

Language acquisition

the state of the art

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13. The young word maker: a case study of innovation in the child's lexicon

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- Noah: (picking up a toy dog) *This is Woodstock.*
(He bobs the toy in Adam's face)
Adam: *Hey Woodstock, don't do that.* (Noah persists)
I'm going home so you won't Woodstock me.

13.1. Introduction

Lexical creativity is widespread in childhood. Children coin new compounds like *plate-egg* and *cup-egg* (for fried and boiled eggs), *tell-wind* (a weathervane), or *fix-man* (a mechanic). They coin agent and instrument nouns like *lessoner* (a teacher), *shorthand* (someone who writes shorthand), *winder* (a machine for making ice-cream), and *driver* (the ignition key of a car). They form adjectives like *toothachey*, *windy* (used in a *windy parasol*, one being blown by the wind), or *bumpy* (used in a *bumpy door*, for a door that was banging). They ask when cocoons will be *flyable*. They form comparatives and superlatives from nouns, saying that food needs to be *salter* (more salty) or describing a bench as the *sliverest seat*. And they use nouns as verbs, talking about cheese that has to be *scaled* (instead of weighed), about *lawning* (for mowing the lawn), or, as in the dialogue between 3-year-olds cited at the opening of the chapter, about actions connected with a toy called Woodstock.

The questions raised by innovations like these are twofold. First, why do children create new words? And second, how do they do it? The answer to the first question may hinge on the communicative function of language. Children may create new words to fill gaps in their lexicon, to express meanings for which they have no ready-made words. (Of course, children might not be aware in this situation that they are creating new

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words.) The answer to how children do this seems to be that they draw on words and morphemes already known to them. By using word stems in new ways or combining them with other stems or affixes, they can express a variety of new meanings. In this chapter I shall argue that children learn very early that the lexicon can be used creatively,¹ and that this knowledge plays an important role in acquisition.

Creativity in the lexicon, though, is not simply a matter of learning which word-formational paradigms are available in a language. This is because the paradigms themselves are open-ended: It is not possible to list all their actual and potential members. For instance, no dictionary lists all the verbs to which the *-er* suffix can be added in English to form an agentive noun, as in *climber*, *sitter*, *goer*, *maker*, and so on. Similarly, there is no *a priori* limit on the possible relations that can hold between the denotata of any two nouns combined to form a new compound on a particular occasion, as in *fire-dog* for a large yellow dog found at the site of a fire (Pelsma, 1910) or the adult *apple-juice-chair* for the place at table with a glass of apple juice nearby (Downing, 1977). They, too, cannot be listed in dictionaries. Lexical innovations, then, are primarily important not because they show mastery of the word-formation paradigms, but because they suggest that children are learning the *process* required in that language for creating new words.

The fact that children are creative and produce numerous lexical innovations raises three major issues for the acquisition process. First, what is the range of productivity among child innovations and why do children use them? Second, what is the relation between child and adult innovations? The latter are governed by conventions that place certain constraints on the process of innovation, and children have presumably to acquire these conventions. Third, what form does the innovative process take? Children could take a particular term already in their repertoire and construct a new one by analogy, say the pair *jump/jumped* as a model for *bump/bumped*, or they could abstract a rule such as "Add *-ed* to all verb stems to express past time" and use that.

In examining these issues and particular hypotheses that arise from them, I will take as my data innovations produced by English-, French-, and German-speaking children and focus on one area of the lexicon only – denominal verbs. And since we already know something about adult usage in this domain, I will begin with a sketch of the categories of denominal verbs in adult speech and the convention that governs their use.

Denominal verbs

In a recent study of denominal verbs (E. Clark & H. Clark, 1979), Herbert Clark and I noted that (1) most denominal verbs can be grouped into a

small number of categories; (2) these verbs lie on a continuum, with well-established verbs at one end and innovations at the other; and (3) to use new denominal verbs, speakers of English rely on a convention that places certain constraints on the process of innovation itself. I will take up each of these observations in turn.

Most denominal verbs in English can be grouped very roughly into eight categories, five major and three minor ones, with a few leftovers. Their classification is based on the role played in a situation by the entity denoted by the noun from which the verb is formed – the parent noun. *Locatum verbs* consist of those denominal verbs whose parent nouns denote an object that is placed somewhere. Thus, in *He PLASTERED the ceiling* and *She BLANKETED the bed*, the plaster goes on the ceiling and the blanket on the bed. *Location verbs*, in contrast, have parent nouns that denote the place where some object is put. For instance, in *He STABLED the horses*, we understand that horses are put in a stable. *Agent verbs* have parent nouns that denote the agent of the action, as in *He AUTHORED the books* or *She CAPTAINED the boat*. *Goal verbs* have parent nouns that denote the goal of the activity, as in *They KNOTTED the ropes* (made the ropes into knots) or *He POWDERED the aspirin* (made the aspirin into powder). And *instrument verbs* consist of verbs whose parent nouns denote the instrument used in the activity, as in *She WEDGED the door open* (made the door stay open with a wedge) or *He LAUNDERETTED the clothes* (cleaned the clothes by means of a launderette).²

The three minor categories have only a few members. First, *experiencer verbs* have parent nouns that denote the entity experiencing something, as in *They WITNESSED the crime*. *Source verbs* have parent nouns that denote the source from which something is produced, as in *They PIECED the quilt together*. And *duration verbs* have parent nouns that denote a stretch of time, as in *He SUMMERED in Canada* or *They WEEKENED in the mountains*. Last, there are a few very small clusters of verbs that fall outside the other categories: verbs of consumption with parent nouns that denote meals or food (*to lunch*, *to snack*), verbs of collection with parent nouns that denote objects that are collected and removed (*to hay*, *to nut*), and verbs for weather (*to snow*, *to rain*).

Within these categories, some verbs have a more transparent connection with their parent nouns than others. At the opaque end of this continuum lie verbs whose parent nouns may not even be recognized as such, as in verbs like *lynch* or *boycott*. Next come verbs where the connection between noun and verb is no longer known, as in *to shanghai*, *to slate*, or *to riddle*. Next come verbs where the connection remains somewhat transparent, as in *to park* or *to land* (but consider *land on water*). And further still towards the transparent end of this continuum lie verbs where the connection seems quite clear, as in *to bicycle*, *to skate*, or *to hammer*.

Many denominal verbs are well established in the language. The process of forming verbs from nouns has been going on for hundreds of years in

English. This, of course, is one reason why many noun-verb pairs no longer retain a transparent connection in meaning. Well-established verbs belong to the conventional or idiomatic lexicon of a language. In this, they contrast with innovations, newly coined denominal verbs, used with particular meanings on particular occasions.

Innovations are governed by conventions – conventions of language use. The convention on innovative denominal verbs, like other conventions, stems from the fact that many innovative expressions are neither purely denotational (like *dog*) nor indexical (like *he*), but *contextual*. That is, they have the three following characteristics:

1. Contextuals have an indefinitely large number of potential senses. An innovative verb formed from a noun might be used with one sense on one occasion, another on a second occasion, yet another on a third, and so on. There is no limit on the number of senses such a contextual can potentially convey.
2. Contextuals depend for their interpretation on the context in which they are produced. Just as one relies on context to identify the referent of an indexical like *he* or *the dog*, so do facts about the context play an essential role in the interpretation of contextuals.
3. Contextuals demand cooperation between speaker and listener. A speaker must assess what his listener knows or could infer from context, and the listener must use any clues from context plus any other facts he has reason to assume the speaker expects him to use in arriving at the intended interpretation.

In order to interpret contextuals as intended, the speaker and listener rely on a convention that goes roughly as follows. In using an innovative expression to denote some kind of situation, the speaker expects his listener to be able to arrive at a readily computable, unique interpretation by considering both the expression itself (here, an innovative denominal verb) and the speaker's and listener's mutual knowledge. This convention places limits on both the use and the interpretation of innovative expressions.

The convention can be spelled out more formally as follows:

The innovative denominal verb convention. In using an innovative denominal verb, the speaker means to denote (1) the kind of situation (2) he has good reason to believe (3) that on this occasion the listener can readily compute (4) uniquely (5) on the basis of their mutual knowledge (6) such that the parent noun denotes one role in the situation and the remaining surface arguments of the denominal verb denote other roles in the situation. [E. Clark & H. Clark, 1979, p. 787]

This convention places certain constraints on which nouns can be used innovatively as verbs.

One of its consequences is captured by the principle of *pre-emption by synonymy*. Certain innovations are pre-empted, or counted as illegitimate, if there is a common term in the language with just the meaning the innovation would have had. There are three types of pre-emption by synonymy:

1. *Suppletion*. Pre-emption by suppletion occurs when the meaning that would be expressed in context by an innovative verb coincides with the meaning of another verb already in the language. For instance, although most vehicle names can be used as verbs with the meaning "go by *X*" (as in *taxi/taxi*, *bus/bus*, or *bicycle/bicycle*), the verbs *car* and *aeroplane* are pre-empted by *drive* and *fly*, which have just the meanings the innovative verbs would have.

2. *Entrenchment*. Pre-emption by entrenchment occurs where the existence of one denominal verb with an idiomatic meaning prevents the formation of another, with the same meaning, from the same parent noun. Thus the innovative verb *prison*, meaning "put into prison," is pre-empted by *imprison*, and the innovative *hospital*, meaning "put into hospital," is pre-empted by *hospitalize*.

3. *Ancestry*. Pre-emption by ancestry occurs when the parent noun is itself formed from a verb with the very meaning that the innovative denominal verb would have. For instance, the denominal verb *baker* is pre-empted by *bake*, just as the verb *farmer* is pre-empted by *farm*, and so on.

Of course, if the innovative verbs contrast in meaning with verbs already in the language, they are quite legitimate. The categories of pre-emption just listed operate only where there is no contrast in meaning. All three reflect the fact that speakers have a strong tendency to avoid creating complete synonyms (see Bolinger, 1977).

Another consequence of the innovative denominal verb convention is captured by the principle of *pre-emption by homonymy*. Here, an innovative verb may be pre-empted by reason not of its meaning, but by reason of its form. For instance, the existence of the verb *spring*, meaning "leap, jump," pre-empted the use of *spring* as in *Jeffrey sprunged in France*, meaning "spend the season of spring." Pre-emption by homonymy prevents the use of innovative verbs that are homonymous with common verbs already well established in the language. It is not clear how strong pre-emption of this type is compared to pre-emptions by meaning.

