

- (b) COPY object BY MEANS OF vb
- i. photograph the children
 - ii. tape the conversation
 - iii. Xerox the article
 - iv. trace the map
- (c) LOCOMOTE TO object BY MEANS OF vb
- i. cycle to Boston
 - ii. ski to the bottom of the slope
 - iii. leg to the other side of the bridge
- (d) CAUSE object TO HAVE TRAJECTORY OR FORM OF vb
- i. circle the enemy
 - ii. arch the back
 - iii. hook the ball (in golf or bowling)
 - iv. cross the arms

These denominals show that the set of four classes proposed by Rose must be at least doubled in number. In support of Rose's more general claims, however, we note that the denominals can be grouped according to fairly well-defined types, each of which is governed by a productive derivational rule.

Instances of two of these additional classes occur in Indonesian¹:

- (2) (b) memotret (formerly mempotret) 'to photograph'
 (d) membentari 'to circle'

There are still other denominals that Rose fails to consider which, unlike the above cases, do not form well-defined classes. Such denominals seem at first glance to have just the kind of idiosyncratic nature pointed out by Bloomfield (1933). Consider (3):

- (3) (a) PERCEIVE object BY MEANS OF vb
- i. eye the stewardess
 - ii. *ear the cheerleader
 - iii. *skin Mary's touch
 - iv. *taste bud the baked potato
 - v. *nose the zinnia (this is acceptable in some dialects)
- (b) CONFER STATUS OF vb ONTO object
- i. knight the hero
 - ii. *colonel the officer
 - iii. *bishop the priest
 - iv. *wife Jennifer

The acceptable denominals in (3ai) and (3bi) have no counterparts in Indonesian. As for the unacceptable denominals, it is quite unlikely that these can be explained away as 'accidental gaps' – that is, as potentially acceptable forms which native speakers can readily paraphrase. At least some of the starred forms in (3) are totally unacceptable, and native speakers find themselves unable to render appropriate paraphrases. These observations lead one to suspect that the acceptable forms in (3) are not purely idiosyncratic. And, in regard to (3a), it has recently been shown (Cooper, 1974) that such denominals do obey a weak order relation involving the referents of sensation. This finding indicates that, alas, the derivation of these denominals is not random. While continuing to search for a more precise account, however, we might at least pause to appreciate

Bloomfield's original skepticism.

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FOOTNOTES

1. Indonesian does contain denominals which resemble (1a) and (1c):

- (2) (a) mentilgram 'to telegram'
menilpon 'to telephone'
 (c) bersepeda 'to cycle'

However, unlike (1a) and (1c), respectively, the denominals in (2a) are intransitive, while (2c) connotes USE rather than LOCOMOTION. I am grateful to John W. M. Verhaar for providing these examples.

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INVENTION AND INNOVATION IN DENOMINAL VERBS

In a recent article (Rose, 1973), I proposed the following scheme of categories as an account of the systematic relationships which hold between English denominal transitive verbs and the nouns from which they are derived:

- (1) (a) CAUSE vb GO TO object
- i. water the lawn
 - ii. air the room
- (b) CAUSE vb COME FROM object
- i. peel an orange
 - ii. bone a chicken
- (c) CAUSE object BE + LOC. vb
- i. crate books
 - ii. pocket a pen
- (d) BE (LIKE) vb TO object
- i. father a child
 - ii. mother a child

I went on to show that denominal verbs in Indonesian marked by the suffix -i not only exhibit the same range of relationships to the nouns from which are derived but in large measure, the same nouns are involved in each relational category. Thus, parallel to the above English exam-

ples, we find in Indonesian:

(2)	Noun	Verb
(a) i.	<u>air</u> 'water'	<u>mangairi</u> ¹ sawah 'irrigate a field'
ii.	<u>gambar</u> 'picture'	<u>menggambari</u> <u>madjalah</u> 'illustrate a magazine'
(b) i.	<u>perut</u> 'stomach'	<u>memeruti</u> <u>ajam</u> 'gut a chicken'
ii.	<u>sisik</u> 'scale (of fish)'	<u>menjisiki</u> <u>ikan</u> 'scale a fish'
(c) i.	<u>kotak</u> 'box'	<u>mengotaki</u> <u>buku</u> 'crate books'
ii.	<u>kantung</u> 'pocket'	<u>mengantungi</u> <u>pena</u> 'pocket a pen'
(d) i.	<u>ajah</u> 'father'	<u>mengajahi</u> <u>anak</u> 'be like a father to a child'
ii.	<u>guru</u> 'teacher'	<u>menggurui</u> <u>teman</u> 'lecture (in the nonliteral sense of assuming a conde- scending manner) a friend'

William Cooper, in a helpful reply (Cooper, 1975), lists the examples (3) which suggest to him that "... the set of four classes proposed by Rose must be at least doubled in number."

