

German Umlaut. Morpholexical all the way down from OHG through NHG (Two *Stützpunkte* for Romance Metaphony)

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After briefly discussing early applications of the notion "umlaut" to metaphonic phenomena in Romance languages, this paper uses German(ic) data to show what the ultimate fate of such presently or previously phonological metaphony processes can be. It presents extensive evidence that Old High German vowel-fronting of all sorts – primary umlaut (of short *a* to *e*) as well as non-primary umlaut (of *u*(*;*), *o*(*;*), *a*(*;*) to *i*(*;*), *ë*(*;*), *æ*(*;*) – was conditioned morphologically and/or lexically (hence morpholexically). On the one hand, the process did not apply in several environments where its putative triggers *i*(*;*)/*j* were present; on the other hand, it did operate in many contexts from which those triggers were absent: e.g., in *beck-o* 'baker'; cf. *back-an* 'to bake'. Thus, despite Salmons' (1994) and Iverson & Salmons' (1996) Lexical-Phonology-based claims to the contrary, OHG vowel-fronting was not "an active phonological process". And neither primary nor non-primary umlaut was a post-lexical process, since both had morpholexical exceptions: e.g., in past subjunctives like *bran-ti* '(if (s)he) burned' (cf. *brenn-en* 'to burn') and *tro:s(t)-ti* '(if (s)he) consoled' (cf. *trô/st-en* 'to console'). Umlaut in Modern (New) High German has moved on from morpholexical conditioning to incipient fossilization, since only one category triggers vowel-fronting both regularly and productively. Still, for any instance of NHG umlaut that is best analyzed as generated, rather than lexically listed, an Optimality-Theoretic account based on root/suffix alignment is superior to one with floating autosegments—as in Wiese (1996a,b), who requires myriad exception-features, as well as violations of the Strict-Cycle Condition.

1. Introduction: Are German(ic) umlaut and Romance metaphony two distinct processes?

The present issue of the *Rivista di linguistica* on metaphony and/or umlaut represents a special kind of linguistic interaction between Romance and Germanic. Of course, the very earliest linguistic contacts between Romance-speakers and Germanic-speakers may often have involved mainly the exchange of war cries. At least, this was the case in 102 BC at Aquae Sextiae, in what is now Provence, where a Roman army under Marius annihilated the invading Teutons, and in 9 AD within the Teutoburg Forest (not far from modern-day Bielefeld), where Varus' three Roman legions were ambu-

shed by Germanic followers of a chieftain known as Arminius – most likely a Latinized form of **Harja-manna* 'Army Man', source of today's unlauted *Herman(n)*. But Romance/Germanic dealings of later times have come to be generally more peaceful and productive. The achievements flowing from this interaction range from liquid ephemera like the *eau de Cologne* of Köln (originally *Colonia Agrippina*) and the wines of Burgundy (named for a Scandinavian tribe who migrated there) to such solid works of linguistic scholarship as Fernand Mossé's *Manuel de la langue gotique* (1956), Paul Valentin's *Phonologie de l'allemand ancien* (1969), Paolo Ramat's *Das Friesische* (1976), and, much earlier, Friedrich Diez's monumental *Grammatik der romanischen Sprachen*, whose first edition appeared in 1836-1843.

It was in fact Diez (1856:180) who (in a later edition) first discussed the possibility of connecting certain phonological changes in Romance, like the development of French *premier* 'first' from *primari*, with umlaut of the sort usually posited in the transition from earlier (reconstructed) **mari* 'sea' to Old High German [OHG] *meri* and eventually Modern/New High German [NHG] *Meer*. After weighing this option, though, Diez concluded that the Romance changes in question "cannot be proved" to involve umlaut [my translation – RDJ]. Instead, they seem to involve "attraction" – whereby, in a sequence like /...áiCi.../, "the... [unstressed final] vowel... [is] attracted by the stressed vowel and fuses with it into a single sound": schematically, that is, /...áiCi.../ > /...áiC.../ > /...éC.../.

While Diez himself did not use a schema of this kind to illustrate the case at issue, diagrams of precisely the current sort were provided by Foerster (1879:482, n. 1), who explicitly argued that the Romance languages show examples of German(ic)-like umlaut (which he preferred to call *Vocalsteigerung* 'vowel-heightening' or 'raising') as well as instances of attraction. Besides reviewing the prior literature on apparent umlaut in Romance (and briefly mentioning further parallels in Celtic and in Avestan Iranian), Foerster emphasized that attraction is not to be viewed simply as a kind of metathesis (a term that he avoided). Rather, he portrayed it as a process whereby either a partial or a full copy (or perhaps an actual fragment) of an unstressed vowel is drawn through an intervening consonant, as it were, into the end of an immediately preceding syllable containing a stressed vowel, whereby (i) the original (part of the) unstressed vowel may then disappear and (ii) the newly created diphthong may later undergo certain adjustments, including monophthongization. That is, e.g., /...áiCi.../ > /...áiCi.../ or /...áiCi/ (or even /...áiC(i).../ > /...é(i)C(i).../).

Ironically, though, Foerster's suggestion that German(ic)-like umlaut and the more particularly Romance phenomenon of attraction are distinct and independent processes of sound-change came at a time when Germanic historical linguists had just begun to entertain seriously what eventually mushroomed into a wide variety of accounts for umlaut – many of them diverging in major ways from Foerster's (1879:482) view that umlaut involves a mutation in root vowels that occurs directly under the influence of a following vowel.

Braune & Eggers (1987:55), for instance, surveying more than a century of research (cf. also Buccini 1992), list no fewer than six of these "theories" – all of them pre-generative – which, taken together, cover a widely disparate set of factors as explanations for the ability of an unstressed final vowel to alter the quality of a preceding stressed vowel, even across one or more consonants. The relevant mechanisms include: (i) palatalization of the intervening consonant, (ii) "psychological" anticipation of the second vowel by the first, (iii) regressive infiltration of a nonetheless unaffected consonant by an "undercurrent" of vowel assimilation, (iv) interaction of prosodically conditioned effects along a progressively declining stress-gradient, (v) phonologization of former root-vowel allophony due to final-vowel reduction, and (vi) epenthesis between the first vowel and following consonant of a segment similar or identical to the second vowel. According to the last of these, German(ic) umlaut essentially reduces to Romance-like attraction (and, indeed, some rare OHG spellings show ...*aili*... or ...*einti*... for the much more usual ...*elli*... and ...*enti*...).

Such considerations help make clear what research on German(ic) umlaut and studies of Romance metaphony like those in the present volume have to contribute to one another. Extremely significant in this respect is the fact that, for at least some of the cases in Romance where stressed earlier vowels in a word are affected by unstressed later ones, the process still seems to be comparatively close to its phonetic origins (in the sense that the relevant triggering vowels are still present and have non-central(ized) realizations), whereas this is far from true for the vast majority of Germanic umlauts. This fortunate asymmetry derives in part from the differing loci of accentuation in the two language-families, since the Germanic languages and dialects all had initial stress when their speakers dispersed, whereas the Romance family arose from a stage of Latin in which stress was calculated from the ends of words. On the other hand, this accidental difference does not suffice to explain

why certain Romance languages and dialects have undergone much more reduction of final vowels than others. In any event, Germanists should feel lucky that at least some present-day varieties of Romance, by possessing conditions similar to those hypothesized for earlier stages of Germanic languages (on the basis either of texts or of reconstructions), provide, in a very real sense, a living laboratory for the investigation of hypotheses concerning the steps by which umlaut (or attraction) must have proceeded more than a millennium ago.

By the same token, however, the fact that so many Germanic and Romance languages are out of phase with one another, as it were, has the benefit for Romance scholars that another kind of living laboratory is available to them – one allowing the comparative study of what happens when processes which were once phonetically or phonologically conditioned become morphologized, lexicalized, and/or completely opaque. For example, because the umlaut which probably was purely phonological at some stage of pre-Old English [OE] had already become heavily morphologized by the late OE period, it is not surprising that the only detectable traces of umlaut left in Modern/New English [NE] are all essentially either lexicalized remnants (e.g., *broad/breadth* and *goose/geese*) or alternations which now go almost completely unrecognized (e.g., *old* vs. *elder*, and *hale* or *whole* vs. *heal*).

The umlaut(s) of NHG, on the other hand, must lie somewhere between these two extremes – a situation reflected by the fact that contemporary generativists have argued for positions ranging from phonologically conditioned umlaut with some morphological and lexical exceptions, at one extreme (cf., e.g., Strauss 1976 or Wiese 1996a,b), to lexically conditioned umlaut with some vestigial morphological productivity and minor phonological determinism (cf., e.g., Scheutz 1989 and Féry 1996), at the other extreme. At the same time, OHG umlaut has also been treated as already at least partly morphologized in the analyses of a small group of writers (cf., e.g., Robinson 1972, 1975, 1980, plus especially Voyles 1976, 1977, 1991, 1992a,b, 1994, and Wurzel 1980, 1981, 1989), or even as completely morphologized during all of OHG (cf. Janda 1981, 1983a), but many scholars taking a variety of other perspectives have advocated purely or at least primarily phonological analyses (cf. most recently Wiese 1987, 1989, 1996b, Salmons 1994, or Iverson & Salmons 1996).

In what follows, I will concentrate almost exclusively on the evidence for morphological and/or lexical (hence morpholexical) condition-

ing of umlaut in OHG and NHG, with an eye toward presenting the analysis in a way that will be most useful for scholars considering possible morpholexical factors governing metaphony in the Romance languages. After all, drawing the attention of Romanists to at least heuristically valuable parallels in one or more Germanic languages would provide the best demonstration that umlaut can indeed involve attraction of some sort.

Before we make German our sole focus, though, it should be mentioned that the debate concerning whether the vowels of Romance languages show diachronic alterations (and synchronic alternations) which are substantially similar to those in German(ic) umlaut did not by any means come to an end with the publication of Foerster (1879). In fact, a polite but dissenting reply by Schuchardt (1880) appeared almost immediately, and several much later studies addressed the same issues at least tangentially. These works include Schür (1936), on umlaut and diphthongization in Romance overall, and Schür (1958), on umlaut and internal inflection in Asturian (regarding which cf. Hualde 1989, 1992, and in this volume, along with his references), plus Blaylock (1965), Lausberg (1969:167ff.), Purczinsky (1970), Leonard (1978), and van Coetsem & Buccini (1990:198ff.). Lest Germanists be tempted to overlook the importance attributed to such phenomena by Romanists, consider the following claim made by Lloyd (1987): "One of the most wide-spread features of the Romance languages is the existence of vowel harmony, also called umlaut or metaphony" (p. 131), especially "the influence of a final high vowel on a preceding vowel" (p. 308).

Evidently, then, the history of Romance as well as Germanic linguistic research over the last century and a half demonstrates that it is certainly academically possible for scholarly descendants of embattled ancient warriors like Varus' legionnaires and the Teutons at Aquae Sextiae to smooth over past conflicts and maintain a long tradition of productive interactions. If there are to be any conflicts in the rest of this paper, therefore, the only combatants should be the forces of phonetics and phonology versus those of morphology and the lexicon. It will not be revealing overmuch for me to say at this point that, at least for High German umlaut, we will find that morpholexical conditioning has carried the day.

That is, OHG (ca. 750-1050/1100 AD) and NHG (ca. 1500 to the present) share some nearly identical alternation-patterns – like, respectively, *kraft* / *kreft-i-g* and *Kraft* / *kräft-i-g* 'power' / 'powerful' – which might suggest an analysis where umlaut has remained phono-

logically triggered by a high front non-consonant like /i(:)/ for over a thousand years. But other evidence from both time-periods (as well as from Middle High German [MHG], ca. 1050/1100-1500) demonstrates clearly that the /i(:)/ in umlaut-accompanying suffixes like *-i(:)g* is at best a relic and at worst an accident. After all, it fails to trigger umlaut in an entire subclass of OHG past-subjunctive verb-forms, like *brant-i* '(if I) burned' (cf. indicative *brant-a*), and in the majority of NHG adjectives with *-lich*, such as *hand-lich* 'handy, manageable' (cf. *Hand / Hände* 'hand' / 'hands'), while umlaut occurs despite the absence of /i(:)/ from OHG agent nouns like *beck-o 'baker'* (cf. the related verb *back-an* '(to) bake') and from NHG plural nouns like *Hämmer* 'hammers' (cf. singular *Hammer*). Morphological conditioning of this sort is complemented by the lexicalization and lexical determination seen in developments like OHG *s/ü/nt-ia* > *s/ü/nt-ea* > *s/ü/nt-a* (> NHG *Sünde* 'sin') and in NHG adjective pairs like *säch-lich* 'neuter, thing-like' vs. *sach-lich* 'objective' (both based on the noun *Sach(-e)* 'thing, object'). It is this kind of evidence which motivates the conclusion that German umlaut has been solidly morphological from OHG through NHG, as already claimed in the title of this paper (and, much earlier, by Janda 1981, 1983a).

So let us now consider that evidence more closely, devoting nearly all of our attention to OHG while reserving some final remarks for NHG, but always keeping these two stages in mind as a pair of strongpoints – *Stützpunkte* – whose umlaut(s) can serve as bases for orientation and comparison in any campaign to analyze Romance metaphony. Whether the present account of High German umlaut should be seen as an indicator of a safe haven to be sought or as a marker of pitfalls to be avoided, the reader must be the ultimate judge.

2. Evidence for predominantly morphological conditioning of umlaut in OHG

2.1. Morphological preliminaries concerning German umlaut (and the notion "Umlaut")

The label *vast* has often been applied – and rightly so – to the body of research carried out on the diachrony of German umlaut during the more than 200 years since the word *Umlaut* itself was coined in 1774 by Friedrich Klopstock in his patriotic utopia *Die deu-*

tsche Gelehrtenrepublik ('The German Republic of Letters'). This poet was obviously not a theoretical linguist, but his word-formational intentions must be seen as a very good sign for morphological analyses of German umlaut at any historical stage. That is, Klopstock (1774/1975:122, 139, 199ff.) clearly intended the morphologically and/or lexically conditioned phenomena which are now usually called *ablaut* (as in NHG verbs like *sing(-en) / sang / (ge-)sung(-en)* '(to) sing' / 'sang' / 'sung') to be covered by his term *Umlaut*, whose two constituent parts (the preposition/particle *um* 'around' and the noun *Laut* 'sound') together have a meaning so vague as to denote nothing more specific than 'sound(s) [changing] around'. In fact, Klopstock's *Umlaut* arguably means 'ablaut', since the two subtypes into which he divided the phenomenon both involve alternations whose members are associated with particular morphological categories (each subtype correlating with a different category or set of categories: number, or mood vs. tense) and since he makes no reference at all to phonology; cf. the following passage (from Klopstock 1774/1975:122; his emphasis, my translation – RDJ):

"To whom should it be unclear if I say, e.g., 'From *Strom* [stream] comes *Ströme* [streams]', and *sang* ['(s)he sang'] comes from *singen* ['(to) sing'], by UMLAUT? If from *a* comes *ä*, from *o* comes *ö*, and from *u* comes *ü*, as [in] *Kraft* / *Kräfte* ['strength' / 'strengths'], *floss* / *flösse* ['(it) flowed (indic. / subj.)'], *Fluss* / *Flüsse* ['river' / 'rivers'], then the umlaut is DEFINITE, and if from one vowel comes any other, as [in] *kommen* / *kam* ['(to) come' / '(s)he came'], *laufen* / *lief* ['(to) run' / '(s)he ran'], *fliehen* / *floh* ['(to) flee' / '(s)he fled'], then the umlaut is INDEFINITE".

But, just as the term describing it was first used with unmistakably morphological reference, so the phenomenon of umlaut first appears in historical records with what seems to be a (morpho)lexically conditioned form. This is the word *gest-umz* 'guests (dat.pl.)' on the Stentoften stone (in Blekinge, Sweden), whose runic inscription has been dated to ca. 600-650 AD (cf. Antonsen 1975:85, plus 27). Here, a root meaning 'guest' – which had formerly been attested as *-gast-* in earlier runic texts – now shows the arguably fronted allomorph *gest-* before a non-*i(:)*-ful suffix (dat.pl. *-umz*, often transliterated as *-umR*) whose /u/-vowel shows no tendency to front a preceding /a/ to /e/ in other inscriptions. Hence the front vowel in *gest-umz* must reflect the fact that *i*-umlaut's /e/-deriving effects (which had altered words like, e.g., former nom.sg. *-gast-iz* and nom.pl. **gast-i-z*) were at some point lexicalized as part of the basic/underlying form of

'guest' – as also seen later in the invariance of *gest-* across every one of its case/number forms in Old Icelandic. Admittedly, the Stentoft stone carries an East Nordic (North Germanic) inscription, rather than a High German (West Germanic) one, but it does provide suggestive evidence that *i*-umlaut could become (morpho-)lexicalized in a Germanic language at a comparatively early date.

Nonetheless, the huge amount of research devoted to the umlaut(s) of both North Gmc. and West Gmc. languages (especially OHG) since Klopstock's time – during the rise of first diachronic and then synchronic approaches to modern linguistics – has had an overwhelming phonological bias. In the present section, at least one aspect of this majority view finds ready acceptance, since OHG umlaut is here analyzed as having been subject to crucial phonological conditions. But the evidence as a whole compels the overall conclusion that the primary conditioning of umlaut throughout the entire OHG period was morphological and lexical, as has been at least hinted – and sometimes strongly suggested – by a number of previous writers (especially Antonsen 1984:400). Because the current paper draws heavily on earlier research by a horde of phonologically-oriented scholars as well as by a small band of morphologically-minded *Um(laut)-Leute* ('umlaut people'), most of the arguments here build almost exclusively on the work of other researchers. Still, the ways in which they are combined – and the generative picture that emerges – are, I believe, novel.

It would alternatively be possible to begin by addressing NHG umlaut – first showing it to be morphologically conditioned, next reasoning that it must have been dephonologized at some earlier point, and then attempting to show that this reanalysis occurred at or before the earliest OHG period. But let us instead follow chronology and indeed start with umlaut in OHG. This has the advantage that, if the phenomenon can be shown to be morphological for the oldest attested stage of German, we can then turn to NHG with a stronger expectation that its umlaut, too, should be non-phonologically conditioned, since rephonologization of dephonologized processes is rare or non-existent (cf., e.g., Joseph & Janda 1988).

