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Livio Gaeta, Turin (Italy) and Davide Ricca, Turin (Italy)

48. Restrictions in word-formation

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Abstract

The main factors taken to be responsible for constraining or restricting the application of word-formation rules are surveyed. On the one hand, constraints of a general nature will be discussed which may be due to several distinct reasons ranging from our concrete cognitive abilities to different views of approaching word-formation from a theoretical point of view. On the other, a typology of more specific restrictions will be provided which result from the interaction of the different levels of the linguistic analysis.

1. Introduction

Word-formation rules (WFRs) typically undergo a number of general constraints or more specific restrictions conditioning or limiting their productivity, the latter intended in a broad sense as the possibility of applying to lexical bases serving as an input (see the article 48 on productivity for a survey). Rainer (2005a: 335) observes that the question of restrictions only arises for productive WFRs, for which the application domain has to be defined intensionally, i.e. by indicating one or more features that any potential base must or should possess as well as additional factors from outside the pattern itself that may be relevant. For unproductive rules the domain is generally described extensionally by enumerating the set of bases to which the rule applies. However, this does not exclude that intensionally defined features may also synthetically summarize the properties shared by the enumerated bases, especially when the latter are quite numerous. What is more, productivity is likely to be a gradient notion to the effect that in some cases a very low degree of productivity approximates unproductivity.

The question of the restrictions on WFRs has been the object of wide investigations ever since, and recent surveys can be found in Bauer (2005) and Rainer (2000, 2005a). As a matter of fact, a big part of the research carried out in word-formation focuses on the restrictions displayed by WFRs. They can be approached adopting two different, although interwoven, perspectives: theory-driven restrictions or constraints of a general nature, and specific restrictions empirically resulting from the analysis of single language-specific patterns. The latter also come from the interaction of morphology with the other components of the language.

In what follows, a survey of the different aspects of the question will be offered, (i) starting with different views of looking at constraints and restrictions and subsequently (ii) developing a typology of restrictions resulting from the interaction of the different levels of the linguistic analysis. In this regard, it must be observed that constraints are usually considered to be those absolute limitations on WFRs which are of a rather general nature while restrictions have a more reduced scope (cf. Rainer 2005a). On the other hand, in the shade of Optimality Theory constraints can also be taken to be violable, much more limited in scope and hierarchically ordered (cf. Bauer 2001: 126). However, the literature is not always consistent with these distinctions; in this article I will follow Rainer's distinction and generally speak of constraints with regard to general limits on WFRs which are independent of the particular linguistic level considered while restrictions are held to be of a more reduced scope.

2. Constraints on WFRs

Generally, there are two possible ways of looking at the question of constraints on WFRs: the first view adopts a top-down perspective, according to which there are constraints due to the format of the grammar and more in general of the language faculty; this view is accordingly competence-oriented. The opposite view is performance-oriented and treats the constraints as resulting in a bottom-up fashion from the way in which our language faculty concretely treats lexical items when they are processed by our cognitive equipment. From the interplay of these two opposite views four possible families of

constraints can be identified, which also reflect the historical trend from more competence-oriented approaches typical of the early models of word-formation to the more performance-oriented views characterizing more recent research supported by the use of large electronic corpora.

2.1. Constraints relating to the format of the WFRs

A first type of constraints directly depends on how WFRs are generally conceived. In this regard, a question which has been discussed at length concerns the input of WFRs, whether they select as a base a possible or an actual word or rather an abstract morpheme. In a nutshell, while nothing seems to hinge *a priori* on whether a word is possible or actual, i.e. stabilized or entrenched in our mental lexicon, the question of word- or morpheme-based WFRs is much thornier. As to the first point, it can be easily shown that possible but unattested words can constitute the input of WFRs, as in *to decaffeinate* which presupposes the unattested *°to caffeinate*. On the other hand, WFRs may be sensitive to the actual status of the base, as in the cases of paradigmatic word-formation pointed out by Rainer (1993: 29) in which a complex word is formed on the basis of another complex word as in the German compound *Volkszählung* ‘population census, lit. population count’ → *Volkszähler* ‘person carrying out the census’, which can only be interpreted with regard to the idiosyncratic meaning of the base. Thus, a conceivable form *??Volksberechner* is odd because no base *??Volksberechnung* ‘population count’ occurs. Furthermore, bases that are stabilized in the lexicon and give rise to instances of paradigmatic word-formation may also be larger than one word, as in *baroque flute* → *baroque flutist*, while *??wooden flutist* is odd because *wooden flute* is not stabilized in the lexicon (cf. Spencer 1988). This latter example calls into play another family of constraints which aim at limiting the access of syntactic patterns and rules below the word level and go under various names such as ‘lexical integrity principle’, ‘no phrase constraint’, etc. (see Gaeta 2006 for a recent survey).

