

SOME PROBLEMS IN THE THEORY OF GENERATIVE MORPHOLOGY: A CASE IN INDONESIAN VERBAL FORMATION

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1. INTRODUCTION

In my paper presented at our last conference (1978c), I pointed out that the approach to the study of morphology as first advocated by Halle (1973) and expanded and revised by Aronoff (1976) encountered serious problems when applied to languages such as Indonesian. At that time I presented the derivation of nouns. The present paper will concentrate on the formation of verbs.

Halle suggests that morphology be viewed as consisting of three distinct components: (1) a list of morphemes (LM), (2) word formation rules (WFRs), and (3) a filter. The LM contains three types of entries, namely, roots, affixes, and what Halle calls 'stems'. These entries are in the form of sequences of phonetic segments with some grammatical information. Thus, for the morpheme write in English we must provide the information that says that it is a verbal root, a member of the 'non-Latinate' group, and that it follows a strong verbal conjugation rule. The affixes include forms such as en-, -tion, and -ity. Within Halle's theoretical framework, the LM must also contain the stems so that forms such as vacant, brother, and believe can be derived by postulating rules of the type /STEM + ant/_A, /STEM + ther/_N, /be + STEM/_V. The stems should be appropriately marked so that a given stem can be substituted only in certain frames and not in others (1973:10). Presumably, there would be a set of indexed stems for forms such as va-, bro-, and be-.

The WFRs specify how the items in the LM are to be arranged to form potential words in the language. Following the phonotactic rules of English, forms such as *blick and *arrivation would be generated by the WFRs, but *mbranyak and *ndlopong would not.

Since words, once accepted in the lexicon, often develop idiosyncrasies, the output of the WFRs must be sorted out so that only actual words will be permitted to pass. Halle postulates three types of idiosyncrasies: (i) semantic, (ii) phonological, and (iii) for want of a better term, I called it 'actual' in my 1978c paper.

Semantic idiosyncrasies are those related to peculiarities in the area of meaning; phonological idiosyncrasies are those in the area of phonology. 'Actual' idiosyncrasies pertain to facts in language in which a form should

Amran Halim, Lois Carrington and S.A. Wurm, eds *Papers from the Third International Conference on Austronesian Linguistics*, vol.4: *Thematic variation*, 215-238. *Pacific Linguistics*, C-77, 1983.

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occur but actually does not. Forms such as *arrivation, *refusation, *derival, and *describal are not found in English, although arrival, refusal, derivation, and description are.

The mechanism to prevent the formation of the above forms is the filter. Any form which passes the filter will be stored in what we know as Dictionary. Thus, arrival, refusal, derivation, and description will be stored in the Dictionary, but their starred counterparts above will not.

Although in general Aronoff's work can be considered as an amplification of Halle's, there is one significant difference that must be pointed out here. Unlike Halle's theory which is morphemically based, Aronoff's is word-based, that is, his WFRs cannot operate on anything less than a word, a word here being defined as that without an inflection. In another work Aronoff classifies his definition by saying that the term 'word' in the theory is synonymous with the term 'lexeme' (1979:116). By implication the major difference between Halle's and Aronoff's theories lies in the fact that Aronoff's component in which bases are stored, similar to Halle's LM, does not contain such stems as *va-* and *bro-*. Both, however, agree that the principle of recognisability, and not that of meaningfulness, must be used to define a morpheme. In Aronoff's words a morpheme is "a phonetic string which can be connected to a linguistic entity outside that string" (1976:15).

The argument in my 1978c paper basically covers the following points. First, to consider a phonetic string a morpheme simply on the basis of its recognisability in certain contexts disregards the well-established view, which I believe is still correct, that says that for any communicative form to be considered a language there must exist a relationship between a *signifiant* and a *signifié*. Native speakers recognise the relationship through intuition. No native speakers of English, except some in linguistics, would consider vacant and brother bimorphic. Similarly, no native speakers of Indonesian would consider *haluan* *bow*, *percaya* *to believe* and *semangat* *spirit* bimorphic simply because these words have what appear to be the affixes *-an*, *per-* and *se-* respectively.

My second argument pertains to Aronoff's requirement that the WFRs cannot operate on anything less than a word (1976:22). The data in nominal derivation for Indonesian show that we have bases upon which the WFRs must operate and yet they are less than words: *juang something to do with struggling*, *henti something to do with stopping*, and *anjur something to do with suggesting*.

If a WFR is now permitted to operate on a base which is less than a word, and if we leave out Halle's stems, the LM will only consist of roots and affixes. My third argument is that the roots must be subcategorised into bound and free roots to accommodate bound forms such as *juang* as well as free forms such as *datang* *to come*. Related to this argument is our difficulty in meeting Aronoff's requirement for a base to bear "syntactic subcategories, selectional features, lexically governed entailments, and presuppositions" (1976:48). Bases such as *juang* do not even have a syntactic category and independent meaning let alone syntactic subcategories, selectional features, etc.

My fourth and last argument is that the concept of blocking, that is a mechanism to block the occurrence of form such as *arrivation, does not explain but rather states idiosyncrasies found in language.

In Section 2 I present the formation of verbs in Indonesian to support my earlier arguments and claims. Section 3 is a discussion, and Section 4 a conclusion.

2. THE LANGUAGE¹

2.1 The bases

At the outset we can say that there are two types of roots in Indonesian which are used as bases for forming² verbs: (i) those to which we can assign syntactic categories and independent meanings without having to add an affix. We have called this type the free roots; and (ii) those whose syntactic categories and independent meanings can be identified only after certain affixes have been added. These are the bound roots. Examples for (i) are *marah to be angry*, *darat (a piece of) land*, and *kerja to work*, and for (ii) are *aju*, *alih*, *selenggara*, and *temu*. As far as meanings are concerned the most we can say about (ii) is that these forms have something to do with putting forward, moving, holding, and meeting respectively (henceforth: 'VERB+ing').

On the basis of the types of roots above, we have basically two verb forms: (1) those which can stand alone unaffixed, labelled here as V_1 , and (2) those which can or must take affixation, V_2 . This type is subdivided into three subgroups: V_{2a} , consisting of verbs whose bases are free roots and requiring affixes; V_{2b} , consisting of verbs which can take affixes; and V_{2c} , consisting of verbs whose bases are bound roots and requiring affixes. Examples:

V_1 :	<i>datang to come</i>	<i>duduk to sit</i>
	<i>tiba to arrive</i>	<i>mengerti to understand</i>
	<i>percaya to believe</i>	
V_{2a} :	<i>mendarat to land</i>	<i>menari to dance</i>
	<i>bersepeda to ride a bicycle</i>	<i>bertelor to lay an egg</i>
	<i>melebar to become wide</i>	
V_{2b} :	<i>membaca to read³</i>	<i>membersihkan to clean</i>
	<i>merestui to bless</i>	<i>bekerja to work</i>
	<i>berjalan to walk</i>	
V_{2c} :	<i>mengajukan to put forward</i>	<i>mengalihkan to shift</i>
	<i>menyelenggarakan to hold (parties)</i>	<i>menemui to meet with</i>
	<i>bersua to meet</i>	

Of all the verbs in V_1 *tiba to arrive*, as far as my present research goes, seems to be the only word in the language which can be considered as, to borrow Jackendoff's terminology (1975:648), a singleton, that is a form which belongs to only one syntactic category. The rest of the verbs in V_1 can be used as bases to form other verbs. From *datang* and *duduk*, for instance, we can have *mendatangkan to bring in*, *mendatangi to approach*, *mendatang to come* (poetic), *kedatangan to get visited by*, *berdatangan to come* (plural subject), and *mendudukkan to seat*, and *menduduki to occupy*, respectively.

Since the bases for V_{2a} and V_{2b} are free roots, one might wonder why they are separated. There are three reasons for this. First, the forms in V_{2b} still function as verbs without *meN-* or *beR-*, but those in V_{2a} do not. Thus, sentence (1) is acceptable, but (2) is not.

- (1) *Kapalterbang itu sudah mendarat.*
plane the already land
The plane has landed.

Pak Blo'on suka baca komik.
Mr like read comic
Mr Blo'on likes to read comics.

- (2) **Kapalterbang itu sudah darat.*

Second, in the imperative form the prefix *beR* in *V_{2a}* must be retained. In *V_{2b}* the retention is optional. We can have (3) and (4), but not (5).

