Complex Signs and Pseudo-composites

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Abstract

The purpose of the present paper is to try to find an answer to the question: how are complex signs analyzed in English morphology in the context of Axiomatic Functionalist Theory? The paper provides the tools for analyzing items like **hatless**, **penniless**, **lioness**, **countess**, hooliganism, and Marxism which are traditionally recognized as morphologically complex, each consisting of two morphemes: a free morpheme and a bound morpheme. With an eye to the notions sign and complex sign as envisaged in Axiomatic Functionalist Linguistics three of these items namely, **penniless**, **countess** and **Marxism** turn out to be unanalyzable, i.e. pseudo-composites .

Complex Signs and Pseudo-composites

Introductory

The purpose of the present paper is to try to find an answer to the question: how are complex signs analyzed in English morphology in the context of Axiomatic Functionalist Theory?[1] To understand the nature of the attempted analysis, it would be most appropriate to begin by giving a brief description of the notions **sign** and **complex sign** as envisaged in Axiomatic Functionalist Linguistics. I shall then attempt to provide the tools for analyzing items like **hatless, penniless, lioness, countess, hooliganism** and **Marxism** which are traditionally recognized as morphologically complex, each consisting of two morphemes: a free morpheme and a bound morpheme (viz. evidence of spelling). With an eye to the notions sign and complex sign as envisaged in Axiomatic Functionalist Linguistics three of these items namely, **penniless, countess** and **Marxism** turn out to be unanalyzable, i.e. pseudo-composite.

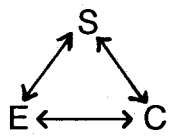
The Notion Sign

The sign in Axiomatic Functionalist Linguistics[2] is envisaged as the conjunction of a particular formal aspect, Expression (E), and a particular meaning-bearing aspect Content (C). Expression and Content are inseparably united. That is to say, E and C mutually imply each other. This means that a given sign is the bi-unity of Expression (E) and Content (C), where a given E implies a given C and vice-versa. The relationship between E and C may be represented as follows:

E ⟷ C

Expression (E): A Particular Formal Aspect
Content (C): A Particular Meaning-bearing Aspect

By virtue of this mutual implication we may say that Expression and Content are equivalent. Furthermore, by virtue of the mutual implication between Expression and Sign (S), i.e. E ⟷ S, on the one hand and Content and Sign, i.e. C ⟷ S, on the other, the notions Expression, Content and Sign may be said to be equivalent:



That is to say, **Expression**, **Content**, and **Sign** represent three different ways of looking at the same thing. Using the term **Expression** implies looking at the sign from a formal angle, and using the term **Content** implies looking at the sign from the side of meaning. For the sake of convenience, however, I shall proceed by talking about the sign in terms of its **Expression**.

Expression is defined as a particular self-contained class of one or more phonological forms {p}, each member of p in its capacity of standing in a relation with a particular distinctive function s.[3] In notation, **Expression** is symbolized {p} Rs, where

p	=	a phonological form
{p}	=	a class of phonological forms
R	=	in its capacity of having
s	=	a particular distinctive function in grammar[4]

This implies that each p of the class {p} in {p} Rs stands in relation with one and the same grammatical distinctive function "S" . Accordingly, {p} Rs = *U* p1Rs *U* p2Rs... *U* pnRs. Example: the phonological form of the "Plural" sign in English equals / iz / *U* / Z / *U* / S / *U* / ø / *U* /e ~ a / *U* / Ri ~ u /, etc. (*U*: logical symbol signifying the union of terms). These phonological features represent the phonological manifestations of the allomorphs of the "Plural" sign in such words as horse, eye, bank, sheep, man, and foot, respectively.

phonological manifestations of the allomorphs of the "Plural" sign (in English)	in such words as:
"/ iz /"	"horse"
"/ z /"	"eye"
"/ S /"	"bank"
"/ ø /"	"sheep"
"/ e ~ a /"	"man"
"/ Ri ~ u/"	"foot"
etc.	etc.

Expression, then, may be viewed as a class of allomorphs and its relation to the notion phonological form is via those allomorphs;[5] hence the distinction between Expression and morph (or allomorph), on the one hand, and morph and phonological form, on the other.[6]

By virtue of the mutual implication between Expression and Sign (as pointed out earlier) we may say that the sign is a class or set of allomorphs; so is Content. Each allomorph has a phonological form which is a term of a member of the expression of the sign. Allomorphs, as members of a sign (a sign may be a class of one allomorph, i.e. it may have a unique morph)[7], are formally different, but they do not commute with one another because they have the same

distinctive function, that of the sign of which they are members.

