

UMLAUT IN GERMAN: THE DEVELOPMENT OF A PHONOLOGICAL RULE*

C.V.J. Russ

1. Introduction

Ever since historical linguistics has been discussed in generative terms, sound change or phonological change has been described in terms of changes in phonological rules and underlying forms. The former may be added, lost or the order of their application may change (at least this was true before the present controversy as to whether rules are ordered or not!) and underlying forms may remain the same or become restructured. The general tendency of a grammar as it changes is expected to be towards a simpler grammar, whatever this may mean exactly. Hitherto, little attention has been paid to what happens to rules which are not lost, or re-ordered, but which undergo internal change, i.e. either in their structural change or in the environment of the structural change. Attempts along these lines have been made by H. Andersen (1969) in his examination of the development of the morphonemic rules for prefixes in Ukrainian, and R. Anttila (1972) deals briefly with the development of the umlaut rule in English. It is in the hope that the examination of the development of one particular rule might show some valuable insights not only for the history of German but also for historical phonology in general that this article has been written. In modern German umlaut affects the underlying back vowels /u/ and /o/, both short and long, and the low vowel /a/ which alternate under certain conditions with front rounded vowels of the same tongue height except that the /a/ undergoes a further raising and the resultant sound is [ɛ], spelt *ä*. Thus: sg. *Buch* 'book' alternates with pl. *Bücher*, sg. *Loch* 'hole' with pl. *Löcher* and sg. *Dach* 'roof' with pl. *Dächer*. In modern German there is also an alternation of a diphthong /au/ with /äu/, a rounded diphthong [ɔɪ], sg. *Haus* 'house' pl. *Häuser* which is also usually regarded as part of the umlaut process, but this will not be dealt with here and its absence in no way affects the main thesis. For linguists of any school dealing with historical phonology, umlaut in German has always been one of the main examples to be treated. Twaddell's exposition of the principles of historical phonemics (1938), supplemented by Penzl's elaboration (1949), are classics in their own right. Generative linguists too have turned their attention to umlaut. Kiparsky (1965) uses umlaut to illustrate restructuring, and King (1969) cites umlaut in German as a 'case history' in his treatment of restructuring. There is therefore a well-trodden path of exposition concerning umlaut. What reasons are there for re-examining it? Firstly, the reason already mentioned, to examine the internal development of a phonological rule which still functions in the grammar of German, and secondly to deal with the enormous gap, between the time when underlying umlaut vowels are first allowed in the grammar and the modern period where, according to Wurzel's suggestion (1970:118ff), umlaut is conditioned by complex morphological features of both suffixes and stems. The development of umlaut in Old High German (OHG) will be sketched briefly first, then how umlaut must have been conditioned in Middle High German (MHG), followed by the final section dealing with the development up to New High German (NHG).

2. Umlaut in OHG

There is no complete generative account of OHG but the short descriptions that are available on the development of umlaut vowels, e.g. King (1969), assume five stressed underlying vowels; /i e a o u/ which can occur either short or long. The back vowels /o/ and /u/ and low vowel /a/, are converted into front vowels by the umlaut rule which is a late phonetic rule conditioned by the occurrence of an *i*, *ī* or *j* in the following syllable. The umlaut rule was probably originally of the following form (King, 1969:94):

$$(1) \begin{bmatrix} v \\ - \text{long} \end{bmatrix} \rightarrow \begin{bmatrix} - \text{back} \\ \langle - \text{low} \rangle \end{bmatrix} / \text{---}^C_1 \begin{bmatrix} - \text{cons} \\ + \text{high} \\ - \text{back} \end{bmatrix}$$

The underlying vowels /a o u/ are turned into /e, ø/ and /u/. Conceived as a sound change which took place in all the languages except Gothic, it is an example of rule addition. It merely affects the surface realizations of /a o u/ and does not lead to any restructuring in the grammar of OHG and the other Germanic languages. Examples of the derivation of surface umlaut vowels are provided by the following cases (King, 1969:94):

underlying form	gasti	tāti	lohhir	skōni	hūsir
umlaut rule	gæsti	tæti	lohhir	skōni	hūsir
surface form	gæsti	tæti	lohhir	skōni	hūsir
spelling	gesti	tāti	lohhir	skōni	hūsir

King formulates two more innovations in the grammar of OHG which affect the environment of the umlaut; they are a *j*-deletion rule and an unstressed vowel reduction rule which have the following form (King, 1969:95ff):

(2) *j*-deletion

$$\begin{bmatrix} - \text{voc} \\ - \text{cons} \\ - \text{back} \end{bmatrix} \longrightarrow \emptyset / \text{---} \begin{bmatrix} v \\ - \text{stress} \end{bmatrix}$$

(3) vowel reduction

$$\begin{bmatrix} v \\ - \text{stress} \end{bmatrix} \rightarrow [- \text{high}] / \text{---} C_o \#$$

These rules are ordered after the umlaut rule but they do not represent any change in underlying forms. Only when these two rules are lost can it be said that there is restructuring and that umlaut vowels are permitted in underlying forms.