It must be stated at the outset that, until recently, OHG umlaut alternations were relatively neglected in generative phonology as a whole, due to the inordinate amount of attention devoted to their reflexes in NHG. That is, ever since the late sixties, a lively debate has raged over whether umlaut in the modern standard language is primarily phonologically or morphologically conditioned. Aside from the appearance, over the last decade, of several phonologically heg-

onistic works by Richard Wiese (from 1987 to 1996b), the upshot of this controversy has been a considerable (though by no means unanimous) consensus favoring morphological conditioning for umlaut in NHG; cf., e.g., Kenstowicz & Kisseberth (1979:211ff.), Lieber (1987:99ff., 1992:170f.), and Spencer (1991:100f.).

However, the relevant argumentation has also had consequences for OHG (albeit indirect ones), since the nature of the approach has been such that the conditioning of umlaut for any given historical stage of German apparently is almost always presumed to be phonological until – and unless – proven morphological. Now, such generalists as Robinson (1972:82f., 1975:2ff.), Voyles (from 1976:22ff. to 1994:253f.), and Fertig (1996:175ff.) have argued that umlaut was at least partly morphological during some or all of the OHG period. But, e.g., Kenstowicz & Kisseberth (1979:354ff.) – in one of the few general phonology-textbooks to mention both the OHG and NHG stages – follow the popular line to the effect that OHG umlaut was exclusively phonological, and a similar position is taken by Wiese (1987:230ff., 1989:145f., 1996b:187f.), Lodge (1989:471ff.), Salmons (1994:220ff.), and especially Iverson & Salmons (1996:passim). It can be demonstrated quite clearly, though, that this umlaut was morphologized in essential ways even early on.

That is, if the OHG fronting of back vowels is claimed to have been (phonologically) conditioned by a following short or long /i(:)/ and by /j/ (a palatal glide; [j] here represents a high front rounded vowel-phoneme), then it is clear what type of evidence will falsify this claim and instead substantiate morphological conditioning. This evidence can be provided, namely, either (i) by entire morphological categories which contain /i(:)/ or /j/ but do not trigger umlaut or, inversely, (ii) by entire morphological categories which do not contain /i(:)/ or /j/ but still trigger umlaut. And both types of data are found in Early as well as Late OHG: that is, abovementioned *brant-i* 'if I burned' (cf. indicative *brant-a*) and *beck-o* 'baker' (cf. *back-an* 'to bake') are not isolated exceptions, but instead regular instantiations of productive patterns.

The data in question require a prior word of introduction, however, in order to make it clear why discussions of OHG umlaut nearly always focus almost exclusively on the fronting of short *a* to *e*, as in abovementioned *kraft* / *kref-t-i:g* 'power' / 'powerful'. The reason for this is that the change /a/ (>) /e/ is in fact the only kind of (original-) /i(:)/- or /j/-triggered fronting which is consistently indicated by orthography during most of the OHG period. Largely for that reason alone, this particular phonological mutation is known as 'primary

umlaut". But there exists suggestive evidence (cf. Robinson 1975, n. 20, 1976:153ff., Buccini 1992:300ff., Iverson & Salmons 1996) that primary umlaut additionally had a temporal and spatial head-start on the process that fronted the other OHG vowels – i.e., not-yet-affected instances of /a/, as well as /u(:), o(:), a:/ – which has in turn been called "non-primary umlaut".² Lastly, within non-primary umlaut, a special status as "secondary umlaut" has been conferred on the fronting to /æ/ (written *ä* in normalized MHG) of any short /a/ whose phonological environment in OHG prevented it from undergoing primary umlaut for one of two reasons: first, because a following /i(:)/ bore secondary stress and so was in a different metrical foot or, second, because /a/ was separated from /i(:)/ by certain umlaut-blocking consonants or an intervening syllable (again perhaps foot-related).³

That the /i(:)/- and /j/-triggered frontings implied by notions like secondary umlaut and (other) non-primary umlaut did take place at the time of – in fact, even before – OHG can be reckoned a secure conclusion due to two facts. First, in MHG spelling, symbols which mark the fronted vowel-qualities /ü(:), ö(:), æ(:)/ occur so predominantly in environments whose OHG (or pre-OHG) antecedents have (or must once have had) an /i(:)/ or a /j/ that this cannot by any means be due to chance. Second, a great many of the latter triggering-segments are shown by MHG orthography to have either disappeared or changed to schwa by that time, so that the fronted vowels which occur in a prior syllable must have arisen at an earlier period, when their triggers were phonetically or at least phonologically present.

Yet this view did not gain wide acceptance till considerably after the heyday of the Neogrammarians (many of whom thought that primary umlaut was the only fronting which had really occurred in OHG), and some Germanists still reject it even today. Voyles (1976:19-26, 1977, 1991, 1992a, 1992b:79ff., 212ff., 1994), e.g., has repeatedly argued that the only umlaut which actually took place during most of the OHG period was of the sort that was indicated orthographically (i.e., essentially only primary umlaut), so that non-primary umlaut must have happened much later, via analogy (cf. also Ramat 1981:25ff.). But, as Antonsen (1979:378f., 1984:399ff.) and most recently Fertig (1996:173ff.) have forcefully pointed out, Voyles' approach cannot explain why, in at least one class of MHG nouns that represented a synchronically irreversible conflation of several classes that had been distinct in OHG, it was basically only the reflexes of (pre-)OHG nouns with suffixal /i(:)/ or /j/ that showed non-

primary umlaut in MHG. Given this disqualifying drawback, Voyles' conclusions as to the chronology of OHG umlaut cannot be accepted. Instead, it is assumed here that, during the OHG period, both primary and also non-primary umlaut were indeed active, with the temporal and geographical priority attributed to the former being pre-OHG.

With this background firmly in mind, we can now consider the evidence – mainly from primary umlaut, understandably – which suggests that such fronting (along with non-primary umlaut) was in OHG already a rule with predominantly morphological conditioning.

2.2. On the primary importance of morphological exceptions to primary umlaut in OHG

Robinson 1980, for example, presents a comprehensive study devoted to a single OHG category: the past subjunctive (a.k.a. preterit(e) optative) of verbs with so-called "Rückumlaut" 'umlaut reversal' – or, more mnemonically, 'Retro-(grade) Umlaut' [RU] – which are named for the fact that they seem to have lost (a chance for) umlaut in past.indic. forms when their theme-vowel /i/ was syncopeated there (i.e., when earlier ROOT+/i+/ta/ became ROOT+ /ta/).⁴ Verbs of this sort show umlaut in the infinitive and the present tense, but not in the past tense: cf., e.g., *brenn-en* 'to burn' / *bran-ta* vs. *bran-ti* '(s)he) burned (indic. vs. subj.)'. The relevance of this class of verbs for accounts of OHG umlaut has often been overlooked, probably as a consequence of the two facts that (i) there are only six of them left in NHG (like *brenn-en* / *brann-te* 'to burn' / '(s)he) burned (indic.)') and (ii) these six now do appear to show past.subj. umlaut, though this is somewhat hidden by the orthography (as in *brenn-te* '(s)he) burned (subj.)'); cf. Janda (1987:253ff.). Nonetheless, as it is easy to verify in Raven (1963), OHG had well over 100 *Rückumlaut* verbs – and, in OHG, the RU.past.subj. category was marked by a suffixal /i(:)/ that failed to condition umlaut in a preceding root (cf. Braune/Eggers 1987:27, n. 2, 256ff., 288ff., 293, n. 1). As Wilmanns (1897:252) put it, in his discussion of OHG umlaut (my translation – RDJ):

"Within the inflectional system, by far the most conspicuous exceptions are the forms of the pret. opt. for the RU subgroup in Class-1 weak verbs [i.e., in the largest, formerly /i/-thematic group within the verb class taking *-t(-)*, the dental-preterite suffix]. These never umlaut, even

in Franconian, so that Olfred of Weissenburg (writing before 870) uses *zalti* [not **zelti*, for '(if (s)he) told', etc.], with nowhere a trace of umlaut. And so it also is elsewhere in OHG".

To reinforce this point, consider the following representative set of additional RU past.subj. examples taken from the longer list in Wilmanns (1897:252), each of them having the root-vocalism /a/ before suffixal -*ti*, just as its past.indic. counterpart did before suffixal -*ta*: *hang-ti* 'allowed', *kan-ti* 'knew', *nan-ti* 'named', *quat-ti* 'greeted', *san-ti* 'sent' (from /*sant-ti*/), *scaf-ti* 'created', *skank-ti* 'poured', *thak-ti* 'covered', *wak-ti* 'wakened', *wank-ti* 'wavered', and *wan-ti* 'turned' (< /*want-ti*/). Moreover, all the above conspicuously umlaut-free examples come from Otfred, who is described by Salmons (1994:221) as normally being one of "the most umlaut-happy of sources". It is crucial to note that, in all of these particular instances (though not, e.g., in *zal-ti* 'told'), the consonantism separating the root vowel and the suffixal /i(:)/ excludes combinations (like /...ht.../) that are known to block umlaut in any or all of the various OHG dialects and have recently been discussed by, e.g., Iverson *et al.* (1994; cf. also the references there).⁵

For this very large group of OHG words with an /i(:)/-ful suffix, Robinson (1980) considers every plausible segmental and suprasegmental cause that could potentially have been responsible for the absence of umlaut, but he is ultimately forced to reject them all. For example (on this point, cf. also Voyles 1977 vs. 1991), in non-umlauting *zal-t-i* '(if (s)he) told' and the like, the root is separated by a -*t*- (for past tense) from the potential umlaut-trigger /i(:)/ (past.subj.), but exactly the same situation is true of umlauted examples like *fer-t-i* 'travel (dat.sg.)', where nominalizing -*t*- and dat.sg. -*i* follow the verb root of *far-(an)* '(to) travel'. Similarly, all the OHG non-[1/3.sg.] endings of RU past.subj. forms contain a long /i:/, but this is unlikely to be the reason why there is no umlaut in words like *san-ti:s* '(if you sg.) sent' (from /*sant-t-i-s*/), because long /i:/ is also found in the umlaut-triggering adjectival suffix /-i-g/ already seen above in *kraft / kref-t-i-g* 'power' / 'powerful'.

Lastly, there are no independent grounds for believing that OHG's suffixal past.subj.-marker /i(:)/ – even when long – carried secondary stress. This is especially true in light of the fact that, aside from failing to trigger umlaut, the past.subj. vowel did not exhibit any traits similar to those of, e.g., secondarily-stressed OHG -*li:h* '-ly'. After all, the primary reason why the latter bore secondary stress and so remained in its own metrical foot – with the consequence

that it was unable to trigger primary umlaut of any vowel in a preceding foot – was that this -*li:h* had remained accentually parallel (perhaps even as a bound root) to the non-affixal source from which it had been grammatic(al)ized in compounds: the free root *li:h* 'body' (cf. its modern reflex, NHG *Leiche* '(dead) body, corpse').

Given all these considerations, Robinson (1980) concludes that the only plausible reason for the absence of umlaut from RU forms such as past.subj. *bran-ti* '(if (s)he) burned' is a morphological prohibition. In this connection, he notes that the application of umlaut in the relevant examples would have created a kind of homophony – by neutralizing the difference between pres. vs. RU.past root-allomorphs, as in *bren(n)-* vs. *bran-(ti)* for 'burn'. Furthermore, Voyles (1994:254) mentions similar near-homophony that would have arisen between full words, such as pres.indic. *sent-i:s* vs. past.subj. *sant-i:s* (< /*sant-t-i-s*/) for 'send (2.sg.)'. In fact, the grammatical restriction in question (also stressed by Voyles 1991:166ff.) is exceptionlessly obeyed by every text in every OHG dialect, from the very earliest attestations to the very latest: if a document has past.subj. forms of a(n) RU verb, then these show no umlaut.

The past.subj. forms of two other OHG verb-classes, however (including even /-t/-suffixed ones), did show umlaut before the past.subj.-marker /i(:)/ – i.e., non-primary umlaut. For example, this can be inferred from the fact that, toward the end of OHG, when the digraph <iu> became available as a marker for the long /i:/-vowel, the verb which later (in MHG and NHG) appears as *dünk-(en)* '(to) seem' (cf. obsolete *(me-)think(-s)* in English) showed up not only with past.indic. *du:h-ta* but also with a past.subj. form that is written <diuh-ti> = [dy:h-ti] '(if it) seemed' (cf. Robinson 1980:452). Likewise displaying the defining vocalic-plus-consonantal anomaly (i.e., present-tense ...VNC... vs. past-tense ...V:h...) of this high-frequency subgroup of OHG Class-1 weak verbs (with their /-t/-suffixed pasts, umlauted or front-vowel presents, and infinitives mainly in /-en/; cf. Braune & Eggers 1987:295f.) were '(to) think' / 'thought' (indic. / subj.) *denk-(en)* / *da:h-ta* / <da:h-ti> = [dæ:h-ti] (> MHG *dæ:h-te* > NHG *däch-te*), along with '(to) bring', '(to) fear', and '(to) work'. Such verbs – besides having vowel- and consonant-quality alternations that set them off from the RU class synchronically – also differed from the latter diachronically, since their past-forms never had a theme-vowel /i/ to be syncopated in the first place.

More importantly, the past.subj. forms of the enormous OHG class of so-called strong verbs, such as *nēm-an* '(to) take', likewise bore the same past.subj. /i(:)/-suffix as did the RU verbs, and yet the

former again must have been subject to OHG (non-primary) umlaut, given that they once more show up umlauted in MHG (and in NHG). Hence it is generally thought that, at least by mid-OHG, a verb like past.indic. (1.pl.) *na:m-(um)* 'we took' had the past.subj. (3.sg.) counterpart [næ:m-i] (spelled <na:m-i>) – as can be inferred from the fact that this form became umlauted MHG *næ:m-e* > NHG *nāhm-e* '(if (s)he) took'.

This last fact is of great significance, since it frustrates any possible attempt to explain away the morphological class of RU.past.subj. exceptions to OHG umlaut as due to the level-ordering considerations so frequently invoked in Lexical (Morphology and) Phonology [L(MP)]; cf. Kiparsky (1982, 1985, 1993, 1996) and many other such works. Because OHG umlaut applied before such a large number of endings, it appears that insoluble traffic-problems would result from trying to make the non-occurrence of the process follow from: (i) its assignment (and that of most /i(:)/-ful suffixes) to an early level, vs. (ii) the assignment of certain non-umlauting /i(:)/-ful suffixes to a later level (cf., e.g., the differential level-ordering of (i) English Trisyllabic Shortening and *-ity* vs. (ii) *-ery* that has been proposed as an explanation for the difference between lax *san-ity* vs. un lax *brau-ery*).

Although, to the best of my knowledge, no one has as yet elaborated even a substantial fragment of OHG phonology and/or morphology in the LP framework, such an effort is unlikely to be useful for blocking OHG umlaut in exactly the right cases (like the RU.past.subj. forms), since the set of umlaut-triggering suffixes is so diverse that it cross-cuts virtually all relevant distinctions that one might be tempted to use in a level-ordering solution: inflectional vs. derivational, regular vs. irregular, productive vs. non-productive, cyclic vs. non-cyclic, word-level vs. non-word-level, etc. As a result, it is not clear how the blocking of umlaut in *bran-ti* 'burned (subj.)' and the like could legitimately be achieved without also wrongly blocking the rule in instances where it should apply. And Goldsmith (1990: 240f.), e.g., emphasizes that it is illegitimate to posit an entire lexical level for an individual morpheme just in order to achieve its desired interaction with a sound-structural process whose application would otherwise have to be analyzed as morphologically conditioned.

In sum: OHG indeed had an entire morphological category, the past subjunctive for the *Rückumlaut* subgroup of Class-1 weak verbs, in which—for completely non-phonological, morphological reasons—umlaut simply did not apply, though every phonological condition for its application was met. And the relevant OHG verbs constituted the

largest subgroup in the largest of the three classes in the larger of the two major verbal types in the language.

2.3. On analyzing morpholexical exceptions to OHG primary and non-primary umlaut

Given that the existence of at least one substantial non-umlauting category in OHG has been general knowledge for more than a century, we may at this point ask how (and whether) proponents of a completely phonological approach to OHG umlaut have dealt (or could deal) with forms like RU.past.subj. *bran-ti* '(if (s)he) burned'. To set the stage, however, let us first briefly mention one non-phonological perspective.

This view is that of the late Herbert Penzl, an unwavering advocate of Post-Bloomfieldian American-Structuralist phonemics in diachronic phonology. For Penzl, the single fact that the /a/ of some OHG verb-forms contrasted before /C₀i/ with the /e/ of certain nouns, in such near-minimal pairs as *branti* (= *bran-t-i*) vs. *henti* 'hands' (= *hent-i*; cf. *hant* 'hand'), would have sufficed to require abandonment of the claim by Twaddell (1938) that umlaut in general had been phonemicized only at the very end of the OHG period, when the original umlaut-triggers /i(:)/ and /j/ were said to have been lost. This is so because, according to Penzl (1971:122; my translation – RDJ), it is only "at the end stage of umlaut... [that] analogical umlautless forms can appear before a surviving /i/'. In this way, principles of diachronic phonemics effectively forced Penzl to concede (albeit reluctantly and only implicitly) that RU.past.subj. *bran-ti* and the like had originally undergone umlaut in pre-OHG – or at least very early OHG – and become **bran-ti*, etc., but that such forms had been analogically leveled to *bran-ti*, etc. under the influence of past.indic. *bran-ta* and the like (cf. Penzl 1949:227f., 1994:57). And the implication here is that all surviving umlaut-alternations in OHG must have been morphophonemic – i.e., morpholexically conditioned (cf., too, the recent unapologetic affirmation of this conclusion by Antonsen 1984:400).