- (3) *BErtelorlah sekarang!*
lay egg now
Lay an egg now!
- (4) *BEkerjalah dengan baik!*
work with good
Work well!
- (5) **Telorlah sekarang!*

Third, in informal style the prefix, a portion of the prefix, or a substitute of some sort must be retained in *V_{2a}* but not in *V_{2b}*. We can have (6) but not (7).

- (6a) *Gua MENdarat jam 3.*
I land hour
I landed at 3.
- (6b) *Gua Ndarat jam 3.*
I landed at 3.
- (6c) *Ayam gua udah BERTolar.*
chicken I already lay egg
My chicken has laid an egg.
- (6d) *Ayam gua udah Nelor.*
My chicken has laid an egg.
- (6e) *Gua mau baca koran.*
I want read newspaper
I want to read a newspaper.
- (6f) *Kamu jalan ke sekolah?*
You walk to school
You walk to school?
- (7a) **Gua darat jam 3.*
- (7b) **Ayam gua udah telur.*

Notice the *meN-* in (6a) becomes *n-* in (6b) and *beR-* in (6c) becomes *n-* in (6d) with the following *t-* assimilated. Notice also that *baca* and *jalan* in (6e-f) need no prefixes since they are members of *V_{2b}*.

2.2 Affixes and their combination with bases

There are prefixes and suffixes to form verbs in Indonesian.⁴ The prefixes are *meN-* (with its *di-* passive counterpart), *(mem)per-*, *beR-*, and *teR-*. The suffixes are primarily *-kan* and *-i* but occasionally also *-an*. In addition to these affixes, there is the prefix *ke-* which must occur with *-an* to form verbs.

The prefixes *meN-* *(mem)per-*, and *teR-* can occur with the suffix *-kan* or *-i*, and *beR-* with *-kan* or *-an*. Below are the details of these combinations.

2.2.1 The meN- verbs

If we postulate three hypothetical sets A, B, and C to represent respectively the verbs formed from meN+BASE, meN+BASE+kan, and meN+BASE+i, and these three sets intersect, we have seven subsets:

1. $M_1 = \{x : x \leftarrow \text{meN+BASE}\}$.⁵ Examples:

membantu to help	mencaci to swear
memberontak to rebel	menduga to guess
meninjau to visit	

2. $M_2 = \{x : x \leftarrow \text{meN+BASE+kan}\}$. Examples:

membicarakan to discuss	membuktikan to prove
membubarkan to abolish	menghidangkan to present
mengajukan to put forward	

3. $M_3 = \{x : x \leftarrow \text{meN+BASE+i}\}$. Examples:

mengepalai to head	mengadili to administer justice
mengawasi to supervise	mengingkari to renege
menangani to tackle	

4. $M_4 = \{x : x \leftarrow \text{meN+BASE+kan}\}$. Examples:

membeli(kan) to buy (for someone)	menjurus(kan) to direct (X) (to)
menyewa to rent	menyewakan to rent out

5. $M_5 = \{x : x \leftarrow \text{meN+BASE+i}\}$. Examples:

mencium(i) to kiss (repeatedly)	menampar(i) to slap (repeatedly)
menyelam to dive	menyelami to penetrate
menghias(i) to decorate	

6. $M_6 = \{x : x \leftarrow \text{meN+BASE+}[\text{kan}]_i\}$. Examples:

memarahkan to anger	memarahi to scold
menjatuhkan to drop	menjatuhi to fall on
memberses(kan/i) to put in order	

7. $M_7 = \{x : x \leftarrow \text{meN+BASE+}[\text{kan}]_i\}$. Examples:

mengambil to take	mengambilkan to take for someone
mengambili to take (repeatedly)	menyerah to surrender
menyerahkan to entrust (X to Y)	menyerahi to entrust (Y with X)

There are approximately 1425 bases⁶ in Indonesian which belong to the meN-set. Of this total 21% are found in M_1 , 29% in M_2 , 9% in M_3 , 21% in M_4 , 4% in M_5 , 6% in M_6 , and 10% in M_7 . Looking at the percentages above we can see that the suffix -kan (in M_2 and M_4) is almost four times as many as the suffix -i (in M_3 and M_5).

Several characteristics of the verbs in this set I have found so far are:

- (1) Verbs with only the prefix meN- in any of the above subsets can be transitive or intransitive: membeli to buy, menyerah to surrender.
- (2) Except for merupakan to constitute, all verbs with -kan are transitive: menjatuhkan to topple membelikan to buy for someone.⁷
- (3) Except for mencukupi to suffice, memenuhi to fulfill, memadai to be sufficient, and menyerupai to resemble, all verbs with -i are transitive.

- (4) If meN+BASE alone does not occur in the language, the addition of -kan or -i will make the resultant verb monotransitive (one object): *mengerja, mengerjakan *to do*, *merestu, merestui *to bless*.
- (5) If meN+BASE is intransitive, the suffix -kan or -i changes the status to monotransitive: melebar *to become wide*, melebarkan *to widen (X)*, mendekat *to come close*, mendekati *to approach*.
- (6) If meN+BASE is monotransitive, the suffix -kan changes the status to bitransitive (two objects): membeli *to buy*, membelikan *to buy for someone*. In some cases the meaning is unique: menyewa *to rent*, menyewakan *to rent out*.
- (7) If meN+BASE is monotransitive, the suffix -i will retain the monotransitive status: mencium *to kiss*, menciumi *to kiss repeatedly*.

The most common meanings of the suffix -kan are causative and benefactive, the former most often found in (5) and the latter in (6) above. The productivity of the suffix often leads to uncertainty among native speakers. The acceptability of causative forms such as melebarkan *to widen (X)*, and meluaskan *to expand* often makes native speakers wonder if forms such as ?*mencantikkan are acceptable or not. Witness the awkwardness of (8) and the less awkwardness of (9).

- (8) ??Bang Alwi mencantikkan kota Jakarta
Mr Alwi 'beautify' city Jakarta
- (9) ?Kota Jakarta dicantikkan lagi dengan pepohonan di jalan2 besar
city Jakarta 'beautified' further with trees on streets big

In the case of the benefactive -kan, if an activity can be performed only by oneself, the -kan seems improbable: menghibur *to entertain*, menghina *to humiliate*, but *menghiburkan and *menghinakan. On the other hand, if the activity can be done on behalf of someone else, there is a tendency for -kan to be on the acceptable side: ?*menggugatkan *to claim for someone*, ?*menilipkan *to telephone for someone*, ?*melamarkan *to propose for marriage for someone*.⁸

The most common meanings of the suffix -i are locative and repetitive, the former having no specific locus and the latter most often found in group (7) above. In the event that an action is semantically repeatable, there is a tendency for the -i verb to be acceptable. This is especially true among the speakers whose vernacular has the repetitive -i suffix. Forms such as ?*menyembahi *to worship repeatedly*, ?*menahani *to arrest (Xs)*, ?*menolaki *to refuse (Xs)* are not rejected by many speakers.

Although the membership in M₁₋₇ is mutually exclusive, there are a few verbs which can belong to more than one subset without a semantic difference. The verbs memindah-memindahkan and menghias-menghiasi mean *to move* and *to decorate* respectively.

2.2.2 The (mem)per- verbs

Except for the irregularity of its form, the (mem) here is the same as the meN- we discussed in 2.2.1. I will consider this group as memper- from now on.

Since memper- can occur with -kan and -i, there should theoretically be seven subsets again here. The fact of the matter is that memper- does not seem to occur with $\pm i$ or $\pm \{kan\}$. We have, therefore, only five subsets:

1. $P_1 = \{x : x \leftarrow \text{memper} + \text{BASE}\}$. Examples:

memperbanyak *to multiply* memperbudak *to consider (X) a slave*
 mempermudah *to make easier*

2. $P_2 = \{x : x \leftarrow \text{memper} + \text{BASE} + \text{kan}\}$. Examples:

memperbincangkan *to discuss* mempermainkan *to make fun of (X)*
 memperbandingkan *to compare*

3. $P_3 = \{x : x \leftarrow \text{memper} + \text{BASE} + i\}$. Examples:

memperbarui *to renew* memperbaiki *to improve*
 memperlengkapi *to equip* mempersenjatai *to arm*

4. $P_4 = \{x : x \leftarrow \text{memper} + \text{BASE} + \text{kan}\}$. Examples:

memperisteri(kan) *to marry (a woman)*

5. $P_5 = \{x : x \leftarrow \text{memper} + \text{BASE} + [\text{kan}]\}$. Examples:

memperingatkan *to remind* memperingati *to commemorate*

There are ninety bases in Indonesian which can take *memper-*. Of this total 48% are found in P_1 , 46% in P_2 , 4% in P_3 , 1% in P_4 , and 1% in P_5 . All the members of P_{3-5} are listed in (3-5) above.

