INTERNAL CONSTITUENT STRUCTURE
AND ACCENT IN RUSSIAN WORDS*

Morris Halle and Paul Kiparsky

Halle's 1973 study of Russian word accentuation and Kiparsky's 1973 study of Sanskrit, Greek, and Lithuanian word accentuation come to remarkably similar conclusions in most respects. Both find that lexical morphemes fall into two great classes, inherently accented and inherently unaccented. A word containing a stem that is inherently accented on some syllable will retain a fixed accent throughout its inflectional paradigm, except possibly for certain secondary shifts, as when the inherently accented vowel is deleted or becomes nonsyllabic in the course of the phonological derivation. Words containing no inherently accented stems make up the so-called 'mobile' paradigms, in which the location of the accent varies depending on the inflectional suffixes that are added to the stem. The accent in such mobile paradigms depends on the character of the suffix. In particular, in all of the languages we investigated, a cognate division into Strong vs. Weak suffixes (governing stem vs. suffix stress) turned out to play a key role in the placement of the accent in mobile paradigms. When affixed to accentless stems 'weak' suffixes normally bear the surface stress. 'Strong' suffixes, on the other hand, bear surface stress only with some stems; words consisting of other accentless stems to which 'strong' suffixes have been adjoined received stress on the initial syllable by a special rule, which Halle calls the Circumflex Rule. This is the core of the system which goes as far back as the Indo-European protolanguage.

But there are also substantial differences between our analyses. Probably the most important of these differences has to do with the role of word internal constituent structure. Kiparsky assumed that each productive inflectional or derivational suffix creates a new constituent with the stem to which it is added, so that the constituent structure of words is nested in the following manner:

(1)
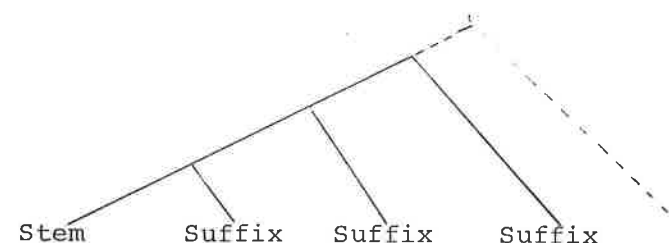
It should be observed that the term 'stem' is not a new lexical category distinct from the traditional 'noun', 'verb', 'adjective', etc. Rather the term 'stem' is a cover term for any and all of the lexical categories; it bears the same relation to the latter as the term 'vowel' bears to '[a]', '[i]', or '[o]'.

Halle began with an assumption quite opposite to that of Kiparsky. He postulated that the word is a simple linear sequence of morphemes with no hierarchical structure:

(2)
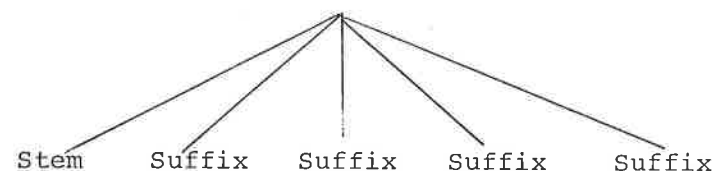
In the course of his analysis, however, Halle found himself forced to postulate, within words, both constituent structure of the type (2) and constituent structure of the type (1). He therefore had to distinguish two kinds of suffixes on the basis of their accentual behavior. The two classes of suffixes differed in how a following suffix would be attached to them. What Halle called *constituent structure forming* suffixes had the property that the next suffix was added by Chomsky-adjunction. Thus, A in (3a) is a constituent structure forming suffix.
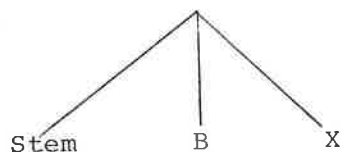
(3a)
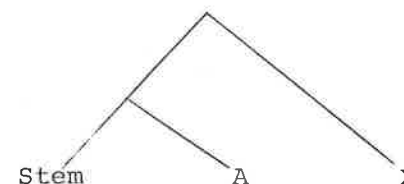
The other type, which Halle took to be the normal case, took accretions at its own level, as B in

