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Putting PUT to Use: Prototype and Metaphorical Extension[1]

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This paper investigates the relationship between prototype meanings and frequency of use with a view to establishing a foundation for the problem of 'prototype acquisition.' Prototype theory has been widely used in fields such as psychology, linguistics, and first and second language acquisition. However, the question of how people acquire and then use prototypes has not been extensively investigated. In this paper, one polysemous basic verb, PUT, was selected, and an attempt was made to investigate whether prototypes of polysemous lexical items are determined by their frequency of use.

To determine the prototype of the verb PUT, a free elicitation test was used, in which native speakers of English (N=42) were asked to write the most typical sentence using PUT. The results yielded the following as the prototypical argument structure of PUT:

Subject	*PUT*	*Object*	*Locative*
[+human]	*PTRANS*	*[+solid]*	*[+horizontal surface]*
			[+small]
			[+alienable]

To investigate the meanings of PUT actually used in native speaker discourse, tokens of PUT in the UCLA Oral Corpus (spoken data) and the Brown Corpus (written data), each of which contain approximately 120,000 words, were analyzed. A major finding was that the prototype of PUT does not correspond to frequency of use. Specifically, PTRANS (= physical transfer) is not as frequent as NON-PTRANS which is a metaphorical extension from the prototype. This result is surprising since 87.8% of the native speakers surveyed produced PTRANS sentences as the prototype of PUT. The implications of the findings for both prototype theory and the acquisition of polysemy will be discussed.

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INTRODUCTION

Basic verbs are, in most cases, polysemous (i.e., have multiple meanings). Previous research in the area of second language lexico-semantic development has shown not only that it is difficult for second language learners to correctly grasp the lexical boundaries of L2 lexical items, but also that learners acquire the central (prototypical) meaning of polysemous words more easily than less prototypical meanings (Kellerman, 1978, 1979; Tanaka & Abe, 1985; Graham & Belnap, 1986; Ijaz, 1986; Tanaka, Abe, & Takahashi, 1987). However, prototype theory, which has been used to account for the lexico-semantic development of L2 learners, is not without problems, though it has strong theoretical foundations of its own. Prototype theory was developed in the fields of psychology and anthropology, in the studies of basic color terms and their universality (Berlin & Kay, 1969) and in investigations of natural categories (e.g., Rosch, 1973). Similar ideas were proposed in the field of linguistics (Ross, 1973; Labov, 1973). The basic idea of the theory is that natural categories have an internal structure, some members being more typical, some members being less typical (i.e., marginal). Human ability to categorize is based on the prototypes of categories, category membership being defined in terms of the distance from the prototype. There is no necessary and sufficient condition for category membership.[2]

Prototype theory has been applied to linguistic analysis (Coleman & Kay, 1981; Bybee & Pagliuca, 1985; Shibatani, 1985; Lakoff, 1987) and psycholinguistic analysis (Pullman, 1983), first language acquisition (Bowerman, 1980; Dromi, 1987) and second language acquisition (as noted above; Gass, 1987; Tanaka, 1987a; Adamson, 1989). Although there is validity in the studies based on prototype theory, I can identify (at least) three problems which have to be resolved for this theory to be fully accountable. First, it is not clear what a prototype consists of. How is the prototype represented in people's minds? Let us take as an example the natural category 'bird.' Is the prototype a specific exemplar, such as 'robin' or 'sparrow,' or is it a summary representation of a cluster of features such as, [+feathers], [+flying ability], [+two legs] (cf., Smith & Medin, 1981)? This is a representation problem. Second, we do not have established measures or instruments for eliciting a mental representation of a prototype from subjects. This is an elicitation problem. Third, it is not known how people acquire a prototype. Is it related to frequency? Is it determined during an

early L1 acquisition stage, and will it remain unchanged once it is acquired? This is an acquisition problem.

The purpose of this study is to conduct a contextual analysis (Celce-Murcia, 1980) of the polysemous basic verb PUT with a view to establishing a foundation on which to address the acquisition problem. I will investigate the use of PUT in the actual spoken/written discourse of native speakers and try to see how the frequency of different uses of PUT is related to the prototype of this verb.

