

SYNONYMY BLOCKING AND THE ELSEWHERE CONDITION: LEXICAL MORPHOLOGY AND THE SPEAKER¹

By HEINZ J. GIEGERICH
University of Edinburgh

ABSTRACT

This article investigates the extent to which synonymy blocking occurs in the synchronic derivation and, more controversially, whether it is predicted by the Elsewhere Condition ('EC'). It argues that in current Lexical Morphology, EC accurately predicts the presence of 'token blocking' and the absence of 'type blocking', that apparent token-blocking failure is due either to non-synonymy or to overregularization, and that apparent type-blocking is due to an informal tendency of synonymy avoidance rather than to EC. A revised version of EC is proposed which brings to light a number of patterns in the behaviour of 'rival' processes including the Strict Cyclicity Effect in phonology.

1. INTRODUCTION

This paper is concerned with the Blocking Effect (the non-occurrence of a regular morphologically complex form due to the existence of a simpler semantic rival) and its expression in the theory of Lexical Morphology. In particular, it aims to show that a recent version of the theory of lexical stratification ('base-driven' stratification: Giegerich (1999)) is consistent with Pinker's finding whereby blocking is due to an innate facility provided by Universal Grammar, "... built into the circuitry that drives language acquisition ..." (Pinker 1999: 197).

Pinker's finding draws on work by Marcus *et al.* (1992), summarised here as it will be relevant below. Marcus *et al.* investigate the occurrence of overregularization (resulting in forms such as **keeped*, **goed*, **singed*)² in children's acquisition of English past tense forms. Their analysis of irregular past tense utterances in children's speech shows that overregularization occurs, as a temporary side effect of the acquisition of productive morphology, when children begin to mark regular verbs for tense. Overregularization is preceded by a period of accurate (but sporadic) usage of irregular forms and disappears gradually as irregular forms (*came*, *went*, *sang*) are established in memory. This eventual overwriting of overregularized forms with irregular items, they hypothesize, is due to the innate presence of the blocking facility and, crucially, not due to negative feedback (the explicit correction of overregularization errors) by adults (Gordon 1990). And the widespread failure of blocking during the overregularization period is then due not to the absence of the blocking facility itself but to the fact that memory of irregular forms at that developmental stage is still too weak to trigger blocking (or of course non-existent). So blocking failure (here: overregularization) is the failure to retrieve blocking items, rather than the absence of a facility later to be provided by the more fully acquired grammar. This hypothesis is consistent with the fact that overregularization errors are not strictly confined to childhood (Stemberger 1982); and it predicts that such errors are at all developmental stages more likely to occur in the case of low-frequency forms than they are with high-frequency forms, which are better established in memory. And indeed, lower-frequency verbs have tended to become regular in the history of English (plausibly due to recurrent overregularizations, which eventually established themselves as standard forms), while those verbs that have retained their irregular inflectional morphology tend to be of high frequency (Bybee 1985).

One problem with these findings is that in English, the morphological default for the past tense is itself overwhelmingly frequent. It is therefore not clear from such data whether overregularization is caused by the high incidence of the regular rule (alongside the low frequency of the irregular form), or by the default status of that rule in terms of the morphological system. In German, on the other hand, -s is the default plural marker in the morphological system, applied productively in loans, neologisms,

acronyms etc. (Wiese 1996: 137), while the most frequent plural marker is in fact *-(e)n*. The lexical morphology of German is stratified in such a way that compounding precedes derivationally the default plural: *-s* cannot therefore occur inside compounds while other plural markers can (*Schweinebraten* ‘roast pork’, *Kinderwagen* ‘perambulator’, *Spinnennetz* ‘spider’s web’). Clahsen (1992), Clahsen *et al.* (1992) and Niedeggen-Bartke (1998) show that children overregularize either the default *-s* in the formation of noun plurals (consistently omitting it inside compounds, just as in adult speech), or *-(e)n*. In Clahsen *et al.*’s study, the latter happened in the data of some dysphasic children, who strikingly then never used *-(e)n* inside compounds, treating this suffix (presumably due to its high incidence) as the derivationally late default. Importantly, this miscategorization of *-(e)n* as the default plural is just as firmly anchored in the dysphasic child’s morphological system as is the categorization of *-s* as the (non-frequency-driven) default for unimpaired children: in either case, the default is crucially ordered after compounding. If it is the case, as Clahsen *et al.* argue, that the default status of a given morphological rule, giving rise to overregularization, may relate not only to frequency but also to the rule’s place in the derivation (Gordon 1985), then two important amendments can be posited to Marcus *et al.*’s (1992) original hypothesis: firstly, blocking is similarly sensitive to a given rule’s place in the morphological derivation (and not merely to frequency criteria); secondly, blocking can be exerted not only by genuinely irregular forms (such as *came*, *went*) but also by forms which are semi-regular to the point of higher actual incidence than the default which they suppress (as in German *-(e)n* vs. *-s* in the case of unimpaired children).

Pinker (1999: 17) moreover argues (again with Marcus *et al.* (1992: 9), Clahsen (1992: 177)) that the Blocking Effect, as manifested in the overregularization data discussed above, relates to the Elsewhere Condition (‘EC’)³ in Lexical Morphology. This position originates with Kiparsky (1982) but has been rejected by subsequent investigators – Rainer (1988), Plag (1999) and indeed Kiparsky himself (1983) – mainly on the grounds that blocking of the *sang* – **singed* type discussed above (which is accounted for by EC in Kiparsky’s (1982) model) is merely part of a wider range of blocking phenomena which, it is said, cannot be so accounted for in full. Rainer (1988: 182) states unequivocally in the summary of his findings:

“... (x) *Blocking* and *level-ordering* are independent concepts. (xi) Blocking cannot be handled by the Elsewhere Condition. ...”

This statement was correct in its time, but only then. It is incorrect if, as Rainer appears to imply, both its points are held to be true for *any* formal model of morphological derivation and for *any* version of EC. Kiparsky’s (1982) versions of lexical stratification (level-ordering) and of EC indeed failed to handle cases of blocking beyond those discussed above. But as I hope to show here, more recent, ‘base-driven’ models of lexical stratification (Wiese 1996: 129ff., Giegerich 1994, 1999) facilitate the prediction of the Blocking Effect, in its various manifestations including but not confined to the *sang* – **singed* cases, through a version of EC which differs from Kiparsky’s. Blocking can be handled by EC; and blocking and level-ordering are not independent concepts.

The version of EC deployed in this study (and discussed in §4 below) is stated in (1):

(1) ***Elsewhere Condition***

The processes A, B apply disjunctively if and only if:

- (i) A is restricted to a single lexical item; B is not so restricted.
- (ii) A and B are rival processes such that the output of A is equivalent to that of B and the inputs of A and B are distinct.

To stay with cases of the *sang* – **singed* type for the moment, an irregular past tense form such as *sang* is produced by a ‘process A’, whose input is also, as we shall see below, *sang*. **Singed*, on the other hand, would be produced by a regular process whose input would be *sing*.

In what follows I outline (in §2) the relevant aspects of the ‘base-driven’ lexical stratification model proposed in Giegerich (1999) in relation to English and German, the two languages from which examples of synonymy blocking will be drawn. In §3 I discuss the predictions made by EC, in such a

stratification model, regarding the various kinds of synonymy blocking that have been identified in the literature. This account will be informed by the acquisition data discussed above, in particular by the observation whereby under certain conditions, items which should be blocked are in fact produced through overregularization. Studies such as Rainer (1988) have tended to cite acquisition data (Clark 1981, Panagl 1977) as anecdotal evidence for their position regarding blocking, without however recognising the full extent to which such data shed light onto the formal side of the phenomenon in the adult morphological system. In §4, finally, I discuss the present version of EC in relation both to its predecessor version proposed by Kiparsky (1982) and to its wider uses in lexical derivations.

In an attempt at categorizing the data, two intersecting distinctions will be drawn. Firstly, in some cases the blocking item and its victim share the same root and are hence produced on the same derivational path (*sang* – **singed*, *bore_N* – **borer*) while in other cases, morphologically unrelated synonyms are involved (*mare* – **horsess*, *beef* – **cattle meat*). Secondly, in some cases the blocking item is a listed form (as in all examples above) while in other cases, both the blocking item and its victim are produced by rule (*committal* ‘pledge’: event – *commitment* ‘obligation: state of being committed’). The latter distinction is (near-) identical with that familiar from the literature (van Marle 1986, Rainer 1988, Plag 1999), usually referred to as ‘token-blocking’ vs. ‘type-blocking’. I show that the former distinction is irrelevant – blocking is not confined to specified derivational paths – while the latter distinction is crucial: there is no ‘type blocking’. Any observed non-synonymy among items in a putative ‘type-blocking’ relationship is not (indeed, cannot be) due to EC but at best to an informal tendency of synonymy avoidance (Kiparsky 1983, Plag 1999).

2. BASE-DRIVEN STRATIFICATION: AN OUTLINE

The ‘base-driven’ stratification model is the successor to various ‘affix-driven’ models (e.g. Kiparsky 1982, Mohanan 1986, Booij and Rubach 1987, Borowsky 1990), where the morphology of a given lexical stratum was defined by the sum of affixes attaching on that stratum. I showed in Giegerich (1999: ch. 2) that such models are untenable (depending as they do on the assumption that every affix of the language is diacritically marked for one specific stratum): some twenty English derivational suffixes display morphological and phonological behaviour which is consistent with more than one stratum. The respective syndromes of behavioural properties associated with the two strata of English (see below on the principle governing the number of strata) are summarised in (2) – for details see Giegerich (1999: chs. 2f.).