Generally speaking, allomorphs are, with regards to distribution, in combinatory (contextual) variance, i.e. in mutually exclusive distribution. Thus, for instance, the elements "/ bRi /", "/ am /", "/ iz /", and "/ ar /", in English, are combinatory (contextual) variants of the sign "to be"; the phonological representations[8] refer to the forms of the allomorphs of the sign "to be" in constructions such as:

Mary will be thirty this month.
I am in the garden.
He is in class now.
The boys are in the playground.

forms of the allomorphs of the sign "to be"	in constructions such as
"/ bRi /"	Mary will be thirty this month.
"/am/"	I am in the garden.
"/ iz /"	He is in class now.
"/ ar /"	The boys are in the playground.

In the case of free variance, we do not speak of allomorphs, but of different signs – synonyms if these signs turn out to be denotationally equivalent[9]. Thus, for instance, the elements "/ai ~ r/" and "/Ri ~ r/" (corresponding to the written form "either", in English) may be conceived of, in distributional terms, as free variants of one another.

Attention must be drawn to the fact that contextual variance between allomorphs of the same sign is not always, and is not required to be, perfect. Thus, for instance, in certain grammatical contexts there may be occasional free variance between some of the alternative

allomorphs of a particular sign whose allomorphs are, otherwise, in combinatory variance; in which case these allomorphs may be said to be in mixed variance, i.e. in partially overlapping distribution.[10] Taking for instance the elements

"/ ∂bl /" and "/ ∂bl ~ eit /" to be combinatory (contextual) variants of the sign conventionally represented as "–able" in such contexts as acceptable and negotiable:

"to accept" R "-able" = "acceptable" ("/ ∂ bl /" and
"to negotiate" R "-able" = "negotiable" ("/∂ bl ~ eit)

we find that in, for instance, the context "to navigate" the two allomorphs in question are in occasional free variance. In other words, the allomorphs
"/∂bl /" and "/∂bl ~ eit /" in context with "to navigate" may be said to be in mixed variance, i.e. in partially overlapping distribution:

"to navigate" R "-able = "navigatable"
and
"to navigate" R "-able" = "navigable"

Complex Sign

According to Axiomatic Functionalist Theory, a self-contained potential constituent in grammar qualifies as a complex sign if it contains at least two constituent signs. The test by which we determine whether a particular potential grammatical constituent is a complex sign or a simple sign is commutation (It must be noted that a simple sign is a sign not capable of further functional analysis. That is to say, it is not analyzable into smaller constituent signs). In order to avoid pseudo-analysis, it is essential to ensure that commutation is conducted between constituent signs only, in which case analyses with residual elements are rejected. This follows actually from the idea that complex sign **y R z** = complex (consisting) of signs y and z (in a constructional relation **R**).

Following the implications of the statements above, we can say that within a complex sign **X** it is possible to identify a constituent sign **y** if and only if **y** recurs in at least one context other than **X**, with the same form or a combinatory variant of that form, and the same denotation. This holds, of course, only provided that this procedure can be repeated for each of the other constituent(s) in **X**, due to the necessary condition stipulated by Axiomatic Functionalist Theory that unless each of the constituents can be identified as a sign, none of the constituents can be identified as a sign.[11]

It must also be remembered that a constituent **y**, in order to qualify as a constituent sign, appears as an element with a certain form and a certain denotation in any complex which it is said to be a constituent. This denotation is a constant function of that sign, a fact which follows from the very definition of the notion sign (in Axiomatic Functionalist Theory). Consequently, **y** can only be identified as a sign within a complex, if the denotation of the complex is in some way a function of the denotation of **y**, plus, of course, of the other constituent(s) and of the relation(s) between them.

Axiomatic Functionalist Theory also maintains that in any complex sign the semantic role of the relation(s) between immediate constituent signs can be partially, but not exhaustively, accounted for by the rough paraphrase the denotation of the complex sign bears some relation to the denotation of each of the immediate constituents. Furthermore, within a complex sign, the denotation of each of the immediate constituents bears some relation, semantically speaking, to that of the other immediate constituent(s), and, of course, vice versa. Thus for instance, the tentative complex sign **X** whose equally tentative constituents y and z stand in some grammatical relation R to one another can be broken down with regard to semantic role as follows:

X

y	R	z
denotation of y	which bears some relation to	denotation of z
denotation of z	which bears some relation to	denotation of y

