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NOTES AND DISCUSSION

Is regularization determined by semantics, or grammar, or both? Comments on Kim, Marcus, Pinker, Hollander & Coppola (1994)*

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ABSTRACT

Kim, Marcus, Pinker, Hollander & Coppola (1994) argue that the preference children and adults show for regular inflection for verbs and nouns with novel meanings (e.g. *The batter *flew/flied out to centre field*) should be attributed to their grammatically based sensitivity to the derivations of these verbs and nouns. However, it could also be that speakers avoid the use of irregular forms to avoid conveying the conventional meaning associated with the irregular form, such as literally flying to centre field. This paper, in reply to Kim *et al.* (1994), reinterprets their findings and argues for a semantic/functional account, without resorting to a grammatical account.

The representation of regular vs. irregular morphology has been intensively investigated within the context of the connectionist–formalist debate (e.g. Pinker, 1991; Plunkett & Marchman, 1993). A recent contribution to this issue was made in this journal by Kim, Marcus, Pinker, Hollander & Coppola (1994). Kim *et al.* claim that young children are sensitive to the grammatical status of the stem, and apply regular or irregular morphology to novel verbs/nouns based on their grammatical status. However, a close examination of their study shows that their findings may be explained by children's sensitivity to the semantics of the experimental items. This paper reinterprets Kim *et al.*'s findings, and argues for an alternative account.

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Kim *et al*. (see also Kim, Pinker, Prince & Prasada, 1991; Pinker, 1991; Marcus, Brinkman, Clahsen, Wiese & Pinker, 1995) argue that in forming plural or past tense forms of existing words, speakers choose regular or irregular inflection depending on the grammatical status of the word itself. For example, in the above example of *flew out* vs. *flied out*, they argue that native speakers of English are sensitive to the derivational status of the verb. The verb *fly* in *fly out* ('to be put out by hitting a fly ball that is caught') is derived not from the verb *fly* ('to move through the air') but from the noun *fly* ('fly ball'), itself derived from the original verb *fly*. The verb with the baseball sense of 'fly' is called a 'denominal verb' – a verb derived from a noun. Since it is denominal, they argue, it cannot inherit grammatical features from the head of the original verb, including its past tense form. Hence, *The batter flied/*flew out to centre field.*

Kim *et al*. (1994) claim, based on four experiments, that both school-age and pre-school children are sensitive to the grammatical status of verbs and nouns. More specifically, they claim that children avoid using the irregular past form for certain verbs simply because they know these verbs are denominal, and they prefer instead to use a regular past tense form. With respect to nouns, Kim *et al*. (1994) explain children's preference for 'walkmans' over 'walkmen' as resulting from this word's exocentric (headless) status. Their explanation depends exclusively on grammatical information – the derivational status or headedness of the verbs or nouns in question.

However, their findings are perfectly consistent with a completely different explanation, what I will call the Semantics Hypothesis: speakers avoid irregular forms simply because they do not want to convey the meanings associated with those forms. In the 'fly' case above, if one says 'The batter flew out to centre field' it may erroneously activate the image of the batter flying through the air. In the case of 'walkmen', the irregular plural form *men* activates the image of human beings, not portable audio-cassette players. Each irregular form is strongly associated with its conventionalized meaning[1], which may not be the meaning intended by the speaker in a particular situation. On this account, speakers tend not to use the irregular form when its conventionalized meaning conflicts with the meaning the speaker wants to convey, and opt instead for the regular form. This account, proposed in Harris (1992, 1993) and Daugherty, MacDonald, Petersen & Seidenberg (1993), is at least intuitively appealing.[2]

[1] 'Conventionalized meaning' here refers to the meaning most readily activated by the lexical form. When the form *flew* is heard, it activates the meaning of 'subject noun flying through the air (in the past).' Note that the lexical form *fly* is not exclusively associated with the verb, but also with the noun *fly* and its various associated meanings, including the insect 'fly'.

[2] In some English dialects, *bad* can mean 'attractive'. A speaker of such a dialect commenting on an attractive woman may say, 'She's bad'. But commenting on another woman who is more attractive, he will have difficulty saying 'She's worse', since that

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One finding of Kim *et al.*'s that apparently supports the claim that children are sensitive to grammatical structure comes from their experiment 2: children use regular forms for denominal verbs more frequently than for extended verbs derived from a verb (deverbal verbs). Their argument is that if meaning is the key, denominal verbs and deverbal verbs with extended meaning should both be regularized, since they both are quite different from the conventional meaning, and therefore there shouldn't be a difference in terms of preference for regularization. Indeed, they found that denominals tend to be regularized more frequently than extended deverbals, which would support their hypothesis. However, the comparisons made were something like those shown in Table 1.

