	−	+	−	−	−	−	+	−	−	−	−	+	−	−	−	+	
FLOW	−	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	+	−	+	−	+	−	−	−	−	−	−	
FLOW OVER	+	+	−	−	−	−	−	+	−	−	−	−	−	+	−	+	−	−	−	−	−	−	−	−	−	−	−	+	−	+	+	−	−	−	−	−	+	
FLOWER	+	−	+	−	−	−	+	+	+	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	−	+	−	+	+	−	−	+	
FLUORESCE	−	−	+	−	−	−	−	+	−	−	+	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	+	+	−	−	+	−	−	−	
FLUSH	−	−	+	−	−	−	−	+	−	−	−	−	−	−	+	−	+	+	−	−	−	−	−	−	+	−	+	−	−	+	+	−	+	−	−	−	−	
FLUTTER	+	−	−	−	+	−	+	+	+	+	+	−	−	+	+	−	+	+	+	−	−	−	−	−	−	−	−	+	−	−	+	−	+	+	−	−	+	
FLUTTER	−	−	+	−	−	−	−	+	−	−	+	−	−	−	−	−	+	−	−	−	−	−	−	−	+	−	−	−	−	−	+	−	+	+	+	−	−	
FOAM	+	+	−	−	−	−	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	+	−	−	−	+	+	−	+	+	−	+	+	+	−	+	
FRIZZ(LE)	+	+	−	−	−	−	+	+	−	−	−	−	−	+	+	−	−	−	−	−	−	−	−	−	−	−	+	+	−	−	−	−	+	+	−	−	+	
FROTH	+	+	−	−	−	−	−	+	−	−	−	−	−	+	+	−	−	+	+	−	−	−	−	+	−	−	+	+	−	+	+	−	+	+	+	−	+	
FRUIT	+	−	−	−	−	−	−	+	−	−	−	−	−	+	+	−	−	−	+	+	−	−	−	−	−	−	−	+	−	+	+	−	−	+	−	−	+	
FUME	+	−	−	−	−	−	−	+	−	−	+	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	+	+	+	+	+	−	−	−	
GAPE	−	−	+	−	−	−	+	+	−	−	+	−	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	+	−	−	+	−	+	−	−	−	−	
GLARE	+	−	+	−	−	−	+	+	+	−	+	−	+	−	−	−	−	−	−	−	−	−	+	−	−	−	+	+	−	−	+	−	+	+	+	−	+	
GLEAM	+	−	−	−	−	−	+	+	+	−	+	−	+	+	−	−	+	−	+	−	−	−	−	−	−	−	+	+	−	+	+	−	+	+	+	−	+	
GLEAM	−	−	+	−	−	−	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	+	+	+	+	+	−	−	
GLIMMER	+	−	+	−	−	−	+	+	−	−	+	−	−	−	−	−	+	−	+	−	−	−	−	−	−	−	+	+	−	−	+	−	+	−	−	−	+	

N0						VERB	L form				PREPOSITIONS														N1					T form			ADJ			N0		Other PREP
conc	plur	abs	plur	anim	hum		N_0 V	N_0 V P N_1	N_0 be a-V P N_1	about/around	in	among	from	on	over	into	through	across	along	down	off	against	out of	Ø	hum	plur	Nbody	conc	abs	N_1 V	N_1 V with N_0	with → Ø	N_1 be a-V P N_0	V-y/V-ant	N_1 be V-a P N_0	sound	plur	
+	-	+	-	-	-	GLINT	-	+	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	+	+	-	+	+	-	+	-	-	-	+	
+	-	+	-	-	-	GLISTEN	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	+	-	+	-	-	-	+	
+	-	+	-	-	-	GLITTER	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-	+	+	+	-	+	
+	-	-	-	+	-	GLOW	+	+	+	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-	+	-	-	-	+	
-	-	+	-	-	-	GLOW	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	-	-	-	
+	-	-	-	-	-	GREEN	+	+	-	-	+	-	-	+	+	-	-	+	+	-	-	-	-	-	-	-	-	+	-	-	+	-	-	+	+	-	+	
+	-	+	-	-	-	GURGLE	-	+	+	-	+	-	+	-	-	-	+	-	-	+	-	-	+	-	+	-	+	+	-	+	+	-	+	-	-	-	+	
+	+	-	-	-	-	GUSH	-	+	-	-	+	-	+	-	-	-	+	-	+	+	-	-	+	-	-	-	-	+	-	+	+	+	+	+	-	-	+	
-	-	+	-	-	-	GUSH	-	+	-	-	-	-	+	-	-	-	+	-	-	-	-	-	+	-	+	-	-	-	-	+	+	+	+	+	+	-	-	
+	-	+	-	-	-	HAMMER	-	+	-	-	+	-	-	+	-	-	+	-	+	+	-	-	-	-	-	-	+	+	-	+	+	+	+	-	-	-	-	IN
-	-	+	-	-	-	HATCH	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-	
+	+	-	-	-	-	HEAVE	-	+	-	+	-	-	-	+	+	-	-	-	+	-	-	-	-	-	-	-	-	+	-	+	+	-	-	-	-	-	+	
-	-	+	-	-	-	HEAVE	-	+	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	+	+	+	-	-	-	-	-	IN
+	+	+	-	-	-	BE HEAVY	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	+	+	+	-	+	-	-	-	-	-	+	
+	+	-	-	-	-	HEMORRHAGE	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	+	+	-	-	-	-	+	
+	+	-	-	-	-	BE HIGH	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+	
-	-	-	-	+	-	HOP	+	+	+	+	+	-	-	+	+	-	+	-	+	+	-	-	-	-	-	-	-	+	-	-	+	-	+	-	-	-	+	
-	-	+	-	+	-	HUM	+	+	-	-	+	-	-	-	-	-	+	-	+	+	-	-	-	-	-	-	-	+	-	+	+	-	+	-	-	-	+	
+	+	-	-	-	-	ICE OVER	+	+	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	+	-	-	-	+	-	+	+	-	-	+	+	-	+	
+	-	+	-	-	-	BE INCANDES-CENT	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	-	+	+	-	-	-	-	-	+	
+	-	+	-	-	-	IRIDESCE, BE IRIDESCENT	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	-	-	-	-	-	-	
+	-	+	-	-	-	ITCH	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-	+	+	-	-	+	+	-	+	
-	-	+	-	+	-	JERK	+	+	-	+	-	-	-	+	-	-	+	-	-	-	-	-	-	+	+	-	+	+	-	+	+	-	+	+	-	-	+	