3. Umlaut in MHG

It is generally recognized in both generative and autonomous phonemic accounts of umlaut that all umlaut variants are phonemes of MHG, which means that the front rounded vowels /ø, ʊ/ are found in the underlying representation of MHG. (There is also an underlying phonological distinction between /e/ and /ɛ/, e.g. OHG *turi* now has /tʊr/ as its underlying form). Autonomous phonemic accounts assume that with the loss of *j* and the reduction of all unstressed vowels to schwa the umlaut allophones are phonemicized (Penze, 1971:117). In a generative account it is assumed, as has been mentioned, that this restructuring comes about by the loss of the *j* deletion and vowel reduction rules. However this does not mean that the umlaut rule itself is lost since there are still cases of the conditioning factor *i* being present in MHG, *tag-tegelich*. This seems mainly to be the case involving wordformation suffixes like *-lich*, *-inne*, *-ling* which did not undergo the vowel reduction rule. Umlaut for King (1969:101) 'survives as a rule of "low functional load".' However he offers no description of what this rule might look like in MHG. After restructuring has taken place umlaut seems to lose its interest for the generative linguist and only regains it in NHG. However the stage from MHG to NHG is one of the best documented periods in the history of German and is to be neglected at great cost. Since there is still an umlaut rule in MHG not all the umlaut vowels will appear in underlying forms but some will still be derived from the corresponding back vowels. Alternations in MHG such as: *vro-vraelich*, *kraft-krefte*, *hus-hiuser*, show the need for such an umlaut rule. From the evidence of such alternations, the structural change brought about by the umlaut rule is the same as it

was in OHG: [V] --> $\left[\begin{array}{l} (-\text{back}) \\ \langle \text{low} \rangle \end{array} \right]$

The crucial changes that have come about are in the environment of the umlaut rule, which is now no longer just *i* or *j*, since all the *i*'s except in suffixes have been reduced to schwa. What triggers umlaut now is not a phonological environment, but grammatical categories and certain derivational suffixes. The grammatical categories and suffixes fall into two main groups; one group which always causes umlaut, and another group which only causes umlaut in connection with certain stems. Let us examine the first group, which always causes umlaut. Umlaut appears without exception in the past subjunctive of strong verbs. The following contrasts between indicative and subjunctive occur: *wir zugen-wir zllgen*; *wir hulfen-wir hllfen*; *wir namen-wir n~~amen~~*; *wir vuoren-wir vlleren*. In some manuscripts this umlaut is not recorded, especially when the vowel concerned is *u*. The grammatical categories which in this case trigger the umlaut rule are: [+verb, +strong, -pres, +subj]. The second case where umlaut always occurs in verbs is again in strong verbs in the second and third sg. present: *vorn, du vers (t), er vert*. This involves the following vowels: *a, vorn, du vers(t), er vert*; *ō, stōze, du stōzest*; *ou, loufe, du lūfest, er lūfet*. Umlaut also occurs in the second and third person sg. of the verb *kommen* in MHG: *du kōmst, er kōmt*. The verbs *saugen* and *rufen* which in NHG together with *kommen* are the only verbs which do not mutate the stem vowel in the second and third person sg. pres. very often occur as weak verbs in MHG, and as such have no mutation in these forms.

The grammatical categories which act as a trigger for the umlaut rule are in this case: [+verb, +strong, +pres, -1st person, +sg]. The situation in word formation is more complicated. MHG grammars generally say very little about umlaut in derivation and even historically orientated accounts of the subject give little information. As has been said, the fact that in some cases umlaut is not written complicates matters. The following suffixes seem always to cause umlaut: *-lîn*, *-linc*, *-inne*, *esch*, plural *-er*.

3.1. *-lîn*

This is the most frequent diminutive suffix in MHG. Neither Wilmanns (1899:245), nor Paul (1916:2,\$43) gives any information as to the occurrence of umlaut with this suffix. Henzen (1957:145) suggests that umlaut was not always present in MHG and there seem quite a number of forms which do not have orthographic umlaut nor even a fluctation in umlaut, *vogellîn*, *lobelîn*, *dankelîn*, as against *tröstelîn*. In view of the fact that such forms which still exist in NHG with *-lîn*, NHG *-lein*, have umlaut without exception, it seems reasonably safe to assume that umlaut was always caused by this suffix in MHG.

3.2. *-linc*

This suffix refers to animate beings; Henzen (1957:166) and Paul (1916:2,\$48), do not mention umlaut in connection with this suffix. Wilmanns (1899:\$280) mentions two cases with apparently no umlaut in MHG, *barlinc* and *ūzwūrfelinc* but neither of these occur in Lexer (1872:78) and are obviously words of limited use.

3.3. *-inne*

This is the suffix for forming feminine nouns from the corresponding masculine ones. It occurs in various forms in MHG: *-inne*, *-in* with short vowel, and *-în* with long vowel. In many cases forms with and without orthographic umlaut exist in MHG: *hūndinne*, *hūndinne*. Henzen (1957:154) does not comment on forms without umlaut like *hūndinne* which he quotes. Wilmanns (1898:\$241) gives *arzatinne*, *botinne* and *genozzine* as occurring without umlaut, but the last word also occurs with an umlauted form. The form *arzatinne* can reasonably be discounted as a loan word. This leaves the word *botinne* which is quoted by the Deutsches Wörterbuch (1854-1960, hereafter Dt. Wb.) as not occurring till Schiller! The only quotation that Lexer (1872-78) and Benecke/Müller/Zamcke quote is from *Das alte Passional* and this may well be the word's only occurrence recorded in MHG. Since this may be so, it would not be reasonable to say definitely it did not occur without umlaut as many cases of words with the suffix *-in* occur with and without umlaut. The Schiller usage could be a new formation from *Bote*.