(2)	Morphology	Phonology
Stratum 1	Listed morphology Productivity restrictions: [± Latinate] (* <i>coolity</i>), fossils (<i>warmth</i>), irregular inflections (<i>oxen</i> , <i>cacti</i> , <i>sang</i> , <i>came</i>) Semantic non-compositionality (<i>opportunity</i> , <i>lightning</i> , <i>cómparable</i>) Random allomorphy (<i>-ible/-able</i> , <i>-ent/-ant</i>) (Bound-) root inputs (<i>maternal</i> , <i>baptism</i>)	Distorted base Stress-shifting suffixation (<i>atom</i> – <i>atomic</i>) Vowel shortening and shift (<i>kept</i> , <i>national</i>) Cyclic rule application (<i>nationality</i>) Strict Cyclicity Effect Nonsyllabic base-final C (<i>metric</i> , <i>lightning</i>)
Stratum 2	Morphology by rule Productivity Semantic compositionality Word inputs (<i>driverlessness</i> , <i>cactuses</i>)	Undistorted base Stress-neutral suffixation (<i>driverlessness</i>) Syllabic base-final C (<i>metering</i> , <i>lightening</i>) Boundary-specific phonotactics (<i>Toryism</i> , <i>keenness</i>)

The point which is essential for present purposes is that the stratum-1 morphology is listed in its entirety. Affixes attach to listed sets of bases, rather than productively following defined structural descriptions: noun-forming *-th* attaches to perhaps a dozen bases (which are moreover prone to irregular phonological behaviour: *length*); *-ity* and many other affixes are subject to the [\pm Latinate] constraint (which the native speaker cannot be expected to manipulate productively); the semantics of complex forms (such as *opportunity*, *baptism*) is frequently inconsistent with the meanings normally associated with their affixes. And most importantly, on stratum 1 just about every affix is capable of attaching to bound roots (*seismic*, *maternity*, *legal*, *linguist*, *baptism* etc.), where moreover such bound roots often resist an unambiguous association with a lexical category: if, for example, *-ity* attaches to adjectival and *-al* to nominal bases then *matern-* must be both unless the solution is adopted whereby roots are not lexically categorized.

Giegerich (1999: ch. 3) proposes therefore (following Selkirk (1982)) that the stratum-1 morphology is entirely root-based. All inputs and outputs of affixation processes on that stratum are roots. Root is then a recursive category which has no lexical category specification. The stratum-2 morphology, on the other hand, is word-based. All inputs and outputs of affixation processes on that stratum are free forms (words, where Word is a recursive category carrying a lexical category specification).

The fact that Present-day English has only the two base categories Root and Word defines the number of lexical strata for the language. German has retained the intermediate category Stem (forms which are not free, like words, but which do carry a lexical category specification) – particularly evident in the case of verb stems forming the bases of affixation processes (*trinkbar* ‘drinkable’, *Filtrierung* ‘filtration’) or pre-head elements of compounds (*Trinkwasser* ‘drinking water’, *Filtrierwerk* ‘filter station’). German, then, has three strata, Root, Stem and Word-based respectively (see also Clahsen *et al.* (1992) Wiese (1996)).

If it is the case that the inputs and outputs of any given stratum are members of the same (recursive) base category then there must be a separate operation which promotes the outputs of, say, stratum-1 morphological processes, as well as forms underived on stratum 1, from root to word status. This operation, whose inputs are roots and whose outputs are words, renders a given form ineligible for further stratum-1 morphology while enabling it to enter the stratum-2 morphology. I argue at length in Giegerich (1999: 76ff., 105ff.) that this operation has the following format:

(3) **Root-to-Word Conversion** (English)⁴

- (a) $[]_r \rightarrow [[]_r]_N$
- (b) $[]_r \rightarrow [[]_r]_V$
- (c) $[]_r \rightarrow [[]_r]_{Adj}$
- (d) $[]_r \rightarrow [[]_r]_{Adv}$

(3) is short for the process whereby certain roots (‘free’ roots) are re-written in terms of both their phonological and semantic structures, promoted to word status and assigned a lexical category specification. Importantly, all English suffixes occurring on stratum-1 are listed for (3) – in the sense that all suffixed forms become words: English has no bound suffixed forms – while eligible morphologically simple roots again must be listed for (one or more⁵ of the subrules of) (3): only in this way can the distinction be expressed between ‘free’ roots (*divine*, *opportune* etc.), which can surface as words, and ‘bound’ roots (*bapt-*, *matern-* etc.), which cannot. (3) will below be shown to be instrumental in the expression of the Blocking Effect in that it crucially figures as ‘process A’ in EC.

Below is a sample demonstrating how the listing of morphological processes is envisaged:

(4)

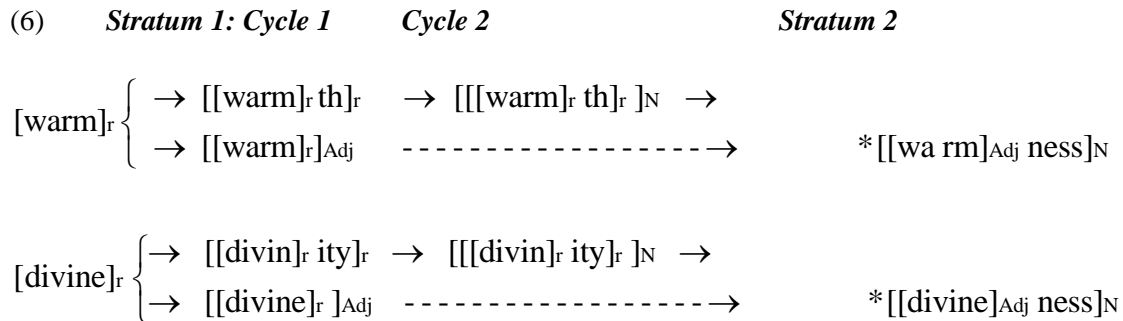
result, corresponding to findings by Rainer (1988) and Plag (1999) which confirm the occurrence of ‘token blocking’ but deny that of ‘type blocking’, is shown here to be predicted by the base-driven model of lexical stratification in conjunction with EC.

On stratum 1, blocking is exerted, under EC, not by a morphological process which attaches an affix but by (3) above – the process which (in English) promotes a given root to word status. As (3) applies to morphologically simple and complex items alike, the blocking item itself may be either simple or complex; and as blocking is crucially driven by synonymy, it is not confined to items sharing a derivational path in terms of their morphology. And as (3) is inoperative on the final stratum, no blocking is predicted there.

The model further predicts that apparent doublets, occasionally attested in putative blocking environments (*length* – *longness*, *ethnicity* – *ethnicness*, *malice* – *maliciousness*), are due not to the absence or failure of the blocking facility (*viz.* EC) itself but to either non-synonymy or overregularization.

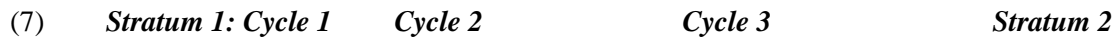
3.1 Blocking among morphologically related forms

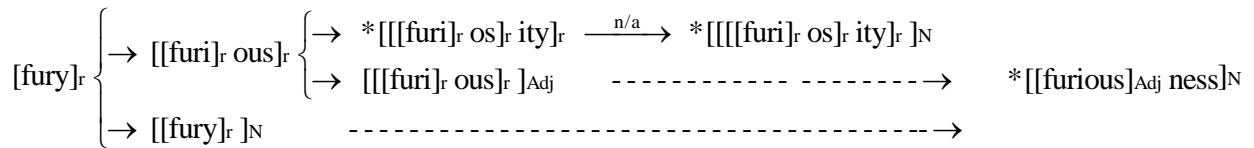
Assume for the moment that the English suffixes *-th*, *-ity* and *-ness* are fully synonymous in that they produce de-adjectival abstract nouns, and that moreover such nouns are synonymous with corresponding morphologically simple abstract nouns. *-th* and *-ity* are attached on stratum 1 – the former because it only attaches to very few (Germanic) bases, giving rise moreover to (occasionally) erratic vowel changes (*width*, *breadth*), the latter because it attaches to Latinate bases only, triggering stratum-1 phonological rules (vowel shortening and shift: *divine* – *divinity*). *-ness* attaches on stratum 2 with full productivity. There is therefore a blocking relationship between *-th* and *-ness* and between *-ity* and *-ness* (but, given their complementary inputs, not between *-th* and *-ity*).



In (6), the first cycle of stratum 1 produces the roots *warmth* and *divinity* as well as (through (3)) the adjectives *warm* and *divine* (which exit from the stratum). Cycle 2 turns *warmth* and *divinity* into nouns (again through (3)). The nouns *warmth* and *divinity* block the formation of their rival nouns **warmness* and **divineness* on stratum 2 (which, recall, is word-based and hence does not have (3)). (3) on stratum 1 therefore figures as ‘process A’ in EC.

(7) shows how (again assuming exact synonymy) the noun *fury*, produced on the first cycle of stratum 1, blocks the attachment of *-ity* to *furious* on the second cycle,⁷ which therefore cannot on the third cycle become a noun under (3). Similarly, the noun *fury* will block the formation of synonymous **furiousness* on stratum 2.





Similarly accounted for are cases such as *profligacy* – **profligateness*, *decency* – **decentness*, *aberrancy* – **aberrantness* (like the *fury* etc. cases first discussed by Aronoff (1976)). -y attaches regularly to *-ate*_{Adj} as well as to *-ent/-ant* and may indeed on those grounds be called productive (Aronoff 1976: 55, Kiparsky 1983: 14). But -y is clearly of stratum-1 status, given its other properties. It causes phonological distortion of the base (/t/ → [s]), it only attaches to Latinate adjectives (which must end in /t/), and moreover *-ency/-ancy* are in free (listed) variation with *-ence/-ance*. -y is listed, under the format suggested in (4) above, as a follow-on suffix for *-ent/-ant* and *-ate*.⁸ The derivational path is therefore similar to that of *-th* and *-ity* mapped in (6) above, giving rise to blocking under synonymy.

