Lipski, John M., ***Rule Interaction and Rule Loss*** , Neophilologus, 58:3 (1974:July) p.273

RULE INTERACTION AND RULE LOSS

The development and spread of the theory of generative phonology has resulted in the application of this new theory to the entire domain covered by more traditional theories of phonology. As well as being applied to synchronic phonological descriptions, generative grammatical theory has been employed in dialectology and, most importantly, in characterizing phonological change. Although the possibilities generally gathered under the rubric of sound change are quite numerous, generative phonologists have attempted to demonstrate that all such changes may be grouped into a few major classifications, considering their effect on the grammar of the language in question considered as a system of generative rules. This question was first addressed by Halle[1], who spoke of the ways in which the grammars of two stages of a language or two dialects of the language could differ in terms of the phonological rule component, thus characterizing various types of phonological change. The most obvious change-type considered by Halle was *rule addition*; i.e. the development of a new set of phonological alternations. Halle also spoke of *rule reordening*, a notion intimately connected with the generative-phonological tenet that rules may be sequentially ordered, and *rule simplification*; both variants on what was previously known as analogical change. These ideas were developed at much greater length and with a wealth of examples by Kiparsky[2]. Kiparsky was basically concerned with the same three categories of grammar differentiation as Halle; both were primarily concerned with what may be termed *innovation*, typified by rule addition, and *simplification*, including rule reordering. Since formal simplicity of rules was taken as the scale against which grammatical modifications were measured, rule complication was not considered a viable category of phonological development. Kiparsky, however, extended the scope of the discussion by also considering cases of the *loss* of rules or parts of rules during diachronic developments. The idea of rule loss was not regarded as an actual category of linguistic change; rather, Kiparsky[3] viewed such cases as special instances of the general process of simplification. Speaking further of the loss of rules from the grammar of a language, Kiparsky noted that loss of a rule can be effected in one of two ways. Either the structural description (SD) of the rule is no longer met, due to a loss of proper input environments to the rule, or the structural change (SC) of the rule is not carried out, perhaps due to additional modifying influences. According to Kiparsky, loss of the SD will automatically result in increased allomorphic variation, since existing phonological alternations are extended. On the other hand, loss of the SC produces a decrease of allomorphic variation, simplifying existing alternations. Thus Kiparsky concludes: "In terms of its effect on the grammar, the salient feature of loss is that it results in *simplifi-*

cation of the grammar."

The theoretical commentaries and observations first offered by Kiparsky and Halle have been further extended and refined by King[4] in the first major treatise dealing with generative diachrony. As with the preceding studies, King confines his attention to instances of innovation and simplification, considered as the only valid classes of phonological change. King's work is different from that of Kiparsky, however, in that *four* major categories of sound change are proposed: the three dealt with by Kiparsky and an additional category of *rule loss*. Rule loss is thus considered to be one of the forms of *primary change*; i.e. changes which affect only the rule component of a grammar but which leave the underlying phonological representations intact. In order to conceive of rule loss in the strict sense, therefore, it is necessary to envisage a situation in which a rule which had previously applied to a set of phonological representations in order to produce an alternation ceased to function at some point, for whatever reason, thus allowing the underlying phonological representations to emerge as surface forms. Put in this way, rule loss seems to be an unusual phenomenon, but in practice it generally turns out that cases of so-called rule loss have their basis in general and widespread phonological processes. One of the two nearly identical examples of rule loss adduced by King concerns word-final devoicing in Yiddish. Yiddish, according to the data presented, once shared with the later stages of Old High German a rule devoicing word-final obstruents. Modern standard Yiddish does not exhibit this rule; hence, there has been a case of rule loss. Obviously, however, it is not the case that word-final devoiced obstruents suddenly and spontaneously regained their voicing due to an instantaneous phenomenon of "rule loss"; in fact this particular development seems to have resulted from an analogical leveling. Many Old Yiddish words with devoiced final obstruents participated in paradigms in which the underlying voiced obstruent appeared, much as in modern German (cf. Middle German alternations like *wec–weges*, *gelt–geldes*, etc.). By an obvious process of analogial extension, the voiced form of the obstruent was reinstated in word-final position. Speaking of the same change, Anttila[5] notes the situation after German had undergone the process of terminal devoicing: "The voiceless variants are the outputs of the devoicing rule. Now when the 'sound change' converts all such voiceless stops which alternate with voiced ones back to voicing, the devoicing rule loses its motivation and drops." Rule loss in this instance is seen to arise from a consideration of the before-after situation in Yiddish; i.e. before and after the analogical leveling had occurred. Put in Kiparsky's terms, the loss of the structural change of the devoicing rule; that is, the voicing of word-final obstruents, results in the interpretation that the rule of final devoicing has been lost.