- (3) (a) COMMUNICATE TO object BY MEANS OF vb
i. telephone the President
ii. wire Grandmother
iii. cable Tom
iv. radio the crew
- (b) COPY object BY MEANS OF vb
i. photograph the children
ii. tape the conversation
iii. Xerox the article
iv. trace the map
- (c) LOCOMOTE TO object BY MEANS OF vb
i. cycle to Boston
ii. ski to the bottom of the slope
iii. leg to the other side of the bridge
- (d) CAUSE object TO HAVE TRAJECTORY OR FORM OF vb
i. circle the enemy
ii. arch the back
iii. hook the ball (in golf or bowling)
iv. cross the arms

A variety of well formed expressions have occurred to me recently which call for an extension and refinement of my original formulation, and I deal with these below. For a variety of reasons, however, I feel that Cooper's particular proliferation of classes is misguided; and I hope that what follows will serve to clarify the issues as I perceive them.

First, it is obvious that Cooper's categories involve relationships of a very different sort than the ones I have proposed. My intention was to describe highly general

classes defined in terms of recurrent features such as CAUSE, MOTION, LOCATION, etc. The introduction of such semantically complex features as COPY, HAVE TRAJECTORY OR FORM OF, COMMUNICATE TO, PERCEIVE, and CONFER STATUS OF indicates a serious misunderstanding of what I meant by "factoring out" underlying regularities. Obviously, there are many ways to subcategorize denominal verb phenomena in terms of an open-ended set of semantic classes. Consider, as an illustration, the following examples (4) of my proposed category (1b) CAUSE vb COME FROM object:

- (4) i. peel the apple
ii. top the tree
iii. milk the cow
iv. weed the garden
v. scale the fish

It is altogether possible, of course, to paraphrase such expressions using the highly specific verbs pare, saw, squeeze, pull, and scrape respectively. Furthermore, it is conceivable that one might choose any one of these verbs as a category label--making it possible to observe, correctly, that the example is unique, idiosyncratic, and therefore not part of a productive process. In a parallel fashion, one might choose to abandon phonological features, phonemes, allophones or any other abstract phonological entities on the basis of very real variations in articulatory/acoustic properties of speech sounds from speaker to speaker or from utterance to utterance by the same speaker. In short, to ignore the consistent "remove" reading in the examples listed in (4) is to abandon analysis.

Still, Cooper's examples do not fit in any obvious way into the categories I have proposed; and, accordingly, they call for explanation. Part of the explanation, I believe, lies in the exceptional character of some of the examples Cooper cites; the remaining part does, indeed, require a modification of the categories presented in (1). I deal with these matters in turn.

First, for want of any reference to the discussions of "category collapsing" that have appeared in the last decade, I am surprised to find Cooper's intransitive examples (3c) in a discussion of verb/object relationships. I conclude that this is an oversight.² Nonetheless, essentially the same objections could be raised against the transitive constructions (5) which I partially overlooked and partially misinterpreted earlier.

- (5) (a) cart the groceries
(b) pedai the bicycle
(c) paddle the canoe
(d) pump the water

In my original formulation (Rose, 1973, p. 513, fn. 2). I proposed that the expression cart the groceries was closely associated with the category (1c) above (e. g. bag the groceries), being distinct only in terms of a motional/stative dichotomy (i. e. GO in a cart vs. BE in a bag). The remaining examples of (5) -- and many more -- preclude that analysis and appear to require an instrumental interpretation of the sort (6):³

- (6) CAUSE object GO + INST. vb.

The Indonesian denominal verb formation in -i fails to

parallel the English "zero derivation" in this case, a fact to which I return after considering Cooper's further exceptions.

