

# German Umlaut, an Outline of a Minimalist Account<sup>1</sup>

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German Umlaut has been extensively described and discussed in the literature, and no attempt will be made here to provide a new or exhaustive description of the phenomenon.<sup>2</sup> On the contrary, the operation of Umlaut will be very parsimoniously illustrated, just enough to allow the reader unfamiliar with the relevant data to form an opinion on the proposal developed therein. Suffice it to say, for the purposes of this note, that under specific circumstances, a suffix can cause the fronting of a back vowel or diphthong in the stem of its complement. This is illustrated in (1).<sup>3</sup>

(1)

'Stem'		Suffix		'Stem'+Suffix and Umlaut
Mann 'man'	[man]	+lich Adj]		männlich 'manly' [menlɪç]
gross 'big'	[gro:s]	+er Comparative]		größer 'bigger' [grö:sər]
Kuh 'cow'	[ku:]	+e Plural]		Kühe 'cows' [küə]
Haus 'house'	[haws]	+er Plural]		Häuser 'houses' [hɔyzər]

I submit that all the suffixes in (1) cause Umlaut by virtue of being endowed with a floating prosody noted 'I', as in (2).

(2)

<<< I  
+lich Adj]

The suffixes of German fall into three categories with respect to Umlaut:

- a) some always trigger Umlaut
- b) some trigger Umlaut, but unpredictably
- c) some never trigger Umlaut

The first type can be exemplified by plural marker *+er*. If *Xer* is the plural of *X*, the rightmost vowel of *X* in *Xer* is always a front vowel. An example appears in (3).

(3)

Rad 'wheel'                  Räder 'wheels'

The second type, the sporadic umlauters, will be exemplified by one single example, adjective forming *+lich*. Its puzzling behavior can be observed in (4), where *+lich* umlauts the stem vowel of the first noun, but not of the second.

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<sup>1</sup> For valuable input, I am grateful to Emmon Bach, W.U. Dressler, Jonathan Kaye, Martin Prinzhorn, John Rennison, Elisabeth Rieder, Richard Wiese, and especially Markus Pöchtrager.

<sup>2</sup> Similarly, the bibliography of this paper is not meant in any way to do justice to the richness of the literature on German Umlaut.

<sup>3</sup> Adjustment rules intervene and /aw/ and /a/ are eventually realized as [ɔy] and [e], respectively. In the remainder of this squib, German data will be quoted according to the orthographic conventions of the language.

(4)

Mann 'man'	männlich 'manly'	
Amt 'government office'	amtlich 'official'	*ämtlich

Note that no special privilege immunizes *Amt* against Umlaut. On the contrary, both *Amt* and *Mann* form *+er* plurals of the type exemplified in (3) above, and both plurals (not just the plural of *Mann*) display Umlaut. This is shown in (5).

(5)

Singular	Plural
Amt	Ämter
Mann	Männer

Finally, the third type includes suffixes such as e.g. *+bar* (ex. *kostbar* 'precious') or *+schaft* (ex. *Verwandschaft* 'kinship') which never cause Umlaut. There is very little to say about those, except they just do not have the relevant Umlaut-triggering property shown in (2).

Clearly, the sporadic umlauters such as *+lich* offer a challenge of the most vexing type: when they will, or will not cause Umlaut is entirely unpredictable.<sup>4</sup> This unpredictability has led many students of German word formation to conclude that further investigation of the synchronic status of Umlaut was nothing but a waste of time.<sup>5</sup> An argument often put forth takes the following form:

(6)

- i. rules apply
- ii. evidence such as in (4) and (5) or fn.4 shows that Umlaut is not rule-governed

Of course, (6) is a textbook case *non sequitur*. Indeed, a conclusion diametrically different from (6ii), namely (7), is compatible with (6i).