TABLE 1. *Examples of deverbal and denominal items used in Kim* et al.*'s experiment 2*

stem	denominal	deverbal
C/see	give a C to	touch
drink	give a drink to	inhale air
meat/meet	put meat on (a bun)	touch the pen to
fly	put flies on (a board)	drive fast (down the road)
right/write	go to the right	arrange lettered cards and spell (a name)

The task for the child is to describe what happened after the experimenter shows the child some action. For example, after the experimenter demonstrates to the child that 'to C someone' means 'to give a letter C to someone' by performing the action, the child is prompted to describe the action using the verb. Note that if the child already knows the meaning of the irregular past forms (e.g. *saw*, *drank*), it is quite unlikely that s/he will use them here since they mean something quite different from the situation the child wants to describe. For example, when the experimenter has Mickey Mouse go right, would the child say 'he [rout]' just because *right* has a homophonous verb *write*? A child who knows the meaning of *wrote* would not say it, since it means something totally different. This is true for ALL the denominals (see Appendix A.1 of Kim *et al.*). In other words, for all Kim *et al.*'s denominals in experiment 2, the choice of irregular past forms would activate a meaning inappropriate for the context.

In contrast, many of the extended deverbal items (see Appendix B of Kim *et al.*) are quite close to the original meaning of the verb, and in fact the

would activate the conventional meaning of inferiority. Kim *et al.* (1994) only discuss irregular inflection of nouns and verbs but do not discuss irregular adjectives. The facts about irregular adjectives can easily be explained by the Semantics Hypothesis.

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irregular past forms can, with some imagination, be used, particularly with elicitation such as used in their experiment:

> See this pen? This pen is going to meet the table. Can you say that? (*Touch the pen to the table*). Now tell Mother Goose. This pen just__.
> (Kim *et al.*, 1994: 209)

Here, it is not very difficult to say 'This pen just met the table,' because personification is possible. It is certainly much easier to say this than to say 'I met the bun,' meaning 'I put meat on the bun'. Since ALL the denominal items had irregular past tense forms with conventional meanings that do not fit the situation to be described, while many deverbal items had irregular past forms that are quite compatible with the context, it is not surprising, from the perspective of the Semantics Hypothesis, that denominals got regular past marking more often than deverbals did.[3]

In sum, Kim *et al.*'s (1994) findings can be explained without resorting to a grammatical account. It can be argued that all that Kim *et al.* showed was that their subjects already knew the meaning of the irregular forms used in the experiments, and avoided using them because their meanings did not fit the experimental situation to be described by the child.

Although Kim *et al.* make a strong case for the grammatical account of the phenomenon, they are not unaware of the Semantics Hypothesis. They extensively discuss Harris (1992) and then reject her proposal (Kim *et al.*, 1994: 198–202). However, what they reject is what they call 'the ambiguity reduction account', and this does not necessarily represent what was proposed by Harris (1992). Harris's proposal was that choice of regular vs. irregular is dependent on communicative gain – minimizing processing cost while maximizing communicative impact. She did not claim the choice of regular or irregular inflection is determined simply by ambiguity reduction. The most important reason for not using an irregular form, as discussed above, is to avoid conveying an unintended meaning associated with that irregular form; whether or not this choice reduces ambiguity is a different matter.

Kim *et al.* give four reasons for rejecting Harris's proposal. First, they claim that ambiguity reduction should call for regularization whenever there is a significant meaning change in a novel verb form. The counter-examples they give include *blow him away*. They claim that on the ambiguity reduction account, the past tense of *blow him away* should be *blowed him away*, not *blew him away*, because a meaning different from the original meaning of *blow* is

[3] Some extended deverbal items in their experiment 2 are closer to the original verbs than others. The Semantics Hypothesis predicts that children (and adults) would use irregulars more often with items semantically similar to the conventional meaning than with dissimilar items. Unfortunately, since Kim *et al.* do not report item-by-item scores, this cannot be tested.

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conveyed, which should require a different form to make this distinction. However, the Semantics Hypothesis makes no such prediction. Rather, *blow him away* can take irregular past precisely because it preserves the original meaning of blowing someone away, albeit metaphorically. Most of the idioms using basic verbs such as *come*, *go*, *take*, etc. still activate the invariant meaning of the verb; therefore it is communicatively not necessary for these verbs to have distinct regular past forms, and thus they retain irregular past forms for extended metaphorical use.