13.2. Issues and hypotheses

Learning conventions

When children acquire their first language, they learn sounds, morphemes, and words, with their various rules of combination. But this is not all. They also learn the conventions that govern uses of particular

forms, and among them, they learn conventions for innovation. When, then, do children learn the innovative denominal verb convention? And what part of the convention do they acquire first?

The first part of the convention that we can be sure children have acquired is the device to be used, the denominal verb. They must give evidence of knowing that nouns can be used as verbs before anything can be said about the remainder of the convention. However, if they only know condition (6) of the convention, there will be no reason for children to observe the consequences of the full convention. Their innovations could as well be illegitimate as legitimate, and could fall into any or all of the pre-empted verb types. Thus use of illegitimate innovations would be evidence for knowledge of condition (6) and against knowledge of the other five conditions of the innovative denominal verb convention. Furthermore, as children acquire the other conditions, they should come to use fewer and fewer illegitimate innovations.

The acquisition of a convention for using innovative verbs must of course go hand-in-hand with the acquisition of well-established verbs and verb meanings. It is the well-established verbs that provide the pre-empting forms, the forms that rule out illegitimate innovations. For example, before children acquire *drive*, *kick*, or *slap*, there is no reason why they should not use innovative *car*, *foot*, and *palm*, or *hand*, with just those meanings, to fill these "gaps" in their lexicons. (They might not be understood very easily, however.) But learning the well-established verbs is not enough: Children have also to realize that one of the consequences of the innovative denominal verb convention is pre-emption. In effect, without the convention, there would be nothing to constrain their innovations.

Children's innovative verbs usually allow the listener to arrive at a readily computable unique interpretation. How do the speaker and listener manage this when the speaker is not observing the appropriate convention? One explanation might be that the convention holds by accident for young children. Most or all of their conversation is focused on the here-and-now. This allows their listeners, in most situations, to readily identify a unique activity as the denotation of an innovative verb. In effect, limitation to the here-and-now allows the speaker and listener to operate, by default, with a restricted version of mutual knowledge (see further H. Clark & Marshall, 1981).

As children get older, their earlier accidental observance of the convention no longer holds because they talk more and more about events displaced in place or time from the locus or moment of speech. So for their listeners to grasp their intended meanings, children have to learn to cooperate with their listeners by using the relevant convention. This cooperation is a complex affair. In some situations, children as old as 8 or 9 do not appreciate that what is known to them as speakers is not

automatically known to their listeners (e.g., Warden, 1976). Children, then, may well take several years to acquire and be able to use the innovative denominal verb convention in its entirety.

The process of innovation: analogy or rule?

Consider what children must do in order to add a suffix like the past-tense ending in English to a verb. They must first identify the suffix as an element separable from the verb stem, and second work out what meaning it adds. This part of the acquisition process can be represented as follows:

1. Identify the suffix as an element that can be detached from the particular stem(s) it occurs with (e.g., *jump + ed*, *walk + ed*).
2. Identify the meaning of the suffix (*-ed* picks out a time prior to the time of the utterance).

Once these steps are achieved, children can add the suffix to other verb stems:

3. The suffix *-ed* adds the meaning of completion or past time to verbs.

The general procedure in the first two steps represents the analysis of form and meaning that has to precede extension of that suffix to new verbs. And the statement in the third step represents the modulation of meaning, to borrow Brown's (1973) term, that children can carry out once they have analyzed the meaning of this suffix.³

But by what process do children use past-tense forms? Traditionally, there have been two ways of talking about this. The first assumes analogy and would posit that children choose the nearest possible exemplar on each occasion as a model for adding the appropriate past-tense allomorph. For instance, in deciding how to form the past tense of *bump*, children could retrieve a verb with a similarly shaped stem⁴ and use it as the model exemplar, for example, *jump/jumped::bump/_____*. The second way of talking about such a process assumes rule use. Under this view, one would argue that children rely on a rule that represents a generalization (such as that in the third step just listed) drawn from their experience with a number of different exemplars. Because they have abstracted a rule – say, “Express past time by adding *-ed* to the verb stem” – they would have no need to conjure up a particular exemplar but could simply apply their rule in adding the appropriate suffix to any new verb.

Do children rely on analogy or on rules? Early studies contrasted rote memorization with analogy, not analogy with rule use (e.g., Stern & Stern, 1928). Guillaume (1927), for instance, argued that French-speaking children were relying on analogy when they formed incorrect past participles for third-conjugation verbs like *éteindre*, “switch off.” Instead

of the adult past participle *éteint*, 3- and 4-year-olds produced *éteindé* (from a first-conjugation model like *donné*)⁵ or even *éteindu* (from another third-conjugation model like *descendu*). Such regularizations are incompatible with the view that children learn by memorizing the forms they have heard.

More recent studies have contrasted rote memory with rule use. For example, Berko (1958) showed that children could add appropriate noun and verb endings to new words (nonsense syllables). She argued from this that they could not be relying on rote memorization because (1) they had never heard these new words before, and (2) they consistently chose regular, rather than irregular, forms of the endings added. However, when rule use is contrasted with analogy, it is not clear which position data like Berko's really favor.

MacWhinney (1975b), in his study of Hungarian children's noun plurals, argued that children start out with rote memorization and then progress via analogy to rule use. At the rote memorization stage, words and their endings are unanalyzed wholes. With analogy, children add new plurals to their repertoire by modeling the plural of a new word on the plural of a known word resembling it. Later still, he argued, children progress to using rules. This is shown by their taking into account the complex conditions that govern the choice of the appropriate plural forms for both real and nonsense stems. But it may be hard to distinguish analogy and rule. Indeed, Park (1978) has questioned whether MacWhinney's data provide evidence for rule use rather than analogy.

There may be no single answer. In deciding how to add word endings, children might well begin by comparing new instances to specific exemplars already in their repertoires. But later, after being exposed to a large number of forms in a coherent paradigm, they should have a plethora of exemplars to work from, and their use of an inflection might take on the form of a general rule. Or they might simultaneously use rules in some domains and analogy in others. Overregular use of the English noun plural suffix *-s* would seem to favor a rule interpretation. But construction of a compound like *coffee-churn*, to designate a coffee grinder, by a child who knew *milk-churn* (Pelsma, 1910), would seem to favor analogy.

To summarize, whether children use analogy or rules is not easy to decide from the data available. Some studies appear to support analogy and others rule use, but few have actively contrasted the two in the domain of language acquisition. Moreover, analogy and rule use appear to lie on a continuum, with analogy based on single exemplars at one end, and rules abstracted over multiple exemplars at the other (see further Brooks, 1978; Kossan, 1978; Medin & Schaffer, 1978). In language, this continuum is such that, whereas instances of analogy could actually be instances of rule use, there should be identifiable instances of rule use that could not be accounted for by analogy. I shall consider this issue

further for the case of innovative denominal verbs. If children's innovations conform to the model exemplars offered in adult speech, it may not be possible to decide between analogy and rule use. But if they depart from the exemplars offered, this departure would favor rules over analogy in the process of innovation.

Some hypotheses

There are several hypotheses implicit in the preceding discussion that will be tested against the present corpus of children's innovative denominal verbs. First, if children do not know all the parts of a convention about language use – here, the convention for using innovative denominal verbs – they could produce both legitimate and illegitimate innovations. However, the incidence of their illegitimate innovations should decline with age as they learn (1) other terms that would pre-empt particular innovations, (2) that well-established terms do pre-empt, and (3) how to assess mutual knowledge – the special common ground that people need in order to make effective reference and so on (see H. Clark & Marshall, 1981). These predictions, I assume, should hold equally for all three languages under discussion here.⁶

Second, there are several alternative hypotheses about the sources of children's innovations. One source children might use is the set of well-established denominal verbs available in their own vocabularies. To use these, whether by analogy or rule, children will need to have recognized and analyzed the relation that holds for particular noun-verb pairings. Evidence for this source could show up in two ways: First, the innovations children produce should belong to the *same* categories of denominal verbs as their well-established verbs; and second, the frequency of their types should reflect that of their well-established verb categories.

An alternative hypothesis about the source of children's innovations is that, instead, they base them on adult usage. With this source, there are similar predictions: First, the innovations children produce should all fit into the adult categories of denominal verbs; and second, their frequency should reflect the relative frequencies of the adult categories. Of course, if children's well-established verbs happen to fall into the same categories as adult denominal verbs, these two hypotheses will not be distinguishable.

In either case, if there are parallels between the proposed model and children's innovations, one could probably not decide between analogy and rule. Their innovations could be produced by analogy to specific exemplars in their own vocabulary or in adult speech, or by a rule based on their own or adult speech.

A third alternative, in which the potential role of analogy or rule might be easier to assess, is the following: Children could produce innovations

because they need a way to express particular meanings on particular occasions. In this case, all they need notice is the general fact that adults use words that denote concrete objects as terms for talking about states, processes, or acts associated with those objects. This would essentially correspond to part (6) of the adult convention, but would involve use of a more general rule, one not governed by the rest of that convention. Under this view, children's innovations – legitimate or illegitimate – would not necessarily parallel either their own well-established verbs or the verb categories used by adults. For example, children might use one or more categories *not* used by adults. This would be strong evidence in favor of rule use.

Data for the case study

The innovations to be analyzed here consist of 224 denominal verbs produced by young children acquiring English (123 verbs), French (35 verbs), and German (66 verbs). The sources for the English data are several. First, there are my own longitudinal records of 2- and 3-year-olds, plus a long-term collection of more casual observations of children's innovations. Examples cited from this source are labeled with the initials D, H, J, K, S, JA, SA, and ME in the tables presented later. A second source of English data is Bowerman (1974, 1978b, and unpublished data), indicated by the initials CB and EB. In addition, I have culled a few instances from other published sources: HO and SO (O'Shea, 1907), EP (Pelsma, 1910), RG (Grant, 1915), DH (Huxley, 1970), HL and JW (Kuczaj, 1977), and AK (Kuczaj, 1978).