3.4. *-esch*

Paul (1916:2,\$67) says that umlaut only occurs 'in jüngerer Bildungen'. Wilmanns (1899:\$359) says that umlaut is regular in adjectives

to proper names. Again there are doublets with and without umlaut: *roubisch*, *rübisch*; *mordisch*, *mbrdisch*. The only word that seems to have no umlaut is *franzisch* which is not recorded in Benecke/Müller/Zamcke, and an unusual form, *franzoisch* being the more usual form. The vowel of this suffix is subject to graphic fluctuation. It is written both *e* and *i* in normalized texts and because of this fluctuation between *e* and *i* was probably a low central unrounded vowel.

3.5. *ge.....e*

This is the collective suffix and prefix which still exists in modern German, *Holz Gehötz*. All collectives in MHG show umlaut but again there are fluctuations in orthography between umlauted and non-umlauted forms: *gebiuze*, *gebüze*, 'beating'.

3.6. *-er*

This is the plural ending which in MHG is still restricted to a small number of neuter nouns but it is always accompanied by umlaut.

The second group comprises the following suffixes: plural *-e*, *-lich*, *-ee*, comparative *-er*, *-nis*. This group only causes umlaut with certain stems: thus the forms *notec* and *kreftec* exist side by side, or *tage* and *geste*. These endings can be marked [+optional umlaut] in the lexicon. Since these suffixes cause umlaut only with certain stems, the stems which undergo umlaut will also have to be specified in the lexicon. In a treatment of NHG umlaut (Wurzel (1970:118ff)) labelling of such stems as [+umlaut] is suggested; thus the combination of stem *kraft* [+umlaut] and suffix *-ee* [+opt umlaut] will be *kreftec* whereas *nōt-*, [-umlaut] plus *-ee* [+opt umlaut] will result in *nōtec*. Complications arise since some stems take [+umlaut] before some suffixes marked [+opt umlaut] and [-umlaut] before other suffixes marked [+opt umlaut]. Thus before plural *-e* which is [+opt umlaut] the stem *kraft* is [+umlaut] *krefte*, whereas *nōt-* is also [+umlaut] but the latter stem is [-umlaut] before *-ee*. If we keep simply the one umlaut feature then we have no means of predicting in the case of stems like *nōt-* when they umlaut and when they do not umlaut. If these stems which undergo umlaut are marked [+umlaut], then either this will produce the wrong result with certain stems like *nōt*, or this feature will have a minus value which is not predictable. The solution to this question which has been adopted for NHG by Wurzel (1970:118ff) is to recognize different types of stem features which trigger off umlaut. In the case just discussed the stem *kraft* could be marked [+Derivational umlaut] since it takes umlaut in derived forms, whereas *nōt-* will not be specified for this feature. Since both stems however mutate in the plural they will both be specified for the feature [+plural umlaut]. The stem *kraft* will therefore have two features which trigger off umlaut [+Der umlaut, +Pl umlaut]. There seems to be no need for other derivational umlaut features since if a stem is marked in MHG [+Der umlaut] it will umlaut before all suffixes marked [+opt umlaut], if it occurs with any of them at all. In most cases not being marked [+Der umlaut] means that no umlaut is taken before any of the suffixes marked [+opt umlaut], e.g. *hant*, *handec*, *hantlich*. It could be that we must likewise recognise a special

feature [+Comparative umlaut] if any stems do or do not mutate in the comparative and superlative form but behave in the opposite manner before a derivational suffix. Since we are dealing with adjectives here the only derivational suffixes concerned are *-lich* and *-ec*. Information on the presence of umlaut in the comparative and superlative in MGH is difficult to obtain but the handbooks say: 'Die Nachwirkung davon zeigt sich noch im Mhd daran, daß einige Komparative und Superlative in der Wurzelsilbe den Umlaut annehmen, andere nicht. Doch haben die meisten einsilbigen Adjektive die umgelautesen Formen entweder ausschließlich oder neben den nicht umgelautesen' (Paul/Mitzka, 1959:§140). It seems that in MHG we must assume that the feature [+Comp umlaut] was at least optional. Paul who is usually very full of information is strangely silent on the umlaut in the comparatives and merely mentions generally in his section on umlaut (1916:2§118) 'Im allgemeinen hat sich der Umlaut über sein ursprüngliches Gebiet hinaus verbreitet'. In NHG there are still some adjectives which do not modify their stem vowel in the comparative: (*Duden Grammatik* 1966: 2320). These forms are either relic forms which never had umlaut or else forms which had optional umlaut in MHG and have given it up in NHG. The adj. *froh* does not take umlaut in NHG and in MHG takes optional umlaut. Here is a clear case of loss of optional umlaut, and it seems as if these forms with no umlaut are in fact a NHG innovation. We will assume that this is so, and therefore in MHG all adjectives had an optional feature [+comp umlaut]. Since some adjective stems umlaut before the suffixes *-lich* and *-ec* and some do not, it seems best to separate the feature [+Der umlaut] and [+comp umlaut] as was done with the features [+Der umlaut] and [+pl umlaut].

