The Principle of Contrast: A Constraint on Language Acquisition

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Different words mean different things. That is, wherever there is a difference in form in a language, there is a difference in meaning. This is what, in 1980, I called the Principle of Contrast. It is by virtue of this property that language maintains its usefulness as a medium of communication. As Bolinger put it, "any word which a language permits to survive must make its semantic contribution" (1977, p. ix). This applies as much to constructions as to words: "the same holds for any construction that is physically distinct from any other construction" (1977, p. ix-x).

In the present paper I focus on the acquisition of meaning in light of the Principle of Contrast. This principle makes specific predictions about acquisition that are supported by data from many different domains. It shapes the lexicon for immature and mature speakers alike. It also plays a role in establishing which forms are conventional and thus contribut,es a solution to why children give up over-regularizations in morphology and syntax. Finally, it helps account for individual variation during acquisition.

I begin in the first section with a statement of the Principle of Contrast together with its corollary, the Principle of Conventionality, and review its predictions about language use in general. I do not review the evidence for the Principle of Contrast in acquisition and show that children observe it in both expected and unexpected ways from the earliest stages in the acquisition of language. In the third section I look at the consequences of the Principle of Contrast for the acquisition of morphology and of syntax, and the

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1See also Clark (1983a, 1983b), Clark and Berman (1984), Clark and Clark (1979), and Clark and Hecht (1982).
role it plays in children's getting rid of over-regularizations. I then show how this principle helps account for variations in the courses children follow during acquisition. In the last section I argue that this principle subsumes several other proposals to constrain language development in that they each constitute special cases of the Principle of Contrast.

THE PRINCIPLE OF CONTRAST

The Principle of Contrast states that any difference in form in a language marks a difference in meaning. The term dog, for instance, which differs in form from horse also differs from it in meaning. This principle can be stated as:

The Principle of Contrast: Every two forms contrast in meaning.

This principle is a general one for speakers of a language. It is one that has been stated or assumed by virtually every linguist over the years.

The Principle of Contrast must be carefully distinguished from its converse, which I will call the Homonymy Assumption. This assumption is that every two meanings contrast in form. Under this view, one should never find two different meanings being carried by the same form. As in bank of a river versus a financial institution, or but, a small flying mammal versus an instrument used in playing cricket or baseball. This assumption clearly doesn't hold in general for speakers of a language. But, within one level of a semantic field, where the words for two different meanings over time come to have the same form, the resultant homonymy may cause genuine confusion. Speakers then typically introduce another form to carry one of the meanings (see Orr, 1962). Aside from this special case, the Homonymy Assumption should be kept distinct from the Principle of Contrast because it may play little or no role in either adult language use or acquisition.

The Principle of Contrast is essential, though, because it helps maintain conventionality in language:

The Principle of Conventionality: For certain meanings, there is a conventional form that speakers expect to be used in the language community.

If one wishes to talk about an instance of the category 'dog', one had better use the conventional word dog (and not horse), or no one will understand. Conventional terms used conventionally work best to convey speakers' intentions within the speech community. Conventional terms work in large part because speakers are consistent with the conventional meanings they assign to forms from one occasion to the next, and therefore maintain the same contrasts in meaning over time. Speakers of English use the word dog to denote dogs, not dogs one day, horses the next, and some other animal the day after. These two principles jointly constrain the choices speakers make in language use (e.g., Bolinger, 1977; Clark & Clark, 1979). Without them, languages simply wouldn't work.

If the Principle of Contrast (from now on, Contrast for short) is truly general in language, then a number of predictions follow:

1. Words contrast in meaning, so there are no true synonyms.
2. Established words have priority in the expression of meaning.
3. Innovative words fill lexical gaps and so may not be used in place of established words with the identical meanings.

The evidence for these predictions is extensive, so I will simply summarize some of the major findings before turning to the predictions Contrast makes about acquisition.

Contrast in Meaning

Evidence for the first prediction comes from the lexicon and from syntax. In both, differences in form make for contrasts in meaning. Meanings may overlap, of course, but they nonetheless contrast in at least some contexts. In the lexicon, many apparent synonyms are in fact not synonymous; they mark contrasts in dialect, in register, or in connotation. In syntax, differences in form mark differences in meaning, but some of these reflect subtle shifts in perspective or topicalization.

Lexical contrasts. Meaning differences, large and small, are characteristic of the lexicon. The study of such differences has traditionally been carried out within semantic fields where linguists have analyzed and characterized patterns of contrasts (e.g., Hiewisch, 1967; Lehner, 1974; Lyons, 1963). While different lexical domains may be organized in a variety of ways, the property they all display is that each term within a domain or semantic field contrasts in meaning with all the others. The precise pattern of lexical contrasts will vary with the internal organization of a semantic field (for discussion, see Fillmore, 1978; Kay, 1971; Lehner, 1974; Lyons, 1977).

Possible relations in lexical domains include those among co-hyponyms (terms contrasting at the same level). For example, horse, dog, cat, and sheep are all co-hyponyms of terms above them, hierarchically, like mammal or animal. This relation of hyponymy may hold across two or more levels. Thus spaniel, a co-hyponym of boxer, Alsatian, and Labrador, is a hyponym of and contrasts with dog, and dog in turn is a hyponym of and contrasts with animal.
Contrasts in meaning, then, may hold at the same level (among cc-hyponyms) or across different levels. ² Contrasts may also be orthogonal, between terms that potentially belong in more than one domain. Dog, for instance, is a hyponym of animal and also of pet (see further Fillmore, 1978. Lyons, 1977).