As to the second point, Aronoff (1976) launched the slogan of a word-based word-formation intending that the input of WFRs cannot consist of (bound) morphemes but rather of full lexemes (possibly deprived of their inflectional endings). This is motivated by word pairs like *aggression/aggressive* which are not to be derived from a bound stem **aggress-* but rather form a series of derivatives *Xion/Xive*, in which the adjective is formed on the basis of the action noun. Substantive evidence in support of this analysis is provided among others by those cases in which an available verb stem cannot be the base of the adjective which is rather formed on the action noun: *induction* → *inductive* in spite of *to induce* (cf. Aronoff 1976: 28–30). However, although words intended as lexemes are undoubtedly the prototypical input of WFRs, the restriction on bound stems cannot be universal as is shown on the one hand by bound stems like *log-* occurring in *logic, logistics*, etc. On the other, for languages of the polysynthetic or strongly fusional (including the inflecting) type, the concept of lexeme may be much more difficult to define. For instance, in Montagnais, an Algonquian language spoken in Canada, a strictly morpheme-based approach has been defended (cf. Drapeau 1980). However, morphological templates characterizing non-concatenative processes might be more easily treated in a word-based fashion rather than in a morpheme-based framework which can only

accommodate a linear concatenation of morphemes intended as atomic units. For instance, in Hindi/Urdu the anticausative verb form is claimed to be straightforwardly obtained by shortening the root vowel: $[XV_1V_1]_V$ ‘A causes B to happen’ \leftrightarrow $[XV_1]_V$ ‘B happens’, as in *maar-/mar-* ‘to kill/die’ (cf. Haspelmath 2002: 49).

This question has gained more relevance in recent times after Aronoff’s (1994) “morphomic” turn especially from the perspective of a realizational approach to inflectional morphology as suggested by Stump (2001: 2). This view has repercussions for WFRs that manifest themselves in a general tendency towards the maximization of base allomorphy with respect to affix allomorphy (cf. Loporcaro 2012 for a discussion with regard to inflectional morphology). The base allomorphy is accordingly dealt with in terms of different “morphemes”, i.e. concrete formats of a certain lexeme, selected by the affix. In this way, a bias arises towards favoring as input to WFRs existing morphemes, while abstract, underspecified morphemes like stems which increase affix allomorphy are taken to be costly. In brief, the problem is how to deal with cases which allow different interpretations going back to different input bases. This also implies a different format for the affix. For instance, there are at least two different allomorphs for the Italian suffix forming agent or instrument nouns found in *stampare* ‘to print’ \rightarrow *stampatore* ‘printer’ or *udire* ‘to hear’ \rightarrow *uditore* ‘hearer’ in contrast with *aggredire* ‘to attack’ \rightarrow *aggressore* ‘mugger’, *distribuire* ‘to distribute’ \rightarrow *distributore* ‘distributor’, etc. (see the article 45 on paradigmatically determined allomorphy: the “participial stem” from Latin to Italian). The latter derivatives select as base the Latin perfect participle which does not match the actual past participle (cf. **aggresso* vs. *aggregito*, **distributo* vs. *distribuito*). On the other hand, the former may be either analyzed as formed by *-tore* plus the so-called verbal stem (formed in turn by the root plus the thematic vowel: *stampa-tore*), or by *-ore* plus the stem of the past participle (cf. *stampat-ore*). The latter analysis presents the advantage of minimizing the suffix allomorphy at the expense of the base allomorphy for which two distinct morphemes have to be assumed. In addition, it also accounts for derivatives like *diffondere* ‘to diffuse’ \rightarrow *diffusore* ‘diffuser’ based on the Italian past participle *diffuso*. However, this choice leaves unexplained on the one hand those cases which require as a base the verbal stem instead of the past participle as *scoprire* ‘to discover’ \rightarrow *scopritore* ‘discoverer’ (cf. the past participle *scoperto*), and on the other new formations which are based neither on the Latin nor on the Italian participle but are rather formed from the parallel action nouns suffixed with *-ione* like *estorcere* ‘to extort’ \rightarrow *estorsore* ‘blackmailer’ / *estorsione* ‘extortion’ (cf. the Latin and Italian past participles *extortus/estorto*, see Rainer 2001), possibly under the influence of Neo-Latin patterns (see the article 88 on word-formation in Neo-Latin).

A second type of constraints on the format of WFRs focuses on their possible input or output, and maintains that any WFR should be limited to one single word category in input (Unitary Base Hypothesis, UBH, cf. Aronoff 1976: 47) or in output (Unitary Output Hypothesis, UOH, cf. Scalise 1984: 137). As for the UBH, it has been pointed out that practically any combination of features such as $[\pm N]$, $[\pm V]$ and the like has been suggested, which means that “by choosing the appropriate feature system the UBH can be immunized against refutation” (Plag 1999: 48). Furthermore, the process of base selection is most likely guided by rule-specific semantic principles (cf. Plag 1998: 237) rather than by purely abstract features. Finally, WFRs are often sensitive to well-defined lexical sub-domains on the basis of a unitary meaning of the process (cf. Plank 1981: 43–65, Rainer 2005b). At any rate, in many cases the decision of considering two deriva-

tives from different bases (like for instance the denominal *fashion-able* and the deverbal *accept-able*) as related to the same or to a different WFR depends on how much we look with favor at the occurrence of affixal homonymy or we rather prefer the assumption of rules of semantic extension as those discussed in the [article 72 on agent and instrument nouns](#).