(7)

The environment for the application of Umlaut was met in the case of *männlich*, but not in the case of *amtlich*

The rest of this paper is devoted to establishing the plausibility of (7). Before I put forth a formal proposal for the expression of (7), I would like to draw the attention of the reader to two properties of Umlaut which strongly suggest that the phenomenon is not nearly as fortuitous and intractable as might have been surmised from merely considering the contrast between *männlich* and *amtlich*.

#### Property 1

Umlaut applies under strict structural adjacency. Thus, *+lich* triggers Umlaut on *Vater* 'father', hence *väterlich* 'paternal'. But when *Vater* and *+lich* are separated by an intervening morpheme, say *+schaft* (cf.

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<sup>4</sup> Janda (1998) provides a spectacular example: *Busch* 'bush' undergoes Umlaut before Plural marker *+e*, but not before adjectival *+ig* while *Tag* 'day' undergoes no Umlaut before *+e* though it does before *+ig*. Thus, *Busch/Büsche/buschig* vs. *Tag/Tage/tägig*.

<sup>5</sup> But see Wiese's lucid work, Wiese (1996a,b).

*Vaterschaft* 'fatherhood'), *+lich* becomes incapable of reaching *Vater*, thus *vaterschaftlich*, not *\*väterschaftlich*. Failure of *+lich* to umlaut *Vater* in this case is not another instance of its unpredictable behavior. Indeed, no case is attested of *+lich* (or any other Umlauter) reaching a target across an intervening morpheme.

## Property 2

Umlaut hits 'low'. That is, its target must be the most deeply embedded object in the morphological representation, thus once more *väterlich* with successful Umlaut. But an attempt to target something higher will only result in failure, e.g. *vaterschaftlich*, crucially not *\*vaterschäftlich*. Again, in the hundreds of productive formations of type *X+schaft+lich*, there is no instance of *Xschäftlich* resulting from Umlaut, or of any other potential umlauter having affected anything but the bottommost object. Importantly, 'bottommost' here is not equivalent to 'linearly leftmost'. Indeed, the bottommost object may be a compound. Consequently, it should be said, strictly speaking that Umlaut targets the head of the bottommost object, thus *zweistöckig* 'two-storeyed' from *zwei* 'two' and *Stock* 'storey'; or *tatsächlich* 'actual' from *Tat* 'fact' and *Sache* 'matter, thing'.<sup>6</sup>

Clearly, structural factors play a major role in the description of Umlaut. Unsurprisingly, they are more likely to shed light on what regular and sporadic umlauters share and don't share than the sterile observation that a dichotomy obtains. Suppose one asked the question in (8).

(8)

What other property distinguishes sporadic from regular umlauters ?

A closer look at the profile of a regular umlauter, plural *+er*, provides the beginning of an answer: *+er* exclusively attaches to unsuffixed complements (cf. *Amt/Ämter, Mann/Männer* above). For instance, the respective plurals of *Obrigkeit* 'authorities' (*obr-ig-keit*) or *Wissenschaft* (*wiss-en-schaft*) are *Obrigkeiten* and *Wissenschaften*. They could never be *\*Obrigkeiter* or *\*Wissenschaftler*. This feature causes *+er* to meet the two properties of Umlaut described above: a) the complement of *+er* will always be as low as can be; b) *+er* will always be adjacent to its own complement or to the head of its own complement. I submit that the positional properties of *+er* are directly related to its behavior as an exceptionless umlauter. The strongest version of the connection between such positional properties and umlauting appears in (9iii).

(9)

- i. *+er* Plural] is endowed with the Umlauting property in (2)
- ii. *+er* Plural] never attaches to a suffix
- iii. it follows that *+er* Plural] is an exceptionless umlauter

If (9iii) is accepted, the behavior of sporadic umlauters can now be construed as in (10).