SEMANTIC ANALYSIS OF (BASIC) VERBS

In this section, I will discuss three different approaches in the literature dealing with the semantics of (basic) verbs. The purpose of this section is not to evaluate these approaches, but to gain some insights for conducting a contextual analysis.

The Dictionary Approach

The dictionary approach is the standard approach for identifying the meanings of basic polysemous words (see Nida, 1975; Larson, 1984.) The procedure is to sample different uses of a word, categorize them into groups according to their similarity in meaning and then assign each group a meaning. The method is both a practical way to capture the meaning of polysemous words and is good for pedagogical purposes. Yet, as a method of linguistic analysis it has problems (Tanaka, 1987b, 1987c). First, the criteria for categorization can be very arbitrary and inconsistent. Secondly, this approach cannot differentiate the meaning inherent in a word from contextual information. Tanaka (1987b) gives an interesting example. In the sentence "John took some candies," the verb 'took' is ambiguous. But by generating additional contexts, the sense becomes clear in each case:

John took some candies and then got a stomachache.---->	EAT
John took some candies and then got arrested.---------->	STEAL
John took some candies and put them on the table.------>	SEIZE
John took some candies to Bill.---------->	CARRY

Therefore, the dictionary approach, which differentiates each instance above as a specific sense of TAKE, does not make clear what is inherent in an abstract basic word such as TAKE.

The Decompositional Approach

The decompositional approach identifies meanings of verbs by sets of primitive features (e.g., Schank & Abelson, 1977; Gruber, 1965; Jackendoff, 1978, 1983; Niedzielski, 1985,. Jackendoff's (1983) work, for instance, which was developed on the basis of Gruber (1965), tries to characterize meanings of sentences by using a set of compositional features. A sentence such as 'Amy put the flowers in the vase' is represented as follows:

> [event CAUSE ([thing AMY], [eventGO ([thing FLOWERS] [path INTO VASE])])]
>
> (Jackendoff, 1983, p. 177)

More metaphorical uses of PUT (e.g., 'He put me in an awkward position') would be analyzed by using the notation 'GO circ' which means 'circumstantial (not physical) change of location.'[3]

Such a representation of verb semantics was proposed to explain all the possible occurrences of verbs. What is interesting here is that Jackendoff and Niedzielski, who have very different theoretical backgrounds, came to propose quite similar semantic features, though Jackendoff's are more precise. Nevertheless, the decompositional approach may be too general for identifying the different meanings of polysemous verbs. As can be seen in the above example, the various meanings of PUT are defined basically by [+CAUSE], [+GO], [+positional/+circumstantial].

The Prototype/Core Approach

Fillmore (1977) discusses 'scene semantics' which proposes that each word has some 'scene' attached to it and that our interpretation of the sentences in which a word occurs is constrained by that scene. For example, when we hear the word 'write,' we usually have the idea that the agent is human, that what is written is language of some kind, that the instrument is something like a pen/pencil and that some surface to be written on is present. We are therefore confused at first by the sentence 'The dragonfly writes' and subsequently try to understand it as metaphor/personification. The typical 'scene' called on by the word thus corresponds to the 'prototype' of the word. Tanaka (1987b, 1987c) develops this idea to explain the different meanings of polysemous verbs by their prototypes and metaphorical extensions. For example, Tanaka proposes that 'break the vase/glass' can be identified as the

prototype of 'break,' while different senses of 'break' (such as 'break one's heart,' 'break the tradition,' 'break the electric current') can be interpreted as metaphorical extensions of the prototype. In addition, to capture the semantic boundary of a word more precisely, he proposes a 'lexical core' as the meaning which is always present for all the uses of a word. This meaning is what is called 'core meaning' in linguistics. The lexical core of PUT is analyzed in Tanaka (1987b) as "to move human or thing to location or state" (p. 210).

Here again, what comes before and after the verbs -- the arguments -- is important in the analysis. Tanaka defines 'core' as 'context-independent meaning' and distinguishes it from 'context-dependent senses,' arguing that there is an abstract meaning which always exists for a word, whereas contextual information determines its different senses.