There are approximately forty other bases of which the status is, in my judgement, uncertain. These include forms such as *?*mempertipis*, *?*memperkosong*, *?*mempersedikit*, and *?*memperbinikan*. Since the predominant meaning of *memper-* plus an adjective base is *to make more (Adjective)*, one might wonder why native speakers are not too comfortable with the first two verbs above to produce the meanings *to make more tipis=thin*, *to make more kosong=empty*, respectively. Similarly, we have *memperbanyak* and *memperisteri(kan)*, but we question *?*mempersedikit* and *?*memperbini(kan)* to mean *to reduce* and *to marry (a woman)* respectively.

There are also cases in which the verbs sound natural in the passive but awkward in the active form. Thus, *diperbuat to be done* and *diperumpamakan to be made as an example for* are natural but *?*memperbuat* and *?*memperumpamakan* are at best questionable.

In cases in which the base is verbal, there is a tendency for the *memper-* verbs to be in 'rivalry' with the *meN-kan* verbs. In some cases there is a difference in meaning: *mempermainkan to make fun of (X)*, *memainkan to play*, *mempertaruhkan to bet*, *menaruhkan to place*, *mempertunjukkan to present (a show)*, *menunjukkan to point out*, *memperpanjang to extend (visa, etc.)*, *memanjangkan to lengthen*. In some other cases the pairs are semantically the same: *memperbandingkan-membandingkan to compare*, *memperdagangkan-mendagangkan to deal in (X)*, *memperdebatkan-mendebatkan to debate*.

2.2.3 The *beR-* verbs

The *beR-* set B has only three subsets:

1. $B_1 = \{x : x \leftarrow \text{beR} + \text{BASE}\}$. Examples:

beragama *to have a religion* berduri *to have thrown*
 berkawan *to have friends* berdansa *to dance*
 bersua *to meet* bergegas *to be in a hurry*

2. $B_2 = \{x : x \leftarrow \text{beR} + \text{BASE} + \text{kan}\}$. Examples:

berdasar(kan) *to be based on* berisi(kan) *to contain*
bermandi(kan) *to be bathed in* beratap(kan) *to have a roof made of*

3. $B_3 = \{x : x \leftarrow \text{beR} + \text{BASE} + \text{an}\}$. Examples:

berjatuhan *to fall* (plural subject) bepergian *to travel*
beterbangan *to fly around* (plural subject) berdatangan *to come* (plural subject)
subject)

There are approximately 700 bases belonging to B_1 and the list may be open-ended. So far I have found only eight bases belonging to B_2 and four to B_3 . In addition to the examples given in 2 for B_2 , we have *beralas(kan) to have a padding made of*, *beristeri(kan) to have a wife from*, *berlandas(kan) to have a foundation made of*, and *berlapis(kan) to be coated with*.

There is also tendency to replace the forms in B_2 , especially if the base is nominal, with a totally different construction. Instead of saying (10), people often say (11).

- (10) Pak Gombloh beristerikan orang Minang.
Mr married to person Minang
Mr Gombloh is married to a Minang woman.

- (11) Pak Gombloh isterinya orang Minang.
Mr wife his person Minang

With regard to the membership in B_3 , one must be cautious here in determining whether a $\text{beR} + \text{BASE} + \text{an}$ form is indeed formed from the simulfix $\text{beR} + \text{an}$ plus a base in the middle or from $\text{beR} +$ plus a base which is already suffixed with the nominal marker $-\text{an}$. The criterion to be used is as follows: a $\text{beR} + \text{an}$ is to be considered a simulfix if the form $\text{BASE} + \text{an}$ by itself cannot stand alone as a word. *Bepergian*, *berjatuhan*, *beterbangan*, and *berdatangan* meet the above criterion since **pergian*, **jatuhan*, **terbangan*, and **datangan* cannot stand as words in the language. On the other hand, forms such as *berhalangan to be unable to do something*, *beranggapan to assume*, *berserakan to be scattered*, and *berlumuran to be stained with*, are excluded from B_3 , because the prefix $\text{beR} +$ is attached to bases which are already nominalised by the suffix $-\text{an}$. The forms *halangan*, *anggapan*, *serakan*, *lumuran* are nominals capable of standing alone in the language.³ These words, therefore, belong to B_1 .

Although the possessive meaning of $\text{beR} +$ is the most common and can be used with newly acquired concepts or words such as *diskusi discussion*, and *asimilasi assimilation*, there seems to be a constraint which prevents the formation from being totally productive. Forms such as **berayam* and **bersapi* to mean *to have chickens* and *to have cows* respectively are 'unusual' at best. Witness the strangeness of (12).

- (12) ?Dia tidak berayam / bersapi
he not have chicken have cow

The constraint is also found where the meaning of $\text{beR} +$ is *to make use of* (BASE) or *to produce* (BASE). Although we have forms such as *bersepeda to ride a sepeda=bike* and *bertelor to produce telur=egg* we question **berbis* and **berbuku* to respectively mean *to ride a bis=bus* and *to produce or write buku=books*.

2.2.4 The teR-verbs

The data for the teR- verbs are not quite complete yet, but from what we have gathered so far teR- can also occur with -kan and -i, but the combination is restricted to five subsets. teR- does not seem to occur with $+[k_{\text{an}}^{\text{an}}]$ or with $\pm[k_{\text{i}}^{\text{i}}]$. Therefore, there are only five subsets.

1. $T_1 = \{x : x \leftarrow \text{teR} + \text{BASE}\}$. Examples:

termasuk *to include* termakan *to be eaten unintentionally*
tertinggal *to be left unintentionally* terletak *to lie*

2. $T_2 = \{x : x \leftarrow \text{teR} + \text{BASE} + \text{kan}\}$. Examples:

terselesaikan *to be finished* tersampaikan *to be deliverable*
tersembuhkan *to be curable* terabaikan *to be neglected*

3. $T_3 = \{x : x \leftarrow \text{teR} + \text{BASE} + \text{i}\}$. Examples:

terpenuhi *to be fulfilled* teratasi *to be overcome*
tertimbang *to be balanced*

4. $T_4 = \{x : x \leftarrow \text{teR} + \text{BASE} \pm \text{kan}\}$. Examples:

terlempar(kan) *to be unintentionally thrown to/from*
terkabal(kan) *to be fulfilled*
terarah(kan) *to be directed* terpikir(kan) *to be thought*

5. $T_5 = \{x : x \leftarrow \text{teR} + \text{BASE} \pm \text{i}\}$. Examples:

terluka(i) *to be wounded* tersaing(i) *to be rivaled*
terselimut(i) *to be covered* ternoda(i) *to be stained*

Although the number of bases for these verbs is still unknown, it seems that T_1 , T_2 , and T_4 have the most members, and T_5 has the least. This is consistent with our previous statement which says that in the M set we have more verbs with -kan than -i.

Since teR- in general can be considered as some kind of passive form for meN-, it is logical to assume that members in the M set are convertible into T. We have indeed forms such as menyelesaikan *to finish*, memenuhi *to fulfill*, melempar(kan) *to throw* as well as terselesaikan *to be finished*, terpenuhi *to be fulfilled*, and terlempar(kan) *to be thrown*. However, if we look at our data more carefully, we will see that the logic fails to apply in all cases. We have for instance, membanggakan *to be proud of*, mendasarkan *to base*, but at least question ?*terbanggakan, ?*terdasarkan. We also have cases in which the M verbs require the presence of a suffix, but the T counterparts must be without it. We have membuktikan *to prove*, meletakkan *to place*, and meninggalkan *to leave*, which are members of M, but the T counterparts are without the suffix -kan: terbukti *proven*, terletak *located*, and tertinggal *to be left unintentionally*.