Synonymy is again at stake in the second set of examples to be discussed here: German agent nouns. Stratum 1 in German contains various agent-noun-forming suffixes (*-or*, *-ent*, *-ant*, *-eur* (masc.)/*-euse* (fem.)), attaching to specific roots. On stratum 2 are located *-er* (attaching to verb stems if denoting agents) and feminine *-in*.⁹ (8) exemplifies the distribution of masculine agent nouns in *-eur* and their feminine counterparts in *-euse*. Both attach to certain roots only (as shown in (8a.b)). Most of these roots also take the verb-stem-forming suffix *-ier-* (8d), to which in turn the agent-forming suffix *-er* attaches with full productivity on stratum 2. *-in*, finally, attaches (again productively) to agent nouns (including those in *-er*) so as to denote feminine agents. Blocking forms are underlined in (8).

	Stratum 1			Stratum 2	
a. Root	b. <i>-eur</i>	c. <i>-euse</i>	d. <i>-ier-∇</i>	e. <i>-er</i>	f. <i>-in</i>
<i>dompt-</i> 'animal-train'	<i>Dompteur</i>	<u><i>Dompteuse</i></u>	<i>*domptier-</i>	<i>*Domptierer</i>	<i>*Domptiererin</i> <i>*Dompteurin</i>
<i>fris-</i> 'hair-dress'	<u><i>Friseur</i></u>	<u><i>Friseuse</i></u>	<i>frisier-</i>	<i>*Frisierer</i>	<i>*Frisiererin</i> <i>?Friseurin</i>
<i>kass-</i> 'cash'	<i>*Kasseur</i>	<i>*Kasseuse</i>	<i>kassier-</i>	<i>Kassierer</i>	<i>Kassiererin</i>
<i>kommand-</i> 'command'	<u><i>Kommandeur</i></u>	<i>*Kommandeuse</i>	<i>kommandier-</i>	<i>*Kommandierer</i>	<i>*Kommandiererin</i> <i>Kommandeurin</i>
<i>mass-</i> 'massage'	<u><i>Masseur</i></u>	<u><i>Masseuse</i></u>	<i>massier-</i>	<i>*Massierer</i>	<i>*Massiererin</i> <i>Masseurin</i>
<i>souffl-</i> 'prompt'	<u><i>Souffleur</i></u>	<u><i>Souffleuse</i></u>	<i>soufflier-</i>	<i>*Soufflierer</i>	<i>*Souffliererin</i> <i>*Souffleurin</i>
<i>tapez-</i> 'wallpaper'	<i>*Tapezeur</i>	<i>*Tapezeuse</i>	<i>tapezier-</i>	<i>Tapezierer</i>	<i>Tapeziererin</i>

This case of blocking is particularly straightforward because of its uncomplicated semantics: except for one case (or perhaps two), the synonymy of *-eur* and *-ier-*, *-euse* and *-eurin/-iererin* is not in question.

Listed forms in *-eur*, *-euse* block the attachment of *-er(in)* to the verb stem in *-ier-*; *Tapezierer(in)* is well-formed due to the non-existence of **Tapezeur*, **Tapezeuse*. *Dompt-*, however, does not take *-ier-*

: **Domptierer(in)* is therefore ill-formed for a reason other than blocking: the base to which *-er(in)* would attach is ill-formed.

Kommand- takes *-eur* but not *-euse*: *Kommandeur* blocks **Kommandierer* and, as that noun is hence ill-formed, **Kommandiererin* is also impossible despite the nonexistence of **Kommandeuse*. The feminine form is therefore *Kommandeurin*.

Note, finally, the apparent failure of *Masseuse* to block *Masseurin*. The two forms are not in fact synonymous: the latter is a recent coinage by the relevant professional body in response to the semantic drift into sexual connotations undergone by the former.¹⁰

3.2 Blocking among morphologically unrelated forms

The literature cites numerous examples where a morphologically complex form is blocked by a synonymous (but morphologically unrelated) simple form: *mare* – **horsess*, *bitch* – **dogess* (Matthews 1991: 75), *bad* – **ungood*, *big* – **unsmall* (Bauer (1983: 87); for further examples see Plank (1981: 173ff.)). In this category also belong items such as *beef* (**cattle meat*), *pork* (**pig meat*), *veal* (**calf meat*), and innumerable more lexical items which may be paraphrased by compounds but where the compound is not used except for the specific purpose of paraphrase. If the attachment of *un-* to adjectives, the attachment of *-ess* to (animate) nouns and compounding are assumed to be stratum-2 processes then the derivational paths of such items look as in (9).

- (9)
- | | Stratum 1 | Stratum 2 |
|-----|-----------------------------------------------------|-------------------------------------------|
| (a) | $[\text{mare}]_r \rightarrow [[\text{mare}]_r]_N$ | -----→ |
| (b) | $[\text{horse}]_r \rightarrow [[\text{horse}]_r]_N$ | -----→ * $[[\text{hors}]_N \text{ess}]_N$ |

In formal grammar, more than just anecdotal interest attaches to such cases (and, indeed, to the blocking phenomenon as a whole). Appeal to blocking as a phenomenon of formal status is required to explain irregularities in otherwise fully regular and productive paradigms, exemplified by the following.

In English, ordinal numerals are regularly and productively formed through the attachment of *-th* to cardinal numerals on stratum 2. But, like so many of the regular stratum-2 suffixations, (Giegerich 1999: ch. 2), this process has sporadic stratum-1 exponents – consider (10):

- (10)
- | | Stratum 1 | Stratum 2 |
|--|---------------|---------------------|
| | <i>first</i> | <i>*oneth</i> |
| | <i>second</i> | <i>*twoth</i> |
| | <i>third</i> | <i>*threeth</i> |
| | --- | <i>fourth</i> |
| | <i>fifth</i> | <i>*fiveth</i> |
| | --- | <i>sixth</i> |
| | --- | <i>seventh</i> |
| | --- | <i>eighth</i> |
| | --- | <i>nineth</i> |
| | --- | <i>tenth</i> (etc.) |

First, *second* and *third* are stratum-1 listed forms. *Fifth* too must be formed on stratum 1: the pre-cluster laxing (Myers 1987) and shift (McMahon 1990) of the vowel are due to phonological rules confined to stratum 1. Both changes fail to apply in *eighth* and *nineth* (where they would give rise to **[#####]* and **[■###■###]*). *Fourth*, *sixth*, *seventh* and *tenth* are ineligible for the vowel change (the only potential diagnostic for stratum 1 available in these cases) and may therefore strictly

speaking be either stratum-1 or stratum-2 forms; but this indeterminacy does not affect the general picture whereby the formation of ordinal numerals is haphazardly distributed over both strata, displaying in synchronic terms on stratum 1 both suppletion (*first, second, third*) and phonological derivation (*fifth*). The non-existence of the corresponding stratum-2 forms can only be explained through blocking, which clearly does not distinguish between suppletive and phonologically derived stratum-1 forms: wherever there is a stratum-1 form, the formation of the regular stratum-2 *-th* form is blocked.¹¹

Forms such as *first, second, third* and *fifth*, then, emerge from the first cycle on stratum 1 as adjectives and block the regular and productive formation of adjectives such as **oneth, *twoth, *threeth, *fiveth* on stratum 2. The derivational path of *fifth* – **fiveth* is again similar to that of *warmth* – **warmness* ((6) above); that of *first* – **oneth* is as in (9) above.

There is, then, no observable difference in blocking behaviour between instances involving morphologically related forms (§3.1 above) and instances involving morphologically unrelated forms (*mare, pork, first, second*, etc.), just as in the case of overregularization in the acquisition of past tense forms (§1 above), there is no behavioural difference between suppletive forms (*went* – **goed*) and forms where a phonological (sub-)regularity may be posited: *kept* – **keeped* (Myers 1987), *sang* – **singed* (Halle 1977). At any rate, this distinction is not always clear-cut: *first, second* are clearly historic instances of suppletion in the paradigm, and *fifth* is amenable to derivation from underlying / $\text{f} \rightarrow \text{v}$ / through attested stratum-1 phonological rules; but *third*, although historically related to *three* (see e.g. Brunner 1962: 94), is not synchronically derivable from underlying **/#####/*, given well-motivated constraints on synchronic derivations. Indeed, Paul (1897: 707), credited with the discovery of the Blocking Effect¹², lists cases belonging in either category:

11)	<i>Lob</i>	<i>*Lobung</i>	(‘praise’)
	<i>Raub</i>	<i>*Raubung</i>	(‘robbery’)
	<i>Wahl</i>	<i>*Wählung</i>	(‘election’)
	<i>Verlust</i>	<i>*Verlierung</i>	(‘loss’)
	<i>Gebrauch</i>	<i>*Gebrauchung</i>	(‘use’)

In each such pair of action nouns, the second member is the output of a productive stratum-2 rule while the former member is a listed (stratum-1) form, in some cases (*Lob, Raub* etc.) produced through a recurrent but rather unproductive process (similar to *convict* – *cónvict*, fn. 5 above) but in the case of *Verlust* clearly now suppletive: as in cases such as English *lose* – *loss* – *loose*, there is no longer a common underlier synchronically linking the verb stem *verlier-* with *Verlust* by means of phonological rules. The diachronic loss of the common underlier has not altered this form’s blocking behaviour; and there is no reason why it should have: while the effect of blocking shows up in the morphology, its cause is semantic.