N_o conc	N_o plur	N_o abs	N_o abs plur	N_o anim	N_o hum	VERB	L form: N_o V	L form: N_o V P N_1	L form: N_o be a-V P N_1	L form: about/around	PREP: in	PREP: among	PREP: from	PREP: on	PREP: over	PREP: into	PREP: through	PREP: across	PREP: along	PREP: down	PREP: off	PREP: against	PREP: out of	PREP: Ø	N_1 hum	N_1 plur	N_1 Nbody	N_1 conc	N_1 abs	Tform: N_1 V	Tform: N_1 V with N_o	Tform: with → Ø	ADJ: N_1 be a-V P N_o	ADJ: V-y/V-ant	ADJ: N_1 be V-a P N_o	N_o sound	N_o plur	Other PREP
−	−	−	−	+	−	JIGGLE	+	+	+	+	+	−	−	+	−	−	−	−	−	−	−	−	−	+	−	−	−	+	−	−	+	−	+	+	−	−	+	
−	−	+	+	+	+	JOSTLE	−	+	−	+	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	+	−	+	−	−	−	+	
+	−	−	−	+	+	JUMP	+	+	−	+	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	−	+	+	−	−	+	
+	−	−	−	−	−	JUT OUT	+	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	−	+	−	−	−	−	−	−	
−	−	+	−	−	−	KINDLE	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	+	−	+	−	−	−	−	
−	−	+	−	−	−	LANCE	−	+	−	−	+	−	−	+	−	−	+	+	+	+	−	−	−	+	−	−	+	−	−	−	+	−	−	−	−	−	−	
+	+	+	+	−	−	BE LAVISH	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	+	−	−	−	−	−	+	
−	−	+	−	−	−	BE LEADEN	−	+	−	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	+	−	−	−	−	−	−	
+	−	−	−	−	−	LEAK	+	+	−	−	−	−	+	−	+	−	+	+	+	+	+	−	+	−	−	−	−	+	−	+	+	+	+	+	−	−	+	
+	+	−	−	−	−	LEAVE OUT	−	+	−	−	−	−	−	+	+	−	−	−	+	−	−	−	−	−	−	−	−	+	−	+	+	−	−	+	−	−	+	
−	−	+	−	+	−	LIGHT UP	−	+	−	−	+	−	−	+	+	−	−	−	−	−	−	−	−	+	+	+	+	+	−	+	+	−	+	−	−	−	+	
+	−	−	−	−	−	LIGHTEN, LIGHTNING	−	+	−	−	+	−	−	−	+	−	−	+	+	−	−	−	−	−	−	−	−	+	−	+	+	−	−	−	−	−	+	
+	−	+	−	+	+	LIVE	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	−	−	+	−	−	−	+	
+	−	−	−	−	−	LUMINESCE	−	+	−	−	+	−	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	+	−	+	+	−	−	+	−	−	−	
+	+	+	−	−	−	BE LUSH, LUXURIANT	+	+	−	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	+	+	−	−	−	−	−	+	
+	−	+	−	−	−	MANTLE	−	+	−	−	+	−	−	+	+	−	−	−	−	−	−	−	−	+	−	−	+	+	−	−	+	−	−	−	−	−	−	
+	+	+	+	−	−	METASTASIZE	+	+	−	−	+	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	+	+	−	−	+	−	−	−	−	−	+	
+	−	−	−	−	−	MILDEW	+	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	+	−	−	+	−	−	+	+	−	−	
−	−	−	−	+	+	MILL	+	+	−	+	+	−	−	+	−	−	+	+	+	−	−	−	−	−	−	−	−	+	−	−	+	−	−	−	−	−	+	
+	+	+	−	−	−	MIST OVER	−	+	−	−	−	−	−	+	−	−	−	+	+	−	−	−	−	+	−	−	+	+	−	+	+	−	−	+	+	−	+	
+	−	−	−	−	−	MOLDER	+	+	+	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	−	+	+	+	−	+	
+	−	+	−	−	+	MOVE	+	+	−	+	+	−	−	+	+	−	−	+	+	+	−	−	−	−	−	−	−	+	−	−	+	−	−	−	−	−	+	
+	+	+	+	−	−	MUSHROOM	+	+	−	−	+	−	+	+	+	−	+	−	+	+	−	−	−	−	−	−	−	+	−	−	+	−	−	−	−	−	+	INTO