The implications of these studies are that (1) in order to analyze the semantics of polysemous basic verbs, it is necessary to look at the predicate-argument structure of the verbs, and that (2) the analysis of verb meaning itself has to be general/abstract to some extent. The problem of the dictionary approach is, as suggested above, that it cannot differentiate contextually determined meaning from the meaning inherent in the word. If we listed all the meanings defined by context, the list would have to be a very large one in the case of basic verbs which are semantically very general. The decompositional approach is also forced to rely on contextual information because any analysis cannot go further than [+CAUSE, +GO] without contextual information. The prototype/core approach also points to the abstract nature of basic verb 'meaning' and the importance of contextual information in determining the specific 'sense.'

METHOD

The method of 'contextual analysis' introduced by Celce-Murcia (1980) was used in this study because, as discussed above, contextual information is important for the semantic analysis of basic verbs. Contextual analysis, which may be considered a type of corpus/text linguistics, is quite suitable for this purpose since it "examines a linguistic form in order to determine where, why, and how frequently that form occurs in written or spoken ... discourse" (Celce-Murcia, 1980, p. 41). In contextual analysis, a particular form (word, phrase, structure, etc.) is chosen, and, by analyzing the

tokens of the form that appear in discourse, such things as its meaning, function and frequency are determined. For example, the method has been used to investigate the differences between clefts and psuedo-clefts (Kim, 1988), the functional differences among 'used to,' 'would' and simple past (Suh, 1989), the function of the conjunction 'and' (Lazaraton, forthcoming), the function of marked word order (Yang, 1989) and conditions on dative alternation (Williams, 1989). In this study, the method is used to determine the relationship between frequency and prototypicality.[4]

As suggested in the introduction, the acquisition of prototype is still an open issue. Frequency is supposed to play some role in prototype formation, but the relationship between the two is not clear. In Reed's (1972) experiment on artificial categories, a high correlation was not found between frequency and prototypicality, but we cannot claim this result to be generalizable to natural categories (Tanaka, 1987c). MacKay (1986) claims that personification is the prototypical metaphor, based on a frequency analysis of poems. His assumption is that prototypical metaphor occurs most frequently.

In the field of SLA, the relationship between prototype and frequency has also been discussed. Kellerman (1978, 1979, 1986) claims that L2 learners tend to transfer prototypical meanings of polysemous words in L1 to L2 more readily than less prototypical meanings. In discussing the factors that influence the acquisition of prototype, Kellerman (1979) suggests the possibility that "frequency may be a crucial, if presently untestable, factor" (p. 50) in determining coreness (i.e., prototypicality). Kellerman (1986) uses the term 'subjective frequency' (i.e., what native speakers believe to be frequent senses of a polysemous word) as a predictor of transferability and suggests that this is another measure of prototypicality. However, perceived frequency may not necessarily correspond to actual frequency in discourse. This study is thus an attempt to investigate whether there is a gap between prototypicality/subjective frequency and actual, observed frequency.

The data analyzed for this study consist of approximately 120,000 words of spoken data from the UCLA Oral Corpus (Celce-Murcia, 1987) and written data samples totalling 124,066 words selected from the Brown Corpus.[5] The selected written data include Press: Reportage--Sports (15,908 words); Skills and Hobbies: Periodicals (76,825 words); Learned: Social and Behavioral Sciences (31,333 words). These topic areas were selected because they were thought to have frequent uses of PUT.

The research questions addressed are:

1 How is the basic verb PUT used in discourse? In particular, what appear as arguments of the verb?
2. What is the relationship between the frequency in discourse and the prototype?

The prototypical predicate-argument structure of the verb PUT was determined using a free elicitation test (the Prototype Test, developed by the researcher) in which subjects (native speakers of English -- TESL/Applied Linguistics students and faculty; N=42) were asked to write a typical sentence using PUT (for details, see Shirai, 1989).[6] The sentence most frequently produced was 'X [+human] put(s) a/the book on the table/desk.'

The prototype of PUT derived from this sentence is as follows:

Subject	PUT	Object	Locative
[+human]	PTRANS	[+solid]	[+horizontal surface] [+small] [+alienable]

PTRANS (=physical transfer) is defined as "the transfer of physical location of an object" (Schank & Abelson, 1977, p. 13).

