

<Article>

A New Framework for Teaching Phrasal Verbs

By Ralph Sumner, Chiba Keizai University

- 1 . Introduction
- 2 . Categories and the Mind
- 3 . The Brain and Memory
- 4 . Categorizing Prepositions/Phrasal Adverbs
- 5 . Conclusion

1 . Introduction

One of the most difficult areas for non-native speakers of English to approach the competence level of native speakers is in the area of prepositions and phrasal verbs. For native speakers, however, these areas mark the most natural and intimate speech patterns. The use of these expressions is--like the use of articles--complex and difficult to codify in formal grammars, although native speakers have a sense of what sounds right or wrong, usually without really knowing why.

Looking in dictionaries does not seem to help very much. Prepositions have long lists of meanings in a variety of situations, and meanings of specific prepositions often overlap with those of other prepositions. The *Webster's Third World Dictionary* gives a total of 75 different meanings for the single word *up*. It would be quite a feat of memory to memorize all of these meanings and then be able to use each appropriately. The problem of understanding prepositions is complicated enough, but

dealing with phrasal verbs is even worse. The foreign language student of English faces the daunting task of memorizing lists of thousands of phrasal verbs to get a good command of spoken English. The excellent dictionary of American phrasal verbs, *NTC's Dictionary of Phrasal Verbs*, compiled by Richard Spears, has 12,276 entries with 13,870 definitions and 29,967 contextual examples. In general, such lists are not organized in any meaningful way for remembering the meanings, and a single phrasal verb may have a number of dissimilar meanings. It is in this area that we can expect the most help for the learner if we can come up with clear and helpful categories.

Since the 1950's, there has been an attempt to define the basic rules in a native speaker's head that are transformed to generate a complex web of meaning. These include "kernel sentences" (Harris, 1957), "generative semantics" (Lakoff, 1963), and "deep structures" (Chomsky, 1965). Many current theorists hold that these rules in the speaker's head are connected to some sort of "language center" in the brain. However, George Lakoff lists ten ways in which theories positing a language-specific center in the brain fail to account for the phenomena observed (Lakoff, 1987, p. 464, 5). Lakoff argues for a paradigm based on universal cognitive principles that does not require a special language center in the brain. In this paper, I will look at the principles Lakoff proposes for mental categories based on prototypes. I will attempt to apply this approach to clarify the meanings of prepositions and phrasal verbs for the non-native speaker. I will also look at the intimately related problem of how the brain remembers. New research in this area can shed light on the universal cognitive principles that are also involved in language. Both of these problems--how the brain remembers

and how it generates language--are crucial matters in teaching English to non-native speakers, and one can hardly deal with one of the problems without dealing with the other.

To summarize, I will attempt to apply these basic rules of categories to words that can be used both as prepositions and as phrasal adverbs, and I will seek to present more satisfactory categories for teaching these words to non-native speakers.

2. Categories and the Mind

Every time we see something as a kind of thing--e.g., a bird, a car, a tree--we are categorizing. This cognitive activity is basic to human perception, structuring both our speech and our action.

George Lakoff tells of R.M.W. Dixon's description of classification words built into Dyirbal, an aboriginal language of Australia (Lakoff, 1987, p.92~95). Nouns in the Dyirbal language must be preceded by one of four classifiers: *bayi*, *balan*, *balam*, or *bala*. These words classify all objects in the Dyirbal universe, and the proper classifier must be used before each noun. Dixon (1982) gave a list of many objects classified by each of these words. The complexity of the lists makes the proper use of these words difficult for non-native speakers of Dyirbal, while native speakers use them properly in a completely automatic fashion. A brief summary of Dixon's list for *bayi* reveals that the word classifies "men, kangaroos, possums, bats, most snakes, most fishes, some birds, most insects, storms, rainbows, boomerangs, some spears, etc." Some of the words classified by *balan* are "women, bandicoots, dogs, platypus, echidna, some snakes, some fishes, most birds, fireflies, scorpions,

crickets, the hairy mary grub, anything connected with water or fire, sun and stars, shields, some spears, some trees, etc.” Similar lists were given for *balam* and *bala*. But Dixon did not stop with these lists. He attempted to uncover just what made these objects categories of the human mind, making sense to Dyirbal speakers so that they could learn them uniformly and use them unconsciously and automatically. Dixon observed that speakers do not learn category members one by one, but operate in terms of general principles.

