

**WHERE DOES THE UMLAUT COME FROM?
RETELLING THE STORY OF GERMAN MODALS**

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1. Introduction

The class of so-called preterite-presents (= P-Ps) represents a classical subject of Germanic linguistics (cf. Birkmann 1987) in which morphological theories/models can be evaluated that aim at providing explanations/predictions about the development or the change of the inflectional system of natural languages. The question is even more interesting, since P-Ps constitute a very complex part of the morphological system in which markedness is rather high. In fact, the small group of verbs constituting this morpho-semantic class (cf. Ramat 1971) is tightly joined together by a set of - among others - inflectional properties which have become more and more noticeable throughout the centuries. Moreover, although all Germanic languages display the same class of P-Ps, which was actually inherited from Indo-European (cf. Goth. *wait*, OGr. *ōīda*, OChSl. *vědě*, Arm. *gitem* 'I know', originally a perfect form of the stem **ueid-/uoid-/uid-* 'to see', cf. Lat. *vidēre*, that happened to acquire a present meaning), the single languages vary considerably in their historical evolution. In English, for example, P-Ps underwent a rather peculiar morphosyntactic development, since they became a kind of auxiliary, displaying very different properties with respect to full verbs (cf. Plank 1984). Besides the massive process of grammaticalization of English P-Ps, the other Germanic languages also display different characteristics in the details of the single morphological systems, which may be tiny but consistent. In particular, the majority of German P-Ps displays an umlaut alternation in the plural of the present indicative and in the infinitive, which is unexpected from the viewpoint of historical development. Let us first give a look at the complete paradigms of NHG P-Ps (cf. DUDEN:129):

(1)

inf.		wissen	wollen	sollen	müssen	mögen	können	dürfen
pres.ind.	1.sg.	weiß	will	soll	muß	mag	kann	darf
	2.	weißt	willst	sollst	mußt	magst	kannst	darfst
	3.	weiß	will	soll	muß	mag	kann	darf
	1.pl.	wissen	wollen	sollen	müssen	mögen	können	dürfen
	2.	wißt	wollt	sollt	müßt	mögt	könnt	dürft
	3.	wissen	wollen	sollen	müssen	mögen	können	dürfen
pres.subj.	1.sg.	wisse	wolle	solle	müsse	möge	könne	dürfe
pret.ind.	1.sg.	wußte	wollte	sollte	mußte	mochte	konnte	durfte
pret.subj.	1.sg.	wüßte	wollte	sollte	müßte	möchte	könnte	dürfte

The emphasized forms in (1) display umlaut, i.e., the well-known vowel alternation resulting from an assimilation process which affected OHG vowels when followed by /i, j/, cf. OHG *hano/benin* 'hen (nom./gen.)'. As a consequence of umlaut, which was completely morphologized (or grammaticalized, cf. Gaeta 1998) in late OHG (cf. Wurzel 1980, 1984b), the following alternation has come into existence, in which the pret.subj. form displays umlaut with respect to the pret.ind.:

(2) NHG pret.ind. konnte < OHG *konta*
 pret.subj. könnte < *konti* ['kōnti]

In the OHG forms, the vowel alternation, which is completely morphologized in NHG, was purely phonologically governed by the following assimilation rule (cf. Wurzel 1980):

(3) $V \rightarrow [+ \text{front}] / ___ C_1 \left[\begin{array}{l} - \text{consonant} \\ - \text{back} \\ + \text{high} \end{array} \right]$

The umlaut rule in (3) underwent a process of morphologization as a consequence of the late OHG radical weakening of unstressed vowels, which made the context triggering the fronting of back vowels opaque. At this point, the phonologically governed alternation [o ~ ø] reported in (2) was reanalysed in purely morphological terms, giving rise to the actual alternation:

$$(4) \quad V \rightarrow [+ \text{front}] / \left[\begin{array}{l} + \text{ verb} \\ + \text{ modal} \\ + \text{ subj.} \\ + \text{ past} \end{array} \right]$$

In the case of the emphasized vowels in (1), however, it is not possible to explain away the presence of umlaut on the basis of an earlier high segment in the following syllable, as is shown by (5), in which the forms of these verbs in the older Germanic languages are reported:

(5)

infinitive	*magan ~ *mugan	*þurþan	*mōtan	*kunnan
languages	pres.ind. 1.sg./1.pl.			
Goth.	mag / magun	þarf / þaurbun	gamōt / gamōtun	kann / kunnun
Olc.	má / megu	þarf / þurfu	-	kann / kunnu
OE	mæg / magon	þearf / þurfon	mōt / mōten	can / cunnon
OS	mag / mugon	tharf / thurbun	mōt / mōtan	can / cunnun
OHG	mag /magun ~ mugun	darf / durfun	muoz / muozun	kann / kunnun

(5) shows that the NHG desinence of plural *-en* goes back to a Germanic suffix **-um*, OHG *-un*, which did not give rise to umlaut, according to the rule in (3) above.¹ Similarly, the Germanic desinence of the inf. form was **-an*, OHG *-an*, which did not cause umlaut either. Therefore, the umlaut occurring in the pl.pres.ind. forms and in the infinitive of the four NHG verbs *mögen*, *können*, *dürfen* and *müssen* is unexpected, i.e. it does not have a phonetic origin, and must consequently be explained in other ways.

2. The umlaut in the P-Ps: previous approaches to the problem

In the last century, several attempts were made to explain the unexpected presence of umlaut in the German P-Ps, yet Mettke (1989:205) observes that there is "keine eindeutige Erklärung". Chronologically, the first attempt to provide an explanation to the problem is found in Weinhold (1883), who assumes that the umlaut was extended to the pl.pres.ind. (and hence to the inf.) from the pres.subj. The employment of subj. forms instead of the ind. in the case of modal verbs explains why this over-extension could take place. In a slightly different way, Šćur (1961) has proposed that the process of over-extension from the subj. forms first affected the inf., which was reshaped on the basis of the 3.pl.pres.subj. to preserve the identity with the 3.pl.pres.ind. which arose from the weakening of unstressed syllables. The latter was undermined by the appearance of forms ending with the suffix *-nt* ~ *-nd* coming from the other inflectional classes (as in *grīfent*, *habēnt* vs. *wizzun*, see (26) below). From the inf. it was successively extended to the pl.pres.ind. Against these proposals, Behaghel (1928:483) already observed that

"Der Gedanke, daß der Umlaut aus dem Konjunktiv stamme, ist abzulehnen. Denn eine syntaktische Berührung zwischen dem Indik. und Konj.Präs. findet im selbständigen Satz nicht statt, da der Konj.Präs. hier überhaupt kaum je gebraucht war; es ist vielmehr der Konj.Prät., der sich im selbständigen Satz mit dem Indik.Präs. in der Bedeutung berührt. So würde auch der Sieg des Konjunktivvokals ganz unverstänlich sein, denn der Indikativ kam im Haupt- wie im Nebensatz vor, war also zweifellos häufiger".

¹The only exception is constituted by Olc. *má/megu*, in which the pl. form displays a front vowel, apparently due to umlaut. I will return to this point later.

In Behaghel's opinion, the explanations proposed by Weinhold (and Šćur), abstracting from the details distinguishing them, meet with a major problem. Namely, the marked and less frequent form, i.e. the subj., supposedly replaced the unmarked and more frequent one, i.e. the ind. For this reason, Behaghel prefers another explanation, already proposed by Brenner (1895). In these scholars' view, the umlaut regularly arose from a phonological change. In this respect, it must be observed that the OHG umlaut rule seen above in (3) took as a domain the phonological word, although recent analyses of umlaut barely mention it (cf., among others, Voyles 1991). In fact, umlaut was also triggered by /i, j/ of a following clitic element, which formed a unique phonological word with the word bearing the primary stress (cf. Behaghel 1928:292):

(6)	gifregin ih < gifragen ih ²	"asked I"
	meg iz < mag iz	"may it"
	meg ih < mag ih	"may I"
	scel iz < scal iz	"shall it"
	leg iz < lag iz	"lay it"
	drenc ih < drank ih	"drank I"
	geb ima < gab imo	"gave him"
	gireh inan < girah inan	"avenged them"
	sem mir < sam mir	"with me"

To account for these data, the rule seen above in (3) must be reformulated in the following terms, in which the bracket with pedix ϕ defines the boundary of a phonological word:

$$(7) \quad V \rightarrow [+ \text{front}] / _ \dots \left[\begin{array}{l} \cdot \text{consonant} \\ \cdot \text{back} \\ + \text{high} \end{array} \right] \Bigg)_{\phi}$$

According to Brenner/Behaghel, it was the high frequency of cases in which the plural clitic pronoun was postposed as in *durfen wir* > *d[y]rfen wir*, *kunnen sie* > *k[y]nnen sie*, etc., that determined the extension of umlaut to the pl.pres.ind., whence it passed to the inf. Notice that a similar change occurred in several Upper German dialects, especially in the Bavarian and the Alemannic areas, also in verbs not belonging to the P-Ps class (cf. Behaghel 1928:292):

(8)	<i>Alem.</i>	chömmе (< cho + mer)	"we come"
		gömmеr	"we go"
		stömmеr	"we stay"
	<i>Bavar.</i>	gengemer	"we go"
		stendemer	"we stay"

This explanation has met with several objections (cf. Fiedler 1928, Šćur 1961, Birkmann 1987). First, there are only a few cases where syntactic umlaut is reported in the manuscripts. This is of course true, but it does not necessarily speak against Behaghel's theory. It is clear that an allophonic variation like umlaut was reflected only sporadically in writing (at least until it became morphologized or lexicalized, cf. Fertig 1996 for a recent discussion of the question of orthography and umlaut). Probably, those cases where umlauted forms occurred in contexts wider than a lexical unit were even more sporadically reflected. Only at a later stage, when these umlauted forms had slowly been morphologized as signals of this specific conjugational class, do we find a regular notation of the umlauted vowels. On the contrary, since umlaut lost phonetic motivation in the course of the OHG period, those cases where umlauted vowels emerged such as the examples in (6) disappeared completely. But I will return to this point later. Second, as observed by Birkmann (1987:195), this

²According to Braune/Eggers (1987:282), the form of 1.sg.pret.ind. *gafregin* is the only OHG attestation for an old Germanic strong verb **fregnan* 'to ask' (cf. Goth. *fraibnan*, OS *fregnan*, OE *friřnan*), which was reshaped in OHG according to the OE pret.ind. *zefræzen*, *zefrezen*. Behaghel's analysis is simpler in that it assumes that this is the umlauted pret.ind. form of the more common weak verb *fragen*.

"phonological" explanation does not make clear the already mentioned case of over-extension of umlaut in the OIc. forms *má/megu*. In OIc., umlaut could not arise as a consequence of a phonologically conditioned process since OIc. clitic pronouns did not display umlaut-triggering high front vowels (cf. *vér, pér, þeir, þau*). Third, and crucially, Brenner/Behaghel's explanation does not make clear why umlaut occurs only in the pl.pres.ind. and in the inf., and not, let us say, in the sg.pres.ind., where it is also attested (cf. in (6) *meg ih*).

