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A Rule's Progress: Reordering in Swiss German

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A number of years ago, Paul Kiparsky suggested that historical change can occur when the relative order of two rules in the synchronic grammar of a language changes. In other words, if rule A is ordered before rule B, and if some of the output of rule A is also subject to B, then the language would change if B moved to before A. To show that this kind of change really does happen, Kiparsky looked at two dialects of Swiss German. One was the dialect spoken in the Canton of Schaffhausen, which is located in the northeastern corner of Switzerland, and the other was spoken in the town of Kesswil, which is located to the east of Schaffhausen.

Kiparsky looked at two rules. One of them was a lowering rule as given below in 1a. A revised version¹ of the rule is given below in 1b.

$$\begin{array}{l}
 1a) \left[\begin{array}{c} V \\ - \text{high} \\ + \text{back} \end{array} \right] \text{---} > [+ \text{low}] / \text{---} \left[\begin{array}{c} + \text{cons.} \\ - \text{grave} \\ - \text{lat.} \end{array} \right] \\
 \\
 1b) \left[\begin{array}{c} V \\ - \text{high} \\ + \text{back} \\ - \text{long} \end{array} \right] \text{---} > [+ \text{low}] / \text{---} \left[\begin{array}{c} + \text{cons.} \\ + \text{cor.} \\ - \text{nas.} \\ - \text{lat.} \end{array} \right]
 \end{array}$$

The revised version of the rule eliminates long vowels from consideration and also eliminates *n* and *l* as possible lowering environments. The other rule Kiparsky considered was an umlaut rule, with environment unspecified, as given below in 2.

$$2) V \text{---} > [- \text{back}] / \dots \text{ (no environment specified)}^2$$

Kiparsky used rule ordering to account for the data given below in 3 and 4.

3) Schaffhausen

bogø 'arch'	bɔdø 'floor'
bögø 'arches'	bödø 'floors'

Sample derivation

	/bogø/ (plur.)	/bodø/ (sing.)	/bodø/ (plur.)
Umlaut	bögø	-----	böðø
Lowering	-----	bɔdø	-----

4) Kesswil

bogø 'arch'	bɔdø 'floor'
bögø 'arches'	bödø 'floors'

Sample derivation

	/bogø/ (plur.)	/bodø/ (sing.)	/bodø/ (plur.)
Lowering	-----	bɔdø	bɔdø
Umlaut	bögø	-----	böðø

As can be seen from the above data, in Schaffhausen umlaut must apply before

lowering to derive the examples given. In Kesswil, on the other hand, umlaut must apply after lowering to account for the above data. Since the lowering rule was added to the grammar long after the umlaut rule, Kiparsky concluded that, in Kesswil, the lowering rule must have been reordered so that it now comes before the umlaut rule. The ordering of the two rules found in Schaffhausen is the original order, and the order found in Kesswil is an innovation.

Since this analysis was proposed, it has been criticized on a number of counts. Numerous researchers³ have suggested, for a variety of reasons, that the lowering rule has been lost in Kesswil and consequently couldn't be ordered with respect to umlaut at all. In this paper I argue that the lowering rule does exist in both Schaffhausen and Kesswil. I will then determine the form in which the original lowering rule was added to the two dialects. I will trace all the changes which have taken place in the two dialects which affect the rules in question in some way. Finally, I will argue that trying to determine whether or not reordering has occurred by examining just the two rules in question gives a distorted picture of the situation.

Some of the evidence which suggests that the lowering rule is still in operation in Kesswil is found in 5. These data⁴, examples of loan words borrowed into the dialect fairly recently, suggest that some lowering rule is being applied to the forms:

5) Kesswil loan words

bɔrtrət	<i>Portrat</i>	'portrait'	kxatoliss	<i>katholisch</i>	'Catholic'
gɔrset	<i>Korsett</i>	'corset'	gomfiturð	Fr. <i>confiture</i>	'jam'
mɔdəl	<i>Model</i>	'model'	galop	<i>Galopp</i>	'gallop'
rɔdəl	<i>Rodel</i>	'toboggan'	bantoffəl	<i>Pantoffel</i>	'slipper'
pɔst	<i>Post</i>	'mail'	pokkə	<i>Pocken</i>	'pock mark'
lɔttəri	<i>Lotterie</i>	'lottery'	tokter	<i>Doktor</i>	'doctor'

The borrowed forms in the first column show that when the dialect borrows a word containing *o* in a lowering environment, the *o* is lowered to ɔ. The forms in the fourth column, on the other hand, offer evidence that when the dialect borrows a form containing *o* in a non-lowering environment, the *o* remains unlowered. The grammar must apply a rule to these forms which lowers *o* in the appropriate contexts. These borrowed words suggest that some form of the lowering rule is indeed operating synchronically in Kesswil.

