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The Function of Word-Formation and the Inflection-Derivation Distinction¹

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Lachlan has always been interested in the function of language, or the function of constructions. In the context of a Festschrift for Lachlan, we might ask what the function of word-formation is. The answer is easily available to us in the literature (since this is far from the first time the question has been asked), although the terminology may be rather variable: word-formation has two functions, firstly a function of lexical enrichment, whereby new words are coined to denote new, or newly salient, concepts, and secondly a transpositional function, whereby lexemes (which we assume to have a fixed word-class) are permitted to appear in a new word class so that the same meaning can be transferred to a new function in a sentence.

Having answered that question, at least for the moment, we can go back and ask a different question, though one which has worried linguists for some time: what is the difference between inflectional morphology and derivational morphology? Again this is not the first time the question has been asked, and answers (plural) are easily available to us in the literature. For one thoroughly exhaustive treatment, see Plank (1994). Plank allows us to deduce that the categories of inflection and derivation are prototypical categories, from which the categories of individual languages such as English and Dutch may differ quite considerably. Such a view is also held by Dressler (1989) and by Bauer

¹ I should like to thank Geert Booij for comments on an earlier version of this paper. He is not to blame for the content, of course.

(1988). Other authorities give us rather more clear-cut answers. One such answer, which has been extremely influential, is that given by Anderson (1982: 587): 'inflectional morphology is what is relevant to the syntax'.

Now we are in the position of having answers to two questions which we can put side by side. One function of word-formation is to allow words (in some vague interpretation of the term) to appear in different word classes in different sentence functions. Inflectional morphology is that morphology which is relevant to syntax. The implication seems clear: word-formation is (or can be, or is at least some of the time) a matter of inflectional morphology. The only difficulty with this conclusion is that it flies in the face of all that we have been taught: word-formation deals with derivational morphology, compounding and some rather less central processes, but not with inflection; anything which changes word-class is derivation.

Fortunately, we are saved from heresy at this point by the fact that two scholars have already gone before to show the path. Booij (1996) argues that inflection is not monolithic, but that it divides into two distinct classes. The first of these classes is contextual inflection, inflection which is determined by concord and government within the sentence. Thus contextual inflection includes adjectival agreement with nouns in Romance languages for number and gender, verbs agreeing with their subjects or objects in number, person, gender / noun class in a wide range of languages, and subjunctive marking where it is demanded by a matrix clause (as in French *Il faut que j'aille à Paris* 'I have to go to Paris' where the subjunctive form of *go* is demanded by the construction *il faut que* 'it is necessary that'), though not where it is a free choice in a main clause (as in English *God save the Queen!*). The second of these classes, Booij calls inherent inflection. Inherent inflection is syntactically relevant but not constrained by the sentence structure. Plurality on nouns and tense on verbs are two of Booij's examples. Whether a subject noun is plural or singular may well have an effect on the form of the verb, but is determined not by the sentence structure but by the choice of the speaker (corresponding to the real-world situation to be described). This division is a useful, but it has the disadvantage that the same formal category may sometimes be inherent inflection and sometimes contextual

inflection. For instance, the uses of the subjunctive mentioned above may be different, and the comparative in (1) seems to be contextual inflection (unless its presence is demanded by the semantics of the construction rather than by any agreement), while the same form in (2) appears to be a case of inherent inflection.

(1) The red block is bigger than the blue one.

(2) I need a bigger block here.

The other pathfinder is Haspelmath (1996). He argues that it is possible to have word-class changing inflection. Adverbial *-ly* in English is one of his examples. This is, according to Haspelmath, inflectional in the sense that it is regular, general and productive, but nonetheless transpositional.

Why should English adverbialisation be seen as inflectional but not English nominalisation? We can go back to Chomsky (1970), where it is pointed out that the forms of English nominalisations are unpredictable and that the semantics of English nominalisations is neither regular nor constrained by the particular affix or other morphological process used to create the nominalisation. Chomsky gives examples such as *belief, laughter, marriage* to illustrate the formal unpredictability of nominalisations, and examples such as *belief, marriage, revolution* to illustrate the semantic problems.