The identification of **X** as a complex sign hinges on both **y** and **z** being identifiable as fully-fledged signs. We can validly identify **y** and **z** as immediate constituents in **X** if and only if each of **y** and **z** recurs with the same form or a combinatory variant of that form, and the same semantic role in at least two complexes, namely **X 1** and **X 2**, which are equivalent to **X** as to the relation (which means also the semantic role of that relation) between their immediate constituents. In other words, **X** can be demonstrated to be a complex sign if we are able to commute the tentative constituents **y** and **z**, one at a time, each with another constituent or with zero. It should be noted that while applying the commutation test, we must make sure that the context, together with the denotation of the tentative constituent(s) and the semantic function of the relation(s), are kept constant. It must be noted that, if it is found that one of the tentative constituents of **X**, i.e. either y or z, is identified as a constituent sign but the other is not, **X** will have to be treated as unanalyzable (i.e. pseudo-composite), due to the necessary condition that unless each of the constituents is identified as a sign, none of the constituents can be identified as a sign.

In what follows, I propose to analyze the self-contained grammatical constituents:

"hatless" "penniless"
"lioness" "countess"
"hooliganism" "Marxism"

which are traditionally recognized as complex signs (viz. evidence of spelling). The attempted analysis will draw on the notions sign and complex sign as outlined above.

Discussion

Taking, for instance, each of the self-contained grammatical constituents hatless, lioness, and hooliganism to be a complex sign (each containing two simple signs):

"hat" + "-less"
"lion" + "-ness"
"hooligan" + "-ism

we find that each of the tentative complexes in question can be broken down with regard to semantic role as follows:

hatless X

"hat"	R	"-less"
denotation of "hat" (covering for the head with a brim, worn out of doors)	which bears some relation to	denotation of "-less" (lacking x)
denotation of "-less" (lacking x)	which bears some relation to	denotation of "hat" (covering for the head with a brim, worn outdoors)

lioness

"lion"	R	" –ess"
denotation of "lion" (membership in a specific sub-class of the class of carnivorous mammals)	which bears some relation to	denotation of "-ess" (female x)
denotation of "-ess" (female x)	which bears some relation to	denotation of "lion" (membership in a specific sub-class of the class of carnivorous mammals)

hooliganism

"hooligan"	R	"-ess"
denotation of "hooligan" (rough lawless person)	which bears some relation to	denotation of "-ism" (behavior characteristic of x)
denotation of "-ism" (behavior characteristic of x)	which bears some relation to	denotation of "hooligan" (rough lawless person)

The identification of two component signs in each of the tentative complexes hatless, lioness, and hooliganism seems to be tenable, as can be demonstrated by the commutations conducted in the equivalent contexts.

hatless

"hat"	R	"-less"
denotation of "hat" (covering for the head with a brim, worn out of doors)	which bears some relation to	denotation of "-less" (lacking x)
denotation of "hood" (bag-like covering for the head and neck often fastened to a cloak)	which bears some relation to	denotation of "-less" (lacking x)
denotation of "hat" (covering for the head with a brim, worn out of doors)	which bears some relation to	denotation of "plural" (more than one)

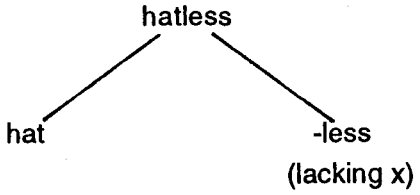
lloness

"lion"	R	"-ess"
denotation of "lion" (membership in a specific sub-class of the class of carnivorous mammals)	which bears some relation to	denotation of "-ess" (female x)
denotation of "host" (one who receives or entertains another as guest)	which bears some relation to	denotation of "-ess" (female x)
denotation of "lion" (membership in a specific sub-class of the class of carnivorous mammals)	which bears some relation to	denotation of "plural" (more than one)

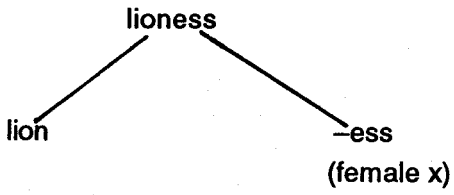
hooligan

"hooligan"	R	"-ism"
denotation of "hooligan" (disorderly young person who often behaves in a violent and destructive way)	which bears some relation to	denotation of "-ism" (behavior characteristic of x)
denotation of "despot" (absolute or tyrannical ruler)	which bears some relation to	denotation of "-ism" (behavior characteristic of x)
denotation of "hooligan" (disorderly young person who often behaves in a violent and destructive way)	which bears some relation to	denotation of "plural" (more than one)