Analyses of specific lexical domains, then, have focused on the contrasts inherent in the meaning relations within each domain. Many contrasts are obvious but others are more subtle. All languages contain numerous expressions whose meanings overlap. In many contexts these may be exchanged for each other, and it is this degree of overlap or partial synonymy that is exploited in dictionaries or thesauri, e.g., for the adjective negative, one finds adult, ripe, perfect, duc; for the verb govern: direct, control, determine, require; or for the adjective loose: inexces, free, relaxed, vague, lax, unbound, inattentive, or slack. When the entry for each of these is inspected, one moves further and further away from the original word being ‘‘defined.’’ What this shows, clearly, is that overlaps are not equivalent to synonymy. While two terms may be interchangeable in many contexts, they are not so in all, and it is the contexts where they are not equivalent that reveal their often subtle contrasts in meaning.

Dialect, register, and connotation. English, like most other languages, contains many apparent synonyms, but these typically contrast in meaning according to dialect or register choices, or according to emotive coloring, connotation. Terms that differ only in one of these dimensions have the same extensions: their intensities are different. It is this that may mislead. Such pairs are often perceived as synonyms and their meaning differences ignored.

Choice of a term from one dialect over another in many settings identifies the speaker’s membership in a particular societal group. DIcetical differences account for pairs such as autumn (UK) versus fall (Western US), as well as for differences between pairs like truck/trolley, pull/bucket, sack/bag, and cup/teasie (Palmer, 1981). They also account for multiple terms with the same denotation, such as cowshed, cowhouse, and byre; haystack, hayrick, and haymow; top, spigot, and faucet, and so on. The contrasts between dialects are really no different from translation equivalents across languages like French and Hungarian or English and Hebrew. In many communities speakers may be unfamiliar with the original dialects while being familiar with some of these pairs from written sources. This, though, simply makes the pairs similar to equivalent terms from two distinct languages, e.g., house and házán.

Other apparent synonyms mark different registers (speech styles). Registers may differ in formality, e.g., the contrasts among smell, effluvium, stink (straightforward, pretentious, colloquial) or, on a similar continuum, die, pass away, pop off. Speakers often opt for Latinate vocabulary in English to mark a more formal register: compare numerous and many, facilitate and ease, attempt and try, sufficient and enough (Jespers, 1961). Choices of lexical items may signal solidarity or identification with a particular social group, formality or informality, or politeness. The dimensions along which lexical choices can mark register are not clearcut, and the same choices may have different consequences on different occasions (Lakoff, 1973; Nunberg, 1978).

Yet other apparent synonyms differ in the emotive coloring or connotation each carries. That is, the speaker’s choice of term can convey his attitude towards the person or event being described. Compare the choice of politician versus statesman, where the latter is laudatory and the former not (see also Orwell, 1950). Much the same contrast appears in underlie choices of skinny versus slim, obstinate versus firm, and spenathrift versus generous. The first term typically carries a negative connotation, while the second carries a positive one. Many apparent synonyms contrast in connotation.

Syntactic contrasts. Differences in form at the syntactic level also mark contrasts in meaning (e.g., Bolinger, 1977; Crafie, 1971). Consider the following pairs of sentences:

(1a) They pulled the ropes in.
(1b) They pulled in the ropes.
(2a) Jan taught Rob French.
(2b) Jan taught French to Rob.
(3a) Jo lit the fire.
(3b) The fire was lit by Jo.
(4a) Bees swarmed in the garden.
(4b) The garden swarmed with bees.

In (1), as Bolinger (1977) pointed out, the contrast is one of completion or achievement marked by the first form (the ropes were in) compared to non-completion in the second. Much the same contrast appears in (2): in the first, one infers that Rob learned some French; in the second, the outcome remains unspecified. In (3) and in (4), the first form in each pair focuses on the actor, while the second focuses on the object affected and the location respectively (see Salkoff, 1983).

Other constructional contrasts appear in lexicalized versus periphrastic causatives as in (5) and in descriptions of sequence as in (6):

(5a) Bill killed John.
(5b) Bill caused John to die.

²The terms superordinate and subordinate are often used in place of hyponymy to talk about the relations among terms at different levels. However, they tend to suggest there is a fixed number of levels, typically three—superordinate, basic, subordinate—where in fact there are sometimes more and sometimes fewer.
(6a) He opened the door and he came in.
(6b) He opened the door and came in.

In (5), the contrast is one between direct (5a) versus indirect (5b) causation (McCawley, 1978; Shibatani, 1976), while in (6) there is a subtle contrast in meaning between (6a) where there are two distinct activities, and (6b) where there is only one (Bolinger, 1977).

Finally, in (7), adjectival modification offers further contrasts at the constructional level:

(7a) the blue cushion, the pale blue cushion
(7b) the green cushion, the pale green cushion
(7c) the red cushion, the pink cushion (*pale red)

Here the modification of adjectives by pale is blocked in the case of red because of the existence of the term pink, an adjective that picks out just the domain that would otherwise be designated by the construction pale red (see Gruber, 1976; Hofmann, 1882, 1983).

Contrasts in meaning, then, show up not only in the lexicon but also in the combinational options possible at the syntactic level.