My sources for French are sparser. I have relied here on instances appearing in published diary studies and discussions by Decroly (1932a), indicated by WD, YD, and XD; Grégoire (1937, 1947), indicated by CG and EG; and Aimard (1975), indicated by LA, VA, and MA. The German data have also been drawn from published sources. The two main studies I have relied on are Neugebauer (1914), indicated by RN, and Stern and Stern (1928), indicated by HS and GS. In addition, I have drawn on additional examples cited by Stern and Stern from other German studies, indicated as follows: AP (Preyer, 1882), DL (Lindner, 1898), FS and SS (Schneider, 1903), Tö (Tögel, 1905), HF and RF (Friedrich, 1906), and Sc (Scupin & Scupin, 1907). The majority of the innovative verbs for all three languages were produced by children between the ages of 2 and 5.

In addition to the English data on innovative verbs, I have also used a comparison corpus of well-established or idiomatic denominal verbs found in the vocabulary of 3-year-olds. This corpus was compiled from seven vocabulary studies by tallying all those denominal verbs for which children also knew the parent nouns (Bateman, 1915; Bohn, 1914; Boyd, 1914; Brandenburg, 1915; Grant, 1915; Nice, 1915; Pelsma, 1910). A sec-

ond set of comparison data comes from the adult corpus compiled by E. Clark and H. Clark (1979) of over 1,300 established and innovative denominal verbs in English.

Each of the verbs in the corpus of innovations, from all three languages, as well as each of the well-established verbs from English-speaking 3-year-olds, was classified using the schema in E. Clark and H. Clark (1979). For well-established verbs, the classification was based on the adult meanings; for innovative verbs, the classification was based on contextual information about the occasion of use, together with adult glosses of what the child had intended to convey.

To be sure that children are using a noun as an innovative verb, one has to make sure that they are observing certain syntactic constraints that allow identification of the word class of the stem in question. Utterances from the one- or two-word stage clearly cannot be categorized reliably as nouns or verbs because they cannot meet the adult constraints on uses of different word classes (see Stern & Stern, 1928). The child must therefore be using subject-verb-object sequences in his utterances before he can be credited with any innovative denominal verbs. The problem is an obvious one when one-word utterances are considered. For instance, some children made early verblike uses of *door* (an adult noun) that are exactly paralleled by other children's uses of *open* (an adult verb) (see Griffiths & Atkinson, 1978). The same problem lingers with two-word utterances that contain a potential denominal verb: In *Daddy brush*, one could have a sequence of noun-plus-noun, in a genitive relation ("Daddy's brush") or a subject-object relation ("Daddy's doing something to the brush"); noun-plus-verb, in a subject-verb relation ("Daddy's brushing something"); or noun-plus-noun, in a subject-manner adverb relation where *brush* is the instrument used in a particular action ("Daddy's doing something with a brush"). Until children produce subject-verb-object utterances, there is no reliable way to identify the syntactic word class of a particular term.

There are, inevitably, certain problems associated with the use of such data on innovations. Since the sample size for each language is different, the samples may not be truly representative. This problem is compounded by the fact that the data for each language are drawn from several different children, and they in turn may not be representative of children acquiring that language. Despite these problems, the instances of innovations observed in my own data appear very similar to those observed by Bowerman, and they fall into similar categories, as do the data from children acquiring German. Moreover, in the case of German, more recent studies contain observations directly comparable to those noted in earlier diaries (e.g., Augst, Bauer, & Stein, 1977; Panagl, 1977). The French corpus is the smallest and therefore possibly less representative than either the English or German one.

A second source of problems with such data lies in their categorization. As I mentioned earlier, each innovative verb was classified according to the role in the situation of the entity denoted by the parent noun. But how is this decided? Both in my own data and in Bowerman's, detailed contextual notes on what the child was talking about on each occasion and what he intended to convey allow as precise a categorization as for adult innovations. But published sources are not always as detailed either about the context or about the intended interpretation. As a result, some innovations could have been classified in more than one way. (This problem is not unique to child innovations; it also occurs with many adult uses; see E. Clark & H. Clark, 1979.) The adult glosses provided in diaries like Grégoire's (1937, 1947) or Stern and Stern's (1928) vary in the amount of detail provided. Some innovations may be transparent to the observer who knows the child and his routines, while to others the same innovations are opaque. In the relatively few instances that lacked both a context and a gloss, the verb category was determined on the basis of the predominant feature of the entity denoted. If the entity was one normally used as an instrument, for instance, the verb was placed in the instrument category, and so on.

A third problem is related to the sampling issue raised earlier. Comparatively few of the innovative verbs in the corpus are legitimate innovations. In essence, people do not notice when children produce verbs that might as well have been produced by adults, but they do notice when child forms violate adult conventions on innovations. This means that the innovations actually produced by children may be severely underestimated in my data. The criterion of illegitimacy is a very conservative one. And there is a second source of underestimation. In many cases, children may reinvent what for adults are well-established forms. These too should be added to the tally of children's innovations, but there is a detection problem. Reinvention is virtually impossible to distinguish from forms based on observed adult usage. This bias against noticing child innovations, then, will lead to even greater underestimates of innovation in the child's lexicon.

13.3. Innovative denominal verbs

In giving an account of the kinds of innovations typically produced in all three languages, I will go through the verb categories in turn, illustrating them with examples from each language. I will then compare innovative verb categories with well-established ones, and children's denominal verbs with those produced by adults.

Instrument verbs. Typical examples of innovative instrument verbs from children acquiring English, French, and German are given in Tables 13.1,

Table 13.1. *Instrument verbs: some English examples*

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- (1) S (2;4, wanting to have some cheese weighed): *You have to scale it first.*
- (2) S (2;4, reaching for the pocket calculator): *I can button it.* [= turn it on]
- (3) S (2;7, having hit his baby sister, explaining what made her cry): *I broomed her.* [= hit her with a (toy) broom]
- (4) S (2;11, not wanting his mother to sweep his room): *Don't broom my mess.*
- (5) S (2;11, telling his father that his mother nursed the baby): *Mommy nipped Anna.*
- (6) S (3;0,21, watching a man opening a door with a key): *He's keying the door.*
- (7) S (3;2, pretending to shoot his mother with a stick): *I'm going to gun you.*
- (8) S (3;2, asking if the pants his mother is mending are ready): *Is it all needed?*
- (9) S (3;2, putting on a cowboy hat with a string-and-bead catch for holding it on under the chin): *String me up, mommy.*
- (10) EB (3;10, taking spaghetti out a pan with some tongs): *I'm going to pliers this out.*
- (11) EP (4;0, asking for some sticks to be chopped): *Won't you hatchet this?*
- (12) CB (4;0, rejecting some paper she'd cut her finger on earlier): *I don't think I'll have it because it papers me.* [= paper cuts me]
- (13) CB (4;4, struggling with the lace on her boot): *How was it shoelaced?*
- (14) CB (4;6, doing up the seat belt in the car): *I seat-belted myself.*
- (15) HL (5;0, complaining about the unfairness of woodchopping assignments): *You axed the wood and I didn't axe it.*
- (16) JW (5;7, hitting a ball with a stick): *I'm sticking it and that makes it go really fast.*
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Note: Ages are given in years; months, and (sometimes) days.

13.2, and 13.3. The category of instrument verbs comprises those denominal verbs whose parent noun denotes the instrument used in the activity being talked about. Table 13.1 lists instances observed in the speech of several English-speaking children.

Many of the innovations in Table 13.1 are illegitimate for adults, even though they are interpretable in context. Some are illegitimate because they are pre-empted by *suppletion* (the same meaning attached to a different form). The child's *scale* is suppleted by adult *weigh*, *broom* (in [4]) by *sweep*, *nipple* by *nurse*, *gun* by *shoot*, *needle* by *mend*, and both *hatchet* and *axe* by *chop*. Other innovations are illegitimate because they are pre-empted by *homonymy* (a different meaning attached to the same form). Thus the child's *button* (turn on by means of a button) is pre-empted by the adult's "fasten with a button," the child's *key* (open with a key) is pre-empted by the adult's "make a key for," and *needle* (mend

Table 13.2. *Instrument verbs: some French examples*

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- (1) LA (2;0, no context given): *C'est déconstruit, c'est bulldozé.* [It's unbuilt, it's bulldoze(re)d.]
- (2) VA (3;9, before licking an envelope to seal it): *Je peux la boutonner?* [Can I button (close, fasten) it?]
- (3) VA (3;10, having heard the word Nixon a lot on the radio): *Ce nixon, c'est pour anixonner?* [This nixon, it's for nixonning?]
- (4) VA (4;1, wanting to write with a piece of chalk): *Tu as pas une craie? Je voudrais crai . . . ver.* [Have you got a piece of chalk? I'd like to chalk.]
- (5) CG (4;7,6, talking about raking a path): *On ne rate pas dans les crasses.* [You don't rake in the dirt/filth.]
- (6) XD (no age given), talking about painting with a paintbrush, used the verb *pincer*. [to paintbrush]
- (7) YD (no age given), talking about measuring something, used *mètrer*. [to meter]
-

with a needle) is pre-empted by adult "irritate, annoy." (*Needle* is therefore pre-empted both by meaning and by form.) Other examples of pre-emption by homonymy are *string up* (fasten with a string) beside adult "hang," *paper* (cut with paper) beside "put paper on," and *stick* (hit with a stick) beside "adhere to."

Most of the remaining verbs are legitimate innovations. *Broom* (in [3]) meaning "hit with a broom," *pliers out*, "remove with pliers" (with *pliers* overextended to include tongs), and *seat-belted*, "fasten in with a seat belt," are all legitimate. *Shoelaced*, however, would normally appear in the form *laced* for adults. Since the child was trying to lace her boots, this verb has presumably been formed from an unanalyzed compound, and is pre-empted by the *entrenched* verb *lace* – the same meaning with a different form.

Table 13.2 contains some instrument verbs produced by French-speaking children. As in the English data, a number of these verbs are illegitimate. Several are pre-empted by suppletion, for instance, *Boutonner*, "fasten an envelope" (from *bouton*, "button"), is pre-empted by adult *cacheter*. Similarly, *pincer*, "paint (with a paintbrush)" (from *pinceau*, "paintbrush"), and *mètrer*, "measure" (from *mètre*, "measuring tape"), are pre-empted by adult *peindre* and *mesurer*, respectively. There is also one instance of pre-emption by entrenchment: *Rater*, "use a rake" (from *rateau*, "rake"), is pre-empted by adult *ratisser*, derived from the same noun. (In Old French, however, *rater* did mean "use a rake.") Two verbs are pre-empted by homonymy (the same forms with different adult meanings). *Pincer*, "paint" is pre-empted by *pincer*, "pinch," and *rater*, "use a rake," is pre-empted by *rater*, "fail." These two, then, are pre-empted by both meaning and form.