Having established the umlaut features which we are going to recognise let us now turn to the suffixes in detail.

1. *Plural -e* This ending or suffix represents a merger of the OHG plural endings *-a*, *taga*, and *-i*, *gesti*. Only the latter nouns were of course subject to the umlaut rule and this merger means that we need the feature [+Pl umlaut] to differentiate between these two types of nouns as this can no longer be done phonologically in the surface forms.
2. *Comparative -er*, superlative *-est*. Here again in OHG there were two separate endings, for each stage in the comparison: *-ro*, *-ōro* for the comparative and *īsto*, *ōsto* for the superlative. Being no longer phonologically distinguishable we have to use the morphological feature [+Comp umlaut].
3. *-ec* This adjectival suffix occurs both as *-ic* and *-ec* and as was said with regard to *-esch* it must be assumed that the vowel so designated most probably is the schwa. This suffix represents the merger of two OHG suffixes, *-īg*, *kreftīg*, which caused umlaut, and *-ag*, *nōtag*, which did not cause umlaut. Owing to their no longer being distinguishable phonologically, morphological features must be used to account for the occurrence of umlaut.

4. *-nisse, -nusse* This nominal suffix has several shapes in OHG *-nassi, -nessi, -nissi, -nussi* which were in free variation (Henzen, 1957:\$114). In MHG there are only two forms, *-nisse*, which is primarily Central German and *-nusse*, which was primarily Upper German (Wilmanns, 1899:\$270,4). Here there is no merger of different suffixes but probably the suffix variant *-nissi* was the one that caused umlaut. In MHG one finds fluctuation of the same stem before this suffix sometimes mutated, sometimes not, *vancnisse, vancnusse*. These stems we must assume also had the feature [+Der umlaut] but it was optional. Paul (1916:2,\$53) does not mention anything about umlaut with this suffix. Wilmanns (1899:\$272,4) comments, 'Der alte Umlaut kommt den Wörtern auf -nis nicht zu, die jüngeren haben die meisten', but he gives no further relevant details.
5. *-līch(e)* This adjectival suffix is the most difficult to deal with since it does not represent any merger of different suffixes. A random sampling of MHG texts shows that many compounds with *-lich* have no orthographic spelling umlaut but they do have umlaut in NHG; e.g. *hovetliche, kosteliche, kumberliche, klagelichiu, offentlich, manlich, angestlich*. This absence of umlaut is not dependent on whether the vowel to be mutated appears separated by an unstressed vowel from the suffix, as *manlich* shows, and there are cases of umlaut with trisyllabic words: *tegetlich*. A tentative answer might be that these forms have assumed umlaut from the forms with umlaut like *vrælich*. This however is analogy on a very large scale and, having no grammatical function, seems unlikely. An alternative would be to assume that these too had umlaut in MHG but that it simply had not received orthographic recognition. This would imply that the normalised editing of MHG texts has not been consistent in applying umlaut in these cases. However since among the forms in NHG which occur both with and without umlaut there are forms which go back to OHG, *gastlich*, and MHG *jæmerlich*, it seems clear that this occurrence of umlauted and un-umlauted forms must have existed in MHG at least, although we cannot be absolutely sure which forms were not marked as having umlaut and which did in fact not have umlaut.

In MHG the environment for the umlaut rule has become radically different and it is now triggered off by suffixes marked [+umlaut causing] or by a combination of grammatical categories in strong verbs, [-pres, +subj; +pres, -1st pers, +sg] and in combination with suffixes marked [+opt umlaut] if the stems are marked [+Der umlaut, +pl umlaut] or [+Comp umlaut]. The umlaut rule is no longer phonologically conditioned. A tentative formulation of an umlaut rule for MHG might take the following form:

$$(4) \quad [V] \rightarrow \left[\begin{array}{l} -\text{back} \\ \langle -\text{low} \rangle \end{array} \right] / \left\{ \begin{array}{l} \text{a) } \left[\begin{array}{l} -\text{Past} \\ +\text{Subj} \end{array} \right] \\ \text{b) } \left[\begin{array}{l} +\text{Pres} \\ +\text{Sg} \\ -\text{1st Per} \end{array} \right] / \left[\begin{array}{l} +\text{verb} \\ +\text{Strong} \end{array} \right] \\ \text{c) } \left[+\text{UmlCaus} \right] \\ \text{d) } \left[+\text{Opt Umlaut} \right] / \left[\begin{array}{l} +\text{Pl Uml} \\ +\text{Comp Uml} \\ +\text{Der Uml} \end{array} \right] \end{array} \right\}$$

The use of morphological features such as [+Pl Uml, +Der Uml] must however have made the grammar more complex. It is difficult to ascertain what attitude Chomsky and Halle would adopt to this since they do not deal in morphological features, but only in diacritic and lexical features (1968:353-5), for a smaller class of items which for various reasons do not undergo a certain rule. This for them clearly makes a grammar more complex. 'The wider and more varied the class of cases that do not undergo the rule, the more complex must be the grammar in terms of the evaluation procedure that must constitute part of a significant linguistic theory.' (1968:173).