Another - very tricky - proposal to explain the extension of umlaut in pl.pres.ind. of P-Ps comes from Fiedler (1928). In his view, the umlaut has been extended to the pl.pres.ind. of P-Ps on the basis of an analogical matching with the inflectional class of verbs displaying the so-called *Rückumlaut* (cf. Vennemann 1986, Ronneberger-Sibold 1990). The latter is an instance of rule inversion (cf. Vennemann 1972), in which a generalization of the inverse rule has taken place on the basis of the occurrence of the sound alternation in a secondary semantic category (cf. Vennemann 1974:139). In the OHG period, as a consequence of the loss of phonetic motivation for the umlaut rule, the following verbal paradigms emerged:

(9)	brennen	brannte	gebrannt	"to burn"
	senden	sandte	gesandt	"to send"

This alternation concerned verbs of the *jan* class (cf. **brannjan, *sandjan*), which displayed, at least historically, particular phonological properties. Here, a rule of Syncope deleted the *-j-* in a light syllable between a primary-stressed heavy syllable and a secondary-stressed one, but the same did not happen to the glide of the infinitive (cf. **brannjan*, vs. **brannða*). The rule of umlaut must be ordered after the Syncope rule in order to provide the correct form (cf. Vennemann 1986 for details). Interestingly, *Rückumlaut* was extended analogically in the MHG period to some other verbs:

(10)		*andi-ō-n "to end"	*andi-ō-ta "ended"
	OHG	entiōn	entiōta
	MHG	enden	endete, ante

In the form *ante*, the same alternation occurs as in *senden - sandte*. Vennemann speaks in this instance of rule inversion. Where originally the phonological rule of umlaut caused sound alternation within the verbal paradigm, a restructuring that has inverted the interpretation of the surface forms has taken place. The real change is assumed to occur in the preterite form - a secondary semantic category with respect to the present tense - which now alternates with the present on the basis of the well attested model *senden - sandte*. Thus, the *Rückumlaut* has given rise to extensions on the basis of the following four-part analogy:

(11)	senden : sandte =	enden : X (ante)

According to Fiedler's explanation, the presence of umlauted forms in the plural present of modals is due to the action of an analogical extension of the *Rückumlaut* to this verbal class. In his idea, the extension of umlaut to the P-Ps has taken place on the model of the *Rückumlaut* following the four-part analogy:

(12)	legen : lahte =	X (megen) : mahte

Notice that *legen/labte* is the result of an analogical extension of *Rückumlaut* on the basis of the model seen in (11) above (cf. Paul/Wiehl/Grosse 1989:257). However, the theory is unconvincing in my opinion because the analogical reinterpretation must have taken place inversely with respect to its normal behaviour. As we have seen above, the (semantically) secondary forms of the past are usually remade on the basis of the inverted rule, and not viceversa. If we agree

with Fiedler's explanation, we must assume that the analogical conditioning has operated in the opposite way as it normally did *ad hoc* for this verbal class.³

The last proposal we will discuss in this section comes from McLintock (1961), who similarly assumes that an analogical extension of umlaut to the pl.pres.ind. of P-Ps has taken place. However, McLintock imagines a different model for the four-part analogy. The latter is provided by those inflectional classes in which the stem vowel is identical both in pres.ind. and in the pres.subj. (as in the pres.ind. *sie grīfent*, *habēnt* vs. the pres.subj. *grīfēn*, *habēn*, see (26) below); and particularly by verbs displaying *-ū-* as a stem vowel:

(13) füllent : füllēn = X (kūnnen) : kūnnen

However, this proposal presents more problems than advantages. First, the other inflectional classes display different suffixes in the pres.ind. with respect to the pres.subj. (cf. ind. *-ent* vs. subj. *-ēn*), whereas P-Ps are characterized by identical suffixes for ind. and subj. If the four-part analogy were the one represented in (13), one wonders why the suffix *-ent* of the other inflectional classes has not been extended to the P-Ps too. Second, as observed by Lühr (1987:266), this hypothesis does not explain why the four-part analogy concerned only the pl.pres.ind., keeping the sg.pres.ind. unaltered.

2.1 Birkmann (1987): the role of system economy

In the following sections, I will discuss two recent proposals that appeared in the same year, apparently unbeknownst to the respective authors, Birkmann (1987) and Lühr (1987). In his impressive book about P-Ps in the Germanic languages, Birkmann (1987) devotes only a small section to the problem of umlaut in the German modals. He first observes that the linguistic changes described in §1 determined the neutralization of verbal endings in MHG, which became unable to signal the opposition of mood. As a consequence, the latter was carried over, where possible, by the stem vowel alternation. In his words, "die Modus-Opposition ist am stärksten bedroht bei den schwachen Verben, am besten erhalten ist sie bei den Prät.Präs. und im Prät. der starken Verben" (Birkmann 1987:196-7). In the following table, the 1.ps.pl. of all tenses and moods of the different inflectional classes are given:

(14)

	pres.ind.	pres.subj.	pret.ind.	pret.subj.
P-Ps	turren	türren	torste	törste
strong verbs	nemen	nemen	namen	næmen
weak verbs	suochen	suochen	suochten	suochten

The language 'reacted' against this situation, in Birkmann's opinion, in two ways. On the one hand, the modals were employed instead of the subj., presumably because they "erstens aufgrund ihrer Semantik dafür prädestiniert sind, zweitens aber auch gerade die Modus-Opposition in ihren Formen zum Ausdruck bringen können" (Birkmann 1987:197). In this respect, examples can be quoted in which the subj., respectively pres. and pret., of a modal verb replaces the subj. of a full verb:⁴

- (15) i. der heilige engel muoze din gewerte sin
unde geleite dich here widere gesunt (*Rolanslied* 1553f)
- ii. wie kunde das ergân, daz ich dich minnen solde? (*Nibelungenlied* 285, 1)

³Less convincing is Birkmann's (1987:195) objection to Fiedler's explanation that "offensichtlich eher das Merkmal '+ Umlaut' generalisiert wird und nicht ein bestimmter Präs-Vokalismus: zu *suln/sûln* gibt es die Varianten *soln/söln* und bei *müezen* liegt ein völlig anderer Vokalismus vor als bei den rückumlautenden Verben. Man müßte also Einzelanalogien statt einer Gruppenanalogie annehmen, die dann jeweils auch einzeln motiviert werden müßten". If it is true that an analogical model for *müezen* was not present among *Rückumlaut* verbs, it is, however, not difficult to extract from the four-part analogy seen in (11) above a hypothetical feature [+umlaut], able to trigger the "group analogy".

⁴From the fifteenth century on, the so-called *würde*-form will assume the role of expressing the subj. of a full verb, as is now the case in NHG.

The second way to express the mood opposition was the use of pret.subj. forms instead of the pres.subj., which presumably "läßt sich wie die Bildung von umschriebenen Formen aus dem drohenden Verlust der Modus-Opposition erklären" (Birkmann 1987:197). In fact, the neutralization of tense in the subj. is a rather old phenomenon; presumably, it first took place in contexts of dubitative or potential meaning, in which "Der sogenannte Konjunktiv Präteriti bezeichnete eine größere Entfernung von der Wirklichkeit als die Präsensform" (Dal 1966:137). Independent of the questions connected with the origin and the causes of the tense neutralization in the subj., it clearly brought about that

"kann eine ehemalige Konj.Prät.-Form in Opposition zu Ind.Präs. treten und hier eindeutig Konj. signalisieren, was die alte Konj.Präs.-Form nicht mehr zu leisten imstande war; *ich heize* (Ind.) ist nicht mehr von *ich heize* (Konj.), wohl aber von *ich hieze* unterscheidbar" (Kern & Zutt 1977:57).

According to Birkmann, this development, which thus concerned the whole verbal system, determined the extension of umlaut to the pl.pres.ind. of the modals, in spite of the fact that the latter preserved a mood opposition between ind. and subj. by means of umlaut. Let us follow Birkmann's argument with his own words (1987:198):

"Wenn man nun annimmt, daß die ursprünglichen Prät.-Formen die ursprünglichen Präs.-Formen in dieser Funktion verdrängten, dann waren diese frei und konnten als Ind.-Formen interpretiert werden".

In his view, the change took place as sketched in the following table (cf. Birkmann 1987:198):

(16)	pres.ind. <i>kunnen</i>	pres.subj. <i>künnen</i>	pret.ind. <i>kunden</i>	pret.subj. <i>künden</i>
		<i>künnen/künden</i>	←	←
	<i>kunnen/künnen</i>	←		

Thus, the extension of umlaut to the pl.pres.ind. of P-Ps happened as a consequence of a slot-exchange of the structuralist type. The functionally non-distinctive form is free to occupy the contiguous slot, replacing the already present one. In our case, the pres.subj. form, undermined by the pret.subj. form, was functionally free to occupy the place of the pres.ind. The linguistic change is therefore explained in terms of chain shifts (cf. Hock 1986:156ff.). Notice that Birkmann considers his explanation to be morphologically grounded, since it is crucially based on the functional space occupied by morphemes. In addition, he admits that other two factors might have played a role:

- (17) i. "dabei könnte das Muster der rückumlautenden Verben eine Rolle gespielt haben" (Birkmann 1987:198);
- ii. "für die Uminterpretation war sicher auch die Semantik der Modalverben von großer Bedeutung" (*ibid.*).

Finally, Birkmann assumes that this process is still going on in NHG, since the pret.subj. is now occupying the place of the pres.ind. (i.e. of the allegedly earlier pres.subj.), as in the case of *möchten* with respect to *mögen*.

Several objections, however, can be made against this explanation. First, as shown in §2 above, the phenomenon of *Rückumlaut* (cf. (17i)) cannot be claimed to be available as a model for analogical changes. The second objection is related to a more general question. The explanatory power of chain shifts has intrinsic limits, since the linguistic change is explained in purely structural and intra-systemic terms, without making reference to more general notions such as markedness or frequency. Thus, an explanation in terms of push chain, in which the pres.subj. is pushed towards the slot of the pres.ind. by the pret.subj., is very unsatisfactory.⁵ In fact, in the absence of other reasons, it is counter-intuitive to assume that a less frequent form such as the pres.subj., once becoming functionally empty, would have occupied the place of the much more frequent pres.ind., as already observed by Behaghel (1928), cf. §2 above. It is more likely that the rare pres.subj. would have disappeared from the system.

⁵Notice, moreover, that Hock (1986:157) observes that "There is some controversy as to whether beside drag chains, there can also be **push chains**. ... The major difficulty with the notion 'push chain', and the reason for its controversial nature is the following: Drag chains are supported by a good deal of empirical evidence, in terms of observable sequences of events. But no such empirical support seems to exist for push chains".

On the other hand, if an explanation in terms of a drag chain is assumed, then the pret.subj. first occupied the place of the pres.ind. for semantic reasons (cf. (17ii) above). As a consequence, the place of the pres.subj. could have been occupied by the pret.subj. From this second point of view, the crucial factor triggering the change was the markedness reversal observed in the case of modals, in which the subj. seems to be semantically less (or equally) marked with respect to the ind. Under this assumption, the real motivation of the change was not a general phenomenon (i.e. the general employment of the pret.subj. to convey *irrealis* modality), as claimed by Birkmann, but a very specific one, namely the markedness reversal displayed by modals. At a closer look, the chain shift model adopted by Birkmann is spurious. The machinery is claimed to function in terms of a push chain, which should assure the morphological motivation for the change. Nevertheless, the markedness reversal between ind. and subj. typical of modals constitutes the spur for the pres.subj. to occupy the functional space of the pres.ind., which points to a semantically motivated drag chain change, as in the case of NHG *mögen/möchten*.