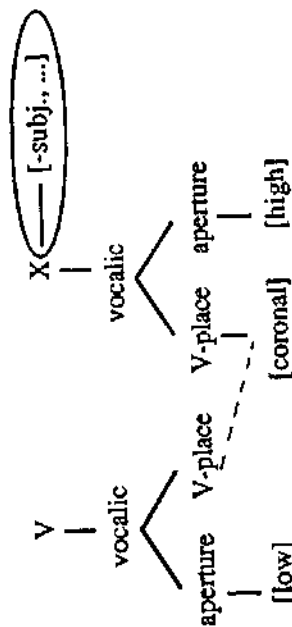
This structurally reached conclusion concerning the chronology and conditioning of OHG umlaut is in fact identical to the late-generative one drawn (quite willingly and explicitly) by the current paper, though for different reasons (cf. the following subsections). But it is quite far from the position taken by Salmons (1994:220f.), who describes umlaut (twice) as having been "an active phonological process" well into OHG, or by Iverson & Salmons [I&S]

(1996:83), who claim that primary umlaut showed "very precise phonological conditioning". Obviously consistent with such descriptions is the later claim in I&S (1996:83) to the effect that "primary umlaut, under the generally accepted analyses, does not appear to have been sensitive to morphological restrictions". Still, this statement is extremely difficult – if not impossible – to square with the fact that, only three pages earlier, the authors in question have just mentioned two RU.past.subj. forms in which, as always, umlaut was inactive and its precise phonological conditions were completely ignored. For the RU.past.subj. data, I&S (1996:80f.) adopt a semi-statistical approach, as it were, since they weakly adopt Penzl's (1949) analogical – hence morphologically based – explanation but simultaneously make a numerical comparison which leads them to downplay it as:

"perhaps plausible for a few well-defined instances, such as the long-standing problem of the preterit subjunctives (cf. OHG *zalti* from 'to tell', *branti* from 'to burn', etc.), but certainly ... not [to] be favored over a straightforward phonological account ... [, since] the largest ... class of forms resistant to primary (and, to a more limited extent, secondary) umlaut has long been recognized as being definable phonologically in terms of ... opaque environments ... [with] intervening ... consonant[s]....".

Here, though, the question is precisely that of how analogy, and its concomitant morphological conditioning, should somehow be brought into association with a purely phonological rule. A possibility that might be favored by those stressing the phonological side of OHG umlaut is illustrated by the mixed rule in (1) below. This version adapts the phonological feature-geometry of I&S's (1996:81) autosegmental spreading-rule for OHG primary umlaut by grafting onto it a specification for two additional (sorts) of elements, here both enclosed in an ellipse. These are: (i) a feature – of a morphological nature – needed in order to block the process from applying to RU.past.subj. forms, plus (ii) an ellipsis (...) intended to stand in for additional morphological features that are motivated by the positive as well as (further) negative morphological environments which can here be anticipated from the discussion devoted to them in later subsections of this paper. As a consequence of certain asymmetries in the distribution of the vowel /i(:)/ across OHG suffixes, it is possible simply to specify as [-subj.] the part of the rule below which makes reference to that segment, since the pres.subj. marker is -e(:) and so never triggers umlaut:

- (1) OHG Primary Umlaut (of short /a/ only; after Iverson & Salmons 1996:81) with (elliptical) morphological conditioning added:



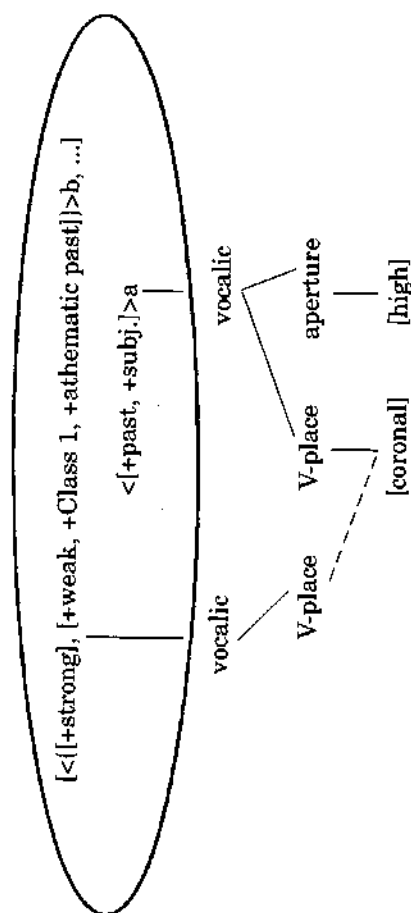
(A straightforward alternative to the above would involve replacing [-subj.] with [-past], since there are no other OHG verbs that undergo primary umlaut before a past.subj. suffix, and none at all that undergo it before a past.indic. ending).

However, once we consider non-primary umlaut, it turns out that the morphological additions which need to be imposed on I&S's (1996:82) purely phonological formulation of this process are extremely complex. This is due to the fact that, as already briefly noted, non-primary umlaut did apply to past.subj. forms in two sorts of non-RU verbs (this is especially clear in Alemannic and Bavarian texts). To begin with, there are (i) anomalously ablauting verbs of the subclass whose past-tense forms never had a theme-vowel /i/, like above-mentioned 'to seem' /'it) seemed (indic. / subj.)' (here, recall that <iu> is a late OHG spelling for /u:/; <dunk-(en)> = [dyŋk-(en)] / *du:h-ta* / <d(i)u:h-ti> = [dy:h-ti]). But there are also (ii) strong verbs, like above-mentioned 'to take' /'we) took (indic.)' / '(s)he) took (subj.)': *nēm-(an)* / *na:m-(um)* / <na:m-i> = [næ:m-i], with the umlaut in the last of these forms being retrospectively detectable from its later reflexes MHG *næ:m-e* > NHG *nähm-e*. In short, past.subj.-marking /i(:)/ triggered umlaut in one small and one huge verbal class of OHG, but not in another large verbal class: RU verbs.

Consequently, we are led to make significant alterations in I&S's (1996:82) OHG non-primary-umlaut rule – again via the addition of elements enclosed by an ellipse – in order to allow umlaut in the two sorts of past.subj. verb-forms just mentioned while simultaneously excluding it from past.subj. forms of RU verbs like OHG <ho:r-(en)> = [hø:r-(en)] / *ho:r-ta* / *ho:r-ti* 'to hear' / '(s)he) heard (indic. / subj.)'

– for which the infinitival (or present-tense) umlaut vs. past-tense non-umlauts are inferred from MHG *hœ:r(-en) / ho:r-te / ho:r-te.6*. This can be done by means of a condition on umlaut such that, if the /i(:)/ in the rule is a past.subj.-marker, then the preceding (root) vowel must be associated with the features for either a strong verb, like *nēm(-an)* 'to take', or a Class-1 weak verb of the type whose past-tense forms were always athematic, like <dunk(-en)> = [dyŋk(-en)] 'to seem'.

- (2) OHG Nonprimary Umlaut (of all black vowels; after Iverson & Salmons 1996:82) with several sets of morphological features added, including one condition(al): if a, then b



The latter sort of specification seems to require a feature for an arbitrary morphological class, such as [+athematic past] in (2) above, since there are in synchronic OHG only minor overt differences – other than the past.subj. forms at issue – between, e.g., 'to think' / 'thought (indic. / subj.) *denk(-en) / dæ:h-til*, with the /a:/-to-æ:/ sort of non-primary umlaut, and *skenk(-en) / skanc-ta / skanc-ti* 'to pour' / 'poured (indic. / subj.)' (where <c> is an orthographic variant for <k>), without (either primary or non-primary) umlaut. Admittedly, we could try to specify not only morphological features like [+past, +subj.] but also phonological ones for root-final /... (V):h.../ (rather than [+athematic past], etc.) and thereby attempt a reformulation of I&S's (1996:82) OHG non-primary-umlaut rule other than the one in (2). Still, it is not obvious how – and if – this would work,

and, even if so, whether it would be preferable to a uniformly morpholexical account. In addition, the further morpholexical features to be motivated in the next subsection for both primary and non-primary umlaut in OHG again require the inclusion of a place-holding ellipsis in the reformulation just given (to provide some idea of the numbers involved, there are at least two more minus-valued features and two more plus-valued features still to come).

In any case, though, the obligatory inclusion of minimally one morphological feature for at least the past.subj. category in any valid formulation of OHG non-primary umlaut makes it clear that, *pace* I&S (1996:15 and *passim*), this process cannot have been a post-lexical rule (even I&S themselves contradictorily admit that "non-primary umlaut seems to have been triggered in some morphological configurations... but not in others"). In fact, there is one alleged property of OHG non-primary umlaut that makes I&S (1996) lean most strongly toward assigning it post-lexical status (as opposed to primary umlaut, which they view as at least a lexical rule, though possibly also a post-lexical one), and this is the putative characteristic that it "...[c]reates [non-contrastive] new segments" – i.e., that it is not structure-preserving but allophonic (which I&S 1996:84f. follow many others in seeing as the main reason for the non-indication of non-primary umlaut in most OHG spelling).

The evidence presented here in the following subsections suffices to demonstrate that this claim is false – because /u(:), ö(:), æ:/ must have become contrastively lexicalized and hence phonemic by at least the mid-OHG period, if not much earlier. But, more significantly, I&S (1996:15f.) emphasize that the allegedly post-lexical rule of OHG non-primary umlaut shows "...[n]o clear phonetic conditioning" and that it is "...[i]nconsistently carried through" (especially in comparison with primary umlaut) – and yet these are both properties which one would far more strongly expect to be characteristic of lexical rules than post-lexical ones. Kiparsky (1988:398), for example, equates the characteristics of lexical-phonological rules with those assigned by Labov (1981:296; cf. also 1994:527) to processes undergoing lexical diffusion: e.g., governance by at most rough (rather than fine) phonetic conditioning or even by grammatical conditioning—and Kiparsky associates quite the opposite properties with post-lexical rules, which instantiate Labov's (1981; cf. also 1994) notion of Neogrammarian (regular sound-)changes. Thus, because that fronting-process involved relative non-phoneticity as well as substantial morpholexicality, we are forced to reject I&S's proposal that OHG non-primary umlaut was post-lexical. Instead, we must conclude

that it was some kind of lexical rule. And this then means that both primary umlaut and non-primary umlaut were lexical rules with significant morphological conditioning – which makes it plausible to consider whether they were not in fact both morpholexical rules.

2.4. Morpholexical umlaut in OHG: more /i(:)/ without fronting, fronting without /i(:)/

2.4.1. On OHG umlaut as morphology, not morphologically conditioned phonology

Now, it is true that numerous linguists recognize a category of “morphologically (or morpholexically) conditioned phonological rules”, and that many such scholars would most probably view OHG umlaut (of any sort) as a process of precisely this type. E.g., Spencer (1991:100) first describes the umlaut in OHG’s indirect descendant NHG as involving “allomorphic variation which is not [...] automatic, but rather is *morphologically conditioned* (i.e., triggered only by specific morphemes, morphological classes or ... words ...), and so] limited to a particular class of items or ... morphological contexts[.]”, but he then calls umlaut “a phonological process” – which would make it precisely a morpholexically conditioned phonological rule. In fact, though, this label has been applied to two rather different types of entities. For example, Voyles’ (1991:188) diachronic study of umlaut posits joint “phonological and morphosyntactic conditioning of the OHG rule” (i.e., a disjunction uniting environments of qualitatively different kinds), whereas Spencer’s (1991:100f.) abovementioned characterization of NHG umlaut treats it as a process whose environments are all wholly morpholexical but whose manipulation of the sounds in its inputs and outputs is such as to merit description as (the operation of) a phonological rule.

Against the claim that OHG umlaut (of all kinds) must have been triggered by environments of disparate types (mostly phonological, but partly morphosyntactic), it can be observed, first of all, that such an internally inconsistent account is not necessary, since there already exists an alternative analysis with only a single sort of conditioning: morpholexical. On this view, umlaut in OHG (at the start of the historical period, and probably beforehand) was triggered by any member in a large set of suffixes – whereby the latter group both excluded some endings containing /i(:)/ and included certain endings not containing /i(:)/. A treatment like this has no need, e.g., to state

anything directly or overtly about the failure of fronting to apply before the nominal case/number-marking suffix *-in* during mid-to-late OHG – the next negative exception to be treated – because *-in* was simply not present in the list of umlaut-triggering suffixes at that time. Of course, the list at issue included, besides a small number of /i(:)-free endings, a large quantity of suffixes that were /i(:)-ful (rather than one phonological process referring to /i(:)/). Yet this arrangement was arguably less complex than, e.g., the nominal system of Classical Latin, which had many different kinds of stem-suppletion for nom.sg. vs. other case/number forms of nouns (as in *o:s / o:r-(is)* ‘mouth’ / ‘(of a) mouth’ vs. *os / oss-(is)* ‘bone’ / ‘(of a) bone’), instead of one frequent alternation-pattern involving minor vocalic allomorphy in noun roots – as in OHG.

Moreover, the umlaut process itself (i.e. the fronting-operation that it performed) can be analyzed as having been morphological, rather than phonological, on any of several current approaches which envision rules of morphology as able to perform operations of permutation, replacement, subtraction, and multiple addition, rather than just simple affixation. Cf. the Word-and-Paradigm “A-Morphous Morphology” of Anderson (1992), the Item-and-Process “Distributed Morphology” of Halle & Marantz (1993), and the overviews of all such “Process Morphology” in Janda (1983b, 1994, 1996b). Indeed, recognizing substitutive morphological processes like umlaut seems to be the only way to impose certain desirable restrictions on phonology, including the constraint that the set of purely phonological generalizations contains no exchange-rules (which interchange the entire identities of two or more segments in the same environment); rather, such processes are always morpholexically conditioned (cf. Anderson 1975:41, Janda 1987:298ff., and references there).

Finally but far from minimally, it is surely relevant that only by analyzing OHG umlaut (or any similar process) as an essentially morpholexical rule can we do justice to the fact that the systematic exclusion of an alternation from a morphosyntactic category (or a set of these) – like the absence of umlaut from the past.subj. forms of RU verbs – effectively marks that category in a salient way, and so can hardly fail to be recognized by speakers and hearers as a morphological cue (on this matter, cf. also Voyles 1991:169ff.). Recall, e.g., that Voyles (1994:254) has drawn attention to the near-minimal pairs which resulted from the local non-application of OHG umlaut (whose effect would have been to create total root-homophony; cf. again Robinson 1980) in the second member of an opposition like *pres.indic.*

sent-i-s vs. *past.subj. sant-i-i-s* (< /sant-t-i-i-s/) for 'send (2.sg.)'. Thus, even if OHG RU.past.subj. forms had been the only ones in which umlaut failed to apply before a suffixal /i(:)/, we would still have sufficient grounds to argue that the fronting-process at issue was already morphologically conditioned during the period in question. But we will soon see that there were in fact additional negative and positive exceptions to OHG umlaut.

The first proposal that OHG umlaut (of all kinds) was conditioned entirely by a set of morphological environments was apparently that of Robinson (1975). He, however, limited his claim to very late OHG ("by around the year 1000", p. 2): "at the time... [when] the original umlaut-conditioners were lost phonetically, the umlaut rule became a rule-schema with a large number of disjunct morphological environments (those which earlier contained the phonological conditioners)" (p. 5). Robinson supplied an informal version of the OHG rule-schema in question, including a sample of eleven morphological environments (three of them with two parts); he also discussed at least five other such contexts and pointed out that, "in derivational morphology, a huge number of suffixes ... caused umlaut". While Voyles (1991, 1994), as we have seen, analyzes OHG umlaut as triggered by both phonology and morphosyntax, he nonetheless views its morphosyntactic conditioning as having been present from the very beginning of the OHG period. Combining these two accounts, as it were, the present paper concludes that OHG umlaut (both primary and non-primary) was completely morphologically conditioned during the entire period for which any OHG texts are extant – at the very least, starting with the composition of the first document that included both (umlautless) RU.past.subj. forms and words which did show umlaut.

Since this position is so extreme when compared with most other writings on German umlaut (e.g., Wiese's 1987 claim that the process has remained phonological from earliest OHG to contemporary NHG, despite certain modifications), the following subsections are exclusively concerned with the evidence for morphological conditioning of umlaut in OHG (much of it already mentioned in Janda 1981 and 1983a), as well as with heading off some possible counterarguments. Moving on from our initial example of an entire morphological category in OHG which bore a suffixal /i(:)/ but failed to undergo either primary or non-primary umlaut – namely, the solidly established case of consistently unfronted RU.past.subj. forms like *bran-ti* '(if (s)he) burned' and *hor-ti* '(if (s)he) heard' – we need to consider both further negative exceptions (of the type just mentioned) as well as a

number of positive exceptions: cases where OHG umlaut occurred despite the absence of a following /i(:)/ or /y/.

2.4.2. More OHG /i(:)/-ful suffixes which fail to trigger Umlaut in a preceding root

While the umlautless RU.past.subj. category clearly involved only verbs, a second sort of negative exception to umlaut in OHG came to occur before the ending *-in* of a relatively large class of nouns (and nominalized adjectives), this *-in* being the Upper German as well as East and Rhenish Franconian form of the masc./neut.dat./gen.sg.-suffix for the *n*-declension (= so-called weak nouns). Specifically, Braune & Eggers (1987:205, n. 2) mention that this ending conditioned umlaut only in the earliest texts. Now, recall that OHG is usually dated between about 750 and 1050/1100, and consider the fact that (primary) umlaut of (most) short /a/ is indicated consistently by about 800. But, for the categories just mentioned, Braune & Eggers (1987:27, n. 2, 205, n. 2) report that the absence of umlaut is already the rule in the ninth century. Clearly, analogy to other forms was involved here, but this does not affect the fact that, in early OHG, the second member in pairs like the following underwent a de-umlauting change: early *han-o* / *hen-in* > less early *han-o* / *han-in* 'rooster' (masc. nom. / dat./gen.), *nam-o* / *nem-in* > *nam-o* / *nam-in* 'name' (masc. nom. / dat./gen.), *fora-sag-o* / *fora-seg-in* > *fora-sag-o* / *fora-sag-in* 'fore-say(-er)', prophet (masc. nom. / dat./gen.), *scad-o* / *scad-in* > *scad-o* / *scad-in* 'damage' (masc. nom. / dat./gen.).

It is worth emphasizing that, on a completely morphological analysis of OHG umlaut (like the present one), the claim is not that the (primary) umlaut seen originally in *hen-in*, etc. was still phonologically conditioned when such forms appeared in early texts, but instead that it was already morphologized even then, and that its analogical leveling-out represents just the sort of development which commonly unifies vowel qualities across roots in a (sub)paradigm. In fact, Wurzel (1980:449ff., 1981:419f., 1989:92f.) has often pointed to the OHG innovation of *han-in* and the like as reflecting a growing tendency to reinterpret umlaut in nouns as a plural-marker, so that fronting tended to be lost from singular forms. For this, however, he has recently been taken to task by Salmons (1994:221), who accuses Wurzel of "using morphology to motivate the rise of a highly marked form, even beyond the problems of having morphology override an active phonological process". Since the issue raised by forms like

han-in is precisely whether OHG umlaut was phonological (and so whether the absence of fronting before a suffixal /i(:)/ was marked or not), it is difficult to see Salmon's criticism as anything but an expression of faith in the proposition that there must be some phonological explanation for the absence of fronting before suffixal /i(:)/, even though none has become apparent during more than a century and a half of research.