DATA ANALYSIS

Frequency of PUT

To determine the frequency of meanings for PUT in the corpus data, all tokens of PUT were first categorized into idioms and non-idioms, the latter being the focus of this analysis. The reason for excluding the category IDIOM is twofold. First, psycholinguistic evidence suggests that idioms are "treated by humans as if they were ordinary, single lexical items" (Aitchison, 1987, p. 78). If this is the case, idioms have to be analyzed in a different way. Another reason for excluding PUT idioms is related to the next subcategory distinction that was posited: PTRANS (physical transfer)/NON-PTRANS (no physical transfer). In the case of idioms, it is very difficult to distinguish between the two. For example, 'put on glasses' involves physical transfer, but the mere fact of 'physical transfer' does not satisfy the meaning of the

idiom, since the glasses must be worn properly as a result of the action.

Two criteria were used to identify idioms following Sadock's (1974) suggestion that there are two dimensions in idiomaticity: one grammatical, the other semantic. If any item satisfied both criteria, it was categorized as an idiom and excluded from further analysis. The two criteria are explained as follows:

Grammatical idiomaticity[7]
It is possible for the verb phrase to have the form 'put + particle + object.' In other words, it can function as a single transitive phrasal verb. Thus, 'put X together' can satisfy the criterion of grammatical idiomaticity since it can take the form 'put together X,' whereas 'put X on a sound basis' does not because it cannot take the form 'put on X a sound basis.'

Semantic idiomaticity
The verb phrase is not categorized as a "literal phrasal verb" (Fraser, 1976). Thus, 'put up the microphone' is not categorized as an idiom because the mere fact of transferring physical location constitutes the meaning of this expression; it should be interpreted literally. 'Put up the basket' in basketball, on the other hand, is an idiom.

As an illustration, the two tokens of 'put in' in the following examples were categorized as idioms because both satisfy the above two criteria. 'Put in' here can be, or is, used as a phrasal verb, and the meaning is not just PTRANS, but 'to plant':

> wanna put something in now?
> This is an excellent time to put in carrots
> (Garden Lady -- UCLA Oral corpus)

In the first example, particle movement can be observed with 'something' as an object. In addition, neither of these examples is a literal phrasal verb because both involve something more than putting A (object) in B (place).

This method of identifying idioms is specific to this study; I do not claim it is applicable to studies with different purposes. It is impossible to make a general dichotomous distinction because idiomaticity is relative and should be considered in terms of a continuum (Bolinger & Sears, 1981). Compromises must be made, therefore, in order to categorize data which are continuous rather than categorical.

As mentioned above, after the idioms were excluded, the remaining tokens were then divided into PTRANS and NON-PTRANS. This division was made because I found it useless just to count frequency without specifying the role/meaning of PUT in a sentence. For example, even if the form is the same, 'a book' in 'put a book on the table' and the same form in 'put a book to use' are quite different in their semantic content in relation to PUT.

In order to validate the reliability of the classification, two linguistically sophisticated native speakers of English were asked to classify approximately 20% of the tokens into the categories used by the researcher (i.e., IDIOM/NON-IDIOM; PTRANS/NON-PTRANS). Items over which the raters and the researcher disagreed were discussed until a consensus was reached.

The frequency data of the lexical item PUT found in the two corpora are shown in Table 1.

TABLE 1
Frequency of PUT
Speech vs. Writing

	Speech			Writing		
	No.	Frequency*	%	No.	Frequency	%
PTRANS	34	.28	25.0	21	.17	39.6
NON-PTRANS	48	.40	35.3	23	.19	43.4
IDIOM	46	.38	33.8	9	.07	17.0
OTHER**	8	.07	5.9	0	.00	0.0
TOTAL	136	1.13	100.0	53	.43	100.0

* Frequency per 1,000 words, calculated according to the following formula: frequency per 1,000 words=1,000x(raw frequency count /120,000)
** The tokens which were not categorizable are in this category.

The numerical differences[8] between the oral data and the written data can be summarized as follows:

1. The frequency of PUT is higher in the spoken data.
2. The percentage of idioms is higher in the spoken data.
3. NON-PTRANS is more frequent than PTRANS both in the spoken and the written data, though the difference is not great in the written data.