Reference in EC to a specific derivational path, which would restrict blocking to morphologically related items – one of the features of Kiparsky’s (1982) original formulation of EC: see §4 below – is therefore clearly unwarranted: the processes ‘A’ and ‘B’ are not confined to a single derivational path in terms of the morphology. The formation of a given word of the lexical category *L* with a specific meaning *M* on cycle *x* on stratum 1 will block the formation of any word *M_L* later in the derivation, that is on a cycle *>x* or on a later stratum. In (7) above, the formation of the noun *fury*_N through (3) is the most specific (least general) way of producing a noun of the meaning ‘fury’. **Furiosity* and **furiousness* are progressively less specific formations, involving as they do recurrent and fully productive processes respectively. They are hence blocked through EC for ‘fury’. Similarly in (9), the formation of *mare*_N through (3) is the most specific way of producing a noun meaning ‘mare’, which again blocks the formation of a noun of that meaning through any productive process. In synonymy blocking, EC operates on strictly semantic grounds.

An analysis crucially involving (3) in blocking – another feature expressed by (1) but not by Kiparsky’s (1982) version, to be discussed in §4 below – makes two further predictions, both of which

are correct. Firstly, bound roots (roots not listed for (3)) do not block. Secondly, of any two synonymous words on parallel cycles, neither will block the other. Thus *sofa* and *settee* are both able to occur with the same speaker. I return to this point presently.

3.3 *Blocking failure: apparent and real*

The model of blocking discussed here predicts that observed ‘blocking failures’ are either due to non-synonymy (in which case EC will not apply, and non-blocking is in fact predicted) or to overregularization, which, as I reported in §1, may be regarded as a processing failure possibly due either to the failure to retrieve a blocking item or to the high incidence (productivity) of the rule whose application fails to be blocked. I deal with non-synonymy and overregularization in turn, before looking at the blocking behaviour of rival productive suffixes on the same stratum.

3.3.1 *Apparent blocking failure: non-synonymy*

The fact that synonymy is a necessary condition for blocking, and that conversely there is a direct relationship between non-blocking and non-synonymy, is demonstrated persuasively by cases where a given item merely blocks part of the meaning of another. Kiparsky (1982: 7; 1983: 14f.) deals with (stratum-1) *-ant*, *-or* and ‘verb-to-noun conversion’ (but see fn. 5 above) and (stratum-2) *-er* suffixations, rival processes in the semantic field ‘agent/device’, showing that the semantics of the stratum-2 form will regularly be confined to what is not covered by the meaning for which the stratum-1 form is listed:

12)	<i>drill</i> (device)	<i>driller</i> (agent)
	<i>cook</i> (agent)	<i>cooker</i> (device)
	<i>divide</i> (device: line)	<i>divider</i> (device: implement)
	<i>refrigerant</i> (device: substance)	<i>refrigerator</i> (device: appliance)
	<i>stimulant</i> (device: substance)	<i>stimulator</i> (device: implement)

Recall also the example of German *Masseuse* – *Masseurin* ((8) above), where the former has undergone recent semantic drift, thereby enabling the coinage of the latter. And again, morphological relatedness is not a necessary condition for the partial blocking observed here: Kiparsky (1983: 16) notes that stratum-2 *cutter* can signify all cutting devices (but only those) for which there are no specific names (*knife*, *scissors*, *adze*, *chisel*, *axe* etc.).

Partial blocking is due, then, as predicted by EC, to partial synonymy. This suggests that in observed instances of non-blocking, the synonymy of the forms in question should be queried before appeal is made to overregularization as an explanatory device which, although well-attested and indeed consistent with the predictions made by formal grammar in certain circumstances (§1 above), is essentially untestable within a formal framework given that those circumstances, relating to frequency and memory, are outwith the domain of formal grammar.

To assess the problems relating to assumptions of synonymy among apparently rival forms, I return to the *-th*, *-ity* and *-ness* cases discussed in §3.1 above. Their blocking behaviour not only lies at the root of problems encountered by Aronoff’s (1976) account¹³; it is also less clear-cut than that of the other examples discussed above (German agent nouns, English ordinal numerals). While *warmth* and *divinity* are predicted to block *warmness* (if meaning ‘warmth’) and *divineness* (if meaning ‘divinity’) respectively, synonymy among these suffixes (and indeed among *fury* – *furiosness* etc.) cannot be assumed. Firstly, nouns in *-ity* are frequently count rather than (non-count) abstract nouns: *activity*, *opportunity*, *oddity*, *fatality*, *rarity*, *variety* etc.), which are not synonymous with parallel *-ness* forms (Giegerich 1999: 65). Secondly, Riddle (1985) and Koshiishi (1995) have argued that in many cases, *-ity* denotes an abstract property while *-ness* denotes an embodied trait: *hyperactivity* (a condition) vs.

hyperactiveness ('the fact that ...'), similarly *ethnicity* vs. *ethnicness*, *reality* vs. *realness* and, in Matthews' (1991: 77) own usage, *productivity* vs. *productiveness*. (See also Kiparsky (1983: 14) and Marchand (1969: 335).) The same point can be made about *-th* and *-ness*: here too the former denotes an abstract property but the latter may occur so as to express an embodied trait: compare *the length of this vowel* (where length is a non-unary feature) and *the longness of this vowel* (the fact that it is long). The relationship between *-ity/-th* and *-ness* is, then, more of the nature of those exemplified in (12) above than it is a case of robust synonymy: when the former denotes unambiguously a count noun (as *opportunity* perhaps does) the latter is available to form an abstract noun; when the former denotes an abstract (and perhaps gradient) property, the latter is available to denote an embodied trait. In more general terms it may well be the case that examples of the kind (12) are far more typical of the situation found in the derivational morphology than are, say, those in (8) (and of course those of the inflectional morphology), which display robust synonymy: less-than-full synonymy is the strikingly predominant outcome of Plag's (1999) extensive study of apparently-rival morphological processes of English.

"... [t]he domains in which two processes are actual rivals are often much smaller than standardly assumed. In some cases no overlap exists at all, making the assumption of rivalry an artefact of an insufficient analysis. The remaining overlap between domains may be further curtailed by additional restrictions, e.g. phonological ones, with the consequence that the number of cases where there is indeed a choice between affixes is further reduced." (Plag 1999: 227)

It would appear that insufficient (semantic) analysis is indeed behind a number of the disagreements about synonymy blocking found in the literature: researchers tend to posit synonymy, using simple dictionary definitions, without taking into account denotative nuances of the kind pointed out by Riddle (1985), let alone dialect, style, register and collocational differences (Palmer 1976: 88ff., Cruse 1986: 265ff.). Such differences open up a wide range of possibilities for 'rival' forms to occur which, in a simplistic assessment of their semantics, would be expected to be blocked.¹⁴ An account of blocking in formal grammar will therefore succeed only if on the semantic side it allows for high degrees of variability and denotative subtlety.

3.3.2 *Blocking failure: overregularization and counter-blocking*

The foregoing analysis has shown that EC predicts synonymy blocking in Lexical Morphology if (and all the examples have shared this feature) 'process A' is an instance of (3) on stratum 1, blocking the production of synonymous items later in the derivation, which may again be the outcomes of (3) or of a productive rule on stratum 2. I deal in this section, more speculatively, with blocking failure through overregularization, invoking the criteria of either low frequency of the blocking item or high frequency of the blocking victim as possible causes of this failure and hoping then to harness these factors to shed some light on some seemingly unrelated phenomena: the existence of 'synonyms' such as *sofa/settee* as well as *cactuses/cacti* and (in the following section) the absence of clear-cut blocking among productive rival processes on stratum 2.

As was reported in §1, Marcus *et al.* (1992) and Clahsen *et al.* (1992) found that in the inflectional morphology (whose blocking behaviour is not distinct from that of the derivational morphology except perhaps in that its semantics is more clear-cut), items of low frequency are more likely to fail to block others than high-frequency items are. This is surely uncontroversial: low-frequency items will be weakly or not at all represented in the speaker's memory and are therefore less likely to be retrieved in processing than are high-frequency items. (Cf. here Bybee and Slobin's (1982) example of the little-known verb *shend* 'to shame', whose past-tense form *shent* is likely to be overregularized as **shended*.)

More interestingly, Bauer (1988: 67) notes that "... blocking frequently fails to work with the most productive morphological processes" (along similar lines Aronoff (1994)), subscribing elsewhere (1983: 88) to Aronoff's (1976: 44f.) analysis of *glory* – *gloriousness* and his claim that *-ness* is not subject to blocking because the outputs of that rule are not listed. It may well be empirically true that -

ness forms, for example, frequently fail to be blocked; but Aronoff's explanation (reiterated by Scalise (1986: 158ff.) and Spencer (1991: 89)) is wrong. The outputs of highly productive morphological rules are (if they are synonymous with the blocking item) in principle subject to the blocking facility, as has been shown conclusively by Marcus *et al.* (1992) and confirmed for numerous other examples in the present study. They are merely (as is also borne out by the empirical findings of Marcus *et al.* (1992) and Clahsen *et al.* (1992)) particularly likely to be overregularized by the speaker. We have to be quite clear here that overregularization is due not to the absence of the blocking facility in the grammar but to the speaker's failure to implement it (for reasons that are consistent with the nature of the facility itself) – a distinction which is substantiated beyond doubt in Marcus *et al.*'s (1992) study.