According to Dixon's analysis there is a basic, productive, and fairly simple general schema that operates unless some specialized principle takes precedence. Dixon proposed the following basic categories:

- I. *Bayi*: human males; animals
- II. *Balan*: human females; water; fire; fighting
- III. *Balam*: nonflesh food
- IV. *Bala*: other (everything not in the other categories)

One can only be amazed by the simplicity of these categories compared to the apparent complexity of the previous lists. However, those lists must be understood in terms of the Dyirbal gestalt. Fish, kangaroos, possums, bats, snakes, and insects are included in class I as animals. Fishing equipment, such as fishing spears and fishing line are included in class I along with fish. Fighting spears, however, are in class II, under the *fighting* rubric. Many of the seeming anomalies can be understood in the context of Dyirbal myth. Storms and rainbows are believed to be mythical men, and so are put in class I. Though birds are animate, only three species appear in class I. These three species of willy wagtail are believed to be mythical men. Other species of birds are believed to be the spirits of dead females, explaining their presence in

class II. In myth, the spangled drongo is the bringer of fire, hence appearing in class II with fire. Crickets are mythical “old ladies”, thus in class II; the moon and sun are believed to be husband and wife, so the moon is in class I with other husbands, and the sun is in class II with other wives. Myth is not the only arbitrator rearranging the groupings. The hairy mary grub, for example, has a sting reputed to feel like sunburn, so the grub appears in class II with the sun. Dixon thus makes sense of what appeared at first glance to be complicated and rather bizarre categorical groupings. It will be worthwhile to see if categorical analysis of prepositions (including their use as phrasal adverbs) can yield similar results.

Lakoff (1987, p.95) describes eight general principles of human cognition at work in creating these categories. The first two principles he describes are:

(1) *Centrality*: Basic members of the category are central--in class I the central objects are human males and all animals. When we apply this principle to linguistic usage such as in regard to prepositions and phrasal verb adverbs, we must first define the basic members central to the category, i.e., the prototypes. Establishing the prototypes will be the key to properly organizing the linguistic categories.

(2) *Chaining*: Categories achieve apparent complexity by including peripheral members through their links to central members. One example is the chain linking women to the sun (a “wife”), which is linked to sunburn, which is linked to the hairy mary grub via its burning sting. While not obvious to the uninitiated, to members of the culture, this chain places the hairy mary grub in the same cognitive category as women.

Some usages within a linguistic category may not be basic members of the category, but the cognitive groupings can be understood by getting a grasp on how these members are linked to the category. By defining the linkage clearly, we can make the cognitive groups that exist in the minds of the native speakers accessible to foreign speakers. Whether categories are derived culturally, or derived from arbitrary cognitive groupings, or derived from chains whose connections are lost in history, showing the links as clearly as possible will create a powerful tool for generating near-native speech in non-native speakers.

The classical view of language development posits special language centers in the brain known as “Broca’s area” (for producing coordinated movements of speech) and “Wernicke’s area” (for “auditory word representations--i.e., individual word memories). Israel Rosenfield, in *The Invention of Memory* (Rosenfield, 1988) examines the reasoning forming the basis for the supposition of these so-called language centers, and shows how the case studies can be far more elegantly explained by the complexity of context, obviating the need to posit specialized centers for language in the brain. While theories of “universal grammar” are often explained by a development of a brain center for language developed through evolution, this phenomenon can just as elegantly be explained by basic principles of categorization.

Within this “Broca’s brain” controversy, proponents often point to the fact that children *always* learn a language to native speaker level, while adults *seldom* do. However, this gap in potential is not limited to language, occurring in many other fields as well. One example is the Japanese abacus, in which users achieve amazing levels of proficiency. To reach the highest strata of proficiency, one must begin studying the

art in childhood. Those who begin later will never attain to the highest level of ability. I doubt that anyone will theorize an "abacus center" in the brain based on this observation. It would seem more reasonable to postulate more flexible mapping in a developing brain due to the rich neural pathway development occurring at that stage.

The *Brain/Mind Bulletin* reported in April, 1989 that Harry Chugani, a neurobiologist at the UCLA Medical School, had measured increasing brain metabolism in children. Metabolism increases from infancy to age 2, when the rate equals that of an adult, and by age 3 or 4 the child's brain uses about twice the energy of an adult brain.

When the child's brain reaches the size of an adult brain at age 6 or 7, it is still using twice the energy of an adult brain. The supercharged state begins to slow at around the age of 10, leveling off to the adult rate by the age of 13 or 14.

The report noted that earlier investigations found 50 percent more synaptic connections in children than in adults. In theory the extra connections would require more energy. These greater energy requirements were used to explain a report by Irwin Feinberg of State University of New York (Stony Brook) that from the ages of 2 to 10, children experience twice as much deep sleep as adults, a difference that disappears by about age 14.

The report concluded that, "This growing evidence of the brain's dynamism during development may account for the shaping effects of early experience and for the child's ease in learning languages." (*Brain/Mind Bulletin*, 1987)

For a more complete look at the deficiencies of the theory positing a language center in the brain, see Lakoff's 1987 aforementioned book,

Women, Fire, and Dangerous Things.

Like Lakoff, Rosenfield eschews a “language center” in the brain and concludes that the evidence can be explained in terms of universal cognitive categories that are imposed by the way the mind works. While mental categories may be formed based on inherent similarities among the objects in the category, they may also be based on connections that are imposed by the mind itself.