N_o						VERB	L form				PREPOSITIONS														N_1					T form			ADJ			N_o		Other PREP
conc	plur	abs	plur	anim	hum		N_o V	N_o V P N_1	N_o be a-V P N_1	about/around	in	among	from	on	over	into	through	across	along	down	off	against	out of	Ø	hum	plur	Nbody	conc	abs	N_1 V	N_1 V with N_o	with → Ø	N_1 be a-V P N_o	V-y/V-ant	N_1 be V-a P N_o	sound	plur	
+	−	−	−	−	−	NOD	+	+	+	+	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	−	+	−	−	−	+	
+	−	+	−	−	−	OOZE	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	+	−	+	−	−	+	+	+	+	+	−	+	−	−	+	
+	−	+	−	−	−	OPALESCE, BE OPALESCENT	+	+	−	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+	−	−	−	−	−	−	
+	−	+	−	−	−	OUTCROP	+	+	−	−	+	−	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	+	−	−	−	−	−	+	
+	−	+	−	−	−	OVERFLOW	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	+	+	−	−	+	+	+	+	−	−	−	−	−	+	
+	−	−	−	−	−	OVULATE	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	+	−	−	−	−	−	+	
+	−	+	−	−	−	PALL	+	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	+	+	+	+	−	−	−	−	−	−	
−	−	+	−	−	−	PALPITATE	−	+	−	−	+	−	−	−	−	−	+	−	−	−	−	−	−	−	+	−	+	+	−	+	+	−	−	+	−	−	−	
+	+	−	−	−	−	PEARL	−	+	−	−	−	−	−	+	+	−	−	+	+	+	−	−	−	+	−	−	+	−	−	−	+	−	−	+	−	−	+	
+	−	+	−	−	−	PERCOLATE	+	+	−	−	+	−	−	−	−	+	+	−	−	−	−	−	−	−	+	+	+	+	−	−	+	+	−	−	−	−	+	
−	−	−	−	+	−	PHOSPHORESCE	+	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	+	+	−	−	+	−	−	+	
+	−	−	−	−	−	POD	−	+	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	+	+	−	−	−	−	−	+	
−	−	+	−	−	−	POP OUT	−	+	−	−	−	−	−	−	−	+	−	−	−	−	−	−	−	−	+	−	−	−	−	−	+	−	−	−	−	−	−	
−	−	−	−	−	+	BE POPULOUS	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	+	+	−	−	−	−	−	+	
−	−	+	−	−	−	POP UP	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	+	−	+	−	−	−	−	−	+	−	−	−	−	−	−	
+	−	+	−	−	−	POUND	−	+	−	−	+	−	−	+	−	−	+	−	+	−	−	+	−	−	−	−	+	+	−	+	+	−	−	−	−	−	−	TO
+	+	−	−	−	−	POUR	−	+	−	−	−	−	+	+	+	−	−	+	+	+	+	−	+	−	−	−	+	+	−	−	+	+	−	−	−	−	+	
−	−	+	−	−	−	PRICKLE	−	+	−	−	−	−	−	+	+	−	−	−	−	−	−	−	−	+	+	−	+	−	−	+	+	−	+	+	+	−	−	
+	−	−	−	−	−	PROJECT	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	+	−	−	−	−	+	−	−	+	−	−	−	−	−	+	INTO
+	−	−	−	−	−	PROTRUDE	+	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	−	−	+	−	−	+	
−	−	+	−	+	+	PROWL	+	+	+	+	+	−	−	−	−	−	+	−	+	+	−	−	−	+	−	−	+	+	+	−	−	−	+	−	−	−	+	
−	−	−	−	+	+	PULLULATE	+	+	−	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	−	−	−	−	−	+	
+	−	+	−	−	−	PULSATE	−	+	−	−	+	−	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	+	−	+	+	−	−	−	−	−	−	IN, TO
+	−	+	−	−	−	PULSE	−	+	−	−	+	−	−	−	−	−	+	−	+	+	−	−	−	+	+	−	−	+	+	+	+	−	+	+	+	−	+	