Examples such as the one treated above illustrate that "rule loss", taken as an overall diachronic correspondence, may arise through analo-

gical levelling of an alternating paradigm. Within the theory of generative phonology, as in other linguistic frame-works, analogy has been interpreted as a form of grammar simplification. Hence, by extension, rule loss of the type discussed above has been considered as an instance of simplification. As a result of this classification, rule loss as a form of language change raises questions as to the nature of linguistic evolution in general. According to the overall model of diachronic generative phonology as formulated by Halle, Kiparsky, King, and others, a clear distinction exists between changes which may be effected by an adult speaker and changes which are initiated by children learning the language, or equivalently, which manifest themselves as the language is passed through successive generations of speakers. The generative model embodies the claim that the only type of phonological change which may occur in the grammar of an adult speaker is the addition of new rules. Simplification, therefore, is necessarily relegated to the grammar of children, generally over a period of several generations, and thus is almost impossible to study directly except by means of before-after correspondences. King has claimed in fact (p. 65) that: "simplification, rule loss, and rule reordering seem typically to occur in the transmission of language from generation to generation, not within the speaker's adult life span." The phenomenon of rule loss thus occupies a strange position among examples of phonological change in that no real consensus has been reached as to whether loss of rules should be regarded as an actual *type* of language change, or merely as the *result* of other, independent changes. King has stated (p. 77) that "rule loss might better be termed *rule non-acquisition*, to emphasize the likely mechanism by which rules are lost from a grammar."[6] Such a view of language change via rule loss is too narrow in that it considers only one particular mechanism which could yield such a phenomenon. Just as language change does not always result in simplification, so rule loss does not always come from simplification, or from analogy, or for that matter from any other single type of development.

An enlightening discussion of rule loss considered as an autonomous form of linguistic change may be found in an informative and provocative paper by Dressler[7]. Dressler, using data from various Breton dialects, has provided a valuable study of the loss of rules during the gradual dissolution of a minority language under the pressure of the "standard" language. Of particular interest are the data dealing with the successive erosion of rules over several generations.

The remainder of this paper will briefly discuss some additional variations on the theme of rule loss, considered not as a form of autonomous change, but as the result of the interaction of conflicting rules, in order to place this form of language change in a somewhat wider perspective. The example chosen as an illustration is a common one, but one which has never before been examined in this precise fashion.

Classical Latin permitted a wide variety of consonant clusters in word-initial position, including clusters of the form *sC*; i.e. *sc-*, *sp-*, etc. In later stages of Latin, however, a prothetic vowel was often attatched to the beginning of such words, perhaps for reasons of syllabicity[8]. At first this prothetic vowel was added only when no vowel preceded the initial cluster, resulting in the situation to be found in modern literary Italian, where we have, for example, *la scuola* but *in iscuola*[9]. Eventually, however, the prothetic vowel became regularly attatched in all environments, remaining permanently implanted in France and in the Iberian peninsula; e.g. *scolam* > O. Fr. *escole*, Sp. *escuela*, Port. *escola*, etc. This situation thus defines a rule of prothesis among certain Romance languages, roughly:

(1) $\varnothing \rightarrow e \; / \_\_ \; sC$

Rule (1) has survived intact in modern Spanish, Portuguese, and Catalan, where it functions not only as a language-internal phonotactic constraint, but also determines the shape of any new borrowing which might contain an initial *sC* cluster. One may thus speak of the addition of rule (1) to the grammar of Ibero-Romance and old French, a term which of course does not do justice to the complexity of the events surrounding this change, but which is nonetheless a useful descriptive label not at variance with the observable data.