Table 13.3. *Instrument verbs: some German examples*

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- (1) RN (1;11,21), talking about climbing something by means of a ladder, used *leitern*. [to ladder]
- (2) RN (1;11,21), talking about tying a cord, used *schnuren*. [to cord]
- (3) RN (2;1,7), talking about a train leaving: *Lekta-sch is forträdel*. [Electric train has wheeled away.]
- (4) RN (2;1,7), talking about using a whip, used *peitschen*. [to whip]
- (5) RN (2;2, talking about a buckle): *Wie hannn man das anbroschen?* [Can someone brooch (fasten) this on?]
- (6) RN (2;2, using tongs to pick things up): *Mutter, was kann ich noch zangen?* [Mommy, what else can I tong?]
- (7) RN (2;9, rubbing stones by running a small stick over them): *Jetzt muss ich die noch stöckeln*. [Now I must stick them again.]
- (8) Sc (3;6), being sniffed by a dog, used *angeschnauzelt*. [(It) muzzles/snouts.]
- (9) HS (3;8, to her mother): *Hast du die Schürze vergürtelt?* [Have you girdled (fastened) your apron?]
- (10) HS (3;9), measuring the length of her necklace, used *metern*. [to meter]
- (11) HF (3;9,15), talking about sewing with a sewing machine, used *maschinen*. [to machine]
- (12) GS (3;11, playing with some glass): *Ich splittre nich. Ich wer mich ja nich splintern*. [I don't splinter. I shan't splinter myself = hurt with splinters.]
- (13) HS (4;2), talking about sweeping with a broom, used *best*. [(He/she) brooms.]
- (14) AP (no age given), talking about cutting something with a knife, used *messen*. [to knife]
-
-

The only legitimate instrument verbs appear to be *bulldozé*, *anixonner*, and *craiver*, but these forms are not necessarily the ones adults would have created. For example, the parent noun for *bulldozé* is *bulldozer* (borrowed from English). To make this noun into a verb would normally require the addition of the first-conjugation ending in *-er*, resulting in a past participial form *bulldozeré*. *Anixonner* seems to have been created with the child assuming *Nixon* to be the name of a product. Given that, the innovation appears quite legitimate. But *craiver*, "write (with chalk)," ought, strictly speaking, to be *craier* (from the noun *craie*, "chalk"). However, the child may have avoided *craier*, which would be homophonous with *créer*, "create, make." Whether this accounts for the form chosen, though, is not clear. The child may also have been influenced by forms like *écrivéz*, from *écrire*, "to write," a semantic neighbor of the meaning being expressed.

Table 13.3 lists innovative instrument verbs from German-speaking children. Again, these verbs can be classified as legitimate or illegitimate. Among the illegitimate ones, there are several instances where the child's

verb is pre-empted by suppletion and one instance of pre-emption by entrenchment. Suppletion occurs with *forträdel*, "leave" (based on the noun *Rad*, "wheel"), pre-empted by adult *fortgefahren*; with *metern*, "measure" (based on *Meter*, "ruler, measuring tape"), pre-empted by *messen*; with *best*, "sweeps" (based on *Besen*, "broom"), pre-empted by *fegen*; and with *messen*, "cut" (based on *Messer*, "knife"), pre-empted by *schneiden*. The latter verb is also pre-empted by homonymy: Adult *messen* means "to measure." Other instances of homonymy are provided by the verb *splittern*, "hurt with splinters" (based on *Splitter*, "splinter, sliver"), which is pre-empted by the adult meaning of "make into splinters," and by *anschnauzen*, "sniff, muzzle at" (based on *Schnauze*, "snout, muzzle"), which is pre-empted by the adult meaning of "talk roughly to."

The remaining innovations all seem to be legitimate. The verb *leitern* (based on *leiter*, "ladder") was intended to mean "climb with a ladder," and although adults normally use *auf eine Leiter steigen* instead, it was transparent in context. The verb *peitschen* (based on *Peitsche*, "whip"), which is actually an established adult verb meaning "whip," was invented spontaneously by RN, who, according to Neugebauer (1914), had never been exposed to it as a verb. *Anbroschen* (based on *Brosche*, "brooch," overextended to include buckles), meaning "fasten (with a buckle)," is legitimate, as are *zangen* (based on *Zange*, "tongs"), *stöckeln* (based on *Stock*, "stick"), *vergürtelt* (based on *Gürtel*, "belt, sash"), and *maschinen* (based on *Maschine*, "machine").

Locatum verbs. After instrument verbs, locatum verbs are the most frequent innovative denominal verbs in children's speech. Representative examples from the three languages are shown in Tables 13.4, 13.5, and 13.6. In locatum verbs, the parent nouns denote the entity that is being placed somewhere.

Table 13.4 presents examples from English-speaking children. Only two of them are illegitimate. The first, where the meaning is expressed with a different form by adults, is pre-empted by *ancestry*: The verb *decoration* is based on a noun derived from a verb with the same meaning, namely, *decorate*. The other illegitimate innovation is pre-empted by homonymy: The verb *cast* for adults means "make a cast from," not "put a cast on." The other locatum verbs in Table 13.4 are legitimate innovations. Notice, however, that some, like *rubber band*, may have an unexpected interpretation. Rubber bands are usually used as instruments for holding things together, not as objects to put somewhere. This clearly makes such verbs difficult to interpret out of context.

Table 13.5 lists some French examples of locatum verbs. As with the English examples in Table 13.4, most of these innovations are legitimate. The two exceptions are both instances of pre-emption by homonymy.

Table 13.4. *Locatum verbs: some English examples*

- (1) DH (2;3, talking about getting dressed): *Mummy trousers me.*
 (2) J (2;6, asking a teacher to toss a pillow at him during a mock pillow fight): *Pillow me!*
 (3) EB (3;4, deciding not to wear her new nightgown outside in the patio):
Mine will dust.
 Mother: *Dust?*
 EB: *Mine will get dust on it.*
 (4) EB (3;4, talking about her foot that had a Band-Aid put on earlier): *It was Band-Aided.*
 (5) CB (3;11, putting crackers in her soup): *I'm crackering my soup.*
 (6) JA (4;0, in the role of doctor dealing with a broken arm): *We're gonna cast it.*
 (7) CB (4;2, talking about a rag for washing the car): *But I need it watered and soaped.*
 (8) CB (4;5, putting first a bead and then a rubber band into the playdough she's kneading): *I think I'll bead it. I think I'll rubber band it.*
 (9) ME (4;11, talking about the Christmas tree): *We already decorated our tree.*
 (10) SA (5;0, to his mother): *Will you chocolate my milk?*
 (11) JW (5;7, dressing a doll): *I'm shirting my man.*

Table 13.5. *Locatum verbs: some French examples*

- (1) VA (4;5, wrapped up in a blanket when asked to put on her slippers): *Je vais me pantoufler dedans.* [I'll slipper myself inside.]
 (2) EG (6;8), talking about some bread with egg on it, used *pain enoeuffé*. [egged bread/with egg on]
 (3) CG (7;0), talking about bread thickly covered with jam, used *pain enconfituré*. [jammed bread/with jam on]
 (4) CG (7;0), talking about putting syrup on things, used the verb *ensiroter*. [to syrup]
 (5) CG (7;3.19, talking about his plate): *Mon assiette est entartée.* [My plate is covered with tart.]
 (6) CG (13;0, asking for a cup of hot chocolate): *Chocolate-moi.* [Chocolate me.]
 (7) CG (16;0, talking about builders who had been repairing the brickwork): *Ils ont bien briqué la maison.* [They've bricked the house well.]

(En)siroter, meaning "put syrup on" (based on *sirop*, "syrup"), is probably pre-empted by the adult *siroter*, meaning "drink with small sips"; and *briquer*, meaning "put bricks on" (from *brique*, "brick"), is pre-empted by adult "clean vigorously." The remaining verbs all appear to be legitimate.

Table 13.6 contains innovative locatum verbs produced by German-speaking children. Again, there are only a few illegitimate innovations.

Table 13.6. *Locatum verbs: some German examples*

- (1) RN (2;2), poking with a sharp tool into a hole, used *reinspitzen*. [to point-in/put the point in]
 (2) HS (3;0, having drunk enough milk): *Hab genug emilcht.* [(I) have milked enough.]
 (3) Sc (3;2), talking about applying a wet bandage, used *handtucheln*. [to towel]
 (4) HS (3;6, refusing to use a spoon because it had already been used for soup): *Der Löffel ist besuppt.* [The spoon is souped/has soup on it.]
 (5) HS (3;6), putting leaves into paper bags, used *einblättern*. [to leaf-in/put leaves in]
 (6) FS (3;9) talked about something covered in ashes as *vollgeascht*. [well ashed]
 (7) GS (3;11), making a string of beads, used *aufperlen*. [to thread beads]
 (8) HS (4;7, talking about having ribbons on that needed tying, used *zugebändst*. [ribboned]
 (9) DL (5;6, talking about stripes on something): *Hier ist Gold angestreift.* [This is gold-striped/has gold stripes on it.]

One of them is pre-empted by suppletion: *Angestreift*, "striped," is normally expressed by *gestreift* (another form based on *Streife*, "stripe"). There is also one pre-emption by homonymy: The verb *milchen*, meaning "drink milk," is kept by adults for "yield milk" (from *Milch* "milk").

The remaining innovations are all legitimate. In many cases, they are based on the same parent nouns as other adult verbs but contrast with them in meaning. For example, the child's *reinspitzen*, "put the point in," contrasts with adult *spitzen*, "make into a point, sharpen" (both from *Spitze*, "point"); the child's *einblättern*, "put leaves into," contrasts with adult *blättern*, "turn the leaves (of a book)" (both based on *Blatt*, "leaf"); and the child's *aufperlen*, "thread beads on," contrasts with adult *perlen*, "sparkle" (both based on *Perle*, "pearl").

Location, goal, and agent verbs. Innovative location, goal, and agent verbs are comparatively rare in children's speech. Some of the few examples observed for each language are illustrated in Tables 13.7 through 13.9. The parent nouns of these verbs denote the location, the goal, and the agent involved in the activity, respectively. There were no instances of agent verbs observed in the French data; this category was also very rare for English and German.