N_o						VERB	L form				PREPOSITIONS														N_1					T form			ADJ			N_o		Other PREP
conc	plur	abs	plur	anim	hum		N_o V	N_o V P N_1	N_o be a-V P N_1	about/around	in	among	from	on	over	into	through	across	along	down	off	against	out of	Ø	hum	plur	Nbody	conc	abs	N_1 V	N_1 V with N_o	with → Ø	N_1 be a-V P N_o	V-y/V-ant	N_1 be V-a P N_o	sound	plur	
+	+	+	-	-	-	PURR	-	+	+	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	+	+	-	+	-	-	+	+	
-	-	+	-	-	-	QUAVER	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	+	+	+	+	+	-	-	
+	-	+	-	-	-	QUIVER	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	+	+	-	+	+	-	+	-	-	-	+	
+	-	+	-	-	-	RACE	+	+	-	+	+	-	-	-	+	-	+	+	+	+	-	-	-	-	-	-	+	+	-	-	+	-	+	-	-	-	+	
-	-	+	-	-	-	RADIATE	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	+	-	+	+	-	-	
-	-	+	-	-	-	RAGE	-	+	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	+	+	-	-	-	-	-	+	
+	+	+	+	+	-	BE RAMPANT	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-	-	-	-	+	
+	+	-	-	-	-	BE RANK	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+	
-	-	+	-	-	-	RANKLE	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-	-	+	-	-	-	-	-	-	
+	-	-	-	-	-	RATTLE	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	+	+	-	+	+	+	+	+	TO
-	-	+	-	-	-	REBOUND	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	-	-	-	-	-	
+	-	-	-	-	-	REDDEN	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	-	-	-	-	-	-	
+	-	+	-	-	-	REEK	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	-	-	OF
-	-	+	-	-	-	REEL	-	+	-	+	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	+	+	-	+	-	-	-	+	
+	-	+	-	-	-	RESONATE	+	+	-	-	+	-	+	-	-	-	+	-	+	+	-	-	-	-	-	-	+	+	+	+	+	-	-	+	+	+	+	TO
+	-	+	-	-	-	RESOUND	+	+	-	-	+	-	-	-	-	-	+	-	+	+	+	+	-	-	-	-	+	+	-	-	+	+	-	-	-	+	+	TO
+	-	+	-	-	-	BE RESPLEN-DENT	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	-	+	
+	-	+	-	-	-	REVERBERATE	+	+	-	-	+	-	-	-	-	-	+	+	+	+	+	+	-	-	+	+	-	+	+	-	+	+	-	+	+	+	+	TO
+	-	-	-	-	-	RICOCHET	+	+	-	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+	
+	-	+	-	-	-	RIDGE	-	+	-	-	-	-	-	+	+	-	-	+	+	+	-	-	-	+	-	-	+	+	-	-	+	-	-	+	+	-	+	
-	-	+	+	-	-	BE RIFE	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-	+	-	-	-	-	-	+	
+	-	+	-	-	-	RING	+	+	-	-	+	-	-	-	-	-	+	+	+	+	-	+	-	-	-	-	+	+	+	-	+	-	-	-	-	+	+	TO
+	-	+	-	+	-	RIPPLE	-	+	+	-	-	-	-	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	-	+	-	-	-	+	
+	-	+	-	-	-	ROIL	+	+	+	+	+	-	-	-	+	-	+	+	-	-	-	-	-	+	+	+	-	+	-	-	+	-	+	+	+	-	+	

N_0						VERB	L form				PREPOSITIONS														N_1					T form			ADJ			N_0		Other PREP
conc	plur	abs	plur	anim	hum		N_0 V	N_0 V P N_1	N_0 be a-V P N_1	about/around	in	among	from	on	over	into	through	across	along	down	off	against	out of	Ø	hum	plur	N_{body}	conc	abs	N_1 V	N_1 V with N_0	with → Ø	N_1 be a-V P N_0	V-y/V-ant	N_1 be V-a P N_0	sound	plur	
+	-	-	-	-	-	ROLL	+	+	-	+	+	-	-	+	+	-	+	+	+	+	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+	IN
-	-	+	-	-	-	ROLL	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	+	IN
+	-	-	-	-	-	ROT	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-	-	+	+	-	+	
+	-	+	-	-	-	RUMBLE	+	+	-	-	+	-	-	+	+	-	+	+	+	+	-	-	-	-	+	+	+	+	-	-	+	-	+	+	+	-	+	TO
+	-	-	-	-	-	RUN	-	+	-	-	+	-	+	+	+	-	+	+	+	+	+	-	+	-	-	-	+	+	-	-	+	+	+	+	-	-	+	
-	-	+	-	-	-	RUN	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	+	-	-	-	-	+	-	+	+	-	-	+	
+	+	+	+	-	-	RUN (A)RIOT	+	+	-	-	+	-	-	-	+	-	+	+	+	+	-	-	-	-	-	-	-	+	+	-	+	-	-	-	-	-	+	
+	-	+	-	-	-	RUN OVER	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	+	-	-	+	-	+	+	-	-	-	-	-	+	
+	-	-	-	+	-	RUSTLE	+	+	+	-	+	-	-	+	+	-	+	-	+	-	-	+	-	-	-	-	-	+	-	-	+	-	+	-	-	+	+	TO
+	-	-	-	-	-	SAG	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	+	-	-	-	-	-	+	
+	-	-	-	-	-	SCAB, SCAR OVER	-	+	-	-	-	-	-	+	+	-	-	+	+	-	-	-	-	+	-	-	+	+	-	+	+	-	-	+	+	-	-	
+	-	+	-	-	-	SCINTILLATE	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	+	-	+	+	-	+	
+	+	-	-	-	-	SCUM OVER	-	+	-	-	-	-	-	+	+	-	-	+	-	-	-	-	-	+	-	-	-	+	-	+	+	-	-	+	+	-	+	
+	-	+	-	-	-	SEEP	-	+	-	-	-	-	+	-	-	-	+	-	-	-	-	-	+	-	+	-	+	+	-	-	+	-	-	+	-	-	-	
+	+	+	+	+	+	SEETHE	-	+	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	+	-	+	+	+	+	+	-	+	-	-	-	+	
+	-	-	-	-	-	SHAKE	+	+	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	+	-	-	-	+	-	+	+	-	+	+	-	-	+	
+	+	-	-	-	-	SHIMMER	-	+	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	-	+	+	+	-	+	
-	-	+	-	-	-	SHIMMER	-	+	-	-	+	-	-	-	-	-	+	-	+	+	-	-	-	-	+	-	+	-	+	-	+	-	+	+	-	-	-	
+	-	-	-	-	-	SHINE	+	+	-	-	+	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	+	+	-	+	+	+	-	+	
-	-	+	-	-	-	SHINE	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	+	+	+	+	-	-	-	
+	-	-	-	-	-	SHIVER	+	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	-	+	+	-	-	+	
+	+	+	+	-	+	BE SHORT	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	+	-	+	+	-	-	-	-	-	-	-	+	OF, ON
+	-	-	-	-	-	SHRIEK	+	+	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-	-	-	-	-	+	-	-	+	-	+	-	-	+	+	
+	-	-	-	+	-	SHRILL	+	+	-	-	+	-	+	-	-	-	+	-	-	-	-	-	+	-	-	-	-	+	-	-	+	-	-	+	+	+	+	TO