The prothetic vowel *e* became firmly attatched to French words originally beginning in *sC* by the twelfth century[10]. This restructuring, however served to place the *s* in syllable-final position, which was subject to a strong tendency towards effacement in early French. In general, syllable-final *s* weakened and fell, with concomitant lengthening of the preceding vowel. In particular, words beginning in the sequence *esC-* were gradually reduced to the form *eC-*; e.g. *escole* > *école*, *ester* > *être*, etc. The loss of the *s* probably passed through a stage of aspiration [h]; the identical process may be observed in many dialects of modern Spanish, where syllable-final *s* is aspirated to [h] and often lost completely: *estar* > [ehtár] > [etár], etc. For a time after the *s* of the French words in *esC-* was lost phonetically, it probably remained phonologically, serving to constrain the form of borrowed words and occassionally reappearing in learned words[11]. Eventually, however, restructuring took place, the *s* was permanently lost. With the phonological loss of *s* from the old French words of the form /sC-/.../, the conditioning environment for rule (1) was effectively removed from the language, and this rule ceased to operate. By the sixteenth century, all traces of the tendency to apply rule (1) had dissappeared from the literary language, and words in *sC-* began to be reintroduced into the language[12].

The above developments which ensued in the history of French provide a clear example of rule loss. In Kiparsky's terms, this loss occurred through the loss of the structural description of (1). In later stages of the language,

even replenishment of the structural description did not serve to resurrect the rule, which may thus be spoken of as having been irrevocably lost. Notice, however, the differences between the loss of rule (1) in French and the model of rule loss formulated by King and Kiparsky. The structural description for rule (1) was removed through the development of another general rule, roughly:

(2) $s \rightarrow \varnothing \; / \; V \_\_ C$

Rule (2), in turn, has its basis in purely phonetic considerations, involving the distribution of articulatory energy, and finds its analogue in various unrelated languages. The development of rule (2) was in no way connected with the prior existence of rule (1), except that (1) served to supply additional environments in which (2) could operate. Any interrelationship between the two rules was, as it were, fortuitious. More specifically, there is no way of interpreting rule (2) as either causing, or facilitating the simplification of any part of the grammar of French. What we have, therefore, is a case of rule loss through the non-principled interaction with another, purely phonetic rule. It would be difficult to justify any sort of argument claiming either that rule (2) arose due to internal structural considerations or that its development was in some way influenced, in a positive or negative fashion, by the existence of (1). If, then, one accepts that the primary motivation for the development of (2) was phonetic and not phonological in nature, the loss of (1) may be said to be entailed by the addition of (2). This view is not without parallel; in a review of King's book, Lyle Campbell[13] notes (p. 197) that "any supposed instances of rule loss can be re-interpreted as the addition of a rule which obliterates the results of some other rule." From this fact, Campbell concludes that it is not particularly useful to speak of "rule loss" as a productive type of sound change. In a similar vein, Chafe[14], in a paper devoted to rule-ordering, considers that as new rules become added to grammars, old rules become pushed "deeper" into the ordering format until, with restructuring, they disappear altogether. Interpretations such as these, however, put the prospect of rule loss in a completely different light as regards the general transmission of language change. It will be recalled from the earlier remarks that the generative model of language change has insisted that the only way that an adult's grammar may be changed is through the addition of a new rule; conversely, rule addition is felt to be predominantly confined to the grammars of adult speakers. The loss of a rule, on the other hand, is felt to be a process involving the passage of a language across a generation gap; that is, involving only the grammars of children. In the French example under consideration, however, rule loss and rule addition are inextricably bound, the former following logically from the latter. The addition of rule (2) could quite feasibly be regarded as a change implemented during the lifetime of a single speaker, as a process of general phonetic disintegra-

tion. As a natural consequence, the loss of (1) must also be regarded as a change typical of the grammar modifications of which an adult speaker is considered capable by the theory of generative phonology.