While the UBH has been discussed at length, the UOH has enjoyed much less discussion and has been, to a large extent, taken for granted. In principle, the UOH opens two different perspectives depending on whether the formal or the semantic aspect of the WFR is in focus. From the formal perspective, the UOH is strictly connected to the degree of allomorphy one is willing to tolerate before considering two affixes as distinct. For instance, in the Italian case discussed above one might be tempted to postulate two different WFRs, a first one selecting a suffix *-tore* and a second one selecting *-ore*. In virtue of their identical meaning, however, this choice is likely to be inadequate. On the other hand, nobody would postulate a unitary WFR for two utterly different affixes sharing the same meaning such as *-ant* in *to inhabit* → *inhabitant* and *-er* in *to sleep* → *sleeper*. In other words, suppletion is generally admitted for lexical bases (e.g., the French pair *eau* ‘water’ / *hydr-ique* ‘hydric’, cf. Schwarze 1970) but much less so for derivational affixes. Notice that this does not hold for inflectional rules (e.g., the Hungarian second person singular suffix of the indefinite present takes the form *-ol* after sibilants or affricates and *-(a)sz* elsewhere, cf. Carstairs 1988: 70), probably because of the stronger paradigmatic force displayed by inflection versus that of word-formation.

Scalise (1984) suggests that the UOH might be valid only for the formal aspect of WFRs, not for their semantic aspect. However, that the question is much more complex is shown by the Italian suffix *-ino* which gives rise to several different sorts of derivatives: *mare* ‘sea’ → *mar-ino* ‘marine’, *tavolo* ‘table’ → *tavol-ino* ‘table-DIM’, *bocca* ‘mouth’ → *bocch-ino* ‘mouthpiece’ and *stagno* ‘tin’ → *stagn-ino* ‘tinker’. The first case can be explained away as an instance of affixal homonymy because the output word category is clearly different (an adjective vs. a noun), although this criterion is not uncontroversial as the objections raised against the UBH above also apply here. The other three examples are more complicated, because the purely diminutive value found in *tavolino* can also be traced back in instrument nouns like *bocchino* that denote little objects, and even the agent nouns like *stagnino* generally refer to humble, in a way “little” professions. Even worse, these cases are paralleled by deverbal instrument and agent nouns like, respectively, *cancellare* ‘to erase’ → *cancellino* ‘eraser’ and *spazzare* ‘to sweep’ → *spazz-ino* ‘street sweeper’, which display exactly the same properties. It is not easy to decide whether all of this should be assigned to the same or to different WFRs. Similar to what we observed above for the UBH, the decision depends on the likelihood of assuming rules of semantic extension; as an alternative, one might also think of a relationship in terms of family resemblance of a Wittgensteinian kind among the several nominal types that have in any case to be kept apart from the adjectival homonym (see the [article 60 on schemata and semantic roles in word-formation](#)).

Finally, a further constraint generally assumed is the open-class base hypothesis which requires that only major lexical classes can be input of WFRs, namely nouns, verbs, adjectives and adverbs. This excludes that, for instance, adpositions and pronouns be involved in WFRs, which forces an analysis of certain patterns like German *hinauf* ‘thereon’, *darunter* ‘there:below’, etc. as resulting from a process different from word-formation proper. Moreover, it is not expected to find cases like Spanish *le* ‘her’ →

leísmo ‘use of the form *le* for direct objects’, in which a pronoun serves as the input of a WFR. However, one can conclude that the major word classes represent the most common or prototypical input of WFRs, although this restriction probably has to be related to the main function of vocabulary enrichment typical of word-formation. In this light, words belonging to the minor word classes usually display grammatical meaning which is only in restricted cases salient enough to be used in word-formation as shown by the Spanish example mentioned above or by numerals (see the article 84 on denumeral categories).

2.2. Constraints relating to general properties of the grammar

In the light of its general value, the last constraint might also be treated in this section, which discusses constraints depending on general properties usually held to shape our language faculty. One such property is expressed by the compositionality or Frege’s principle, because the German logician Gottlob Frege is generally credited for its first modern formulation (but see Klos 2011): it requires that the meaning of a complex word resulting from a WFR be a function of the meaning of the rule and the base. Against Frege’s principle, clear cases of analogical formations have been mentioned which require a holistic reference to another complex word like the German compound *Doktormutter* ‘female thesis supervisor’ with regard to its male counterpart *Doktorvater*. In general, a holistic approach has to be assumed when affix substitution occurs like the Italian verb *svitare* ‘to unscrew’ which can only be interpreted by making reference to a previous *avvitare* ‘to screw’ (cf. **vitare*), or with instances of bracketing paradoxes like *multiconfessional* which is formally derived by prefixation [[*multi*]confessional] but semantically requires the analysis [[*multiconfession*]al]. At any rate, this anisomorphism between form and meaning can be treated in terms of the paradigmatic relations mentioned above and is not substantially different from a strictly compositional approach on condition that the lexical status of the pattern is duly taken into account. In other terms, the compositionality and the holistic approach simply reflect the two different routes followed by the speakers when they access complex words, namely decomposition or full lexical access (cf. Baayen and Schreuder 2003 for a recent survey).

Further constraints focus on the limits imposed on WFRs which result from the interaction with other components of the language. In particular, general trends favoring haplology have been observed for many languages, which block the application of a WFR if a phonological string is replicated by the addition of an affix. For instance, the Italian deanthroponymic suffix *-iano* is normally blocked when the base ends with the same string: *Gadda* → *gaddiano*, but *Flaiano* → ??*flaianiano*. In spite of the apparently universal character of this tendency towards the avoidance of cacophonous repetitions, formulating a general rule is not an easy task (see section 3.6.).