The forms given below in 6 are examples of loan words found in Schaffhausen.

6) Schaffhausen loan words

mɔdəl	<i>Model</i>	'model'	toplət	<i>doppelt</i>	'double'
rɔdəl	<i>Rodel</i>	'toboggan'	xopf	<i>Kopf</i>	'head'
mɔst	<i>Most</i>	'must (of wine)'	glokkə	<i>Glocke</i>	'bell'
pfɔst	<i>Pfost</i>	'post, stake'	tokkə	<i>Dogge</i>	'mastiff'
pɔst	<i>Post</i>	'mail'	tokxter	<i>Doktor</i>	'doctor'

As is the case in Kesswil, *o* is lowered when it occurs in the expected environments. These forms suggest that the lowering rule also still operates in Schaffhausen. The borrowed forms found in both of these dialects suggest that the lowering rule has not yet been lost.

A situation potentially damaging to this analysis is present in Kesswil. In this dialect, *u* is lowered to *o* in the same environments in which *o* is lowered to ɔ. As a result, forms such as [tɔrn] 'tower', which are derived from an underlying /turn/ are found side-by-side in the language with [tɔrn] 'thorn' derived from an underlying /torn/.

The fact that both [o] and [ɔ] are found in the same environments could result in rule opacity; if a rule is not recoverable synchronically, it becomes opaque and unlearnable. The presence of the forms [torn] 'tower' and [tɔrn] 'thorn', as a fact isolated from the rest of the language, would indeed cause opacity. Data from the language as a whole, however, offer a way of recovering synchronically the underlying forms of the words in question. Those data are the forms resulting from umlaut.

In Kesswil, umlaut regularly relates back vowels to their corresponding front vowels; *o* invariably umlauts to *ö*, *ɔ* invariably umlauts to *ö̃*, and so on. This regularity is violated by those forms which contain *o* as a result of lowering *u*. In these cases⁵, the umlauted vowel is *ü*. Alternations such as *tsondel/tsünd* 'fire/to ignite', *pont/püntəl* 'bunch/small bunch', *šots/šüts* 'shoot of water/shoots', and *nots/nüts* 'use/make use of' are common in the dialect. With the majority of those forms containing phonetic *o* which has resulted from lowered *u*, the umlaut is *ü*. In contrast, those forms containing phonetic *o* which results from an underlying *o* invariably umlaut to *ö*. The umlauted forms thus offer a way to distinguish phonetic *o* from phonemic *o*. The simplest analysis of the situation, and the one which reflects historical reality, is to posit an underlying *u* which umlauts in the normal fashion and which is lowered in the appropriate environment. Since examples such as [torn] 'tower' are now treated as underlyingly containing *u* rather than *o*, they do not cause opacity. Both the rule lowering *u* and the rule lowering *o* are recoverable. Consequently, the original lowering rule has not been lost in Kesswil.

The data thus support the contention that some lowering rule is present both in Schaffhausen and in Kesswil. The forms of the two lowering rules, however, are not identical; furthermore, neither of the two rules is identical with the rule originally added to the language. This fact is not surprising. It would be a gross oversimplification to imagine that everything in the two dialects in question remained static except for the relative order of lowering and umlaut. In actuality, although both dialects contain the descendant of the original lowering rule, both dialects have expanded the rule in a number of ways. After establishing the form of the rule which was originally added to the language, I shall discuss these various changes in some detail. By doing so I intend to shed some light both on the question of rule reordering and on the problem of language change in general.

A great deal of evidence suggests that the original rule had the form seen below in 7.

7) $o \rightarrow \text{ɔ} / ___ r$

Some of the evidence for this claim was presented in Robinson (1976)⁶. Robinson noticed that, with respect to the lowering rule, the Canton of Schaffhausen seemed to be divided into two parts. In one part, the subdialect Kiparsky had discussed, the lowering rule completely follows the umlaut rule. In the other part of the Canton, the lowering rule seems to be split. The data upon which Robinson based his observation is presented in 8.

8) Schaffhausen

bɔdθ	'floor'	tɔrn	'thorn'
bödθ	'floors'	törn	'thorns'
trɔttθ	'sidewalk'	xɔrb	'basket'
trötti	'little sidewalk'	xörbli	'little baskets'

gɔttə	'godmother'	fɔrə	'Scots pine'
götti	'godfather'	föris	'wood from Scots pine'

Order of rules:

1. Umlaut
2. Lowering

Order of rules:

1. Lowering
2. Umlaut

As the data show, when lowering occurs before *r*, it precedes umlaut. When lowering occurs before other coronals, it follows umlaut. Robinson suggests that the correct analysis of the situation is to assume that the original lowering rule lowered *o* only before *r*. He suggests that the lowering in other environments is the result of expansion, and that the mechanism by which expansion occurs is the addition of a new rule at the end of the phonological component of the grammar. He posits a sequence of events in which the dialect first acquired a rule lowering *o* before *r*, secondly reordered the rule so that it applied before umlaut, and finally expanded the rule by adding the new environments as a new rule at the end of the phonological component of the grammar. As further evidence that the original rule lowered *o* only before *r*, Robinson examined data from other nearby dialect areas. He found that, although a number of other dialects have some rule lowering *o*, the only environment found in all the dialects which consistently causes lowering is *r*.