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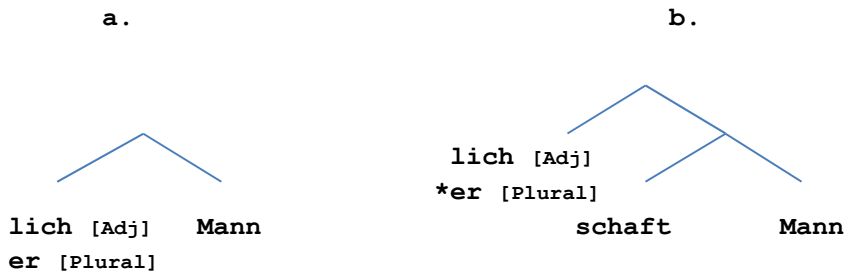
<sup>6</sup> *+schaft* is surely the head of *Wissenschaft*, but *Wissenschaft* is not the bottommost object in *wissenschaftlich*. Rather, *Wissen* is: ((*Wissen*)*schaft*)*lich*). A precise characterization of the still vague notion 'bottommost object' will be offered momentarily.

(10)

- i. when a sporadic umlauter does trigger Umlaut, it is located in the same position as +er [Plural].
- ii. When a sporadic umlauter does not trigger Umlaut, it is located in a different position from +er [Plural].

This is schematically represented in (11): in (11a) both +lich and +er occupy a low position and both trigger Umlaut, viz. *männlich* and *Männer*; in (11b) +lich occupies a higher position (inaccessible to +er) and causes no Umlaut.

(11)

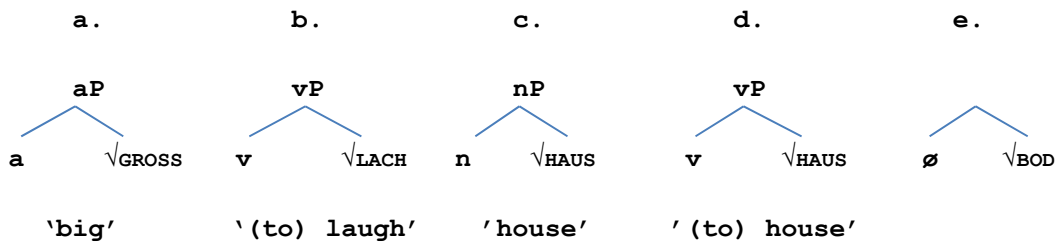


The next section is devoted to the presentation of the theoretical apparatus relevant to the implementation of the view just put forth.

### 3. Some tools

Following Borer (2005), Embick (2010), Embick & Marantz (2008) and others, I assume that the grammar of a language involves the presence of two lists. The first list is a list of uncategorized roots. Examples of such roots in the case of German are  $\sqrt{\text{GROSS}}$ ,  $\sqrt{\text{LACH}}$ ,  $\sqrt{\text{HAUS}}$ ,  $\sqrt{\text{BOD}}$ . Roots acquire categorial membership upon merger with one or more of a set of categorizers, *n* (noun), *v* (verb), or *a* (adjective). Resulting structures are shown in (12).

(12)



(12a,b) require little comment, as they merely show how roots  $\sqrt{\text{GROSS}}$  and  $\sqrt{\text{LACH}}$  merge with *a* and *v* to form adjective *gross* 'big' and verb *lach* '(to) laugh', respectively. (12c,d) show how root  $\sqrt{\text{HAUS}}$  has merged with both *n* and *v* to form a noun 'house' and a verb 'to house'. Accordingly, *gross*, *lach(en)*, *Haus* and *haus(en)* are recorded in the second list, the list of actual 'words'. Finally, (12e) illustrates a case of selectional inertia: root  $\sqrt{\text{BOD}}$  has not been selected by a categorizer.<sup>7</sup> As a result, no verb, adjective, or noun *bod* is known to us. Of course, the natural question to ask is: why would we suppose the existence of a root  $\sqrt{\text{BOD}}$  in the first place

<sup>7</sup> It is strictly for graphic clarity that selectional inertia is noted in (12e) as if the root had been selected by a null categorizer. No claim such as can be found in De Belder & v. Craenenbroeck (2011) is intended here.

if no corresponding 'word' *bod* is recorded in the second list ? This interesting question will be returned to momentarily.