This formulation of rule loss does not stand in contradiction with the generative model as previously formulated, since the circumstances surrounding the actual loss of a rule are different in each case. In the French example discussed above, there was no need to posit motives of analogy or simplification, thus not conforming to the observation of generative phonology that rule loss generally involves simplification. Another diachronic development which may be interpreted as rule loss has been illustrated, showing that a rule may arise in a language and in so doing affect the action of another rule, perhaps even to the point of rendering this rule meaningless.

Pursuing the development of rule (1) among the Romance languages a bit further, a somewhat different mechanism of rule loss may be discovered. It was noted earlier that rule (1) of vowel prothesis has survived up to the present day in Spanish and Portuguese, although subject to further developments in Spanish. In certain dialects of Portuguese, however, the development of rule (1) has been altered in a number of different ways. Occassionally, for example, the entire first syllable *es-* (more often [eš]) of a word to which a prothetic *e* has been added will drop, thus yielding a truncated form beginning in a consonant. The development *está* > *tá* is common in Brazilian Portuguese and in many dialects of continental and insular Portuguese as well. In all observed cases, only a small subset of the words in *esC-* have been so treated; consequently the continued existence of (1) in these dialects has not been threatened. If, however, the process of deleting certain unstressed syllables became more widespread, so as to cause restructuring in such words, it would be necessary to speak of the loss of part or all af (1), depending on the extent to which entire syllables are deleted. In such cases, one could again speak of a general phonetic process of syllabic reduction, perhaps also to be considered as the addition of a rule. It would be more difficult, however, to assess the effects of such developments on the phonological structure of the language as a whole, since if such syllabic tendencies became dominant, the entire language would be drastically modified, particularly as concerns the phonological rule component. In any event, such rudimentary developments in this direction as may be observed point once again to the intimate connection between rule addition and rule loss in a diachronic evaluation.

A much more instructive example of rule evolution comes from other dialects of Portuguese, where phonetic tendencies countering the effects of rule (1) have created an interesting situation. In many dialects of Portugal, an increasingly strong expiratory stress accent, aided by additional factors, has resulted in a tendency for unstressed vowels to weaken or even disappear. In particular, the prothetic *e* of words in *esC-*, being

unstressed, is so weakened that in some dialects it has disappeared altogether, yielding forms in which the phonetic realization *sC-* is permanent[15]. The reduction and deletion of unstressed vowels in these dialects is in fact constrained by certain factors, but for the purposes of discussion we may assume the development of a general rule such as:

(3) $\ddot{V} \rightarrow \varnothing \; / \_\_$

As in the previous cases, rule (3), if in fact it may be properly considered as a rule, arose from purely phonetic developments, affecting the entire language. By the action of rule (3), however, the prothetic voewl which had been inserted by (1) was subsequently removed. This paradoxical situation may be viewed more clearly if we restrict (3) to a more specific case, namely:

(4) $\check{e} \rightarrow \varnothing \; / \_\_ sC$

Here it may be seen that (4), considered as a proper subset of (3), is the exact opposite of (1),, in that it removes precisely those vowels which have arisen by the application of (1). In order to retain both rules in the grammar of the Portuguese dialects in question, it would be necessery to strictly order (1) before (4), thus resulting in a situation in which the net result of the application of these two rules to underlying forms in /sC-/ is precisely nothing at all! Obviously, in the absence of morphophonemic evidence to the contrary, such an analysis cannot be maintained indefinitely; eventually, one will have to admit to the loss of rule (1).