In summary, differences in form mark differences in meaning at both the lexical and the syntactic levels. Furthermore, where languages contain a variety of apparent synonyms, these typically mark contrasts in dialect, in register or speech style, or in connotation. True synonyms probably do not exist: "... there are no real synonyms ... no two words have exactly the same meaning" (Furhman, 1981, p. 89).

Priority of Established Forms

Evidence that established forms take priority comes from existence of suppletive forms in the lexicon as well as elsewhere in the language. The lexicon as a whole can be roughly organized into paradigms or groups of terms that share some element of form that marks an element of meaning shared by all the members of a paradigm. For example, many adjectives in English end in the suffix -y, an element of form marking any terms that carry it as adjectives with the meaning, roughly, "having X" or "being connected with X", e.g., stony, dirty, wetery. Similarly, many agentive nouns end in -er, an element of form indicating agentivity, e.g., builder, farmer, runner; and many nouns for states end in -ness, a suffix indicating statehood, e.g., cleverness, ordinariness, roughness. Such paradigms reflect the many regularities to be found in the lexicon.

But irregularities abound too. The lexicon as a whole combines regular and irregular forms in a complex patchwork. Irregular forms are often the remains of paradigms no longer in use, as when a suffix like nominal -th ceased to be productive several hundred years ago. Yet traces of -th remain in the lexicon in words like warmth, width, and depth. Other irregularities result from changes in the sound system that obscure the connections between forms that were originally related (e.g., create and creature), or from the borrowing of isolated forms to express special meanings (e.g., hers d'oeuvres, sabotage).

Irregular forms in the lexicon often fill slots in otherwise regular paradigms. These forms are suppletive. They pre-empt or block the use of the expected, regular form that would otherwise fill that slot. In morphology, for instance, the regular past tense *good (unacceptable indicates) is pre-empted by suppletive went, the regular comparative adjective *gooder is pre-empted by better, and the regular plural *feet is pre-empted by feet. In the lexicon, the regular noun *gloriosity (from glorious) is pre-empted by glory, the regular *longness (from long) is pre-empted by length, the regular agentive *cook (from the verb cook) is pre-empted by the noun cook, and the regular denominative *to car is pre-empted by to drive. In syntax, the regular causative construction *to disappear X is pre-empted by to make X disappear, just as the regular phrase *to kick with his foot (alongside to bruise with his foot, to knock with his foot, etc.) is pre-empted by to kick, and the regular phrase on this day (alongside on the next day, on the second day, on that day) is pre-empted by today on just those occasions when the speaker is referring to the actual time of utterance. In each instance, an established but irregular suppletive form with just the meaning required pre-empt or blocks use of the regular form one would expect there (see Aronoff, 1976; Clark & Clark, 1979; Gruber, 1976; Hofmann, 1982, 1983; Kiparsky 1983). Provided there is no contrast in meaning, established suppletive forms in the language take priority over regular ones that would convey the same meaning. This can be stated as a principle covering pre-emption by synonymy in general (Clark & Clark, 1979, p. 798):

Pre-emption by synonymy: If a potential innovative word-form would be precisely synonymous with a well-established word, the innovative word is pre-empted by the well-established word, and is therefore consiered unacceptable.

Such pre-emption is illustrated further for some verb and noun paradigms in English in Table 1 and Table 2 respectively. In Table 1 the paradigm is that of verbs formed from nouns, a highly productive option in English. Virtually all terms for vehicles, for instance, provide the source for the corresponding verbs, e.g., to sled, to ski, to skateboard, to helicopter, to jet, to truck, to Chevey, and to bicycle. Two possible verbs in this paradigm, *to car and *to airplane, though, are normally pre-empted by to drive and to fly. This is because these two terms are already established in the lexicon with just the meanings intended. In contexts where to car and to airplane contrasted in meaning with to drive or to fly, they would be perfectly acceptable verbs (Clark & Clark, 1979). The pre-empt-
TABLE 1
Pre-emption within the Lexicon: Verbs

<table>
<thead>
<tr>
<th>Source</th>
<th>Paradigm</th>
<th>Pre-empted</th>
<th>Pre-empter</th>
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</thead>
<tbody>
<tr>
<td>bicycle</td>
<td>to bicycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>jet</td>
<td>to jet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>car</td>
<td>*to car</td>
<td>to drive</td>
<td></td>
</tr>
<tr>
<td>airplane</td>
<td>*to airplane</td>
<td>to fly</td>
<td></td>
</tr>
<tr>
<td>knee</td>
<td>to knee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>shoulder</td>
<td>to shoulder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>foot</td>
<td>*to foot</td>
<td>to kick</td>
<td></td>
</tr>
<tr>
<td>palm</td>
<td>*to palm</td>
<td>to slap</td>
<td></td>
</tr>
<tr>
<td>stable</td>
<td>to stable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>jail</td>
<td>to jail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hospita</td>
<td>*to hospital</td>
<td>to hospitalize</td>
<td></td>
</tr>
<tr>
<td>prison</td>
<td>*to prison</td>
<td>to imprison</td>
<td></td>
</tr>
<tr>
<td>salt</td>
<td>to salt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pollen</td>
<td>*to pollen</td>
<td>to pollinate</td>
<td></td>
</tr>
<tr>
<td>butcher</td>
<td>to butcher meat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>chauffer</td>
<td>to chauffer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>baker</td>
<td>*to baker bread</td>
<td>to bake</td>
<td></td>
</tr>
<tr>
<td>banker</td>
<td>*to banker money</td>
<td>to bank</td>
<td></td>
</tr>
</tbody>
</table>