A second more debated case concerns recursion which is normally widely present in syntax, but much less so in word-formation. Recursion seems to be generally possible in compounding (although languages may differ as to its extent) but much more restricted in affixation. In contrast to syntactic recursion, recursion in word-formation is strongly limited by two aspects: on the one hand, WFRs often are property-changing, which prevents their immediate reapplication to the output. On the other, the systematic reappli-

cation of WFRs leads to long chains of morphemes which may present problems from the viewpoint of their processing, especially when property-changing affixes occur as, for instance, in *organizationalization*. When the last two factors do not intervene, recursion can be generally observed as in the case of the Italian evaluatives *casa* ‘house’ → *cas-etta* ‘small house’ → *cas-ett-ina* ‘small small house’. Finally, while the reapplication of two identical suffixes seems quite rare (again with the remarkable exception of evaluative suffixes as in the colloquial Spanish examples *ahora* ‘now’ → *ahor-it-ita* ‘right now’, *amigo* ‘friend’ → *amig-az-azo* ‘close friend’, cf. Rainer 1993: 108), prefixes are in general more liberal, probably because they are mostly not property-changing, as in *re-rewrite* and the like.

Finally, general constraints can also come from the interaction with factors external to the language faculty but of high relevance with regard to the function of lexical enrichment generally assigned to word-formation. A first constraint has to do with the demand of new words which is of greatest importance for those WFRs which are more connected with the naming function rather than with other functions carried out by WFRs like the mere transcategorization. This is clearly the case with WFRs forming agent or instrument nouns which presuppose the existence of a certain profession or device. This fact contributes to a large extent to shape our lexicon as the result of our cultural historical development and to motivate the varied degree of acceptability of certain formations which synchronically lack a referent like Spanish *arzobispa* ‘lit. archbishop (fem.)’, *calienta-ojos* ‘lit. eyes-warmer’, etc. (cf. Rainer 1993: 113). The possible unacceptability of these formations is likely to be guided not by grammatical – i.e. competence-oriented – principles, but rather by performance-oriented conditions, also connected with our world knowledge (see section 3.6. and article 54 on dissimilatory phenomena in French word-formation).

Similar observations also hold for a constraint such as neophobia which has been invoked to account for the low acceptability of new formations simply because they are unusual words (cf. Gyurko 1971 on Spanish). This is especially the case with neologisms which are launched in creative writing (intending on the one hand literary works and on the other products which involve the conscious manipulation of language like advertisements). What appears more acceptable in certain contexts allowing for more creativity may be rejected in contexts requiring a stricter subscription to a shared norm.

2.3. Constraints relating to the particular format of the grammar

While the former constraints can be considered to be theory-independent and therefore universal, the constraints discussed in this section are strictly related to a certain format attributed to the grammar. For instance, in the late seventies a number of locality conditions were formulated which aimed to restrict the number of features visible to a certain WFR in a given domain like Siegel’s (1977) ‘adjacency principle’, Williams’ (1981) ‘atom condition’, or Kiparsky’s (1982) ‘bracket erasure convention’ (cf. Plag 1999: 45–46 for a brief survey). As repeatedly emphasized in the literature, these constraints were flawed by serious problems, due among others to an insufficient empirical basis underlying their formulation. At any rate, when the interest in generative grammar sailed towards theoretical shores different from conditions on rules, these constraints were simply aban-

done. A similar problem concerns the binary branching hypothesis (cf. Scalise 1984: 146–151), which – far from being universal – is systematically falsified by coordinative compounds like *German-French-English* (*corporation*) and therefore best to be viewed as consequence of the semantics of determinative compounds rather than as the result of a formal constraint on the grammar format (cf. Barri 1977).

Stratal conditions on WFRs deserve a partially different discussion. The latter were originally formulated to account for the well-known fact that the WFRs may be sensitive to certain sets of lexical items (lexical strata, cf. Saciuk 1969) characterized for instance in etymological terms (e.g., ‘of Latin origin’). This idea was further expanded by assuming at least two different and serially ordered derivational strata or levels to which the affixes belong (cf. Siegel 1979). Accordingly, the properties shared by different groups of affixes result from the specific level assigned to them and need not be specified for the single WFRs. Against the stratal view it has been generally objected that it is largely impossible to account for the severe restrictions on the combinability of the affixes especially when they belong to the same level (cf. Fabb 1988). Furthermore, in several cases affixes have to be assigned to more than one stratum in order to account for their selective and allomorphic properties. This weakens the stratal approach considerably. On the other hand, there are surely languages in which the lexicon is sharply compartmentalized into separate strata (see the article 183 on Maltese), displaying robustly different properties. For instance, in German the native WFRs do not generally produce prosodic changes on the bases, while the non-native WFRs are largely characterized by stress shifts: *Wissenschaft* ‘science’ → *Wissenschaftler* ‘scientist’ vs. *Térror* ‘terror’ → *Terror-íst* ‘terrorist’.