Salmons (1994:219, n. 5) is on solid ground, though, in his criticism of Wurzel's (and other scholars') excessive reliance on "the handful of oversimplified data cited in the handbooks" for OHG, rather than on "the complexity of the actual data". Nonetheless, it would be more accurate to direct this objection against claims based only or principally on Braune & Eggers (1987) – admittedly the standard reference-work for OHG. This is because other OHG handbooks, and especially the individual studies cited by Braune & Eggers, often provide much more adequate information concerning textual attestation and chronology.

In the current case of umlaut loss before the weak-noun masc./neut.dat./gen.sg.-suffix *-in*, e.g., a consultation of Paul (1877:408f.), Schatz (1907:115ff., 1927:225ff.), Franck (1909:192), and Lessiak (1910:217) yields a very detailed overview. The text counts that emerge (bolstered by initial soundings in Graff 1834-1846/1963) do support a chronology where early umlaut before *-in* soon gave way to non-umlaut. For example, the Monsee/Vienna) Fragments (Franconian-influenced Bavarian, from ca. 800) show six dat.sg. instances of unumlauted *nem-in* 'name' vs. two of unumlauted *fora-sag-in* 'prophet', whereas the "Exhortation to the Christian Populace" (Bavarian, from ca. 815) has only non-umlauted forms like *so:na-tag-in* 'Judgment Day'. And it further emerges (cf. also Schwarz 1954: 259ff.) that place-names which were originally formed with *-in* but then became opaque often show lexicalization of fronted vowels, thus demonstrating that the suffix at issue was indeed an umlaut trigger at the beginning of the OHG period (but later lost that status).

A third negative exception to OHG umlaut (and the last to be discussed here) involves the suffix *-iu*, whose pronunciation seems to have been roughly /ju/ in most Franconian varieties (MG) vs. /iw/ in Alemannic and Bavarian (UG); cf., respectively, Franck (1909:208) vs. Schatz (1907:132, 1927:253). Actually, *-iu* represents three (sets of) endings, two adjectival and one nominal: (i) the fem. nom.sg.-marker and (ii) the neut.nom./acc.pl.-marker(s) on so-called strong adjectives, and (iii) the recessive (obsolescing) instr.sg.-marker on so-called *i-*

stem nouns. Let us consider adjectival *-iu* first and then turn to nominal *-iu*.

According to Braune & Eggers (1987:27, n. 2, 218, n. 6), the fem.nom.sg. and neut.nom./acc.pl. suffix *-iu* failed to trigger umlaut (of any kind) in all but the very oldest OHG texts (mostly Franconian ones). That is, aside from early occurrences of the common words for 'all', 'other', and 'many' (a) – plus a few others (such as *scem-iu* 'short'; cf. the adverb-form *skam-li:cho* 'brief-ly') – no adjectives showed umlaut before *-iu* in earliest OHG. But soon even these divergences from the norm ceased to umlaut, so that, for the opposition 'masc.nom.sg./fem.nom.sg.' or 'neut.nom./acc.pl.', the texts show the changes *al(l) / ell-iu > al(l) / all-iu* for 'all', *ander / endr-iu > ander / andr-iu* for 'other', and *manag / menig-iu > manag / manig-iu* for 'many' (a). Consequently, 'long' was regularly *lang-iu* (not **leng-iu*), e.g., although the adjective *lang* could undergo umlaut—in, say, the comparative *leng-iro* 'longer'. The instr.sg. *-iu*, on the other hand (cf. Braune & Eggers 1987: 198, nn. 2-3, 200, nn. 1-2), originally triggered umlaut in nouns like *gest-iu* 'guest' (masc.) or **stet-iu* 'place' (fem.), although unumlauted forms like *gast-iu* also occur, but *-iu* was relatively quickly replaced by *-u* (due to a combination of factors probably involving both /j/-loss and analogy with instr.sg. *-u* in other noun-classes) and eventually lost its association with umlaut. In fact, the instr. category as a whole gradually fell out of use in OHG, leaving behind few attestations even from the relative height of its use.

In earlier work, Wurzel (1980:446-449, 1981:419ff., 1987:91, 1989:91) described the loss of umlaut from instr.sg. *gest-iu* 'guest' and the like as due to the increasing morphologization of the fronting-process (initially as a "morpho(phonological)" rule [MPR]; on the latter, cf. also Dressler 1985, 1996 vs. the critique in Janda 1996a, plus references there), and he has used such data both to elaborate and to argue for his version of "Natural Morphology". The important (and already several times abovementioned) study by Salmons (1994), though, has recently shown that consideration of a wider range of OHG data does not strongly confirm the claim that umlaut was lost from instr.sg. *gest-iu*, etc. mainly as a result of its having already become primarily associated, in nouns, with plural-marking.

In particular, the relevant chronology did not proceed from earlier *gest-iu > later gest-iu > even later gast-u*, as assumed by Wurzel, but instead (where a tilde indicates variation) from earlier *gast-iu ~ gest-iu > later gast-u ~ gest-u*, in which *gast-u* represented by far the most common OHG variant. Thus, Salmons (1994:220) reports that

the "scattered attested instances of *gastiu*-like forms appear to come generally from early manuscripts where umlaut is not consistently marked", implying that *gastiu*-like forms occur later, and he takes this both to contradict Wurzel's linking of OHG vowel-fronting in nouns with plural-marking and to "confirm the more straightforward view that umlaut is an active phonological process at this point" in the history of the language.

Yet further data cited by Salmons (1994:219f.) include several crucial forms that suggest precisely the opposite conclusion (i.e., the one advocated here). Indeed, the evidence in question demonstrates quite clearly that umlaut was already morphologized very early in the OHG period—given that it involves numerous words which reflect fronting in the absence of any apparent trigger. Of these, cf. especially the "occasional" *gastiu*-like /i,j/-less instr.sg. form *sted-u* '(river)bank' (cf. nom.sg. *stad*), "showing umlaut but not marking the trigger", but also the many /i,j/-less plural forms, like nom. *gest-e*, acc. *gest-e* or (UG) *kest-a*, dat. *gest-en*, and gen. *gest-o* or (UG) *ke(i)s-eo* (on which cf. p. 268 in Volume IV of Graff 1834-1846/1963).⁷ The latter directly contradict Salmons' (1994:223) claim that umlaut /e/ occurs in all these plurals "because they contain a more consistently triggering segment, not because they are plural, as Wurzel maintains", and that "the establishment of the relationship between plurality and umlaut(+affix) in the masculine *i*-stems was phonologically rather than morphologically motivated". I.e., here the suffixes are *-a*, *-e(n)*, *-(e)ol*.

Given the existence of relatively early OHG texts that yield paradigms for nouns like *gast* 'guest' containing few or no suffixal /i/s or /j/s but still showing a fronted root-vowel in every form of the plural, it appears that, compared with its once phonetically (more) circumscribed nature, the process of umlaut in OHG was not phonologically "active" but instead hyperactive – i.e., morphologically conditioned (since only in the sense of manipulating sounds was it "phonological" – i.e., sound-structural). Thus, while we in fact cannot link umlaut in OHG nouns primarily with plural-marking, the presence of fronting before /i,j/-less endings for both the pl. and the instr.sg. categories reinforces the conclusion that the process was indeed multiply morphological (rather than uniquely phonological). This makes it even more plausible to claim, as here, that OHG *gastiu*-like forms (such as *slag* / *sleg-iu* 'striking, blow (nom. / instr.)') were similarly morphologically conditioned – with *gastiu*-like variants simply reflecting the removal of *-iu* from the list of triggering suffixes (rather than being, as Salmons' 1994:221 diffidently speculates, forms that just

happened not to have been reached yet by fronting because the "umlaut-triggering behavior of *-iu* was lexically diffuse", as "some evidence could be taken to suggest").

As for the absence of fronting before the OHG fem.nom.sg. and neut.nom./acc.pl. adjective-ending *-iu*, Salmons (1994:221ff.) confirms the existence of this phenomenon but again goes beyond the limited data and discussion in Braune & Eggers (1987:27, n. 2, 218, nn. 6, 9) to present a more varied image based on specific texts. As he summarizes matters: "forms of the type *langiu* ['long'] and *altiu* ['old'] are indeed the norm (...[with /t/ being] an umlaut-blocking environment in many dialects)", although "forms like *sempftiu* 'soft' do occur [cf. *sam(p)ft* 'soft' (masc.sg.)]".⁸ More importantly, Salmons (*loc. cit.*) notes that, just like the nominal instr.sg. suffix *-iu*, the adjectival suffix(es) *-iu* tended in a number of dialects to "become *-u* early on" – though, "as the handbooks and ... more direct data indicate, this change ... remain[ed] ... incomplete for a long time". Citing a cross-categorical range of instances where suffixal *-iu* became *-u* and was also inconsistently associated with umlaut, Salmons (p. 223) infers that umlautless forms like fem.nom.sg. *all-iu* 'all' occur in various texts due to their containing a suffixal segment that was "not ... consistently [umlaut]-triggering". Hence his overall conclusion (*loc. cit.*) regarding the data in question is that "this again underscores the fact that palatal glides participated differently in early umlaut phonology and were morphologically at best peripheral".

Yet, once again, some of the very evidence cited in support of such a claim turns out actually to point in the opposite direction. In the first place, although "the potential umlaut-trigger ... *i/j* was lost early in suffixes regardless of whether [or not] it ... brought about umlaut", Salmons (1994:223) concedes that "*/j/* did not by any means ALWAYS disappear without a trace" (his emphasis), because there are "many often-cited instances ... [where] umlaut was left behind, usually lexicalized". In these numerous cases, "the umlauted vowel was found throughout a given paradigm without alternation, as in ... the present of *-jan* verbs ... [like] *setzen* [or *sezzen*] <— **satjan*".

However, *sez(z)-(en)* / *saz-ta* / *saz-ti* '(to) set' / 'set (indic. / subj.)' was in fact one of the by-now familiar RU verbs, and this means that the umlaut in its infinitive and present-tense forms (cf., e.g., 1.sg.indic. *sez(z)-u*) was not so much lexically as in fact morphologically derived. Here, an inverted analysis with de-umlauting ablaut is contra-indicated by adjective-vs.-RU-verb pairs like *stark* vs. *sterk-(en)* 'strong' / 'strengthen', as well as by the fact that (*/t/-*suffixed) past participles of RU verbs frequently show umlaut alternations such

phonological motivation for underlying /j/ was lost. E.g., there were many OHG masc. nouns (especially agentive-like formations and their congeners) which presumably were once suffixed with **-jan-* but which first appeared in texts with the ending *-jo*. Yet this /j/ had largely disappeared as early as in the ninth century (cf. Braune & Eggers 1987:206f.), though without taking umlaut along with it when *-o* was left behind. Thus, the verb *back(-an)* '(to) bake' was paired with a primary-umlauted agentive noun *beck-o* 'baker' (< **bakk-jo* < **bakk-jan-*), while the noun *sku3* 'shot' (cf. also *sku3(3)-un* '(they) shot') had a related agentive-like noun which presumably underwent non-primary umlaut, to judge from its subsequent history: 'shooter, shot' < *skutz-o* = *sk[y]tz-o* > MHG *schütz(-e)* > NHG *Schütz(-e)*.

Here, an ending consisting solely of the mid back rounded vowel /o/ served to trigger vowel-fronting. But, because /o/ (e.g., as a common adjective- and adverb-suffix) did not condition umlaut elsewhere in OHG, we can only conclude that agentive *-o* was a morphological trigger, not a phonological one. It was for such positive exceptions to a purely phonological treatment of OHG umlaut that ellipses were provided in rule formulations (1) and (2) above. Still, those formulations should be replaced with a purely morphological rule, particularly because OHG had umlaut-triggering /i/-less suffixes other than just agentive *-o*.

That is, by the middle of the ninth century, a large subgroup of forms in the previously mentioned set of Class-1 weak verbs (former **-jan-* verbs) which were derived from related nouns and adjectives came to appear generally with umlaut before *-en* in the infinitive (and before the present-tense endings); cf., e.g., *kampf* 'battle' / *kempfen* 'to (do) battle' (< **kampf-jan*) and *warm* 'warm' / *warm-en* 'to warm' (< **warm-jan*). On the other hand, fronting of verbal root-vowels was not conditioned by any of the infinitive endings *-an* (for strong verbs), *-on* (for Class-2 weak verbs), or *-en* (for Class-3 weak verbs). Especially given the opposition between umlaut-triggering *-en* vs. non-umlaut-triggering *-on*, it seems certain that not phonological but morphological conditioning was responsible for the fronting in infinitives belonging to, e.g., the RU subclass of Class-1 weak verbs. This conclusion is strengthened even further by the fact that, as Braune & Eggers (1987:265) remark, both Alemannic and Bavarian (UG) texts of the ninth century continued to show umlaut in Class-1 weak infinitives even when the ending for this category increasingly became *-an*, by analogy with the corresponding suffix on strong verbs (hence 'to burn' occurs in UG as *brenn-an* as well as *brenn-en*).

Both for agentive-like nouns such as *beck-o* 'baker' and weak

Class-1 infinitives like *warm-en* 'to warm', the generalization holds that these OHG umlauting forms contained neither a surface [i] or [j] nor any motivation for an underlying /i/ or /j/. This is because the orthographic <i> which remained following many stems with short vowel plus /r/ no longer represented the glide /j/, but instead was a voiced palatal fricative (often written <g>) and as such had undoubtedly been reanalyzed as a further part of those stems (cf. Braune & Eggers 1987:112, n. 3). E.g., the OHG noun *fer(-i)-o* 'ferryman' (analyzable as the causative agentive of *far(-an)* '(to) travel') also appeared as *ferig...* > MHG *ver(i)ge* > NHG *Ferge*, while the verb *ner(-i)-en* 'to save' (cf. the noun *nar-a* 'salvation') had the common OHG variants *nerg-en* and, with *g* assimilated to *r*, *nerren* > MHG *ner(-e)n* > NHG *nähr-en* 'to nourish'. Cases of this sort thus in fact constitute additional evidence that early OHG umlaut was morpholexicalized also in the sense of being conditioned by /i,j/-less suffixes.

To show that the number of /i,j/-less endings in OHG which still triggered fronting was roughly equal to the number of /i,j/-ful endings which nevertheless failed to condition that process (roughly three or four of each, depending on one's principles concerning suffixal polysomy vs. homophony), we can raise the tally for the former by one new type of umlaut without /i,j/ and by several more subtypes which flesh out an existing example of that sort. The novel umlaut-type involves fem. *-jo:(n)* stems such as OHG *kenn-a* 'hen', which could be quite transparently derived from masc. *kan-o* 'rooster' and where fronting seems to have been triggered by an *-a* suffix. In competition with *kenn-a* was synonymous OHG *hen-in*, a so-called 'moved' feminine (parallel to NHG *Äff-in* 'female ape' vs. *Äff(-e)* 'male ape'); the latter is important because the relatively constant umlaut-triggering ability of its suffix *-in* shows that the decreasing umlaut-conditioning power of the previously discussed *n*-stem masc./neut.dat./gen.sg.-suffix *-in* – which triggered umlaut in early OHG and then ceased to do so – involved a morpholexically and not a phonologically determined process.

When we earlier treated OHG umlaut before the infinitival *-en* suffix of Class-1 weak verbs, as in *warm-en* 'to warm' or *zell-en* 'to tell, count, number' (cf. *zal-a* 'number'), it was mentioned that fronting was likewise found in this class for all present-tense forms (which, if they are treated as unspecified for tense, are equivalent in this respect to infinitives and probably also to present participles).⁹ But we have not yet considered the phonological make-up of the (other) present-marking suffixes at issue. Of these, some actually did

contain /i/ through nearly all the OHG period: cf., e.g., indic. *zel-is(t)* / *zel-it* 'tell' (2. / 3. sg.) and imper. *zel-i* 'tell' (2.sg.).¹ However, the umlauted root-form *zell-* additionally appeared before four non-/i,j/-ful indic. suffixes – 1.sg. -*u* (from earlier -*iu*, whose *i* had disappeared by about 800), 1.pl. -*eme:s* (also -*ame:s* or -*e:n*), 2.pl. -*et* (also -*at*), and 3.pl. -*ent* (also -*ant*) – as well as before pres.subj. -*e(:)(-)* and pres.part. -*enti* (also -*anti*). Yet again, the fact that these categories continued to show umlaut even when the suffixes marking them came to contain /a/ demonstrates that the fronting seen in such cases was morphologically and not phonologically conditioned. Of course, rather than analyze all of the OHG suffixes just listed as morphological umlaut-triggers, one can simply propose that fronting in *zell(-)* and the like was triggered solely by the morphological features for 'weak.Class-1.pres.' (or perhaps '...l-past'), just as the fronting in NHG verbs like *zähl(-en)* '(to) count, number' (vs. *Zahl* 'number'; cf. Janda 1982a,b) is triggered by a feature like '(derived) verb'.

In either case, though, we have now amassed roughly equal numbers of cases showing each of the following for OHG: (1) umlaut often occurred even when its putative phonological triggers /i(:)/ and /j/ were absent; (2) umlaut often failed to occur even when such alleged triggers were present. Given that /i(:)/ and /j/ were neither necessary nor sufficient conditioners of umlaut, the only workable umlaut-rule that can be written for OHG (as a whole, if RU.past.subj. forms are criterial; from about 850 onward, otherwise) is a schema whose environments omit mention of /i(:)/ or /j/ or indeed any such segments (or their phonological features) – *qua* segments (or features) – and instead refer only to particular morphemes or even allomorphs. I.e., it is not enough just to list certain morphological categories (or their morphological features), since a number of these had several realizations, only some of which caused umlaut. Thus, e.g., adjectival comparatives in -*ir-* show umlaut, but not those in -*o:r-* – as exemplified, presumably, in <ho:h-iro> = [hø:h-iro] vs. its doublet <ho:h-o:ro> = [ho:h-o:ro] 'higher' (cf. Braune & Eggers 1987:225) – and the two superlatives -*ist-* and -*ost(-)* are even clearer: compare adjectival *leng-ist-o* vs. adverbial *lang-ost* 'longest one' vs. '(for) the longest (time)' (cf. Braune & Eggers 1987:230). Nevertheless, this does not mean that OHG umlaut was phonologically conditioned – even only partially so. On the contrary, it means that the process was even more clearly conditioned by particular realizations of certain morphemes, and so even more definitively morphological.