Table 13.7 gives some innovative location, goal, and agent verbs produced by English-speaking children. These verbs are occasionally hard to classify. For instance, *towel* was used for asking to be wrapped in the towel, not dried with it, hence its classification as a location rather than as an instrument verb. (Location and locatum verbs, in fact, often double as instrument verbs: *Net the fish*, for example, means both "put in a net"

Table 13.7. *Location, goal, and agent verbs: some English examples*

Location	
(1) CA (4;6, waving a funnel at her younger sister):	<i>I'm going to funnel you.</i> <i>Ff, ff, ff. You're all in there.</i>
(2) SO (ca. 5;0):	<i>I'm going to basket those apples.</i>
(3) CB (5;5, asking her mother to stop her sister from putting popcorn "beads" on her thread):	<i>Mom, will you keep Eva from threading on mine?</i>
(4) K (7;0, asking her mother to wrap a towel round her as she got out of the bath):	<i>Towel me, mommy.</i>
Goal	
(5) S (3;1, watching a cement truck with its back revolving):	<i>That truck is cementing.</i> [making cement]
(6) CB (5;6, asking for her hair not to be done in "dogears"):	<i>I don't want to be dogeared today.</i>
Agent	
(7) EB (2;8, after roaring, with "claws" outstretched, at a towel hanging in the bathroom):	<i>I monstared that towel.</i>
(8) AK (5;1, talking about someone dancing in a ballet):	<i>She's ballerining.</i>
(9) HO (ca. 5;0, after overhearing some remarks about a new governess coming):	<i>When is she coming to governess us?</i>

and "capture by means of a net.") In general, I have assigned such verbs to the instrument class except where the context made clear that they had a location or locatum meaning only (see E. Clark & H. Clark, 1979). Of the verbs in Table 13.7, only one is pre-empted, by homonymy. It is *cement*, meaning "make cement"; for adults, that same form means "put cement on." All the other verbs are legitimate innovations.

Table 13.8 contains innovative location and goal verbs from French-speaking children. Two verbs are illegitimate, both pre-empted by homonymy: *Emboîter*, meaning "put in an envelope" (from *boîte*, "box"), for adults means "nest or encase one box in another." And *bossu*, an adjectival form, means "humpbacked," not "humped," as the child intended. *Bosse* means "hump," but the adult verb has the meaning "fix ornamental humps (bosses) onto." The child's form, then, is illegitimate (quite aside from the auxiliary verb used). The remaining innovations all appear quite legitimate.

Table 13.9 presents location, goal, and agent verbs produced by German-speaking children. All three types were comparatively rare. Three of the verbs here are illegitimate. The one agent verb, *dieben*, meaning "steal" (based on *Dieb*, "thief"), is pre-empted by suppletion: Adult *stehlen* has the same meaning. The other illegitimate verbs are both pre-empted by homonymy: *Wassern*, meaning "place in water" (from *Wasser*, "water"), for adults means "alight on the water"; and *lichten*, mean-

Table 13.8. *Location and goal verbs: some French examples*

Location	
(1) MA (3;3), talking about closing an envelope, used <i>emboîter</i> .	[to box/put in a box]
(2) CG (9;3) described a procession on the water as <i>une procession eautée</i> .	[a watered procession/on the water]
Goal	
(3) EG (3;9,29, talking about some plants):	<i>Elles ne sont pas encore grainées.</i> [They haven't made seeds yet.]
(4) VA (4;4, talking about an episode at the swimming pool):	<i>J'ai rencontré une vieille dame qui m'avait mis de l'eau quand je m'avais bossu.</i> [I met an old woman who poured water on me when I made myself into a hump.]
(5) EG (5;8, arming himself with a toy sword and gun):	<i>Je vais m'ensoldater.</i> [I'm going to make myself into a soldier.]

Table 13.9. *Location, goal, and agent verbs: some German examples*

Location	
(1) RN (2;7,15, dipping a stick into a bucket of water):	<i>Der Stock soll bewässert sein.</i> [The stick is supposed to be in the water.]
(2) Sc (3;11), talking about burying something, used <i>vererden</i> .	[to earth]
Goal	
(3) RN (2;10, talking about making small cakes):	<i>Da wird er glatt und dann wird er ausgeplätzelt.</i> [Then it's getting smooth and then it's caked/made into cakes.]
(4) RF (3;6,15), talking about showing one's teeth, used <i>bezähnen</i> .	[to tooth]
(5) FS (3;11), talking about playing music, used <i>musiken</i> .	[to music]
(6) HS (3;11), tying something in loops, used <i>zuschleifen</i> .	[to loop]
(7) HS (5;1,15, talking about lights):	<i>Du brauchst nicht zu lichten.</i> [You needn't light/shine a light.]
(8) HS (5;4,15, when her brother turned up the lamp):	<i>Günther lichtet mehr.</i> [Günther lighted more/made more light.]
Agent	
(9) GS (4;4), talking about someone stealing something, used <i>dieben</i> .	[to thief]

ing "produce light" (from *Licht*, "light"), for adults means "make clearings (in a wood)" or "thin trees." *Lichten* is also pre-empted by suppletion since adults express the meaning "produce light" with the verb *belichten*. Another pre-emption by suppletion occurs with *vererden* (based on *Erde*, "earth"), "bury," where the adult verb is *begraben* or *beerdigen*.

The remaining verbs all appear to be legitimate innovations. The meaning of *ausgeplätzelt* (based on *Plätzchen*, "small cakes") is perfectly com-

Table 13.10. *Characteristic activity verbs: some English examples**Act of*

- (1) EB (2;3, when the stove timer went off): *The buzzer is buzzing.*
 (2) RG (3;0, wanting a bell to be rung): *Make it bell.*
 (3) S (3;0, watching a truck go by): *It's trucking.*
 (4) S (3;2, looking at a drooping flag that suddenly spread out in a gust of wind): *It flagged.*
 (5) S (3;2, noticing a picture of trees leaning in the wind): *It winded.*
 (6) CB (3;11, making dots with a crayon over a person she had drawn): *It's snowflaking so hard that you can't see this person.*
 (7) CB (4;0, talking about pictures in a book she's making): *Right now it's storming. Here it's storming too.*
 (8) CB (4;4, describing a storm): *It was winding hard and then it started raining.*

Act done to

- (9) S (2;4, to mother preparing to brush his hair): *Don't hair me.*
 (10) S (2;4, eating soup): *I'm souping.*
 (11) J (2;6, seated in a rocker): *Rocker me, mommy.*
 (12) S (2;8,15, hearing his father using the vacuum cleaner in the hall): *Daddy's rugging down the hall.* (Later, going out to help): *I'm helping rug.*
 (13) S (2;9, overheard talking to another child while outside playing with a toy lawn mower): *I'm lawning.*
 (14) EB (3;2, talking about another child): *I saw Julie match up a match.*
 (15) D (5;0, looking at a picture revealed by moving a puzzle piece): *They're teaing.*
 (16) CB (6;0, bringing her mother two walnuts to crack): *Will you nut these?*
 (17) H (6;0, during a card game, wanting to cut the deck): *It's my turn to deck the cards.*

prehensible. The same goes for *bezähnen* (based on *Zähne*, "teeth"), *musiken* (based on *Musik*, "music"), and *zuschleifen* (based on *Schleife*, "loop").

Characteristic activity verbs. Characteristic activity verbs, together with locatum verbs, form the largest group of children's innovations after instrument verbs. They denote the characteristic activity done *by* or *to* the particular entity denoted by the parent noun of the verb (E. Clark, 1978a). This class of verb is rare or nonexistent in adult speech for talking about the activities of concrete objects; the only potential exemplars in English appear to be the weather verbs like *rain* or *snow* (E. Clark & H. Clark, 1979). Typical examples from English, French, and German children are shown in Tables 13.10, 13.11, and 13.12. Although there are more instances in the corpus for English and German than for French, the French examples appear very similar to those in the other two languages.

The first half of Table 13.10 comprises activities done *by* the entity

Table 13.11. *Characteristic activity verbs: some French examples**Act of*

- (1) VA (3;6, talking about the neighbor's cat meowing): *Chez Nan-nan, j'entends miaou . . . miaouner . . . mianouner le chat de Madame P.* [At Nan-nan's, I heard Madame P's cat meowing.]
 (2) CG (6;3,17, talking about the weather): *I grelonne.* [It's hailing.]

Act done to

- (3) CG (4;8,15, to his father): *Pipe un peu.* [Pipe/smoke your pipe a bit.]
 (4) EG (11;0, discussing with his brother what to do): *Nous argilerons dans la chambre.* [We'll clay/play with clay in the bedroom.]
 (5) CG (13;0, responding to his brother's utterance, in [4]): *Et nous allons microscoper.* [And we'll microscope.]
 (6) WD (no age given), talking about playing the piano, used the verb *pianer*. [to piano]

named in the verb; the second half comprises activities done *to* the entity named in the verb, by someone else. Among the illegitimate innovations in this table, several are pre-empted by suppletion, for example, *bell* or *ring*, *match* by *light*, *nut* by *crack*, and *deck* by *cut*. The last verb, *deck*, is also pre-empted by homonymy, because adult *deck* means either "put *X* on a deck," as in *He decked his opponent*, or "put a deck on," as in *They decked and masted the ship*. Three other verbs are pre-empted by ancestry. *Buzzer* and *rocker* are both formed from nouns that are in turn formed from *buzz* and *rock*, verbs that denote the activities talked about. And *snowflake* is pre-empted by the simpler adult *snow*.

The legitimate innovations in Table 13.10 tend to fall into various segments of the "Others" category in E. Clark and H. Clark (1979). *Soup* and *tea* are clearly akin to adult *lunch*, *breakfast*, and *snack*. *Wind* and *storm* fall together with adult *rain* and *snow*. There is no obvious reason why other weather terms should not occur as verbs in English. (Indeed, *storm* is used by some speakers, but not by the parents of these children.) *Truck* and *flag* denote the activity of these entities on particular occasions. The nearest uses of these in adult speech are often figurative, as in *The market submarined*, but such figurative verbs do not denote an actual participant in the activity named by the verb. *Hair* represents a use that was maintained by this particular child over eight months or so without any encouragement from his parents. It resembles two other verbs used by the same child, *lawn* and *rug*. Verbs like this do not seem to be represented at all among adult categories of denominal verbs in English.