An orthogonal question relates to the source of the selective properties, whether they must be sought in the WFRs, i.e. in the affixes, as generally assumed by those who support a stratal approach, or in the bases, as maintained by Plag (1999: 67–76) who defends a generalized base-driven approach. Accordingly, the selective correlation between the German non-native noun-forming suffix *-itüt* and the non-native adjectival bases as in *banal* ‘banal’ → *Banalitüt* ‘banality’ is taken to be driven by the latter. This approach is more economic than the former because it does not require us to assume a complex mechanism of rule-by-rule blocking to account for the oddness of the conceivable form **Banalheit*. Furthermore, it also accounts for cases in which the non-native suffix is selected by native bases like *schwul* ‘gay, queer’ → *Schwulitüt* ‘embarrassing situation’, which violate a rigid stratal view (see section 2.4.). However, doublets of derivatives from the same base should in principle be excluded, but exceptions of this kind are not uncommon, as shown by cases like *absurd* ‘absurd’ → *Absurditüt/Absurdheit* ‘absurdity’, *naiv* ‘ingenuous’ → *Naivitüt/Naivheit* ‘ingenuity’, etc.

2.4. Constraints depending on lexical accessibility

The problems relating to the lexical strata and their ordering have been approached recently from a completely different perspective, which has been termed by Plag complexity-based ordering. This refers to the general properties displayed by the lexical items when they are processed by our cognitive capacities. In particular, Hay (2000, 2002) suggests that more easily parsable affixes should be normally less restricted than

less easily parsable ones and accordingly should occur more externally. On the other hand, words containing less easily parsable affixes are more likely to be directly accessed as units entrenched in our mental lexicon. The ease of parsability, or its counterpart lexical entrenchment, are influenced by factors like frequency, especially relative frequency, i.e. the frequency of a derivative with respect to its base, and phonotactics. The latter refers to the occurrence of less frequent sound clusters resulting from the combination of two morphemes which are a better cue for detecting and parsing a morphological boundary than sound clusters occurring frequently inside morphemes. Relying on these parameters, Hay provides a hierarchy expressing the combinability force of the single affixes with regard to the base: affixes scoring higher in terms of relative frequency and phonotactics are likely to be placed closer to the base. In spite of the attractiveness of this entirely performance-oriented approach, it is empirically insufficient because of the fact that specific selectional restrictions are also required to account for the number of impossible combinations normally observed (cf. Hay and Plag 2004).

A second family of constraints relating to lexical accessibility goes under the broad label of blocking although substantially different things have to be understood here. First of all, one must distinguish between homonymy and synonymy blocking: the first type has been suggested to account for the non-occurrence of denominal verbs like *spring* → **to spring*, *fall* → **to fall* parallel to *summer* → *to summer*, *winter* → *to winter* because of the mere presence in our mental lexicon of the corresponding homophonous verbs. However, the non-occurrence – at least in British English, see Bauer (1983: 97) – of **to autumn* in the absence of any homonymous verb casts doubt on the reliability of this explanation. More in general, “this approach fails to expound why language tolerates innumerable ambiguities, but should avoid this particular one” (Plag 1999: 50).

Much more relevance has been attributed to the second type of synonymy blocking. Two cases have to be distinguished: word or (perhaps slightly emphatically) Paul’s blocking, in which the occurrence of one synonymic lexeme in our mental lexicon is made responsible for the non-occurrence of a possible derivative as in the classic example of *thief* blocking the formation of ??*stealer*. In this case, which is a true instance of lexical blocking as already envisaged by Hermann Paul (1896: 704), the accessibility of the established word is of crucial relevance: as argued by Rainer (1988: 163), the blocking force of the established word is a direct function of its frequency and of the productivity of the intervening WFR. On the other hand, the blocked word is not really ill-formed, but a potentially usable word – and indeed often attested – provided that for some reason a speaker fails to retrieve the blocking established word and/or is in search of a particular meaning effect as in *scene-stealer* (cf. Rainer 2012). Notice that potential words like ??*stealer* are different from possible words like °*to caffeinate* seen in section 2.1 also because they are usually inert to further derivation as shown by the impossibility of ??*stealerless* with regard to pairs like *leader* → *leaderless*, *teacher* → *teacherless*, etc., while °*caffeination* is a possible word exactly like its base. In this regard, Rainer (2005a: 337) formulates a Possible Base Constraint according to which bases of WFRs must be possible words while merely potential words are excluded.

The second case is more complicated and can be referred to as rule or Pāṇini’s blocking, because the non-occurrence of a derivative is accounted for by the fact that a synonymous pattern takes precedence provided that both patterns are productive. This reminds us very closely of the so-called Pāṇini’s or elsewhere principle whereby the application of a more specific rule blocks that of a more general one, as already envisaged by the

Indian grammarian Pāṇini (cf. Kiparsky 1973; for a different view see Giegerich 2001). Rainer (1988) suggests to account in these terms for the lexical domain of the German quality nouns formed on the basis of end-stressed adjectives. The latter select different suffixes in dependence of a set of features restricting in a cumulative way their scope of application. Thus, the suffix *-heit* normally combines with end-stressed adjectives: *gewiss* ‘sure’ → *Gewissheit* ‘sureness’, *ordinär* ‘vulgar, common’ → *Ordinärheit* ‘vulgarity’, etc., unless they display a learned flavor; in this case they select *-ität*: *binär* ‘binary’ → *Binarität* ‘binarity’/??*Binärheit*, cf. also ??*Ordinarität*, only possible with a mathematical meaning: ‘the property of being a common event’. Finally, if a learned, end-stressed adjective ends with the bound stem *-phil*, it selects the suffix *-ie*: *xenophil* ‘xenophile’ → *Xenophilie* ‘xenophilia’/??*Xenophilität*?/??*Xenophilheit*. Notice that the simple occurrence of an ending */-fil/* does not trigger the application of *-ie* and the superordinate preference for *-ität* applies in the light of the learned flavor: *monofil* ‘unifilar’ → *Monofilität* ‘unifilarity’/??*Monofilie*?/??*Monofilheit*.