In this light, it seems that Birkmann has defined his explanation too quickly as morphologically grounded. In fact, the real motivation for the change was, under his assumptions, the markedness reversal typical of modals. This is the only way to make clear why the pres.subj. did not disappear from the system, but rather was successful in occupying the privileged place. Finally, the explanation provided by Birkmann fails to answer a crucial question: If the push-drag chain explanation is correct, why did the change concern only the pl.pres.ind.? In the case recalled above of NHG *mögen/möchten*, the pret.subj. is replacing the pres.ind. in all persons, not merely in the pl. Thus, if Birkmann's approach is able to highlight the role of the markedness reversal typical of modals in favouring the change, his structural explanation does not make clear why the change happened in the way it did. In other words, we have to study all conditions of the system to grasp its dynamics. Birkmann's approach shares the synchronistic shortcomings of classical structuralist linguistics, since it projects the linguistic change onto homogeneous stages, in which we can discretely measure the evolution from one stage to the following. Quite correctly, Lühr (1987) has stressed the chronological differences in the documentation of the umlaut among the several P-Ps; some of them do seem to have undergone the change first. Omitting these relevant data has the consequence of obscuring the teleology of the change, which led Birkmann (1987:219) to conclude that

"Wenn man das Eindringen der umgelauteten Formen in den Pl.Präs.Ind. als morphologisch motiviert betrachtet, ... dann liegt hier einer der seltenen Fälle vor, in denen durch morphologischen Wandel morphologische Irregularität aufgebaut wird - aus der Sicht des Gesamtverbsystems".

2.2 Lühr (1987): the role of semantics in local analogy

Lühr's (1987) analysis follows a rather different line of argumentation with respect to the ones already discussed. The main concern of her analysis is to make clear which P-Ps first underwent the umlaut extension on the basis of historical documentation. In this respect, she observes that the first verb displaying any change is *mögen*, OHG *magan*. Interestingly, this verb underwent two different kinds of analogical change. On the one hand, *magan* was reshaped as *mugun*, with a high back vowel, in the ninth century in Franconian (Tatian, Otfrid), then in Alemannic (about tenth-eleventh century, Notker) and in Bavarian (twelfth century). The formal model for this analogical change was provided by the P-Ps of the third and fourth apophonic classes (containing verbs like *kunnan* and *sculan*, see (29) below), which also constituted the absolute majority of the P-Ps:

(18) scal : sculun = mag : X (mugun)

In Lühr's view, the four-part analogy does not constitute in itself a crucial factor for the linguistic change to take place. In a process of analogical extension, other kind of similarities and overlappings of syntactic and semantic nature are equally relevant. In this respect, the major syntactic similarity is obviously the fact that most of the P-Ps were modals, i.e., they governed a bare infinitive. From a semantic point of view, Lühr observes that *sculan*⁶ and *magan* overlapped when used as a replacement of the subj. in main sentences (cf., e.g., (15) above) to convey wish or exhortation, as in the following examples (cf. Lühr 1987:268):

⁶According to Lühr (1987:267), the possible model for analogical changes in OHG could only have been *sculan*, not *kunnan*. "weil die älteste althochdeutsche Quelle die *mugun*-Formen aufweist, der Tatian kein *kan*, *kunnun* kennt und auch für Otfrid nur 5 *kan*-Belege nachzuweisen sind".

On the other hand, if an explanation in terms of a drag chain is assumed, then the pret.subj. first occupied the place of the pres.ind. for semantic reasons (cf. (17ii) above). As a consequence, the place of the pres.subj. could have been occupied by the pret.subj. From this second point of view, the crucial factor triggering the change was the markedness reversal observed in the case of modals, in which the subj. seems to be semantically less (or equally) marked with respect to the ind. Under this assumption, the real motivation of the change was not a general phenomenon (i.e. the general employment of the pret.subj. to convey *irrealis* modality), as claimed by Birkmann, but a very specific one, namely the markedness reversal displayed by modals. At a closer look, the chain shift model adopted by Birkmann is spurious. The machinery is claimed to function in terms of a push chain, which should assure the morphological motivation for the change. Nevertheless, the markedness reversal between ind. and subj. typical of modals constitutes the spur for the pres.subj. to occupy the functional space of the pres.ind., which points to a semantically motivated drag chain change, as in the case of NHG *mögen/möchten*.

In this light, it seems that Birkmann has defined his explanation too quickly as morphologically grounded. In fact, the real motivation for the change was, under his assumptions, the markedness reversal typical of modals. This is the only way to make clear why the pres.subj. did not disappear from the system, but rather was successful in occupying the privileged place. Finally, the explanation provided by Birkmann fails to answer a crucial question: If the push-drag chain explanation is correct, why did the change concern only the pl.pres.ind.? In the case recalled above of NHG *mögen/möchten*, the pret.subj. is replacing the pres.ind. in all persons, not merely in the pl. Thus, if Birkmann's approach is able to highlight the role of the markedness reversal typical of modals in favouring the change, his structural explanation does not make clear why the change happened in the way it did. In other words, we have to study all conditions of the system to grasp its dynamics. Birkmann's approach shares the synchronistic shortcomings of classical structuralist linguistics, since it projects the linguistic change onto homogeneous stages, in which we can discretely measure the evolution from one stage to the following. Quite correctly, Lühr (1987) has stressed the chronological differences in the documentation of the umlaut among the several P-Ps; some of them do seem to have undergone the change first. Omitting these relevant data has the consequence of obscuring the teleology of the change, which led Birkmann (1987:219) to conclude that

"Wenn man das Eindringen der umgelauteten Formen in den Pl.Präs.Ind. als morphologisch motiviert betrachtet, ... dann liegt hier einer der seltenen Fälle vor, in denen durch morphologischen Wandel morphologische Irregularität aufgebaut wird - aus der Sicht des Gesamtverbssystems".

2.2 Lühr (1987): the role of semantics in local analogy

Lühr's (1987) analysis follows a rather different line of argumentation with respect to the ones already discussed. The main concern of her analysis is to make clear which P-Ps first underwent the umlaut extension on the basis of historical documentation. In this respect, she observes that the first verb displaying any change is *mögen*, OHG *magan*. Interestingly, this verb underwent two different kinds of analogical change. On the one hand, *magan* was reshaped as *mugun*, with a high back vowel, in the ninth century in Franconian (Tatian, Otfrid), then in Alemannic (about tenth-eleventh century, Notker) and in Bavarian (twelfth century). The formal model for this analogical change was provided by the P-Ps of the third and fourth apophonic classes (containing verbs like *kunnan* and *sculan*, see (29) below), which also constituted the absolute majority of the P-Ps:

(18) scal : sculun = mag : X (mugun)

In Lühr's view, the four-part analogy does not constitute in itself a crucial factor for the linguistic change to take place. In a process of analogical extension, other kind of similarities and overlappings of syntactic and semantic nature are equally relevant. In this respect, the major syntactic similarity is obviously the fact that most of the P-Ps were modals, i.e., they governed a bare infinitive. From a semantic point of view, Lühr observes that *sculan*⁶ and *magan* overlapped when used as a replacement of the subj. in main sentences (cf., e.g., (15) above) to convey wish or exhortation, as in the following examples (cf. Lühr 1987:268):

⁶According to Lühr (1987:267), the possible model for analogical changes in OHG could only have been *sculan*, not *kunnan*. "weil die älteste althochdeutsche Quelle die *mugun*-Formen aufweist, der Tatian kein *kan*, *kunnun* kennt und auch für Otfrid nur 5 *kan*-Belege nachzuweisen sind".

- (19) i. *queman mág uns thaz in múat!* (*Otfrid V,19,36*)
 ii. *druhtin hóhe mo thaz gúat joh frewe mo émmizen thaz múat* (*ad Ludowicum 6*)
 iii. *thes scal er góte thankon* (*ad Lud. 25*)
 iv. *thes thánke ouh sin githígini* (*ad Lud. 26*)

A second point of semantic overlapping concerned the possible use of *sculan* and *magan* to convey future meaning (cf. Lühr 1987:271):

- (20) i. *War múgun wir nu bigínnan, mit kóufu brót giwinnan* (*Otf. III,6,17*)
 (*cf. Job. 6,5 unde ememus panem*)
 ii. *thu bist fórsago sín, / thu scalt drúhtine rihten wéga sine* (*Otf. I,10,19f.*)
 (*cf. Luc. 1,76 praeibis enim ante faciem domini parare vias eius*)

On the basis of these similarities and overlappings, it is thus correct, according to Lühr, to establish the four-part analogy seen in (18) above. Therefore, her methodology is based on the fact that

"es bei der analogischen Umbildung von Modalverben auf Übereinstimmungen in den Bedeutungsmerkmalen ankommt. Nebenbedeutungen eines Modalverbs, die mit den Bedeutungen eines anderen Modalverbs übereinstimmen, können der Anlaß für eine Umgestaltung nach diesem Verb gewesen sein" (Lühr 1987:271-2).

The verb *magan* underwent a second analogical change attested from the twelfth century on in the Bavarian area: the umlauted form (*sie*) *megen*. In Lühr's reconstruction, the model for the analogical extension was provided in this case by *wellen*, which presented a phonologically motivated umlaut (i.e. **waljan* > *wellen*, cf. Braune/Eggers 1987:307, and (31) below). Thus, the proportional analogy was as follows:

- (21) will : wellen = mag : X (megen)

With respect to the four-part analogy seen in (18) above, however, the formal matching between the model and the outcome is not complete (I will return to this point later). Besides the formal matching, Lühr highlights the semantic overlappings between the two verbs that made the analogy possible. *Magan* and *wellen* shared the same semantic overlappings seen above, i.e., the usage as a substitute of the subj., the exhortative and the future meaning. Moreover, they shared the meaning 'will, wish' as in the following sentence, in which they occur close to each other:

- (22) hinder iu wil ih niht bestân:
 sît ir ze rîten gerne get,
 sô mac ich daz niht lâzen
 ich wil mit iu rîten ûf die strâzen (*Rabenschlacht I,350*)

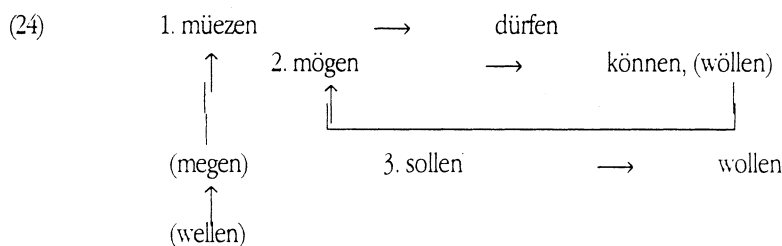
In Lühr's view, this sentence shows both hints: *magan* denotes here both 'can, to be able to' and 'will'. The meaning shift is illustrated in the following way (I report the whole passage, because it is very telling about her line of argumentation):

"'Ich bin zwar befähigt zu einer Tätigkeit, aber es steht in meiner Hand, ob ich die Tätigkeit aus der Möglichkeit in die Wirklichkeit will übergehen lassen'. Der Bedeutungswandel von 'können' zu 'wollen' dürfte sich mithin in der 1. Person vollzogen haben und die Bedeutung 'wollen' dann auf die anderen Personen übertragen worden sein" (Lühr 1987:274).

In this respect, she quotes as an example a 1.pres.ind.pl. form *megen* displaying exhortative meaning that can also be classified under the column 'will, wish':

- (23) Der jude sprach dô:
 nû megen wir iemer wesen frô.
 daz paradise ist uns allen ûf getan,
 nû megen wir sanfte dar in varn (*Kaiserchronik* 9458ff.)

These points of semantic overlapping seem to Lühr sufficient to give rise to the analogical extension *wellen* → *megen*. Moreover, it is important to recall that the other verb, which first underwent analogical extension of umlaut, was *muozan* → *müezen*, already attested in the second half of twelfth century in the Bavarian area, and displaying, according to Lühr, semantic overlappings with respect to *megen*. Lühr applies this approach to all P-Ps. As a consequence of successive analogical extensions, triggered by similar semantic overlappings, the umlaut was extended to all modals in the following way (cf. Lühr 1987:289):



The further steps in this schema represent successive developments determined by phonological change and extended analogically to other modals. In particular, at the second step, *megen/mügen* became *mögen* under the analogical influence of *wellen*, which in turn had become *wöllen* due to phonological change. Successively, *mögen* influenced the change *künnen* → *können*. Finally, at the third step, the form *sollen* (remade on the basis of the pret. *solte*) determined the analogical change *wöllen* → *wollen*.