(3b):

(3b)

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              /|\
             / | \
            /  |  \
         Stem  B   X
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No other difference between the suffixes, whether
syntactic, semantic, morphological, or phonological,
seems to exist. But by a projection from the ac-
cent facts Halle was led to set up a constituent
structure difference.
     We will analyze the motivation for Halle's so-
lution in detail below. We may note to begin with
that the corresponding accentual difference between
suffixes is found also in the accent systems ana-
lyzed by Kiparsky but is dealt with in another way.
Instead of setting up two kinds of constituent
structure, Kiparsky's analysis assumes that all
suffixes are added with constituent structure, but
marks certain suffixes (those which Halle would
have adjoined without forming constituent structure)
as not undergoing a certain accent rule. Our pur-
pose in this paper is to present an analysis of
Russian along the lines advocated by Kiparsky, and
to compare it with Halle's treatment of the same
data. We shall see that Kiparsky's analysis has a
number of clearcut advantages, which emerge in
Russian even more clearly than in the languages to
which he originally applied it.
     Before proceeding to compare the two solutions,
we would like to comment briefly on the theoretical
issues involved. Our work on Russian stress is not
motivated only by our interest in the system for
its own sake, but also by our conviction that it
can show us something about stress systems in gen-
eral, and about the interrelationship of phonology
and morphology. We have already mentioned the
question of constituent structure. We would like
to raise the question whether it is possible to
maintain the hypothesis that morphology works by
Chomsky-adjunction for all languages. That is, can
we assume that principle (4) holds universally?

(4) Each productive inflectional and derivational
    suffix creates a new constituent.

This would have the great virtue of resolving the
question of the phonological role of constituent
structure in a principled manner. The present

status of this question appears to be the follow-
ing. There are certain clear cases where it has
been shown that phonological rules must make ref-
erence to word internal constituent structure. For
example, no other way has ever been found to ex-
plain the secondary stresses in the English words
like *grammaticality, theatricality*. Thus, we must
at any rate allow some constituent structure in
words. One possibility in this situation would be
to set up constituent structure in just those
places where it is required by the operation of the
phonological rules. This is what has been done in
practice in many phonological analyses. But the
'minimal structure' required by the phonology gen-
erally does not coincide with what might conceiv-
ably be motivated on any other grammatical grounds.
It is therefore worthwhile to consider the ade-
quacy of the 'maximal structure' implied by prin-
ciple (4). Can we make this strong and consistent
assumption about word structure? It might of
course mean that much of the constituent structure
of words would not be relevant to the operation of
the phonological rules. In languages with few
phonological rules the constituent structure might
even play no role at all in the phonology. But
this is naturally no argument whatsoever against
(4). The real question is rather whether the as-
sumption of maximal constituent structure would
complicate the phonological component of any lan-
guages. Is the structure just phonologically
irrelevant in some respects, or does it actually
force bad analyses on us? It is exactly this ques-
tion which is posed by the competing solutions to
the Russian accent system which we will confront
with each other below. Kiparsky's, but not
Halle's analysis is compatible with principle (4).
Therefore, if Halle's analysis is right, principle
(4) is necessarily wrong; if Kiparsky's analysis is
right, (4) may or may not be right, but we will at
any rate have found some evidence to support it.
     A less vital but still interesting question
concerns a claim made in Kiparsky's paper concern-
ing the nature of the accent rules. The key rule
with which we will be concerned is the rule which
Halle calls the Oxytone Rule. This rule places
stress on the last vowel of the string, except be-
fore certain marked sequences where stress is
placed on the penult. Within Kiparsky's framework
the analogous rule places stress on the post-stem
syllable. Thus, if Halle's solution is right Rus-
sian diverges in this respect from the other Indo-

European languages that retain their inherited accent mobility. If Kiparsky is right, Russian will have been shown to be at one with all of its sister languages.

Since the above putative generalizations cannot yet be regarded as firmly established, we will not in any way use them to decide the issue between the two solutions. The choice will be made on the basis of what seems right within Russian itself. We indicate these possible generalizations merely to draw attention to the kinds of further consequences which a resolution of the immediate issue will have.