Such a series of developments raises a number of interesting theoretical questions. As with the developments in French, the Portuguese example presented here may be interpreted as the loss of one rule conditioned by the addition of another rule. In the latter case, the loss of rule (1) presumably occurs through removal of the structural change of this rule by the action of (4). Once again, the changes involved find their motivation in general, non-phonological processes, and the overall development is the net result of the basically fortuitous overlapping of the domains of two unrelated rules. There is, however, one major difference which separates the loss of (1) in French from the loss of the same rule in some dialects of Portuguese. In French, (1) was lost by the development of (2), which robbed it of environments on which to operate, but which otherwise was a totally unrelated rule. The advent of rule (4) into the Portuguese dialects is problemmatic, for it causes the loss of (1) by in effect negating this rule, inasmuch as (4) is the exact opposite of (1). This gives rise to the question of precisely how the interaction of these two rules is to be characterized. Along these lines, at least the following three possibilities may be offered. First, it may be that the appearance of rule (4), which is the end result of a gradual phonetic process, effected the removal of the prothetic vowels inserted by (1) during the generation in which (4) came into effect; later generations then dropping (1)

altogether. Such an assumption carries the implicit claim that at least one generation of speakers exhibited grammars containing both (1) and (4), in that relative order. If one accepts the notion that grammar modification in adults is restricted to rule addition, such an interpretation is unavoidable[16]. A second possibility is that the synchronic grammars of the Portuguese speakers in question have contained both (1) and (4) ever since the introduction of the latter rule, and that in fact both rules are still present in the modern dialects. Finally, it may be that the development of (4) logically entailed the loss of (1), due to the inherent nature of the two rules; i.e. the existence of both rules within the same system is a logical impossibility.

The second possibility, that of the continued coexistence of (1) and (4), may be dispensed with easily enough. Under no currently available theory of phonology would a long-term analysis be tolerated in which one rule totally cancelled the effects of another rule, an analysis in which underlying forms are identical with surface forms, but different from intermediate forms. Since no additional evidence may be adduced in favor of the continued existence of (1), the rule must be regarded as lost. Chosing between the remaining two alternatives is not quite so straightforward, in that it involves a confrontation between a theoretical model and an actual set of observed data. The standard theory of diachronic generative phonology asserts that rule addition occurs in the grammar of adults and that rule loss is a function of grammar-construction by children. It should be noted at this point that such claims are based largely on the theory, and are not substantiated by any irrefutable empirical evidence; they may, in fact, eventually turn out to be unfounded. Accepting this model, nonetheless, forces one to accept the position that at least one innovating generation of speakers exhibited both (1) and (4) in their adult grammars. This choice is forced by the theory, regardless of any contrary opinions which might be voiced due to the special nature of the case involved. A closer look at the situation defined by this theoretical orientation will show why this choice may not always be warranted. Rule (4) of course did not arise suddenly in Portuguese; it is the cumulative effect of a long process by means of which certain unstressed vowels were successively weakened to the point of disappearing. It thus developed by increments, as a rule of weakening with an increasingly strong effect on atonic vowels. While this rule only weakened vowels but did not delete them, rule (1) could operate unhindered, since the vowel which was introduced remained in the surface forms. At one point, however, the prothetic vowel was last, not only in rapid speech, but in all styles. Presuming that this evolution could be consummated during the adult lifetime of a native speaker, we thus have a situation in which a speaker now deletes vowels which at some earlier point in his life he merely weakened. To the extent to which he is aware of his earlier habits, we may postulate the continued existence of (1) in this speaker's grammar.

If the speaker is aware that words like *scola* should contain an intial prothetic *e*, it may be said that both (1) and (4) are present in is grammar, even though this vowel is never pronounced. On the other hand, an awareness of (1) presupposes that the full extent of (4) has not been reached in this speaker's grammar. One possible way out of this dilemma is to envisage an old speaker, who adopted (4) early in his life, and who has all but forgotten his earlier use of (1); this speaker, it may be claimed, has clearly replaced one rule by another during his lifetime. Under more usual circumstances, however, the paradox inherent in the above description remains, and it seems impossible to discuss the coexistence of (1) and (4) in the same synchronic grammar. The problem resides in the distinction between the *competence* of the speaker, represented by the grammatical rules, and his *performance*, or actual phonetic output. By attempting to differentiate these two concepts as mutually independent domains, one is left with the problem of drawing the line between (1) and (4) in a synchronic grammar. If, alternatively, the competence of the native speaker is made contingent upon his observable verbal output, it is possible to define the logical incompatibility of (1) and (4), thus dissolving the paradox.