Robinson's analysis of the situation seems reasonable; furthermore, evidence found in Kesswil supports his claims. As mentioned earlier, Kesswil has a rule lowering *u* to *o* before *r* and coronals; these lowered forms umlaut to *ü* rather than to *ö*. The situation, however, is somewhat more complex than it would seem at first blush, for the form of the umlauted vowel actually depends upon the environment which caused the lowering. Contrast the examples of lowered *u* given in 9 with those given earlier in the paper:

9) **Kesswil**

storm <i>Sturm</i> 'storm'	worm <i>Wurm</i> 'worm'
störm 'to storm'	wörm 'worms'

xorts *kurz* 'short'
xörts 'to shorten'

When *u* is lowered before *r*, its umlaut is *ö*; when *u* is lowered before other coronals, its umlaut is *ü*, as was the case in the examples discussed earlier. When *u* is lowered before *r*, lowering precedes umlaut; when *u* is lowered before other coronals, lowering follows umlaut. The rule lowering *u* must thus be split into two parts; more importantly, it must be split down exactly the same lines as the rule in Schaffhausen is split. It would stretch the bounds of credibility to suggest that coincidence accounts for this similarity; instead, I suggest the following sequence of events.

The first change was that the language acquired a rule lowering *o* before *r*. After the rule was acquired, Kesswil and Schaffhausen split. Following the split, Kesswil innovated in a number of ways. First, the lowering rule moved so that it was ordered before the umlaut rule. At this point, the rule expanded in two directions. One of the expansions added a rule lowering *u* to *o* before *r*, which was added to the language at the end of the phonological component of the grammar. The other expansion added a rule lowering *o* to *ɔ* before coronals. This rule was also added at the end of the phonological component. After these expansions, the new rule lowering *o* before coronals was reordered so that it occurred before umlaut and collapsed with the original lowering rule. Next, the rule lowering *u* was also reordered so that it applied before umlaut. It could not be collapsed with the original lowering rule since the two rules now applied in

different environments; the rule lowering *u* still applied only before *r* but the rule lowering *o* applied before both *r* and other coronals. Finally, the rule lowering *u* expanded. A new rule lowering *u* before other coronals was added to the grammar at the end of the phonological component. At this point, the rule lowering *u* was split, with part of the rule applying before umlaut and part of the rule applying after umlaut. This describes the state of affairs found in Kesswil.

A similar sequence of events took place in Schaffhausen. In part of the Canton of Schaffhausen, a number of other changes took place as well. In seven villages⁷ in the Canton, a morphological rule has been added to the grammar which lowers *o* to ɔ in the past participles of the strong verb classes II, IIIb, and IV⁸. Some examples of this are given in 10.

10) Schaffhausen past participles

Class II	Class IIIb	Class IV
kst ɔ bə <i>gestoben</i> 'have scattered'	kw ɔ rffə <i>geworfen</i> 'have thrown'	kst ɔ xxə <i>gestochen</i> 'have pierced'
kr ɔ xxə <i>gerochen</i> 'have smelled'	kh ɔ lffə <i>geholfen</i> 'have helped'	kfl ɔ xtə <i>geflochten</i> 'have braided'

In these morphological environments, *o* is thus lowered before non-coronals as well. The situation found in these villages is similar to that found in a nearby dialect area, the town of Toggenburg in the Canton of St. Gallen. In Toggenburg, *o* is routinely lowered when it occurs in past participles of the strong verb classes mentioned above; some examples are *kl ɔ gə* 'have lied', *kw ɔ rffə* 'have thrown', and *kf ɔ xtə* 'have fought'. These examples indicate that a morphological rule has been added to the dialects spoken in this area.

In two of the seven villages which have acquired this morphological lowering rule, the rule has lost its morphological marking so that labials and velars in general have become lowering environments as well as *r* and coronals. Forms such as *s ɔ ppə* 'to stuff', *h ɔ gər* 'hump', *ɔffə* 'open', and *j ɔ xxə* 'yoke' show *o* lowered in these environments. The original lowering rule has thus been expanded further in these parts of the Canton of Schaffhausen. It is interesting to note that these seven villages are precisely those villages which do not contain the split rule Robinson described; the villages make up the area in which the lowering rule has remained entirely after the umlaut rule. Their behavior suggests that these villages comprise a dialect area which should be treated separately from the rest of the Canton.