The difference between the two solutions which we reached was at bottom a reflection of our differing perceptions about the role that constituent structure plays in phonology. Halle was much impressed (excessively, he would say in retrospect) with the various examples that have been adduced in the literature purporting to show that there was no need or purpose in invoking constituent structure in the operation of phonological rules (cf., e.g., Ross 1972). He therefore assumed that Russian words were usually linear concatenations of morphemes without constituent structure. This assumption seemed to work reasonably well for so large a part of the vocabulary that the cases where constituent structure had to be invoked appeared rather to be exceptions for which a more elegant solution without recourse to constituent structure would ultimately be found, or failing this, a general explanation for the fact that there were two types of words (with and without constituent structure) would be forthcoming.

Kiparsky, on the other hand, has long felt that exceptional behavior of words should not be attributed to differences in their underlying representation and that exceptions to phonological rules should be expressed by marking specific morphemes as not undergoing particular rules.

At this level, we have not two theories, but two strategies or even biases. Neither of us has given principled reason for excluding the other's way of dealing with exceptions. It is certain that theoretical issues are ultimately at stake, particularly those of naturalness and psychological reality, though we are not yet able to formulate the connections with any precision. So far, all we have is two sets of beliefs as to what kinds of ways of representing arbitrary categorization in phonological rules will one day turn out to be

correct. We will naturally look for theoretical justification of these beliefs in so far as we are led by them to analyses which are supported on other grounds.

We turn now to Russian stress. Before launching into a detailed comparison of the two competing solutions, a number of background issues must be discussed. These are, on the one hand, certain modifications in the general framework that are the result of work by Goldsmith 1976, Haraguchi 1975 and some others done subsequently to the publication of our two papers. On the other hand, we must also sketch the main rules that interact with the one rule--Halle's Oxytone or Kiparsky's Post-Stem Rule--that is the focus of the controversy.

In Halle 1973 it is assumed that all vowels preceding an accented vowel are subject to the Stress Distribution Rule, which accents all pretonic vowels. A later rule destresses all but the last of these with the result that surface stress appears on the last of the accented vowels. The major motivations for this treatment are the following two phenomena. The treatment captures neatly the fact that when an accented vowel is deleted the surface accent appears on the vowel to its left. (For examples see Halle 1973:313-5.) Moreover, Russian possesses derivational suffixes that are always accented regardless of whether the stem to which they are adjoined is accented or not. Thus, for instance, the adjective forming suffix -*ast*- has the surface stress when added to an accented stem (e.g., *griv́astyj* 'having a big mane') as well as when added to an unaccented stem (e.g., *gub́astyj* 'having big lips'). We see, thus, that in Halle's treatment a word containing more than one accented morpheme will emerge with the surface accent on the last or right-most of these morphemes. We shall therefore refer to it as the 'right-most accent wins' approach.[1]

An immediate consequence of this approach is that all case endings must be represented underlyingly as unaccented, for when these are added to accented stems, the surface stress appears on the stem rather than on the ending. Since some case endings do bear the surface accent quite regularly when added to unaccented stems, a special rule, Halle's Oxytone Rule, was postulated to supply the accent:[2]

(5')   V $\longrightarrow$ [+accented] / Q ____ ($C^X V^X$)

> where Q contains no [+accented] and $C^X V^X$
> represents specially marked suffixes.

The rule had to be restricted so that it would not
apply after accented stems, because if it were to
apply then surface stress would appear on the case
ending rather than on the (accented) stem, as re-
quired by the facts.

In addition to derivational morphemes that are
always accented, the language also possesses deri-
vational suffixes that behave like case endings:
they are accented only when adjoined to unaccented
stems; when adjoined to accented stems, the surface
stresses is not on the suffix but on the stem, cf.;
for example, *sáxaristyj* 'sugary' vs. *zolotístyj*
'golden'. Given the fact that rule (5) is part of
the grammar, it is only natural to make use of (5)
to handle such cases as well. The difficulty here
is that (5) normally accents the word final suffix
(the case ending) and not suffixes that precede
the case ending. The obvious move under these cir-
cumstances is to let (5) apply cyclically: it will
then accent the last morpheme in the constituent.
If the word has no internal constituent structure
this will be tantamount to accenting the case end-
ings; in words with internal constituent structure
(5) will accent the last vowel of the innermost
constituent. While this approach can mechanically
grind out the correct stress assignments, it does
so at a cost: it requires that we assign constitu-
ent structure to a word not on the basis of its
morphological composition, but on purely phonolog-
ical grounds.