Table 13.11 presents a few characteristic activity verbs produced by French-speaking children. These verbs seem rarer in French than in English or German and in general are produced by older children. Several are illegitimate. Some are pre-empted by synonymy: *Miaouner* or *mian-*

Table 13.12. *Characteristic activity verbs: some German examples**Act of*

- (1) RN (1;10, talking about the cat): *Miezelt*. [(It's) catting/meowing.]
 (2) RN (1;10 talking about bees): *Die Biene hummelt*. [The bee is humming.]
 (3) Tö (2;3, talking about a dog): *Der Hund waut*. [The dog is woofing.]
 (4) RN (2;4,15, screwing in a screw): *Die Schraube tunnelt durch*. [The screw tunnels through.]
 (5) RN (2;4,15, shaking out a cloth): *Jetzt haben wir aber (ge)flügelt!* [Now we have winged.]
 (6) RN (2;6), watching a barrel organ handle turn, used the verb *mühlen*. [to mill]
 (7) SS (2;6, listening to bells): *Es glockt*. [(It's) belling.]
 (8) RF (2;6,15, talking about a caterpillar): *Raupt*. [(It's) caterpillaring.]
 (9) RF (2;6,15, talking about a shrew): *Spitzt*. [(It's) shrewing.]
 (10) GS (3;2, talking about a coffee grinder): *Gemühlt*. [(It) mills.]
 (11) Sc (4;0, talking about the weather): *Es windet*. [(It's) winding/the wind is blowing.]
 (12) Sc (5;7), talking about waves flowing down, used the verb *runterwellen*. [to wave-down]
 (13) HS (6;6, looking at someone blinking): *Du wimperst ja so schnell*. [You're (eye)lashing so quickly.]

Act done to

- (14) RN (1;10), turning pages in a picture book, used the verb *bildern*. [to picture/turn pages in picture books]
 (15) RN (2;8, when his mother wiped his nose): *Du näselt*. [You nose/wipe noses.]
 (16) GS (2;9, after playing on the piano): *Fettig ewiert*. [Done pianoed.]
 (17) HS (3;8, when her mother was drumming her fingers on the table):
Warum kawierst du denn dort? [Why are you pianoing there?]

owner, based on *miaou*, is pre-empted by adult *miauler*, with the same meaning.⁷ Similarly, *grelonner* (based on *grelon*, "hailstone"), meaning "hail," is pre-empted by *grêler*, and *piper* (based on *pipe*, "pipe"), meaning "smoke (a pipe)," is pre-empted by *fumer*. *Piper* is actually pre-empted both by synonymy (the suppletive verb *fumer*) and by homonymy, since the form *piper*, for adults, carries the meaning "deceive." The remaining verbs, *argiler* (from *argile*, "clay"), *microscoper* (from *microscope*, "microscope"), and *pianer* (from *piano*, "piano"), all appear legitimate.

Lastly, Table 13.12 presents some typical examples of characteristic activity verbs from German-speaking children. This table is also divided into two sections, for activities done *by* the entity named in the verb and activities done *to* it. Most of the illegitimate innovations in this table are pre-empted by suppletion. For instance, the three verbs for animal sounds (based on *Mieze*, the name of the cat, *Hummel*, "bumblebee," and *Wau-*

wau, "woof-woof") are pre-empted by adult *miauen*, *summen*, and *abriden*. *Tunnelt* (based on *Tunnel*, "tunnel"), meaning "tunnel/screw in," and *flügelt* (based on *Flügel*, "wing"), meaning "shake, flap," are pre-empted by *einschrauben* and *schütteln*, with those same meanings. And *mühlen* (from *Mühle*, "mill"), used for talking about turning the handle of a barrel organ, is pre-empted by adult *drehen*. Another use of *mühlen*, this time for talking about the action of a coffee grinder, is also pre-empted, but by the verb *mahlen*, "grind, mill." *Glocken* (from *Glocke*, "bell") occurs in several different records. One child, for instance, commented that people could "bell" every day: *Die könnten jeden Tag glocken* (HS, aged 4; 11, 15). This verb is pre-empted by *läuten*. *Runterwellen* (from *Welle*, "wave"), meaning "flow down (in waves)," and *wimpern* (from *Augenwimper*, "eyelash"), meaning "blink," are pre-empted by *runterfließen* and *blinken* or *blinzeln*, respectively. Finally, *naseln*, meaning "wipe one's nose" (from *Nase*, "nose") is pre-empted by homonymy: For adults, this form has the meaning "speak through one's nose."

The remaining verbs in Table 13.12 all appear to be legitimate: They fill gaps in the adult lexicon, either where there is no particular word to express just that meaning or where one would use a phrase rather than a single word. For example, in talking about the typical motion of caterpillars and shrews, the child filled gaps in the adult lexicon by using *raupen* (from *Raupe*, "caterpillar") and *spitzen* (from *Spitzmaus*, "shrew"). *Windet* (from *Wind*, "wind") falls with other weather verbs in German, where the general pattern of use is similar to that in English. All the innovations in the second half of the table appear legitimate: *bildern* (from *Bild*, "picture"), and *ewiert* and *kawierst* (both from *Klavier*, "piano").

Patterns of innovation

The overall patterns of innovation in English-, French-, and German-speaking children are very similar. As the figures in Table 13.13 show, the same categories of denominal verbs were represented in each language, with the largest being instrument, locatum, and characteristic activity. The relative sizes of the six categories used were also similar, with an average rank order correlation between languages for these categories of .87. The one category missing from the French data, agent verbs, was also the smallest for the other two languages (2 percent of the totals). There appears to be considerable unanimity, then, among children in the categories of innovative denominal verbs they produce.

I also compared children's innovative verbs in English to their well-established verbs, and to adult denominal verbs.⁸ These comparisons were designed to answer two questions. First, do the categories of well-established denominal verbs represented in 3-year-old speech correspond

Table 13.13. *Categories of innovative denominal verbs used in English, French, and German*

Verb category	English	French	German	% of total
Instrument	42	26	36	37
Locatum	21	34	18	22
Location	5	14	3	6
Goal	11	9	11	11
Agent	2	0	2	2
Experiencer	0	0	0	0
Source	0	0	0	0
Duration	0	0	0	0
Characteristic activity	19	17	30	22

Note: Data are expressed as a percentage of the corpus for each language, for comparison (123 English, 35 French, 66 German).

to the innovative categories children use? And second, do adult denominal verb categories correspond to the innovative categories children use?

For the first question I sorted the denominal verbs taken from seven vocabulary studies of children aged between 2 and 3 into categories, just as I had done with the innovative verbs. Since well-established verbs might provide a model for innovations, I counted only those denominal verbs whose parent nouns were also present in the children's vocabularies, to make sure that in each case there was a noun-verb pairing available. The percentage of well-established verbs in each category is shown in Table 13.14. Instrument verbs made up the largest group, followed at some distance by locatum verbs. The only other well-established verbs were a few instances of location and goal verbs. There were no verbs in any other categories, with the exception of two "weather" verbs, *rain* and *snow*, listed under Others.

A comparison of the first two columns in Table 13.14 reveals both similarities and differences in the categories represented among innovations and well-established verbs. The proportions of verbs for both in the first five categories were similar, although well-established instrument verbs had a larger share of the total (60 percent) than their innovative counterparts (42 percent). Furthermore, there were no instances of well-established agent verbs, as against 2 percent among innovations. From one point of view, this general positive correlation between innovative and well-established verbs could be regarded as surprising: One might expect the child to innovate mainly in categories where he knew fewer well-established verbs. This is clearly not the case. At the same time, the biggest difference between innovative and well-established verbs was in the last category – characteristic activity verbs. Although these made up

Table 13.14. *Child innovations, child well-established, and adult denominal verb categories in English*

Verb category	Child innovations	Child well-established	Adult
Instrument	42	60	32
Locatum	21	25	25
Location	5	3	14
Goal	11	6	12
Agent	2	0	12
Experiencer	0	0	.2
Source	0	0	.2
Duration	0	0	1
Others (combined)	0	6 ^a	3 ^b
Characteristic activity	19	0	0

Note: Data are expressed as a percentage of the total types for each corpus (123 innovative, 145 well-established, 1,323 adult).

^a All these verbs were weather verbs.

^b Weather verbs made up one-tenth of this category, or .3% of the total adult corpus.

one of the three largest categories among innovations (19 percent), they went completely unrepresented among well-established verbs.

For the second question, I examined the categories of denominal verbs represented in adult speech, together with their relative frequency, in a corpus of over 1,300 well-established and innovative verbs compiled by E. Clark and H. Clark (1979). The percentage of verbs in each category is shown in Table 13.14. The first two categories listed, instrument and locatum, between them accounted for 57 percent of the adult corpus, with the next three taking up a further 38 percent (location, goal, and agent verbs). The remaining categories together constituted a mere 5 percent, with no instances of characteristic activity verbs.

When these adult categories were compared to the categories of innovations produced by children, there were again some striking differences. Although adults and children used similar proportions of instrument and locatum verbs, children used fewer location and agent verbs. (This was true for both innovations and well-established forms in the child data.) But the biggest discrepancy was again in the last category: Characteristic activity verbs made up 19 percent of the children's corpus versus 0 percent of the adult one.

Where do characteristic activity verbs come from? There is no obvious model offered either by children's well-established verbs or by adult denominal verbs. The nearest potential candidates that might be considered are weather verbs like *rain* and *snow*, but their claim to the role of models for innovative characteristic activity verbs is at best very tenuous. First,

weather verbs cover a very restricted domain of activity compared to the range covered by children's innovations (see Table 13.10). Second, weather verbs are highly restricted syntactically and occur only with subject-position *it*. But children's characteristic activity verbs occurred with animate subjects in the first, second, and third person as well as with *it*. In fact, the *it* used with characteristic activity verbs is rarely the ambient *it* of weather and time expressions (Bolinger, 1977), but is often an *it* co-referential with a non-animate noun phrase. Moreover, in contrast to weather verbs, which are intransitive, there were both intransitive and transitive characteristic activity verbs among the children's innovations.⁹ Third, weather verbs made up only a small proportion of children's well-established verbs (6 percent – contributed by only two verbs, *rain* and *snow*) and an even smaller proportion of the adult corpus (0.3 percent). Characteristic activity verbs, then, appear to have no counterpart either in children's well-established denominal verbs or in adult denominal verbs.