In *Metaphors We Live By*, Lakoff and Johnson note that the central concepts of the way our bodies function provide the structure of our physical experience (Lakoff and Johnson, 1980, p.58). Their book explains how our cognitive categories are largely a function of metaphor, which organizes (1) the way we think, (2) what we experience, and (3) what we do every day. One example they give is the metaphor “argument is war”. We don’t merely talk about arguments in terms of war, we live by the metaphor. We see the person with whom we are arguing as an opponent. We attack his position and defend our own. We can win or lose. Many of the actions that we do in an argument are structured in terms of war (Lakoff and Johnson, 1980, p.4). The authors point out that focusing on the warlike aspects of arguing also hide other aspects that are inconsistent with that metaphor. For example, when we are preoccupied with the martial aspects of arguing, we lose sight of the cooperative aspects, such as viewing the other person as giving you his time, a valuable commodity, in an attempt to achieve consensus.

Lakoff and Johnson describe the ability to comprehend experience through metaphor as a sense, like seeing, touching, or hearing, with metaphors providing the only ways to perceive and experience much of the world. Rather than being “trite”, cliches may well be basic to our

way of organizing and understanding our world.

Emergent metaphors and emergent concepts (chaining) are those that come from emotional experiences. These concepts may be less clearly delineated than the basic concepts that are based on physical experience, but emergent concepts are often connected to or based on the physical concepts. The authors state that the physical basis is more fundamental than the cultural basis, though it is often hard to distinguish the whether a metaphor has a physical or cultural basis, since the choice of one physical basis from among many possible ones is related to cultural coherence. From this, we might predict that the fundamental (physical-based) concepts will be more easily learned in a foreign language, while the necessary reorganization of emergent (emotional) categories may well be confusing for language students, and it is here that clarification of the categories may do the most good.

Most of our fundamental concepts, the authors claim, are organized in terms of one or more orientation metaphors, which the authors refer to as "spatialization" metaphors. Prepositions, of course, are the basic means of expressing orientation, indicating that these words play a powerful and intimate role in determining who we are and how we experience the world. They have emerged from our experience of our own bodies. For this reason, understanding prepositional usages will be extremely important for the non-native speaker to grasp the spirit of the English language.

Lakoff and Johnson posit that "no metaphor can ever be comprehended or even adequately represented independently of its experiential basis" (Lakoff and Johnson, 1980, p.19). Understanding how these categories are organized in a language thus becomes basic to

approaching native speaker competence in that language. It will also be crucial for the non-native speaker to see *how* the emergent concepts are chained to these experiential categories.

While similarities in human experience create similarities in metaphorical categories, there is room for cultural differences as well. One example is that English speakers project a front-back orientation onto objects that have no intrinsic fronts or backs, such as when we say, “the ball is IN FRONT OF the rock” to indicate that the ball is between us and the rock. Hausa speakers project the opposite orientation onto the rock and in that situation would say, “the ball is IN BACK OF the rock” (Lakoff and Johnson, 1980, p.161).

This type of cultural difference in creating emergent categories illustrates the rather arbitrary manner in which the categories emerge. In Charles Fries’ 1945 book, *Teaching and Learning English as a Foreign Language*, Fries sets the stage for “Contrastive Analysis” to explain the difficulty of second-language learning being traceable to language differences. Fries saw this as a behavioristic problem—one of having learned different stimulus-response patterns. Dulay, Burt, and Krashen refute Fries in their book *Language Two* and argue in favor of a view of language “transfer” (which can be either “positive” or “negative”) that is not based on stimulus-response. However, they fail to ascribe any other clear theoretical principles (Dulay, Burt, and Krashen, 1982, pp. 96~101). I believe it would be possible to describe this “transfer” as a natural result of cognitive categorizing.

Traditionally, categories have been understood as groups of objects sharing inherent properties. However, the human mind uses categories to organize and understand the world, and categories must be sufficiently

flexible to serve that purpose. According to leading cognitive psychologist Eleanor Rosch, a category is based on the ideal prototype, and peripheral members of the category may share no properties at all, merely being included by virtue of relation to the prototypical ideal. (Rosch and Lloyd, 1978) Because of this, Lakoff and Johnson note that it is important to realize that rather than being rigidly defined, categorical concepts are defined by prototypes and kinds of relations to prototypes. This paper will attempt to present categorical definitions of prepositions in accordance with the principles of prototype-based cognitive categories.

3 . The Brain and Memory

How does the brain store memories? How does it create language? Are there special "language centers" in the brain, or is language based on universal cognitive principles? The answers to these questions will affect how we organize language teaching materials and influence how we present those materials to the students. Much of the classroom work with pattern drills is based on behaviorist assumptions of stimulus-response in which both cognition and emotion are deemed unimportant. Current research in cognitive psychology presents powerful challenges to these assumptions.