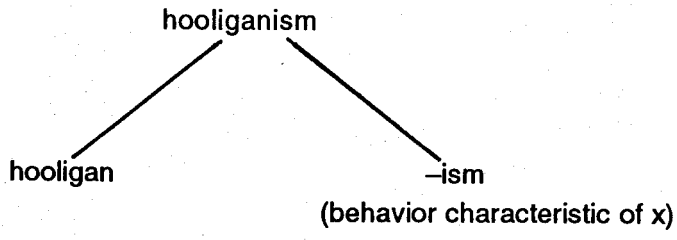
The complex signs hatless, lioness and hooliganism can be represented in tree diagrams as follows:



a) hatless consists of the simple sign hat plus the simple sign conventionally represented as -less:



b) lioness consists of the simple sign lion plus the simple sign conventionally represented as -ess:



c) hooliganism consists of the simple sign hooligan plus the simple sign conventionally represented as –ism.

It seems possible on the face of it to treat the constructions penniless, countess and Marxism as complex signs, each consisting of two signs:

penny + less
count + ess
Marx + ism

on the assumption that the simple signs I have discussed earlier, namely "-less" (as in hatless) "-ess" (as in lioness) and "-ism" (as in hooliganism) recur with the same form and the same denotations in the tentative complexes penniless, countess and Marxism, respectively. Let me first examine the item penniless.

It seems possible on the face of it to treat the construction penniless as a complex of two signs, namely penny and less. This, however, can only be done consistently if all the tentative constituents (in this case both) can be identified as constituent signs. To begin with we may note that an element with the same form as the tentative constituent penny can be identified in contexts other than penniless such as:

There is a penny on the table.

However, the hypothesis that in the context There is a penny on the table the element with the same form as the tentative constituent penny has also the same (or at least similar) denotation as that of the tentative constituent within penniless, is easily refuted. That is to say, the attempted analysis of penniless into two constituent signs breaks down on the identification of the tentative constituent *penny in that complex with any other element having the form /peni/ (or a contextual variant element), playing a semantic role equivalent to that of *penny. The element *penny in penniless is not to be identified with the word penny (denoting that bronze coin which has a value equal to one hundredth of a British pound) for a person lacking in financial means can be called penniless regardless of the currency used in the country of which that person is a national. Thus, for instance, a Qatari lacking financial means is not *Riyaless, but penniless, i.e. no reference to the currency value penny is intended.

The fact that *penny in penniless cannot be identified as a constituent sign already implies (as pointed out earlier) that the other tentative constituent, namely *less, cannot be identified as a sign either. Under these circumstances, we are virtually forced to treat penniless as unanalyzable. That is to say, penniless is merely a pseudo-composite. Analogous considerations hold for each of the following constructions: spotless, fruitless, speechless, etc

as in say,

i) spotless kitchen/reputation
ii) fruitless efforts
iii) The boy was speechless with surprise etc.

But we may note that for each of the pseudo-composites above there is a homonym that is complex (containing the simple sign "-less") but rare in use. – virtually ousted by the pseudo-composite. A person whose face has been covered with spots for the past two weeks, for instance, but wakes up one morning to find that all the spots have disappeared may be said to have a spotless face. That is to say, reference to spot is intended in using the complex homonym spotless. Similarly, a person with one pound note on him and needs a change for a penny-operated slot machine may be called penniless. That is to say, reference to the currency value penny is intended in using the complex homonym penniless.

To the superficial glance, it seems possible to assume that the simple sign –ess in the context lion recurs with the same form and the same denotation in the tentative complex countess. That is to say,

-ess1 (in lioness) and
-ess2 (in countess)

may be considered as one and the same sign in that both have a phonological form /es/ and are denotationally equivalent in their respective contexts (both approximating to the rough paraphrase "female x"). Our assumption that

"/ es /"1 in (lioness) and
"/ es /"2 in (countess)

are denotationally equivalent implies that they must play the same semantic role in their respective contexts. This assumption is refuted by the fact that "/ es /"2 in (countess) does not play the same denotational role as "/ es /"1 does in (lioness).