In another situation we have verbs belonging to M which require the presence of a suffix, but the suffix becomes optional in T. The M counterparts of all the examples in T_5 above, for instance, must have the suffix -i, and yet this suffix is optional in T: melukai *to hurt*, menyaingi *to rival*, menyelimuti *to cover (with blankets)*, menodai *to stain*. There is no situation in which the teR- verb adds a suffix not found in the meN- counterpart. In other words, since menduga *to guess* belongs to M_1 , the subset with no suffix, we can predict that *terdugakan and *terdugai do not occur in the language, although terduga does.

2.2.5 The ke-an verbs

As far as the occurrence of the affix ke-an with a base is concerned, there is only one subset, K, of which the members are formed by the formula ke+BASE+an. There are approximately forty-five bases in the language which belong to this set. Some examples: *kebakaran to be caught on fire*, *kebanjiran to be flooded*, *kehabisan to run out of*, and *kebingungan to be confused*.

Of this total, seven give us the impression that they are not formed by the simulfix ke-an, but rather by the prefix ke- added to a base already suffixed with -an. These seven verbs are *kebagian to get a portion of*, *kebingungan to be confused*, *kecurian to be stolen*, *kelupaan to forget*, *ketakutan to be frightened*, *ketiduran to fall asleep*, and *ketumpahan to be splashed with*. The forms *bagian a part*, *bingungan to get confused easily*, *curian stolen (X)*, *lupaan to forget easily*, *takutan to get scared easily*, *tiduran to lie around*, and *tumpahan things that one pours* do indeed occur, but the verbal meanings of the ke-an counter-parts are not deducible from the addition of ke- to the BASE+an alone. Nowhere do we find ke- which encompasses all the meanings given above. It is obvious that these verbs must be treated in the same way we treat *kebakaran*, *kebanjiran*, *kehabisan*, etc.

As far as syntactic collocations are concerned, nineteen of those in K permit no nouns occurring after them. Some of these verbs are *kebakaran to be caught on fire*, *keberatan to object*, *kesakitan to suffer from pain*, and *kecapaian to feel tired*. Nineteen verbs, on the other hand, allow nouns to occur. Some examples: *kebanjiran to get flooded*, *kekurangan to lack*, *ketinggalan to be left behind by (X)*. The other seven members require the presence of a noun. Some examples: *kedatangan to get visited by*, *kejatuhan to be struck by a falling (X)*, *kemasukan to get infiltrated by*.

2.2.6 Summary on affixation

The combinatorial possibilities of the prefixes and the suffixes are summarised in Chart 1. The sign 'x' means 'possible' and '-' 'impossible'.

Prefix					Suffix
meN-	memper-	beR-	teR-	ke-	
x	x	x	x	-	∅
x	x	-	x	-	+kan
x	x	-	x	-	+i
x	x	x	x	-	±kan
x	-	-	x	-	+ _i kan
x	x	-	-	-	+ _i [kan]
x	-	-	-	-	± _i [kan]
-	-	x	-	x	+an

Chart 1

2.2.7 Intersection among verbal sets

From 2.2.1 – 2.2.6 one may get the impression that the membership in the sets M, F, B, T, and K is mutually exclusive. This is, however, not the case. Many of the bases are shared by more than one set. Section 2.2.7.1 presents the intersection between M and B, and Section 2.2.7.2 between T and K.

2.2.7.1 The intersection of M and B

In this section I will discuss all of the subsets of M but only subset B_1 of set B. We recall that certain bases can or must occur with an affix or affixes in order to become verbs. Bantu *helping* must take only *meN-* but *kepala* a *head* must take also *-i* in order to function as verbs: *membantu* to *help* and *mengepalai* to *head*. On the other hand, the base asal *place of origin* must take *beR-* to form a verb: *berasal* to *originate*.

Despite this mutual exclusiveness, there are many bases which can occur with different affixes. If we now set up a Venn diagram for the M subsets and superimpose on it subset B_1 , we will have seven new subsets. These are:¹⁰

1. $BM_1 = \{x : x \leftarrow \text{beR/meN+BASE}\}$. Examples:

<i>berlatih</i> to <i>practise</i>	<i>melatih</i> to <i>train</i>
<i>berburu</i> to <i>hunt</i>	<i>memburu</i> to <i>chase</i>
<i>berlantai</i> to <i>have a floor</i>	<i>melantai</i> to <i>dance</i>
2. $BM_2 = \{x : x \leftarrow \text{beR+BASE or meN+BASE+kan}\}$. Examples:

<i>bekerja</i> to <i>work</i>	<i>mengerjakan</i> to <i>do</i>
<i>bercerai</i> to <i>be divorced</i>	<i>menceraikan</i> to <i>divorce</i>
<i>berhenti</i> to <i>stop</i>	<i>menghentikan</i> to <i>stop (X)</i>
3. $BM_3 = \{x : x \leftarrow \text{beR+BASE or meN+BASE+i}\}$. Examples:

<i>berair</i> to <i>contain water</i>	<i>mengairi</i> to <i>irrigate</i>
<i>berlindung</i> to <i>take a shelter</i>	<i>melindungi</i> to <i>protect</i>
4. $BM_4 = \{x : x \leftarrow \text{beR+BASE or meN+BASE+kan}\}$. Examples:

<i>berbuat</i> to <i>behave</i>	<i>membuat</i> to <i>make</i>
<i>membuatkan</i> to <i>make for someone</i>	<i>berjumlah</i> to <i>have a total of</i>
<i>menjumlah</i> to <i>total</i>	<i>menjumlahkan</i> to <i>add up</i>
5. $BM_5 = \{x : x \leftarrow \text{beR+BASE or meN+BASE+i}\}$. Examples:

<i>berbohong</i> to <i>lie</i>	<i>membohong</i> to <i>lie</i>
<i>membohongi</i> to <i>deceive</i>	<i>berulang</i> to <i>happen again</i>
<i>mengulang</i> to <i>repeat</i>	<i>mengulangi</i> to <i>repeat (X)</i>
6. $BM_6 = \{x : x \leftarrow \text{beR+BASE or meN+BASE+}[k^{\text{an}}_i]\}$. Examples:

<i>berjalan</i> to <i>walk</i>	<i>menjalankan</i> to <i>operate</i>
<i>menjalani</i> to <i>endure</i>	<i>berkeliling</i> to <i>go around</i>
<i>mengelilingi</i> to <i>go around (X)</i>	<i>mengelilingkan</i> to <i>take (X) around</i>
7. $BM_7 = \{x : x \leftarrow \text{beR+BASE or meN+BASE+}[k^{\text{an}}_i]\}$. Examples:

<i>bercampur</i> to <i>be mixed</i>	<i>mencampur</i> to <i>mix</i>
<i>mencampurkan</i> to <i>mix</i>	<i>mencampuri</i> to <i>intervene</i>
<i>menggambar</i> to <i>draw</i>	<i>bergambar</i> to <i>have a picture made</i>
<i>menggambarkan</i> to <i>describe</i>	<i>menggambari</i> to <i>draw (on X)</i>

These subsets can be seen in diagram 1.

As stated earlier, there are approximately 700 bases which can occur in B_1 . Of this total, 300 are found also as members of M. The percentages are as follows: 11% in BM_1 , 40% in BM_2 , 16% in BM_3 , 16% in BM_4 , 1% in BM_5 , 8% in BM_6 , and 8% in BM_7 . Notice again here that bases which occur with *-kan*, that is, those in BM_2 and BM_4 , comprise more than 50%.