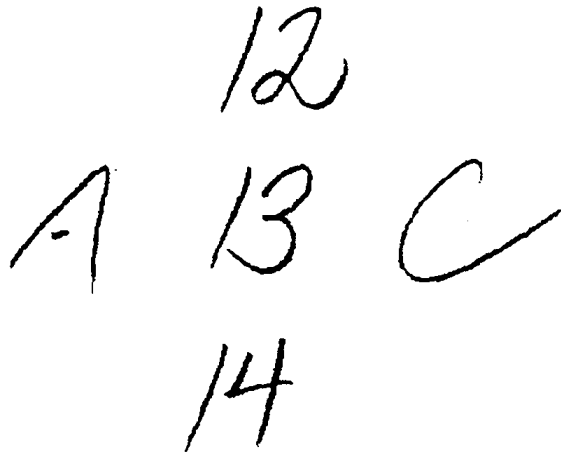
In *Grammatical Man*, Jeremy Campbell tells us, "It should be stated as emphatically as possible that language is generated, as well as sometimes imitated. A child does not merely store copies of heard sentences in the file cabinet of memory one at a time. Because language is generated by means of internalized rules, the child is able to be

creative, and is not wholly dependent on information from outside... Language most certainly is not the passive imitator of what other people say.” (Campbell, 1982, p.128) The dominant paradigm for explaining how human memory works currently compares the brain to a computer filing memories in storage compartments. Israel Rosenfield, in *The Invention of Memory*, calls this metaphor “the doctrine of localization of function”. (Rosenfield, 1988, p.5)

According to this traditional view, visual, tactile, and auditory stimuli are computed into perceptions which are then compared to previously learned images stored in the brain. This view holds that all perception is based on prior learning (images imprinted in the brain by the environment--how this is done, we are not told). Sigmund Freud, however, disturbed by the unreliability of memory, argued against localization of function. Freud’s view stressed that emotions structure both memory and perception. The modern term for the doctrine of localization of function is “modularity”, which retains the view that the brain has specialized functional units, although the view does not insist on anatomical localization.

An opposing view argues that the brain categorizes stimuli in accordance with past experiences as well as current needs and desires, providing a foundation for perception and recognition. Rather than storing images, we store procedures that help us manipulate and understand the world. These procedures are essential to recognition.

Consider the following well-known example from Gestalt psychology.



When covering the top and bottom figures and reading the horizontal group of three figures from right to left, most people will tend to read the three-figure group as “A, B, C”, but when covering the left and right figures and reading the vertical group of three figures from top to bottom, we tend to read the figures as “12, 13, 14”. This shows that the brain is interpreting or categorizing according to context rather than simply matching according to pre-existing images such as that done by an optical character recognition program on a computer.

The localized function and modular arguments are based on the belief that specific pieces of information can be sorted out by the various specialized brain centers, or “modules”. As demonstrated by this example, however, the brain does not simply sort information. If it did, context would be meaningless in perception.

The doctrine of modularity has for many years pointed out that the brain maps motor stimuli. In 1870, two young Germans, Fritsch and Hitzig, demonstrated that touching discrete areas of a dog’s brain activated specific parts of its body. These maps were assumed to be both permanent and more or less identical in all members of a species. However, in 1983, Merzenich and others at the University of California

at San Francisco discovered that sensory maps in monkeys showed considerable variation. The maps varied over time, even within short periods of time, and displayed considerable variation between individual monkeys. (Rosenfield, 1988, p.180)

The brain has many different kinds of maps. These maps are interrelated, mapping each other in a variety of ways, and categorizing input in many different ways. The purpose of the maps is to create perceptual categorizations. The brain does not simply store images or bits of information, but instead actively categorizes and recategorizes information in connected ways. Thus, as F.C. Bartlett said, "remembering is not the re-excitation of innumerable fixed, lifeless and fragmentary traces. It is an imaginative reconstruction, or construction, built out of the relation of our attitude towards a whole active mass of organized past reactions or experience..." (quoted in Blair, 1988, p.99)

Many people refer to the electrical stimulation of certain areas of the brain causing the reliving of forgotten memories. This experiment has become so widely known that it has achieved urban legend status, and is believed to constitute proof of fixed, permanent memories stored in specific locations of the brain. The legend is based on the work of Wilder Penfield, a neurosurgeon who electrically stimulated the surface of the brain of a conscious patient during a brain operation in 1933, and much to the surprise of both doctor and patient, the stimulation caused a memory "flashback". However, of the 520 patients who received electrical stimulation, only 40 produced what Penfield termed "experiential responses", and some of those memories were of experiences that obviously could not have actually happened. In a 1980 review of Penfield's work, two American psychologists (Loftus and Loftus, 1980,

p.413, 414) challenged this "video recorder" view of how the brain works. They found the content of these memories to be strongly influenced by the patient's mental content at the time of the stimulation. They argued that a reconstruction or construction hypothesis was much more viable to explain the memories. Subsequent studies have shown that activating limbic structures (believed to be essential to emotional experiences) is the key to obtaining experiential responses. (Rosenfield, 1988, p.164)