Contrast in Innovative Forms

Evidence for the third prediction comes from the fact that speakers coin words freely and frequently, typically to fill gaps. These may be momentary gaps, as when one forgets the exact word for something, or long-term gaps, where there is no established word for that particular meaning. In either case, speakers make use of the word-formational resources available to construct a form appropriate for the meanings they wish to convey.3 Speakers freely coin new verbs for specific actions. They construct these verbs, for instance, around terms for instruments: to BART to Berkeley, to Concorde, to siren up to an accident (said of the police), to postcard someone, to Ajax the bath, to Windex the panes, to bottle the police (meaning ‘to throw bottles at’), to toothpick the clam, to jaw the swimmer (following the film Jaws), to microwave the chicken, to crayon the walls, to x-and-m out a word, or to 86 a customer (meaning ‘to throw out for drunkenness according to Ordinance 86’). These represent only a minute sample of the range English-speakers use (see further Clark & Clark, 1979; Karius, 1985).

Speakers are equally free in coining new nouns for talking about new categories or subcategories of objects. One of the easiest ways is to create innovative noun + noun compounds, such as apple-juice chair for the chair with the apple-juice nearest it, earthquake school for schools that would be unsafe in the event of an earthquake, hedge-axe for an axe for cutting down hedges, banana fork for a fork for eating bananas, giraffe fence for a fence for confining giraffes, elf shoes for shoes to fit elves, or bike horn for a horn on a bicycle (Downing, 1977). There are other ways too. People can construct a term to designate virtually any category they wish. What is crucial, as Bolinger (1975, p. 109) observed, is that:

Words are not coined in order to extract the meanings of their elements and compile a new meaning from them. The new meaning is there FIRST, and the coin is looking for the best way to express it without going to too much trouble.

In summary, evidence for the Principle of Contrast is widespread. The first prediction was that differences in form mark differences in meaning. The evidence for this comes from analysis of lexical contrasts, including contrasts between terms that differ in dialect, in register, and in connotation, as well as from

TABLE 2
Pre-emption within the Lexicon: Nouns

<table>
<thead>
<tr>
<th>Source</th>
<th>Paradigm</th>
<th>Pre-empted</th>
<th>Pre-empter</th>
</tr>
</thead>
<tbody>
<tr>
<td>curious</td>
<td>curiosity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tenacious</td>
<td>tenacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>glorious</td>
<td>*gloriosity</td>
<td>glory</td>
<td></td>
</tr>
<tr>
<td>furious</td>
<td>*furiosity</td>
<td>fury</td>
<td></td>
</tr>
<tr>
<td>polishy</td>
<td>polisher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sweepy</td>
<td>sweeper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>drily</td>
<td>*driller</td>
<td>drone</td>
<td></td>
</tr>
<tr>
<td>borey</td>
<td>*borer</td>
<td>bore</td>
<td></td>
</tr>
<tr>
<td>ridey</td>
<td>rider</td>
<td></td>
<td></td>
</tr>
<tr>
<td>drivey</td>
<td>driver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cooky</td>
<td>*cooker</td>
<td>cook</td>
<td></td>
</tr>
<tr>
<td>spyy</td>
<td>*spyer</td>
<td>spy</td>
<td></td>
</tr>
<tr>
<td>apply</td>
<td>*applier</td>
<td>applicant</td>
<td></td>
</tr>
<tr>
<td>inhabit</td>
<td>*inhabiter</td>
<td>inhabitant</td>
<td></td>
</tr>
</tbody>
</table>

3In using an innovation speakers rely on their addressees to work out the intended meaning, given their mutual knowledge, the prior linguistic context, and any other pertinent information (see Clark & Clark, 1979; H. Clark, 1983).
syntactic contrasts, where differences in form again mark contrasts in meaning. The second prediction was that established terms take priority (by virtue of their meaning) over regular terms designed to carry the same meaning. The evidence here was drawn from the presence of suppletive forms in otherwise regular paradigms in morphology, in the lexicon, and in syntax. The suppletive forms pre-empt or block the formation of regular forms to carry the requisite meanings. The third prediction was that lexical gaps—points where there are no established terms to convey particular meanings—are filled by lexical innovations. Here pre-emption no longer applies since the novel meanings have no conventional expressions already established. Speakers must therefore cal on some other resource, and they do

CONTRAST IN ACQUISITION

The general predictions of Contrast for children acquiring language parallel those for adult users of a language. If the notion of Contrast is inherent to the nature of language, then children should assume this principle from a very early point in acquisition (Clark, 1983a, 1983b). The major predictions for children, then, are similar to those for adults:

1. Children assume words contrast in meaning.
2. Children give priority to known words.
3. Children assign novel words that they hear to gaps in their lexicon, and, to fill such gaps, they coin new words themselves

But the kinds of evidence I shall draw on appear very different.

Different Forms Contrast in Meaning

For children, too, different forms contrast in meaning so they reject any apparent synonyms. Evidence for this first prediction comes from several sources: children narrow down over-extensions as they acquire new, contrasting vocabulary items; they build up each lexical field by adding new contrasts as they add new items; and they assign contrasting meanings to contrasting forms at the level of words, word-formational patterns, and multi-word constructions.