In arriving at this finding, the current subsection has made prominent reference to suffixes from which a former /j/ was lost early on

in OHG (cf. Braune & Eggers 1987:60, n. 1, 110ff.). These included, namely, (i) agentive-like nominal **-jan-* > *-jo* = <*ioeo* (somewhat less rare and early) > -*o*, and (ii), for weak Class 1, infinitive-marking verbal **-jan* (sometimes <*ianen*. Previous scholarship on OHG has paid great attention to such formerly /j/-ful suffixes, because they figured in umlaut alternations (like those seen above), but it has also focused on /j/-ful endings like the ex-stem-formant */-jo:/ of certain feminine nouns. This is because -*jo*: came to be associated with invariant umlaut, since its /j/ originally appeared on every member of a nominal paradigm like that for 'sin' – which, in the ninth century, regularly had nom./acc./gen.sg. <sunt-a> = [synt-a] (cf. Braune & Eggers 1987:195ff.).

That OHG <sunt-a> 'sin' was phonologically /sunt-a/ is virtually assured by the occurrence of the novel spelling <sunt-a> in the late text of Otloh's Prayer (Bavarian, ca. 1050; cf. also Note 6), as well as by MHG *sünd(-)e* and NHG *Sünd(-)e*. As scholars from Kratz (1960:466f.) to Fertig (1996:170f.) have rightly emphasized, the existence of an invariantly umlauted form like /sunt-a/ suffices to demonstrate that non-primary as well as primary umlaut was already phonemic (non-allophonic) very early during OHG, since in such words the former stem-extension /j/ had been lost so close to the beginning of the period that the ensuing retention of [ü] guarantees phonemic /ü/ for most OHG texts. Indeed, /sunt-a/ occurred in near-minimal pairs with the adverb/conjunction <suntar> = /suntar/ 'apart, especially, rather, but' (cf. NHG *be-sonder-s* 'especially' or *sonder-n* 'but (rather)') and with the nearly antonymous adjective-form <gi-sunt-an> = /gi-sunt-an/ 'healthy, sound (masc. sg. acc.)' (cf. NHG *ge-sund*).

The existence of lexicalized /ü/ during most of OHG is thus incompatible with Iverson & Salmon's (1996:83ff.) suggestion that non-primary umlaut arose in the "[...]middle of the OHG period" and that it was post-lexical (since it supposedly "created new segments") – a claim which we have already seen to be contradicted by the morphological conditioning of /ō/ vs. /o/ in RU-verb alternations like 'to console' as umlauted /trō:st-en/ (cf. late OHG <trōist-en>) vs. non-umlauted *tro:st-i* (< /trō:st-ti/ 'if (s)he consoled'). In fact, I&S's (1996:689ff.) adoption of Twaddell's (1938) view that [ü, ö] were only allophonic in OHG had already been gainsaid by an (in part) above-mentioned remark of Salmons' (1994:223):

"Clearly, though, /j/ did not by any means ALWAYS disappear without leaving a trace. In many often-cited instances, /j/s were lost

early and umlaut was left behind, usually lexicalized, i.e., the unumlauted vowel was found throughout a given paradigm without alternation, as in *hella* 'hell' (cf. Gothic *halja*...), a member of the same noun-subclass as OHG <sunta> 'sin')]. The original glide in *-jo*: stems is of course lost early [t] and quite often is only indirectly accessible within OHG, through its traces in umlaut [tʲ], gemination or relic ... forms".

That is, since there is no evidence that /j/ loss in OHG progressed at different rates depending on the quality of the vowel in a preceding syllable, we must conclude that the early lexicalization of primary umlaut in 'hell' **hall-ja* > *hell-ia* > *hell-a* (also *hell(e)-e*) was accompanied by the early lexicalization of non-primary umlaut in 'sin' **sunt-ja* > *s[ʏ]nt-ia* > *s[ʏ]nt-ea* > *s[ʏ]nt-a*, especially given the abovementioned Bavarian spelling <sunt-a> and the evidence from those varieties of Franconian that in MHG and NHG became the MG dialects. From the latter – to take just one example – it is clear that Martin Luther's pronunciation of the German word for 'sin' must have been close to current NHG *Sünde*, even though he invariably wrote <sunde>; cf. Antonsen (1979:379), as well as Fertig (1996:171).

Indeed, if we follow Salmons' (1994:219ff.) advice to supplement the handbooks' paradigms with a careful look at fuller sources like Graff (1834-1846/1963), it turns out that the abovementioned umlauted reflexes of 'sin' in (relatively late) Bavarian OHG, as well as in (much later) MHG and NHG dialects, are temporally preceded by a set of OHG textual attestations (from various regions) that hardly ever include a written /i,j/-ful suffix – which suggests that non-primary umlaut did undergo early lexicalization in OHG /sunt-a/. Thus, of the 142 attestations (five being prefixed forms) listed by Graff for the noun 'sin' (cf. pp. 261f. of Volume VI), fully 90.0% have a suffix starting with -o..., 8.5% a suffix starting with -e(o)...., and only 1.5% (2 words) a suffix starting with -i.... Similarly, the unumlauted MHG denominal verb *sünd-en* 'to sin' is the successor to a set of OHG attestations among which (cf. Graff's list on pp. 264f., plus Raven 1967:151f.) fully 71% have a suffix starting with -o..., 26% a suffix starting with -e(o)...., and only 3% a suffix starting with -i....

While this kind of checking in Graff (1834-1846/1963) yields only a rough approximation (since subsequent works have brought corrections and new data into the picture), it is sufficient to show (i) that the *-jo*-stem ancestors of at least some unumlauted MHG and NHG nouns had been lexicalized with fronted vowels like /i/ quite early in OHG (since a later focus of analogical umlaut on exactly these words

would have been a colossal accident), and so also (ii) that non-primary umlaut was not an allophonic/post-lexical rule of OHG. Combining the findings of this and the preceding subsections, we can therefore definitively conclude that, throughout OHG, both primary and non-primary umlaut were completely morphological in their conditioning – with their triggering environment(s) being a long but finite set of suffixes. This is because treating the OHG umlaut-processes as even partially phonological rules would force us to accept an intolerably large set of exceptions (ones accidentally coextensive with the membership of specific morphological categories, like RU.past.subj. verbs) and would in any case still require us to posit further, morphologically conditioned rules (for, e.g., agent-like nouns with -o and present-tense forms of Class-1 weak verbs). The era during which vowel-fronting (of any kind) was a purely phonological or even a phonetic process must consequently lie in the pre-OHG period. But a discussion of the mechanisms which governed the transition(s) from (phonetic to) phonological to morphological umlaut must be reserved for another occasion; cf. Janda (in preparation).¹⁰

2.5. The overall case for OHG morphological umlaut vs. pre-OHG phonological umlaut

The above unorthodox but still generative-phonological conclusion (based mainly on morphological/morphophonemic considerations) is parallel to and actually a more extreme version of a structuralist conclusion (based mainly on classical-phonemic considerations involving surface contrast) that has been reached in the writings of numerous historical phonologists. These include, e.g., Penzl (1949:229ff., 1969:55f., 1971:122ff., 1972:83ff., 1975:90ff., 1983:133), Moulton (1961:24ff.), Antonsen (1964:188ff., 1972:119, 1984:400, 1994:47f.), Dal (1967), Kyes (1967:672), Valentin (1969:271), Russ (1977:218, 1978:56ff.), Keller (1978:164), and Sonderegger (1979:304); for critical discussion, see Buccini (1992:200-204, 1996:33-43).

Significantly, all of these writers have argued that umlaut was phonologized (i.e., that its effects became phonemic when they were morphologicalized) at some time before late OHG; they differ only in regard to how soon in the early part of the era they analyze that event as having occurred. The current paper's absolutist position in this respect – that the complete absence of umlaut from RU.past.subj. verbs at all times during the OHG period shows the process to have been already morphologized even when it first start-

ed to appear in texts – differs from Antonsen's (1964, 1972, 1984, 1994) views as regards certain substantive aspects of its argumentation, but, overall, the two conclusions are still very close. Unfortunately for this general approach, however, the most massive, unambiguous, and incontrovertible evidence for the morphological nature of umlaut in OHG comes from patterns in the textual material which were not really to be found before the ninth century.

In any case, though, the fact that umlaut had become dephonetized by at least 850 AD shows that the morphologization of the process did not have to wait for the reduction to schwa of the (majority among the) many unstressed short and long /i(:)/s which occurred in most of the suffixes conditioning it – as was once suggested by, e.g., King (1969:100f.) and Kiparsky (1971:634/1978:54). After all, this reduction process seems to have accelerated greatly starting only in the tenth century, and it appears not to have gone to completion until the end of the eleventh (cf. Braune & Eggers 1987:1, 60). Conversely, the morphologization of umlaut does not appear to have brought about the immediate reduction to schwa of the many /i(:)/s in question – even though the process could then have done quite well without them, so to speak. Finally, Salmons' (1994:223) statement that the relatively early loss of the palatal glide shows it to have been "morphologically at best peripheral" in OHG umlaut must be (re)interpreted to the effect that the disappearance and hence absence of /j/ from OHG (suffix) morphemes which nonetheless continued to trigger vowel-fronting likewise demonstrates the morphological nature of umlaut at a very early stage of the language.

It is such considerations which militate against adopting for OHG an approach like that proposed for NHG by Bach & King (1970), who used an abstract but phonetically plausible umlaut-trigger /i/ as the underlying representation for certain schwas so as to motivate assimilatory vowel-fronting in words like *Hüt-e* 'hats' – but then found it rather difficult to constrain the unstressed-vowel-reduction rule which they needed in order to (re)create the surface schwas at issue (cf., e.g., /hüt+i/ → [hüt+ə]). In essence, any such account almost invariably ends up squandering on lexical exception-markings and phonological clean-up rules whatever it saves by reanalyzing a disparate schema of morphological processes as a single, elegant, purely phonological rule with abstract conditioning. Thus, e.g., the NHG word *Kuli-i*, a circuitously derived nickname for *Kugel-schreiber* 'ball-writer' = 'ballpoint pen' which can be argued to contain an /i/ suffix (cf., e.g., Kluge & Seebold 1995:492), undergoes

neither umlaut nor vowel-reduction – and so must be specified for this unpredicted behavior – on Bach & King's (1970) purely phonological approach.

But this currently quite old-fashioned linear-phonological sort of analysis has now been brought much more up to date in a non-linear way by Wiese (1987:230ff., 1989:145f., 1996b:187f.) and Lodge (1989:472ff.), who analyze umlaut in OHG (as well as MHG and NHG) by positing a [(+front)] autosegment (in German [(+vorn)]) which is introduced as part of an underlying front vowel in early OHG but comes to be a floating autosegment in late OHG and subsequent eras (up to and including the present). For Lodge, the floating [front] feature is always part of a suffix (or itself a kind of suffix); for Wiese, the [+front] (or [+vorn]) autosegment instead nearly always hovers over the last vowel of a root.

It is hard to avoid concluding that the principal motivation for this approach comes from the fact that most phonologists seem constitutionally unable to conceive of a world where morphological rules may resemble phonological rules by operating so as to change a segment's featural identity or its position in a string (as opposed to performing mainly simple additions and perhaps some limited subtractions). But, in any case, floating-autosegment accounts have the serious drawback of being unable to explain why alternations like umlaut in OHG (plus MHG and NHG) virtually always tend to become associated solely with certain triggering-suffixes – having particular meanings and/or grammatical functions – but not with other suffixes, even if these are homophonous with one or more triggers. Nor do purely phonological analyses, linear or non-linear, lead to the correct prediction that processes like German umlaut almost invariably tend first to fossilize, next to develop myriad lexical exceptions, and then eventually to die out – and at varying rates in different morphological categories (e.g., Féry 1996 observes that by far the majority of occurrences for NHG umlaut are lexicalized forms). Rather, both of these strong and widespread tendencies make much more sense on a morphological approach to umlaut in OHG and later.

At this juncture, it is necessary to forestall three potential criticisms that have been or could be directed against an analysis of OHG vowel-fronting as a morphologically conditioned phenomenon. The first concerns the fact that OHG primary umlaut could apparently be triggered across word boundaries by post-verbal clitic pronouns containing /i/; the second relates to the abovementioned umlaut-blocking effects in OHG of some consonants and especially certain consonant-clusters (cf. Note 5), and the third has to do with the fact that, even

in relatively late OHG, the majority of umlaut-triggering suffixes still contained /i(ɔ)/. Of these, let us first consider the verb-clitic data in question, which nearly all come from Otfrid of Weissenburg's "Gospel Book" (South Rhenish Franconian, before 870) and include forms like *wurf iz* 'threw (1/3.sg.) it' (vs. clitic-less *warf* 'threw'), *geb imo* 'gave (1/3.sg.) to him' (vs. clitic-less *gab* 'gave'), and inverted *drenk ih* 'drank I' (vs. uninverted *ih drank* 'I drank'); cf. Braune & Eggers (1987:27). Iverson & Salmons (1994:83) first characterize Otfrid's work as "the most exceptional OHG corpus" but then take his vowel-fronted verb+clitic combinations to show that, in OHG, "primary umlaut also exhibits postlexical properties" (a suggestion which they attribute to Andrew Albers). This claim does not interfere with the difference claimed by I&S to exist between primary and non-primary umlaut in OHG, however, since adopting it would make primary umlaut both a lexical and a post-lexical rule, while non-primary umlaut would be only a post-lexical rule.

Nevertheless, we have already concluded that neither primary nor non-primary umlaut in OHG could possibly have been a post-lexical rule, because both sorts of alternations are subject to extensive morphological conditioning. Recall, e.g., the numerous consistently non-umlauted RU.past.subj. forms – like *bran-ti* '(if (s)he) burned' or *zal-ti* '(if (s)he) told' – cited above (in Section 2.2), from the selfsame Otfrid, and mentioned by I&S (1996:80) themselves; such forms could not possibly have occurred if OHG primary umlaut had been a post-lexical rule. Furthermore, elements referred to as clitics sometimes display idiosyncratic or other lexical properties which suggest that they may best be analyzed as affix-like entities which are added to other words in the lexicon and so can (and do) interact with lexical-phonological rules; this might well be the case with the OHG enclitics *ih* 'I', *iz* 'it', and *imo* 'to him'. In that event, these elements could be treated (in at least one of their uses) as suffixoids able to condition morphological umlaut on a preceding verb. Confirming such an analysis would require considerable additional investigation of OHG syntax – and more certain knowledge of the degree to which umlauted combinations like Otfrid's *meg ih* 'can I' (vs. *ih mag* 'I can'), etc. were idiosyncratic – but it does receive support from two sources.

On the one hand, it is known (cf. Kaisse 1985 and references there) that, even though a Modern English clitic like the reduced modal-auxiliary form *'ll* (corresponding to full-form *will*) can cliticize to virtually any word which syntactic structure happens to place before it (as in, say, *A black eye'll always get you a lot of attention*), there nonetheless exist certain combinations of pronoun+*'ll* which

have an idiosyncratic pronunciation and hence must be lexically listed. In my own speech, e.g., *I'll* is homophonous with *eye'll* in hypercareful style but with *all* in casual style. Hence it would not actually be surprising if certain OHG verbs underwent a morphologically special umlaut before *ih* 'I', *iz* 'it', and *imo* 'to him'.

On the other hand, evidence for a very close connection between OHG pronominal clitics and (other?) verbal suffixes is provided by the development of the 2.sg.pres.indic. suffix from *-s* to *-st* (cf. Braune & Eggers 1987:258). I.e., in inverted verb+clitic combinations with the 2.sg. pronoun *thu*(:)/*du*(:), such sequences as *gilaub-i-s thu* 'believest thou' – which were often pronounced and sometimes even spelled *gilaubistu* – appear to have been reinterpreted as *gilaub-i-st thu*. An additional influence here came from 2.sg. forms of so-called preterite-present verbs like *muos-t* 'must' or *weis-t* 'knowest', in which *s* was (at least originally) a root consonant and *t* was an inherited 2.sg. affix (on the parallel development in OE, see Campbell 1959:297). Consequently, a lexical-phonological and thus morphological analysis of clitic-triggered umlaut in OHG is clearly a possibility.

Still, the current morphological analysis of OHG vowel-fronting might also come in for criticism from someone who claimed that a truly morphological phenomenon should not be subject to any phonological limitations, while the primary umlaut of OHG was governed by precisely such a set of well-defined restrictions on the sounds associated with it. These, namely (cf. also Note 5), were the abovementioned prohibitions against the occurrence of certain consonants or consonant clusters between an umlauting root vowel and the following suffix vowel (cf. Braune & Eggers 1987:28, n. 2): e.g., *ht*, *hs*, and *Cs* in all dialects, vs. always *hh*, *ch*, mostly *h*, consistently *lC*, and often *rC* mainly in UG dialects, especially Bavarian (for the phonetics of these consonants, particularly *h*, cf. Iverson *et al.* 1994).

Yet a moment's reflection will bring to mind the existence of numerous well-established morphological phenomena which are subject to similarly well-defined phonological restrictions (i.e., partial conditioning), such as the "syllable-totalling" distribution of comparative *-er* vs. *more* in English and diminutive *-ito* vs. *-(e)cito* in Spanish; cf. Janda (1987:188ff.) and references there. Carstairs (1988), too, presents a host of morphological alternations that show "phonologically conditioned suppletion", like the distribution in Russian of the gen.pl. suffixes for masc. nouns of the so-called second declension: *-ej* after stems ending in a palatalized or palato-alveolar consonant vs. *-ov* after all other stems. Based on such facts, there is no basis for any possible objection to a morphological analysis of OHG umlaut on the

grounds that it includes reference to certain phonological restrictions.

The third, final, and least challenging potential criticism that remains to be answered by a morpholexical account of vowel-fronting in OHG is one which would be raised by someone who might find it suspicious that the majority of umlaut-triggering suffixes in the language retained an /i(:)/ until relatively late in the period at issue. What this potential objection forgets, though, is that (pre-)OHG-era grammars with morpholexical, suffix-triggered analyses of vowel-fronting had to come from somewhere and therefore – since they certainly were not passed down from the original human language(s) – must have arisen via the reinterpretation of pre-OHG grammars with phonological, vowel/glide-triggered analyses of umlaut. The relevant principle is rarely if ever stated explicitly, but it surely must be operative in virtually all cases of reanalysis: in order for some analysis to be a reinterpretation of an earlier system, its surface output may not deviate excessively from the output of that earlier system – or else it would be a replacement of the latter. Concomitantly, though, one reason why reanalyses are common – why surface differences between and among idiolects within the same dialect are rarely radical, even across generations – is that, comparatively speaking, speakers are overwhelmingly more likely to seek conformity with the linguistic usage of their speech models than they are to cultivate conscious, radical innovations.