However philologically well documented this explanation may be, it is in my opinion unconvincing. From a general point of view, Lühr's approach relies too much on the notion of local analogy, without systematicity. As a consequence, the use of analogy appears arbitrary in many cases, because changes are supposed to have taken place only on the basis of semantic overlappings, driven by textual contiguity. However, with respect to previous analyses, she tries to give an answer to the question why umlaut is only found in the pl.pres.ind. Once more, the explanation is in terms of local analogy. Since *wellen* (< **waljan*) displayed umlaut only in the pl.pres.ind., the latter could be extended to *magan*. Nonetheless, this explanation raises more questions than it can answer. In fact, one wonders what is actually the object of analogy. Lühr is not very explicit on this point, but we can conceive of two alternatives:

- (25) i. *-j-* from **waljan* was analogically extended to *magan*, giving **magjan* > *megen*;
 ii. *magun* became *megen* on the basis of the direct (local) model of *wellen*.

According to (25i), we have to assume intermediate forms like **magjan* and **muozjan*, which seem rather improbable, given the late documentation of the phenomenon, and, above all, the fact that the only attested OHG form is *wellen* with final vowel weakening. According to (25ii), the object of analogy would have been the (almost completely morphologized) morphophonological alternation *-i-* [-umlaut] / *-e-* [+umlaut] in *wil/wellen*. This alternation is claimed to have been extended, following the proportional analogy represented in (21) above, first to *mag/megen*, and hence to *muoz/müezen*. In my opinion, there is strong counter-evidence against this hypothesis. The morphophonological - thus only partially/no more phonologically motivated - alternation is anything but salient in the model verb *wellen*. In fact, it appeared only in the case of strong verbs like *helfen* - *hilfst* - *hilft*, where, however, it concerned vowel alternation in the sing.pres.ind., not in the pl.pres.ind. (cf. Bittner 1996:75ff.). Moreover, the four-part analogy of (21) is imperfect, because the inflectional paradigms to which *magan* and *wellen* belonged in MHG were different. In fact, the pl.pres.ind. of *wellen* presented different suffixes with respect to *magan* (cf. *sie wellent* vs. *megen*). Thus, one wonders why the object of analogy

has only been the less salient umlaut and not a form like *wellent*, or why the whole paradigm of *magan* has not been completely remade as **mig/megen* on the basis of *wil/wellen*. As a matter of fact, Lühr's analysis is very approximate with respect to the plausibility of the change in paradigmatic terms. If my reconstruction is correct, her idea is that the analogical extension was strictly local (i.e. syntagmatic) and concerned the pl. (or even the 1.ps.pres.ind., as observed by the author) of *wellen* and *magan*. Once *megen* came up as a mistake, i.e. as an analogical extension, it was immediately reanalyzed as an umlauted form with respect to the sing.pres.ind. *mag*; hence it was successively extended to *müezen de dicto*, i.e., as a paradigmatic alternation of umlaut, not *de re*, i.e., as a phonetic form *-e-*, erroneously created owing to the textual (and semantic) contiguity of *megen* and *wellen*. Thus, Lühr's line of argumentation is very complex. She is forced to make rather strong (and arbitrary) assumptions both about the role of analogy, which is merely seen in terms of syntagmatic erroneous over-extension, and about the speaker, who must operate a very complex - and implausible - process of reanalysis on the basis of a not very salient model.

2.3 Summary

Let us sum up all suggestions gathered until now. First, it has been observed that P-Ps are a particular inflectional class. As such, they display a very specific inflectional paradigm, which separates them from other verb classes. Second, the absolute majority of P-Ps are modal verbs, which constitute a morpho-semantic field (cf. Ramat 1971) with particular properties. For example, we have seen above that modal verbs can be used as a substitute of the subj. of other verbs (cf. (15) above). Moreover, they often conveyed exhortative, desiderative or future meaning, denoting *irrealis* modality in spite of the ind. morphological mood (cf. respectively (19i-ii), (19iii-iv) and (23), and (20) above). In other words, we observe, in the case of modal verbs, a markedness reversal (cf. Mayerthaler 1981) with respect to the normal markedness values occurring in the ind. mood (*realis* modality, unmarked) and in the subj. mood (*irrealis* modality, marked). Because of their modal character, the markedness values can be obliterated (as in the frequent usage of the ind. with exhortative meaning) or even reversed (as in the usage of modals in the place of the subj. of other "full" verbs). From this point of view, Behaghel's (1928) claim reported in §2 above appears too strong. Since modal verbs display reversed values with respect to the normal markedness relations, interferences between the usually marked class, i.e., the subj., and the usually unmarked class, i.e., the ind., are to be expected⁷ (cf. Plank 1984, Wurzel 1984b:634, Bittner 1996:106).

Moreover, we have seen that the analogical extension of umlaut first concerned the pl.pres.ind. of the verbs *mögen* and *müssen*, whence it passed to the whole group. *Mögen* underwent more than one analogical change, giving different results with respect to the inherited Germanic form (cf. *magun* > *mugen/megen*). Finally, we have seen that the phonological rule of umlaut was, at least in OHG times, extremely pervasive, since it concerned not only lexical units, but even phonological words (cf. (6) and (7) above). Of course, the allophonic neutralizations occurring in external sandhi were - as is often the case⁸ - only sporadically reported in writing; moreover, it definitely disappeared once that the phonological process of umlaut was morphologized/lexicalized. Nonetheless, on the basis of the available documentation, which actually involves modal verbs (cf. *meg iz*, etc., in (6) above), we can be sure that the process of umlaut was very widespread, determining a high number of neutralizations in domains wider than the lexical unit. This is obviously not enough to explain the presence of the umlaut in the modal verbs, as assumed by Brenner (1895) and Behaghel (1928). In fact, it is not clear in their explanation why the umlaut, which determined neutralizations, i.e. fronting of back vowels in all cases where postponed clitics occurred, was only preserved in the pl.pres.ind. of P-Ps (cf. Fiedler 1928 for similar objections). With these observations in mind, I will try in what follows to provide a homogeneous picture of the development of this verbal class from OHG to MHG.

⁷Behaghel's claim appears too strong also in the light of the more general unpredictability of language change, as shown in the case of the Italian 1.ps.pl.pres.ind. *-iamo* (cf. *lod-are/lod-iamo*, *tem-ere/tem-iamo*, etc.), which originally was a subj. suffix (< Lat. *laud-eāmus*, *tim-eāmus*, etc.), and was then extended to the pres.ind. of all inflectional classes (cf. Vincent 1980).

⁸Phonological processes involving domains wider than the lexical unit are usually not reported in writing, presumably because they do not give rise to paradigmatic alternations, given their syntagmatic character. A good example is provided by the well-known phenomenon of *Raddoppiamento sintattico* ('syntactic doubling', cf. Loporcaro 1997) occurring in Italian. Although the *Raddoppiamento sintattico* originally arose as a consequence of an assimilation rule concerning morpheme-ending obstruents (cf. It. *a [r:]oma* < Lat. *ad Romam*) and is still found both in internal (*cosiddetto* 'so-called', *caffettino* 'coffee-DIM', etc.) and in external sandhi (cf. *così [d:]ice*, *caffè [b:]ollente*), only the first case is reported in writing.

3. The system of P-Ps in the history of German

Let us now turn our attention to the class of P-Ps, only roughly sketched in the preceding sections. I have already mentioned that P-Ps first originated in the Indo-European mother tongue. In particular, the oldest representative of the class, which constituted the model for forming the other P-Ps (cf. Meid 1971:18ff.) and can be considered the inflectional model for the whole class, is - quite paradoxically - the only non-modal P-P in NHG, i.e., *wissen*. It corresponds to OGr. *oīda*, in which, as seen in §1, an originary form of perfect has acquired present meaning. The preterite form of *wissen* has been reshaped on the model of the most productive inflectional class of German verbs, i.e., the so-called weak verbs, taking accordingly a dental suffix. Let us take a look at the complete OHG paradigm (cf. Birkmann 1987:131):

(26)

		P-Ps	strong verbs	weak verbs
infinitive		wizzan	grīfan	habēn
pres.ind.	1.sg.	weiz	grīfu	habēm
	2.	weist	grīfis(t)	habēs(t)
	3.	weiz	grīfit	habēt
	1.pl.	wizzun (-umēs)	grīfen (-emēs)	habēn (-emēs)
	2.	wizzut	grīfet	habēt
	3.	wizzun	grīfent	habēnt
pres.subj.	1.sg.	wizzi	grīfe	habe
	2.	wizzīs(t)	grīfes(t)	habēs(t)
	3.	wizzi	grīfe	habe
	1.pl.	wizzīn	grīfēn	habēn
	2.	wizzīt	grīfēt	habēt
	3.	wizzīn	grīfēn	habēn
pret.ind.	1.sg.	westa/wessa	greif	habēta
	2.	westōs(t)/wessōs(t)	grife	habētōs(t)
	3.	westa/wessa	greif	habēta
	1.pl.	westun/wessun	grifun	habētun
	2.	westut/wessut	grifut	habētut
	3.	westun/wessun	grifun	habētun
pret.subj.	1.sg.	westi/wessi	grifi	habēti
	2.	westīs(t)/wessīs(t)	grifis	habēfīs(t)
	3.	westi/wessi	grifi	habēti
	1.pl.	westīn/wessīn	grifīn	habēfīn
	2.	wessīt/wessīt	grifit	habēfīt
	3.	westīn/wessīn	grifīn	habēfīn
pres.part.		wizzanti	grīfanti	habenti
pret.part.		giwizzan	gigrifan	gihabet

On the basis of *wizzan*, and paying attention to the other inflectional classes of OHG verbs, let us try to determine the morphological characteristics of P-Ps in OHG. They can be grouped in the following Paradigm-Structure Conditions (= PSCs, cf. Wurzel 1984a), which keep P-Ps distinct from the other verbal classes:⁹

- (27)
- i. 1.ps.sg.pres.ind. = 3.ps.sg.pres.ind. = -∅-suffix
(similar to the pret.ind. of strong verbs);
 - ii. 2.ps.sg.pres.ind. suffix -t;
 - iii. vowel alternation between the sg. and the pl.pres.ind. -ei-/i-

⁹Although PSCs are usually organized in an implicational/hierarchical order within the framework of Natural Morphology (cf. Wurzel 1984a, 1987). I will loosely list them in a rather informal way, without attempting to provide a deeper insight into the possible (inner) structure of the OHG verbal paradigms. However, in (38) below, Bittner's (1996) analysis is reported, which should - at least for NHG - supply this lacuna.

- (similar to the pret.ind. of strong verbs, cf. *greif/grif*);
- iv. 1.ps.pl. = 3.ps.pl. = *-n* in all tenses and moods
(in the other classes, a pres.ind. suffix *-nt* is opposed to *-n*);
- v. pres. and pret.subj. suffix *-i-*
(similar to the pret.subj. of strong verbs);
- vi. pl.pres.ind. stem = pret. stem.