Narrowing down over-extensions. Some of the earliest evidence that children assume that words contrast in meaning comes from their narrowing down of lexical over-extensions. Suppose, in an over-extension, child A applies dog not only to dogs, but also to cats, sheep, and other four-legged mammals (Clark, 1973, 1978). When this child acquires cat, a word for part of this domain, he stops over-extending dog to cats. And when A acquires sheep, he stops over-extending dog to sheep. At this point, A relies on cat for designating cats, sheep for sheep, and dog for dogs and (possibly still over-extending it) for other small mammals excluding any for which he already has terms available. Each new term contrasts with the terms already known, rather than being treated as synonymous with one or more of them. Such patterns of narrowing are clearly illustrated in the detailed diaries kept by Leopold (1939, 1949), and Pavlovitch (1920) and in studies such as Mervis and Canada (1981).

Building up lexical fields. In narrowing down over-extensions, children simultaneously build up lexical fields: terms for animals, for birds, for vehicles, for people, for toys, and for furniture as well as for relations and dimensions (Clark, 1978). Each new term acquired contrasts in meaning with those already known. Early uses of big and small, for example, become restricted with the addition of further contrasting adjectives like tall/short for objects with vertical extent, or long/short for ones with horizontal extent (e.g., Clark, 1972; Donaldson & Wales, 1970). Children follow a similar progression with orientational terms like top as they add front, back, and side (Clark, 1980; Kuczaj & Maratos, 1975) and possessive verbs like give as they add take, buy, sell, and trade (Gentner, 1975). Each term added contrasts with its neighbors.

Contrasting meanings for contrasting forms. Children assign contrasting meanings to distinct forms, but they don’t always hit on the conventional adult contrasts. For example, in building up terms for birds, some children establish a three-way contrast quite early among duck, bird, and chicken, to group birds into those that go in the water, those that fly, and those that don’t fly (Clark, 1978). Similiarly, many children make use of the deictics here and there among their first 50 to 100 words, but they don’t contrast these terms descriptively. Instead, they typically use one term to mark transfers of possession, e.g., Here said as a child hands a rattle to his parent, and the other to mark completion of some activity, e.g., There! said as the child places the last block on a tower (Clark & Sengul, 1978). Such contrasts must often be revised as they learn more about the adult meanings.

Children may also assign idiosyncratic contrasts at the syntactic level. For example, in a study of early possessive constructions by Deutsch and Bullock (1983), children contrasted utterances containing their own name plus the term for some object, e.g., Timmy book with utterances containing a first person pronoun (I, me, mine) plus some object, e.g., Me cookie. The first type of utterance was used to describe current states—the object named was in the child’s possession—while the second was used in situations where the child was...
laying claim to something not yet his (see also Badwig, 1985). Analogously, children acquiring Hungarian may contrast two different inflected forms of nouns to mark two different meanings. For instance, they may use the nominative or citation form in naming things and the accusative of the same nouns when talking about things they want to have (MacWhinney, 1985; Slobin, 1985b). In other words, even though they may not hit at first on the conventional contrasts adults use, children consistently assume that differences in form mark contrasts in meaning.

Finally, in assigning meanings to contrasting forms, children may tidy up the language by aligning one form with one meaning in a manner orthogonal to the match of meanings and forms in the adult language. In a study of celandic word-formation by Mulford (1985), some children used the suffix -ari (equivalent to English -er) only for agentic terms analogous to English forms like worker, and opted for a compound noun pattern (K + N) for instrument terms analogous to English. Icelandic-speaking adults, however, make use of both the suffix and the compound pattern for both agentic and instrumental nouns. Also a French child observed by his father (Vinson, 1915-16) took contracted de + article forms to be possessive in meaning, as in du pain for 'my' bread', and uncontracted forms to be possessive in meaning, as in de la fille 'of the girl, the girl's'. Contraction in fact occurs only when de is combined with masculine singular or with plural definite articles and appears in both possessive and instrumental constructions. Vinson's son created a meaning contrast for contracted versus uncontracted forms that was orthogonal to the adult one. He then filled in the paradigm by constructing a contracted feminine form with possessive meaning, e.g., *da neige 'some snow', and using uncontracted masculine forms with possessive meaning, e.g., *de le garçon for du garçon 'of the boy, the boy's.'

Children consistently act as if they assume different forms must have contrasting meanings. That is, they assume any new expressions contrast with those they already know.

Priority Goes to Known Words

In giving priority to words or expressions already familiar to them, children again reject apparent synonyms. The evidence for the second prediction comes from two main sources: early in language acquisition, children don't appear to realize that contrast operates both within and between levels for the lexic and the grammar. Two- and three-year-olds consistently reject what appear to them to be multiple labels for the same thing. For instance, if an adult says of a dog, There's an animal, children object by saying, No, it's a dog. They act as if an animal because dog already carries the requisite meaning. They haven't yet recognized that there are contrasts between levels in the lexic as well as within any one level. Young bilinguals also reject multiple labels across languages. Both within and across languages, children's reliance on form-meaning combinations already familiar to them leads them to reject further forms perceived as synonymous. Even in word-learning tasks, children reject synonyms.