An important observation made in connection with structures of the type exemplified in (12) is that the first *merge* may or may not give rise to compositional meaning, but further *merges* regularly culminate in compositionality, cf. Embick (2010). To see this, consider the paradigm in (13):

(13)

a. Kunst 'art'	kunst
b. künstlich 'artificial'	[[kunst]lich]
c. künstlichkeit 'artificialness'	[[[kunst]lich]keit]

Typically, the combination of *Kunst* and *+lich* produces an adjective the meaning of which is non-compositional (presumably, compositionality would have derived a meaning akin to that of *artistic*). Non-compositionality, it is argued, can be observed when the relationship between two ingredients is local. By contrast, further *merges* systematically result in compositionality. The meaning of *Künstlichkeit* clearly vindicates the claim.

I part ways with the authors mentioned at the beginning of this section on an important issue, exponence. Most, if not all, students of word formation subscribe to the idea that, by and large, most derivational suffixes are exponents of a grammatical category, its Saussurean *signifiant*. Thus, *+schaft*, *+keit*, *+ung* are exponents of nominality, *+lich*, *+ig*, *+isch* are exponents of adjectivalness, etc., a view forced by all frameworks I am familiar with. But, frameworks countenancing roots and categories offer other options. Here, capitalizing on such options, I draw from Lowenstamm (in press) I propose something completely different from the usual view, viz. (14).

(14)

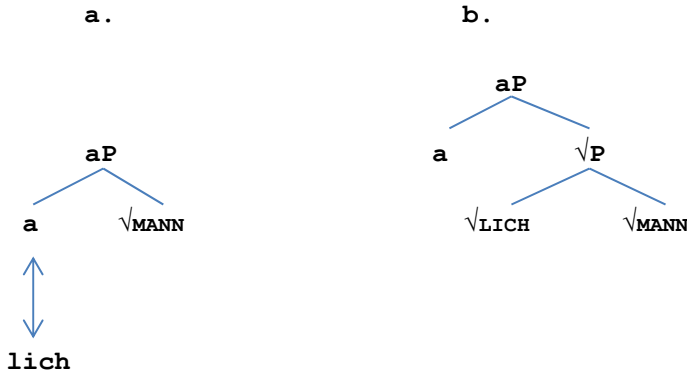
- i. suffixes are not categorial exponents
- ii. suffixes are themselves roots

The difference appears in (15) with alternative representations of *männlich*. In (15a), the classical position is represented in the form of a perfect positional fit between the suffix and the category of which it is reputed to be the exponent.<sup>8</sup> In (15b), I have represented the position advocated in this paper: 1) suffix *+lich* is NOT the exponent of category a, 2) *+lich* is a root.

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<sup>8</sup> The double-pointed arrow in (15a) is meant to exclusively represent the fit between the affix and the category, regardless of whether the mechanism responsible for bringing about the fit is bottom-up or top-down, cf. Lowenstamm (in press) for discussion.

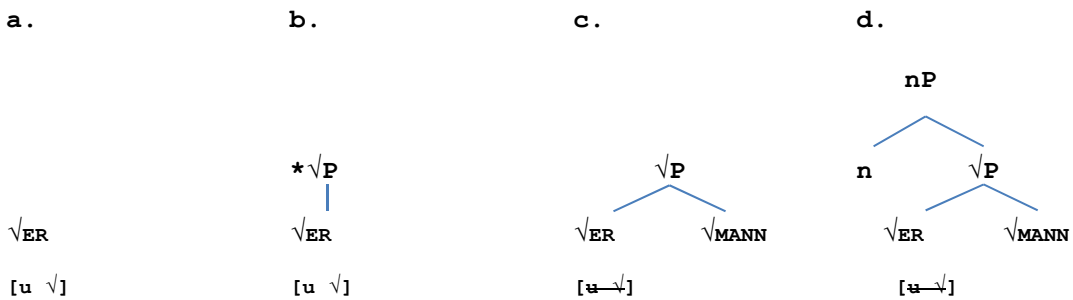
(15)