The answer to the formal side of this problem was given in Bauer (1983: 79), though the complete evidence was not available until Bauer (2001). That answer is, in a word, lexicalisation. Nominalisations persist in a natural language like English long after their coining (or long after they were borrowed, if that is the relevant means of introduction of the new word into English). We are rarely in the position of having to coin a nominalisation for a verb which we have not inherited, ready-made, as part of our language's norm. We use the established nominalisation, whether or not that nominalisation could be produced in the current state of the language system. When it comes to those few instances where we are genuinely called upon to create a new nominalisation, we have two possibilities: avoid the issue or create a new one. If the verb for which we wish to create a new nominalisation uses the suffixes *-ate, -ise* or *-ify*, there is no choice of nominalisation process. We must add *-ion, -ation, -cation* respectively. This is

important because these are the only affixes with which new verbs can be created in current English (Plag 1999). This leaves us (a) with instances of new verbs created by conversion and (b) with established verbs which have no established nominalisation. It seems that we are adept at avoiding this issue. My favourite example of continued avoidance is the case of the verb *ignore*. We would expect to have a nominalisation for this verb, yet *ignorance* has become so specialised in meaning that it is no longer obviously related to *ignore*. *The Oxford English Dictionary* provides *ignoration* with the required meaning, but speakers do not use it, and tend to find it impossible when it is suggested. Rejection of this form could be because it does not fit with the productive patterns available to speakers of current English. In other words, *pace* Chomsky, the creation of new nominalisations to allow new verbs to be used as nouns is perfectly regular.

At one level, the problem of the lack of predictability of the meaning of a nominalisation persists. For example, if we look in *The Oxford English Dictionary* for relatively recent words using *-ation*, we find, among others, *dollarization* ‘The action or process of basing the value of a national currency upon that of the U.S. dollar’, *myristoylation*, ‘The process of becoming myristoylated; the state of being myristoylated’, *Saudiization*, ‘The process or result of rendering (more) Saudi Arabian in character’. Superficially, these entries suggest that nominalisations can mean any of action, process, state or result. However, as is pointed out by Bauer (1983: 188), similar vagueness can be found in the meaning of words which are not derived nominalisations. Consider *noise* and *farewell* in (3):

- (3) The noise continued for about twenty minutes. (State)
 When I knocked over the saucepans, the noise was appalling. (Result)
 His farewell was effusive. (Action)
 Her farewell consisted of three major phases. (Process)

If these various readings are available for non-de-verbal nominalisations, then they cannot derive from the process of nominalisation *per se*, and so cannot be part of the meaning that these words hold *qua* nominalisations. Thus much of the variation in the meaning of nominalisations is something inherent in nouns rather than a feature of a morphological process. Accordingly, any of the nominalisations cited above can be given a consistent meaning, which we can

gloss as ‘noun from verb’. The grammatically important feature is thus the transposition, not that part of the meaning which might appear variable.

Of course, lexicalisation applies here, too. It cannot be predicted *a priori* that *residence* can mean something concrete or that *trial* can be connected with the legal system. But these meanings arise because there is a long tradition in the use of words which are grammatically specified as ‘nominalisation of RESIDE’ and ‘nominalisation of TRY’. The grammatical specification is all that is needed in the coining of new words.

Another side to this is that we do not appear to be able to distinguish the various existing nominalisation suffixes from each other semantically. Given *-age*, *-al*, *-ance*, *-ation*, *-ence*, *-ery*, *-ment*, *-s*, *-t*, *-th*, *-ure*, *-y* (see Bauer 2001: 177-83), we cannot assign any meaning of nominalisations as a class to just one of these (or even to some subset of these). Any nominalisation meaning may co-occur with any of these forms (though some are so rare as to make a full range unlikely). Similarly, though *-esque* seems to carry its own meaning, the adjectival suffixes *-al*, *-ar*, *-(i)an*, *-y* do not appear to differ semantically, and Plag (1999) argues that *-ise* and *-ify* are synonymous. We can thus argue that, while there are affixes like *-esque* (more will be added later) which not only change word-class but also add their own determinable meaning, there are those whose sole function is to effect a transposition. The argument here is that we may wish to set these up as a separate class of affixes (or word-formation processes), alongside contextual inflection and inherent inflection. We can term this ‘transpositional² morphology’ (and take no stance on whether such morphology is derivational or inflectional).

This leaves us with that part of what has traditionally been called ‘derivation’ whose function is to expand the lexicon by modifying the meaning of existing lexemes. Here we find such well-known instances as gender-marking morphology (German *Entericht* ‘drake’ from *Ente* ‘duck’; English *princess* from *prince*), morphology which marks agents, patients, instruments, locations (cf

² The term ‘transposition’ is used more narrowly by Marchand (1969); this use follows Haspelmath (1996).