The first observation corresponds with the data in Francis & Kucera (1982) which dealt with the frequencies of the entire Brown Corpus (out of a total of 1,136,854 words, the frequency of PUT in the whole Brown Corpus is .51 per 1000 words). In the present study, PUT appears more than twice as frequently in spoken data as in written data. The relatively low frequency of PUT in written text is probably due to stylistic reasons since repeated use of the same high frequency word is not desirable in writing, and a writer has more time to choose different words than a speaker does. The high frequency of idioms in the spoken data is also not surprising.

The third important observation is that PTRANS is less frequent (both in oral and written data) than NON-PTRANS and that the difference is greater in speech than in writing. This finding sharply contrasts with the results of the Prototype Test in which PTRANS was predominant among the native speakers' responses. The implication of this finding will be discussed in detail in the discussion section.

As stated in the previous sections, an analysis of arguments (subjects, direct objects, locatives) was undertaken whose focus was the semantic properties of the arguments, not the formal properties. As Lloyd-Jones (1987) notes, it is difficult to categorize NPs by their semantic properties; it is inevitable that there will be many fuzzy cases. I would therefore not claim that the classification is absolute. Also, I do not report information on how many pronoun/common noun NPs appeared in the corpus. In fact, subjects and direct objects of the verb often appeared as pronouns. The difficulty in the analysis was to determine the referent of those pronouns. (Thus, there were 8 cases in the spoken data which could not be categorized, as can be seen in Table 1. They are labeled as OTHER.) In the following, what I refer to as arguments of PUT do not correspond to the form in which they appeared, but to the referent of the form.[9]

SUBJECT

In the spoken data, it was found that all subjects of the verb PUT, including the idioms, were [+agent]. This verb thus seems to follow its selectional restriction pattern quite strictly. What is more interesting is that while only 7 cases of the 136 subjects are [-human] (e.g., missile, computer, society, situation), these 7 cases all seem to have some human property (i.e., personification). As

Shintani (1979) suggests, [+human] NPs seem to be the unmarked case for agents, while [-human] NPs are marked agents.

Direct Object

The data for the categories of PTRANS and NON-PTRANS are shown in Table 2.

TABLE 2
Direct Objects in PTRANS/NON-PTRANS (Speech)

PTRANS	No.	%	Examples
Prototype	27	79.4	(plant, pear, soda bottle)
-solid	1	2.9	(bathwater)
-small	5	14.7	(blanket and pillows, radiators)
-alienable	1	2.9	(hands)
TOTAL	34	100.0	

NON-PTRANS	No.	%	Examples
information			
(specific)	11	22.9	(initial, name, number)
(abstract)	8	16.7	(it, this, this thing)
human	13	27.1	(you, your/myself, a guy)
abstract entity	7	14.6	(fear, emphasis, focus)
thing	6	12.5	(car, tax, money, property)
body part	3	6.3	(foot, hand, finger)
TOTAL	48	100.0	

What is important here is that as far as PTRANS is concerned, most of the direct objects are categorized as prototype (i.e., [+solid], [+small], [+alienable]). Moreover, the second feature [+small] is not very clear-cut; some of the items in [-small] may well be prototypical. As compared with the data on locatives (to be discussed below), this is quite remarkable. It seems PUT constrains/selects direct objects as well as subjects quite strictly.

In NON-PTRANS cases, many fixed expressions can be found, such as 'put (=write) your initial in X,' 'put (=express, phrase) it this way.' It should be noted that there was no case of a prototypical object ([+solid], [+small], [+alienable]) found in this

category. Though this is a little surprising, it is understandable if we consider that the nature of the category involves various extended meanings of PUT.

Locatives

The locative expressions were the next to be analyzed. The results are shown in Table 3.

TABLE 3
Locative Expressions in PTRANS/NON-PTRANS (Speech)

PTRANS

	No.	%	Examples
in + container	14	41.2	(crate, box, basket, pot)
in + area	3	8.8	(spot)
on + surface	5	14.7	(bonnet, body, top, head)
adverb of location	11	32.4	(up, outside, there*, down)
0	1	2.9	(put water)
TOTAL	34	100.0	

NON-PTRANS

	No.	%	Examples
in	21	43.8	(+area (4), +place (2)),
on	14	29.2	(+human (4), age, list, hold)
into	4	8.3	(position, machine, context)
adverb	4	8.3	(there (2), here, away)
0 + Noun	2	4.2	(put it this/that way)
to	1	2.1	(put an end to it)
0	2	2.1	
TOTAL	48	100.0	

*It should be noted that it would be desirable to identify anaphoric 'there' in terms of its referent (i.e., ON X, IN X, etc.) from the context. However, it was not possible to do so with these data.