The umlaut rule is now not merely triggered off by a single phonological segment but by several different features. The rule can be said to have been grammaticalized, as has been pointed with regard to the umlaut rule in English: 'When the environment was lost, that is [high, front] \rightarrow \emptyset , the change was to have a repercussion in the rule, because the information on which the rule must operate was wiped out. But since this was a mere phonetic change, the rest of the grammar retained the syntactic and semantic reactions as they had been before and the umlaut vowels were by necessity related to these facts. The phonetic environment was at some point replaced by the grammatical one, that is [front] \rightarrow [back] / ___ (plural, causative, and p-noun), or the like. Not all plurals had umlauts only those that had *-i earlier; that is, such items had to be learned specially as before. The rule has now been modified. Its environment needs a more complex specification in terms of the total grammar and not only phonology.' (Anttila, 1972:118). One of the main points that generative phonology emphasizes is that both sound change and synchronic phonological rules may be grammatically conditioned. The umlaut rule in MHG now makes use of non-phonological information. Phonological change as conceived by generative phonology is reducible to the addition of rules, loss of rules, reordering of rules and restructuring of underlying forms. The development of umlaut fits into this scheme in that it is an example of restructuring which King uses as case history. However the umlaut rule is not lost but is modified in the way outlined above. This modification of rules that are left in the grammar after restructuring has taken place, has received only brief treatment in the literature up to now.

4. Umlaut in early NHG

In MHG among the group of affixes marked [+opt uml] many stems were

marked either + or - [Der Uml]. In NHG there seems to have been considerable fluctuation among stems before these suffixes, which was caused by uncertainty as to whether they took umlaut or not. The following is a representative list of such forms, mostly occurring before *-ig*.

anmutig (Dt. Wb. 1, 410f.), *bauchig* (Dt. Wb. 1, 1167), *behaglich* (Dt. Wb. 1, 1319),
dortig (Dt. Wb. 2, 1308), *dunstig* (Dt. Wb. 2, 1564), *durstig* (Dt. Wb. 2, 1752)
duftig (Dt. Wb. 2, 1506), *fuchsig* (Dt. Wb. 4, 1, 1:347), *goldig* (Dt. Wb. 4, 1, 5:796)
haarig (Dt. Wb. 4, 2, 2:30), *hßrig* (Dt. Wb. 4, 2:1786), *gerthumig* (Dt. Wb. 4.2:3582)
knotig (Dt. Wb. 5, 1510), *lausig* (Dt. Wb. 6, 360), *luftig* (Dt. Wb. 6, 1255),
lustig (Dt. Wb. 6, 1339) *muffig* (Dt. Wb. 6, 2625) *nßtig* (Dt. Wb. 7, 940)
sandig (Dt. Wb. 8, 1767) *schwammig* (Dt. Wb. 9, 2199) *staubig* (Dt. Wb. 10, 2, 1:1114)
trotzig (Dt. Wb. 11, 1, 2) *zappelig* (Dt. Wb. 15, 280) *zornig* (Dt. Wb. 16, 111)
zottig (Dt. Wb. 16, 139)

Of these examples the majority have found their way into standard NHG without umlaut. Historically these seem to go back to OHG forms with *-ag*, thus there are no clear examples of forms with historically justifiable umlaut which have lost their umlaut. However there is a clear case of the opposite happening. The word *nßtig* goes back to OHG *nōtag* and it has taken the feature [+Der uml] although even in MHG it did not have it. In NHG forms both with and without umlaut occur before *-ig*. One of the fullest lists available is by Van Dam (1963:414f.). He lists, excluding compound forms, 80 forms ending in *-ig* with umlaut and 81 without! The feature [+Der umlaut] has not spread to other forms.

A pointer to the fact that the forms without umlaut may be construed as being the more regular is that all new adjectives formed with the suffix *-ig* have no umlaut in the stem. That the feature [+Der umlaut] was not extended to new formations can be seen from the following examples which are recorded as being new formations from the Early NHG period but without any more specific dates:

morgig (Dt. Wb. 6, 2587); *schlampig* (Dt. Wb. 9, 440); (*schmutzig* (Dt. Wb. 9, 1140);
vorig (Dt. Wb. 12, 2, 1214).

These formations are from the late 15th c. to the 17th c. There are however more and better dated examples from the 18th and 19th c. *Baldig* (Dt. Wb. 1, 1084) is quoted as 'eine erst im 18j h aufgekommene Bildung'. The word *sonstig* is quoted for the 18th c, (Dt. Wb. 10, 1, 749). The word *obig* (Dt. Wb. 7, 1108) is first recorded in *Simplizissimus*. *Prozig* (Dt. Wb. 7, 2177) is first