As a result, an analysis of OHG vowel-fronting in which most of the umlaut-triggering suffixes retained their /i(:)/s must have been far from unusual, since it was the only kind of reinterpretation of a former purely phonological umlaut-system that made sense – and since there is no known principle that would make speakers initiate vocalic differentiation among the members in a set of umlaut-triggering suffixes. Rather, subsequent local developments of a non-reinterpretational sort (like analogy or /j/-loss) are what must have been responsible for unconnected innovations like umlaut elimination before certain suffixes (e.g., RU past subj. *i*) or umlaut maintenance before other endings (e.g., agentive-like *-o*). Strange indeed, however, would have been a reanalyzed system in which multiple suffixes triggered vowel-fronting but did not share a single vowel-quality with any of the vocally uniform suffixes which were once present in the system that had been reinterpreted.

In short, because the most – and probably the only – plausible reanalysis of an earlier situation where many suffixes all possessed a single umlaut-triggering vowel-quality was one involving a later situ-

ation where many umlaut-triggering suffixes all possessed a single vowel-quality, it is not only unobjectionable but in fact to be expected that a language like OHG should have had numerous umlaut-triggering suffixes which all contained the vowel /i(:)/. These considerations obviously merit close consideration by linguists who organize major portions of their analyses around the minimizing of accidental formal similarities between uncollapsible elements. Indeed, the latter preoccupation may well lack any close counterpart in the minds of speakers – who in fact seem extremely prone to engage in extensive recycling, as it were (for discussion of this and related issues, cf. Janda 1982b, Joseph & Janda 1988, Janda & Joseph 1992, and references there). At the very least, then, speakers of pre-OHG appear to have recycled most of their /i(:)/s (though not their /j/s).

Still, a fundamental conclusion, in regard to OHG umlaut, seems to be the following. The overlap between forms where umlaut occurred and forms which currently or formerly contain(ed) /i(:)/ or /j/ is too great to be accidental, so that German umlaut must have been, at some earlier time, an extremely natural phonetic process – a prototypical anticipatory assimilation. But, at least for High German, umlaut seems to have been so natural that its phonological and phonetic origins must be situated in time long before the era when its oldest historical stage (OHG) was recorded in documents, since the texts at issue were written with numerous examples of non-umlauted roots before /j/-ful suffixes, as well as unumlauted roots before /j/-less suffixes. This is not really surprising, though, given that such morpholexically- rather than phonologically-conditioned instances of vowel-fronting had had so much time to develop. After all, the occurrence of umlaut in potentially all Germanic dialects has led some scholars, like Penzl (1949:230ff., 1971:115, 1972:33, 1975:90ff.) and Antonsen (1961:229f., 1964:179ff., 1965:24f., 1972:140, 1984:400f., 1994:47f.), to reconstruct vowel-fronting as an allophonic process of Common or even of Proto-Germanic. Somewhat ironically, then, the earlier the phonetic origin of phonological umlaut was, the earlier the probable date of its morphologization is likely to have been – and thus the greater the plausibility of its complete morpholexicality already in OHG, as argued above.

In concluding this rather detailed discussion of OHG vowel-fronting, it behooves us to emphasize a final point which receives explicit formulation occasionally – and seems like a natural candidate for implicit acceptance the rest of the time – but is contradicted frequently in the actual practice of historical linguists. At issue is the principle that the first occurrence of a phenomenon in writing virtually never

represents its first occurrence in speech, much less the first moment of its underlying presence in grammar. This claim would appear to be a truism hardly needing further comment, but consider the following statement by Braune & Eggers (1987:27f.; my translation – RDJ):

"We can trace the emergence of th[e] ... so-called 'primary' umlaut ... of *a* to *e* in the literary monuments. It begins approximately ca. 750 and spreads more and more in the second half of the 8th century. The oldest glosses still often have non-umlauted *a* ... [but, i]n the 9th century, umlaut has essentially reached completion, though certain consonant-clusters inhibit [it] ...".

Here, the first sentence is nothing but an empty tautology unless umlaut is something other than an orthographic phenomenon – yet, if it is, then the second sentence violates the above principle that phonological changes do not begin or even really take place in written texts. Finally, if we turn the third sentence on its head and make the obvious inference that the oldest glosses already had at least some instances of *e* from *a* via umlaut (along with many cases of unchanged *a*), should we not then conclude that umlaut as a phonological phenomenon started before – potentially even long before – the official beginning of OHG in documents from ca. 750? We would do well to distinguish more clearly between Written OHG [WOHG] and the Phonologically Reconstructed OHG [PROHG] which is only indirectly linked with WOHG but which represents our best guess at how the language was spoken.

Iverson & Salmons (1996:70), for their part, do affirm the relevance of a "period needed ... [not only for *a*] sound change to spread but also for a new orthographic practice to establish itself among the conservative monastic scribes". Yet they, too, start with the textual observation that, "... [b]eginning around 750, some OHG texts show a fronting and raising of the short low vowel to /e/ ..." and then proceed to adopt (on p. 9) "a familiar chronology in which ... primary umlaut ... [was] instituted around 750 ...", thus (p. 78) "beginning in early OHG" [= WOHG]. Revealingly, although I&S (1996:70, n. 2) refer to Sonderegger's (1961:267ff.) demonstration that, among 8th/9th-century Alemannic-speakers at the Swiss monastery of St. Gall, umlaut and some other OHG phonological changes in progress were reflected in the rough drafts of documents but not in officially filed copies (due to a "conservative orthographic tradition"), they conclude from this only that "the completion of the phonological change of primary umlaut was faster than the records indicate".

Yet the same logic would also require us to conclude that the beginning of the change was likely to have been much earlier than ca. 750, since the conservative spelling-tradition of Church Latin can hardly have been any weaker when OHG was first being written than when it had become more orthographically established – as has repeatedly been stressed by Antonsen (cf., e.g., 1964:188ff. and, much more recently, 1979:377ff., 1984:399, 1995).

Similarly, as Penzl (1982:254) once reluctantly conceded (my translation – RDJ):

"Recognizing that the introduction of new symbols represents a *terminus ante quem* rather than showing a *terminus post quem* (i.e., the real beginning of phonemic change) is not a pleasant insight for the phonological historian, since it entails that gaps in written records are not the only factor whose effect is to deprive diachronicians of crucial assistance that would allow exact determinations concerning time and space ...".

Indeed, along the very same lines, Mario Alinei's 1989 Presidential Address to the European Linguistic Society asserted bluntly that, "... [i]n most cases, if we rely on written documents for our dating, what we find is not a *terminus a quo*, the real beginning of the story, but a *terminus ante quem*, a point of relative value, which can be centuries or even millennia remote from the date we are looking for" (Alinei 1991:109).

Buccini (1992, 1996:33ff.) has recently applied such principles with particular consistency in proposing a scenario for the development of umlaut in OHG (as well as in OE). In the first place, he allows sufficient time between the proposed origin of phonological umlaut in OHG (during the 7th/8th centuries; cf. p. 41f.) and its first appearances in orthography (after ca. 750). In the second place, he explicitly (pp. 36f.) relates OHG umlaut to final-vowel reduction, envisaging both processes as phenomena characteristic of allegro and/or informal styles/registers and comparing them in this regard with Sonderegger's (1961) treatment of stylistic factors relating to the rough drafts vs. filed copies of documents written at the St. Gall monastery.

In this context, I would add only that, rather than seeing the monks' vowel-related alterations in their rough-draft manuscripts as reflecting solely stylistic and/or orthographic practices, we may also want to recognize an evaluative dimension in scribal undoing of primary-umlauted <e> (back to <a>). That is, pre-OHG primary umlaut may well have started as a Labovian "change from below" – i.e.,

below social awareness and (be)low on the socioeconomic hierarchy (cf., e.g., Labov 1972:178f., 1994:78f.) – which had come to be seen as an indicator of non-high status by the time that it began showing up in early OHG texts. Such an origin could explain how it happened that OHG vowel-fronting had such a gradual start before eventually becoming conspicuous; see Labov (1994:78):

“Changes from below are systematic changes that appear first in the vernacular ... and represent the operation of internal, linguistic factors. At the outset ... and through most of their development, they are completely below the level of social awareness. No one notices ... or talks about them, and even phonetically trained observers may be quite unconscious of them for many years. It is only when the changes are nearing completion that members of the community become aware of them. Changes from below may be introduced by any social class, although no cases have been recorded in which the highest-status social group acts as the innovating group”.

Still, the resources available for studying such OHG sociolinguistic phenomena by variationist methods are extremely restricted, and so we are encouraged to turn our attention now, very briefly, to umlaut in NHG, access to the variation in which is virtually unlimited. This topic can provide a rapid transition back to the subject of Romance metaphony and close the circle of this paper by allowing one last reference to the Germanic/Romance interaction sphere with which we began.

3. NHG umlaut: still resolutely morphological – and growing weaker every year

Now, since OHG umlaut was morphological, we would expect NHG umlaut not to have been (re)phonologized, but instead to have stayed morphological. And, in fact, the arguments of Zwicky (1967), Wurzel (1970:106ff.), Robinson (1972, 1975), Lieber (1980: 272ff., 1987:99ff., 1992:170f.), Janda (1981, 1982a,b, 1983a), Strauss (1982), van Lessen Kloeke (1982:215ff.), Yu (1992:112ff.), and others have already basically shown that it is indeed still morphological (vs. Hamans 1985 – in any case mainly on Dutch). Parallel to the arguments given here for the morphologicality of umlaut in OHG, two main types of contemporary facts strongly support that characteristic for the modern standard language.

First, there exist numerous pairs of homophonous suffixes such that one suffix triggers umlaut while the other does not: cf., e.g., the *-e* which derives abstract fem. nouns from adjectives, like *Bräun-e* ‘brownness, tan’ from *braun* ‘brown’, vs. the fem.nom./acc.sg. adjective inflection *-e* seen in phrases like *eine braun-e Kuh* ‘a brown cow’. A similar pair (this time involving two derivational suffixes) which has recently received considerable attention consists of *-chen* ‘diminutive’ vs. *-chen* ‘hypocoristic’. Thus, e.g., Raffelsiefen (1992:140) mentions (from her speech) *Fräu-chen* ‘small woman’ vs. *Frau-chen* ‘female owner (mistress) of a dog’, and Wiese (1996b:189f.) cites (from his speech) *Hünd-chen* ‘small dog, puppie’ vs. *Hund-chen* ‘nice doggie’ (my revised translations – RDJ). Raffelsiefen also points out that there additionally occur deadjectival hypocoristics, like *Alt-chen* ‘dear old one’ from *alt* ‘old’, which seem to bring in a further morphosyntactic restriction.

Iverson & Salmons (1992) use Lexical Phonology to account for these NHG differences by treating diminutive *-chen* as a Level-1 affix and hypocoristic *-chen* as a word-level affix. But, since Wiese (1996b:191f.) admits that umlaut can occur only with some – rather than with all – Level-1 (and Level-2) affixes, it seems that we are still forced to view NHG vowel-fronting as morphologically conditioned. That is, even if NHG diminutive *-chen* were analyzed as triggering umlaut due to the (features in the) segments that it contains, there are other, similar suffixes on Level 1 (though admittedly no(t) completely homophonous ones) that would represent entire morphological categories where vowel-fronting inexplicably failed to apply – an unacceptable situation which, based on parallel examples from OHG, we earlier took to be diagnostic for morphologicality of umlaut.

Second, NHG is again parallel to OHG in having morphological categories where umlaut appears even in the absence of any overt trigger. Thus, for example, we find *Öhr* ‘ear’ vs. *Öhr* ‘eye(let) [e.g. of a needle]’ (here, the positing of any segmental or featural suffix would be totally ad-hoc), plus *fand* vs. *fänd(-e)* ‘found (1/3.sg. indic. vs. subj.)’, where final schwa (or an empty vowel-slot) is a general subj.-marker (cf. Wiese 1996b for critical discussion). Hence we can take the morphologicality of NHG umlaut as largely given, and move on to consider lexicality. This characteristic of vowel-fronting is in fact even easier to demonstrate, thanks to the extensive early study of Wurzel (1970). Consider, e.g., the behavior of, respectively, the words *Busch* ‘bush’ and *Tag* ‘day’, of which the first undergoes umlaut before plural *-e* but not before the suffix *-ig* ‘-y’ – hence *Büsch-e* ‘bushes’ / *busch-ig* ‘bushy’ – while the second undergoes umlaut before *-ig* but

not before plural *-e*: hence ... *täg-ig* '... days long' / *Tag-e* 'days'. Even more strikingly, there exist pairs of words where essentially the same suffix triggers umlaut with one use of a root but not with another use of the same root: cf., e.g., already abovementioned *Sach(-e)* 'thing, object' vs. *säch-lich* 'neuter, thing-like' but also *sach-lich* 'objective'.

Facts like these have led Féry (1996) and some others to conclude that vowel-fronting in NHG is essentially only a lexical phenomenon. In that case, NHG umlaut is preferably to be analyzed via massive lexical listings which pair an umlauted stem together with one or more affixes (or with a meaning other than that of a bare stem). Here, the only rules involved would be redundancy statements which parse such complex listed forms and relate their parts to those of other complex words (and to the component morphemes and/or formative processes mentioned in the redundancy rules themselves). The evidence for this approach is rather strong: even in cases where NHG umlaut is regular (exceptionless), it is rarely productive. Strikingly, the only suffix which both is productive and always triggers vowel-fronting is diminutive *-lein*, which is not native to any modern regional dialect of German and tends to have a strongly literary flavor outside the one phonological arena in which it is favored (viz., nouns ending in *-ch*, since these do not comfortably take *-chen*, a much more common diminutive – and hypocoristic). In short, umlaut in NHG seems to be dying – though it is doing so via fossilization, and thus will leave behind widespread traces of its former lively presence. But it is dying at different rates in different categories, and this provides a somewhat morbid but very real confirmation of its morphological nature.

In the event that an analysis of NHG other than one with lexical listings should still be preferable, however, it may briefly be mentioned that the morphological account of Janda (in preparation) – couched within Optimality Theory [OT] (cf., e.g., Prince & Smolensky 1993, McCarthy & Prince 1993, Archangeli & Langendoen, eds. 1997) – is surely preferable to the abovementioned non-linear approach of Wiese (1996a,b). Recall that Wiese posits a [+front] autosegment that floats over any root which ever shows vowel-fronting; when a suffix is added, making the form in question a derived one, a simple linking-rule of umlaut – with essentially no environment – may apply (otherwise, the floating autosegment simply disappears). This treatment is remarkable in its ingenuity, but it has two disastrous (and related) characteristics which render it completely unacceptable.

First, Wiese's analysis violates the Strict-Cycle Condition (cf.,

e.g., Kiparsky 1982, 1985, and references there), as is clear from the fact that the floating autosegment on which it relies is present underlyingly and that its NHG umlaut rule quite literally has no content, since suffixation is needed only in order to create a derived form. Second, for the same reason – that it is irrelevant what the segmental make-up and even the identity is of any suffix whose addition to a root turns the latter into a derived form – Wiese's account wrongly predicts that the NHG umlaut rule should apply to any derived form, including even prefixed words. Wiese (1996b:189ff.) tries to ameliorate this problem somewhat by suggesting that umlaut is limited to Level 1, but he ultimately abandons this attempt (i.e., "the confinement of umlaut to the first lexical level ... [is offered] as a speculation only"), and so the sole way to constrain NHG vowel-fronting on such an approach is through the massive use of lexical exception-features (for [-umlaut trigger]). Any workable morphological alternative is preferable to an account like this, which requires negative lexical marking for, e.g., the common NHG Level-1 verb-suffix *-ier-* (which is not an umlaut trigger; cf. *form-ier-(en)* '(to) form, align'), given that *-ier-* occurs with a root like *Form* 'form' and that the latter is umlautable (cf. *förm-lich* 'formal, ceremonious') – and so underlyingly has a floating [+front] autosegment which will be anchored by Wiese's umlaut-rule as soon as any affix is added. Hence we expect **förm-ier-en* unless *-ier-* is lexically marked [-umlaut trigger].

With the advent of OT – which, via (i) the use of constraints on, e.g., alignment and faithfulness allows (ii) an abandonment of derivations, with their intermediate steps – there is no longer a need for any floating autosegments in the analysis of NHG vowel-fronting. As spelled out with tableaux by Janda (in preparation), an OT account of umlaut in NHG can consist simply of a set of ALIGN constraints which require the alignment of (the left edge of) a particular suffix with (the right edge of) a root whose last vowel is [+front] (alternatively, [-back]); these constraints are ranked higher than FAITHFULNESS for umlaut-triggering suffixes, but lower than the latter constraint for non-umlaut-triggering suffixes. Here, again, the morphological nature of NHG vowel-fronting remains unmistakable. For a survey of the long list of suffixes still associated with umlaut in NHG, see the Appendix.

By forgoing any use of floating autosegments in OHG or NHG, it has been possible here to nail down solid morphological analyses of umlaut that can serve as the *Stützpunkte* ('strongpoints') mentioned at the start of this paper and intended to provide Germanic poles of comparison for accounts of Romance metaphony. In return,

Germanists can look to Romanists for detailed descriptions and theoretical treatments of dialects with more vital vowel-fronting (or vowel-raising) processes – whether of umlaut or of attraction. While OHG umlaut has, to be honest, not really been caught yet in the nets of linguistic analysts, moribund NHG umlaut is certainly closer now to being ready for the display case. But it is Romance metaphony that is currently more likely to tantalize us with its chromatic variety.¹¹

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Notes

- This and other abbreviations used in the current paper are summarized in a list given at the end of this footnote. Most italicized forms in the text are simultaneously orthographic and quasi-phonemic; orthographic forms that are phonologically unrepresentative in some significant respect are given in angled brackets and accompanied by either a phonemic or a phonetic transcription. Vowel length has been shown in orthographic representations more consistently than was actually the case in earlier stages of (High) German; in particular, the length (= longness) of some Middle High German vowels has been emphasized via the addition of a quantity-marking colon even in instances where the usual normalization-practice employs a single symbol which presupposes length (e.g., <æ> = /æ:/ here given as æ:).