Rejecting multiple labels within a language. Children aged two and three have long been known to reject multiple labels for things. Having learned one label for something, they are unwilling to accept a second even though it is superordinate or subordinate to the first (e.g., François, 1977; Macnamara, 1982; Mervs & Canada, 1981). These utterances from two-year-olds are typical:

(8) Nor a plate, it a bowl. (upon being asked to take his plate off the table)
(9) Not a plane, that a jet-plane. (looking at a picture book)
(10) It's not a animal, it's a dog. (said of a toy)

What these children have not yet realized is that meanings may contrast in the levels of categorization being picked out. They act as if terms for the same domain all contrast at the same level. If the terms in these examples were at the same level, the pairs would have to be synonymous. Since the children already know one term for the object being referred to and don't accept synonymy, they reject the multiple labeling. Once they recognize that there is more than one level for labeling, such rejections vanish.

Rejecting multiple labels across languages. Young bilingual children face a similar problem. In the earliest stages of acquisition, they often accept only one label for a category despite exposure to a label from each language (e.g., Ervin-Tripp, 1974; Fantini, 1974; Taechar, 1983). Knowing a term in one language appears to preclude use of the equivalent term from the second language, as in the following typical examples:

(11) English/Spanish: leche precludes milk
English/Spanish: lupo precludes wolf
English/French: bird precludes oiseau
German/Italian: acqua (water) precludes Wessar
German/Italian: Beine (legs) precludes gambe

The result, from the young child's point of view, is a single lexic in which all the terms should contrast. This leads them to accept only one term (from whichever language they happen to pick up first) for each category. The other is rejected. This typically lasts only a few months, until these children have a vocabulary of about 150 words (Taechar, 1983). At that point, bilingual children begin to admit 'doubles' (equivallent terms from both languages, e.g., leche and milk, into their vocabulary. This point may well coincide with the one at which young bilinguals also begin to distinguish their two languages on phonological grounds. Early on, they typically make use of a single phonological
system as well as a single lexicon (e.g., Vogel, 1975). If young bilingual children at first believe they are dealing with a single language, their rejection of apparent synonyms follows directly from their assumption of contrast: different forms should carry different meanings. Bilingual children, however, start to accept equivalent terms in their two languages at a stage when monolingual children still reject as synonymous terms from a single level within their language. The only reason for young bilinguals to begin accepting equivalent terms across languages—essentially two labels for many of their categories—is their recognition that they are dealing with two distinct systems with the Principle of Contrast applying within each system, but not across systems. From that point on, they should only reject apparent synonyms within each language.

Children not only give priority to words already known and reject apparent synonyms within a language. They also do so across languages, but they reject apparent synonyms only until they realize they are dealing with one but with two languages. Terms learned first, then, take priority over apparent synonyms, whether from within the same language or from another language. Where there is no synonymy, children simply add new terms and expressions to their growing repertoire.

Rejecting synonyms in word-learning tasks. Priority for known terms sometimes causes unanticipated problems. In 1950, Werner and Kaplan examined the difficulties children had in inferring the meanings of nonsense words used in a set of sentential contexts. Children found this a very difficult task. Most five-year-olds failed, and only some nine-year-olds did well. This occurred even though children add actual new words to their vocabulary at an average rate of nine a day from age two onwards (e.g., Carey, 1978; Templin, 1957). If children acquire real words so rapidly, why did they have such difficulty with Werner and Kaplan’s task?

The task itself dealt in synonyms. To construct the sets of context sentences, Werner and Kaplan took English words like the noun stick, made up several sentences using the word stick (e.g., including the facts that sticks are used to walk with and burn easily), and then substituted a nonsense word like corplum for stick in each sentence. The children’s task was to discover the meanings of the nonsense words—exact synonyms for English words they already knew.

This is indeed a major source of difficulty for children. In a replication of the Werner and Kaplan study by Braun-Lamesch (1962), French-speaking children were given sets of four sentences with a nonsense word substituted for a familiar French noun, verb, or adjective. (They were told the sentences had been produced by a second-language speaker who made some mistakes.) One hundred children (aged five to nine) heard the sentences read one at a time and were asked to correct what was wrong in each set. As in Werner and Kaplan’s original study, few of the younger children (under age seven) succeeded in supplying the target word across all four sentences in each set.

In Braun-Lamesch’s second study (with five-, six-, and eight-year-olds), children heard similar sets of sentences, but with a pause in place of the target word. Under these conditions, six- and eight-year-olds found the task much easier than when they had to identify and correct the nonsense words. The youngest children also produced the appropriate target words more often. So if children aren’t being asked to discover synonyms, they can make use of linguistic context to identify any words omitted. Gaps are easier to fill than places that are already taken.

In summary, when children are faced with apparent synonyms, they reject them. They do this within a language prior to discovering that terms at higher or lower levels of categorization are simply labels given at some other still contrasting level. They also do this across languages prior to discovering that they are working on two languages simultaneously. And, again for the same reason, they have difficulty in tasks where they have to discover exact synonyms for terms they already know.

Unfamiliar Words and Innovations Fill Gaps

Evidence for the third prediction comes from two sources. First, when children hear words new to them, they consistently assume these words designate kinds of things for which they lack terms themselves. They assign new terms to gaps in their lexicon. Second, when children themselves wish to talk about things for which they have no words, they often construct innovative terms on the spot.