We know from 2.2.1 that a verb formed by *meN+BASE* can be intransitive. Since all *beR-* verbs are also intransitive, the question that immediately arises is: how do we form an intransitive verb? More specifically, what criteria do we use to determine which affix is to be selected to form this type

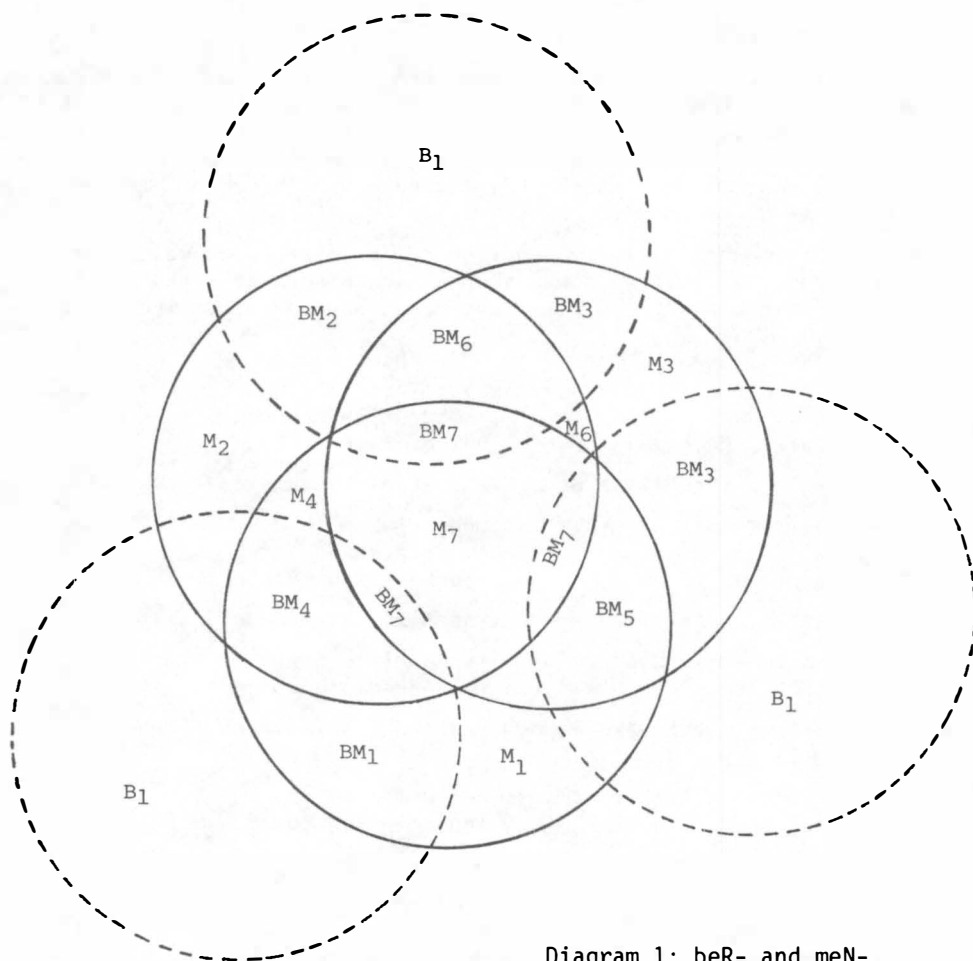


Diagram 1: beR- and meN-

of verb? If we are given the base *kering*, how do we know that this base must take meN- and not beR- whereas *kerja* must take beR- and not meN- to produce *mengering* to *dry* and *berkerja* to *work* and discard at the same time the forms *berkering and *mengerja.

Although there does not seem to be a general criterion for all the verbs in BM, there are some generalisations that help us understand how these two sets of affixes operate. First, if the base is an adjective, it can occur only with meN-, resulting in an inchoative verb. We have *mengering* above and *mengecil* to *become small*, *menguning* to *become yellow*, etc., but not *berkering, *berkecil, and *berkuning respectively. Second, either prefix attached to a verbal base reiterates the verbal status of the resultant form. This being the case, the prefix loses its function and, therefore, can be deleted in informal Indonesian. We have, for instance, *berkerja* to *work*, *berlari* to *run*, *membeli* to *buy*, and *menjual* to *sell* as well as the informal forms *kerja*, *lari*, *beli*, and *jual*. Third, if a base takes either beR- or meN- (with or without a suffix), it almost always produces a difference in meaning, syntax, or both. *Berlatih* and *melatih* given in BM₁ are semantically and syntactically different.

The difference between *berburu* and *memburu*, also in BM₁, is more subtle. Although both can be glossed as *to hunt*, the *beR-* form indicates a generic action, whereas the *meN-* counterpart refers to a specific one. This can be seen from the acceptability of (13-15) and the rejection of (15) where the presence of the classifier *seekor* contradicts the generic nature of *berburu*.

- (13) Mereka *berburu* rusa.
 they hunt deer
 They go deer-hunting.
- (14) Mereka *memburu* rusa.
 they hunt deer
 They are hunting a deer.
- (15) Mereka *memburu seekor* rusa.
 they hunt CLASS. deer
 They are hunting a deer.
- (16) *Mereka *berburu seekor* rusa.

There are two, or possibly three, bases which can take *beR-* or *meN-* with no semantic or syntactic difference. These are *nyanyi*, *kembang*, and *bekas*. The verbs *bernyanyi-menyanyi*, *berkembang-mengembang*, and *berbekas-membekas* mean *to sing*, *to develop*, and *to leave a trace* respectively.

2.2.7.2 The intersection of K and T sets

While some people believe that *ke-an* and *teR-* are too close to each other to warrant a separate treatment, the similarity is in fact much more restricted. Out of the forty-five *ke-an* verbs, only six can occur with *teR-* with no semantic or syntactic difference. These bases are: *bakar*, *dengar*, *lihat*, *racun*, *tidur* and *tinggal*. There are four other bases which can belong to the sets K and T, but they show a semantic or syntactic difference: *bagi*, *dapat*, *masuk* and *tumpah*. *Terbagi to be divided* and *kebagian to get a portion of* are not only different in meaning but they also require different syntactic operations.¹¹ We must also note here that the bases which can also occur in K are only those that belong to T₁.

Naturally we have bases which can occur with *teR-* but not with *ke-an*, and vice versa. We have, for instance, *terbangun to be awakened*, *terbuka to be opened*, but not **kebangunan* (as a verb), and **kebukaan*. On the other hand, we have *kedatangan to be visited by* and *kehilangan to lose* but not **terdatang* and **terhilang*.

2.2.8 More intersections

If we look again at our Chart 1 in 2.2.6, we can see that in order to obtain a total picture of verbal information in Indonesian, we must take a column and contrast it with the other columns in the chart. Charts 2, 3, 4, and 5 represent progressively these contrasts with the signs 'x' and '-' indicating, as before, 'possible' and 'impossible'.

From the charts we can see which intersections are possible in the language. If we look at Chart 2, for instance, and read *memper+ø* across, we will see that there are *memper+ø* bases which can also occur with *meN+ø*, *meN+kan*, *men+kan*, *meN+[^kan]*, and *meN±[^kan]*, but not with *meN+i* and *MeN±i*. Examples: *memperhambat-menghambat*, *mempermudah-memudahkan*, *memperkecil-mengecil-mengecilkan*, *memperberat-memberatkan-memberati*, and *memperdalam-mendalam-mendalamkan-mendalami*.

	meN+ $\emptyset$	meN+kan	meN+i	meN $\pm$ kan	meN $\pm$ i	meN+ ^{kan} _i	meN $\pm$ ^{kan} _i
memper+ $\emptyset$	x	x	-	x	-	x	x
memper+kan	-	x	-	x	x	x	x
memper+i	-	-	x	-	x	-	-
memper $\pm$ kan	-	-	-	-	-	-	-
memper+ ^{kan} _i	-	-	-	x	-	-	-
beR+ $\emptyset$	x	x	x	x	x	x	x
beR $\pm$ kan	-	x	x	x	-	-	-
beR+an	-	x	-	-	-	x	x
teR+ $\emptyset$	x	x	x	x	x	x	x
teR+kan	-	x	-	-	-	-	x
teR+i	-	-	x	-	-	-	-
teR $\pm$ kan	x	x	-	x	-	-	x
teR $\pm$ i	-	-	x	-	-	-	x
ke-an	x	x	x	x	x	x	x

Chart 2: Intersections of M with P, B, T, and K

	memper+ $\emptyset$	memper+kan	memper+i	memper kan	memper+ ^{kan} _i
beR+ $\emptyset$	x	x	x	-	-
beR $\pm$ kan	-	-	-	x	-
beR+an	-	-	-	-	-
teR+ $\emptyset$	-	x	-	-	x
teR+kan	-	x	-	-	-
teR+i	-	-	x	-	-
teR $\pm$ kan	-	x	-	-	-
teR $\pm$ i	-	-	-	-	-
ke-an	x	x	-	-	-

Chart 3: Intersections of P with B, T, and K

	beR+ $\emptyset$	beR $\pm$ kan	beR+an
teR+ $\emptyset$	x	x	x
teR+kan	x	-	-
teR+i	x	-	-
teR $\pm$ kan	x	-	-
teR $\pm$ i	x	-	-
ke-an	x	-	x

Chart 4: Intersections of B with T and K

	teR+ ϕ	teR+kan	teR+i	teR $\pm$ kan	teR $\pm$ i
ke-an	x	-	-	-	-

Chart 5: Intersections of T with K

If we read meN+ ϕ down, we will see that meN+ ϕ bases can only co-occur with memper+ ϕ , beR+ ϕ , teR+ ϕ , ter $\pm$ kan, and ke-an. Examples: menghambat-memperhambat, membentuk-berbentuk, mengira-terkira, menjawab-terjawab(kan), mencopet-kecopetan.