Now in the complex sign lioness the sign –ess1 is in construction with lion whose denotation, by convention, is not restricted to males but it is rather indeterminate as to sex. Consequently, the opposition between lion and lioness is merely an opposition between Zero and Female:

lion	R	ø	= lion
lion	R	Female	= lioness

This is consistent with the fact that the relation holding between the sign lion and the sign lioness is a hyperonym-hyponym relation. That is to say, lioness is a hyponym of lion and the latter is a hyperonym of the former (lioness). This is tantamount to saying that the denotation class of the sign lioness is properly included in the denotation class of the sign lion and not vice-versa.

In the case of the tentative complex countess the equally tentative sign "/ es /"2 occurs in the context of the sign count whose denotation, by convention, is restricted to males only. Consequently, if we were to proceed with the assumption that "/es/"2 in (countess) and "/es/"1 in (lioness) play the same semantic role in their respective contexts, we would face the absurdity of having a complex sign (countess) which would read something like "a female-male count". This points to the fact that the denotational relation of lion to lioness is not the same denotational relation of count to countess. The latter exhibits a relation of exclusive antonymy. That is to say, the denotational classes of count and countess are disjunct. The relational difference can only be explained on the understanding that "/es/"1 in lioness and "/es/"2 in countess do not have the same semantic role, which means that they are not one and the same sign. This, however, does not mean that countess is unanalyzable. That is to say,"/es/"2 might still be a sign if it can be identified as having some other constant denotation.

Now if we assume that the element –ess in countess is a sign with a denotation approximating to the rough paraphrase female holding a

title, the tentative complex countess, with regard to semantic role, can be represented as follows:

countess

"count"	R	"-ess"
denotation of "count" (membership in a specific subset of the class of titles)	which bears some relation to	denotation of "-ess" (female holding a certain title)
denotation of "-ess" (female holding a title)	which bears some relation to	denotation of "count" (membership in a specific subset of the class of titles)

On conducting the following commutation test:

(1) count "-ess"
(2) count ø

we find that the identification of "-ess" as a constituent sign in countess breaks down in that count(1) and count(2) are not equivalent contexts for the recurrence of the tentative constituent sign "-ess". By our assumption count(1) has the denotation with the rough paraphrase "membership in a specific subset of the class of titles" while count(2), judging from its deployment in larger complexes, is restricted to denoting a male holder of a specific title.

An alternative would be to proceed by assuming that
a) count (title) R "Male" ø = count (male holder of a title), and
b) count (title) R "Female"-ess = countess (female holding a title)

This assumption is refuted because the sign "Male" whose existence we have to assume does not have a form other than zero (?). In Functionalist Linguistics the identification of signs that only have zero form is not permitted. Our final attempt at the identification of countess as a complex sign will be to hypothesize that the element –ess is a sign having the denotation equatable to wife of. This assumption is automatically refuted in that it is materially inadequate. That is to say, it is not consistent with the facts, because the denotation of countess, by convention, is not restricted to denoting wife of but it is also used to denote a female holding a title in her own right.

The fact that we are unable to identify the element –ess in countess as a constituent sign already implies that the other tentative constituent – in this case count – cannot be identified as a sign either. This points to the conclusion that the construction countess is unanalyzable, i.e. it is a pseudo-composite.

Analogous solutions hold for any of the following:

Baroness	Peeress	Duchess
Vicaress	Mayoress	etc.

Let's now turn to our last item for analysis.

Attempted analysis of a construction such as Marxism into two component signs: Marx and -ism (the latter roughly translatable as theory/doctrine originating from x) proves to be materially inadequate due to the semantic specialization in the meaning of this construction as a whole. Judging from the deployment of Marxism in larger complexes, we find that this item denotes, by convention, a particular economic and political theory or system which holds that actions and human institutions are economically determined, that the class struggle is the basic agency of historical change and that capitalism will be superceded by communism. We may also note that the theory as such originated from Marx and Engels and therefore the element Marx in Marxism may not be interpreted as founder of

Marxism in that this element has just lent itself to the theory as it stands today. It is worthwhile noting that Marx and -ism in Marxism are involved in a dynamic rather than a synchronic process of word-formation, a phenomenon which may be of interest to sociolinguistics, but not to a synchronic description of complex signs in English. Under the circumstances, it seems most appropriate to treat Marxism as a fossil. Analogous arguments, involving fossilization, support the need to treat Calvinism, Buddhism, etc as pseudo-composites. The fact remains that quite a number of – isms in English have a remote connection with the elements they happen to be in construction with, and they do not appear to have a constant denotation.