recorded by Christian Reuter in 1695. The word *tranig* (Dt. Wb. 11,1,1:1188) is first recorded for 1905, but apparently occurred in the form *tranicht* in Heine: *Buch der Lieder* (Dt. Wb. 11,1,1:426). *Ulzig* (Dt. Wb. 11,2,754) seems to have come from student slang and is first recorded in Auerbach's *Dorfgeschichten* 1871. The words *wohlig* and *wuchtig* (Dt. Wb. 14,2,1163,1732) are first recorded for the 19th c. This seems clear evidence that the feature [+Der uml] for stems which enter into derived formations with the suffix *-ig* has not spread in NHG but its occurrence in the lexicon is frozen. This can be clearly seen from the lack of umlaut in recent formations, a thing which has been going on since the 16th c. Many examples from colloquial German confirm this: *poppig*, *putzig*, *quakig*. There are no examples of new formation with umlaut. Most of the examples of this 'freezing' of the umlaut and its lack of lexical diffusion can also be illustrated from new formations with other suffixes marked [+opt umlaut], but these are not so numerous. Although the word *sprachlich* existed in OHG it is not recorded in MHG - it appears again in the 19th c. (Dt. Wb. 10,1,2768). Although this is not really a new formation it is reintroduced in a form without umlaut. The word *fraglich* did not exist in MHG, instead *fragebare* was used, but in NHG this has been replaced by *fraglich*, without umlaut (Dt. Wb. 4,1:47). Similarly the word *folglich* is a new formation; Lessing used *folgsam* (Dt. Wb. 3,1884). The clearest example that I could find of a new formation with *-lich* without an umlaut is the word *sportlich* (Dt. Wb. 10,1,2689), which was first recorded in Graf von Götze's book: *Durch Afrika von Ost nach West*, 1895, *sportliche Leistungen, aus rein sportlichem Interesse*. Van Dam (1963:418ff) lists approximately 61 words with umlaut before *-lich* and only 32 without umlaut, (418f). Here quite clearly the stems with [+Der uml] are more numerous. Even though this is so, the lack of umlaut in new formations shows that umlaut is not being diffused through the lexicon. In labelling these forms help cannot be gained from the use of diacritic signs in the lexicon since the words come from several different origins. *Sport* could perhaps be marked [+Foreign] and *ulk* [+Slang] but *wohl* could only be marked [+Native] as could *wuchtig*. New formations occur with the suffix *-nis*; *Ersparnis* is first recorded by Voß 1779-1822, (Dt. Wb. 3,987), and *Wagnis* (Dt. Wb. 13,495) although recorded earlier only became widely used in the 19th c. Some forms without umlaut are not recorded in the Dt. Wb. and may be of quite recent origin but this can only be surmised. Examples are: of formation with *-nis*, *Besorgnis*, *Bewandtnis*, *Vorkommnis*, other forms like *Verdammnis* occurred without umlaut even in MHG. One formation with *-lich* which has not been recorded is *fablich*.

If the feature [+Der umlaut] has not been further diffused through the lexicon, the opposite is true of the feature [+Pl Uml] which has spread to many nouns which did not take umlaut in the plural in MHG. Paul (Paul 1916-20, Vol. 2:§10) gives a list of those nouns which now have plural umlaut in NHG but did not in MHG. Although we found that recent formations in derivation did not take umlaut, we find that in inflection recent formations and loan words take umlaut in the plural: Paul (*ibid.*) lists as recent formations: *Bausch*, *Brauch*, *Gebrauch*, *Knall*, *Puff*, *Schluck*, *Schmaus*, *Schwank*, *Schwanz*, *Stand*, *Wuchs*, *Antrag*, *Einwand*, *Vorwand*, and the loan words, *Baß*, *Paß*, *Marsch*, *Platz*, *Plan*, *Rang*, *Spaß*, *Tanz*, *Trumpf*.

It has long been known that the feature [+Pl uml] diffused widely across the lexicon. The reason for this is obvious - umlaut provides a clear indication of plurality. Even today there are many cases where there is still fluctuation in the plural as to whether a noun takes the feature [+pl uml] or not, (*Duden Grammatik*; 1966:1750).

The development of the feature [+Comp Umlaut] is not so easy to trace. Paul gives no information on this. In NHG there are three possibilities in the comparing of adjectives, either they always take umlaut, *arm*, *ärmer*, or they take the feature [+Comp Umlaut] optionally, *gesunder*, *gesünder*, or they never take umlaut, *froh*, *fröher*. In MGH the feature of [+Comp Umlaut] seems to have been optional for every adjective. Exceptions are not traceable. In NHG however the number of adjectives with optional umlaut in the comparative has shrunk. Duden mentions only the following: *banger* or *bätnger*, *blasser* or *blätsser*, *frommer* or *frömmer*, *gesunder* or *gesünder*, *glatter* or *glätter*, *kanger* or *kätnger*, *krummer* or *krümmer*, *nasser* or *nätsser*, *schmäler* or *schmätler*. However speakers are advised 'Im Zweifelsfalle wähle man daher stets die nicht umgelautete Form', (*Duden Grammatik*, 1966:2325). As was said in the section on MHG, it seems probable that the forms which have no umlaut in the comparative are recent forms and this clear indication that unmodified forms are to be preferred in case of fluctuation confirms this. The reduction in lexical distribution of the feature [+Comp Uml] has already affected all the back vowels: *barsch*, *blank*, and many others. Examples with *o* are: *lose*, *froh*, *hohl*, *hold*, *stolz*, *toll*, *voll*, and examples with *u* are: *bunt*, *dumpf*, *rund*, *stur*, *wund*. Here we have a curtailment in the range of the feature [+Comp Uml] which has not yet been completed all the way across the lexicon. In this case the presence of the ending *-er* and the signals like *als* and *so . . . wie* have rendered the umlaut feature redundant. All the changes discussed so far have simply been of the spread or restriction of the plus values of the features, [+Der / +Pl / +Comp uml]. There has been no fundamental change in the system itself. The features remain and the suffixes *-ig*, *-lich* and *-nis* are still marked [+opt uml] in the lexicon.