This research suggests that not only do we need to focus on arranging language study materials such as prepositions into meaningful categories, we also need to insure that the material is presented in meaningful contexts in chunks of discourse. Rosenfield states flatly, "Emotions are essential for creating and categorizing memories." (Rosenfield, 1988, p.165) He goes on to describe the sensations of both perception and remembering as requiring limbic (emotional system) activity. Considering emotional requirements when selecting texts and teaching methods for language learning will lead to the use of more interesting texts that consider overall meaning and holistic discourse. Rather than demanding that students perform mere grammatical operations on language, we need to focus on having them experience the language in meaningful, goal-oriented discourse.

The spread of behaviorism, especially as popularized by B.F. Skinner, led to the so-called "stimulus response" drills, in which automatic language responses were supposedly learned by repetitive drills. Skinner insisted that emotions do not matter to a theory of learning. According to behaviorist assumptions, there is a stimulus and a response. The response can be reinforced by training, making it more likely to recur.

In a typical behaviorist experiment, a pigeon would be trained to peck a circle of a specific color. During training, the pigeon spots the circle, pecks, and receives a food pellet. Behaviorists posit that the pigeon's pecking activity becomes associated with sighting the colored circle. The food reinforces the behavior, making its future occurrence more likely. These behavioristic inferences about how learning occurs resulted in the development of stimulus-response language drills. The behaviorists liked the simple animal experiments and insisted cognition and emotion were irrelevant to learning.

Edmund Blair, in *Remembering and Forgetting: An Inquiry Into The Nature of Memory*, tells of a Russian experiment with baby rabbits that challenged the stimulus-response theory in the mid-1970's. Russian experimenters conditioned newborn rabbits by producing nipples to suck in coordination with a certain smell. When they caught the odor, the rabbits would raise their heads to suck the proffered nipples. Eventually, the rabbits would raise their heads in response to the smell alone, without the nipples being offered. The behaviorist conclusion was that the rabbits had been trained to raise their heads in response to a certain odor. However, the Russians stopped the training when the rabbits were only five days old. When the rabbits were old enough to move about, the experimenters reintroduced the scent to the rabbits. At this time, the rabbits did not raise their heads. Instead, they ran toward the source of the smell. Their actions reveal a memory of the smell, but not a memory demanding a specific action (raising their heads). This demonstrated that the rabbits had not learned a performance, as the behaviorists had been theorizing, but instead had learned an emotional association. (Blair, 1988, p.33)

Rosenfield states that the sensation of having a “memory” seems to require an emotional link (limbic activity of some kind). He quotes Pierre Gloor et al as saying, “It is well known that ... inactivation of limbic structures produces automatism, confusion, and amnesia.” (Rosenfield, 1988, p.165) This suggests that emotion must be considered in learning, and thus in language learning as well.

We can see, therefore, that categories are fundamental to the universal cognitive principles upon which language, perception, and memory are based, and that these activities are intimately connected to the human emotional system. These discoveries need to be incorporated into our approach for organizing and presenting language teaching materials.

4 . Categorizing Prepositions / Phrasal Adverbs

In the following prepositional and phrasal adverb categories, no distinction is made between usage as a preposition or in a phrasal verb. Even native-speaking grammarians cannot always agree on when a word is a preposition or the adverbial component of a phrasal verb. Rather than focus on such grammatical categories, this paper will focus strictly on semantical categories.

In organizing these semantical categories, prototypical meanings are sought, and basic experiential meanings are given first. These meanings should easily translate across different languages and cultures. Next come the emergent concepts chained to the basic prototypes. Because the manner of chaining the radial meanings is somewhat arbitrary and culturally-based, these emergent concepts should be the most productive

in helping students rearrange their conceptual maps and understand the concepts in a manner similar to native speakers.

Suggestions of how conceptual links have come about are suppositions, and not meant to be definitive. Boundaries of the categories themselves are sometimes arbitrary, and other persons might create different boundaries and different numbers of categories. However, the boundaries are none the less valid in helping students create new mental maps.

4.1 UP

In considering the categories for this word, I purposely do not look at whether the concept is used as a preposition or as the adverbial component of a phrasal verb. The semantical concepts shown here can be seen as the meaning that *up* adds to the phrasal verbs. Note that in this sense, *up* is an adverb, not a verb. Many non-native speakers of English quite naturally want to use *up* as a verb, in the sense of “to raise”, or “to lift”. This is not common in English. The only example I can think of in American English is from poker, to “up the ante”. When non-native speakers tell the boss they want him to “up my salary”, it sounds unfortunately like they are telling him “up yours” (i.e., “[*put*] my salary up [*your ass*]”) and quitting the job. *Up* should be thought of as a position or a condition, and not an action. Understanding that *up* is basically *not* a verb is essential to understanding these categories.