The following sequence of events summarizes the changes which have affected the lowering rule in Schaffhausen. After Schaffhausen split from Kesswil, the Canton itself split into two parts. In one area, the dialect region discussed by Robinson, the rule lowering *o* before *r* was reordered to apply before umlaut. After the rule was reordered, it expanded to include other coronals as a lowering environment. The new environments were again added to the grammar at the end of the phonological component; the rule was thus split. In the other part of the Canton, the area originally described by Kiparsky, the rule was not reordered. It also expanded to include coronals as a lowering environment; since the original rule still applied after umlaut, the new environments could be collapsed with the old. The dialect, along with the nearby dialect of Toggenburg, also acquired a morphological rule which lowered *o* in certain past participles. In two of the villages the rule lost its morphological marking and was collapsed with the lowering rule.

At this point a summary of the main points of the paper so far is in order.

Summary

- 1) A lowering rule is present synchronically both in Schaffhausen and in Kesswil.
- 2) Neither of the dialects has a rule identical with the rule originally added.
- 3) The original rule lowered *o* to ɔ only before *r*.
- 4) The rule has undergone a number of expansions and changes in all of the dialect areas discussed.
- 5) One of these changes was reordering.

I draw a number of general conclusions from this. One conclusion is that Kiparsky's original example of rule reordering still stands. The reordering did not take place in exactly the fashion he described, but nevertheless reordering must have occurred. As the data presented in this paper show, the lowering rule must have been reordered at some point. Kiparsky's original point, that historical change can take place in this manner, remains valid.

Another conclusion is that a generative account of historical change such as this can account for a mass of confusing data in a systematic way. The analysis proposed in this paper systematically accounts for all the data by making two assumptions; one is that phonological rules are ordered, and the other is that rules expand in the manner described by Robinson. It is difficult to imagine an alternative analysis which could account for all the data without making these assumptions.

The most important conclusion I draw from this analysis is that any account which tries to describe historical change must be as detailed and messy as the data require. Whether the analysis is presented in a generative framework or in any other framework, an account of linguistic change must be as complex and detailed as any account of synchronic data. It would be foolish to treat historical change as something somehow neater than synchronic data; both have proven to require complex and detailed analyses. Looking just at lowering and umlaut, as Kiparsky did in this case, offers an artificially elegant and dangerously skewed account of what has happened these dialects. The account presented in this paper is admittedly a little messy, but this messiness is due to the fact that one part of a language cannot be isolated from the rest of the language; rules interact with one another in complicated ways, and any changes to these rules must of necessity have complicated repercussions. If this analysis is messy, it is because in all probability historical change is similarly messy. It is generally accepted that any account of synchronic phenomena must exhaustively account for all the data; an account of historical change must do no less.

Endnotes

1) This version of the rule was given in Robinson (1976). This formulation of the rule is more accurate and is formulated in more common terminology; when I refer to 'the lowering rule' it is to this version that I refer.

2) Of course, umlaut is not the only source of rounded front vowels in these dialects. As Moses (1982) points out, in both Schaffhausen and Kesswil, front unrounded vowels have sometimes become rounded in the presence of a following labial consonant. She cites such as examples as *trɔffə* 'treffen' and *ɔlf* 'elf'. Moses cites these examples to show that the rounded front vowels are phonemic in the language. This fact, of course, presents no problem to Kiparsky's analysis; the morpho-phonemic rule of umlaut is not lost just because it, too results in rounded front vowels.

3) Researchers such as Moses (1982), Hooper (1976), and Bynon (1977) have all argued that the Swiss German case is not an example of reordering. Hooper and Moses

in particular argue that the lowering rule has been lost in Kesswil, although each arrives at her conclusion for different reasons. As is apparent, I do not agree with their conclusions.

4) Unless otherwise specified, throughout the paper the modern German forms will be given in italics along with the Schaffhausen and Kesswil forms.

5) This generalization is true with the exception of forms in which *u* is lowered before *r*, which are discussed later in this paper, and with the exception of a small number of diminutive forms.

6) In addition to the Swiss German case discussed here, Robinson considers other cases which support his claim that rule expansion behaves like rule addition; new environments are added in the form of new rules. In this paper I treat rule expansion in the same way.

7) The seven villages in question are Buchberg, Buchthalen, Rudlingen, Trasdadingen, Dorflingen, Osterfingen, and Wilchingen. It is interesting to note that these villages are those which lie the farthest away from Kesswil. As mentioned in the paper, they are also the only areas in Schaffhausen which have never reordered the lowering rule at all.

8) Strong verb classes II, IIIb, and IV are those classes in which, in Old High German, vowel alternation in the root resulted in an *o* in the past participle.

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