The work of Goldsmith and others alluded to
above has shown that the left-ward movement of the
surface accent that results in consequence of the
deletion of an accented vowel can be captured quite
elegantly not only with a 'right-most accent wins'
convention like that of Halle 1973, but also with
its diametrical opposite, a 'left-most accent wins'
approach. We shall not give the details here since
they require a separate paper. We shall only ex-
plore a few of the most salient consequences that
the adoption of a 'left-most accent wins' approach
has for the treatment of Russian accentuation.

The most immediate result is that it is no
longer necessary to represent all case endings as
underlyingly unaccented. Since we are adopting a
'left-most accent wins' approach, it will be an

automatic consequence that after accented stems
case endings will be unaccented. Secondly, it is
no longer necessary to restrict the Oxytone Rule so
as to prevent it from applying after accented stems.
The Oxytone Rule can, therefore, be simplified as
in:

(5)   V $\longrightarrow$ [+accented[/ ____ ($C^X V^X$)

> where $C^X V^X$ represents a specially marked
> suffix

This formal change makes the Oxytone Rule more sim-
ilar to Kiparsky's Post-Stem Rule which we give here
as (6):

(6)   V $\longrightarrow$ [+accented] /]$_{stem}$ + C_0 ____

It might be asked at this point whether in view
of the adoption of the 'left-most accent wins' ap-
proach there is still any need for a rule with the
effects of (5) or (6). One might instead accent all
case endings and let the 'left-most accent wins'
principle do its work. With regard to the so-called
'weak' case endings this is an unexceptional sug-
gestion. However, there are in Russian, as well as
in the other Indo-European languages, 'strong' case
endings which, like the 'weak' endings, appear un-
accented after all accented stems, whereas unlike
the 'weak' endings, they appear accented only after
certain unaccented stems and unaccented after oth-
ers. We must, therefore, represent 'strong' case
endings differently from the 'weak'. Since it has
been proposed that 'weak' endings be represented as
accented, an obvious move is to represent underly-
ing 'strong' case endings as unaccented, and have
the Post-Stem Rule or the Oxytone Rule supply them
with accents after certain stems but not after
others. This entails that stems must be marked
for whether or not they trigger the application of
the Post-Stem (respectively Oxytone) Rule. An al-
ternative to this, which is in fact adopted by
Halle 1973, might be to represent all suffixes as
unaccented and supply the accent by rule (5) or
(6). We would then have to distinguish between
'weak' case endings, which are always subject to
the rule, and 'strong' endings, which are subject
to the rule only after certain stems, by means of
different assignments of the rule feature, [+ Rule
(5)] or [+ Rule (6)] respectively. This alterna-
tive seems to us mistaken, for, in effect, it

utilizes a rule feature to supply a phonetic feature to a class of morphemes. We would not countenance the use of a rule feature to supply voicing to word-final continuants in such nouns as *cave, lathe, size,* even though English must have a rule voicing word final continuants to account for such noun-verb pairs as *device-devise, grief-grieve, bath-bathe.* It would not be a correct generalization about English that word final continuants are voiceless except in a restricted class of instances where the voicing rule applies. The metagrammatical restriction that rules out this solution would also rule out the proposal to represent Russian 'weak' case endings as unaccented and invariably subject to rule (5) or (6) respectively. We shall therefore assume in what follows that case endings and suffixes, in general, like stems, may be both accented and unaccented, and that stems may or may not be marked as triggering rule (5) or (6) respectively. We shall discuss further consequences of this decision below after reviewing briefly the rest of the accentuation rules of the language.

The first of these rules is the Deaccentuation Rule, which removes the accent before certain idiosyncratically marked suffixes. Both derivational and inflectional suffixes can be deaccenting.