13.4. Discussion

Lexical creativity is endemic in children's speech. Children exploit what they already know of their language to create new words. In talking about actions, they appear to draw freely on the stock of nouns they have available to create a wide range of innovative denominal verbs. But why do children create new words with new meanings? And what devices do they rely on in the process of innovation?

Using a rule

The data just considered suggest that in talking about actions, children assume that the noun denoting an entity can be used as a verb for any state, process, or activity associated with that entity. They do this, I argue, because they need the vocabulary to talk about actions with a degree of precision not otherwise available (E. Clark, 1978a). The result of such an assumption is reliance on an extremely general rule for producing new verbs, a rule that is gradually narrowed down in its possible applications as children get older. Let me now spell out the arguments in support of this view of children's innovative denominal verbs.

When young children talk about actions, they appear to face certain difficulties. Their vocabulary for actions typically lags behind that for objects, and they take a relatively long time to work out verb meanings (see, e.g., E. Clark, 1978a; Gentner, 1975, 1978). Naming the entity involved in the action, then, may be a good substitute for finding precisely the right verb. Indeed, many of the denominal verbs children create are pre-empted by specific action verbs already present in the language.

Sweep normally pre-empts *broom*, *drive* pre-empts *car*, *fly* pre-empts *airplane*, and *shoot* pre-empts *gun*, to take only a few of the attested English examples. For adults, innovative denominal verbs serve the appropriate purpose only where established verbs are lacking. For children, innovative denominal verbs fill more gaps since they do not yet know many of the established verbs that will later pre-empt some of their innovations. Their rule of using a noun as a verb for talking about a precise action serves them well: They want to express precise meanings and they lack other devices for doing so.

Changing a noun into a verb seems to be a very simple business in English. As many linguists have pointed out (e.g., Adams, 1973; Jespersen, 1942; Marchand, 1969), this process has had a very long history in English. Moreover, the noun-to-verb changeover, with no derivational affix to add to mark the change in form class, has virtually no productive competing patterns in English. This presumably makes the creation of verbs from nouns already known particularly easy for children: They do not have to master any special affixes in coining new verbs.

But where does their rule come from? The comparison made between children's innovative verb categories and their well-established denominal verbs showed that the innovations were not simply modeled on their well-established verbs. Nor were their innovations modeled on adult denominal verb categories (see Table 13.14). Adults produced some categories of denominal verbs that did not appear in children's speech, and children created one large class of innovative verbs that was not represented in adult speech.

Their rule might nonetheless be abstracted from observations of adult usage. There are many instances where the noun-verb pairing is transparent, as in *bicycle/bicycle*, *brush/brush*, or *dress/dress*. Children could simply make an over-broad generalization from such cases to come up with a rule that might be characterized as follows:

Any noun denoting a concrete entity can be used as a verb for talking about a state, process, or activity associated with that entity.

Notice that this rule is essentially equivalent to condition (6) of the adult convention governing innovative denominal verbs. The difference is that children apply their rule too generally because, first (unlike the adult rule), it is not constrained by the other parts of the adult denominal verb convention; second, they lack other (pre-empting) vocabulary; and third, they lack the ability to judge mutual knowledge for their interlocutors.

These data, someone might complain, are really just mistaken part-of-speech assignments. Children are using nouns as verbs, not because they are relying on a rule, but because they do not know that those lexical items are really nouns and not verbs. For instance, one possibility might

be that children begin by identifying the word *broom*, say, as a verb and at first never use it as a noun. This misassignment would produce just the kind of data we have been considering. Another possibility is that children first identify *broom* as a noun but are confused about whether it is a noun or a verb and so use it in both ways. A third possibility, the one put forward here, is that children know *broom* is a noun but use it as a verb in order to say things they could not say otherwise.

One consequence of the first two possibilities is that children should use verbs as concrete nouns just as often as they use concrete nouns as verbs. However, the data do not fit this prediction: There is a strong asymmetry in children's usage. My records contain only seven verbs used as concrete nouns in English, for example, *the shave* (lather), *the rub* (eraser). In fact, the process of forming concrete nouns from verbs has always been much rarer in English than the formation of verbs from concrete nouns (Marchand, 1969). Moreover, 3-year-old speech is remarkably free of any other part-of-speech confusions. As Brown (1957) demonstrated, children that age are already very sensitive to part-of-speech information provided by the syntactic context of newly introduced words. Using a noun as a verb, then, represents the setting up of a precise means for talking about actions.

Is this rule really a rule for children, or could they instead be using a series of analogies to arrive at the innovations produced? The evidence as a whole favors rule use over analogy. Although children produced a number of innovative verbs that fell into various adult denominal verb categories (see, e.g., Table 13.1, 13.4, and 13.7), they also produced verbs of a type *not* used by adults – namely, characteristic activity verbs (Table 13.10). Had children been using analogy, it should have been possible to identify potential models for each verb type among either children's well-established denominal verbs or adult verb categories. But even if that had been possible, rule use could not have been excluded as an explanation. Either analogy or rule could have been at work. However, since children did produce, as one of their largest categories, a verb type for which there was no model from which to work by analogy, they must have been using a rule.

Although the evidence favors rule use in the case of innovative denominal verbs, this may not necessarily be true of the acquisition process in general. Children may rely on rote, analogy, and rule, in differing degrees at different stages, depending on the aspect of language being acquired. Generalizations about other types of lexical innovation will have to await further case studies like the one undertaken here.

Child rule and adult convention

One consequence of the rule children use is that they produce illegitimate as well as legitimate innovative denominal verbs. But to distinguish il-

legitimate from legitimate innovations, children need to master the convention that specifies the circumstances under which a denominal verb is legitimate. The rule children rely on is more general than the rule given in condition (6) of the adult convention, largely because the child rule is not yet constrained by the remainder of this convention of use. The convention as a whole has to be acquired. But when does this acquisition take place? Although there are numerous illegitimate innovations in the speech of 3- to 5-year-olds, there are many fewer in the speech of older children. Learning the convention must begin with the rule children abstract, a rule that is virtually equivalent to condition (6). But they may not acquire the rest of the conditions that make up the full convention until many years later.

Although there is little research that bears on the different conditions in such a convention, there are some findings available that seem pertinent to the mutual knowledge condition. As H. Clark and Haviland (1977) pointed out, *the* has among its uses the marking of information as given, or known, to both speaker and addressee. Indefinite *a*, in contrast, is used for the first mention of information new to the addressee. Thus use of *the* assumes mutual knowledge in certain contexts, whereas *a* does not. Studies of *the* and *a* have shown that, although children contrast these articles in some situations as early as age 4 or 5, they overuse the definite *the* in certain first-mention contexts as late as age 8 or 9 (Maratsos, 1976; Warden, 1976). This slowly emerging appreciation of what the addressee knows is illustrated by the following exchange between EB, aged 4; 6, who misused *the*, and her older sister CB, aged 7; 0, who corrected her. The younger child was recounting to her mother a Flintstone episode both children had watched and ended with an allusion to "the island." Her older sister promptly called her to task: "You were saying *the*! She doesn't know!" Appreciation of what is readily and uniquely computable presumably grows slowly too.

Learning the convention, of course, parallels learning a larger and larger vocabulary. And with a larger vocabulary comes the possibility that the meanings of some lexical items will coincide with the meanings of innovations. While true synonyms are hard to find in adult speech, little is known about how much synonymy children may tolerate in their lexicons. The evidence from early language acquisition is that children set up new words in contrast to those already in their repertoire. But no studies have examined what happens with noun and well-established verb pairs like *gun/shoot*, *needle/mend*, or *broom/sweep*. At what point after adding the verb, say, do children stop using innovative forms based on the parent nouns *gun*, *needle*, and *broom*? Do pre-empting forms take over as soon as children have worked out their full meaning? Or do both verbs – the illegitimate innovation and the well-established verb – exist side by side for a while until children come to appreciate that pre-emption is one of the consequences of the convention on innovative denominal

verbs? The early structuring and restructuring of vocabulary domains like those for animal terms suggest that children *do* treat new lexical items as if they contrast with those already known (E. Clark, 1978a). So, if they are consistent in this, they are acting much as adults do (Bolinger, 1977) and will presumably eliminate illegitimate innovations as soon as they realize that they coincide in meaning with well-established verbs.

The child's overgeneral rule for forming verbs from nouns, therefore, is eventually narrowed down and incorporated into a convention governing such innovations. But the innovative denominal verb convention is only one of many such conventions that operate in English. It is a convention of language use, a convention for creating new verbs. Acquiring such conventions of language use is just as important as acquiring the conventions of a language – the knowledge that particular words or morphemes established as part of the language have particular meanings (Morgan, 1978). Children have to learn both. That they start early on such conventions is attested by their abstraction of the rule for forming new verbs from concrete nouns. That acquisition of the convention itself may take a very long time is attested by the late age at which they seem able to appreciate what is and is not mutually known. In summary, such conventions of language use are an integral part of what there is to learn when one acquires a language.

Parallels across languages

Children acquiring French and German come up with innovative denominal verbs very similar to those produced by children acquiring English. Their verb types parallel those for English (Table 13.13), with the three largest categories being the same – instrument, locatum, and characteristic activity. Their characteristic activity verbs (Tables 13.11 and 13.12) pose the same problem for analogy as they do with English-speaking children: This category is virtually unrepresented in adult speech, yet productive for children. French and German children, then, not only seem to come up with a similar rule for forming new verbs from nouns, but also apply that rule overgenerally in producing innovative denominal verbs. Just like English-speaking children, they too are setting up a precise way for talking about actions.

Innovative denominal verbs in both French and German are added to the largest regular verb paradigm in their respective languages. In French, this is the first conjugation, marked by *-er* for the infinitive and regular inflections to indicate person, number, and tense. Historically, the process of forming verbs from nouns has been fairly productive in French, and it continues to be a productive source of new verbs in various technological domains (Guilbert, 1975). In German, innovative denominal verbs again go into the first conjugation, with an infinitive in *-en* (added

to the noun stem) or in *-eln* (with iterative meaning), and with regular inflections for person, number, and tense, just as in French. The formation of new verbs from nouns is very productive in German (Curme, 1922/1964; Fleischer, 1969), although, according to Marchand (1969), not quite so pervasive as in English.