Although I have not found a base which can take all of the prefixes, there are bases which can take four: melihat *to see*, memperlihatkan *to show*, terlihat *can be seen*, and kelihatan *can be seen*; mendengar *to hear* (as well as mendengarkan *to listen*), memperdengarkan *to present* (a song, etc.), terdengar *can be heard*, and kedengaran *can be heard*.

As mentioned before, there is one base in Indonesian which takes no affixes at all. This base is tiba *to arrive*. There is not even a noun to be derived from this base.

3. DISCUSSION

3.1 The list of morphemes

On the basis of the existence of a relationship between a signifiant and a signifié, I would treat forms such as halaman *page*, pegawai *worker*, perduli *to care*, percaya *to believe*, kecuali *except*, and semangat *spirit* as monomorphic forms. They will be listed in the LM as well as in the Dictionary. There is nothing we gain by treating them as bimorphic forms.

As I suggested in 1978c, the LM should contain both free and bound roots. The words used as evidence at that time werejuang *struggling*, anjur *suggesting*, and temu *meeting*. If we look at our data in Section 2 more carefully, we will see that the existence of bound roots is widespread among the verb sets.

In the M set, for instance, we have roots such as jurus *leading*, pancar *radiating*, and lolong *howling* which have no syntactic or semantic independence. These roots must take affixes to become verbs: menjurus *to lead or be specific*, menjuruskan *to lead (X)*, memancar *to radiate*, memancarkan *to radiate (X)*, melolong *to howl*. They must also take affixes to become other syntactic forms in the language: jurusan *direction*, pancaran *radiation*, and lolongan (a) *howling*. Still in the M set, we have the roots aju *forwarding*, alih *redirecting*, and selenggara *carrying out* which are not found anywhere without affixation, verbal or nominal.

In the P set the roots bincang *discussing* and silah *requesting (X to do Y)*, for instance, behave in the same way as jurus, pancar, etc. In the B set we have roots such as sua *meeting*, gegas *hurrying*, and dentum *booming* which must take beR- to become verbs: bersua *to meet*, bergegas *to hurry*, and berdentum *to boom*. In the T set we have, for instance, belalak *opening (one's eyes) wide* and lampias *taking (X) out on* which must be affixed to become words: terbelalak *widely opened (of eyes)*, terlampiaskan *to be the victim of*. And finally in the K set the roots jangkit *becoming infected with* and tular (same meaning) cannot stand alone in any syntactic construction.

We see from the examples above that in addition to free roots and affixes we also have bound roots that must be accommodated somewhere. It is only logical that LM is the place for such forms.

3.2 The word formation rules

One peculiarity about a WFR which distinguishes it from a phonological rule is that it must be permitted to operate on its own output. In order to derive the noun refusal in English we must allow the WFR to operate on refuse which itself is an output of a WFR. Given the Indonesian noun pemberontakan *rebellion* and the verb memberontak *to rebel*, we must first determine whether the noun is derived from the verb, or vice versa. As I stated in 1978c, the principle of economy and generality will be maintained, if the verbs are derived first.

Suppose that we agree now to derive the verbs before the nouns. A problem immediately arises in the verb formation where a base is shared by more than one affix. Obviously, a choice must be made either (1) to select a basic verb and form the other related verbs transformationally, (2) to select a basic verb from which other related verbs are formed through the WFRs, or (3) to form all the verbs sharing the same base simultaneously.

If there were syntactic and semantic consistencies between a chosen basic verb and its other related verbal forms, the first choice would be ideal. We would be able to set up a class of basic verbs and form the rest of the verbs sharing the same bases through transformation. The corollary of this solution would be that the Dictionary would contain only basic verbs. If for the base lihat we choose lihat *to see* as the basic verb, we will only have this verb in the Dictionary. The rest of the verbs, melihat *to see*, memperlihatkan *to show*, terlihat *can be seen*, and kelihatan *can be seen* would be formed through transformation. The same is true with verbs from other sets or subsets. If we postulate jatuh *to fall* as the basic verb, we will form the verbs menjatuhkan *to topple*, menjatuhkan *to fall on (X)*, berjatuhan *to fall* (plural subject), and kejatuhan *to be struck by a falling (X)* through transformation.

The problem with the above approach is that there is no syntactic and semantic consistency. In the P set, for instance, while the predominant meaning of memper- attached to an adjective base is *to make more (Adjective)*, thus producing forms such as memperbaiki *to make more baik=good*, we do not have *memperbetuli or *memperusak to mean *to make more betul=correct* and *to make more rusak=damaged*. As stated in 2.2.2, the acceptance of forms such as memperbanyak *to make more banyak=many; to multiply*, and the uncertain status of *mempersedikit *to make more sedikit=less; to reduce* create a problem for a transformational approach.

The second choice, which uses a WFR to form verbs from a basic verb, has an advantage over the first in that a WFR is not required to be applicable to all types of bases. One problem that remains to be solved pertains to the choice of the basic verb from which other verbs sharing the same base are to be formed. Given the free root jatuh, which of the following verbs are to be chosen as basic: jatuh *to fall*, menjatuhkan *to topple*, menjatuhkan *to fall on (X)*, kejatuhan *to be struck by a falling (X)*, or berjatuhan *to fall* (plural subject)?

Native speakers' intuition on what is basic can in fact be explained in terms of what Marchand calls 'semantic dependence': the word that is dependent on the content of the other pair member is necessarily the derivative (1964: 244). We can see here that the meaning of the verb jatuh above is inherent in the rest of the verbs with the same base.

The second criterion is economy. If we were to choose any of the affixed verbs as basic, we would have to set up two rules to form the rest of the verbs. One type of rule is to delete the affixes from the chosen basic verb in order

to form a non-affixed verb. Suppose we choose *menjatuhkan* as basic, we have to delete *meN-* and *-kan* to get *jatuh*. Another type of rule is to replace the affixes with other affixes. To form *berjatuhan*, for instance, we must replace *meN-* and *-kan* with *beR-* and *-an*.

Semantic dependence and economy, which, from another angle, are synonymous with simplicity, seem to justify our selecting the unaffixed form as our basic verb. The WFRs to form these verbs are applicable to those I have labelled as V_1 , V_{2a} , and V_{2b} . In the case of V_{2b} we may have to add the feature */+informal/* to the bases to accommodate the fact that these bases, with proper or no suffixes, can stand alone in informal style.

The proposed solution above, however, stumbles when applied to the bases under V_{2c} in which the unaffixed forms are bound roots. In order for the base *temu* *meeting*, for instance, to become a verb it must take an affix or affixes: *menemukan* *to find*, *menemui* *to meet with*, *mempertemukan* *to make (X) meet (Y)*, or *bertemu* *to meet (by chance)*. Since by definition no form having a status less than a word is to be listed in the Dictionary, the bases in V_{2c} cannot be listed. This leaves us with two choices: (1) to form a verb and use it as our basic verb to form the rest of the related verbs, and (2) to form all the verbs simultaneously.

Unlike the case with the free roots we have just discussed, the bound roots have a special problem. We have no syntactically and semantically independent unaffixed form to use as the base. Therefore, we are compelled to select an affixed form as our basic verb and form the rest afterward. Here we stumble on having to make a choice arbitrarily. Even if we are able to say that there is a semantic ground that ties all the *temu* verbs together, namely, all of these verbs have something to do with meeting or finding, there does not seem to be non-arbitrary ground to support our claim that *bertemu*, for instance, is basic.

Our second choice, the simultaneous formation, seems to offer a better solution since we do not have to make an arbitrary commitment as to which verbs are basic and which are derivative. The interrelatedness of the verbs in the Dictionary is still maintained by the same base which the verbs share.