Although they rely on a similar synonymic mechanism, Paul’s and Pāṇini’s blocking are two completely different phenomena because the former refers to the degree of entrenchment of a word in our mental lexicon which is measurable in frequency terms, while the latter is due to the selective specificity of two rules applying to (portions of) the same set of lexical bases. In fact, Rainer (2005a: 337) observes that Pāṇini’s blocking may also “apply even when no actual blocking word formed according to the rival pattern exists”. Furthermore, while a word like ??*Xenophilheit* can be said to be ill-formed because of the conditions on the selected base, ??*stealer* is not ill-formed *stricto sensu*, as discussed above. At any rate, frequency may also play a role in the case of Pāṇini’s blocking as shown by the occurrence of doublets of derivatives from the same end-stressed adjectives if the latter “have become part of a more colloquial register” (Rainer 2005: 338): *debil* ‘stupid’ → *Debilheit* ‘stupidity’, beside established *Debilität*, *skurril* ‘droll’ → *Skurrilheit* ‘drollery’, beside established *Skurrilität*, etc. (see the pairs *Absurdität*/*Absurdheit*, etc. mentioned in section 2.3.). Clearly, the property of becoming part of a more colloquial register is also connected with an increase of frequency, which has the effect of relaxing the strict condition on learnedness.

On the other hand, Rainer (1988: 172) has suggested that frequency may interfere in cases of affix rivalry systematically blocking a derivative when a clearly more frequent competitor occurs. This is allegedly the case of the Italian deadjectival nouns formed with the two highly productive suffixes *-ismo* and *-ità*, whereby frequent quality nouns selecting *-ismo* (by dropping the ending *-ico* of the base) are said to block the possible formation of *-ità* derivatives: *cinico* ‘cynic’ → *cinismo* ‘cynism’ / ??*cinicità*, *patriottico* ‘patriotic’ → *patriottismo* ‘patriotism’/??*patriotticità*, etc. Although Rainer maintains that this should be interpreted as a case of Paul’s blocking, the high productivity of the two WFRs might be regarded as a clue that indeed an intertwining of the two types of blocking is going on here, because the frequency of the single derivatives cannot be kept totally distinct from the availability of the two synonymic WFRs expressed by productivity. The latter is in fact related to frequency (see the article 48 on productivity). In other words, a productive WFR can be blocked by the intervention of another productive WFR forming more frequent derivatives.

3. Domain-specific restrictions

Let us now turn to specific restrictions relating to the different levels of linguistic analysis which have been pointed out in the literature. The discussion will be in some cases brief because several issues have been already touched upon in the foregoing sections.

3.1. Phonological restrictions

Besides the constraint on haplology mentioned above in section 2.2, there are generally three types of restrictions of a phonological nature. First, there may be selectional restrictions of a positive or a negative value relating to the segmental make-up of the base. For instance, a certain stem ending or the occurrence of certain segments within a stem may favor or hinder the combination with a certain suffix: respectively, the suffix *-eer* preferably selects bases ending with a dental voiceless obstruent: *musketeer*, *profiteer*, etc. (cf. Rainer 2005a: 344), while the Dutch noun-forming suffix *-te* as in *koelte* ‘coolness’ cannot be added to adjectives ending in a vowel (cf. Bauer 2001: 129). More complex and much discussed especially from the viewpoint of an autosegmental approach to phonology is the case of the Latin suffix *-ālis* in *capitālis* ‘capital’, *nāvālis* ‘naval’, etc., which takes the form *-āris* if the base contains a lateral: *lūnāris*/**lūnālis* ‘lunar’ (cf. Cser 2010). Notice that prefixes are generally held to be far less sensitive to base-driven phonological restrictions (cf. Rainer 2000: 881).

Second, the selectional restrictions may relate to the prosodic shape of the base; in particular word stress may play a role guiding, for instance, the positive selection of the suffix *-al* with regard to verbs stressed on the final syllable: *arrival*, *rebuttal*, etc. On the other hand, this restriction might also be seen as due to the preference for Latinate prefix-root verbs, which all happen to have final stress (cf. Malicka-Kleparska 1992: 437). Word stress is relevant for the derivation of circumfixal abstract nouns in German, insofar as only bases displaying initial stress are possible: *klatschen* ‘to clap’ → *Geklatsche* ‘clapping’ but *applaudieren* ‘to clap’ → **Geapplaudiere*, etc. Third, the length of the base computed in syllables may be relevant, as in the suffix *-C₁oj* ‘-ish’ found in the Mayan language Tz’utujil spoken in Guatemala, which only selects monosyllabic adjectives *rax-roj* ‘greenish’, *q’eq-q’oj* ‘blackish’ (cf. Bauer 2001: 129). The stress position and the syllable number may also form a joint restriction as in the case of the suffix *-eer* mentioned above which preferably selects bisyllabic trochaic bases: *cameleer* vs. **giraffeer*, *profiteer* vs. **gaineer*, *racketeer* vs. **fraudeer*, etc. (cf. Rainer 2005a: 344).