Second, Kim *et al*. (1994: 199) state that Harris's 'account should predict that regularization would only be a tempting option when the morphological, semantic, and syntactic context leaves the sense of a derived verb ambiguous,' but that 'for the vast majority of denominal verbs, the meaning of the related verb root would be either ungrammatical, ... or absurd in context'. However, as Harris has pointed out, the reason that denominals prefer regular inflection is to disavow an association to the meaning of the irregular verb. Because the form *drank* has almost exclusive associations with the meaning of ingesting liquid, *I drank you* strongly activates the meaning of ingesting a person as if he/she were liquid. The form *drink*, on the other hand, does have some other associations than drinking liquid: it has the associations with the noun *drink*. Therefore, *I drinked you* more easily activates other possible meanings of this phrase, such as 'I gave you a drink'.

Third, Kim *et al*. (1994: 199) claim that the ambiguity reduction account 'predicts that they [i.e. denominal verbs] should have a DIFFERENT past tense form from their homophonous verb roots, whenever phonologically possible' and that therefore it should equally predict that another irregular form (not just regular form) will be used for ambiguity reduction. For example, since irregular past formation is productive for some schemas (Bybee & Moder, 1983), the ambiguity reduction account should predict that forms such as *helt* might be used to disambiguate between the past tense for *heal* (*healed*) and the past tense for the denominal *heel*. This never happens, and therefore Harris's claim is incorrect, Kim *et al*. argue. But in Harris's account, speaker selection of a past-tense form is guided by the types of meanings associated with that past-tense form. When a new use of a verb retains a metaphorical association to an irregular verb, then using the irregular past helps signal this metaphorical connection, as in the 'blew him away' case. Using *helt* as the past tense of the new verb *heel* (meaning, 'stomp on someone's foot with one's heel,' Kim *et al*.'s example) would serve no communicative purpose, and would furthermore obscure the connection to the noun *heel*.

Fourth, and a related point, Kim *et al*. (1994: 201) claim that 'denominal verbs reliably take regular past, even when there is no existing irregular that could be a source of ambiguity'. Therefore, ambiguity reduction cannot explain why productive irregular patterns such as *ing-ang-ung* are not applied to non-homophonous denominal verbs such as *king* (*She kinged/*kang/*kung*

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the checker piece.) However, the observation that *-ed* is always preferred for denominals can be attributed to communicative gain. Let us consider Kim *et al*.'s example (23b):

> I decided that my painting should depict the night rather than the day. So I bought some dark paints and nighted/*nit/*nought the paintings.

Note that it is communicatively most efficient to preserve the form *night* to convey the meaning of 'night' and at the same time add *-ed* to show that the category change (noun → verb) has occurred. This is probably why the regular form is preferred for certain denominal verbs. Changing *nighted* to a novel form such as **nit*/**nought* loses both of these functional advantages, and indeed the sentence may become incomprehensible.

In short, *pace* Kim *et al*., Harris's (1992) proposal cannot be characterized as an 'ambiguity reduction account'. In addition, some of the phenomena Kim *et al*. cite to criticize Harris can be explained by the principle of communicative efficacy.

Finally, it is important to note that Harris (1992, 1993) and Daugherty *et al*. (1993) do not totally reject the role of grammar in the denominal problem. At this point, the issue is still open. The empirical data available so far appear to be consistent with both the semantic/functional explanation and the grammatical explanation. Since derivational status and semantic distance are confounded[4] (Daugherty *et al*., 1993), it is difficult to tease them apart. Harris (1993), in a well-designed experiment, attempted to tease them apart by controlling derivational status and semantics. Her results showed that derivational status (denominal vs. deverbal) was not a significant factor affecting preference for the regular forms, and that there was a significant effect of meaning change (*via* change in argument structure) when derivational status was held constant. These results are not predicted by a formalist account such as that of Kim *et al*., but they support the Semantics Hypothesis.

Another possibility, suggested by Harris and by Daugherty *et al*., is that grammatical status in the denominal problem is itself derived from semantic/functional constraints. If we admit the role of grammar in the denominal problem, the next question is why there is such an interaction between grammar and semantics – why is it that the grammatical system is set up the way it is? The formal grammatical theory argues that semantic features of a 'head' are preserved in the derived word (e.g. *overeat* is a kind of *eat*ing, *workman* is a kind of *man*). In other words, only a semantically similar entity can be a head of the derived word. This may be a semantic constraint that

[4] By virtue of having a verb as its source, a deverbal verb is semantically closer to its source than a denominal verb is to its source, other things being equal. This explains why even in a denominal/deverbal experiment which used nonce words (Kim *et al*., 1991), denominals are more often regularized than deverbals.

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motivates what was claimed to be the grammatical phenomenon of 'headedness'. This possibility suggests that regularization may be determined by both semantics and grammar.

In conclusion, Kim *et al*. have not demonstrated the superiority of their formal grammatical account to the one proposed by Harris – a semantic account. The question of whether regularization is determined by grammatical status or semantics is still open; we need further empirical investigation to settle the issue. In any case, we should certainly not take Kim *et al*. as the last word.

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