It is unfortunate for present purposes that *-ness* has figured so prominently in this debate: *-ness* forms are in many instances not even synonymous with their putative rivals. If speakers use a given *-ness* form then it is not clear whether they do so because they regard it as semantically distinct from other (e.g. *-ity*) forms or because they are overregularizing it, merely failing to retrieve the listed rival form. While there is some (albeit anecdotal) evidence suggesting that "... the *-ness* suffix seems to be thriving at the expense of the *-ity* suffix" (Williams 1965: 285), the explanation of such diachronic trends in the language must remain ambiguous as long as we do not know the speakers' semantic interpretation of the *-ness* forms which (apparently increasingly) override established *-ity* forms: this may be due either to overregularization of the former (see here Anshen and Aronoff (1988)) or to semantic drift of the latter (Riddle 1985). If it is indeed the former (as Williams (1965) seems to suggest, without however documenting the decline of *-ity* forms) then the disappearance of listed (*-ity*) forms from the lexica of certain (social groups of) speakers is another instance of ongoing morphological change, preceded by a syndrome of changes whereby especially the inflectional morphology of English has become more regular in the course of its history (Bybee 1985, Faiß 1992). Highly productive processes are evidently able, through overregularization, to cause the loss of listed forms; but it is important to note that such 'counter-blocking' (while opening up intriguing possibilities for the sociolinguistic explanation of morpholexical change) must remain a strictly diachronic notion, which contradicts the direction in which synchronic blocking happens under the prediction of EC neither in principle nor, under closer analysis, in practice.

Consider now the existence of doublets of the type *cacti/cactuses*, *referenda/referendums*. I argued in Giegerich (1999: 95) that speakers will store such items either as bound roots, *cact-*, *referend-*, inflecting them on stratum 1 (*-us/-i* and *-um/-a* respectively), or as free roots (*cactus*, *referendum*), subject to rule (3) and available for regular pluralization on stratum 2. This account predicts that a given speaker will consistently use one member of each such pair but not the other, a prediction which is probably oversimplified in the light of the facts of overregularization discussed above. Once the overregularized form has gained some currency in the language without completely suppressing the use of the 'correct' form, speakers are likely to be familiar with both and to store both the bound root *cact-* and the free, unanalysed root *cactus* side by side in their mental lexica. Alongside dialect- and idiolect-specific distribution differences, style- and register-specific non-synonymy may then develop to the extent that a single speaker may use the form *cactuses* in everyday talk but *cacti* in a dissertation on cactaceous plants. Frequency criteria, which ultimately drive such differentiation (which, recall, is unrelated to EC and essentially diachronic), are possibly also responsible for the sociolinguistic differentiation of apparent synonyms such as *sofa* and *settee*. Neither of these forms blocks the other as both are produced on the same cycle of stratum 1. Through sociolinguistic non-synonymy, denotative non-synonymy may develop among such doublets, adding to the overall picture whereby true synonymy is a surprisingly rare phenomenon. (See §3.3.3 below, and again Palmer (1976: 88ff.), Cruse (1986: 265ff.).)

3.3.3 *Absence of blocking: rival processes on stratum 2 and the strategy of synonymyavoidance*

Returning to the blocking predictions made by formal grammar, I now address the question of whether blocking can be exerted by a process whose inputs answer the structural description of a rule ('type blocking'), rather than being supplied by a list ('token blocking'). In line with the model of base-driven stratification (and thereby perhaps oversimplifying matters), I assume here that all and only

morphological processes which happen (perhaps for independent reasons) on stratum 2 fall in the category of ‘type blocking’. What is at stake here is the involvement of (3) in causing the blocking effect: I argued in §3.2 that (3), when figuring as ‘process A’ in EC, makes the right predictions regarding blocking; and (3) is in English confined to stratum 1. Here I show that the involvement of (3) is crucial for EC to predict blocking: there is no systematic synonymy blocking among English stratum-2 affixes.

This finding is not new. On the formal side, Janda and Sandoval (1984) have argued that EC cannot be motivated in cases where the processes A and B are ‘lexically free rules’ – I return to this point in §4. And on the empirical side, Plag (1999) has argued on the basis of an extensive study of rival (mainly verb-forming) morphological processes that ‘type-blocking’ does not exist. (See also Rainer (1988).)

Rather than summarising Plag’s intricate analysis of the interaction of verb-forming *-ate*, *-ify*, *-ize* and conversion, I deal here with the more clear-cut case of noun-forming *-al* and *-ment*. The former attaches to end-stressed, usually resultative-transitive verbs, which are usually Latinate and often prefixed, denoting events (or, in Marchand’s (1969: 236f.) terms, ‘the act, fact of –’): *rehearsal*, *acquittal*, *perusal*, *referral*, *withdrawal*, *renewal* etc. Noun-forming *-al* must be confined to stratum 2. It invariably attaches to verbal bases (never to bound-root bases); it may breach the [\pm Latinate] constraint; and the characterisation of its base refers to stress (Siegel 1974, Odden 1993, Giegerich 1999: 113). Note also that in RP, *referral* would be *[$\square \rightarrow \text{hand} \rightarrow \text{arrow} \rightarrow \text{square} \star \bullet$], not [#####], if formed on stratum 1, like *deterrent*, *error* (stratum 1) vs. *detering*, *erring* (stratum 2) (Giegerich 1999: 221ff.).

-ment attaches on both strata (Giegerich 1999: 47f., 55f.): stratum-1 forms, almost exclusively based on bound roots, attract adjective-forming *-al* (which is itself stress-shifting and hence stratum 1): *incremental*, *instrumental* etc.; stratum-2 forms have verbal bases and fail to attract *-al*: **attachmental*, **embarrassmental* (Aronoff 1976: 53ff.). Verbs attracting *-ment* are not confined to specific stress patterns, nor does transitivity figure in the structural description. Marchand (1969: 332) characterises the meaning of *-ment* forms, probably comprehensively, as ‘act or fact of –’, ‘something concrete or material connected with –’, ‘place connected with –’ and (most productively) ‘the state of being *-ed*’.

If there were a type-blocking relationship between these two suffixes, driven by a version of EC other than (1) (e.g. that of Kiparsky (1982), given in (14a) below) then *-al* should block *-ment*.¹⁵ The potential inputs of the *-al* rule constitute a proper subset of the potential inputs of the *-ment* rule. All transitive end-stressed verbs should therefore attract *-al* for the meaning ‘event’ while *-ment* attaching to all such verbs should have the meanings left over by *-al* (e.g. ‘state’); the full semantic range should be available only to verbs which take *-ment* but are ruled out as *-al* bases. The observed facts would then be amenable to a generalisation similar to that shown in (12) above. But they are not.

Lehnert (1971) does list a few doublets, among them *committal* (‘pledge: event’) – *commitment* (‘obligation: state of being committed’) and a few more of similar semantic distribution including *retiral* – *retirement*, of which the former is common only in Scottish English (meaning ‘event’ and leaving the latter with the meaning ‘state’). In Southern British English the former is uncommon, the latter meaning ambiguously ‘event’ and ‘state’. The distribution of the semantics among these pairs is indeed reminiscent of the examples in (12), suggesting a type-blocking relationship of precisely the kind one might expect. These are isolated instances, however: there is no overall generalisation to the effect that the rule attaching *-al* is disjunctively ordered before (and therefore type-blocks) the rule attaching *-ment*. In fact it is the *-ment* form that takes precedence in many cases, thereby (given its more inclusive semantics) obviating a potential *-al* form. Lehnert’s (1971) list of *-ment* forms contains a large number whose bases would fit, but are not attested for, *-al*. A sample of such *-al* gaps is given in (13):

- 13) **amendal* **bombardal*
 **disbandal* **procural*
 **disrobal* **interral*
 **incital* **achieval*
 **enactal* **investal*

**appeasal* **improval*

Facts such as these suggest that in terms of attested forms, *-ment* is more productive than *-al* in that it appears to be favoured by bases which are eligible for both suffixes. Perhaps this is again a diachronic effect of frequency, in turn caused possibly by the dominance of *-ment* in regard of its range of inputs. But an attempt to put the absence of forms such as those in (13) down to overregularization would have to be based on the (probably false) assumption that they actually exist somewhere in the language and speakers merely fail to retrieve them. To invoke overregularization without such evidence would amount to interpreting the absence of blocking as evidence for its existence. Similarly, an explanation invoking (diachronic) counter-blocking would have to assume (again, probably falsely) that such forms used to exist. At any rate, as I argued above, the notion of counter-blocking is explanatory, albeit in an informal sense, in diachronic terms only. In formal synchronic terms we have to conclude that *-al* and *-ment*, although prime candidates for type blocking, are not subject to this phenomenon. This result confirms the findings of Rainer (1988), Plag (1999) and Zwanenburg (1981) whereby there is no type blocking – in our terms, no systematic blocking among forms produced on stratum 2.

Note moreover that the assumption for forms such as those in (13) to ‘exist’ (without being retrieved by individuals) would imply the presence of a list of such forms. But what characterises the outputs of stratum-2 processes is precisely that they are *not* listed, in the technical sense in which stratum-1 forms are: (3) is inoperative on the final stratum. And this in turn means for the present model that there not only is no blocking among stratum-2 processes but that there cannot be such blocking, given the predictions made by EC (1). These predictions are consistent with, while independent from, Janda and Sandoval’s (1984) observation whereby ‘lexically free rules’ do not induce EC-driven blocking; but it suggests a principled explanation for that observation.