3.2. Morphological restrictions

We have already seen some examples of morphological restrictions above when stratal constraints were discussed. In general, three types of morphology-driven restrictions can be determined. First, the base can belong to a class which is morphologically well-defined by means of stratal constraints or some other morphological feature like gender

as in the case of the Hebrew sarcastic diminutive of the form CCaCCaC which can only be made from masculine nouns: *zakan* ‘beard’ → *zkankan* ‘little beard’ (cf. Bauer 2001: 130). In this regard, the reference to “etymological” information such as “of foreign origin” and the like mentioned in section 2.3 above might also be labeled as morphological (or lexical, possibly) because “most speakers do not have in their mental lexicons information about the sources of the words they use” (Bauer 2001: 130). Rather, the latter “are perceived as belonging to various synchronic classes” which “mimic etymological provenance (because that is their origin), but the mental listing involves assigning them to classes which are as random as (perhaps more random than) gender classes” (Bauer 2001: 131). In fact, we have also seen above that the etymological categorization often ‘leaks’, insofar as words of a wrong etymological type are included. Notice incidentally that reference to some information on the base, including when the latter already contains an affix, comes into conflict with those approaches which are typically represented by Anderson’s (1992) “a-morphous morphology”, because they surmise that a process of bracketing erasure cancels any morphological information contained in the base which is therefore inaccessible to further WFRs. This view is too radical, as shown by the highly productive selectional solidarity of *-ize* and *-ation* which does not hold when the ending has no morphological status: *to realize* → *realization*, but *to surmise* → **surmisation*, etc. (cf. Rainer 2005a: 345).

Second, the base may have to show a particular morphological structure. In this regard, examples are found in which an affix only applies to complex bases, as the Punjabi prefix *gair-* ‘un-’, which only selects derived bases, e.g., deriving *gairsarkaarii* ‘non-governmental’ from *sarkaarii* ‘governmental’, itself derived from *sarkaar* ‘government’ (cf. Bauer 2001: 131).

The third possible case of morphological restrictions relates to the presence or the absence of a particular affix in the base, as in the case of the Dutch female suffix *-ster* which requires the presence of the suffix *-aard* ‘-er’ in the base: *wandelaarster* ‘female hiker’ (cf. Bauer 2001: 131), or, conversely, the German suffix *-heit* which can be combined with compounds (e.g. *Schreib-faul-heit* ‘the quality of being a bad correspondent, lit. write-lazy-ness’), prefixed adjectives (*un-gleich* ‘un-equal’ → *Ungleichheit* ‘inequality’) or circumfixed past participles (*ge-schloss-en* ‘closed’ → *Geschlossenheit* ‘closure’), but does not generally apply to already suffixed bases as shown by *freund-lich* ‘friend-ly’ → **Freundlichkeit/Freundlicheit* ‘friendliness’, *ein-sam* ‘lonely’ → **Einsamheit/Einsamkeit* ‘loneliness’, in which the allomorph *-keit* has to be selected (cf. Aronoff and Fuhrhop 2002: 459), although sparse exceptions like *blei-ern* ‘lead-en’ → *Bleiernheit* ‘leaden-ness’ are attested. A positive correlation can give rise to the phenomenon of potentiation when the productivity of an affix is reinforced by the productivity of the affix in the base (cf. Williams 1981: 250). On the other hand, a negative correlation has been referred to in terms of closing morphemes, namely morphemes that “‘close’ the construction to other morphemes” (Nida 1949: 85, cf. van Marle 1985: 234–238 for Dutch, and Aronoff and Fuhrhop 2002 for German). The closing property is considered an idiosyncratic feature of the single affixes which has the effect of pre-empting the application domain of another affix, as for instance in the case of the Bulgarian suffix *-ski* forming denominal adjectives like *pisatel* ‘writer’ → *pisatelski* ‘writer’s’ which cannot be further derived unless they are recent Russian borrowings like *rus-sk-ost* ‘Russian-like style’, *svet-sk-ost* ‘worldly-minded style’, etc. (see the article 55 on closing suffixes for a detailed discussion).

3.3. Syntactic restrictions

Although at first sight one might expect to observe a number of clear-cut restrictions resulting from the interaction of morphology and syntax, in practice this turns out to “be more illusory than real” (Bauer 2001: 133). The often mentioned importance of the syntactic category of the base as a milestone for the WFRs has been overestimated, as pointed by several authors (see for instance Plank 1981: 43–45), while Plag (1998: 237) even dismisses it as “a by-product of the semantics of the process”. More in general, allegedly syntactic restrictions can be always reinterpreted as morphological (or possibly lexical) in nature because of the way in which “a word is used depends to some extent upon the class it belongs to” and therefore “it might seem preferable to merge these two” (Bauer 2001: 133). However, in a more loose parlance one may treat under the label of syntactic restrictions those instances which refer to abstract properties of the bases which have an immediate effect on their syntactic behavior. One such case is represented by examples in which the argument structure of the verbal base is involved as suggested by the so-called “constructional” approaches to argument structure according to which “meaning resides in the syntactic context” (cf. Levin and Rappaport Hovav 2005: 18). For instance, it has been repeatedly claimed that the suffix *-able* normally combines only with transitive verbs: *visitable* vs. **goable*, *observable* vs. **lookable*, etc. On the other hand, depending on the theory transitivity has also been seen as a semantic, not a syntactic feature (cf. Rainer 2005a: 348). Similarly, in Apalai, a Cariban language spoken in Brazil, two different suffixes are used to form agent nouns, *-ne* with transitive and *-kety* with intransitive verbs (cf. Bauer 2001: 133): *parata wo-ne* ‘rubber cutt-er’ and *wa-kety* ‘danc-er’. Finally, a particular tricky example is provided by the Australian language Diyari in which the attributive suffix *-kanyfi* is used on “the set of common nouns which take the inchoative verbalizer and appear in the ergative case when used predicatively” (Austin 1981: 39) as in *nyudu* ‘power’ → *nyudukanyfi* ‘powerful one’.