Based on the foregoing observations, it is possible to tentatively propose a reassessment of rule loss along a number of different lines. First, it must be born in mind that the so-called loss of a rule does not have a unique source, but may arise from a number of developments, often in the antagonistic action of a different rule. If the addition of one rule logically entails the loss of another rule, then rule loss must be regarded as a possible form of adult language change, if one ascribes the same status to rule addition. It is, however, when two logically contradictory rules must be considered concurrently that the entire notion of rule loss *per se* becomes questionable. To date there have been few convincing examples offered of the loss of a rule through a purely spontaneous evolution. To the contrary, rule loss is generally a mere label for a diachronic correspondence resulting from a diverse range of developments. Given, therefore, the present knowledge of diachronic processes, it appears unlikely that rule loss will turn out to be a normal form of autonomous change. If one regards rule loss as the logical outcome of the interaction of additional factors, several theoretical obstacles are thereby avoided. If, in addition, the observable action of two rules in a diachronic situation is taken as basic to the grammatical description, it is possible to classify many and perhaps most cases of rule loss in terms of natural diachronic tendencies.

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Notes

1. Morris Halle, "Phonology in generative grammar," *Word* XVIII (1962), 54–72.
2. Paul Kiparsky, *Phonological Change*. Unpublished Ph. D. dissertation, M. I. T. (1965). "Linguistic universals and linguistic change," in *Universals in Linguistic Theory*, ed. E. Bach and R. Harms (New Jersey, 1968), pp. 170–202.
3. *Phonological Change*, Chapter 2.
4. Robert King, *Historical Linguistics and Generative Grammar* (New Jersey, 1969).
5. Raimo Anttila, *An Introduction to Historical and Comparative Linguistics* (New York, 1972), p. 119. For further discussion of this same problem see a review of King's book by D. N. S. Bhat in *Indian Linguistics*, XXXI (1970), 49–57.
6. Kiparsky has spoken of this same notion, which he has termed *imperfect learning*.
7. W. Dressler, "The phonology of language death," in the *Papers from the Eighth Regional Meeting of the Chicago Linguistic Society* (1972).
8. See, for example, Henning Andersen, "Diphthongization," *Language*, XLVIII (1972), 11–50 (esp. p. 34); Edouard Bourciez, *Eléments de Linguistique Romane* (Paris, 1967), pp. 48, 156.
9. See C. H. Grandgent, *An Introduction to Vulgar Latin* (New York, 1934), pp. 97–98.
10. See M. K. Pope, *From Latin to Modern French* (Manchester, 1934), p. 217.
11. *Ibid.*, p. 152.
12. *Ibid.*, p. 234.
13. In *Language*, XLVII (1971), 191–209.
14. Wallace Chafe, "The ordering of phonological rules," *International Journal of American Linguistics*, XXXIV (1968), 115–136.
15. Many examples of this development may be found in the literature. See, for example, J. Leite de Vasconcellos, „Dialectos Trasmontanos," *Revista Lusitana*, II (1890), 97–120 (pp. 107, 119); „Dialectos Alemtejanos," *Revista Lusitana*, II (1890), 15–45 (p. 38); „Dialectos Alemtejanos," *Revista Lusitana*, IV (1896), 215–246 (pp. 232, 245–6); „Dialectos Algarvios," *Revista Lusitana*, IV (1896), 324–338 (pp. 330, 336); A. R. Gonçalves Vianna, „Falar de Rio-Frio," *Revista Lusitana*, I (1887), 195–226, 310–319 (pp. 217–219, 221, 311).
16. King, *op. cit.*, pp. 67–68, makes exactly this observation with respect to an analogous case.