Although similarities may exist with respect to the other inflectional classes, and particularly the strong verbs, the whole set of properties is organized in a rather specific way. In other words, P-Ps constitute a specific micro-class of the OHG verbal system. Moreover, it must be added that *wizzan* has developed pret. forms by means of the dental suffix typical of weak verbs. As is well known (cf. Bittner 1996), the latter have been and still are the most productive inflectional class of German verbs. However, alongside the new dental form *westa*, the old form *wessa* is still documented (cf. Braune/Eggers 1987:300). The forms *westa* and *wessa*, which alternated in OHG with the original *wista, wissa*, are the result of a phonological process of lowering that affected /i, u/ when followed by /a, e, o/ (cf. Metke 1989: 57), particularly in the central dialects (cf. Braune/Eggers 1987:56). This phonological process, which was blocked by the presence of an intervening /n/, is represented in (28), with adequate exemplification:

- (28) i. $V \rightarrow [-\text{high}] / __ \begin{bmatrix} + \text{consonant} \\ - \text{coronal} \\ - \text{nasal} \end{bmatrix} \begin{bmatrix} - \text{consonant} \\ - \text{high} \end{bmatrix}$
- ii. *wulfaz > *wolfaz > OHG, MHG wolf
*numanaz > OHG ginoman, MHG ginomen
*furhta > OHG forahtha, MHG vorhte vs. *furhtjan > OHG furihtan, MHG fürhten

As a consequence of this phonological change, the PSC represented in (27vi) is rather obscured in OHG, being clearly visible only in the case of *magan ~ mahtha, muozan ~ muosta*.

Once the PSCs of P-Ps have been set up on the basis of the model *wizzan*, let us look at the whole class, as documented in OHG times. Notice first that the number of verbs belonging to the class of OHG P-Ps is bigger than those reported in (1) for NHG. Moreover, while NHG P-Ps are virtually all modal verbs, with the only remarkable exception of *wissen*, the OHG class of P-Ps also contained a number of non-modal verbs (cf. *torran, tugan, unnan*, and - only partially attested - *ginah* and *eigun*). Moreover, not every modal verb belonged to the class of P-Ps: the exception is represented by OHG *wellen*, which displayed particular characteristics. However, in what follows, *wellen* will be treated together with the P-Ps, in order to investigate its role and its diachronic evolution with respect to the other modals. (29) reports the whole set of OHG P-Ps, distributed according to the original apophonic classes (so-called *Ablautreihen*) to which they belonged in Proto-Germanic (cf. Braune/Eggers 1987:299ff.):

(29)

<i>Ablautr.</i>	infinitive	pres.ind.sg./pl.	pret.ind.	past part.	meaning
I.	1. wizzan	weiz/wizzun	wissa/wessa	giwizzan	'to know'
	2. -	eigun (cf. <i>Goth. aih</i>)	-	eigan (<i>adj.</i>)	'we own'
II.	3. -	toug/tugun	tohta	-	'it helps'
III.	4. unnan gi-unnan	an/unnun gian/gunnun	onda gionsta (gunde)	-	'to grant'
	5. kunnan	kan/kunnun	konda (kunda)	-	'to understand, can'
	6. durfan	darf/durfun	dorfta	-	'to need'
	7. -	gitar/giturrun	gitorsta	gitorran	'to dare'
IV.	8. scolan/sculan	scal/sculun	scolta	-	'to have to'
	9. -	ginah	-	-	'it is enough'
V.	10. magan mugan	mag/magun mugun	mahta mohta	-	'to be able to, can'
VI.	11. muozan	muoz/muozun	muosa (<i>later</i> muosta)	-	'to have the possibility, may'

With respect to the system of P-Ps as documented for Goth. (cf. Birkmann 1987:91ff.), the linguistic change has operated in the direction of reducing the number of inflectional properties that did not correspond to those seen above in (26) for *wizzan* and represented in the PSCs in (27). In particular, in Goth. a P-P *ōg/ōgun/ōhta* 'to fear' is attested, which belonged to the sixth apophonic class, and therefore did not display stem vowel alternation between sg. and pl.pres.ind., violating PSC (27iii). This verb has disappeared in OHG. Moreover, *magan* has developed in OHG forms with a back vowel not attested in Goth., where the paradigm of this verb was *mag/magun/mabta* (s. (5) above). In other words, *magan* improved its status with respect to PSC (27iii), developing a stem vowel alternation between sg. and pl.pres.ind. However, according to the documents, the situation is still rather unstable for this verb, since the form *magan* is well preserved, especially in Upper dialects such as Bavarian (cf. Braune/Eggers 1987:302). Finally, the other verb that appears to diverge from some of the PSCs in (27) is *muozan*, violating again PSC (27iii). Apart from these two cases, the OHG system of P-Ps is well captured by the PSCs in (27). The majority of P-Ps was also characterized by the stem vowel alternation *-a/-u-* between the sg. and pl.pres.ind. This alternation type was even more salient in terms of type/token frequency (cf. Bybee 1985, Köpcke 1993 for these notions), since the only verbs with a significant frequency that did not display *-a/-u-* alternation were *wizzan*, *magan* (but cf. *mugun*) and *muozan*.

In addition to the group of P-Ps, let us now consider the characteristics of the modal verb *wellen* 'to will'. The inflectional paradigm of this verb has a particular story, since the pres. form originates from an old optative, which happened to be used as an ind. This optative was formed according to the old athematic class of the so-called *mi*-ending verbs (cf. OGr. *didōmi*, *tiībēmi*, etc.). It consequently displayed the desinences that usually appeared in the pret.subj. of the other inflectional classes. Moreover, the pret. was formed by means of a dental suffix, as well as in the other modals, on the basis of the class of weak verbs.

To emphasize the linguistic changes that occurred in OHG, the paradigm of *wellen* (< **waljan*) will be presented next to the corresponding Goth. *wiljan*:

(30)

inf.		OHG wellen	Goth. wiljan
pres.ind.	1.sg.	willu/wili/wile	wiljau
	2.	wili/wile/wilis	wileis
	3.	wili/wili/wilit	wileiþ
	1.pl.	wellemēs, wellēn	wileima
	2.	wellet	wileiþ
	3.	wellent	wileina
pres.subj.	1.sg.	welle	-
pret.ind.	3.sg.	welda/welta	wilda
pret.subj.	1./3.sg.	wolti	*wildédjau / wildédeiþ

From the comparison between the Goth. and the OHG forms, it becomes evident that *wellen* has undergone a number of linguistic changes, which brought it near to the inflectional class of P-Ps on the one hand, and on the other to the weak verbs. In fact,

"im Got. flektierte *wiljan* wie die Prät.präs. im Präs.Konj. bzw. wie die starken Verben im Prät.Konj.; im Ahd. sind diese Konj.-Formen dagegen nur noch im Sg.Präs.Ind. teilweise erhalten, im Pl.Präs.Ind. wurden sie durch die Endungen der schwachen Verben Klasse 1 ersetzt" (Birkmann 1987:157).

Notice that in the pres.ind. the stem vowel alternation *e/i* between sing. and pl. occurs, which is unusual among the other P-Ps, but corresponds to the PSCs of the inflectional class and in particular to (27iii) above. The origin of this stem vowel alternation is phonological, since it is a consequence of the umlaut rule seen above in (3), which, together with the action of the so-called West-Germanic gemination (s. **staljan* > **stalljan* > **st[æ]lljan* > *stellen*, cf. Braune/Eggers 1987:94ff.) and of the weakening of the final unstressed syllable, gives us the attested form:

(31) **waljan* > WGg **walljan* > UR **w[æ]lljan* > *wellen*

Thus, *wellen* presents the following picture with respect to the PSCs seen in (27) above:

- (32)
- i. 1.ps.sg.pres.ind. = 3.ps.sg.pres.ind. = -Ø-suffix:
NO!: *will-u* vs. *wil-i*
 - ii. 2.ps.sg.pres.ind. suffix -*t*:
NO!: *wil-i* ~ -*e* ~ -*is*
 - iii. stem vowel alternation between the sg. and the pl.pres.ind.:
OK: *will-* vs. *well-*
 - iv. 1.ps.pl. = 3.ps.pl. = -*n*:
NO!: *well-emēs* ~ *wellēn* vs. *wellent*
 - v. pres. and pret.subj. suffix -*i*:
OK: *welle* (*willt*) vs. *welti*
 - vi. pl.pres.ind. stem = pret. stem:
OK: *well-emēs* vs. *welda* ~ *welta*

From (32) it turns out that *wellen* is in a transitional stage, since it tended to assimilate its inflectional paradigm to the PSCs of P-Ps, most of which were modal verbs. However, the picture is still unstable in OHG times, since only three of the six PSCs of P-Ps are respected.

Let us now take a look at the system of P-Ps in the successive period, i.e., in MHG times (cf. Mettke 1989:204):

(33)

Ablautsr.	1.3.sg.pres.	2.sg.pres.	1.3.pl.pres. = inf.	pret.ind./subj.	pret.part.
I.	1. weiz	weist	wizzen	wisse, wesse, wiste, weste	giwist, gewest
II.	3. touc	-	tugen, tügen	tohte/töhte	-
III.	4. gan (< ge-an); cf. erban. verban	ganst	gunnen, günden	gunde (gonde)/günde	gegunnen gegunnet
	5. kan	kanst	kunnen, können	kunde (konde)/künde	-
	6. darf	darft	durfen, dürfen	dorfte/dörfte	bedorft
	7. tar	tarst	turre, türren	torste/törste	-
IV.	8. sol (sal)	solt	suln, sülñ	solde, solte/sölte	-
V.	10. mac	macht	mugen, mügen magen, megen	mahte, mohte/ mähte, möhte	-
VI.	11. muoz	muost	muozen, müezen	muose, muoste/ müese, müeste	-
-	wile, wil	wilt	wellen; 3.Pl. wellent, wellen	wolte, wolde/ wolte, wölte	-

As already mentioned above, the most noticeable phonological change that occurred in MHG times is the radical weakening of unstressed syllables, which already began in late OHG and became pervasive in MHG. As a consequence, the umlaut rule lost its phonological motivation and was morphologized (cf. Wurzel 1980, Gaeta 1998) as in the case of the subj. suffix -*i*- seen above in (2), which disappeared leaving only its allophonic trace, i.e. the umlaut. Therefore, the latter has become the marker of subj., as seen above in the rule in (4), cf. *solte/sölte*. It is in this period of strong phonological changes that the extension of umlaut to the pres.ind.pl. and to the inf. of the P-Ps took place, cf. *tügen, günden, können, dürfen, türren, sülñ, mügen* (*megen*) and *müezen*.