In view of the cases presented in this section, especially those which involve the formation of verbs from bound roots such as *temu*, *juang*, *sua*, etc., we are compelled to refute Aronoff's contention that the base upon which a WFR operates must be a word. Cases from V_{2c} clearly indicate that Indonesian has roots which are less than words and yet must be used as bases to generate verbs.

If we agree now that the base upon which a WFR operates does not have to be a word, we must also discard Aronoff's requirement that the base bear syntactic subcategories, selectional features, lexically governed entailments, and presuppositions. Bases of this type do not even have syntactic categories and independent meanings, let alone syntactic subcategories, selectional features, etc. They acquire all of these features after a WFR has been applied.

3.3 The Filter

We have just concluded that for Indonesian, and very likely also other languages in Indonesia, there must be two types of verb formation: (1) that which selects a basic verb and forms the rest of the related verbs by means of a WFR, and (2) that which forms all the verbs sharing the same base simultaneously.

A general problem in the formation of a syntactic category is that we often have to observe certain constraints for our rules. In English, for instance, we can derive nouns from verbs by using the suffix *-tion* or *-al* to obtain derivation, observation, arrival, and refusal. Note, however, that we do not have **derival*, **observal*, **arrival*, and **refusation*, despite the possibility of recitation-recital, proposition-proposal, and approbation-approval.

In Indonesian we have similar cases. We can set up a rule that covers most, but not all, cases. Attempts have been made (Dardjowidjojo 1971, 1977, 1978b; Tampubolon 1977a (1983), 1977b), for instance, to use semantic features to form one type of verbs from another. Tampubolon recently (1977b) used inchoative and causative features to form process and action verbs from a state verb. Using the state verb *lebar* *to be wide* he forms *melebar* *to widen* inchoatively and *melebarkan* *to widen* (X) causatively.

Looking at the inchoative and causative processes in Indonesian as a whole, we are indeed able to say that these processes are very general, and yet we have cases in which the rule cannot be applied for no apparent reason. The state verbs *cantik* *beautiful*, *indah* *beautiful*, *kaya* *rich* (Tampubolon 1977b:29) and many others are questionable as process verbs ?**mencantik*, ?**mengindah*, and ?**mengaya* despite the logic and availability of the semantic and syntactic slots for them. The most we can say about the causative process is that they are very productive, and yet we still question the acceptability of forms such as ?**mencantikkan*, ?**mengindahkan*, and ?**mengayakan* to mean *to beautify*, *to beautify*, and *to enrich* respectively, at least in contemporary Indonesian.

The problem on productivity is not limited to the inchoative and causative processes. We discussed in 3.2 the unacceptability of **memperbetuli*, **memperusaki*, etc. Membership in the K set also shows a constraint. While the predominant meaning of *ke-an* is *adversative and unexpected*, thus giving us the verbs *keracunan* *to suffer from racun=potion; get poisoned*, *kecopetan* *to suffer from a copet=pickpocket; to get your pocket picked*, and *kedatangan* *to get visited by unexpectedly*, we at least question ?**kegranatan* *to suffer from a granat=grenade; get blown up by a grenade*, ?**kegarongan* *to suffer from a garong=robber; get robbed*, and ?**kepergian* *to be left by unexpectedly*. We expect sentences such as (17a) to be as acceptable as (17b), but apparently this is not the case, at least in contemporary Indonesian.

- (17a) ?*Dia kepergian kekasihnya.*
she left by sweetheart her
Her sweetheart left her.

- (17b) *Dia kematian kekasihnya.*
she died by sweetheart her
Her sweetheart died.

In the B set as discussed in 2.2.3 we also have peculiarities. We have forms such as *bersepeda* *to ride a sepeda=bike* and *bertelor* *to produce/lay a telor=egg* but question ?**berbis* and ?**berbuku* to mean *to ride a bis=bus* and *to produce a buku=book* respectively.

In some cases there may be an explanation for the non-occurrence of certain lexical items. In the case of the process verbs formed from their state counterparts we find that the inchoative process competes with a syntactic construction in which the inchoativity is manifested in the form of a lexical item, *jadi* *to become*, which is applicable to all and any state verbs.

We can, therefore, have *jadi lebar to become wide; to widen* as well as *jadi cantik to become beautiful, jadi indah to become beautiful, and jadi kaya to become rich*.

The causative verbs ?*mencantikkan, ?*mengindahkan, and ?*mengayakan are rivalled by a syntactic construction of the form *bikin (X) (BASE)*. This leads us to accept sentences such as (18) but at best question (19).

- (18) Tanam2an itu bikin kota Jakarta cantik.
 plants the make city beautiful
 The plants make Jakarta beautiful.

- (19) ?Tanam2an itu mencantikkan kota Jakarta.

In the P set the the meaning *to make more (BASE)* can also be expressed by *bikin (X) lebih (BASE)*. We have *memperbesar to enlarge, memperbanyak to multiply, bikin lebih besar to enlarge, bikin lebih banyak to multiply*, as well as *bikin lebih rusak to make (X) worse, bikin lebih sedikit to make (X) less, and bikin lebih kosong to make (X) more empty*.

The meanings *to possess* and *to make use of* in the B set are rivalled by *punya+BASE* and *pakai/naik+BASE*. Thus, while we do not have or question forms such as ?*bersapi, ?*berayam, ?*berbis, ?*berdelman, we have *punya sapi to have a cow, punya ayam to have a chicken, naik/pakai bis to ride a bus, and naik/pakai delman to ride a horse-drawn wagon*.

The K and T sets show an interesting phenomenon. We recall that the membership, thus also productivity, is very limited. Suppose we have a situation in which an adversative and unexpected event, such as the entering of a devil into a child's body, happens. We can say:

- (20) Dia kemasukan setan.
 he penetrated by devil
 He is possessed by a devil.

However, if this same child adversatively and unexpectedly eats a handful of kapok, we cannot say:

- (21) *Dia kemakanan kapuk
 he eat kapok

A possible explanation for this case is that there is a rival form, *termakan*, which is found in the language. Thus, (21) is rendered as (22)

- (22) (Segumpal) kapuk termakan dia.
 handful kapok eaten he
 A handful of kapok was eaten (adversatively) by him.

The presence of *kemakanan along with termakan is presumably considered redundant.

While the above explanation seems logical, the fact of the matter is that we do have evidence which is contradictory. As we can see from 2.2.7.2, the existence of a *ke-an* form does not necessarily preclude a *teR-* form. We have *ketinggalan-tertinggal, kebakaran-terbakar, kedengaran-terdengar* etc. with members of each pair having the same meaning.

Even if we had an explanation for all of the idiosyncrasies mentioned above, one problem still remains unsolved, namely, why within a certain set only certain roots are permitted to become words, while other roots with the same semantic features are not? Why do we have *melebar, bersepeda, memperbaiki*,

kedatangan, but not ?*mencantik, ?*berdelman, ?*memperbetuli, and ?*kepergian as their parallel forms? Related to this group of unacceptable forms are those which are rejected simply because the affixational choice is unacceptable. I am referring to forms such as *mengamali, *merestukan, *mengerja, *terselesai, etc. By a sheer intuition the bases amal, restu, kerja, and selesai belong, in addition to any other subsets, to the subsets M₂, M₃, B₁, and T₂ respectively. Therefore, amal must take meN-kan, restu meN-i, kerja beR, and selesai teR-kan.

A distinction must be made here between these two groups. The first group, which includes not only forms such as ?*mencantik but also forms such as ?*menggugatkan, ?*berayam, etc., constitutes an accidental gap within the verbal system. As a corollary, it would not be too surprising to see these forms used in the future or used now by people from certain parts of Indonesia or for certain purposes. For cross reference purposes, I will call this group Reject One, R₁. The second group, where *mengamali, *merestukan, etc. are found, is more systematic in the sense that their affixational affiliation is some kind of 'pre-determined'. This group will be labelled R₂.

Since a WFR generates all the potential words in the language, it generates not only those verbs in V₁ and in the sets M, P, B, T, and K, but also those in R₁ and R₂. The potential and the actual words must be separated and this is done by a mechanism we have called Filter. For nominal derivation, I suggested that we set up some kind of 'coarse' and 'fine' screens so that we will be able to prevent forms such as *perhargaan from passing the Filter and allow not only forms such as pertandingan *a (sport) match*, but also ?*penandingan *act of putting one team against another*. I believe that we can do the same for verbs. Those under M, P, B, T, and K plus those in V₁ will be generated and stored in the Dictionary. Those under R₁ should also be generated, but perhaps we should add a feature such as /-common/ to distinguish them from the verbs now in use. Those under R₂ should be blocked.