Consider now Cooper's first two classes (2a and b). It is striking, it seems to me, that all but one of the denominal verbs cited: telephone, wire, cable, radio, photograph, tape, Xerox (but not trace),⁴ involve relatively recent technological advances. Considering the complex and particular function of such instruments, it is extremely difficult to imagine how they could fit, in any straightforward way, into a scheme of noun/verb relationships that antedates the inventions literally by millennia. If, in fact, these examples establish new categories, it is important to note that the inventions referred to have altered reality. In so doing, they call forth an accommodation in any linguistic system in which their functions are to be verbalized. It comes as no surprise, therefore, that the English/Indonesian parallelism observed in (1) and (2) above does not, as Cooper correctly observes, extend to these examples. Thus, it is largely owing to lack of regularity in the noun/verb relationship that Indonesian fails to exhibit forms such as *menilgrami, *menilponi, *memotreti, etc. (from tilgram 'telegram', tilpon 'telephone', and potret 'portrait, photograph', respectively). The significant point is that Indonesian denominal verbs in -i are "marked" for precisely the range of meanings that I have described: this suffix is simply not available for the necessary innovation in that language.⁵ The considerations which bear on the limits of morphological productivity constitute an enormously important question which cannot begin to be adequately dealt with in a short space. For the present, let it suffice to emphasize the necessity for a coherent scheme of derivational relationships within which particular morphological systems may be examined and compared.

In this regard, it seems significant to me that Cooper's examples (2a and b) are so closely associated to my examples (1a and b). That is, an expression such as telephone the president differs systematically from one like water the lawn only as to the overt expression (or lack of it) of the subject of the motional verb and the instrumental NP. Thus, in the formulas (7):

- (7) (a) CAUSE (unspecified "message") GO TO object INST (vb)
 (b) CAUSE vb GO TO object (INST. (unspecified))

There is a uniform relationship which holds among the elements CAUSE, GO TO, and object. Similarly, the systematic difference between photograph the children and bone the chicken appears to rest not with the causative and motional (COME FROM) aspects of the verb/object relationship but with something like a figurative/literal distinction regarding what is extracted. Alternatively, it may be appropriate to regard an expression like photograph the children as an extension of my category (1c): (CAUSE object BE + LOC. vb), in which case it would be interpreted as something like "cause the children to be (in existence) in a photograph." Further alternatives suggest themselves (e.g. photograph as INSTRUMENT) in which case the expressions of (8) will doubtlessly prove to be closely associated in the final analysis:

- (8) (a) pencil a sketch
 (b) pipe a tune
 (c) pen a letter
 (d) voice an objection

More significantly, the same relational categories that I proposed originally continue to come to bear on expressions for which they were not designed. Thus, the prospects for this line of inquiry would seem to be enhanced rather than diminished.

Returning now to Cooper's remaining exceptions, the last of Cooper's classes listed above (3d) is far from uniform. First of all, the example (3di) circle the enemy surely doesn't mean "cause the enemy to have the form of a circle." Rather, it means, ambiguously, "form a circle around the enemy" or "cause the enemy to be located in a circle," both of which readings appear in my original formulation.⁶

Before dealing with the remainder of Cooper's apparent exceptions, I wish to turn to another omission in my earlier discussion of possible noun/verb relationships (1). In my original presentation (Rose, 1973, p. 16, fn. 3), I cited the expression baby someone as a unique exception to my proposal. It has occurred to me in the meantime that the expression is neither unique nor significantly beyond the categories provided. This and many other exceptions are accounted for as causatives of the only one of my categories which is not a causative in the first place. That is, baby someone rests on the underlying semantic relationship: CAUSE object BE (LIKE) vb. Similarly, Cooper's exceptions arch the back (3dii) and cross the arms (3div) are causatives of the expressions: the back BE LIKE an arch and the arms BE LIKE a cross, respectively. The remaining example -- hook the ball (in golf or bowling) (3diii) -- differs from the foregoing only with respect to the stative/motional dichotomy which I noted in relation to category (1c) in the original formulation (Rose, 1973, p. 513, fn. 2). Thus, arch the back differs systematically from hook the ball only with regard to the distinction between BE and GO in the formulas (9):

- (9) (a) CAUSE object BE LIKE vb
 (b) CAUSE object GO LIKE vb

Furthermore, it is important to note that the literal/simile option (represented originally by (LIKE) is maintained in the causatives of the expressions in (1d) as well. Thus, beside the simile readings on arch, hook, and cross just noted (with which dice the vegetables and cube the meat seem to fit) we find quite literal, but otherwise parallel causative readings in the expressions (10):

- (10) (a) orphan the children
 (b) widow the woman
 (c) pauper the royalty

Cooper's remaining exception to a productive derivational process: eye the stewardess (i. e. why not *ear the cheerleader, *nose the zinnia, etc.) does indeed appear to lie beyond my proposed categories. Once again, however, we find in expressions like lay eyes on, cast a glance, look into, etc., that the motional (GO TO)⁷ reading of (1a) is far from irrelevant in this case as well. At the same time it may be important to notice that expressions involving vision are considerably more numerous than those concerned with other senses. Thus, it would be reasonable to suppose that the process of denominal verb formation has been extended beyond its ordinary limits in this special circumstance.