4. Morphological naturalness and system congruity

Given the syntactic (they govern a following infinitive without taking *zu*) and semantic (they convey *irrealis* modality) properties of modals,¹⁰ which constitute the absolute majority of P-Ps, we can state that the inflectional class originally containing P-Ps has become extra-morphologically motivated (cf. Wurzel 1984a). According to Wurzel, an extra-morphologically motivated inflectional class has good chances to become stable, even though it happens to be rather small as in the case of modals, and eventually productive. In this respect, consider the case of NHG *brauchen* 'to need', which is

¹⁰Notice, by the way, that these properties increase the textual frequency of modals. High frequency makes modals very salient from a perceptual point of view and strengthens the stability of the class.

on its way to being included in the set of modals. At a sub-standard level, this verb has already acquired peculiar properties of modals, since it can govern an infinitive without *zu* and presents a zero suffix in 3.ps.sg.pres.ind., as in *Er brauch nicht lesen* 'he need not read' (for the similar development of English *to need*, cf. Plank 1984). As shown by *brauchen*, both the extra-morphological properties and the PSCs seen above in §3 constitute the defining features of the inflectional class. Thus, eventual linguistic changes displayed by single verbs such as *brauchen* are motivated by a tendency toward adapting both to the set of extramorphological properties and to the PSCs of the inflectional class that acts as a pole of attraction (cf. Wurzel 1984a). Therefore, we can on the one hand formulate the prediction that verbs not sharing the extra-morphological properties of the inflectional class (i.e. the non-modal verbs) will be eliminated. This prediction is borne out by the data, since we observe that non-modal P-Ps (cf. *tügen, gönnen, törren*) have given up the inflectional properties of P-Ps, and behave in NHG as weak verbs (cf. *ich gönne, du gönnst, er gönnt*, etc.). On the other hand, we can predict that verbs provided with the extra-morphological properties of the inflectional class will also adapt to its PSCs. As an example, consider the PSC (27ii), according to which verbs belonging to this inflectional class display a unique suffix *-t* in the 2.ps.sg.pres.ind., whereas all other inflectional classes present a common suffix *-st*. The modal verb *wellen*, which, as already observed in §3 above, was on its way to this inflectional class, carried over the suffix *-t* in the 2.ps.sg.pres.ind. *wilt* in MHG (cf. (33) above).¹¹ With respect to the picture seen in (32) above, *wellen* has thus continued the process of adapting to the PSCs of P-Ps/modals:

- (34)
- i. 1.ps.sg.pres.ind. = 3.ps.sg.pres.ind. = \emptyset -suffix:
OK: *wil* (beside *wile*)
 - ii. 2.ps.sg.pres.ind. suffix *-t*:
OK: *wilt*
 - iii. stem vowel alternation between the sg. and the pl.pres.ind.:
OK: *will-* vs. *well-* (in Franconian the form *woll-* is found)
 - iv. 1.ps.pl. = 3.ps.pl. = *-n*:
NO!: *wellen* vs. *wellent* (but the 3.ps.pl. *wellen* is also attested)
 - v. pres. and pret.subj. suffix *-i-*:
OK: *welle* (*willt*) vs. *wolte, wölte*
 - vi. pl.pres.ind. stem = pret. stem:
OK: *wellen, woll-en* vs. *wol-te, wol-de*

Apart from the non-congruous inflectional feature (34iv), which is also gradually being eliminated, all other PSCs of P-Ps/modals are respected.¹² In fact, another peculiar trait of OHG P-Ps/modals was the suffix *-i-* as a marker of subj. in all tenses. It has already been observed (cf. Birkmann 1987, and §2.2 above) that this feature represented a defining property of modals. For the latter, in contrast with the other inflectional classes, the suffix was a uniform marker in the sense of Mayerthaler (1981), since it uniformly designated one and the same morphological category. From the viewpoint of the extra-morphological properties motivating the class of modals, we can add that their peculiar trait, i.e. the markedness reversal between ind. and subj. (see §2.3 above), is mirrored by the paradigmatic strength of the subj. suffix *-i-*, which was a uniform marker in this class. As a matter of fact, this suffix was extended to verbs that happened to adapt to this class such as *wellen*, whereas the cognate Goth. verb *wiljan* did not display it (cf. (30) above). From this perspective, the eventual interference of the subj. suffix upon the others is not surprising, given its strength as a uniform marker and the particular semantics (and the markedness relations) of modals. With respect to Birkmann's (1987) observation reported in §2.2 above, according to which it was the weak perceptibility of the pres.subj. in the whole inflectional system (and consequently in the

¹¹Notice that this PSC was very robust in spite of its being an isolated characteristic of P-Ps/modals, because it survived for a long time (a form *darft* is still attested in the seventeenth century), before disappearing under the pressure of the super-stable (since common to all other inflectional classes, cf. Wurzel 1984a) marker *-st*, which is found in NHG (cf. (1) above).

¹²Notice that some troubles in the structure of the paradigm of *wellen* can be given by the Franconian forms with a back vowel, cf. *wollen*, etc., which are now common in NHG. In this case, an extension of the pret. back vowel to the pres.ind. (and hence to the pres.subj.) took place. Probably, this extension was favoured by the tendency towards rounding due to the initial labial glide, and the diffusion of pret. forms with a back vowel in the pret. and in the pl.pres.ind. of all other P-Ps/modals. Both factors can also be made responsible for the diffusion of a pret. form with back vowel in the case of *wissen* (cf. *wusste*), although the latter caused the violation of the PSC (34iv).

modals too) that determined its general replacement by means of the better distinguished pret.subj., we are in the opposite perspective. In inflectional paradigm of the modals, the subj. suffix *-i-* constitutes a stable and strong marker; moreover, its paradigmatic strength reflects the particular extra-morphological property of modals, in which a markedness reversal between ind. and subj. is found. Thus, any eventual over-extension of the stable marker is to be expected in the system of modals. One must add that the only other case in which *-i-* appears as an inflectional suffix in the verbal system is given by the pret.subj. of strong verbs (cf. *grifi* in (26) above). In other words, this suffix is always associated with categories conveying *irrealis* modality. It is straightforward to conclude that this fact also might play a role in favouring interferences in the case of modals, which often conveyed *irrealis* modality. Finally, recall that the suffix *-i-* caused phonological umlaut in OHG, which was successively morphologized in MHG due to the radical weakening of final vowels. As a consequence, the umlaut can now be represented by means of the morphological rule seen in (4) above. By this rule, the properties once belonging to the suffix *-i-* are transferred to the umlaut marker, i.e., the vowel alternation. These circumstances and the properties of the modals' morphosemantic class shed light on the presence of umlaut in the pres.ind., since they provided the essential conditions for the extension of umlaut from the subj. to the ind. to take place. However, there are still some problems to explain. First, we have seen that the extension of umlaut was not a simultaneous process. In fact, it first concerned the verbs *mögen* and *müssen*, and was then extended to the others. Moreover, it did not cause a full reanalysis of the paradigms of P-Ps. The umlaut was only extended to the pl.pres.ind., although it is theoretically possible that the subj. completely replaced the ind., given the markedness relations between the moods. Actually, this is what happened in Germanic in the case of *wollen*, in which the optative form completely replaced the ind., as testified by Gothic (cf. (30) above). Moreover, this is what we observe in NHG, in which, as mentioned in §2.2 above, the pret.subj. of *mögen*, i.e. *ich möchte, du möchtest*, etc., is on the way of completely replacing the pres.ind. as a consequence of the markedness reversal in modals. Finally, we have to explain how the process of extension really took place. As a matter of fact, we have seen that the phonological umlaut could take place in OHG in the domain of the phonological word (cf. (7) above), potentially giving rise to neutralizations between the ind. and the subj., when an umlaut-triggering clitic happened to be syntagmatically present.

4.1 The umlaut extension as a natural change

To explain why the umlaut first extended to the pl.pres.ind. of the verbs *mögen* and *müssen*, we have to address our attention to the PSCs of this inflectional class seen in (27) above. The OHG verbs *magan* and *muozan* presented the following picture (cf. (29) above):

- (35)
- i. 1.ps.sg.pres.ind. = 3.ps.sg.pres.ind. = \emptyset -suffix
OK: *mag; muoz*
 - ii. 2.ps.sg.pres.ind. suffix *-t*;
OK: *mabt; muost*¹³
 - iii. vowel alternation between the sg. and the pl.pres.ind. *-ei/-i-*
NO: *mag-* vs. *mag-*; *muoz-* vs. *muoz-*
 - iv. 1.ps.pl. = 3.ps.pl. = *-n* in all tenses and moods
OK: *magun; muozun*
 - v. pres. and pret.subj. suffix *-i-*
OK: *megi/mehti; müezi/müesi*¹⁴
 - vi. pl.pres.ind. stem = pret. stem.
OK: *mag-; muoz-*

As is shown in (35iii), *magan* and *muozan* are the only two P-Ps that in OHG were not completely congruous with the PSCs of this inflectional class. In particular, they violated the stem vowel alternation condition, which is otherwise present in all others verbs of the class. At least for *magan*, the tendency towards adapting to the PSCs led to the creation of

¹³The form *mabt* is the result of phonological processes of devoicing and spirantization (cf. Braune/Eggers 1987:139); the form *muost* comes from an assimilation rule of the otherwise palatal sibilant to the following dental (cf. Braune/Eggers 1987:168).

¹⁴*Muozan* (and *wizzan*) still presents pret. forms without dental suffix, which were successively replaced in late OHG by the new ones (cf. *wista. muosta*). The pret. forms with dental suffix also constitute a PSC of this inflectional class. There is no space to discuss this aspect here, but cf. Bittner (1996:128ff.) for details.

an analogical form *mugun* in some German dialects (namely in Franconian, cf. Braune/Eggers 1987:302, and §2.1 above). However, with respect to the complicated analogical mechanism proposed by Lühr (1987), the morphological change appears now to be motivated by the need for improving the system congruity (cf. Wurzel 1984a) of the verb. In this perspective, the change increased the naturalness (or diminished the markedness) of the whole system. The model that gave rise to the form *mugun* was the most widespread within the inflectional class of P-Pl (cf. *an/unnun*, *kan/kunnun*, *darf/durfun*, *gitar/giturrun*, *scal/sculun*). Besides *mugun*, we have already seen in §2.1 above that Bavarian dialects developed a form *megen*, which was the result of the extension of umlaut. Independent of the origin of umlaut, the new form also improved the system congruity of the paradigm of *magan*, since it established a stem vowel alternation between the sing. and the pl.pres.ind. The latter is also true for the other verb that first underwent the linguistic change, namely *muozan*. The umlauted form *müezen*, firstly attested in Bavarian dialects as well, established a stem vowel alternation between the sing. and the pl.pres.ind., and rendered the verb fully congruous with the PSCs of the inflectional class, as already observed by Birkmann (1987:216), who concluded that:

"andererseits aber auch im Präs.Ind. durch das Eindringen des Umlauts in den Pl. Irregularität aufgebaut wird. Daneben stellt der Vokalwechsel ein wichtiges Merkmal der Flexionsklasse der Prät.Präs. dar, und *müezen* erfüllt als Modalverb die Bedingung für die Flexionsklassen-zugehörigkeit".

He maintains, however, that the umlaut extension represented an unmotivated increase of irregularity within the system, as already discussed in §2.1 above. Only for *muozan* might the linguistic change have brought benefits in terms of improving the system congruity of the verb. The other parallel case of *magan* is completely ignored. Consider that for *magan* two different possible changes are attested to improve its system congruity (cf. *mag/mugun* ~ *megen*). On the other hand, *muozan* only presents the second possibility (cf. *muoz/müezen*). The first one (cf. **maz/muozun* as *scal/sculun*) is precluded by the absence of a direct model containing a stem diphthong. In fact, *muozan* is the only verb of the sixth apophonic class attested in OHG (cf. (29) above). Moreover, in an eventual change **maz/muozun*, the direction of the process of analogical extension would have been the opposite in comparison with what we observed for *magan*. In this case, it was not the pl. (the marked form, cf. Mayerthaler 1981) to be reshaped with respect to the sing. (the unmarked form), but the other way around.