3.4. Lexical restrictions

Since the role of the lexicon is ubiquitous in word-formation, it is difficult to identify genuinely lexical restrictions. One might conceive of two different sources for lexical restrictions. First, considering that unproductive WFRs normally give rise to shorter or longer lists of words in our mental lexicon, these lists have been generally assumed to form the lexical restrictions of the WFRs. Particular blatant are those cases in which the domain of a WFR is restricted to one or two single entries, as in *bishopric*, the only English word testifying of a suffix *-ric*, or *laughter* and *slaughter* which testify of the suffix *-ter*. Similarly, in Punjabi the nominalizing suffix *-aapaa* is found only in the noun *kuṭaapaa* ‘beating’ from the verb *kuff* ‘to beat’, and in Abkhaz the intensifier *-samsal* appears only in the adjective *ayk°ac°a-samsal* ‘very black’ (Bauer 2001: 135).

Second, lexical restrictions may relate to class properties of the bases which have to do with their status within our mental lexicon. One example is given by the stratal conditions repeatedly discussed above, which can also be treated as lexical in nature if one thinks that they refer to the architecture of our mental lexicon rather than to form-specific properties of the words. A similar conclusion can also be reached if a “projec-

tionist” approach to argument structure is adopted, which maintains that the latter results from the projection onto syntax of lexically specified information contained in the verb (cf. Levin and Rappaport Hovav 2005: 18).

3.5. Semantic restrictions

Similarly to the lexicon, also the role of semantics is ubiquitous because any WFR displays a meaning side which selects portions of the lexicon on the basis of their content. In this light, since a projectionist approach to argument structure may also be interpreted as involving a semantic restriction on the possible input, this would subsume under semantics all the examples discussed above.

In general, semantic restrictions are invoked when highly specific meaning aspects of the base domain are required in order to delimit the input of a WFR. For instance, the Italian suffix *-eto* combines only with plant or fruit names and forms nouns referring to the corresponding grove: *canna* ‘reed’ → *canneto* ‘grove of reeds’, *arancia* ‘orange’ → *aranceto* ‘orange grove’, etc. Similarly, in the Australian language Mangarayi the ethnic suffix *-ḡuḡuḡ* combines only with bases referring to a place name or a language: *Guwijnilen-ḡuḡuḡ* ‘Queenslander’ (cf. Bauer 2001: 134).

A certain debate has been animated by the question of the boundary between word meaning and world knowledge insofar as this is relevant for WFRs. For instance, the reversative prefix *un-* can only be applied to verbal bases displaying a reversible meaning: *to unfold*, *to unscrew* vs. *to *unswim*, *to *unkill*. While for the unacceptability of *unswim* a true semantic restriction may be invoked because the atelic process of swimming cannot give rise to any reversative interpretation, the unacceptability of *unkill* might be due to our encyclopedic knowledge which tells us that death is an irreversible state. The latter condition, however, might not hold in other possible worlds: for instance in the jargon of video-game aficionados *unkill* is a possible verb consisting in bringing back to life a character.

3.6. Pragmatic restrictions

As briefly hinted at in the previous section, a lively debate has focused on the possible distinction of the word meaning from our encyclopedic knowledge which is necessary in order to correctly understand “the nature of the real-world referent of the word” (Bauer 2001: 135) when it is used in a certain context. The latter perspective can also open the door for investigating the role of pragmatically-oriented restrictions on WFRs. For instance, the Dyirbal suffix *-ginay* meaning ‘covered with, full of’ is normally restricted to bases denoting something dirty or unpleasant as in *gunaginay* ‘covered with faeces’. Similarly, in Kusaie, an Austronesian language spoken in Micronesia, the inchoative suffix *-yak* combines typically with names of insects (with the meaning ‘to become infested with’) or diseases (with the meaning ‘to be badly affected by’). In Kannada, the adverbializing suffix *-va:ra* is generally restricted to a bureaucratic language, as in *ko:mu-va:ra* ‘community-wise’ (Bauer 2001: 135 and further references there). This reminds us of the German suffix *-itāt* seen in section 2.4. above, which is sensitive to

the stylistic register in which the base is employed. A full-fledged system of restrictions relating to stylistic-sociolinguistic features is provided by the Javanese “cromification” rules (cf. Becker 1990: 20–23).

Finally, restrictions of an “aesthetic” nature have been invoked for the speakers’ refusal of certain words which are theoretically well-formed: for instance, Guilbert (1975: 191) discusses an aesthetic reaction against very long word in French as the reason preventing the formation of the adverb **oppositionellement* ‘oppositionally’ from its base *oppositionnel* ‘oppositional’. In this vein, a merely aesthetic reason might be made responsible for the haplological blocking of **sillily* in English. However, in the absence of solid investigations these observations have an impressionistic flavor.

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