Other PREP	N_0 plur	N_0 sound	ADJ: N_1 be V-a P N_0	ADJ: V-y/V-ant	ADJ: N_1 be a-V P N_0	T form: with → Ø	T form: N_1 V with N_0	T form: N_1 V	N_1 abs	N_1 conc	N_1 Nbody	N_1 plur	N_1 hum	Ø	out of	against	off	down	along	across	through	into	over	on	from	among	in	L form: about/around	L form: N_0 be a-V P N_1	L form: N_0 V P N_1	L form: N_0 V	VERB	N_0 hum	N_0 anim	N_0 plur	N_0 abs	N_0 plur	N_0 conc
	−	−	+	+	−	−	+	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	−	SHRILL	−	−	−	+	−	−
	+	−	−	−	+	−	+	+	−	+	+	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	+	SIMMER	−	−	−	+	+	+
	−	−	−	−	+	−	+	+	−	−	+	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	−	SIZZLE	−	−	−	+	−	−
	−	−	+	+	+	−	−	−	−	−	+	−	+	−	−	−	−	−	−	+	+	−	−	−	−	−	−	−	−	+	−	SKITTER	−	−	−	+	−	−
	+	−	−	−	+	−	+	+	−	−	+	−	−	−	+	−	−	−	−	−	−	−	−	−	+	−	−	−	−	+	−	SLAVER	−	−	−	−	+	+
	−	−	−	+	−	−	+	+	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	−	+	−	SLEET	−	−	−	−	−	+
IN	+	−	+	+	+	+	+	−	+	+	−	−	−	−	+	−	−	−	−	−	−	−	+	−	+	−	+	+	−	+	−	SLOP	−	−	−	+	+	+
	+	−	−	−	−	−	+	+	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	+	−	−	+	+	SLOP, SLOSH OVER	−	−	−	−	+	+
IN	+	−	−	−	+	−	+	−	−	+	+	−	−	−	−	−	−	−	−	−	+	+	+	−	−	−	+	+	−	+	−	SLOSH	−	−	−	−	+	+
	+	−	−	−	+	−	+	+	−	+	+	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	−	−	+	+	SLUMP	−	−	−	−	−	+
	−	−	−	−	−	−	+	+	−	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	−	SMART	−	−	−	+	−	+
OF	−	−	+	+	−	−	+	+	−	+	+	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	−	−	+	+	SMELL	−	−	−	−	−	+
	+	−	+	+	+	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	+	SMOKE	−	−	−	−	−	+
	+	−	−	−	+	−	+	−	−	+	+	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	+	SMOLDER	−	−	−	+	−	+
IN	+	−	−	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	+	SOAK	−	−	−	−	−	+
	+	−	−	−	−	−	+	−	−	+	−	−	−	−	−	−	−	−	−	+	−	−	+	+	−	−	+	−	−	+	−	BE SOLID	+	+	−	−	+	+
TO	+	−	−	−	−	−	+	−	−	+	+	−	−	−	−	+	−	+	+	+	−	−	+	−	−	−	+	−	−	+	+	SOUND	−	−	−	−	−	+
	+	−	−	+	+	−	+	−	−	+	+	−	−	+	−	−	−	−	+	+	−	−	+	−	−	−	+	−	−	+	+	SPARK	−	+	−	+	−	+
	+	−	−	−	+	−	+	+	+	+	+	−	−	−	−	−	−	−	+	+	−	−	−	+	−	−	+	−	−	+	+	SPARKLE	−	−	−	+	−	+
	+	−	−	−	+	+	+	−	−	+	+	−	−	−	+	−	−	−	−	−	−	−	−	−	+	−	−	−	−	+	−	SPEW	−	−	+	+	+	+
	+	−	−	−	−	−	+	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	−	+	+	SPILL OVER	−	−	−	+	−	+
	+	−	−	−	+	−	+	+	−	−	+	−	−	−	−	−	−	−	−	−	+	−	−	−	−	−	+	+	−	+	−	SPIN	−	−	−	+	−	−
	+	−	+	+	+	+	+	+	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	+	−	+	+	−	SPLUTTER	−	−	−	−	−	+
	+	−	−	−	+	+	+	−	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	+	−	−	−	−	+	−	SPOUT	−	−	−	−	−	+