Together with the WFRs the Filter must also attach the semantic idiosyncrasies to the verbs which will be stored in the Dictionary. Verbs such as memohon *to request*, kehilangan *to lose*, bertemu *to meet*, menemui *to meet with*, and mengawini *to marry*, for instance, must be idiosyncratically specified. Memohon can only be from a person lower in status than the one to whom the request is directed. Kehilangan must be marked in such a way that the thing lost must belong to the person losing it. Bertemu and menemui must be so marked that the former bears the semantic idiosyncrasy /-volition/ while the latter /+volition/. The verb mengawini is somewhat complicated. Under normal circumstances this verb must be specified in such a way that the patient noun bear the feature /+female/. This is to allow sentences such as (23) and prevent, or perhaps discourage, (24),

- (23) Yasin akan mengawini Siti.
 Yasin will marry Siti
 Yasin will marry Siti.

- (24) Siti akan mengawini Yasin.
 Siti will marry Yasin.

where Yasin is a male and Siti a female. Admittedly, if Siti is such a well-known figure as, say, Elizabeth Taylor, (24) is probably all right.

Phonological idiosyncrasies must be observed. The verbs menterjemahkan *to translate* and mencuci *to wash* for instance, often retain the t and the c after the prefix meN-, deviating from the normal phonological rule of

Indonesian. The verb mempunyai *to possess*, despite its frequency of occurrence, retains the *p* after *meN-* and drops the suffix *-i* in informal style. The dropping of the suffix is not seen anywhere else in the language.

Halle presents only three types of idiosyncrasy as represented above. It seems necessary to add a fourth category to handle syntactic idiosyncrasies. In Indonesian, as in many other languages, there are verbs which occur only in certain types of syntactic constructions. As stated before in 2.2.1 the verb *merupakan* is not transitive. Consequently, it cannot be passivised. We can indicate this fact with a feature such as */-passive/*.

On the other hand, we also have verbs which occur naturally in a passive construction. We recall the verbs *diperbuat* and *diperumpamakan* from 2.2.2. The verbs *dibeginikan to be done this way*, *dibegitukan to be done that way*, *dipenjarakan to be imprisoned*, *dipidatokan to be delivered as a speech*, and *dinakali to be teased* are more natural than their active counterparts *?membeginikan*, *?membegitukan*, *?memenjarakan*, *?memidatokan*, and *?menakali*. Verbs of this type should be marked */+passive/*.

Let us now return to the occurrence and non-occurrence of certain lexical items to which we alluded before. Halle briefly touches on this matter and states that it is the content of the Dictionary which more or less determines what words can be generated (1973:10). The fact that English has forms such as *arrival* and *confusion* precludes the possibility of the occurrence of **arrivation* and **confusal*. As Halle himself admitted, this cannot be the whole explanation since we have cases such as *recital-recitation*, *transmittal-transmission*, etc. Another problem with Halle's explanation is that in order for us to say that *X* precludes *Y* we must assume that *X* must have existed before *Y*. This is not only difficult to prove, especially in less documented languages, but also runs into contradiction. In the case of Indonesian nominals, as stated in my 1978c article, if we say that forms such as **perperiksaan*, **perderitaan*, and **perselesaian* do not occur simply because we have *pemeriksaan investigation*, *penderitaan suffering*, and *penyelesaian solution*, we must assume that the latter have existed in the language before the former. Even if this statement can be proven, we have no way, except by reversing the statement, of explaining why *percobaan an attempt*, *permintaan a request*, and *perlawanan opposition* occur instead of **pencobaan*, **pemintaan*, and **pelawanan* especially when we know that all of them are derived from the *meN-* verbs.

We have the same problem with our verbal formation. We cannot say that **mengamali*, **memenuhi*, and **terdatangi* do not occur because we have *mengamalkan to put into practice*, *memenuhi to fulfill*, and *kedatangan to get visited by* without running into the same difficulty. We have, for instance, just the opposite cases: the bases *restu*, *aju*, and *tutup* must take *meN-i*, *meN-kan*, and *teR-*, but not *meN-kan*, *meN-i*, and *ke-an* respectively: *merestui to bless*, *mengajukan to put forward*, and *tertutup closed*, but not **merestukan*, **mengajui*, and **ketutupan*.

Aronoff's mechanism, called blocking, which says that the non-occurrence of one form is due to the simple existence of another (1976:43) encounters the same problem. Occasionally we do have an explanation for some of our cases, as we stated before, but the explanation fails to encompass all cases. We still do not know, for instance, why only certain bases can become verbs while others with the same features cannot.

Until otherwise proven, I believe that we can only describe, but not explain, this phenomenon in language.

3.4 The Dictionary

The criteria which Chomsky uses to determine which nouns are to be listed in the lexicon are: (1) the regularity of form, (2) the regularity of meaning, and (3) the absence of the internal structure of a noun phrase (1972:16). I believe that two, (1) and (2), of the above criteria can be used also for verbs.

Since none of the verbs in Indonesian meet the above requirements, we must list all of the verbs in the Dictionary. Our Dictionary will, therefore, contain (a) singleton forms such as *tiba*, (b) unaffixed forms such as *datang*, and (c) affixed forms such as *mendatang*, *mendatangkan*, etc., and (d) uncommon forms such as **menggugatkan*. Forms under (d) may have to be marked /-common/ to indicate their uncertain status.

4. CONCLUSION

In view of the evidence we have from our verbal formation, I believe that while Halle's and Aronoff's theories are very promising, they need to be revised. I propose the following changes: (1) Halle's List of Morphemes should be limited only to affixes and roots which have a signifiant and signifié relationship. This excludes forms such as *va-* and *bro-* from the list; (2) the roots in the LM must be split into free and bound roots to accommodate forms such as *datang* as well as *sua*; in the case of a bound root it is not possible to assign a syntactic category, let alone subcategories, selectional features, presuppositions, etc.; (3) the base upon which a WFR applies does not have to be a word; otherwise, there is no way we can generate verbs such as *bersua*, *memperjuangkan*, etc. which are formed from the bound roots *sua* and *juang*, respectively; (4) the Filter must be so constructed that it will let go forms here labelled as *R₁: *menggugatkan*, **mencantik*, etc.; and (5) it may be necessary to set up a fourth idiosyncrasy for peculiarities in syntax.

NOTES

1. This paper is the first preliminary report of an ongoing project on "The lexicon of Indonesian" funded by the University of Hawaii Office of Research Administration. The data are taken primarily from Poerwadarminta's *Kamus umum Bahasa Indonesia* with entries added or deleted as deemed necessary. We do not always agree with Poerwadarminta's assignment of affixes.
2. The terms 'to form' and 'formation', rather than 'derive' and 'derivation', are used here to generate one verb from another.
3. I believe that the grouping of *baca* under *V_{2a}* is more defensible than that taken by Verhaar (1978:13) who considers this word as being a bound form.
- ?? 4. The so-called infixes such as *-el-*, *-em-*, and *-er-* are so unproductive and well blended with the base as to deserve no morphological treatment in this paper.
5. Read "M is the set of all x's such that x is formed from..." The signs "+" and "±" mean obligatory and optional respectively.

6. Since this paper is preliminary in nature and the data have not been subjected to final scrutiny, the figures throughout this paper should not be considered absolute. The percentage figures, however, are not expected to change very much.
7. Verbs such as *menyenangkan to please*, *menguntungkan to be profitable* may appear without an object. This is true only if the 'hidden' object is the speaker himself or people in general. Otherwise, the object must be explicitly given.
8. The boundary between a rejected form and a questionable one is sometimes hard to draw. See the R₁ and R₂ distinction in 3.3.
9. I am not sure what to do with forms such as *berdekatan to be near to each other* and *berjauhan to be far from each other*. They normally occur as some kind of complements to the predicate verb: *Mereka tinggal berdekatan they live near each other* where *tinggal* functions as the sentence verb.
10. The same classification was erroneously reported in Dardjowidjojo 1977.
11. Excluded from this category are forms such as *terdahulu first* and *kedahuluan to beat to the punch* where the former is not a verb.

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