But the conclusion whereby there is no type blocking leaves the semantic complementarity between *committal* and *commitment*, *retiral* and *retirement* unexplained, specifically the fact that the former member of each such pair (and more, drawn from verb-forming suffixations, can be found in Plag (1999)) is not simply a hyponym of the latter. If rules such as those attaching *-al* and *-ment* operate ‘side-by-side’ on stratum 2, that is, without having disjunctive order imposed on them by EC, then any observed semantic distinctness between the outputs of semantically-overlapping processes on stratum 2 must be due to a principle other than EC. Recall that similar, non-EC-induced non-synonymy is likely to develop among ‘side-by-side’ items such as *sofa* and *settee*, perhaps as the result of frequency-, style-, register- etc. differentials.¹⁶ Such observations, along with the absence of items such as those in (13) above, point towards an informal learning strategy of synonymy avoidance in language similar to that proposed by Kiparsky (1983: 16f.) but less specific than his version¹⁷ and clearly coexistent with EC rather than replacing EC. Unlike EC, this strategy cannot be expected to be absolute; nor is there any way it can be directly encoded in (let alone predicted by) formal grammar. Put in simple terms, all it amounts to is that synonyms should be expected to develop semantic differences over time and that, based on the lack of experienced ‘true’ synonymy, “... in acquiring a new word one assumes it means something different from the word one already knows.” (Kiparsky 1983: 17).

4. EC AND (ITS) FORM AND MEANING

There is, then, a semantic learning strategy whereby speakers assume words normally not to be synonymous. EC is the partial implementation of this strategy in formal grammar – the Blocking Effect, whereby the formation of any synonyms of listed forms, which may themselves be morphologically simple or complex, in the morphology is blocked. There is no synonymy blocking within the stratum-2 morphology of English – not because EC itself is inoperative there but because stratum 2 contains no listed forms. There is therefore no formal principle that constrains the semantic relations among related stratum-2 forms.

There is also a phonological learning strategy, known as the Alternation Condition, whereby speakers posit abstract (non-surface-true) underlying segments only where those are warranted by alternations (as for *serene* – *serenity* but not for *free*: Anderson (1981)). EC is the partial implementation of this strategy in formal grammar – the ‘Strict Cyclicity Effect’¹⁸, whereby the application of structure-changing rules to listed forms, which again may be morphologically simple or complex, in the phonology is blocked (Kiparsky 1982: 35ff., Giegerich 1988, 1999: 103ff.). To return to a well-worn example, EC predicts that the process *nightingale*_F → *nightingale*_N blocks the application of Trisyllabic Shortening to that form: the input *nightingale* is included in the range of inputs to Trisyllabic Shortening; the output *nightingale* is distinct from the output of the shortening rule (which predicts a short antepenultimate vowel). There is no Strict Cyclicity Effect in the stratum-2 phonology of English – again, because stratum 2 contains no listed forms. There is therefore no formal principle that constrains the phonological relations among related stratum-2 forms.

The parallelism regarding the nature of stratum 2 is striking, confirming for the morpho-semantics what is already known about the morpho-phonology of that stratum – as is on closer inspection the parallelism regarding synonymy blocking and Strict Cyclicity. On the meaning side, listed items are protected in the language from being superseded, through the operation of the morphology, by synonymous complex forms. On the form side, the integrity of the underlying representations of listed items is protected: structure-changing phonological rules may affect the morphological derivatives of listed items but not those items themselves. This protection of both meaning and form of listed items in synchronic derivations is afforded by a cognitively straightforward principle: EC.

However, synonymy blocking and the Strict Cyclicity Effect are driven by different versions of EC. (14a) below gives Kiparsky’s (1982) version – recall that this version was subsequently found not to predict synonymy blocking accurately (Kiparsky 1983, Rainer 1988, Plag 1999). In (14b) I repeat the version invoked here, amended so as to also account for Strict Cyclicity.

14) a. Kiparsky (1982: 8)

Rules A, B apply disjunctively to a form Φ if and only if:

- (i) The structural description of A (the special rule) properly includes the structural description of B (the general rule).
- (ii) The result of applying A to Φ is distinct from the result of applying B to Φ .

b. Current version ((1), amended)

The processes A, B apply disjunctively if and only if:

- (i) A is restricted to a single lexical item; B is not so restricted.
- (ii) A and B are rival processes such that *either*
 - (a) the input of A answers the structural description of B and the outputs of A and B are distinct; *or*
 - (b) the output of A is equivalent to that of B and the inputs of A and B are distinct.

Some of the reasons why (14a) fails to predict synonymy blocking accurately are obvious by now. First, we saw above that the relationship between processes A and B is more specific than what (14a) just calls ‘special’ vs. ‘general’. Process A must be the most special process of all, namely one restricted to a single lexical item: hence (3) is crucially involved in blocking. Associating EC crucially with (3) serves to express in terms of lexical stratification the distinction between token blocking and type blocking, predicting the former but not the latter: (3) does not operate on the final stratum, the only potential site of type blocking. The involvement of (3) also makes sense of the apparent contradiction whereby, say, *width*, although morphologically derived, is regarded as a listed item¹⁹ once it has gained word status. All outputs of stratum 1 are in that sense listed, given the format of stratum-1 morphological ‘processes’ (‘listed concatenation options’: Giegerich (1999: ch. 3))

suggested in (4) above. The statement of (3) as a ‘rule’ is merely short for the sort of derivational process undergone by those lexical items which are able to enter the next stratum: the outputs of (3) are the words formed on stratum 1. The process which turns the root *fury* into a noun and that which turns the root *sang* into a verb marked for past tense are not amenable to generalisation, given especially that every root has to be marked as to whether it is able to become a word and, if so, which lexical category it will bear. (3) is short for a set of similar (but not identical) and essentially unpredictable (listed) processes undergone by certain roots.

The revision of EC whereby ‘process A’ is crucially a manifestation of (3) does not affect EC’s ability to predict Strict Cyclicity – on the contrary. (3) has long been known to be crucially involved there (Giegerich 1988, 1999: ch. 4), just as we now know it to be involved in synonymy blocking.²⁰ Note that this revision has been demanded, on independent grounds, before: Janda and Sandoval (1984) have argued that EC fails to predict accurately the imposition of disjunctive order on ‘lexically-free’ rules in the phonology (the original motivation of EC: Kiparsky (1973)), thereby possibly leaving the Strict Cyclicity Effect as the only effect of EC in the phonology. For the morphology, Janda and Sandoval (1984: 36) have similarly argued, again anticipating the position defended here, that “... the closest thing to an EC that can be motivated ... appears to be limited to cases where lexical listing blocks the application of lexically-free rules.”

The second problem with (14a) is that, as we saw above, blocking is not restricted to the single derivational path of a given root but also applies in cases such as *first* – **oneth*, *mare* – **horsess*. The restriction of the processes involved in EC to a single ‘form Φ ’ is therefore unwarranted. This revision again does not affect the prediction of Strict Cyclicity through EC and can therefore be generalised.

Cases such as *first* – **oneth* reveal a third aspect of blocking which is inadequately handled by (14a). It is this aspect, relating to the notion of ‘rival process’, that differentiates the EC which triggers blocking from that which causes Strict Cyclicity. In blocking, it is the output of (3), *first*_{Adj}, that prevents the output of the process attaching *-th* to *one* from occurring, while the inputs to the two processes are distinct. In Strict Cyclicity, on the other hand, for example the input to (3) *nightingale* is also a candidate for the input (roughly ‘CV \nrightarrow CVCV’) of Trisyllabic Shortening, while the outputs of the two processes are distinct. Blocking and Strict Cyclicity therefore appeal to two different kinds of rivalry among processes: output rivalry and input rivalry. There is no conceivable third form of rivalry.

But that is not all. If Janda and Sandoval (1984) are correct then, in terms of the present framework, EC governs (nothing but) the way in which the lexical derivation produces word-size linguistic signs; specifically, EC governs the meanings and the forms of words – the two sides of the linguistic sign. And indeed, the two different sides of the linguistic sign are involved in synonymy blocking and Strict Cyclicity: meaning in the former, where ‘rivalry’ is output synonymy, and form (‘sound’) in the latter, where ‘rivalry’ is the competition of two processes for a phonological input. Synonymy blocking is, then, ‘output rivalry of meaning’ and Strict Cyclicity is ‘input rivalry of form’.

This raises an obvious question. Is there, and does EC govern, ‘output rivalry of form’ and ‘input rivalry of meaning’? The former is ‘homonymy blocking’ (Jespersen 1942: 231, Plank 1981: 159ff., Bauer 1988: 68), whereby the existence of a given listed form blocks the formation of a (semantically distinct) homonym in the morphology: *toilet* blocks **toylet* (‘small toy’), *battery* cannot mean ‘bat roost’, the listed (stratum-1) meaning of *waiter* (‘restaurant attendant’) blocks the regular (stratum-2) semantic interpretation ‘someone who is waiting’. Homonymy blocking, more problematic than synonymy blocking, is predicted by EC as long as the term ‘equivalent’ is used in clause (iib) of (14b) so as to cover both synonymy and homonymy. But this prediction of EC needs detailed assessment

I offer not even the beginning of an answer to the latter part of the question.