Although there has been no analysis of the current productivity of denominal verbs in adult French and German, the data produced by children are striking in their resemblance both to each other and to data from English-speaking children. In all three languages, forming new verbs from concrete nouns is a device available to both adults and children. Children presumably form their rule on the basis of transparent noun-verb pairings in adult speech. But once their rule is formed, they apply it far more widely than adults do, and in the process create a category of denominal verb not found in adult speech. Moreover, the creation of many illegitimate innovative verbs, which are later dropped, is strong evidence for the existence of conventions governing lexical innovation in French and German similar to the convention governing innovative denominal verbs in English.

Further issues

When children coin new words – here, new verbs – they do not do so with a very even hand. Some categories of innovative denominal verbs are much larger than others, and some adult categories are not even represented at all among child innovations. Why this unevenness of productivity? There appear to be several factors that could affect the process of coining new verbs: the size of the child's lexicon, the conceptual salience of particular categories, the child's syntactic knowledge, and economy of expression. I will take up each of these factors in turn.

The size of the lexicon children have at their disposal might be pertinent to productivity in two ways. To begin with, notice that children acquire many more nouns than verbs in the early stages of language. This may be because it is easier to map nouns than verbs onto things they denote in the world (E. Clark, 1978a; Gentner, 1978). As a result, one could propose that the categories of innovative verbs in children's speech represent just those domains in which children have few other verbs available. However, this view does not stand up well to scrutiny. First, since children produce many innovative instrument and locatum verbs, they should have very *few* well-established verbs in these domains. But instrument and locatum turn out to be the *largest* categories among their well-established denominal verbs (see Table 13.13). The only support for this position, then, would be from characteristic activity verbs, because children have no other way of expressing these actions. Second, the wide use children make of general-purpose verbs like *do* and *go* during the

early stages of acquisition (E. Clark, 1978a) would seem to remove any imperative to coin particular categories of denominal verbs. Nonetheless, children do do this.

A second way in which the lexicon could affect productivity is in the device used. Because young children dispose of a larger stock of nouns than verbs, their nouns are presumably all the more available for "conversion" into verbs to fill particular gaps of meaning. This asymmetry between children's noun and verb inventories presumably accounts for why innovative denominal verbs are so much commoner in children's speech than deverbal nouns. But the differences observed in the sizes of different innovative verb categories are not explained by this asymmetry per se.

An alternative view is that the larger categories of innovative and well-established verbs reflect instead the conceptual salience of certain types of object. If some types of object are more salient than others, then it could be important for children to look for ways of talking about any actions connected with them. Given the data in Table 13.13, this view would require instruments, locata, and objects with characteristic activities to be the most salient for small children. However, little can be said about this view since there is currently no independent evidence that these categories are conceptually more salient than the others attested among denominal verbs.

As far as syntactic knowledge is concerned, investigators like Bowerman (1974) have linked the appearance of periphrastic causatives with *make* and *get* to the appearance of other causative verb forms, among them innovative denominal verbs. She argued that new causative verbs (e.g., *fall*, *funnel*) enter the child's repertoire only after the appearance of periphrastic forms (e.g., *make fall*, *put in the funnel*) to express the same notion. In other words, Bowerman seemed to be suggesting that there is a derivational relation, syntactically, between "unpacked" periphrastic forms of causative (to make the blanket be on the bed) and conflated forms (to blanket the bed). However, my longitudinal data for S show very few instances of periphrastic causative *make*, *get*, or *be* prior to the appearance of innovative denominal verbs in his speech. This suggests that periphrastic and conflated forms may not be derivationally related. Rather, they could represent alternative ways of expressing causation that may or may not be mastered at the same time by young children. Moreover, notice that the presence of periphrastic verb forms in the child's speech does not seem to explain why children might opt for a denominal coinage rather than a general-purpose verb or a periphrastic expression.

For adult speakers, however, the choice can make a difference. For instance, one can distinguish between manipulative and directive causation in considering the meaning differences between such pairs as *to kill*

and *to make die*. Shibatani (1976) argued that in manipulative causation (e.g., *kill*), the causer or agent plays a more direct role in the action, and the purpose of the act goes beyond the immediate result or outcome. In directive causation (e.g., *make die*), in contrast, the role of the causer is less direct (and may be secondhand, as in *Bill made John die by having someone else run over him*), but the focus is on the immediate outcome of the act. Lexical (*kill*) and periphrastic (*make die*) causative expressions, then, may contrast in meaning (see also McCawley, 1978).

Although there has been little detailed analysis to date of the possible meaning contrasts between lexical and periphrastic causatives, the distinction is one that is clearly pertinent to uses of denominal verbs. Notice, for instance, that *dress* in *He dressed the child* has the general meaning of "put clothes on," whereas the periphrastic version in *He put a dress on the child* does not. In the latter case, one knows only that the child ended up wearing a dress. The question that requires exploration is whether such contrasts between lexical and periphrastic causatives are at all systematic. In any case, where contrasts do exist, children have eventually to acquire them, and the fact that they exist for such commonly used pairs as *dress* and *put a dress on* may play some role in explaining why children do not rely exclusively on general-purpose verbs but coin denominal verbs as well (see also Ammon, 1980). A further point is that there may be no commonly used periphrastic form even available. This is the case for many characteristic activity verbs (e.g., *It flagged* or *It's trucking*) and indeed could be the reason why children coin characteristic activity verbs in the first place.

Yet another factor behind denominal verb use as opposed to reliance on periphrastic or general-purpose verb constructions may be the placement of information in an utterance. Denominal verbs, unlike periphrastic constructions, allow information about the action and the object involved in that action to be conflated and thus be expressed simultaneously. Otherwise, this information would have to be spread out over the utterance. Moreover, in the case of causative or transitive denominal verbs, the conflated verb precedes the direct object. As a result, denominal verbs allow information to be packaged in a more economical way than periphrastic constructions do. This allows children (and adults) to focus, if needed, on the action as a whole expressed in a single lexical item, instead of in a series of two or more items within the utterance. However, given the meaning contrasts observable between periphrastic and lexical causatives, the search for economy could be only a fragment of the whole story.

In summary, children's denominal verbs are more numerous in some categories than others. Several factors probably contribute to this, among them the size of the early lexicon together with the relative numbers of nouns and verbs available, the conceptual salience of particular categories

of objects, syntactic knowledge of the contrasts between lexical and periphrastic constructions, and finally, economy of expression. The extent to which these factors play a role in the coining of innovative denominal verbs cannot be determined at this point. But by drawing attention to them, I hope to raise further questions about lexical creativity generally and what it is governed by, over and above the conventions children have to learn.

13.5. Summary

Lexical creativity is common in children's speech. In the present study I have focused on just one aspect of that creativity – their coining of innovative denominal verbs. Children create new verbs for particular actions from the nouns for the entities involved in the actions they wish to talk about. They do this, I have suggested, to fill gaps in their current lexicon.

To form innovative denominal verbs, children use a rule, not analogy. Their rule can be represented as: "Any noun denoting a concrete entity can be used as a verb for talking about a state, process, or activity associated with that entity." The main evidence for this rule is that children produce a large category of innovative denominal verbs – characteristic activity verbs – for which they lack any model in adult speech.

Conventions of language use are an important part of what children learn when they learn a language. The rule children use coincides with one condition of the convention that governs adult use of innovative denominal verbs. But learning the remaining conditions of the adult convention takes time. At first, children simply apply their rule in an over-general fashion and produce both legitimate and illegitimate innovative verbs. Later, they must take into account such factors as mutual knowledge, uniqueness, and ready computability in assessing whether their listeners will be able to understand innovative verbs as they intended. Although children begin learning this convention of language use very early, they take a long time to master it in its entirety. The present case study has documented some of the first steps in this process of innovation.

Notes

- 1 Even though lexical creativity pervades everyday adult speech, it has seldom been discussed or analyzed in any detail (but see E. Clark & H. Clark, 1979; Downing, 1977; L. Gleitman & H. Gleitman, 1970). Most discussion of linguistic creativity in children has been limited on the one hand to the combining of words to form new utterances, and on the other to the adding of inflections to nonsense words.
- 2 The actual boundaries between these categories are not always clear-cut. For example, many locatum verbs can also be instrumental. Contrast *He leashed*

the dog with He leashed the dog to the post. In the former, *leash* would be classified as a locatum verb and in the latter as an instrument verb as well (see further E. Clark & H. Clark, 1979, pp. 778–9).

- 3 The procedures in the first two steps clearly assume that children do not have to learn each present–past pair by rote. If they did, they should never produce incorrect past-tense forms, and they should be unable to use the generalization described in the third step to form past tenses for "new" (nonsense-syllable) verbs. However, even very young children overregularize verb and noun endings (W. Miller & Ervin, 1964) and readily add endings to nonsense forms they can never have heard before (Berko, 1958).
- 4 Similarity of phonological shape, of course, is only one of many dimensions of similarity that children (or adults) might use in forming analogies. They could equally well rely on conceptual criteria, for instance, where the action to be denoted is similar in some way to some other action for which they already have a word with a present–past contrast. I give phonological shape as the example here simply for illustrative purposes.
Notice also that although people may appear to favor analogy in very small paradigms like *throw/threw*, *grow/grew*, *know/knew*, *blow/blew*, or *ring/rang*, *sing/sang*, when presented with nonsense stems of similar shapes, it is quite possible that these, too, involve rule use. The rules here would simply be more restricted than the one for weak verbs taking *-ed*.
- 5 According to Grevisse (1964), at least 90 percent of all French verbs belong to the first conjugation.
- 6 Although there has been no research, to my knowledge, on the form of the conventions governing innovative denominal verbs in French and German, I shall assume that they are similar for conditions (1) through (5) to that for English, and have similar consequences.
- 7 It is possible that verbs denoting animal noises like this ought to be treated as goal rather than characteristic activity verbs (see also Table 13.12). However, these verbs seem to be just as closely linked to other animal verbs where the characteristic activity is the typical motion rather than the noise produced. They are therefore grouped together in the present analysis.
- 8 These comparisons were confined to English because there are no published data available for the pertinent comparisons in French and German.
- 9 The range of characteristic activity verbs in English was also typical for the other two languages considered (see Table 13.11 and 13.12). Moreover, the syntactic properties of these innovations are very comparable to the English examples, in contrast to the restricted syntax of weather verbs in both French and German.