Unfamiliar words fill gaps. When children hear an unfamiliar word, they appear to make some immediate inferences about what it might mean. This ‘rapid mapping,’ which appears to be the first step children take in figuring out what a word means, was first looked at experimentally by Carey and Bartlett (1978). In their study, nursery school children were exposed to one instance of an unfamiliar word in a color context (e.g., ‘Give me the chromium tray, not the red tray’ in the presence of a red and an olive-green tray). A number of the children took chromium to be a color term, as Carey and Bartlett had intended, and remembered it as such a couple of weeks later, even if they got the target color wrong.

Do children hearing unfamiliar words consistently associate them with unfamiliar objects? In a follow-up study by Dockrell (1981), three- and four-year-olds were presented with a set of animals, three familiar (a cow, a pig, and a sheep) and one unfamiliar (a tapir), and then heard a novel word (gombe) in contrast to the familiar words for the known animals. All the children assumed the novel word picked out the novel animal.

The setting influences the inferences children make about unfamiliar words. For instance, children were given a set of solids of different colors, in two different linguistic contexts. In the shape context, children were asked for "the
gomite, one, not the square one or the round one." In the color context, they were asked for "the gomite one, not the green one or the red one." When the contrast was with known shapes, children consistently handed Dockrell the only solid unfamiliar to them. When the contrast was with color, they were more likely to select solids of an unusual color or with some pattern although some children still preferred shape.  

It has long been known that one- to two-year-olds attach new words they hear to unfamiliar objects (Vincent-Smith, Bricker, & Bricker, 1974). In a study by Golinkoff, Hirsh-Pasek, Lavallee, and Badjiu (1985), two-year-olds were presented with a series of novel objects mixed in with familiar ones, and heard both familiar and unfamiliar labels. The children overwhelmingly selected a novel object as a referent for a novel word and an appropriate referent for a known word. Since all the objects in a set were equally familiar from prior handling and play, the children's assignments of labels could not be attributed just to the salience of a new object.

In the same study, two-year-olds also readily extended the novel word to a new exemplar from the same category. And, when given a choice (through the introduction of a second novel word with further novel objects from another category), these children preferred not to pair a second novel name with a novel object that had already been labeled. Instead, they assumed that the second novel name must refer to an as-yet-unnamed novel object. That is, these children assumed contrast rather than synonymy. Overall, these studies offer strong support for the hypothesis that children rely on contrast in their acquisition of the lexicon.

Gaps can be filled by innovative words. Young children typically have vocabularies much smaller than they need for talking about objects and activities. Yet this rarely limits what they talk about. To make do with the resources at their disposal, they stretch them. For example, they over-extend their words, they rely heavily on deictic terms like that, and they use general purpose verbs like do or go. They also construct innovative words (Clark, 1978, 1982a, 1983b).

Children's coinages appear from the earliest stages of acquisition on. Typical examples of innovative nouns, adjectives, and verbs, together with glosses of their intended meanings, are shown in Table 3. Children coin new verbs but only to talk about actions that contrast with those they already have words for. These actions are often very specific in that they involve particular instruments, places, or goals.  

They also coin nouns to talk about objects, and they again contrast these with terms they already know. English-speaking two-year-olds produce many innovative noun + noun compounds, e.g., plate-egg ('a fried egg') or fire-dog ('a dog like that found at the site of a local fire'). In a corpus of over 300 such compounds produced between age 2;2 and 3;2 (Clark, Gelman, & Lane, 1985), over two-thirds were used to mark explicit contrasts between subcategories, e.g., tea-stive versus water-stive (2;2) for a small and large strainer respectively, snow-car versus race-car (2;4) for pictures of a car with snow on it and a racing car respectively, and car-truck versus cow-truck (2;4) for pictures of a car transporter and a cattle truck respectively. In a follow-up elicitation task, two- and three-year-olds, like adults, relied on compounds far more often when they were labeling contrasting subcategories than when they were not (Clark, Gelman, & Lane, 1985). Finally, when presented with agentive and instrumental

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5The preference for shape in mapping the meanings of unfamiliar words may be a further reflection of the importance of shape in identifying instances of categories. In the overextension used by one- and two-year-olds, the vast majority are based on similarities in shape (Clark, 1973, Thomson & Chapman, 1977).

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6As in Dockrell's studies, when children are presented with verbs that contrast in form e.g., walk versus make X walk, or kid versus foot, they consistently interpret them as having contrasting meanings (Ammon, 1980. Clark, unpublished data).
TABLE 4

<table>
<thead>
<tr>
<th>Child Innovation</th>
<th>Adult Pre-empter</th>
</tr>
</thead>
<tbody>
<tr>
<td>to broom</td>
<td>to sweep</td>
</tr>
<tr>
<td>to fire</td>
<td>to burn</td>
</tr>
<tr>
<td>to scale</td>
<td>to weigh</td>
</tr>
<tr>
<td>to babysitter</td>
<td>to babysit</td>
</tr>
<tr>
<td>to decoration</td>
<td>to decorate</td>
</tr>
<tr>
<td>a fix-man</td>
<td>a mechanic</td>
</tr>
<tr>
<td>a tooth-guy</td>
<td>a dentist</td>
</tr>
<tr>
<td>a lessoner</td>
<td>a teacher</td>
</tr>
<tr>
<td>a carer</td>
<td>a rower</td>
</tr>
<tr>
<td>a locker</td>
<td>a lock</td>
</tr>
</tbody>
</table>

In summary, children rely heavily on Contrasts in filling gaps in their lexicon: unfamiliar words are assumed to denote categories for which they as yet have no words. At the same time, when they need to talk about categories for which they lack established words, they freely construct innovative terms for that purpose. In both cases, they are engaged in filling lexical gaps in accordance with Contrast.