English *killer, interviewee, blender, diner*, respectively), modal-marking on adjectives (cf. *eatable, payable*), negation and reversative marking (cf. *unequal, inequality, undo, dethrone*), as well as subtler meanings such as that shown by *-esque* cited above.

Are there any other categories which we might want to distinguish on the inflection-derivation cline? There may well be, and my provisional classification here is not meant to exclude extra suggestions. There are two cases which may have to be given particular consideration.

The first of these is the case of evaluative morphology, typified by the use of augmentatives and diminutives. There are many ways in which diminutive morphology, in particular, has been shown not to be typical of inflection nor of derivation. For example, evaluative affixes are often transparent to the word-class and/or gender of the base (see Scalise 1984: 131). Diminutives in many languages are more productive than is typical of derivational morphology, yet with a proliferation of possible markers which is otherwise more expected in derivational morphology.

The second type is morphology which leads not to a change of word-class but to a change of sub-type of word-class, in particular valency-changing morphology for verbs (causatives, intransitivisers, transitivisers). These are rare in English, where such changes are not usually morphologically marked (e.g. *The dog walked, I walked the dog; Flowers grow on this bank, I grow flowers*). Things such as the change from *king* to *kingdom*, *kitchen* to *kitchenette*, and *biography* to *biographee* are excluded from this category since the affixes carry more meaning than simply the grammatically specified output class of noun here, but it may well be the case that some instances are difficult to classify. We can label this type by its core members and call it 'valency-changing', though a better label would be preferable. I assume that changes of countability in English nouns would fit into this category if they were morphologically marked.

If the suggestions above are accepted, we might wish to say we are dealing with not two classes of morphology (inflectional versus derivational) but six: contextual, inherent, valency-changing, transpositional, evaluative, lexicon-

expanding. Many of the criteria that have been traditionally taken to distinguish inflection from derivation can be shown to be divided among these six categories.

- (a) Only contextual inflection is syntactic in the sense that it shows agreement between various parts of syntactic structures or is introduced by government.
- (b) Both contextual and inherent inflection maintain the same lexeme (I make the assumption here that no noun and verb can ever belong to the same lexeme since they enter into different paradigms, and *a fortiori* that no intransitive and transitive verb can belong to the same lexeme, since each must be capable of entering into its own paradigm, and the two need not match). The other types create new lexemes. Alternatively, in many languages we can view this break as distinguishing those forms which may appear within compounds or word-formation from those which must be part of the syntax. The morphology which cannot occur word-internally is precisely the inflectional morphology. Note that English is rather insecure with regard to this particular point, since it does allow plurals inside words, at least marginally on some analyses: *admissions policy*, *teeth-ridge*, etc.
- (c) The first three types are, in traditional terminology, class-maintaining (they maintain the major word-class, e.g. noun, adjective, verb; the latter three are class-changing, they involve shifts from one of noun, verb or adjective (in some cases some other category) to another from the same list. Evaluative morphology is awkwardly placed here, since it is typically class-maintaining, though it can be class-changing
- (d) The first four types share some grammatical function, while the last two have a function which is more lexical in nature: categories such as augmentative add new lexemes whose function is not determined by grammatical needs, as do those categories which appear in the lexicon-expanding set.

- (e) The last type is much less automatic than the other types. If there is no instrument in English called a *retriever*, it is not a matter of morphology that the slot is vacant, it is a matter of societal needs. For the other categories considered, it tends to be grammatically driven whether or not particular transpositional classes exist or not. Where they exist, we expect to find some form available in most slots, or some way of creating words to fit the slots in a regular manner (though, of course, it may not be predictable over the established vocabulary precisely what form will fit in any given slot). In the lexicon-expanding set, while there may be some well-established slots with regular exponence, it is frequently not true that the number of slots is predetermined. Thus English has experimented over the last half-century or so (with greater or lesser success) with slots which can be filled by words in *-nik*, *-(n)omics*, *-(t)eria* and so on. This difference can be summarised by saying that the lexical-expansion type of morphology is less paradigmatic than other types.

A tabular summary of these major distinctions is presented in Table 1.