N_o conc	N_o plur	N_o abs	N_o plur	N_o anim	N_o hum	VERB	L form N_o V	L form N_o V P N_1	L form N_o be a-V P N_1	L form about/around	PREPOSITIONS in	among	from	on	over	into	through	across	along	down	off	against	out of	Ø	N_1 hum	N_1 plur	N_1 Nbody	N_1 conc	N_1 abs	T form N_1 V	T form N_1 V with N_o	T form with → Ø	ADJ N_1 be a-V P N_o	ADJ V-y/V-ant	ADJ N_1 be V-a P N_o	N_o sound	N_o plur	Other PREP
+	-	+	-	-	-	SPRING	-	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	+	-	+	-	+	+	-	-	+	-	+	+	-	-	+	
+	-	-	-	-	-	SPROUT	+	+	+	-	+	-	+	+	+	-	-	+	+	-	+	-	-	-	-	-	-	+	-	-	+	+	+	-	-	-	+	
+	+	-	-	-	-	SPUME	+	+	-	-	-	+	-	+	-	-	+	+	-	+	-	-	-	-	-	-	-	+	-	-	+	-	+	+	+	-	+	
+	-	-	-	-	-	SPURT	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	+	+	+	-	-	-	+	
+	-	-	-	+	-	SQUEAK	+	+	+	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	+	+	+	+	+	
+	-	-	-	+	+	SQUEAL	+	+	+	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	+	-	-	+	+	
-	-	+	-	+	+	SQUIRM	+	+	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	+	+	-	-	+	
+	-	-	-	-	-	SQUIRT	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	+	+	+	-	-	-	+	
+	-	-	-	-	-	STEAM	-	+	-	-	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	-	-	+	-	+	+	+	+	+	+	-	+	
-	-	+	-	-	-	STEAM	-	+	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	+	+	-	+	+	-	-	-	
+	-	-	-	-	-	STIFFEN	+	+	-	-	+	-	-	+	+	-	-	+	-	-	-	-	-	+	-	-	+	+	-	+	+	-	-	+	+	-	+	
+	-	+	-	-	-	STING	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-	+	+	-	-	-	-	-	+	
+	-	-	-	-	-	STINK	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	+	-	+	+	+	-	-	OF
-	-	+	-	-	-	STINK	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	+	-	-	+	-	-	-	OF
+	-	+	-	+	+	STIR	+	+	+	+	+	-	-	-	-	-	+	-	-	-	-	-	-	+	+	-	+	+	-	+	+	-	+	-	-	-	+	
+	+	+	+	-	-	STREAM	-	+	-	-	-	-	+	+	+	-	+	+	+	+	+	-	+	-	+	-	+	+	-	+	+	+	+	-	-	-	+	
+	+	-	-	-	-	SUDS	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	+	-	-	+	+	-	+	
+	-	-	-	-	-	SUPPURATE	+	+	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	+	-	-	+	
-	-	+	-	-	-	SURGE	-	+	-	-	+	-	-	-	+	+	+	-	-	+	-	-	-	-	-	-	+	+	+	-	+	-	+	-	-	-	-	
+	+	+	+	+	+	SWARM	+	+	-	+	+	-	-	+	+	-	+	+	+	+	-	-	-	+	+	-	+	+	+	-	+	-	+	-	-	-	+	
+	-	-	-	+	+	SWAY	+	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	+	TO
+	-	-	-	-	-	SWEAT	-	+	-	-	-	-	+	-	-	-	+	-	-	-	-	-	+	-	-	-	-	+	-	+	-	+	+	+	-	-	+	
+	-	-	-	-	-	SWEAT	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	+	+	+	+	+	+	-	+	
+	+	-	-	-	+	SWELL	-	+	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-	+	+	+	+	-	+	+	+	-	+	
-	-	+	-	-	-	SWELL	-	+	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	+	-	-	-	+	-	+	+	+	-	-	