To appear in *Transactions of the Philological Society* 99.2 (2001):

Department of English Language
University of Edinburgh
David Hume Tower
George Square
Edinburgh EH8 9JX
UK
Email: heinz.giegerich@ed.ac.uk

REFERENCES

- ANDERSON, STEPHEN R., 1981. 'Why phonology isn't natural', *Linguistic Inquiry* 12, 493-539.
- ANSHEN, FRANK and MARK ARONOFF, 1988. 'Producing morphologically complex words', *Linguistics* 26, 641-655.
- ARONOFF, MARK, 1976. *Word Formation in Generative Grammar* (= Linguistic Inquiry Monographs; 1), Cambridge MA: MIT Press.
- ARONOFF, MARK, 1994. 'Blocking', in R. E. Asher (ed.), *The Encyclopedia of Language and Linguistics*, vol. 1, Oxford: Pergamon Press, 373-374.
- BAUER, LAURIE, 1983. *English Word-Formation*, Cambridge: Cambridge University Press.
- BAUER, LAURIE, 1988. *Introducing Linguistic Morphology*, Edinburgh: Edinburgh University Press.
- BOOIJ, GEERT and JERZY RUBACH, 1987. 'Postcyclic vs. postlexical rules in lexical phonology', *Linguistic Inquiry* 18, 1-44.
- BOROWSKY, TONI, 1990. *Topics in the Lexical Phonology of English*, New York: Garland.

- BRUNNER, KARL, 1962. *Die englische Sprache: Ihre geschichtliche Entwicklung, zweiter Band: Die Flexionsformen und ihre Verwendung*, zweite, überarbeitete Auflage, Tübingen: Max Niemeyer Verlag.
- BYBEE, JOAN L., 1985. *Morphology: a Study of the Relation between Meaning and Form*, Philadelphia: John Benjamins.
- BYBEE, JOAN L. and SLOBIN, DAN I., 1982. 'Why small children cannot change language on their own: suggestions from the English past tense', in Anders Ahlquist (ed.), *Papers from the 5th International Conference on Historical Linguistics* (= Current Issues in Linguistic Theory; 21), Philadelphia: John Benjamins, 29-37.
- CLAHSEN, HARALD, 1992. 'Commentary. Overregularization in the acquisition of inflectional morphology: a comparison of English and German', in Gary F. Marcus *et al.* (1992), *Overregularization in Language Acquisition*, with commentary by Harald Clahsen (= Monographs of the Society for Research in Child Development; Serial No. 228, Vol. 57, No. 4), Chicago: University of Chicago Press, 166-178.
- CLAHSEN, HARALD, ROTHWEILER, MONIKA, WOEST, ANDREAS and MARCUS, GARY F., 1992. 'Regular and irregular inflection in the acquisition of German noun plurals', *Cognition* 45, 225-245.
- CLARK, EVE V., 1981. 'Lexical innovations: how children learn to create new words', in Werner Deutsch (ed.), *The Child's Construction of Language*, London: Academic Press, 299-328.
- CLARK, EVE V., 1993. *The Lexicon in Acquisition* (= Cambridge Studies in Linguistics; 65), Cambridge: Cambridge University Press.
- CRUSE, D. A., 1986. *Lexical Semantics*, Cambridge: Cambridge University Press.
- FABB, NIGEL, 1988. 'English suffixation is constrained only by selectional restrictions', *Natural Language and Linguistic Theory* 6, 527-539.
- FAISS, KLAUS, 1992. *English Historical Morphology and Word-Formation: Loss versus Enrichment* (= FOKUS Linguistisch-Philologische Studien; 8), Trier: WVT Wissenschaftlicher Verlag Trier.
- FLEISCHER, WOLFGANG, 1974. *Wortbildung der deutschen Gegenwartssprache*, dritte, überarbeitete Auflage, Leipzig: Bibliographisches Institut.
- GIEGERICH, HEINZ J., 1988. 'Strict cyclicity and elsewhere', *Lingua* 75, 125-134.
- GIEGERICH, HEINZ J., 1994. 'Base-driven stratification: morphological causes and phonological effects of "strict cyclicity"', in Richard Wiese (ed.), *Recent Developments in Lexical Phonology* (= Theorie des Lexikons: Arbeiten des Sonderforschungsbereichs 282; 56), Düsseldorf: Heinrich Heine Universität, 31-61.
- GIEGERICH, HEINZ J., 1999. *Lexical Strata in English: Morphological Causes, Phonological Effects* (= Cambridge Studies in Linguistics; 89), Cambridge: Cambridge University Press.
- GORDON, PETER, 1985. 'Level-ordering in lexical development', *Cognition* 21, 73-93.
- GORDON, PETER, 1990. 'Learnability and feedback', *Developmental Psychology* 26, 217-220.
- HALLE, MORRIS, 1977. 'Tenseness, vowel shift and the phonology of the back vowels in Modern English', *Linguistic Inquiry* 8, 611-625.
- IVERSON, GREGORY K. and WHEELER, DEIRDRE W., 1988. 'Blocking and the Elsewhere Condition', in Michael Hammond and Michael Noonan (eds.), *Theoretical Morphology: Approaches in Modern Linguistics*, San Diego: Academic Press, 325-338.

- JANDA, RICHARD D. and SANDOVAL, MARÍA, 1984. *'Elsewhere' in Morphology*, Bloomington: Indiana University Linguistics Club.
- JESPERSEN, OTTO, 1942. *A Modern English Grammar on Historical Principles, Part IV: Morphology*, London: George Allen and Unwin, Copenhagen: Ejnar Munksgaard.
- KIPARSKY, PAUL, 1973. "'Elsewhere' in phonology", in Stephen R. Anderson and Paul Kiparsky (eds.), *A Festschrift for Morris Halle*, New York: Holt, Rinehart and Winston, 93-106.
- KIPARSKY, PAUL, 1982. 'Lexical morphology and phonology', in The Linguistics Society of Korea (ed.), *Linguistics in the Morning Calm: Selected Papers from SICOL-1981*, Seoul: Hanshin Publishing Co., 3-91.
- KIPARSKY, PAUL, 1983. 'Word formation and the lexicon', in Frances Ingemann (ed.), *Proceedings of the 1982 Mid-America Linguistics Conference*, Lawrence: University of Kansas, 3-29.
- KOSHIISHI, TETSUYA, 1995. 'On the English suffixes *-ity* and *-ness*', in S. Takahashi, K. Asao and R. Matsumoto (eds.), *In Honor of Nobuyuki Higashi*, Tokyo: Kenkyusha, 53-73.
- LEHNERT, MARTIN, 1971. *Reverse Dictionary of Present-Day English – Rückläufiges Wörterbuch der englischen Gegenwartssprache*, Leipzig: VEB Verlag Enzyklopädie.
- MARCHAND, HANS, 1969. *The Categories and Types of Present-Day English Word-Formation: a Synchronic-Diachronic Approach*, 2nd edn., München: C. H. Beck'sche Verlagsbuchhandlung.
- MARCUS, GARY F., PINKER, STEVEN, ULLMAN, MICHAEL, HOLLANDER, MICHELLE, ROSEN, T. JOHN and XU, FEI, 1992. *Overregularization in Language Acquisition*, with commentary by Harald Clahsen (= Monographs of the Society for Research in Child Development; Serial No. 228, Vol. 57, No. 4.), Chicago: University of Chicago Press.
- MASCARÓ, JOAN, 1976. *Catalan Phonology*, doctoral dissertation, MIT, Cambridge MA.
- MATTHEWS, PETER H., 1991. *Morphology*, 2nd edn., Cambridge: Cambridge University Press.
- MCMAHON, APRIL M. S., 1990. 'Vowel shift, free rides and strict cyclicity', *Lingua* 80, 197-225.
- MOHANAN, K. P., 1986. *The Theory of Lexical Phonology*, Dordrecht: D. Reidel Publishing Co.
- MOHANAN, K. P. and MOHANAN, TARA, 1982. 'Lexical phonology and the consonant system of Malayalam', *Linguistic Inquiry* 15, 575-602.
- MYERS, SCOTT, 1987. 'Vowel shortening in English', *Natural Language and Linguistic Theory* 5, 485-534.
- NIEDEGGEN-BARTKE, SUSANNE, 1998. *Experimentelle Studien zur Flexion und Wortbildung* (= Linguistische Arbeiten; 376), Tübingen: Max Niemeyer Verlag.
- ODDEN, DAVID, 1993. 'Interaction between modules in lexical phonology', in Sharon Hargus and Ellen Kaisse (eds.), *Studies in Lexical Phonology* (= Phonetics and Phonology; 4), San Diego: Academic Press, 111-144.
- PALMER, FRANK R., 1976. *Semantics: a New Introduction*, Cambridge: Cambridge University Press.
- PANAGL, OSWALT, 1977. *Aspekte der kindersprachlichen Wortbildung* (= LAUT Series B; 24), Trier: Linguistic Agency, University of Trier.