The next series of changes to be discussed involve the change of a feature in the case of the suffixes *-isch*, *-in* and *-ling*. In MHG they were marked [+Uml causing] but in NHG they have become like *-ig* and *-lich* and must be marked [+opt umlaut]. In NHG both umlauted and unumlauted stems occur with them: *römisch* but *russisch*, *Köchin* but *Gattin*, *Dörmling* but *Rundling*. The system of umlaut causing and optional umlaut suffixes remains in existence but these suffixes have become [+opt. umlaut]. There are no examples of any change the other way. The change seems again to have occurred in recent formations, cf. Paul (1916:2, §67,1). Of the words in *-in* with no umlaut some have no recorded date and it can only be presumed that they are new formations: *Beamtin*, *Russin*. The word *Gattin* (Dt. Wb. 4,1,1511) is an 18th c. formation first recorded in *Adelung*. *Sklavin* (Dt. Wb. 10,1,1323) is first recorded in Kramer's dictionary, 1702. *Gemahlin* (Dt. Wb. 4,1,2:3155) appears in the 17th c. with umlaut. *Mohrin* (Dt. Wb. 6,2476) occurs in Early NHG with umlaut as it did in MHG where it occurred quite frequently. In NHG it has been replaced by a form without umlaut, which Luther uses, (Numbers 12:1) to

render "Ethiopian woman" of the Authorized Version. *Genossin* (Dt. Wb. 4,1,2:3155) occurred with umlaut in MHG but in NHG it has lost its umlaut and has acquired a new meaning: *Parteigenossin*. *Botin* is given as being first recorded by Schiller (Dt. Wb. 2,276), but it is recorded once in MHG without umlaut. Possibly it is a re-creation by Schiller. Of the adjectives in *-isch* without umlaut some which are not recorded in the Dt. Wb. are presumably recent: *tropisch*, *logisch*, *schulisch*, *rassisch*. *Lawnisch* (Dt. Wb. 6,349) and *schottisch* (Dt. Wb. 9,1614) are recorded in Early NHG with umlaut as well. The word *sklavisch* (Dt. Wb. 10,1,1324) is first recorded in Kramer's dictionary, 1702, as is *schurkisch* (Dt. Wb. 9,2050). *Russisch* is first recorded by Raimund 1790-1836, (Dt. Wb. 8,1543). The word *spanisch* is recorded in Early NHG, (Dt. Wb. 10,1,1885), but in the form *spanjoisch* and *spaniolisch*, the dictionary of Frisch is the first to have *spanisch*. The forms with no umlaut before *-ling* are only two: *Rundling* and *Rohling*. The latter occurred already in Early NHG with umlaut (Dt. Wb. 8,1121) but *Rundling* is not recorded till the 19th c. when it occurs with the specialised meaning of 'die wendische Dorfform' (Dt. Wb. 8,1515). These forms all show the same tendency: to limit the extent of the feature [+Der umlaut]. In every case the forms without umlaut are recent forms and if they showed fluctuation with forms with umlaut in Early NHG the form without umlaut has been selected into the standard language. (The word *modisch*, original form *alamodisch*, (Dt. Wb. 8,2447), which is first recorded in 1626, is a good example with definite dating, which shows a new formation without umlaut.) In MHG umlaut was compulsory in the 2nd and 3rd person sg. of strong verbs but in NHG there has been a slight change for there are three exceptions to this: *rufen*, *saugen* and *kommen*. Being a small number they may be simply marked [-umlaut rule] in the lexicon. The two verbs *rufen* and *saugen* fluctuated for a long time between being weak or strong, (Dt. Wb. 8,1397) and (8,1888) and there is the comment 'erst in diesem jahrhundert hat die schriftsprache die schwachen formen ... aufgegeben', (1398). The verb *kommen* had umlauted and non-umlauted forms in competition until into the 19th c; Lessing uses forms with umlaut, *kömmt*.

It has been stressed that in Early NHG doublets of forms with and without umlaut existed side by side. Characteristic of the modern language is that in some cases there has been a differentiation in meaning between these forms. The earliest and best known of these is the pair *drülken*, 'to press' and *drucken* 'to print' which are regarded as different words with separate meanings in the late 17th c. in the dictionaries of Stieler and Frisch, (Dt. Wb. 2,1441). This doublet is due to the fact that the umlaut rule was hindered in Upper German before velar stops. Many of the early centres of printing were in S. Germany and thus the local form without umlaut was used for 'to print', (Trübners Wb. 2,94). Another well known case deals with adjectives and adverbs which in some cases were distinguished by presence or absence of umlaut: *träge* adjective: 'Die mīne gespiln waren, die sint träge unde alt ...' *träge* adverb, 'Mich grüezet maneger träge, der mich kande ē wol ...' (Walther von der Vogelweide). This umlaut was only characteristic of certain adjectives, *holde* for instance was the form for the adjective and adverb was *holtliche*. In NHG this distinction has been lost and with it