Being the received view, (15a) requires little comment. On the other hand, the unusual scheme described in (15b) certainly requires demonstration. The rest of this section is devoted to such a demonstration.<sup>9</sup>

If bound morphemes such as suffixes are roots, they must be 'bound' roots, cf; Selkirk (1982). I propose to represent their boundedness by means of an uninterpretable feature as in (16) with the case of plural *+er*.

(16)



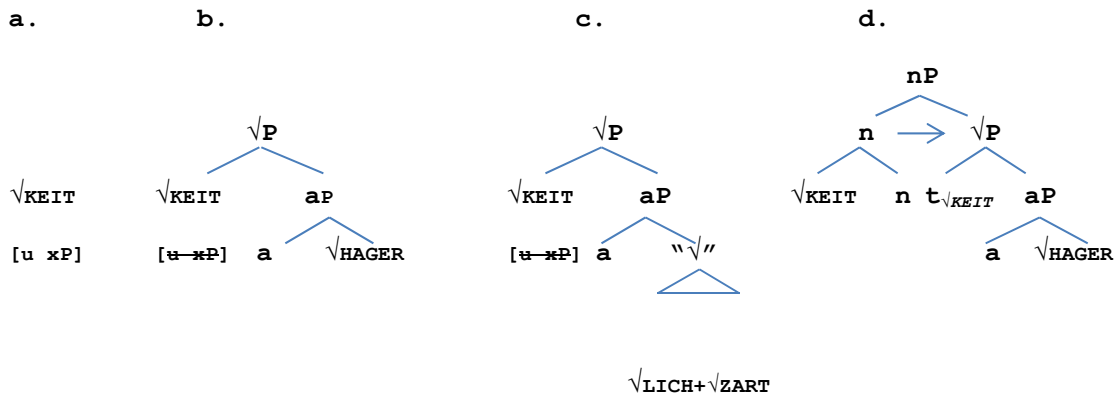
Suffix  $\sqrt{ER}$  carries an uninterpretable feature  $[u \sqrt{ ]}$ , as shown in (16a) which causes it to seek a suitable complement, another root. In the absence of such a complement, it cannot project to the phrasal level and further construction of structure cannot be contemplated, (16b). On the other hand, when  $\sqrt{ER}$  merges with a complement of the required type, it rids itself of its uninterpretable feature and projects at the phrasal level, (16c). The complex root formed in (16c) can now be categorized, i.e. it can be selected by a category-defining head and further mergers can take place. The reader will remember that  $\sqrt{ER}$  is an exceptionless umlauter. We return to this aspect of its behavior below. For the time being, our exclusive concern is to establish that the selectional behavior of affixes can be characterized in terms of the proposed machinery, i.e. merger triggered by the need to check uninterpretable features. Crucially, Umlaut plays no role in that characterization. Ultimately, it will be shown to follow independently from a) the selectional requirements of affixes and b) the phasal mechanism.

At the outset of this subdiscussion plural  $\sqrt{ER}$  was described as a suffix that only attaches to an unsuffixed complement. We are now in a position to capture the notion 'suffix  $\sigma$  exclusively attaches to an unsuffixed base': a suffix corresponding to that definition can only attach to a root.

<sup>9</sup> See Faust (2012) for discussion and development of this idea on the basis of an extensive fragment of Modern Hebrew phonology and morphology.

We now turn to a different aspect of the selectional behavior of suffixes. Some suffixes only attach to categories. For instance, noun forming *+keit* exclusively selects full-fledged adjectives, thus *Hagerkeit* 'gauntness' from adjective *hager* 'gaunt', (17). As depicted in (17a), suffixes of that type will carry a [u xP] uninterpretable feature, x standing for a variable ranging over {a, n, v}. Two comments are necessary at this point.