- PAUL, HERMANN, 1887. 'Ueber die Aufgaben der Wortbildungslehre', *Sitzungsberichte der Philosophisch-Philologischen und der Historischen Classe der Königlich Bairischen Akademie der Wissenschaften zu München*, 692-713.
- PINKER, STEVEN, 1984. *Language Learnability and Language Development*, Cambridge MA: Harvard University Press.
- PINKER, STEVEN, 1999. *Words and Rules: the Ingredients of Language*, London: Weidenfeld and Nicolson.
- PLAG, INGO, 1996. 'Selectional restrictions in English suffixation revisited: a reply to Fabb (1988)', *Linguistics* 34, 769-798.
- PLAG, INGO, 1998. 'Morphological haplology in a constraint-based morpho-phonology', in Wolfgang Kehrein and Richard Wiese (eds.), *Phonology and Morphology of the Germanic Languages* (= Linguistische Arbeiten; 386), Tübingen: Max Niemeyer Verlag.
- PLAG, INGO, 1999. *Morphological Productivity: Structural Constraints in English Derivation* (= Topics in English Linguistics; 28), Berlin: Mouton de Gruyter.
- PLANK, FRANS, 1981. *Morphologische (Ir-) Regularitäten: Aspekte der Wortstrukturtheorie* (= Studien zur deutschen Grammatik; 13), Tübingen: Gunter Narr Verlag.
- RAINER, FRANZ 1988. 'Towards a theory of blocking: the case of Italian and German quality nouns', in Geert Booij and Jaap van Marle (eds.), *Yearbook of Morphology*, Dordrecht: Foris Publications, 155-185.
- RIDDLE, ELIZABETH M., 1985. 'A historical perspective on the productivity of the suffixes -ness and -ity', in Jacek Fisiak (ed.), *Historical Semantics, Historical Word-Formation*, Berlin: Mouton, 435-461.
- SCALISE, SERGIO, 1984. *Generative Morphology* (= Studies in Generative Grammar; 18), Dordrecht: Foris Publications.
- SELKIRK, ELISABETH O., 1982. *The Syntax of Words* (= Linguistic Inquiry Monographs; 7), Cambridge MA: MIT Press.
- SIEGEL, DOROTHY, 1974. *Topics in English Morphology*, doctoral dissertation, MIT, Cambridge MA.
- SPENCER, ANDREW, 1991. *Morphological Theory: an Introduction to Word Structure in Generative Grammar*, Oxford: Basil Blackwell.
- STEMBERGER, JOSEPH P., 1982. 'Syntactic errors in speech', *Journal of Psycholinguistic Research* 11, 313-345.
- VAN MARLE, JAAP, 1986. 'The domain hypothesis: the study of rival morphological processes', *Linguistics* 24, 601-627.
- WIESE, RICHARD, 1996. *The Phonology of German*, Oxford: Clarendon Press.
- WILLIAMS, THEODORE, 1965. 'On the -ness peril', *American Speech* 40, 279-286.
- ZWANENBURG, W., 1981. 'Le principe de blocage dans la morphologie derivationelle', in S. Daalder and M. Gerritsen (eds.), *Linguistics in the Netherlands 1981*, Amsterdam: North Holland, 47-57.

Notes

¹ This article is based on papers read at the Philological Society on 14 January 2000 and at the Edinburgh Linguistic Circle on 17 February 2000. I am grateful to the audiences for their many insightful contributions to the discussion, and to John Anderson, Laurie Bauer, Andrew Carstairs-McCarthy, Tetsuya Koshiishi, Mits Ota, Ingo Plag, Graeme Trousdale, Richard Wiese and two anonymous reviewers for their comments on earlier drafts of this article.

² Here and below, the asterisk means ‘blocked’ unless otherwise indicated. I take no position regarding the well-formedness, morphological or otherwise, of blocked items; but (unlike Rainer (1988: 162)) I do not regard slips of the tongue and children’s speech as ‘strong external evidence’ for well-formedness.

³ In earlier work, Pinker (e.g. 1984: 177) refers to a similar condition as the “Unique Entry Principle”.

⁴ German has such processes on stratum 1 (Root-to-Stem) and stratum 2 (Stem-to-Word), where lexical category specifications are assigned by the former.

⁵ I argue in Giegerich (1999: 283) that what is usually referred to as verb-to-noun conversion (*convict* – *cónvict*) and positioned on stratum 1 by Kiparsky (1982), unlike its productive (stratum-2) noun-to-verb counterpart (*to book*, *table*, *pattern*, *condition* etc.), should instead be regarded as the listing of a given root for both (3a) and (3b).

⁶ The statement in (4) whereby *-ism* attracts *-al* is possibly true for *baptismal* only (see Lehnert 1971), probably due to the extremely odd semantics of this *-ism* (‘event’), and should therefore perhaps be omitted – especially as it then overgenerates, giving rise to **baptismalize*, **baptismality* (if such items are neither blocked nor semantically ill-formed). **Baptization*, on the other hand, is semantically quite regular but, as will become evident below, victim to blocking through *baptism*. In more general terms, it may be the case that affixes attached directly to bound roots fail to take part in the regularities predicted by the format exemplified in (4) for stacked affixes.

⁷ The mere absence of a complex listed item in the presence of a morphologically simple(r) synonym constitutes evidence for blocking only if the format proposed above is correct whereby every affix is listed for affixes which regularly stack onto it. If this format is shown to be inadequate then such items are not systematically blocked but merely (unaccountably) not listed. (I am grateful for this observation to Caroline Heycock (pers. comm.).)

⁸ Alternatively, we may (as does Marchand 1969: 248ff.) simply regard *-ency/-ancy/-ence/-ance* as one or more separate suffixes, not synchronically derived from *-ent* and *-ant* respectively but linked to those through a redundancy relationship (similar to that linking German *-eur* and *-euse*, discussed below). Nothing depends here on such details of stratum-1 listing.

⁹ For further details see Giegerich (1999: 84ff.), more generally Fleischer (1974: 194ff.). Wiese (1996: 119ff.) treats *-er* as a stratum-1 suffix. I regard it, similarly to its English counterpart (Giegerich 1999: 33f.) as predominantly stratum 2, where it attaches productively to verb stems and denotes agents (*Fahrer* ‘driver’, *Kassierer* ‘cashier’), with a sporadic presence on stratum 1, listed with certain roots (*Chiroprakter*) and/or displaying non-agent meanings: *Bremer* ‘person from Bremen’ vs. *Aachener* (**Aacher*) ‘person from Aachen’. The same holds for *-in*. (See also Plag (1998: 205ff.).)

¹⁰ A similar development seems to be underway in the case of *Friseur*/*Friseurin*, where the ability of the former to block the latter is declining. Possibly a special case of overregularization, this may be due to analogy with *Masseurin*, *Kommandeurin* and a developing connotation of ‘highly trained professional’ associated with *-eurin*, or simply to a recent spate of very popular German jokes caricaturing the owners of certain sports cars and their *Friseur* girlfriends. Whatever the cause(s), we

are witnessing the decline of the suffix *-euse*, likely to result in the free availability of *-in* to all agent nouns in *-eur*. The occurrence of doublets such as *Souffleurin/Souffleuse*, *Dompteurin/Dompteuse* would be unsurprising, similar to *cacti/cactuses* etc. (§3.3.2 below).

¹¹ Irregular (stratum-1) forms in this paradigm are notable for clustering in the low (and undoubtedly more frequent) numbers: ordinal numerals above *fifth* are entirely regular. It would be surprising to find an isolated irregular (stratum-1) form for, say, *257th*. (I am grateful to Jane Edwards for asking in class how Lexical Morphology handles the ordinal numerals. This is how.)

¹² “The formation of nouns in *-ung* is prevented through the existence of simpler forms with the function of *nomen actionis*.” (Paul 1897: 704) – “A form in *-ung* fails to occur in exceptional cases where simpler forms exist which can take an objective genitive, as *Lob*, *Raub*, ...” (p. 707) [My translations. HG]

¹³ The flaws in Aronoff’s account of synonymy blocking – in particular his contradictory treatment of *-ness* – are well-documented (Plank 1981: 177ff., Rainer 1988, Plag 1999: 50ff.). The formal account of blocking offered by Scalise (1984: 165ff.) is equally flawed in that it merely reiterates Aronoff’s analysis.

¹⁴ If, for example, we use handbooks such as Marchand (1969) as the sole sources for the semantics of derivational suffixes then absurd conclusions such as the following are not beyond possibility. *-ous* and *-ful* are synonymous (Marchand 1969: 339, 291), as are *-ity* and *-ness* (Marchand 1969: 312, 334). Therefore, if *glory* blocks **gloriosity* then *fear* and *fearfulness* are synonymous.

¹⁵ Note that *-ment/-al* are blocked by stratum-1 *-(at)ion*: *denunciation* – **denouncal/denouncement*, *delusion* – **deludal/deludement*.

¹⁶ Bauer’s (1988: 67) example of *normality* – *normalcy* falls in the same category. Produced on parallel cycles, neither of these forms is predicted to block the other. But their distribution is largely complementary in terms of dialect; and the latter is, at least for those speakers who use both forms, usually restricted to political, economic etc. contexts.

¹⁷ “The output of a lexical rule may not be synonymous with an existing lexical item.” (Kiparsky 1983: 16)

¹⁸ A first attempt at incorporating the Alternation Condition (which cannot itself be imposed in formal terms: Kiparsky (1982: 36)) in formal grammar was the Strict Cycle Condition (Mascaró 1976). Note that the Strict Cycle Condition/Effect (and its prediction through EC) is stronger than the Alternation Condition in that it allows structure-changing rules to operate only in the morphologically complex member of any pair of forms sharing an underlier, while the Alternation Condition allows the application of structure-changing rules in either member of such a pair so long as it does not take place in both members.

¹⁹ Recall that in German, processes of the format (3) are found on strata 1 (Root-to-Stem) and 2 (Stem-to-Word), identifying effectively any form produced on a non-final stratum as ‘listed’. Words formed on stratum 2 are therefore expected to block the formation of their synonyms on stratum 3. This is certainly the case for plural nouns (Clahsen *et al.* 1992, Wiese 1996: 136ff.), where stratum-2 *-(e)n* blocks the default (stratum-3) *-s*. But detailed investigation of the derivational morphology of strata 2 and 3 is in order to confirm the predictions stated here.

²⁰ Another reason why Kiparsky’s (1982) account failed to predict accurately both synonymy blocking and Strict Cyclicity lies in the version of lexical stratification current at the time. Lexical stratification was then viewed as affix-driven (see §2 above), therefore lacking processes of the type (3). Kiparsky (1982) posited ‘Identity Rules’ instead, which served the same purpose as (3) does here but lacked independent motivation (see Iverson and Wheeler (1988) for the morphology, Mohanan and Mohanan (1982) for the phonology). As I argued in §2 (and in Giegerich (1999: chs. 3f.)), (3) is independently motivated in a base-driven stratification model.