N_0						VERB	L form				PREPOSITIONS														N_1					T form			ADJ			N_0		Other PREP
conc	plur	abs	plur	anim	hum		N_0 V	N_0 V P N_1	N_0 be a-V P N_1	about/around	in	among	from	on	over	into	through	across	along	down	off	against	out of	Ø	hum	plur	Nbody	conc	abs	N_1 V	N_1 V with N_0	with → Ø	N_1 be a-V P N_0	V-y/V-ant	N_1 be V-a P N_0	sound	plur	
+	−	+	−	−	−	SWIM	−	+	−	+	+	−	−	+	+	+	+	−	−	−	−	−	−	−	+	−	+	+	−	−	+	−	+	+	−	−	+	IN
+	−	+	−	−	+	SWING	−	+	−	−	+	−	+	−	−	−	+	+	+	−	−	−	−	−	−	−	+	+	+	+	+	−	−	−	−	−	+	TO
+	−	+	−	−	−	SWIRL	+	+	+	+	+	−	+	−	+	−	+	+	+	+	−	−	+	−	+	−	+	+	−	−	+	−	+	+	−	−	+	
+	+	−	−	−	−	TANGLE	+	+	+	−	−	−	−	+	+	−	−	+	−	−	−	−	−	−	−	−	+	+	−	−	−	−	+	+	−	−	+	IN
+	+	+	+	+	+	TEEM	+	+	−	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	+	−	−	−	−	−	+	
+	−	−	−	−	−	TEETER	+	+	+	+	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	−	+	−	−	−	+	
+	+	+	+	+	+	BE THICK	−	+	−	−	+	−	−	+	−	−	−	−	+	−	−	−	−	−	−	−	+	+	−	−	+	−	−	−	−	−	+	
+	−	−	−	−	−	THICKEN	+	+	−	−	+	−	−	+	+	−	−	+	+	−	−	−	−	+	−	−	−	+	−	−	+	−	−	−	−	−	+	
−	−	+	−	−	−	THRILL	−	+	−	−	+	−	−	−	−	−	+	−	−	−	−	−	−	+	+	−	+	−	−	+	+	−	+	−	−	−	−	TO
+	−	+	−	−	−	THRIVE	+	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	−	−	+	−	−	−	+	
+	−	+	−	−	−	THROB	+	+	+	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	+	+	−	−	+	−	+	−	−	+	+	TO
−	−	+	+	+	+	THRONG	−	+	−	−	+	−	−	−	+	+	−	−	−	−	−	−	−	+	−	−	+	+	−	−	−	−	+	+	+	−	+	
+	+	−	−	−	−	BE TIGHT	−	+	−	−	+	−	−	+	+	−	−	+	+	−	−	−	−	−	−	−	−	+	−	−	+	−	−	−	−	−	+	
+	−	+	−	−	−	TINGLE	+	+	+	−	+	−	−	−	−	−	+	+	+	+	−	−	−	−	+	−	−	+	−	−	+	−	+	+	+	+	+	TO
+	−	−	−	−	−	TINKLE	+	+	+	−	+	−	−	−	−	−	−	+	+	+	−	−	−	−	−	−	−	+	−	−	+	−	+	+	−	+	+	TO
−	−	+	−	−	−	TREACLE	−	+	−	−	−	−	+	−	−	−	+	−	−	−	−	−	−	−	+	−	+	−	+	+	+	−	+	+	−	−	+	
+	−	+	−	−	−	TREMBLE	+	+	+	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+	−	+	+	−	−	+	
+	−	−	−	−	−	TRICKLE	−	+	−	−	−	−	+	−	+	−	+	+	+	+	+	−	+	−	−	−	+	+	−	−	+	+	+	+	−	−	+	
+	−	+	−	−	+	TUMBLE	−	+	+	+	+	−	+	+	−	−	+	+	+	+	+	−	+	−	−	−	+	+	−	−	+	−	+	−	−	−	+	IN
−	−	+	+	−	−	TURN	−	+	−	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	+	−	−	+	+	−	−	−	−	−	+	
+	−	−	−	−	−	TWANG	+	+	−	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	+	−	+	+	−	+	+	TO
−	−	+	−	−	−	TWINGE	−	+	−	−	+	−	−	−	−	−	+	−	−	−	−	−	−	+	−	−	+	+	−	+	+	−	−	−	−	−	−	
+	−	+	−	−	−	TWINKLE	+	+	+	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	−	+	−	+	+	+	−	+	
+	−	−	−	−	−	TWIRL	+	+	−	+	+	−	−	+	+	−	+	+	+	+	−	−	−	−	−	−	−	+	−	−	−	−	+	+	−	−	+	
+	−	−	−	−	−	TWIST	+	+	−	+	+	−	−	+	+	−	+	+	+	+	−	−	−	−	−	−	−	+	−	−	−	−	+	−	−	−	+	IN