First, as just pointed out, the fact that a suffix carries a [u √] feature causes it to select an unsuffixed complement exclusively. By contrast, a suffix carrying a [u xP] uninterpretable feature is intrinsically incapable of discriminating in that fashion. Rather, it is solely sensitive to the properties of the head of its complement and entirely oblivious to the contents of the complement of the latter. Concretely, this means that *+keit* - if correctly defined as a selector of aP's - will be incapable of discriminating on the basis of the complexity of the adjective it attaches to.<sup>10</sup> This appears to be correct, since *+keit* selects plain adjectives such as *hager* (17b) and complex adjectives as well, such as *zärtlich* 'tender' ([[zart]lich]), thus deriving *zärtlichkeit* 'tenderness', (17c). (17)



A substantial claim is thus made in the system advocated so far. It is recorded in (18).

- (18)
- i. 'suffix σ exclusively attaches to an unsuffixed base' is possible selectional behavior
  - ii. 'suffix σ exclusively attaches to a suffixed base' is not possible selectional behavior

Secondly, there is something truly paradoxical in (17b), namely the fact that functional structure has been embedded under lexical structure. On the one hand, this cannot be avoided if a) suffixes are roots as I claim, and b) certain suffixes indeed select 'words'. I submit that the violation of canonical structure inherent in (17b,c) is immediately resolved by left-adjunction of the offending head root to the immediately dominating categorizer *n*. This is shown in (17d): upon left-adjunction of √KEIT to *n*, it is now *n* that heads the √P as indicated by the rightward pointing arrow, in conformity with canonical structure.

Finally, a third type of selectional behavior will be recognized, the combination of both types just reviewed. √LICH raises a problem with respect to exactly what it selects. Consider the data in (19).

<sup>10</sup> A famous example of precisely the opposite is mentioned in Aronoff (1976). English *+al* attaches to X+ment if X is not a verb (e.g. *segment*), but not if X is a verb (e.g. *\*employmental*). Cf. Lowenstamm (in press) for critical discussion and a solution.

(19)

- a. Mann 'man'                      männlich 'manly'
- b. Mannschaft 'team'            mannschaftlich 'teamlike'

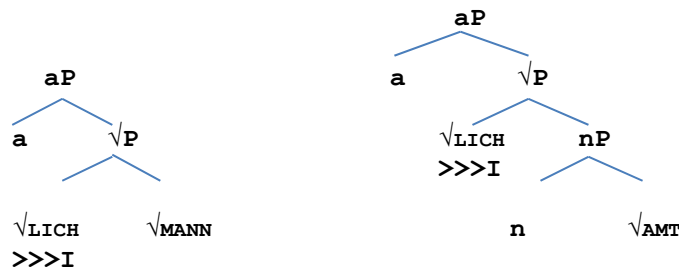
Clearly,  $\sqrt{\text{LICH}}$  selects nouns as attested by *Mannschaft*. If it selects nouns, it must be incapable of distinguishing between suffixed and unsuffixed nouns, *per* (18). Thus, when no suffix intervenes between  $\sqrt{\text{LICH}}$  and the base it attaches to, as in *männlich*, it could equally well be attaching to the noun *Mann* or to root  $\sqrt{\text{MANN}}$ . Which is it? It is at this point that the Umlaut conundrum which so puzzled the phonologist becomes the morphologist's ally, and presumably the learner's as well. Indeed, it is precisely when  $\sqrt{\text{LICH}}$  attaches to an unsuffixed base that it displays its ambiguous behavior, sometimes umlauting (20a), sometimes not (20b).