THE ROLE OF CONTRAST IN MORPHOLOGY AND SYNTAX

Children replace their own coinages with established terms when they find no meaning contrast between the form they are using and the one adults use. The absence of a contrast in meaning leads them to choose one and eliminate the other. Since the form used by adults is already established in the lexicon, it takes priority. The same procedure applies with equal force in the acquisition of inflectional morphology and syntax.

Morphological Over-regularizations

Children are pattern-makers. And when they begin to acquire the inflections that mark tense, for instance, they typically take irregular verbs such as break, bring, and go, and treat them as if they belonged to the regular paradigm of walk, open, and jump. So the past tense of break is produced as broke, oring as bringing, and go as good (e.g., Berko, 1958; Cazden, 1958; Kuczaj, 1977). The initial basis for adding particular inflections and then for over-regularization appears to be semantic: verbs for change of state like break or drop are affected for past tense before verbs for activity or state like run or sleep (Bloom, Lifter, & Hafitz, 1980). Moreover, the phonetic shape of the verb stem also affects the course of over-regularization. As Bybee and Slobin (1982) found, children first over-regularize verb stems that do not end in an alveolar stop (e.g., break/broked, bring/brought, go/got). Verbs like hit, ride, or eat are left unchanged, because, argued Bybee and Slobin, they already conform to the past tense schema by ending with an alveolar stop (/t/ or /d/). It is only later, often after forms like broke and went have been mastered, that hit is over-regularized to hitted and ride to rided.

Once children have constructed over-regularized past tense forms, how do they get rid of them? Just as for the lexicon, the Principle of Contrast offers children crucial evidence for replacing regularized forms by irregular past tense forms. Suppose a child uses broke as the past tense of break instead of broke. But that child hears only the irregular form broke from adults. He then notices that whenever he would use broke, adults use broke, so his anticipations about the the form for a particular meaning are wrong. He realizes that the meaning
I don't like being called down on

The principle of contrast.

Do you want to see the picture on the board?

I don't like being called down on

The principle of contrast.

Do you want to see the picture on the board?

I don't like being called down on

The principle of contrast.

Do you want to see the picture on the board?

I don't like being called down on

The principle of contrast.

Do you want to see the picture on the board?
The contrast and the course of acquisition

The principle of contrast also helps explain for the different course children take.

Meanings is a central principle in discovering which syndromes form complex words.

Discovering these syllables may take children a long time. In other cases, com-

Clark 22
I. THE PRINCIPLE OF CONTRAST

Principle of Contrast: The second proposal is a pragmatic, unifying principle that should be replaced by the conceptual and single, fundamental principle of behaviorism. This proposal, as the second of the foundations of behaviorism, is not only the substitute for the previously proposed behavioristic principle of contrast, but also the substitute for the currently proposed behavioristic principle of contrast. The second proposal will provide the value of the current principle of contrast, while the previously proposed behavioristic principle of contrast will yield the value of the current principle of contrast.

For the behavioristic principle of contrast, the conditions under which contrast occurs have been defined. The conditions are as follows: contrast occurs if and only if there is a contrast between the two alternative stimuli presented to the organism, and the response to that contrast is stronger than the response to either of the two stimuli presented alone. If there is no contrast between the two stimuli, or if the contrast is not strong enough, then the response will be weaker than the response to either of the two stimuli presented alone.

Special Cases of Contrast

Special cases of contrast are described in several books and papers designed to illustrate the principle of contrast. For example, when two stimuli are presented to an organism, the contrast between these two stimuli can be enhanced by adding a third stimulus that is different from the first two. This can be done by presenting the third stimulus after the first two stimuli have been presented, or by presenting it before the first two stimuli. In either case, the contrast between the two stimuli is increased by the presence of the third stimulus.
INTERESECTING CONCEPTS ON THE PRINCIPLE OF CONTRAST: When children are working on a project requiring the use of contrast, they learn that contrast is important. This is achieved through the use of contrasting elements in their work, such as light and dark, or bright and dim colors. Contrast helps them understand the importance of distinguishing between different aspects of their work.

The contrast principle is fundamental in many areas of life. In art, for example, contrast is used to create visual interest and to draw attention to certain elements. In design, contrast is used to create balance and to enhance the overall visual impact of a piece. In fashion, contrast is used to create a sense of style and to draw attention to certain features.

The contrast principle is also important in psychology. It is used to study the effects of contrast on perception and learning. For example, it has been shown that contrast can help improve visual acuity and can improve the ability to distinguish between different objects. Contrast can also be used to create a sense of depth and can help enhance the overall visual impact of a piece.

In conclusion, the principle of contrast is a fundamental concept that is important in many areas of life. It is a principle that is used to create visual interest, to enhance the overall visual impact of a piece, and to improve perception and learning. Understanding the contrast principle is important for anyone who wants to create effective and engaging visual experiences.
REFERENCES


CONCLUSION

Volunteer and community involvement in community-based organizations have become an integral part of many communities. The role of these organizations in promoting social capital and civic engagement is crucial. However, there is a need for further research to understand the factors that influence volunteer participation and community involvement. Future studies should focus on identifying strategies to increase volunteerism and community engagement, thereby enhancing the overall social capital of communities.