the distinction between the adjective and adverb. The resultant form is usually the form with umlaut except in the case of *hart* and *sanft* which show the non-umlauted vowel of the adverb form. There are two cases where the original pair of words, one with umlaut and one without have become differentiated in meaning and not linked synchronically any longer. This is the case of *fast* 'almost' and *fest* 'firmly', and *schon* 'already' and *schön* 'beautiful'. The differentiation between *sachlich* 'material' and *sächlich* 'neuter' is more easily established, (Trübners Wb. 6,2.) In 1781 Adelung introduces the term *sächlich* as a technical grammatical term and Campe is the first to systematically differentiate between them, (Dt. Wb. 8,1604). This is the only example of a new formation taking umlaut. The next two examples come from the world of entertainment: in Early NHG the forms *walzer* and *wälzer* were in free variation but the meaning of *walzer* as 'waltz' can be fixed to 1781, (Dt. Wb. 13, 1436). Similarly *schlager* and *schlädger* were also in free variation in Early NHG but are now differentiated with *Schlager* as 'hit'. According to Trübner's Wb. (6,94) the latter developed in Vienna in 1881 as a theatre hit and a German-English dictionary translates it as 'draw' (theat.). It is not recorded in the Dt. Wb. in this meaning, indeed it does not seem to have found its way into German dictionaries for some time. The most recent example of a differentiation is the pair *verträglich* 'peaceable' and *vertraglich* 'contractual' which are not recorded in Hoffmann's dictionary of 1914 which only has *verträglich*. They are recorded in the 1936 edition. This differentiation probably belongs to the immediate postwar period when treaties were being drawn up, but there seems no clear date of its first being recorded. This is a case of a new formation and there may never have been two forms in free variation. In fact (this was pointed out by P. Kiparsky) they are morphologically different, *verträglich* being derived from a verb, *sich vertragen mit* 'to get on with', and *vertraglich* being derived from a noun *Vertrag*. Common to all these cases is that the newest meaning is always the form without umlaut. There may be other cases where the differentiation was not accepted by the standard. One case is the pair *kundig*, *kündig* which Mackensen (1955:464) differentiates as 'kundig "erfahren", kündig "bekannt".' Other dictionaries do not accept this and Paul (1960:353), comments "früher auch mit umlaut". The form that has been accepted is the form without umlaut. These differentiations mean of course added items in the dictionary with separate meanings. The underlying forms of, for instance, *sächlich* and *sachlich* will be *sachlich*, but *sachlich*¹ 'material' will not be marked [+Der umlaut] whereas *sachlich*² 'neuter' will be marked [+Der umlaut]. Their semantic features will also be different. In these cases the differentiation has led to new items of vocabulary. The umlaut features have developed differently in inflection from derivation. In inflection the feature [+Pl umlaut] is highly productive, whereas in derivation all new formations are [-Der umlaut]. The evidence that has been produced contradicts Schirmunski's assertion (1961:152) that umlaut is very productive 'in Neubildungen'. The development of the original umlaut rule leads from a simple rule to a morphologically and lexically complex one. If the phonology has been simplified by dropping the rule this has led to complication in the morphological component and the lexical entries. This seems hard to reconcile with the concept of restructuring as a simplifying process. In the other Germanic languages umlaut has undergone a different development. In all the other languages

except Icelandic and Faroese, the phonetic rule and conditioning factors have been lost except for a few lexical items which have been restructured or for a few forms in some grammatical categories, e.g. noun plurals, English *goose, geese*, Dutch *stad, steden*, Swedish *fot, fötter*. In Icelandic and Faroese both *i* and *u* umlaut are still largely phonologically conditioned. German best exemplifies an alternative to the radical loss of the original umlaut rule, integrating it into the morphology and lexicon of the language. That this is not an isolated example is suggested by the phenomenon of consonant lenition in the Celtic languages which was also originally a phonetic rule but now usually requires grammatical features to trigger it off. Where does this development of a phonological rule from simple to complex fit into historical linguistic theory? The environment of the rule changes from phonetic to morphological and lexical, from general to more specialised. Mostly linguistic change has been dealt with in terms of rule addition, rule loss, reordering of rules and restructuring, but little attention has been paid to the development of the phonological rules themselves. This paper is an attempt to examine one such example.

Postscript

It was suggested by T. Vennemann that since umlaut behaves differently in inflection and derivation, the umlaut rule should be restricted to inflection. Umlaut vowels in derived forms would be then regarded as lexicalised. This is further supported by the existence of a pair like *gläubig* and *gläublich* where with the present approach one would be forced to state that the *gläub-* has the value [+Der uml] before *-lich*. Another pair I have found is *stämmig, stämmlich* and if more examples could be found a reanalysis would be necessary. At the moment it seems to me that if there is an umlaut rule then we should try to apply this in derivational as well as inflectional morphology.

NOTE

- * [An earlier version of this paper was presented at the First International Conference of Historical Linguistics (Edinburgh, 1973), but was not submitted in time to be included in the Proceedings.] Eds.

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