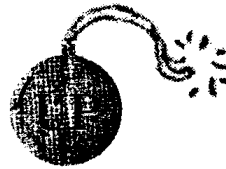
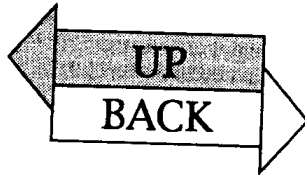
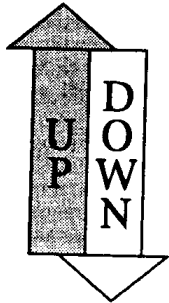
I have divided the meanings of *up* into three broad categories (or “groups”), each with its own basic symbol, and separated these into 10 sub-categories. The fundamental experiential meaning is given as category 1, group 1, with the other meanings in the group seen as

emerging from this prototype. While the fundamental concept in group 2 has emerged from the prototype in group one, it is also the basis for other emergent concepts. Rather than show each emergent meaning in detail, the categories are kept as broad as possible to establish general concepts that will be most useful in helping non-native speakers form cognitive maps. Individual categories could be further broken into smaller categories. However, all occurrences of *up* in phrasal verbs should fit into one or more of these categories as given.

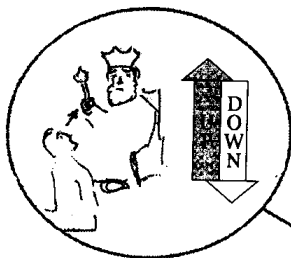
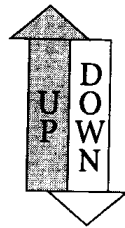
Basic to these categories is the word paired with *up* to provide the opposite meaning. In this regard, there are three types of categories: those in which *up* is opposite to *down*, those in which *up* is opposite to *back*, and those in which *up* has no opposite aside from its negation.

Here is a graphic representation of the meanings, using the basic physical reference meaning as a starting point and showing how other categories of meaning can be derived through chaining, or emergent meanings.

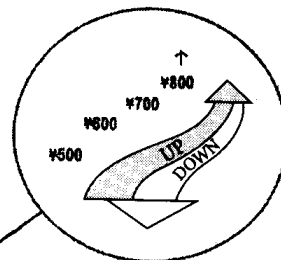
I. II. III.



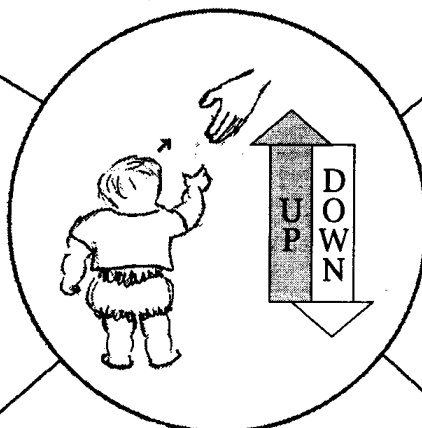
I.



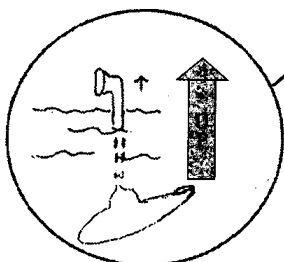
2. Better



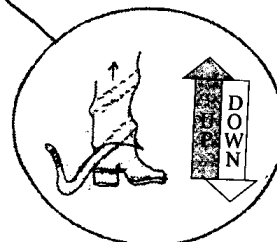
3. More



1. Higher

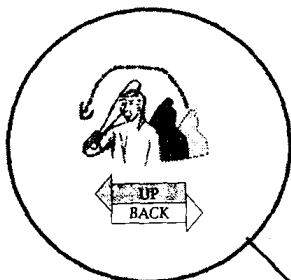
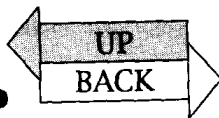


4. Into View

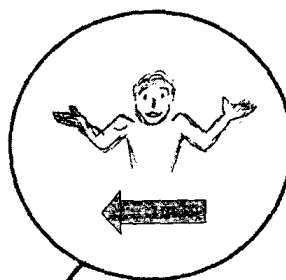


5. Upward inside

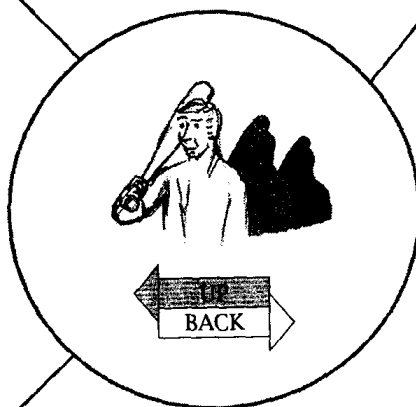
II.