INSERT TABLE 1 ABOUT HERE

The creation of a new set of categories where there have previously been only two or three inevitably brings problems with it. There are two obvious problems with the suggestion made here: (1) it creates more borderlines, and thus more borderline disputes; (2) it splits the outputs of more morphological processes into different categories. The first of these problems is something that has to be tested on real data: if the benefits of the categorisation outweigh the borderline disputes, then the categorisation will have a value; otherwise it will be discarded.

To illustrate the second problem, consider the outputs of *-ery* suffixation in English. We find straightforward transpositional uses as in *jugglery* from *juggle*, we find collective instances such as *greenery* from *green* or *jewellery* from *jewel*, and these I take to be lexicon-expanding, and the clearly lexicon-expanding locational nouns in *rookery* and *swannery*. The same morphological process feeds — albeit not productively — two of the suggested categories. Either this suggests

that we should consider adopting a separationist view of morphology, following Beard and others (see e.g. Beard 1994), or it suggests that we need to be much stricter in distinguishing between productive and non-productive uses of morphology. For example, we may take it, following Aronoff's work, that *-ity* is still used productively on certain bases to derive abstract nouns which we might gloss, in Marchandian fashion as 'state, quality, condition of —', but once we start talking about an atrocity, the muzzle velocity of a bullet, uttering profanities and minor divinities we are no longer seeing productive uses of *-ity* affixation as a morphological process, but the historical process of semantic change. It is not entirely clear to me to what extent we can solve problems of this kind by restricting our analysis to what happens in productive morphology, but I am convinced that it will at least reduce the apparent size of the problem, if not remove it entirely.

It is of some interest to consider other criteria that are standardly given for distinguishing inflection from derivation, to see how they fare against this six-way division. Such criteria include regularity of meaning, productivity, obligatoriness, the relative size of the sets of affixes concerned and affix ordering (see e.g. Bauer 1988, Dressler 1989).

- (a) *Regularity of meaning.* The regularity of transpositional meanings was argued for above, contra Chomsky (1970). It was noted, however, that transpositional morphology is open to lexicalisation, which may render this original regularity opaque. The same is true with lexicon-expanding morphology. We cannot predict from the form of *lover* that it will mean a person who has a sexual (rather than a purely emotional) relationship with another. We can predict the meaning we find in *music-lover*. The sexual meaning of *lover* is not morphological, but due to lexicalisation. That being the case, we would expect to find similar lexicalised instances of evaluative morphology. The Spanish use of the augmentative of the word for 'rat' meaning 'mouse', *ratón*, must count here, as must the Klamath use of the diminutive of 'horse' to mean 'dog', and the word for 'sheep' being an augmentative of the word for 'rabbit' in Natchez and Tunica (Mithun 1999: 468, 532). English *changeling*, *foundling* and *groundling* also have more

specific meanings than could be deduced from their form, and we could argue that the specialisation of *duckling*, *gosling*, *spiderling* to mean ‘young of the species’, while *princeling* focuses on negative connotations and *darling* on positive ones are all indications of lexicalisation. (See also Bauer 1997: 551.) As was mentioned earlier, English tends not to have valency-changing morphology, but in Diyari we find examples such as the transitive form of a verb meaning ‘die’, *palima-*, can only take the noun meaning ‘fire’ as its object and is specialised in the sense of ‘extinguish (a fire)’ (Austin 1981: 160). Semantic lexicalisation (or idiomatisation) can also affect inherent inflection. Beard (1982) cites examples of semantically irregular plural forms such as *feelings*, *greens*, *heavens*, *looks*, *waters*. Contextual inflection does not appear to lexicalise. If we look at semantic regularity in terms of its inverse, lexicalisation, then it appears that, to a large extent, the further left we are on the scale in Table 1, the less lexicalisation there is likely to be. Evaluative morphology may be less subject to lexicalisation than transpositional morphology, but we do not have statistical information to support such a claim at the moment.