With the locative expressions, a pattern clearly different from the direct objects can be seen. Most of the direct objects were congruent with the prototype. Among the locatives, for which a variety of expressions are used, 'on + surface' occurred in only 5 out of 35 tokens, and the most prototypical case ([+surface], [+horizontal]) occurred only once (on the bonnet). 'IN X' has a much higher frequency (13 occurrences). In NON-PTRANS, too, 'IN X' is more frequent than 'ON X.' It appears that regarding locatives, the frequency is quite different from the prototype.

DISCUSSION

In this study, a large discrepancy in the use of PUT was found between frequency in actual discourse and prototype. First of all, the frequency of PTRANS was lower than that of NON-PTRANS, particularly in speech. This is an important finding since 87.8% of the respondents in the Prototype Test (native speakers of English) produced PTRANS sentences as their examples of the most typical use of PUT. Second, the most frequent locative expression following a direct object (i.e., 'IN X') was different from the prototype (i.e., 'ON X').

Taken at face value, these results have important implications. Let us consider their possible interpretation in relation to the methodological problems involved in this study.

The first possible interpretation is related to the sampling problem of the discourse to be analyzed. When we want to do lexico-semantic analysis, topic areas have a much stronger bearing on the result than in the case of syntactic/pragmatic analysis. Lexico-semantic analysis also requires a much larger corpus than syntactic analysis (Marianne Celce-Murcia, personal communication). The corpora used in this study (UCLA Oral Corpus, Brown Corpus) may not necessarily represent the typical linguistic environment of adult native speakers of English. In everyday language, native speakers may be exposed to (and use) more prototypical cases of PUT, but frequency of occurrence is very much dependent on discourse topic. The types of PUT a person uses might vary greatly depending on his/her occupation (e.g., housewives, construction workers, students, college professors, kindergarten teachers). Construction workers, for instance, might presumably frequently use PTRANS in giving directions to one another.

The second interpretation is that in early L1 acquisition stages, children may be exposed to (and use) the prototype, and, once the prototype is established, it may not undergo any major change. In other words, what is learned first remains most basic through the later stages of learning.

The third interpretation is that there may be some cognitive constraints on prototype formation. It has been claimed that prototype is universal (Berlin & Kay, 1969; Rosch, 1973). Tanaka & Abe (1985) call this the 'prototype hypothesis.' As an example, Tanaka (1987b) discusses the prototype of the preposition ON. The semantic boundary of ON and its equivalents are different across languages. In English it is possible to say 'on the wall,' 'on the ceiling' and 'on the table.' However, in Japanese/Korean, the first two uses of ON are not possible, and in French, 'on the ceiling' is not possible. Even so, the prototype is the same across the four languages: namely, [+surface], [+horizontal], [+contact] (e.g., on the table). Though further study is necessary in this area before making any claims, it is possible that the prototype formation of spatial prepositions/verbs is constrained by cognitive factors such as perceptual/visual saliency. All human beings have the same vision by which to view the world. If language is a way to interpret and represent the world, it should develop with a number of constraints that work across languages (cf., Takahashi, 1964; Jackendoff, 1983).

The fourth interpretation is related to the problem of the elicitation instruments and the narrow definition of the prototypical locative expression.[10] The results of the Prototype Test may be due to an interaction between direct objects and locatives, which influenced the subjects' response. If 'book' is associated with PUT as the prototypical object, 'ON X' is more likely to be triggered. If 'ball' is the prototypical object of PUT, 'IN X' may be triggered. Alternatively, if 'ON X' is the prototypical locative expression associated with PUT, 'book' is more likely to be triggered as a direct object than 'ball.' The high frequency of elicited 'ON X' may be due to its 2-dimensional nature which is perceptually simpler and more salient than 'IN X' which is 3-dimensional and thus more general and less salient. It is thus possible that the prototype of PUT is wider in scope than hypothesized, with both 'ON X' and 'IN X' being prototypical, ON being unmarked, IN being marked in English (Marianne Celce-Murcia, personal communication). Recalling the representation and elicitation problems discussed earlier, if this interpretation is true, the actual frequency of prepositions in the corpus database is not very different from the prototype, as far as the PTRANS cases are concerned.