VERB		TWIST	TWITCH	TWITCH	TWITTER	TWITTER	UNDULATE	VIBRATE	VOMIT	WAFT	WASH	WAVE	WELL	WHIR	WHIRL	WHIRL	WHISPER	WHISPER	WHISTLE	WIGGLE	WINK	WRIGGLE	WRITHE	YEAST
N_0	conc	−	+	−	−	−	+	+	+	+	+	+	+	+	+	−	+	−	+	+	−	−	+	+	+
	plur	−	−	−	−	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+
	abs	+	−	+	−	+	−	+	−	−	+	−	+	−	−	+	−	+	−	−	+	−	+	−	−
	anim	−	−	−	+	−	−	−	−	−	−	−	−	+	−	−	−	−	−	+	−	+	−	−	−
	hum	−	−	−	+	−	−	−	−	−	+	−	−	−	−	−	+	−	−	−	−	+	−	−	−
L form	N_0 V	−	−	−	+	−	+	+	−	−	−	+	+	+	+	−	+	−	+	+	+	−	−	−	
	N_0 V P N_1	+	−	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
	N_0 be a-V P N_1	−	−	−	+	−	−	−	−	−	+	−	−	−	−	−	−	+	−	−	−	−	−	−	
	about/around	−	−	−	−	−	−	−	−	−	+	+	−	+	+	+	+	−	−	+	+	+	+	−	
PREPOSITIONS	in	−	−	+	+	+	+	+	−	−	−	−	+	+	+	+	+	+	+	+	+	+	+	−	
	among	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	
	from	∖	∖	∖	∖	∖	∖	∖	+	∖	∖	∖	+	∖	∖	∖	∖	∖	∖	∖	∖	∖	∖	∖	
	on	−	−	−	−	−	−	−	−	−	+	+	−	−	−	−	−	−	−	+	+	−	−	+	
	over	−	−	−	−	−	−	−	−	−	+	+	+	+	+	−	−	−	−	+	−	−	+	+	
	into	−	−	−	−	−	−	−	−	−	−	+	−	+	−	−	−	−	−	−	−	−	−	−	
	through	+	+	+	+	∖	+	∖	+	∖	+	+	∖	+	+	+	+	+	+	∖	∖	+	∖	∖	
	across	−	−	−	−	−	−	−	−	−	+	+	−	+	+	−	−	+	−	+	−	+	+	−	
	along	−	−	−	−	−	−	−	−	−	+	−	−	+	+	−	+	+	+	+	−	+	+	−	
	down	−	−	−	−	−	−	−	−	−	+	−	−	+	+	−	+	+	+	+	−	+	+	−	
	off	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	
	against	−	−	−	−	−	−	+	−	−	+	−	−	−	+	−	−	−	−	−	−	−	−	−	
	out of	−	−	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	
	at	−	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	
N_1	hum	−	−	+	−	+	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	+	−	
	plur	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	
	body	+	−	+	−	+	−	+	−	−	+	+	+	−	−	+	−	−	−	−	+	+	+	−	
	conc	∖	+	∖	+	∖	+	+	+	+	+	+	∖	+	+	∖	+	+	+	+	+	+	+	+	
	abs	+	−	−	−	−	−	+	−	−	+	−	−	−	−	−	−	+	−	−	−	−	−	−	
T form	N_1 V	−	−	+	−	+	−	−	−	−	−	−	−	−	−	+	−	−	−	−	−	−	+	+	
	N_1 V with N_0	+	−	+	−	+	+	+	+	−	−	−	+	−	−	+	−	−	+	−	+	−	+	+	
	with → Ø	−	−	−	−	−	−	−	+	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	
ADJ	N_1 be a-V P N_0	+	+	+	+	+	−	−	−	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	
	V-y/V-ant	−	+	+	+	+	+	+	−	−	+	+	−	−	+	+	+	+	−	+	−	+	−	+	
	N_1 be V-a P N_0	−	−	+	−	+	−	+	−	−	−	−	−	−	−	−	+	−	−	+	+	−	−	+	
N_0	sound	−	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	
	plur	−	+	−	+	−	+	+	−	+	−	+	−	+	−	−	−	+	−	−	−	+	−	+	
Other PREP								IN TO		IN	IN							OF		IN				

REFERENCES

ANDERSON, STEPHEN R. 1971. Deep structure in semantic interpretation. Foundations of Language 7.387–96.

BOONS, JEAN-PAUL. 1974. Acceptability, interpretation and knowledge of the world: Remarks on the verb *planter*. Cognition 2:2.183–211.

——; ALAIN GUILLET; and CHRISTIAN LECLÈRE. 1976. La structure des phrases simples en français: Constructions intransitives. Genève: Droz.

CHOMSKY, NOAM. 1972. Some empirical issues in the theory of transformational grammar. In his Studies on semantics in generative grammar, 120–202. The Hague: Mouton.

COWIE, A. P., and R. MACKIN. 1975. Oxford dictionary of current idiomatic English, vol. 1. Oxford University Press.

FILLMORE, CHARLES J. 1968. The case for case. Universals in linguistic theory, ed. by Emmon Bach & Robert Harms, 1–88. New York: Holt, Rinehart & Winston.

——. 1977. The case for case reopened. Grammatical relations (Syntax and semantics, 8), ed. by Peter Cole & Jerrold M. Sadock, 59–81. New York: Academic Press.

FRASER, BRUCE. 1971. A note on the *spray paint* cases. LI 2.604–7.

——. 1976. The verb–particle combination in English. Tokyo: Taishukan.

GOUET, MICHEL. 1976. On a class of circumstantial deletion rules. LI 7.693–7.

GROSS, MAURICE. 1975. Methodes en syntaxe. Paris: Hermann.

HARRIS, ZELLIG. 1968. Mathematical structures of language. New York: Wiley.

JESPERSEN, OTTO. 1924. A modern English grammar. London: Allen & Unwin.

NILSEN, DON L. F. 1973. The instrumental case in English. The Hague: Mouton.

[Received 26 January 1982;
revision received 1 April 1982;
accepted 20 August 1982.]