Abbreviations used: abstr[act], accusative, (as)soc[ia]tive, causative, characteristic, collective, comparative, compositional, dative, D[eriv]ational), diminutive, fact[itive], fem[inine/female], gen[itive], gent[ilic], G[erman], G[er]m[an]ic, H[igh], indicative, Inflectional, instr[umental], instrumentalive, intensive, iterative, locative, masculine, Middle, modal, neuter, New = Modern, nominalive, Noun, occupational, O[ld], original, participle, pejorative, plural, Post[positive], Preposition, P[re]positional P[hrase], present, qualitative, resultative, S[uperlative], singular, strong, subjunctive, superlative, tentative, U[pper], V[erb], and w[ord].

Three major explanations have been offered for why the (primary) umlaut of short /a/ to /e/ is the only one consistently reflected – nearly always as <e> – in most OHG orthography, as opposed to the additional /i(:), ö(:), æ(:)/ of MHG. First, it has been claimed that the only phonemic or phonetic product of OHG umlaut was precisely /e/ = [e], so that nothing else needed to be written (cf. – besides many Neogrammarians like Weinhold 1883:9f. – especially Voytes 1976:2, 1991:161ff., 1994:252ff., and references there). Second, it has been alleged that the results of OHG umlaut were both phonemic /e/ (= [e]) and also phonetic [y(:), ø(:), æ(:)], but that the latter were not written because they were merely allophones of /u(:), o(:), a(:)/, respectively (cf. V. Kiparsky 1932:244f., Twaddell 1938:180f., and later many others). Third, it has been suggested that all of the

abovementioned umlaut-vowels later written in MHG were already phonemic in OHG (i.e., /e/ as well as /i(:), ö(:), æ(:)/), but that they were not written either because of their “low functional load” (cf. Kyes 1967:672 and Moulton 1961:26) or due to the conservatism of a fixed spelling-tradition. This tradition was of course based on the prestigious conventions of Church Latin, which had no low front unrounded vowels and no front rounded vowels of any sort (cf., e.g., Penz 1949:234, 1983:133, Antonsen 1964:188f., 191, n. 50, 1979:377ff., 1984:399ff., 1995, Buccini 1992:133, 1996:37ff., Iverson & Salmons 1996:84f., and their references). Given the surprising frequency with which established orthographies fail to indicate prosodic distinctions like vowel- or consonant-length consistently or at all, and the fact that they sometimes neutralize even segmental contrasts in voicing and/or vowel height – for an example from (North) Germanic, cf. Haugen (1976:144ff.) on the “younger” futhark (alphabet of Scandinavian runes – it is the last-mentioned explanation above which seems by far the most cogent. Moreover, it accords well with the present conclusion that all of the umlaut vowels later written in MHG were already phonemic in OHG – and that umlaut of all types had become phonemic in pre-OHG (cf. especially also Antonsen 1964:188ff., 1972:119, 1984:400). See Fertig (1996) for extensive and insightful further discussion regarding the phonological/orthographical asymmetry of umlaut in OHG and the problems that it raises for the limited-phonemic (Voytesian) and the allophonic (Twaddellian) accounts – as well as for evidence that orthographic inconsistency of umlaut-marking continued not only through all of MHG but even past the end of the early NHG period and “well into the 17th century” (p. 171).

3 The most convincing evidence for both the chronological and the geographical primacy of primary umlaut (i.e., fronting only of short *a* to *e*) concerns the fact that this fronting-process – but not secondary umlaut (of *a* to *æ*) or fronting of any long back vowel – shows up in texts from the “main, western ... area ... [of] Middle Dutch or in modern [Dutch] dialects” (cf. Robinson 1975:20, n. 4, 1976:154, plus Iverson & Salmons [I&S] 1996:74ff.), and that these varieties descend from Old Low Franconian, a very close linguistic relative of OHG. Thus, compare the conditioned presence vs. total absence of secondary umlaut in MHG *vater* / *väter-lîch* vs. Middle Dutch *vader* / *vader-lîjk* ‘father’ / ‘fatherly’ (though Buccini 1992:300ff., 1996:43ff. argues that these differences are the result of a contact-induced reversal of non-primary umlaut in western Netherlandic). Robinson (1976:154) also suggests that primary umlaut is unlikely to be just a raised subcase (with *â* (—) > *e*; cf. Moulton 1961:20ff.) of a more general umlaut-rule (including *a* (—) > *ä*), since a very similar raising-rule that changes (older) [e] to [ɛ] is not subject to the same limitations on raising as is primary umlaut (similarly also I&S 1996:79ff.). While I&S (1996:76f.) further stress that non-primary umlaut shows regional differences in the degree to which it is carried through (such that central and northern NHG dialects have more forms like ‘head’ *höfd* vs. standard *Haupt*, whereas southern NHG dialects have more like ‘midge, gnat’ *muḥ* vs. standard *Mücke*), they do not eliminate all of Antonsen’s (1969, 1984:399ff.) arguments that such divergences may often be analogical. This is especially the case for examples involving verbs which in OHG showed both fronted and unfrosted vowels within their paradigms, since these provided two different models for analogical extension (bzw. analogical leveling) – on these verbs, more later. Finally, in order to avoid possible confusion concerning the various umlauts in OHG (plus MHG and NHG) – and elsewhere – the reader should be warned of certain divergences in terminology. First, recall that *secondary umlaut* is used here (following common practice) to designate only the /i(:)/y-triggered anticipatory fronting /a/ (—) > /æ/; this applied to any short *a* which was blocked by consonant clusters or foot structure from undergoing primary umlaut (i.e., *a* (—) > *e*), and so was just a subtype of

non-primary umlaut (the latter being /u(:), o(:), a(:) / (—) > /ü(:), ö(:), æ(:)/). But there is a competing practice (e.g., cf. Russ 1978:56) in which *secondary umlaut* means 'all' non-primary umlaut'. To make matters worse, Braune & Eggers (1987:54, 36, n. 2 vs. 28f., n. 2, 55f., n. 2) on two occasions seem to adopt an intermediate position in which *secondary umlaut* is defined as affecting both short and long low back vowels (i.e., /æ(:)/ (—) > /æ(:)/), but they simultaneously use standard terminology elsewhere. Moreover, other anticipatory vowel-assimilations of OHG and wider Germanic are also often referred to as *umlaut* – whereby we can jointly specify the vocalic fronting/raising and fronting-only processes discussed by this paper as *i*-umlaut (vs. rounding/raising *u*-umlaut, lowering-only *a*-umlaut, raising-only Germanic umlaut, etc.; cf., e.g., Buccini 1992, 1996). And umlaut itself is designated by means of other terms, such as *mutation*, *inflection*, or even *inflection* – as well as, rarely, *metaphony*. It is not to be held against Romanists if they judge this nomenclatural muddle to be uncharacteristically un-Germanic.

This development – involving extensive syncope – did not occur, however, in some Franconian varieties of OHG. E.g., in the Rhenish Franconian 'Isidor' text (translated ca. 795 from St. Isidore of Seville's *De fide catholica*) 'On the Catholic Faith', from ca. 600), verbs in the past indic. show both a thematic vowel /i/ and, as expected, the effect of primary umlaut on a preceding root, this yielding forms like *zel-i-ta* '(s)he told'. The corresponding past subj. in such documents is *zel-i-ti*, again with umlaut. Still, the fronting in the latter category was due to the presence of the medial thematic vowel /i/ not of the past subj.-marking /i/. In fact, since the texts at issue show non-alternating *zel(i)-* in all forms of the verb 'tell', one could even argue that umlaut had been lexicalized in them. Most importantly, though, even if all the relevant instances of /e/ were derived, the set of exceptional forms like *zel-i-ti* would not counterexemplify the generalization that there is no OHG text in which past subj.-marking /i/ itself ever triggers umlaut. Several Romanists commenting on earlier versions of this paper have recommended the use of *syncope/past forms* or a similar label as an alternative technical term to *Rückumlaut* or *RU verbs*, especially given the apparent contradictoriness implied by a first glance at expressions like 'RU verbs never show umlaut in the past'. Still, given that *RU* is an established Germanist term and that it can be mnemonicized as both *Retro-(grade)Umlaut* and *reversal of umlaut*, I have opted to follow traditional practice here. Any Germanists tempted to deride Romanists for their reactions to the umlaut-related matter at issue are hereby invited to contemplate Craddock's (1980) systematization or Penny's (1991:39ff.) summary of the conditions governing metaphony due to the glide /j/ in the history of Spanish. While Lloyd (1987:193ff.) understatedly says only that 'the facts are in part rather complex', they in actuality make the conditions on /j/ deletion in German look like child's play.

Iverson *et al.* (1994) provide an ingenious account for the umlaut-blocking effects of the OHG clusters at issue by appealing to feature geometry and autosegmental spreading (cf., e.g., Clements 1985 and Hayes 1986). Unfortunately, their solution is incompatible with the claim of Iverson & Salmons [I&S] (1996) that OHG primary umlaut was not only structure-preserving but also a lexical rule (in the sense of Kiparsky 1982). In fact, I&S (1996:81f.), too, attempt to achieve the relevant blocking-effect; they do so by incorporating into their formulation of primary umlaut – a lexical rule of leftward spreading by a [coronal] feature onto a preceding vocalic node (cf. (1) in the main text) – a specification such that the latter node must be linked to a single [coronantal]-place node (below the skeletal tier). It is the last-mentioned condition which is meant to block umlaut across /h(C)/, since the authors in question analyze /h/ as essentially a voiceless vowel that receives its place specification via spreading from an adjacent (true)

vowel. Crucially, I&S's (1996) analysis assumes that rightward place-spreading to /h/ from a preceding vowel (as in OHG *maht-i* 'powers') applies early, so that its creation of a place-node double-linked to a vowel can block subsequent application of primary umlaut. However, they thereby overlook the fact that this place-spreading has a non-distinctive output, is thus surely a post-lexical rule, must therefore follow the lexical rule of umlaut, and so applies too late to block fronting. Parallel conclusions hold for Iverson *et al.*'s (1994) analysis of /iC/ as a blocking-cluster in certain varieties of OHG, since they thereby rely on /i/ as receiving a velarized realization whose [dorsal] place-feature pre-emptively empties the spreading of [coronal] through it (because this would violate the prohibition against crossing association-lines). Again, though, a rule specifying a non-distinctive, surface-phonetic characteristic of a segment like velarized /i/ is assuredly a post-lexical rule, and so it cannot apply early enough to block the lexical rule of primary umlaut, as it was originally intended to do. This conclusion would also seem to hold for the process vocalizing /r/ (as a [dorsal] segment) which Iverson *et al.* (1994) use in order to block primary umlaut across /rC/ clusters in some OHG dialects. Once again, that is, unless /r/ is vocalized in such a way as to create a configuration identical to one which exists underlyingly, the process in question must also be post-lexical and so will take effect too late to achieve the intended blocking. Finally, it will be recalled that the later OHG phenomenon of secondary umlaut had the effect of fronting most instances of short /a/ which had earlier been blocked from undergoing primary umlaut – e.g., due to the intervention of certain consonant clusters. But Iverson *et al.* (1994) posit a historical retention of /i/-velarization and /r/-vocalization, thereby predicting that these processes must have blocked secondary umlaut, as well. It is true that they cite a small number of cases where the MHG and NHG evidence suggests that there were some exceptions to secondary umlaut across /iC/ and /rC/ clusters. Still, many more such instances are required in order to overturn the current inductive generalization that secondary umlaut is normally free of the consonantal interference which helped allow it to apply in the first place, by blocking primary umlaut.

It should be mentioned (cf. Paul *et al.* 1989:258, n. 4) that the OHG absence of (both primary and non-primary) umlaut in RU-past subj. verbs that was carried over into early and mid-MHG eventually succumbed, in mid- and late MHG, to the analogical model provided by common verbs like abovementioned *denk(en)* / *da:h-te* / *dæ:h-te* '(to) think' / 'thought (1/3.sg. indic. / subj.)', especially in [UG] dialects: Alemannic or Bavarian – the latter including Austrian varieties). E.g., '(to) burn' / 'burned (1/3.sg. indic. / subj.)' developed from OHG *brenn(en)* / *bran-ta* / *bran-ti* and early MHG *brenn(en)* / *bran-te* / *bran-te* into mid-/late MHG *brenn(en)* / *bran-te* / *bren-te* in MG (later > NHG *brenn(en)* / *brann-te* / *brenn-te*). Here, however, a major factor must have been the reduction of final vowels in late OHG and early MHG, which neutralized the contrast between OHG *bran-ta* / *bran-ti* as they evolved into early MHG *bran-te* / *bran-te* and so made RU verbs the sole exceptions to the otherwise inviolable generalization that all and only verbs with an irregular past indic. form show(ed) past subj. umlaut – a situation rectified via the innovation of mid-/late MHG *bran-te* / *bren-te* in MG dialects (and their eventual generalization in Standard NHG). The comparatively late and at first geographically limited occurrence of this analogically extended umlaut in (former) RU-past subj. verbs thus leaves it as a secure conclusion that early MHG forms like abovementioned '(to) hear' / 'heard (1/3.sg. indic. / subj.)' *hœren* / *hor-te* / *hor-te* indeed continued the pattern of OHG <hœ:r-(en)> = {hœ:r-(en)} / *hor-ta* / *hor-ti* and numerous similar RU verbs in which both non-primary and primary umlaut systematically failed to apply before the past subj.-marker /i/ – a robustly

morphological exception. This finding is virtually clinched by the fact that late OHG writings – glosses and the connected text of Otloh's Prayer (Bavarian, ca. 1050) – use the spellings <ō> vs. <oi> to distinguish /o:/ vs. /œ/. These documents make it clear that non-primary umlaut was blocked in, e.g., (prefixed) 3.sg. (*gi-/tro:-s-ti* (</tro:-st-ti/) and other past-subj. forms of the RU verb '(to) console', though a fronted vowel occurred in the (inflected) infinitive *troist-ane* = [trœ:-st-ane:] and in present-tense forms like (prefixed) 3.sg.subj. (*ge-/troist-e* = [trœ:-st-e] (where <oi> = /œ:/ is parallel to <iu> = /i:/); cf. Raven (1963:229f.).

The reader is invited to compare the forms just cited from Graff (1834-1846/1963) – as the (nearly full) set of attested plural-forms for the oft-mentioned OHG noun 'guest' – with the pl. forms for this word given by Braune & Eggers (1987:198): nom./acc. *gest-i*, gen. *gest-eo*, *gest-io*, *gesto* (the "regular" form), and dat. *gest-im*, *gest-in*, *gest-en*. Even a brief comparison of a handbook like Braune & Eggers (1987) with one or more textually based works like Graff (1834-1846/1963) or Raven (1963) reveals very quickly that many of the paradigms listed in the handbooks are filled out with unattested (i.e., hypothetical or at least hybrid) forms – which must therefore be checked against more philological works before they can be used in linguistic argumentation. On the other hand, the benefits of normalized texts for some purposes cannot be denied. One must just be sure to indicate one's practice in a recoverable way: here, both handbook- and other forms have been used.

⁸ The fem.nom.sg. strong-adjectival form *sempft-iu* 'soft' mentioned by Salmon (1994: 222) indeed reflects umlaut, but it is not clear whether the fronting here is lexicalized or due to the presence of the ending *-iu*, since the masc.nom.sg. form of this adjective exists both as *sam(p)ft* and as *sem(p)fti*. In similar fashion, a number of the instr.sg. forms of nouns previously cited here with front(ed) root-vowels from Salmon (1994:219f.) actually have variants also showing front(ed) vowels in the nom.sg. category and/or elsewhere. Consequently, it may be the case that several or even all of the instr.sg. forms in question have lexicalized umlaut (perhaps due to contamination – i.e., blending – or back-formation, in at least some cases). E.g., Salmon's example *sted-(i)u* 'riverbank', which occurs multiply in the Gospel Harmony associated with the name 'Tatian' (East Franconian, ca. 830), is compatible not only with masc.nom.sg. *stad* but also with neut.nom. sg. *sted-i*. One can only endorse Salmon's (1994:220) conclusion that, unless we have "gone directly to the manuscripts...[.] more philological work will presumably uncover yet more problems."

⁹ The doubled *l* in *zell-en* 'to tell, count, number' was a result of the so-called West Germanic gemination of consonants (other than *r*) before *j*; see Braune & Eggers (1987:358) and other references there, along with Denton (in progress). In connection with the loss of the formerly-triggering glide, this gemination became partly analogical and presumably was morphologically conditioned, especially in Class-1 weak verbs like above *zell(t)-en* – whereby the parentheses sometimes included here around the second consonant in such a geminate indicate that this element was not part of the underlying base-form of a root.

¹⁰ In a nutshell, the mechanism for the linked phonemicization and morphologicalization of Pre-OHG umlaut proposed by Janda (in preparation) combines aspects of work by numerous other scholars with an original insight: that the most crucially relevant typological datum here is the fact that English /h/ and /ɪ/ are distinct phonemes but have such oddly defective distributions that they actually occur in complementary distribution. With this can be combined a consultation of Labov (1972, 1994) on the sociolinguistic generalization of phonological changes, of Ohala (1981) and Anderson (1981) on the denaturalization of such changes, and of Korhonen (1969), Dressler (1977, 1985, 1996), and many others

on the existence of marginal/quasi-phonemes (ones in complementary distribution). Also crucially relevant is consultation of Ebeling (1960), A. Liberman (1991) (plus his many references), Hauman (1994), and many others on the necessarily prior phonologization of umlaut before the reduction or loss of its triggers, as well as of van Coetsem & McCormick (1982) on "optimal patterning" vis-à-vis phonological vs. morphological conditioning. The point of departure here is the established fact that speakers of succeeding generations who are carrying on a sound-change in progress tend to generalize it in various ways which may include exaggerating the rule's phonetic effect. It seems obvious that repetition of this process can eventually yield two sounds – such as [u] and [ū] – which are so phonetically distant from each other that they are at some point (re)categorized by the next generation (or by co-generational non-native speakers) as allophones of two different phonemes – such as /u/ and /ū/ – even though they occur in complementary distribution just like English /b/ and /p/, whose distributional complementarity seems to bother virtually no one. So as to keep matters straight, we may adopt Hyman's (1976) terminology and say that, when it began, in pre-OHG, umlaut was a phonetic process; when [u] vs. [ū] were recategorized as /u/ vs. /ū/, also in pre-OHG, umlaut became phonologized, and, when /u/ and /ū/ eventually came to occur in contrastive distribution (due to /j/ loss, to umlaut reversal in, e.g., RU.past.subj. forms, etc., and later to vowel reduction), in pre-OHG and then increasingly in early and later OHG (plus MHG and NHG), umlaut became phonemicized).