Another interpretation concerning the locative expressions is that the higher frequency of 'IN X' may be due not to the association of PUT and 'IN' but to the higher frequency of 'IN' in

English discourse in general. According to Francis & Kucera (1982), 'IN' appears 20,870 times in the over 1,000,000 words of the Brown Corpus, while 'ON' appears only 6,183 times. In view of this finding, the discrepancy between prototypicality and frequency in locative expressions may not be very important. It may be only natural that 'IN X' appears more frequently than 'ON X,' whether or not as an argument of PUT.

Another interesting point to be noted regarding the difference between 'IN X' and 'ON X' is that in the case of NON-PTRANS, 'ON X' is more frequent relative to 'IN X' than in the case of PTRANS. With PTRANS, 'IN X' appears in 50% of the tokens and 'ON X' in 15%, while of the NON-PTRANS cases, 44% are 'IN X' and 29% are 'ON X' (see Table 3.). What is important here is that for NON-PTRANS, which is a metaphorical extension of PTRANS, 'ON X' is used more often despite 'IN' being more than 3 times as frequent as 'ON' in English discourse in general. This finding may be interpreted as support for the hypothesis that "metaphor is based on prototype" (Tanaka, 1987c, p. 151). For example, when we say 'He is a snail,' it is assumed that both the speaker and the listener know the prototypical features of 'snail' -- its speed, appearance, etc. Without this knowledge, it is impossible to interpret the metaphor. If Tanaka's hypothesis is right, it is not surprising that 'ON X' occurs more frequently in the NON-PTRANS category than in PTRANS.

CONCLUSION

In conclusion, I would like to discuss the limitations of the present study and suggest some areas of possible future research. One of these limitations is the criteria of categorization, especially that for IDIOM/NON-IDIOM. An alternative approach would be to use psycholinguistic measures of idiomaticity by giving a number of native speakers a questionnaire (such as those used in Jordens, 1977; Tanaka & Abe, 1985) and asking them to rate the idiomaticity of the target expressions. Such a procedure might yield different results from the present study because the criteria used in this study are basically linguistic (grammatical, semantic) rather than psycholinguistic. For example, PUT in 'Let's put it this way' might be perceived as an idiom by most subjects, though in this study it is not treated as such. Since one of the reasons for excluding idioms from the analysis was psycholinguistic, it is important to explore this possibility. However, the methodology of idiomaticity rating

also faces the same problem of dichotomy and continuum. Psycholinguistic measures of idiomaticity have to be continuous rather than dichotomous. We would have to somehow operationally define the cutoff point without throwing away too much information.

Another limitation of this study is the subjects from whom the prototype was elicited. The subjects (TESL/Applied Linguistics students and faculty) may not be truly representative of the 'native speakers of English ' population. Though an informal survey with a limited number of UCLA graduate students from various major fields did not show a different trend, it would be interesting to administer the Prototype Test to a less specialized sample to get perhaps more representative data concerning the prototype of PUT.

A third problem is the sampling of the corpora studied in the contextual analysis. Not only does it appear that the choice of topic areas has a strong bearing on the results, it is probably impossible to obtain a corpus that truly represents what is called 'native speaker discourse.' What we can do is try to approximate representativeness. If possible, we would select people engaged in several different occupations and record their daily conversation. The data obtained would likely be more valuable in addressing the research question: How do native speakers of English use PUT in their everyday language? If the analysis of such data yields the same results as the present study, the claims made here would be more reliable.

It would also be very interesting to study child language acquisition data to examine the frequency and function of PUT in the linguistic input and output of children acquiring English. L1 acquisition baseline data are stored on-line at Carnegie-Mellon University and may be accessible for such research. Such an undertaking would be important because there are few studies on the acquisition of prototypes and none, to my knowledge, on polysemous verbs.

Finally, the 'prototype hypothesis,' discussed earlier, should be examined more rigorously since this is an interesting and important hypothesis. If the hypothesis is true, it would explain why people acquire the prototype in their L1 regardless of frequency. If there are cognitive constraints on prototype formation, it would be only natural that prototype and frequency are very different. It would also explain why it is easy for L2 learners to acquire the L2 prototype.