4.2 Where does the umlaut really come from?

We have so far explained why the change took place in the way it did in terms of improvement of system congruity of the two verbs that first underwent it. Let us now try to see how it really took place. We have seen above that, at least partially (cf. *mag/mugun*), it was the result of an analogical process that aimed at reshaping the pl.pres.ind. on the basis of a four-part-analogy (cf. (18) above). For the second possible alternative (cf. *mag/megen*, *muoz/müezen*), however, the explanation in terms of analogical extension provided by Lühr (1987) does not hold true (see §2.2 above). We have to look for another way. Consider that the two different changes displayed by *magan* belong to two different times and to two different geographical areas. While the first change (*mag/mugun*) can be ascribed to OHG times and to a Franconian area, the second case (*mag/megen*) came up in MHG times (twelfth century) and in a Bavarian area. It is well known - and it has often been repeated in this paper - that the change from OHG to MHG was characterized by two related phenomena: the radical weakening of unstressed vowels and, consequently, the morphologization/lexicalization of umlaut. Both phenomena concerned the forms *megen* and *müezen*. The hypothesis we want to support in this paper bears Brenner's (1895) and Behaghel's (1928) idea in mind, according to which the umlaut first arose as a consequence of a post-posed clitic (cf. *magan wir* > *m[æ]gen wir*). The fact that, as has been objected (cf. Šćur 1961:209), the umlaut in external sandhi was only sporadically attested in OHG and successively disappeared does not really constitute a true counter-argument. As discussed in §2.3 above, it is quite usual that phonological processes having a domain wider than the lexical unit are generally either not reported in writing or much less frequently and consistently, since they do not give rise to paradigmatic alternations. From this point of view, the attestations of umlaut in external sandhi are surprisingly numerous, and assure the wide diffusion of the phenomenon in OHG times. Clearly, once the umlaut was morphologized, the cases of umlaut in external sandhi disappeared, much faster than otherwise, since they did not give rise to paradigmatic alternations. However, we still find sporadic cases in which the umlaut in external sandhi has been preserved, as in the forms *züemer* 'to me', *züenen* 'to them', *züenis* 'to us' (< *zuo mir*, *zuo inen*, *zuo üns*, cf. Behaghel 1928:288), documented in Toggenburg, or in the plural forms of verbs like those reported in (8) above. Notice that this phenomenon is particularly widespread in the

Alemannic and Bavarian dialects, especially in verbs such as *geben* 'to go', *stehen* 'to stay', *tun* 'to do', etc. (e.g., Swabian ind.pres.sg. *gauⁿ(n)/gōⁿn*, *šdand/šdōd*, *duər*, pl. *gēⁿnd*, *šdēⁿnd*, *dēⁿnd*, cf. Schirmunski 1962:559). In my opinion, the occurrence of umlaut in external sandhi must be seen in terms of a neutralization of both phonological and morphological features. In fact, the phonological process of umlaut determined the neutralization of the phonological feature [± front] when a non-consonantal high and front segment followed within a prosodic word. This process was a source of morphological opaqueness within paradigms (cf. the cases of *helfen* - *hilft* reported in §2.2 above). In the case of modal verbs, the umlaut triggered by a post-posed clitic caused the neutralization of the opposition between the pres.ind. and the pres.subj., since the latter were the only class that displayed the suffix *-i-* in the pres.subj.:

(36) ind.	magen wir	→	m[æ]gen wir	subj.	m[æ]gen
	muozen wir	→	m[yø]zen wir		m[yø]zen
	sulen wir	→	s[y]ien wir		s[y]ien
	kunnen wir	→	k[y]nnen wir		k[y]nnen

This neutralization of a phonological origin favoured the process of umlaut extension, together with the other factors examined above. In particular, consider the paradigmatic strength of the subj. marker *-i-* within this inflectional class and the markedness reversal between ind. and subj. mood. As seen in §2.1-2 above, the subj. occurred in main sentences conveying an exhortative, desiderative or future meaning, often joined with an allocutive function.¹⁵ In several cases - especially those in which the allocutive function was dominant, cf. Lühr 1987:274 and §2.2 above -, the pronoun (often in the pl.) was post-posed (cf. 20i), (23) above). Clearly, a complete neutralization between ind. and subj. took place in these contexts, both at a formal and a semantic level. Notice that the same does not hold true for the sg. forms (cf. (6) above). Thus, it was the phonological process of neutralization that determined the emergence of the umlauted forms in (36). However, it must not be forgotten that the phonological neutralization had precise correspondences at the functional (i.e. markedness reversal between ind. and subj. in modal verbs) and at the morphological level (i.e. the strength of the subj. marker *-i-* in modals). This state of affairs favoured (or better: triggered) the linguistic change, but did not determine the way and the outcome. In fact, the reanalysis and the restructuring of the paradigm first took place in cases where it was necessary to establish a full system congruity with respect to the PSCs, i.e. in the two OHG non-congruous verbs *magan* and *muozan*. In the latter, the umlauted forms were able to eliminate the morphological inadequacy seen in (35iii) above. Hence, they were extended to the other modals, in which, however, the phonological and functional neutralization of ind. and subj. was already present. Notice that for *magan* two possibilities occurred in which the umlaut was present:¹⁶

- (37) i. /magen si/ → [mægen si]
 megen si den geziuch uber uns bringen, / sô birn wir ubele her chomen
 (*Kaiserchronik* 9857f.)
- ii. /mugen wir/ → [myge wir]¹⁷
 muge wir doch gèn unde besehen, wie vil der unsern sî erslagen
 (Konrad v. Fußesbrunnen, *Kindheit Jesu* (ca. 1200))

As already observed above, the variants corresponded to different dialectal areas. Between the two variants the second one was selected, presumably because it was closer to the type *kan/kunnan* (for which forms like *k[y]nnen*

¹⁵In this respect, consider similar interferences between ind. and subj. observed in several dialects of central Italy (cf. Haase 1996). In these cases, the ind.pret. has been replaced by the subj.pret., but only in the 1. and in the 2.ps.pl. (cf. *jéssimo*. *iéssivo* vs. *jéttero* da *jícce* 'to go'). presumably because, among others, "Durch seinen Gebrauch in hortativen (1. Person) bzw. optativen (2. Person) Kontexten ist dieser Konjunktiv besonders häufig" (Haase 1996:74).

¹⁶Both cases reported below display a full (i.e., both at a formal and a functional level) neutralization of the opposition between ind. and subj., since they represent the use of a modal as a substitute of the subj. of a 'full' verb in a main sentence (cf. (19) above).

¹⁷Notice that a final *-n* was optionally deleted in the case of a post-posed pronoun, and especially *wir*: OHG *wizzuwir* (cf. Braune/Eggers 1987:260), MHG *neme wir*, *name wir* (cf. Paul/Wiel/Grosse 1989:242). The nasal deletion can be interpreted as a clear-cut signal of cliticization of the post-posed pronoun. Given the effect of the umlaut in OHG times, *wizzuwir* was presumably realized [*wizzuwir*].

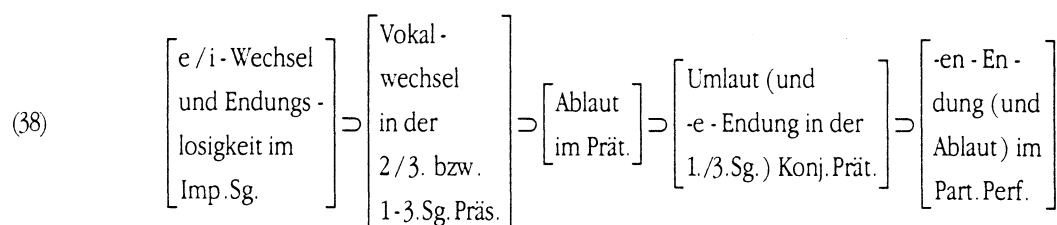
occurred, cf. (36) above), which was the most frequent among the P-Ps/modals. As seen in §3.1 above, *muozan* did not possess the requirements to adapt to the most frequent model.

4.3 Further developments

The inflectional class of P-Ps/modals remained rather stable until NHG times. However, as already observed in §3, it developed more and more towards strengthening its extra-morphological motivation, which had the consequence of eliminating non-modal P-Ps as *tügen*, *gönnen* and *törren*, which belong now to the class of weak verbs, with the only (relevant) exception of *wissen*.¹⁸ Moreover, the PSCs have been partially reformulated as a consequence of the developments of the whole system. In fact, the 2.sg.pres.ind. suffix *-t* (cf. (27ii) above) was slowly replaced by the super-stable marker (cf. Würzel 1984a) *-st*, which occurred in all other inflectional classes. Notice also that PSC (27vi), according to which the pl.pres.ind. stem corresponded to the pret. stem, disappeared after the spreading of umlaut in the pl.pres.ind. The weakness of this PSC is also revealed by the case of *wissen*, which developed, presumably for phonological reasons, a pret. *wuste*, which is preserved in NHG. Besides the restructuring of the PSCs, other changes concerned the levelling of alternations produced by phonological processes. In particular, the alternation between OHG pres. *kunnun* and pret. *kondun* produced by the phonological rule seen in (28) was eliminated. This levelling must be seen in the light of the development of a unitary inflection of these verbs:

"Die Modalverben entwickeln sich zu einer separaten, außermorphologisch motivierten Flexionsklasse, was eine formale Vereinheitlichung mit sich bringt ... Auch das Muster **müssen - müsste - musste**, also identischer Vokal im umgelauteeten Infinitiv, Pl.Präs. und Konj.Prät. vs. identischer, aber nichtumgelauteeter Präteritalvokal, das die 'Verteilung' der teilweise phonologisch bedingten Stammvokalveränderungen regelt, z.B. **u/ü > o/ö** besonders vor Nasal - **können** bzw. Kürzung in geschlossener Silbe - **müssen**, erfährt diese Vereinheitlichung" (Bittner 1996:172).

With respect to this unitary development, *sollen* (and partially *wollen*) underwent a massive process of regularization, in which on the one hand the stem vowel /o/ was generalized across the whole paradigm (also in the pl.pres.ind., violating the OHG PSC (27iii) above), and on the other the umlaut disappeared from the whole paradigm (cf. (1) above). Probably, in the case of *sollen*, the reason for the massive levelling process on the basis of the weak verbs was the wide range of historically documented variants (cf. Birkmann 1987:211ff.). At the dialectal level, we still find a huge variation that comprises forms such as Low German *šäl/šült*, where the umlaut is extended to the whole pres.ind. (cf. Grimme 1922), and Alemannic *sol/sönd* with *l*-deletion in the pl.pres.ind. (cf. Schirmunski 1962:551). As a matter of fact, the levelling process was necessary to establish morphological naturalness within the inflectional paradigm. In fact, the process went in the direction of eliminating morphological markedness, following the implicational model "indem zunächst der Vokal im Sg. und Pl.Präs. ausgeglichen wurde, danach dann Präsens und Präteritum und erst dann, und auch nur, wenn die normale Semantik des betroffenen Verbs verloren geht, verschwindet auch das spezifische formale Kennzeichen" (Bittner 1996:108). The implicational model proposed by Bittner (1996:80) accounts for the distance, in morphological terms, of the other verbal classes with respect to the unmarked one, i.e. the weak verbs:



Obviously, *sollen* (and *wollen*) did not undergo the last two steps on the left side of (38), since the status of modals (and the extra-morphological motivation) was not lost.

¹⁸For a possible explanation of the exceptional behaviour of *wissen*, cf. Birkmann (1987:204, 374).