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APPENDIX: Modern (Standard) High German Umlaut Alternations

Umlaut-trigger type / Example	Gloss / (Lexical Category)	Inflect. - D(deriv.): Meaning or function of affix-type + umlaut	Umlautless stem or related form / (Lexical Category)
Zero-Affixes			
1. -Ø (or Ø-)			
a. i. <i>Hämmer-Ø</i>	'hammers' (N)	I: pl. (of masc.)	<i>Hammer</i> 'hammer, sg.' (N)
ii. <i>Klöster-Ø</i>	'monasteries and/or convents' (N)	I: pl. (of neut.)	<i>Kloster</i> 'monastery or convent, sg.' (N)
iii. <i>Töchter-Ø</i>	'daughters' (N)	I: pl. (of fem.)	<i>Tochter</i> 'daughter, sg.' (N)
b. i. <i>Öhr-Ø</i>	'[needle] eye(let)' (N)	D: dim./instr.	<i>Öhr</i> 'ear' (N)
ii. <i>edel-Ø</i>	'noble, fine' (Adj) [not connected with 'nobility' by all speakers]	D: assoc.	<i>Adel</i> 'nobility, peerage' (N)
c. <i>fänd(-e)</i>	'found' (V)	I: past subj. (-et-) = subj.; -Ø = 1/3.sg.)	<i>fand</i> 'found, past indic. (-Ø = 1/3.sg.)' (V)
d. i. <i>kämpf(-en)</i>	'(to) fight, struggle' (V)	D: assoc./caus.	<i>Kampf</i> 'fight, struggle' (N)
ii. <i>nass(-en)</i>	'(to) wet' (V)	D: caus./assoc.	<i>nass</i> 'wet' (Adj)
iii. <i>saug(-en)</i>	'(to) suckle' (V)	D: caus./assoc.	<i>saug(-en)</i> '(to) suck' (V)
Prefixes (alone or with a suffix -			
2. be-...-e			
<i>be-hend-e</i>	'humble, quick, handy' (Adj) [morphosemantic connection with 'hand' not made by all (many?) speakers]	D: assoc. [Adj reanalyzed from MHG PP bi: hend-e by/ at hand (dat.sg. V)]	<i>Hand</i> 'hand' (N) [vs. be-in-be-quem 'comfortable' (Adj.) but *quem alone, and -e in 7.(d.?) below]
3. Ge-...-(X)			
a. <i>Ge-...-Ø</i>			
i. <i>Ge-bäck-Ø</i>	'pastry, cookies' (N)	D: result./collect.	<i>bäck(-en)</i> 'to bake' (V)
ii. <i>Ge-därm-Ø</i>	'entrails, bowels' (N)	D: collect.	<i>Darm</i> 'intestine' (N)
iii. <i>Ge-flüss-Ø</i>	'vessel, container' (N)	D: instr.	<i>Fass</i> 'barrel, vat' (N)
b. <i>Ge-...-de</i>	'painting, portrait' (N)	D: result./collect.	<i>mal(-en)</i> '(to) paint' (V) [cf. ...-de in 6. below]
<i>Ge-mäl-de</i>			
c. <i>Ge-...-e</i>			
i. <i>Ge-länd-e</i>	'terrain, area' (N)	D: collect.	<i>Land</i> 'land' (N)
ii. <i>Ge-fahrt-e</i>	'(traveling-)companion' (N)	D: (as) soc.	<i>Fahrt</i> 'trip, journey' (N) [cf. -e in 7.b.i. below]
d. <i>Ge-...-t</i>			
<i>Ge-hof-t</i>	'farm(stead)' (N)	D: collect.	<i>Hof</i> '(court)yard, farm' (N) [vs. -t in <i>Fahrt</i> 'travel' (N) from <i>fahr(-en)</i> '(to) travel' (V)]

e. Ge-...-ter Ge-läch-ter	'laughter' (N)	D: collect/result.	lach-(en) 'to laugh' (V) [cf. -ter in <i>Mai-ter</i> 'mult- tude, grinding-fee' (N) < <i>mahl-(en)</i> 'to grind' (V), vs. <i>ge-lach-t</i> 'laughed' (V) with wk. past part. -t; al- so vs. -t in 3.d. above, -er in 13.b.ii. below]
Suffixes (alone) —			
4. -chen <i>Bänk-chen</i>	'little bench' (N)	D: dim.	<i>Bank</i> 'bench' (N)
5. -d- <i>gefähr-d-(en)</i>	'(to) endanger' (V)	D: caus.	<i>Gefahr</i> 'danger' (N)
6. -de <i>Gebär-de</i>	'gesture' (N)	D: assoc.	(<i>sich</i>) <i>gebar-(en)</i> '(to) behave (oneself)' (V) [vs. -d in 5. above and -e in 7.b.ii. below]
7. -e			
a. i. Häng-e ii. Flöss-e iii. Wänd-e	'slopes' (N) 'rafts' (N) 'walls' (N)	I: pl. (of masc.) I: pl. (of neut.) I: pl. (of fem.)	<i>Hang</i> 'slope, sg.' (N) <i>Floss</i> 'raft, sg.' (N) <i>Wand</i> 'wall, sg.' (N)
b. i. Röhr-e ii. Krätz-e	'tube' (N) 'scabies' (N)	D: assoc./dim. D: assoc.	<i>Rohr</i> 'reed; pipe' (N) <i>Kratz-(en)</i> '(to) scratch' (V)
c. i. Kält-e ii. Bald-e	'coldness' (N) 'near future, soon(ness)' (N)	D: abstr.qual. D: abstr.qual.	<i>kalt</i> 'cold' (Adj) <i>bald</i> 'soon' (Adv)
d. böse	'angry; bad' (Adj.)	D: assoc.	<i>bös(-haft)</i> 'malicious' (Adj); (<i>er</i>) <i>bös-(en)</i> '(to) (in-)furi-(ate), anger' (V)
8. -el(-)			
a. i. Säck-el ii. Arm-el	'purse, little sack' (N) 'sleeve' (N)	D: dim. D: instr./assoc.	<i>Sack</i> 'sack, bag' (N) <i>Arm</i> 'arm' (N)
b. i. sächs-el(-n) ii. klüg-el(-n) iii. läch-el(-n)	'(to) speak in (a) Saxon accent or dialect' (V) '(to) puzzle out' (V) '(to) smile' (V)	D: mod./tent. D: mod./tent. D: iter./mod./tent.	<i>Sächs(-e)</i> 'Saxon' (N) or <i>Sächs-en</i> 'Saxony' (N) <i>klug</i> 'intelligent' (Adj) <i>lach-(en)</i> '(to) laugh' (V)
9. -elchen <i>Löch-elchen</i>	'(tiny) little hole'	D: dim.	<i>Loch</i> 'hole' (N) [but * <i>Löch- el</i> alone (except regional- ly); vs. -el in 8.a.i. and -chen in 4. above]
10. -(e)lein <i>Vög-(e)lein</i>	'birdie, little bird' (N)	D: dim.	<i>Vog(-el)</i> 'bird' (N) [vs. -el in 8.a.i. above, but * <i>fl-ein</i> alone, elsewhere]

11. -en a. <i>Haupt-en</i> (in <i>zu Haupt-en</i> (von))	'head' (N) (only in PP 'at (the) head (of)', (with complex Prep))	I: dat.sg.-like [vs., for some speakers, perhaps still a dat. pl., as opposite of PP <i>zu Fuss-e-n</i> 'at the feet/foot (of)', with <i>Fuss/Fuss-e</i> 'foot/feet' (N)]	<i>Haupt</i> 'head' (N) [but dat. = sg. <i>Haupt(-e)</i> , pl. <i>Haupt- er-n</i> currently; <i>Haupt-en</i> = a former dat.pl. < (non- Southern) MHG dat.pl. variant <i>houb(e)k-e-n</i> , with not- <i>er(-)</i> but <i>-e(-)</i> as pl.- stem and with unlauded <i>houb(e)k(-)</i> even in the sg. (< OHG <houtbat> 'head')]
b. <i>har-en</i>	'hair(y), of hair' (Adj)	D: compos.	<i>Haar</i> 'hair' (N)
12. -(en)tlich a. <i>wöch(-)</i> b. <i>öff(-)</i> <i>ent-/lich</i> <i>ent-/lich</i>	'weekly; every week' (Adj) 'public, open to the public' (Adj)	D: char./assoc/app. D: char./assoc./app.	<i>Wöch(-e-n)</i> 'weeks' (N) <i>öff(-en)</i> 'open' (Adj) [vs. -en in 11.b.?) and -t in 3.d. above, -lich in 29.a,b. below]
13. -er(-)			
a. i. <i>Ränd-er</i> ii. <i>Blät-er</i> iii. <i>Märk-er</i>	'edges' (N) 'leaves' (N) '(deutsch)marks' (N) [ocular]	I: plural (of masc.) I: plural (of neut.) I: plural (of fem.) [sole example]	<i>Rand</i> 'edge, sg.' (N) <i>Blatt</i> 'leaf, sg.' (N) <i>Mark</i> '(deutsch)mark, sg.' (N)
b. i. <i>Bäck-er</i> ii. <i>Städt-er</i>	'baker' (N) 'city-dweller' (N)	D: agent. D: assoc.	<i>back-(en)</i> '(to) bake' (V) <i>Stadt</i> 'city' (N)
c. i. <i>wärm-er</i> ii. <i>öff-er</i>	'warmer' (Adj) 'more often' (Adv)	I: compar. I: compar.	<i>warm</i> 'warm' (Adj) <i>öff</i> 'often' (Adv)
d. i. <i>stänk-er(-n)</i> ii. <i>plätsch-er(-n)</i>	'(to) squabble, (cause a) stink' '(to) ripple, babble'	D: iter./tent./mod./ caus. D: intens./iter./tent.	<i>Stank</i> 'squabble' (N) [archa- ic], <i>Ge-stänk</i> 'stench' (N) <i>plätsch-(en)</i> '(to) splash' (V)
14. -erei <i>Büb-erei</i>	'boyish prank, knav- ish trick' (N)	D: collect./result./ loc./pejor.	<i>Bubi(-e)</i> 'boy; knave' (N) [but * <i>Büb-er</i> (N) alone; vs. -er in 13.b.ii. above and -ei in <i>Abt-et</i> 'abbey' (N) from <i>Abt</i> 'abbot' (N)]
15. -(e)rich a. <i>Gäns-erich</i>	'gander, male goose' (N)	D: male anim./plant	<i>Gans</i> '(fem.) goose' (N) [but <i>Gans-er</i> 'gander' (N) alone; vs. -er in 13.b.ii. above and the -ich... of -ticht in 21. below]
b. <i>Föhn-erich</i>	'standard-bearer, en- sign' (N)	D: male	<i>Fahn(-e)</i> 'flag, standard' (N)
16. -(e)rig <i>schlief-ig</i>	'sleepy' (Adj)	D: assoc./sim./char.	<i>Schlaf</i> (N) or <i>schlaf-(en)</i> (V) '(to) sleep' [cf. <i>glitsch-(e-)</i> <i>rig</i> 'slippery' (Adj) vs. <i>glitsch-(en)</i> '(to) slip' (V)]

17. -erlich läch-erlich	'laughable, ridiculous' (Adj)	D: char./assoc./app.	lach-(en) '(to) laugh' (V) [but Läch-er 'laugher' (N), not *Läch-er, alone; vs. -er in 13.b.ii. above and -lich in 29.c.]
18. -ern wächs-ern	'wax(en), waxy' (Adj)	D: compos.	Wächs 'wax' (N) [but *Wächs-er alone; vs. -er in 13.b.ii., -en in 11.b. above]
19. -(e)st a. i. ält-est- ii. stärk-st- iii. öft-est-	'oldest, eldest' (Adj) 'strongest' (Adj) 'most often' (Adv) [could alternatively be listed as -st - (e)st]	I: superl. I: superl. I: superl.	alt 'old' (Adj) stark 'strong' (Adj) oft 'often' (Adv)
b. i. wäsch-(e)st ii. fäng-st	'you (sg.) wash' (V) 'you (sg.) catch' (V)	[i, ii =] I: 2.sg. (fam.) pres. indic. str.V	wasch-(en) '(to) wash' (V) fang-(en) '(to) catch' (V)
20. -(e)t fäll-t	'[she/he] falls' (V) [could alternatively be listed as -t - (e)t]	I: 3.sg. pres. indic. str.V	fall-(en) '(to) fall' (V) [cf. 3.sg. pres. indic. str.V bitten '(she/he) asks', bitten '(to) ask']
21. -icht a. Röh-icht	'reed-bank' (N)	D: loc./collect.	Rohr 'reed; pipe' (N) [vs. ...ich of -(e)rich in 15. above (or -ig = [ɪç] in 22. below), -t in 3.d. above]
b. tö-icht	'foolish' (Adj)	D: assoc.	Tor 'fool' (N)
22. -ig a. kräft-ig	'powerful' (Adj)	D: assoc./sim./char.	Kraft 'power' (N)
b. voll-ig	'complete' (Adj)	D: assoc./sim./char.	voll 'full' (Adj)
c. geständ-ig	'one who has confessed' (Adj)	D: assoc./sim./char.	gestand-(en) 'confessed' [past (part.) of gesteh-(en) '(to) confess'] (V)
d. i. änst-ig-(en)	'(to) alarm, frighten' (V)	D: fact./caus.	Angst 'fear, anxiety' (N) [but *ängst-ig (Adj) alone]
ii. sätt-ig-(en)	'(to) saturate, satiate' (V)	D: fact./caus.	satt 'satisfied, satiated' (Adj) [but *sätt-ig (Adj) alone]
23. -igam Bräut-igam	'(bride)groom; fiancé' (N)	D: assoc.	Bräut 'bride, fiancée' (N) [but *bräut-ig (Adj); vs. -ig in 22.b. above, but *-am alone or elsewhere]
24. -igkeit Frömm-igkeit	'piety' (N)	D: abstr./qual.	fromm 'pious' (Adj) [but *frömm-ig (Adj) alone; cf. -ig in 22.b. above, -keit in Sauber-keit 'clean(liness)' (N) from sauber 'clean' (Adj)]
25. -in Ärzt-in	'fem. physician' (N)	D: fem.occup./orig./gent.	Arzt 'physician' (N)
26. -isch narr-isch	'foolish' (Adj)	D: orig./sim./char.	Narr 'fool' (N)
27. -issin Äbt-issin	'abbess' (N)	D: fem.occup./title	Äbt-isse alone; vs. -iss-le in Diakon-isse 'deacon(-ness)' (N), and -in in 26. above]
28. -ler Länd-ler	'country-dance' (N)	D: assoc./agent.	Land 'country' (N) [cf. also Tisch(-ler) 'table-maker' (N); dim. (*?) Landl = regional; vs. -el = -(e)l in 8.a/b., -er in 13.b.ii. above]
29. -lich a. mann-lich	'masc.; manly' (Adj)	D: char./assoc./app.	Mann 'man' (N)
b. kränk-lich	'sickly' (Adj)	D: mod./tent./assoc.	krank 'sick' (Adj)
c. i. spät-lich ii. vergäng-lich	'scanty' (Adj) 'passing by (quickly), transitory' (Adj)	D: char./assoc./app. D: char./assoc./app.	spär-en '(to) save (up)' (V) vergang-(en) 'passed by' [past part. of vergeh-(en) '(to) pass by'] (V) [but *Vergang (N) alone]
d. sämt-lich	'complete; all' (Adj or Quant)	D: char./assoc./app.	samt 'along with' (Prep)
30. -ling a. Haft-ling	'prisoner, detainee' (N)	D: assoc./orig./dim.	Haft 'custody, arrest' (N)
b. Schwäch-ling	'weakling' (N)	D: pejor./dim./orig.	schwach 'weak' (Adj)
c. Anköm-ling	'newcomer, new arrival' (N)	D: orig./app./pejor./dim.	ankomm-(en) '(to) arrive' (V) [vs. -el = -(e)l in 8.a./ii. above, gent.-ing in Edel-ing 'Gmc. nobleman' (if from Adel 'nobility' + -ing, add -ing as 20.5 above; if < edel 'noble' + -ing, then not--cf. 1.b.ii. above)]
31. -lings bauch-tings	'one's stomach, stomach-first' (Adv)	D: loc./manner	Bauch 'stomach' (N) [but *Bauch-ling (N) alone; cf. blind-tings 'blindly' (Adv), blind 'blind' (Adj) but *Blind-ling (N); vs. -ling in 30. above, -s in 34. below]

32. -ner
Täsch-ner
D: agent/assoc.
'purse-maker' (N)
Täsch(-e) 'pocket; purse' (N) [but *Täsch(-e/-n) alone; cf. Red-ner 'orator' < red(-en) 'to speak' or Red(-e) 'speech'; vs. -en in 11 b., -er in 13 b.ii. above]
33. -nis
a. Verstand-nis
D: abstr.qual./loc./result.
'understanding, comprehension' (N)
Verstand 'reason, mind' (N) or verstand(-en) [past part. of versteh(-en) 'to understand'] (V) [cf. Stand 'standing'; status' (N) or (ge)stand(-en) 'stood', steh(-en) 'to stand' (V)]
- b. Fäul-nis
D: abstr.qual./loc./result.
'rot(tenness)' (N)
faul 'rotten, lazy' (Adj) or faul(-en) 'to rot' (V)
- c. i. Gelob-nis
D: abstr.qual./loc./result.
'pledge, vow' (N)
gelob(-en) 'to pledge, vow' (V)
- ii. Gedächtnis
D: abstr.qual./loc./result.
'memory, remembrance, commemoration' (N)
gedacht 'remembered, commemorated; thought' (V) < gedenk(-en) 'to remember, commemorate' (V) or denk(-en) 'to think' (V) [cf. also An-dacht 'reverence, prayer(s)' (N)]
34. -s
läng-s
D: loc./reanalysis of MHG adverbial gen.sg. leng-e-s 'of length' (N)
'along-side (of)' (Adv or Prep)
lang 'long' (Adj) and entlang 'along' (Adv or Prep) [vs. -s in nachts 'during nights' (Adv) from Nacht 'night' (N)]
35. -sel
Hack-sel
D: (pejor.)dim./result.
'chaff, chopped straw' (N)
hack(-en) 'to chop, hack' (V) [but *Hacks alone; vs. -s in Knack-s 'crack' (N) < knack(-en) 'to crack' (V) or in 34. and -el in 8 a./ii. above]