I noted earlier that Indonesian denominal formations

in -i fail to parallel the additional English zero derivations that I have discussed here. Since my original presentation was intended to describe the (still remarkable) correspondences between the two derivational systems, this consequence is not altogether unexpected. Still, as a result of Cooper's (and others') comments, it is clear that I earlier underestimated the difficulty of formulating a notion of "possible derivational relationship" even in the extremely limited domain of denominal verb formation in only two languages. Though humbled, I remain confident that a formulation of productivity is not only possible, but essential to an understanding of the boundary between the syntax and semantics of human language. Accordingly, I conclude with a few remarks on the lack of correspondence between English and Indonesian denominal verb formations.

While the Indonesian expressions of (2) are freely and repeatedly elicited from native informants, other sets of expressions which seem to be uniform in English (e.g. (3a and b), (5), and (8) above) elicit clearly distinct correspondences. Thus, English expressions such as telephone the President, photograph the children, cart the groceries, and pencil a sketch are never freely translated (and apparently cannot be) with Indonesian denominal verbs in -i. While a portion of such exceptions are readily explained by the notion of "preemption" (cf. Rose 1973, p. 521), and others seem to result from language specific constraints on the use of morphological elements; still others clearly call for an extension and refinement of categories.

My original proposal took note of examples like Indonesian membului ayam (from bulu 'feather') attributing the lack of an English expression feather a chicken, in the intended meaning, to preemption by the established verb pluck. A parallel case could be made for an Indonesian expression in -i corresponding to the English one suggested by Cooper - cross the legs owing to the existence of bersilang kaki, where the base silang 'cross wise, intersecting' is adjectival rather than nominal. Similarly, it is reasonable to suppose that established periphrastic expressions such as menganggap anak-(anak) 'regard as a child (childish)' preclude Indonesian verbs in -i corresponding to English baby someone.

Still, while such explanations appear to be correct for exceptions to established categories, it would be less than realistic to suggest that they account for all gaps in morphological correspondence between the two languages. The immediately obvious solution is to accept, in cases like (5) and (8), that the two morphological systems diverge at these points. At the same time, it is important to note that a precise specification of the divergence is statable only in terms of a system of relationships such as that which I have proposed and refined here and elsewhere. According, keeping in mind the extent of regularity, I continue to suppose that the structured limits on productivity in particular languages is accessible only through an assumption of a universal set of potentially relevant relational features and principled limitations on their arrangement.

I conclude, as I did earlier (Rose, 1973, pp. 525-26), that "there must be some quite general principles which govern potential innovations in the domain of derivational

morphology." In short, if linguistic history is being made in the patent office, the linguistic innovations are probably less likely to be "something new under the sun" than the inventions they describe.

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FOOTNOTES

1. The meN- prefix has no bearing on the question at hand.
2. It appears likely that denominal intransitives can be analyzed into relational categories similar to and closely associated with the ones I postulate for transitives. However, owing to complexities in the morphological marking of intransitives expressing parallel semantic relationships in Indonesian and English, I purposely and explicitly (Rose, 1973, p. 510) restricted my attention to verb phrase types in which the verbs is followed immediately by a noun phrase.
3. I am indebted to Professor L. Lipka for first demonstrating the need for such a class.
4. The relationship of the verb trace to its nominal source is indeed obscure - both historically and synchronically. Systematically, the reading of (1b) CAUSE vb COME FROM object seems appropriate; but what results in this case, unlike the others in this category, is not a trace but a tracing - suggesting that the word is now an established verb in English. This conclusion is further supported by the fact that the noun trace (in the appropriate sense of 'imprint, copy') is virtually frozen in negative expressions such as without a trace, not a trace.
5. The matter is further complicated by the more general (i.e. not restricted to denominal verbs) use of the -i suffix in a frequentive meaning. Forced to interpret the sentence "Dia menilponi saja", two informants readily agreed to something like "He (or she) keeps on phoning me."
6. Note that Indonesian membentari shares the same ambiguity. Such intersections of semantic relationships (equivalently, clothe, cover, blanket, and numerous others) suggest either historical bifurcations in the system or, alternatively more comprehensive semantic categories synchronically. It is altogether possible that the categories I have proposed are, in part, regularly associated subcategories in a more general analysis of conceptual regularities.
7. For a discussion of look as a verb of motion, see Gruber, 1967.

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