Alemannic and Bavarian dialects, especially in verbs such as *geben* 'to go', *stehen* 'to stay', *tun* 'to do', etc. (e.g., Swabian ind.pres.sg. *gauⁿ(n)/gōⁿn*, *šdand/šdōd*, *duər*, pl. *geⁿnd*, *šdeⁿnd*, *deⁿnd*, cf. Schirmunski 1962:559). In my opinion, the occurrence of umlaut in external sandhi must be seen in terms of a neutralization of both phonological and morphological features. In fact, the phonological process of umlaut determined the neutralization of the phonological feature [± front] when a non-consonantal high and front segment followed within a prosodic word. This process was a source of morphological opaqueness within paradigms (cf. the cases of *helfen* - *hilft* reported in §2.2 above). In the case of modal verbs, the umlaut triggered by a post-posed clitic caused the neutralization of the opposition between the pres.ind. and the pres.subj., since the latter were the only class that displayed the suffix *-i-* in the pres.subj.:

(36) ind.	<i>magen wir</i>	→	<i>m[æ]gen wir</i>	subj.	<i>m[æ]gen</i>
	<i>muozen wir</i>	→	<i>m[yø]zen wir</i>		<i>m[yø]zen</i>
	<i>sulen wir</i>	→	<i>s[y]ien wir</i>		<i>s[y]ien</i>
	<i>kunnen wir</i>	→	<i>k[y]nnen wir</i>		<i>k[y]nnen</i>

This neutralization of a phonological origin favoured the process of umlaut extension, together with the other factors examined above. In particular, consider the paradigmatic strength of the subj. marker *-i-* within this inflectional class and the markedness reversal between ind. and subj. mood. As seen in §2.1-2 above, the subj. occurred in main sentences conveying an exhortative, desiderative or future meaning, often joined with an allocutive function.¹⁵ In several cases - especially those in which the allocutive function was dominant, cf. Lühr 1987:274 and §2.2 above -, the pronoun (often in the pl.) was post-posed (cf. 20i), (23) above). Clearly, a complete neutralization between ind. and subj. took place in these contexts, both at a formal and a semantic level. Notice that the same does not hold true for the sg. forms (cf. (6) above). Thus, it was the phonological process of neutralization that determined the emergence of the umlauted forms in (36). However, it must not be forgotten that the phonological neutralization had precise correspondences at the functional (i.e. markedness reversal between ind. and subj. in modal verbs) and at the morphological level (i.e. the strength of the subj. marker *-i-* in modals). This state of affairs favoured (or better: triggered) the linguistic change, but did not determine the way and the outcome. In fact, the reanalysis and the restructuring of the paradigm first took place in cases where it was necessary to establish a full system congruity with respect to the PSCs, i.e. in the two OHG non-congruous verbs *magan* and *muozan*. In the latter, the umlauted forms were able to eliminate the morphological inadequacy seen in (35iii) above. Hence, they were extended to the other modals, in which, however, the phonological and functional neutralization of ind. and subj. was already present. Notice that for *magan* two possibilities occurred in which the umlaut was present:¹⁶

- (37) i. /*magen si*/ → [mægen si]
megen si den geziuch uber uns bringen, / sô birn wir ubele her chomen
(Kaiserchronik 9857f.)
- ii. /*mugen wir*/ → [myge wir]¹⁷
muge wir doch gën unde besehen, wie vil der unsern sî erslagen
(Konrad v. Fußesbrunnen, Kindheit Jesu (ca. 1200))

As already observed above, the variants corresponded to different dialectal areas. Between the two variants the second one was selected, presumably because it was closer to the type *kan/kunnan* (for which forms like *k[y]nnen*

¹⁵In this respect, consider similar interferences between ind. and subj. observed in several dialects of central Italy (cf. Haase 1996). In these cases, the ind.pret. has been replaced by the subj.pret., but only in the 1. and in the 2.ps.pl. (cf. *jéssimo*, *iéssivo* vs. *jéttero da jicce* 'to go'), presumably because, among others, "Durch seinen Gebrauch in hortativen (1. Person) bzw. optativen (2. Person) Kontexten ist dieser Konjunktiv besonders häufig" (Haase 1996:74).

¹⁶Both cases reported below display a full (i.e., both at a formal and a functional level) neutralization of the opposition between ind. and subj., since they represent the use of a modal as a substitute of the subj. of a 'full' verb in a main sentence (cf. (19) above).

¹⁷Notice that a final *-n* was optionally deleted in the case of a post-posed pronoun, and especially *wir*: OHG *wizzuwir* (cf. Braune/Eggers 1987:260), MHG *neme wir*, *name wir* (cf. Paul/Wiel/Grosse 1989:242). The nasal deletion can be interpreted as a clear-cut signal of cliticization of the post-posed pronoun. Given the effect of the umlaut in OHG times, *wizzuwir* was presumably realized [*wizzuwir].

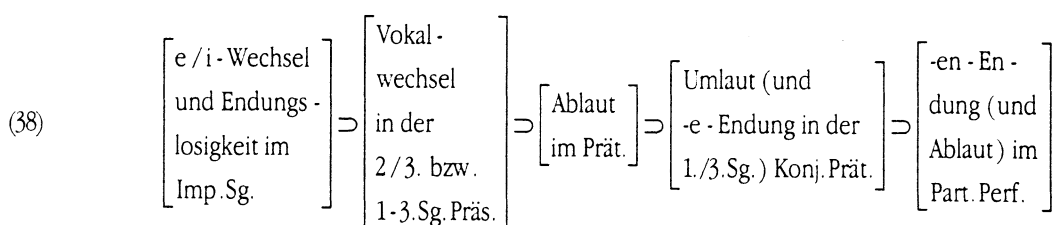
occurred, cf. (36) above), which was the most frequent among the P-Ps/modals. As seen in §3.1 above, *muozan* did not possess the requirements to adapt to the most frequent model.

4.3 Further developments

The inflectional class of P-Ps/modals remained rather stable until NHG times. However, as already observed in §3, it developed more and more towards strengthening its extra-morphological motivation, which had the consequence of eliminating non-modal P-Ps as *tügen*, *gönnen* and *törren*, which belong now to the class of weak verbs, with the only (relevant) exception of *wissen*.¹⁸ Moreover, the PSCs have been partially reformulated as a consequence of the developments of the whole system. In fact, the 2.sg.pres.ind. suffix *-t* (cf. (27ii) above) was slowly replaced by the super-stable marker (cf. Würzel 1984a) *-st*, which occurred in all other inflectional classes. Notice also that PSC (27vi), according to which the pl.pres.ind. stem corresponded to the pret. stem, disappeared after the spreading of umlaut in the pl.pres.ind. The weakness of this PSC is also revealed by the case of *wissen*, which developed, presumably for phonological reasons, a pret. *wuste*, which is preserved in NHG. Besides the restructuring of the PSCs, other changes concerned the levelling of alternations produced by phonological processes. In particular, the alternation between OHG pres. *kunnun* and pret. *kondun* produced by the phonological rule seen in (28) was eliminated. This levelling must be seen in the light of the development of a unitary inflection of these verbs:

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5. Conclusion

P-Ps had a particular status within OHG verbal system. They were characterized by different PSCs with respect to the other inflectional classes. Moreover, they were mostly constituted by modal verbs, which displayed common properties of a syntactic and a semantic type. Diachronically, we observe a tendency towards anchoring the original class of P-Ps with the specific extra-morphological motivation of being modals. As a consequence, the class in NHG contains almost only modals, with the relevant exception of *wissen*, which is probably due to its high frequency of usage (cf. Birkmann 1987:220). The story of the umlaut seems to start with the verbs *magan* and *muozan* in Bavarian and Alemannic. In these dialects, the phonological neutralization caused by the umlaut rule in the domain of the phonological word was first reanalyzed and employed to improve the inflectional status of the two verbs with respect to the PSCs of the inflectional class. Notice that in central dialects another kind of analogical change is found (*magun* > *mugun*), which is similarly motivated by the need to improve the status of the verb with respect to the PSCs. It is important to underline that the latter is parallel to the action of umlaut, giving rise to forms such as *m[y]gen*, *m[æ]gen*. Moreover, the phonological neutralization was accompanied by a functional neutralization in the exhortative (allocutive) usage which was accompanied by inversion and cliticization of the pronoun. Notice that in OHG times the phonological neutralization caused by umlaut was not limited to the pl. (cf. *meg ib*, etc., see (6) above). However, the morphologization of umlaut in the pl. is the result of a reanalysis. Probably two factors contributed to favour the process of reanalysis:

- (39) i. the need for establishing a stem vowel alternation in the sg. and the pl.pres.ind. in the case of *magan* and *muozan*, which were the first verbs to undergo the process of reanalysis;
 ii. the role of the (for modals) stable subj. marker *-i-*, which was able to give rise to a formal and functional neutralization between subj. and ind. in the pl. of all modals.

Consider that OHG was probably the only Germanic language in which the umlaut acted at the level of the phonological word. This explains why the extension of umlaut concerned all modals besides the two verbs in which it was morphologically motivated (i.e. *magan* and *muozan*). In fact, in other Germanic languages, morphological changes of a similar type to what we observed for German are found, which aimed at improving the status of these verbs with respect to the PSCs of the inflectional class. In particular, the North-Germanic languages displayed both the analogical type *mag/mugun* (cf. OSw. *ma/mughum*, ODan. *ma/mughom*) and the type *mag/megen* (Olc., ONorw. *má/megum*). Notice that in the North-Germanic languages **magan* is the only P-P to be inadequate with respect to the PSCs since the other Germanic verb **mōtan*, corresponding to NHG *müssen*, is not attested (cf. Birkmann 1987:362). That the teleology of these changes is the same as for German is confirmed by a look at the set of P-Ps attested in - for instance - OSw. and Olc. (cf. Birkmann 1987:223; 293):

(40)

Germanic P-Ps	Olc.	OSw.
*witan	veit - vitum	vet - vitum
*igan	á - eigum	a - äghum
*kunnan	kann - kunnum	kan - kunnum
*unzan	ann - unnum	an - unnum
*þurþan	þarf - þurfum	þarf - þorvom
*munan	man - munum	mon - monom ¹⁹
*skulan	skal - skulum	skal - skulum
*magan	má - megum	ma - mughum

¹⁹In OSw., which is documented one century later than Olc. (about XIII c.), an analogical levelling took place in the verb *mona* 'to remember'. According to Birkmann (1987:305), this fact can be interpreted in two different ways: "(1) Ein sich schon im Aisl. und Anorw. andeutender Prozeß des Zusammenhangs der Formen von *munu* ['to become'] und *muna* ['to remember'] hat sich im Aschwed. weitgehend vollzogen, indem der Vokalwechsel zwischen Sg. und Pl.Präs.Ind. bei *muna* aufgegeben wurde. (2) Beim Vollverb *muna* wurde der Vokalwechsel zwischen Sg. und Pl.Präs.Ind. aufgegeben, weil dieses wenig frequente Verb so aus der Flexionsklasse der Prät.präs. ausgegliedert werden konnte". Notice, however, that this verb was rather rare in OSw., and has now disappeared in Modern Sw.

In particular, in the case of Olc. *megum* the presence of an umlauted vowel²⁰ is probably due to the same factors summarized in (39) for German, as - at least partially - admitted by Birkmann (1987:230):

"Unserer Meinung nach liegt im Falle von urn. **magum* > aisl. *megum* morphologischer Wandel vor, ein Wandel, der für dieses Verb eine Zunahme an Irregularität, aber zugleich eine Anpassung an die Flexionsklasse der Prät.präs. bedeutet, da durch ihn eine Vokalalternation zwischen Sg. and Pl.Präs.Ind. entsteht".

Olc. did not, however, crucially display phonological neutralization as a consequence of post-posed clitic pronouns since the latter were not umlaut-triggers (cf. *vér, þér, þeir, þau*). Thus, the umlaut in *megum* was not extended to the other modals, presumably because the functional neutralization between ind. and subj. was not accompanied by a general phonological neutralization due to a post-posed clitic, as in the case of OHG. A peculiar characteristic of OHG, i.e. the pervasive action of umlaut in the domain of the phonological word, explains why the story of German modals displays a relevant difference with respect to other North-Germanic languages, although the local morphological motivation of the change was essentially the same.

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²⁰Cf. Noreen (1923:352): "Der auffällige stamm *meg-* stammt wol aus dem konj., der einst **megja* gelautet haben muss".

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