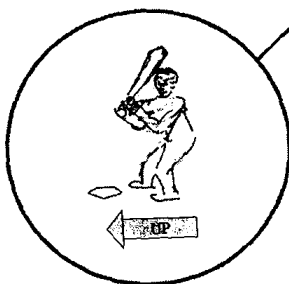
7. To the front



9. Awaiting

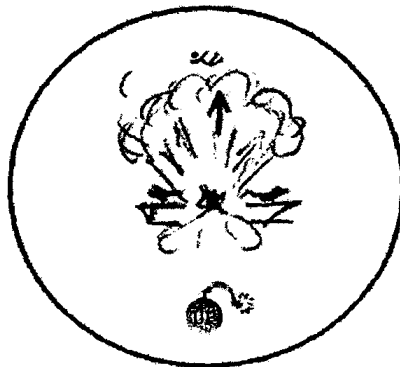


6. Closer



8. Arrived

III.



10. Completely

Let's look at these categories one by one.

1. **Higher:** This is the basic cognitive category of *up* as it relates to our bodies. We can think of this as the fundamental experiential category that we most likely first learn as babies, and from which our other categories are derived. This basic concept translates well across languages and cultures as it is fundamental to human experience regardless of culture.

Opposite: *Down*

2. **Better:** This emergent category includes the concept that a job or social position with authority or special privilege is *up*. We see such positions as being "higher". This concept is cultural, but also seems to translate well across languages and cultures.

Opposite: *Down*

3. **More:** This category is based on the concept that "more is up". The category can be thought of as a category for numbers, but will include anything definable by numbers. In English, we speak of larger numbers as being "higher" and smaller numbers as being "lower". This is not the only possible categorization. In Japanese, for example, smaller numbers are conceptualized as "younger". Both categorizations exhibit natural but arbitrary cognitive processes that are completely typical human mental behavior as the mind organizes its world with cognitive categories. Since categories are arbitrary, they vary from language to language, and understanding the boundaries in the target language will improve the student's ability.

Opposite: *Down*

4. **Into view (or existence, or consideration):** Coming into view can be seen as the basis of this category, and coming into existence or

consideration (“something came up”) could easily be defined as separate categories emerging from this one. In hopes of keeping the mapping as simple as possible, I have combined them all into one category here. This category seems to have the potential of causing confusion, and does not translate well literally across languages and cultures.

Opposite: Negative (I.e., there is no specific opposing word, only the lack of it, as in “something came up” vs. “nothing came up”.)

5. **Upward inside:** The meaning of “a fly went up my nose” is not necessarily obvious to speakers of other languages, though a native speaker would immediately assume that the fly went inside the speaker’s nose, rather than upward on the outside of the nose. This concept also brings us the basis for the crude and aggressive expression, “up yours”, which probably comes from “[Stick it] up your [ass]”, where “up” includes the meaning “inside”. This category does not translate well literally.

Opposite: Down

6. **Closer:** Lakoff and Johnson suggest that this concept has emerged from something or someone looking taller as it comes closer. Some confusion could arise here with Japanese students, as Japanese does not include this concept, but instead contains the concept of “coming up” referred to as *ki-agaru* (来上がる), which is based on category 2, i.e., you come up into my superior presence. We must be careful that such categorization does not automatically transfer, with students mistakenly thinking that *ki-agaru* (来上がる) is a possible category for “come up” in English.

Opposite: Back

7. **To/at the front:** One could consider this category as emerging

from category 8, as the person at the front of a group is closest to the observer, hence appearing taller. The concept may also be theorized to have emerged from the “status is up” concept, in which those of “higher” status are in the front, and those of “lower” status are in the rear.

Opposite: Back

8. Arrived: In the phrase, “you are up”, the word “up” has a much different meaning than in the phrase “the time is up”. While we saw that “the time is up” contains the meaning of being completed, “you are up” means it is your turn. When we want to say “It is Mark McGuire’s turn to bat”, we can say “Mark McGuire is up”. I have placed this concept here as an emerging concept from the previous “to the front”. One could also conceive of the category as emerging from the basic category 1, with the sense of the person “up” being the one standing to act or speak.

Opposite: Negative (no specific opposing word)

9. Awaiting your decision: “It is up to you” may have emerged from concept #8--something having arrived--and therefore is now awaiting your action or decision. It could also be seen as emerging from concept #4--coming into view or existence--and now awaiting settlement. One could even imagine the concept emerging from concept #2--more important--and as the most important, or highest, matter at hand it must be dealt with.

Opposite: Negative (no specific opposing word)

10. Completely, thoroughly: When we say, “the time is up”, we mean that the allotted time has been completely used, and is gone. Not only can time be “used up”, but we can also “use up” other resources,

such as our money, our food, or our water. The feeling that this concept adds to a phrasal verb may be illustrated by the difference between “cutting something” and “cutting something up”. We say something is “cut” when it has received a simple cut, but that it has been “cut up” when completely or thoroughly being cut to pieces. This concept also leads to the expression of something “blowing up”, such as a bomb. The category also includes the idea of completely, thoroughly bad, as in “screw up”, “mess up”, etc. The feeling of “badness” clearly belongs in the verb rather than the adverb, which adds the “thorough” or “complete” feeling.