(20)

- a. Mann männlich
- b. Amt amtlich

I submit that the Umlaut difference in (20) reflects a difference in the level targeted by  $\sqrt{\text{LICH}}$ : the target in (20a) is  $\sqrt{\text{MANN}}$ ; the target in (20b) is  $[_{\text{nP}} \sqrt{\text{AMT}}]$ . This is graphically represented in (21), this time with  $\sqrt{\text{LICH}}$  equipped with its umlauting property (noted  $\ggg>>I$ ).

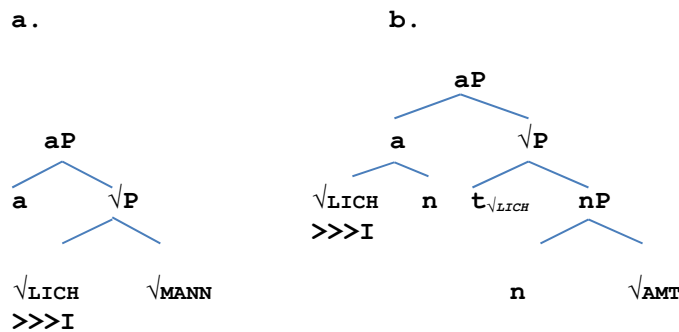
(21)



The phasal mechanism can now interpret the structures in (21).

I assume a version of phasal interpretation as in Marvin (2003) whereby each phase head triggers the spellout of its complement. Following Embick (2010), I assume moreover that the two relevant phases are those headed by aP since both contain the two partners of  $\sqrt{\text{LICH}}$ . As things stand in (21),  $\sqrt{\text{LICH}}$  is likely to be interpreted during the same interpretive phase as its partner in both (21a) and (21b). However, as the reader will have noted, (21b) incorporates a violation of the canonical order of projections inasmuch as  $\sqrt{\text{LICH}}$  dominates an nP. But after the operation of the repair strategy which left-adjoins  $\sqrt{\text{LICH}}$  to the head of nP,  $\sqrt{\text{LICH}}$  finds itself outside the scope of spellout of the adjectival phase and will be realized independently of  $\sqrt{\text{AMT}}$ . This is shown in (22b).

(22)





√LICH and √MANN are spelled out together in (22a). √LICH, releases its umlauting property and *männlich* is derived. On the other hand, √LICH and √AMT in (22b) are spelled out at different phases. The umlauting potential of √LICH remains unspent and *amtlich* surfaces.

### Conclusion

In this squib, I have argued that German Umlaut is amenable to analysis under a slightly more sophisticated view than is usually assumed of how the relevant ingredients combine. In the process, I also hope to cause analysts to relax a bit. Indeed, most attempts at tackling Umlaut seem to view the task at hand as involving something along the lines of (23).

(23)

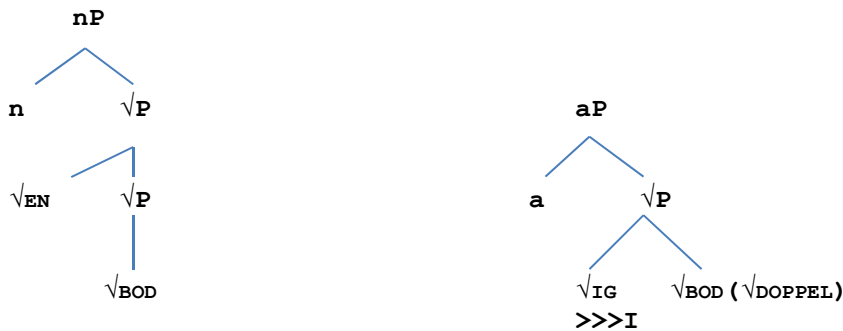
- i. Predicting whether Mann+lich will result in *mannlich* or *männlich*
- ii. Ruling out *mannlich*
- iii. Ruling in *männlich*