Notes

1. cf. J.W.F. Mulder and S.G.J. Hervey, **Theory of the Linguistic Sign**, The Hague: Mouton (1972), S.G.J. Hervey, Axiomatic Semantics: **A Theory of Linguistic Semantics**, Edinburgh: Scottish Academic Press (1979).
2. S.G.J. Hervey and J.W.F. Mulder, **Pseudo-composites and Pseudo-words: Sufficient and Necessary Criteria for Morphological Analysis**, in Mulder and Hervey, **The Strategy of Linguistics: Papers on the Theory and Methodology of Axiomatic Functionalism**, Edinburgh: Scottish Academic Press (1980), and S.G.J. Hervey, **Grammar and Semantics** in **Axiomatic Functionalist Linguistics**, Lingua, 36, pp. 47 – 67 (reprinted in Mulder and Hervey, **The Strategy of Linguistics: Papers on the Theory and Methodology of Axiomatic Functionalism**, Edinburgh: Scottish Academic Press (1980).
3. cf. J.W.F. Mulder and S.G.J. Hervey, **Theory of the Linguistic Sign**, The Hague: Mouton (1972). This section which is presented in synopsis here represents a vastly compressed explanation of what is stated in the work above.
4. cf. Def.24a in J.W.F. Mulder, **Postulates for Axiomatic Functionalism**, in Mulder and Hervey, **The Strategy of Linguistics: Papers on the Theory and Methodology of Axiomatic Functionalism**, Edinburgh: Scottish Academic Press (1980).
5. **Distinctive function for the set of commutations in which a semiotic entity may partake** (cf. Def. 7a3, in **Postulates for Axiomatic Functionalism**). Note that distinctive function, with a view to the ontological distinction between phonology and grammar has two different manifestations: distinctive function in phonology and distinctive function in grammar, the latter is symbolized by "s" and the former by "d".
6. **Allomorph for a particular phonological form p, member of a particular class of phonological forms {p}, in its capacity of standing in a relation with a particular distinctive function "s"** (cf. Def. 24a1, **Postulates for Axiomatic Functionalism** in

Mulder and Hervey, **The Strategy of Linguistics: Papers on the Theory and Methodology of Axiomatic Functionalism**, Edinburgh: Scottish Academic Press (1980).

7. An allomorph, let alone a class of allomorphs, cannot be analyzed into phonemes. An allomorph of the "Plural" sign "/iz/", for instance, should not be analyzed into /i/R "Plural" and /z/R "Plural". If such an analysis were made we would be assigning to phonemes a grammatical distinctive function as well as a phonological one, and this is logically absurd. On the other hand, an analysis into /i/ and /z/ implies that, first, the phonological form has been "extracted" from the morph, by abstracting away from the grammatical distinctive function "s" of the latter.
8. For unique morph, see S.G.J. Hervey, **Axiomatic Semantics: A Theory of Linguistic Semantics**, Edinburgh: Scottish Academic Press (1979)
9. For the phonemic notation used throughout the present paper, the reader is referred to J.W.F. Mulder and H.A. Hurren, The **English Vowel Phonemes from a Functional Point of View and a Statement of Their Distribution, La Linguistique**, 4, (1968), pp. 43 – 60.
10. In Axiomatic Functionalist Theory, synonyms are conceived of as different signs, that, by definition, correspond to identical denotation classes (cf. S.G.J. Hervey Axiomatic Semantics: A **Theory of Linguistic Semantics**, Edinburgh: Scottish Academic Press (1979).
11. The idea of allomorphs being sometimes in partly free, but partly contextual variance is noted by Hervey in Axiomatic **Semantics: A Theory of Linguistic Semantics**, Edinburgh: Scottish Academic Press (1979).
12. Hervey and Mulder, **Pseudo-composites and Pseudo-words: Sufficient and Necessary Criteria for Morphological Analysis**, in **The Strategy of Linguistics: Papers on the Theory and Methodology of Axiomatic Functionalism**, Edinburgh: Scottish Academic Press (1980).

13. cf. M.S. Munla, **The Female-moneme in English: Semantic Considerations in Testing Moneme-Identity, Journal of the Faculty of Humanities and Social Sciences,** Vol.21, University of Qatar (1998).
14. For more details on exclusive antonomy, the reader is referred to S.G.J. Hervey, **Axiomatic Semantics: A Theory of Linguistic Semantics, Edinburgh:** Scottish Academic Press (1979) and **Postulates for Axiomatic Semantics,** in Mulder and Hervey, **The Strategy of Linguistics: Papers on the Theory and Methodology of Axiomatic Functionalism,** Edinburgh: Scottish Academic Press (1980).

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