One way to test this hypothesis would be to cross-linguistically study the semantic boundary and prototype of selected lexical items. If equivalents in different languages are found to have the same prototype, this finding could support the prototype hypothesis. I assume, however, that this hypothesis might not apply to all kinds of lexical items. Items whose meaning is socially determined would naturally lie outside the scope of the prototype hypothesis. We should therefore initially study lexical items related to visual/spatial cognition. Such research is very important in that it would be an attempt to define the scope of innateness -- i.e., what is universal in language acquisition.

The present study has shown that since actual frequency of use in native speaker discourse does not necessarily correspond to the prototype, the acquisition of prototype may not correlate with frequency. Although this study leaves open many questions to be resolved, it does provide a foundation on which to base further research in the analysis of basic polysemous verbs and their acquisition.

Notes

[1]I thank Marianne Celce-Murcia, Evelyn Hatch and three anonymous reviewers of *Issues in Applied Linguistics* for their helpful comments on an earlier version of this paper. All the deficiencies are, of course, mine.

[2]For a comprehensive review of the prototype theory, see Taylor (1989).

[3]This is my own interpretation of Jackendoff; he does not give a specific example using PUT but uses other verbs to exemplify the notion of 'GO circ.'

[4]I do not claim that contextual analysis is superior to the three approaches discussed above. The method is suitable for the purpose of this particular study.

[5]For details, see Francis & Kucera (1979).

[6]In the field of cognitive psychology, several methods have been used to elicit prototype, such as reaction time, free production and typicality rating. Having subjects write a prototypical member of a category is one such elicitation device (see, for example, Glass & Holyoak, 1986, p. 165). However, this plethora of methods is part of the elicitation problem. Further research is needed to see whether the method used in the present study is truly valid.

[7]This criterion was also intended to exclude 'phrasal verbs' which can take forms syntactically different from the prototype (put X on Y).

[8]In this paper, figures and percentages are presented without any statistical tests having been performed. Therefore, I do not claim any statistical difference among the data. Although chi-square tests are often used in frequency studies in linguistics, it is a questionable procedure which violates one of the assumptions (independence of data) of the chi-square test (see Hatch & Lazaraton, forthcoming).

[9]As for the analysis of arguments, I shall only report the results of the spoken data, since there were no important differences between the written and spoken data as they relate to the research questions. For details on the written data, see Shirai (1989).

[10]This interpretation does not therefore apply to the discrepancy between PTRANS and NON-PTRANS.

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Special Feature

Looking Back, Looking Ahead: An Interview with Evelyn Hatch

Maria M. Egbert
University of California, Los Angeles

Profile

Evelyn Hatch began her studies at UCLA in the 1960s, completing, in fairly rapid succession, a BA in political science, an MA in linguistics and a Ph.D. in education. This broad academic background reflects Evelyn's long and successful career in applied linguistics, during which she researched, published and taught in many areas, most notably in second language acquisition, discourse analysis, psycholinguistics and research methodology. Evelyn's interests have also taken her around the world: one of her most frequent stops has been Cairo where she was awarded the Ain Shams University Medal for Service to English Language Teaching in Egypt on the occasion of the 10th anniversary of the Center for Developing English Language Teaching.

In 1977, Evelyn founded the Second Language Research Forum, the only major conference in our field organized entirely by graduate students. The 1989 SLRF Conference at UCLA was dedicated in her honor. Upon her retirement from UCLA's Department of TESL & Applied Linguistics in November 1989, past students and colleagues established the Evelyn Hatch Award for Excellence in Graduate Research at UCLA in recognition both of Evelyn's own influential research career and of the help and encouragement she has offered to all who have worked with her over the years.

IAL is therefore pleased that Evelyn Hatch agreed to be the subject of our first Special Features Interview and answer several questions that people have always wanted to ask her but never found the opportunity to do so. Early this year, students and colleagues at UCLA, as well as everyone on IAL's electronic mailing list, were invited to submit questions for this interview. We thank the respondents[1] for their suggestions which included questions concerning Evelyn's personal experiences, her view of applied linguistics as a researcher and her role as an educator for future researchers. The interview was conducted at UCLA on February 28, 1990.

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