In reality, there is nothing to predict, to rule in or out ! Indeed, *mannlich* is perfectly well-formed phonologically and morphologically, and fully interpretable semantically. The problem with *mannlich* is thus not its ungrammaticality. The problem, rather, is simply that *mannlich* is not attested (yet ?). There is nothing surprising in that, given that the set of extant words is always vastly inferior to the set of well-formed words. To put things differently, Umlaut is entirely predictable, what is not predictable is what words out of the set of possible words will actually be in use at any given time. Before deciding that my answer is too glib, the reader is invited to consider what would count in favour or against my stance. Suppose counterfactually that *mannlich* and *ämtlich* existed but not *männlich* and *amtlich*. We would have the exact same problem: why those two but not the other two. Clearly, what is required in order to establish that unattested *mannlich* is no less likely than attested *männlich* are cases where both options (Umlaut and absence thereof) are realized. Simple pairs such as *sachlich* 'factual, objective' from *Sache* 'thing, matter' as opposed to *sächlich* 'neuter gender as opposed to Feminine and Masculine' are not terribly numerous, though the latter clearly shows that absence of Umlaut goes hand in hand with compositional meaning. But German productively creates compound adjectives, a rich source for what we are looking for. Thus, consider *flachnasig* (from *flach* 'flat' and *Nase* 'nose'), crucially without Umlaut. *flachnasig* denotes exactly what can be expected under compositionality, viz. a flat-nosed creature or human being. This sharply contrasts with *hochnäsig* (from *hoch* 'high' and *Nase*), crucially with Umlaut, which means 'arrogant, one who carries his nose high therefore looks down on others'. A minimal pair such as *rotznasig* and *rotznäsig* from *Rotze* 'snot' is another example: both can be glossed as *snotty*, but *rotznasig* without Umlaut is fully compositional and describes an otorhinolaryngological condition, whereas *rotznäsig* with no Umlaut and non-compositional meaning describes an attitude. Many more such examples can be found, cf. Lowenstamm (in preparation).

### Appendix 1 Root √BOD

Earlier, I mentioned that no word such as *bod* is known in German, though a root √BOD does exist. I claim that root √BOD underlies the noun *Boden* 'ground'. I submit that *+en* is a root adjunct as shown in (24a). Yet, adjectival suffix √IG can select √BOD directly, in effect peeling off the adjunct layer. Both Umlaut and non-compositionality ensue: *doppelbödig* 'ambiguous'

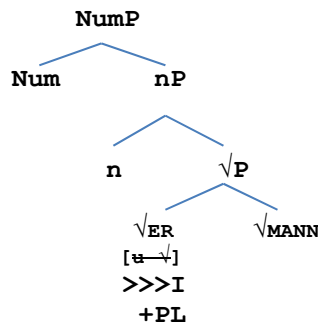
(24)



#### Appendix 2 Root $\sqrt{\text{ER}}$

It was argued above that the structure of an +er plural is as indicated in (16) repeated in (25), this time after selection by the Num head.

(25)



While *Männer* is certainly plural, +er is not the exponent of the Num head. Rather, it was argued, +er is part of the complex root represented in (25).<sup>11</sup> Evidence for that claim comes from the fact that a complex root such as in (25) can be directly selected by adjectival  $\sqrt{\text{IG}}$ , e.g. blätterig 'leafy' from Blätter 'leaves', pronounced [bletər]. Strikingly, blätterig is pronounced [bletrik], not \*[bletərɪk]. The fact that  $\sqrt{\text{IG}}$  has been capable of triggering syncope shows that all three ingredients,  $\sqrt{\text{BLATT}}$ ,  $\sqrt{\text{ER}}$ , and  $\sqrt{\text{IG}}$  are realized in the same phase.

Borer, H. (2005) *In Name Only*, Oxford & New York: Oxford University Press

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<sup>11</sup> In a sense, it could be said that *Männer* is a *plurale tantum* that happens to have a corresponding singular, in contradistinction with *Wissenschaften* 'sciences' which is the true plural of its singular.

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