- (b) *Productivity*. It is tempting to equate productivity with paradigmaticity in Table 1, on the view that each implies that there will be a form which will fit into a particular slot or cell in the paradigm (even if the form will be unpredictable in some instances). The example of the nominalisation of *ignore*, cited above, suggests that this easy equation will not work, since transpositional morphology, at least in English, appears to allow for a greater number of gaps in the system than we might expect. This is probably not accidental, and valency-changing morphology might well show similar gaps depending on the degree of societal need for vocabulary that we have already seen affecting lexicon-expanding morphology. Perhaps a new criterion should emerge from this discussion: the degree to which the coining of new forms is determined by grammatical imperatives as opposed to societal needs, with those ruled mainly by societal needs being at the less productive and less paradigmatic end of the scale. In this context it should be noted that different languages may make use of

different kinds of morphology in different ways. Turner (1973: 181) comments on the nominal style of English scientific writing, and students in translating to and from French are often taught to use a more verbal style in French (see Ritchie 1963: 73 for a hint of such matters). If it is the case that different styles or different language use more nominals than others, there may be greater use of and greater regularity in nominalisation markers in the one than in the other. This remains to be proved, but seems a reasonable hypothesis.

- (c) *Obligatoriness*. Obligatoriness is something of an awkward concept in morphology under any circumstances: is it the category or the morph which is obligatory, and under what set of circumstances? Let us take it that it is the morphological category which may be obligatory in a particular syntactic construction. This definition virtually defines obligatoriness as a feature of the erstwhile inflectional categories, contextual and inherent. Complex words from any of the other categories are likely to be replaceable in context with morphologically simpler (because not marked for valency-change, transposition, evaluation or lexical-expansion, respectively) words.
- (d) *Relative sizes of affix sets*. Doubt is cast on this potential criterion in Bauer (1988), and without a serious attempt to count the comparable sets in a number of languages nothing can be concluded here.
- (e) *Affix ordering*. Again, without some cross-linguistic statistical survey a sensible discussion of this is not possible. If we think in terms of Bybee's (1985) criterion of relevance, we might expect something like the reverse of the order given in Table 1 (assuming suffixation), but such a hypothesis would need to be tested against the findings in a range of languages. Evaluatives are notorious for not showing the expected order with relation to inherent inflection (see Bauer 1988, 1997: 546-7 for some examples and references). On the other hand, examples like the following show the expected patterning, if not every possible combination:

(4) Dutch: *bakk·er·ij·tje* 'little bakery' (bake·AGT·LOC·DIMIN)

- (5) French: *mang-er-ons* ‘we shall eat’ (eat·FUT·1PL)
- (6) Telugu: *tfa·mp·æ:·du* ‘killed’ (die·TRANS·PAST·3SGMASC)
(Krishnamurti & Gwynn 1985: 203)
- (7) Warekena: *nu·ku·Jua·ba·mia·Ju* ‘I drank too much’
(1SG·drink·AUG·PERF·EMPH) (Aikenvald 1998: 385)

Having said that, it must also be admitted that, even ignoring the cases where evaluative morphology is apparently ordered in strange positions, it is relatively easy to find apparent counterexamples, like that in (8) where valency-changing and transpositional morphology come in the wrong order. Clearly some kind of statistical survey would be needed to see what the preferred order for these suggested categories is cross-linguistically.

- (8) Macushi: *te·es·enyak’ma·se·n* ‘worker’
(ADV·DETRANS·work·ADV·NOML) (Abbott 1991)

We might also note things such as diminutives are often reported as allowing the same suffix to apply to its own output (for Xhosa, Karok and Spanish examples see Bauer 1997: 548-9), valency-changing morphology may occasionally do the same, as in Kannada (but there apparently with a maximum of two iterations; Sridhar 1990: 276), and lexicon-expanding morphology may do the same when it is semantically appropriate, as in *meta-meta-file* or German *Ur-ur-grossvater* ‘great great grandfather’. I am not aware of any instances of recursive transpositional morphology without intervening transpositional morphology of a different type. This discontinuity in the scheme in Table 1 may or may not be important.

Even with the extended schema suggested here, the position of evaluative morphology may not be completely secure. Nevertheless, it is of interest that the other types do seem to provide some support for the ordering that is laid out in Table 1.

By starting out with a functional question, we have come back to a new look at the formal system of morphology, with a solution to an old problem arising because we have approached the problem from a functional angle.

Whether the solution has lasting value or not, the general principle ought to be one of which Lachlan would approve.

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Table 1: A representation of the differences between the 6 suggested categories

Contextual	Inherent	Valency-Changing	Transpositional	Evaluative	Lexicon-expanding
Agreement	No agreement				
Lexeme-maintaining	Creating new lexemes				
Class-maintaining			Class-changing		
Grammatical				Lexical	
Paradigmatic					Non-paradigmatic