The category may be conceived of as having arisen from the achievement of reaching the top, thus being finished. As such, it could be based on either category 1 or 2.

We often use “all” before the phrasal verb with this meaning, to emphasize the meaning of “completely”: e.g., “all used up” (完全に使いこなして), “all worked up” (完全にいらいらになって), “all written up” (完全に書き終わって).

Opposite: Negative (no specific opposing word)

The following chart illustrates how phrasal verbs are formed by combining the meaning of the verb with the meaning of the adverb. In some cases, the combination does not occur in English. For these slots, I have inserted the symbol [X].

Through these comparisons, one can see how both the verb and the adverb category bring different meanings to the phrasal verb. Sample sentences can easily be provided in addition to the following chart to help with understanding.

Verb	1.Higher	2.Better	3.More	4.Into View	5.Up inside	6.Closer	7.Forward	8.Arrived	9.Awaiting	10.Thoroughly
Be	Be up 上にいる	Be up えらい	Be up 沢山になっ ている	Be up 現れている	Be up 中に入っ ている	Be up 近づいてい る	Be up 前にいる	Be up いる	Be up (to) ～ したい	[X]
Go	Go up 上に行く	Go up えらく成る	Go up 沢山になる	[X]	Go up 中に入っ いく	Go up 近づいて行 く	Go up 前に行く	[X]	[X]	[X]
Come	Come up 上に来る	Come up えらく成る	Come up 沢山になる	Come up 現れる	Come up 中に入っ くる	Come up 近づいて来 る	Come up 前に来る	[X]	[X]	[X]
Get (manage to go)	Get up おきる	Get up えらく成れ る	Get up 沢山に成れ る	[X]	Get up 中に入っ いかれる	Get up 近づいて行 かれる	Get up 前に行かれ る	[X]	[X]	[X]

5 . Conclusion

English teaching must keep up with the advances being made into the nature of learning and memory. Understanding how the brain works can clearly help in both organizing English teaching materials and in presenting those materials to optimum advantage for the students. Showing general categories for prepositions and phrasal adverbs can help students understand the semantical boundaries and use them in a manner more closely resembling native speaker usage. Categorical mapping similar to the above mapping for *up* can be done for all the preposition/phrasal adverbs. Charts and sample sentences can be made to clarify the meanings, and students should be encouraged to make their own lists and to categorize the phrasal verbs that they use.

In the larger sense, this approach requires us to consider activities using English for real communication. Such activities can and should be done in the classroom, but other methods, such as home-stays in foreign countries, can bring about remarkable results as well. Organization of language teaching materials needs to be based on a cognitive approach, while classroom activities should focus on meaningful discourse that can stimulate limbic (emotional) connections.

References:

Bolles, Edmund Blair, *Remembering And Forgetting: An Inquiry Into The Nature of Memory*. Walker and Company: New York, 1988.

Brain/Mind Bulletin, "Research News: Developing Brain Full of Surprises." August 1987.

Campbell, Jeremy, *Grammatical Man: Information, Entropy, Language, and Life*. Simon and Schuster: New York, 1982.

Chomsky, Noam, *Syntactic Structures*. Mouton: The Hague, 1965.

Dulay, Heidi, Marina Burt, and Stephen Krashen, *Language Two*. Oxford University Press: New York, 1982.

Fries, Charles, *Teaching and Learning English as a Foreign Language*. University of Michigan Press: Ann Arbor, 1945.

Harris, Zellig, "Co-occurrence and Transformation in Linguistic Structure." *Language* 33, no.2, 293-340. 1957

Dixon, R.M., *Where Have All The Adjectives Gone?* Walter de Gruyter: Berlin, 1982.

Lakoff, George, "Toward Generative Semantics." *Syntax and Semantics*, vol.7, 1963.

-----, *Women, Fire, and Dangerous Things: What Categories Reveal About the Mind*. The University of Chicago Press: Chicago, 1987.

-----, and Mark Johnson, *Metaphors We Live By*. The University of Chicago Press: Chicago, 1980.

Loftus, Elizabeth, and Geoffrey Loftus, "On the Permanence of Stored Information in the Human Brain," *American Psychologist* 35, p.413, 414, 1980.

Rosch, Eleanor, and B.B. Lloyd, "Principles of Categorization," in *Cognition and Categorization*, ed. by Rosch and Lloyd. Lawrence Erlbaum Associates: Hillsdale, N.J., 1978.

Rosenfield, Israel, *The Invention of Memory*. Basic Books, Inc.: New York, 1988.

Spears, Richard A, *NTC's Dictionary of Phrasal Verbs*. National Textbook Company: Chicago, 1993.