(7)   a) *rifm + ač + í* 'poetasters'   (cf. *rífm + a* 'rhyme')
     golov + ač + í 'big-headed ones' (cf. *golov + á* 'head')

    b) *učítel + ju*   'teacher' (dat. sg.) but
                  učítel + jám idem (dat. pl.)
     proféssor + u 'professor' (dat. sg.) but
                  professor + ám idem (dat. pl.)

As shown in (7a) the noun-forming suffix *ač* produces nouns that are accented on the case ending both from accented and unaccented stems. Formally we capture this by saying that unaccented *ač* triggers Deaccentuation, and that stems formed with this suffix trigger the Post-Stem (respectively Oxytone) Rule. Deaccentuation also accounts for the accentuation of the plural of the nouns in (7b). As the singular forms show, these nouns have stems that are underlyingly accented. In order to account for the accent on the case endings in the plural it must be assumed that Deaccentuation has applied: since in the class of nouns under discussion all plural case endings are accented ('weak'), the endings appear stressed on the surface.

The Metatony Rule, which is a word level rule, retracts stress from certain suffixes one syllable (and, in certain instances, two syllables) towards the beginning of a word. (For details see Halle 1973:320-2.) The Metatony Rule is triggered by certain word-forming suffixes. Moreover, it also applies to certain large classes of words--e.g., a fair proportion of Russian nouns is subject to Metatony in the plural, and a great many verb forms are subject to Metatony. In other Indo-European languages Metatony is well represented and in many instances the environments where Metatony functions in Sanskrit, Greek or Lithuanian are identical with those where it is functioning in modern Russian. In Kiparsky and Halle 1977 Metatony is treated not as a stress retraction rule, but as a rule accenting the vowel preceding a marked suffix. This does not affect the issues under discussion here.

The Circumflex Rule is a second word level rule; i.e., it does not apply to any constituent other than the word. It places stress on the first vowel of the word (which in some cases is taken to include the immediately preceding preposition) provided that the word is unaccented. This rule is the Russian analog of the Greek and Sanskrit 'recessive' stress rule.

Finally, we recall again that when an accented vowel is deleted the word does not become stressless, rather the stress moves to the preceding syllable. This type of stress movement is of particular importance in view of the great role that vowel deletions play in the phonology of Russian (see below pp. 147ff. for further illustrations of stress movement). As noted above, an explanation for this movement of the stress will be found in Goldsmith 1976.

We proceed now to investigate the different empirical consequences of the Post-Stem and the Oxytone Rules. We shall show that the former rather than the latter is more nearly correct in capturing the facts of modern Russian accentuation. The Post-Stem Rule always accents the syllable which immediately follows the stem. Therefore, if an unaccented suffix has two (or more) syllables, it will receive stress on its first syllable. The Oxytone Rule is more indeterminate: it assigns stress to the last (and exceptionally to the penultimate) vowel of an unaccented constituent. It is therefore capable of assigning stress in places where the Post-Stem Rule cannot apply. In particular, the Oxytone Rule can apply in the following three types of cases where

the Post-Stem Rule is inapplicable:

Case a. On the last (second, third, etc.) syllable of a polysyllabic suffix. This can be done by not designating this syllable as belonging to the special category *C*V; it should therefore theoretically be the general case in the analysis of Halle 1973.

Case b. On the last syllable of a stem not followed by a suffix in the same constituent, or of a stem followed only by a nonvocalic suffix; provided that the stem is preceded by a prefix.

Case c. On the last of a string of suffixes within a constituent, e.g., [Stem + C_0VC_0 + VC_0]. This possibility is widely exploited in Halle 1973.

Do these three additional types of cases, which constitute the extra power of the Oxytone Rule as compared to the Post-Stem Rule, ever actually arise in Russian? The answer, we now think, is 'no' on all three counts. In what follows we shall show why this is so, and how the seemingly small rule change leads to a substantial reappraisal of the system.

Case a. There appears to be no need for this case since there are no attested instances of it to be found, even given the analysis of Halle 1973. Every polysyllabic suffix (and there are relatively few of these) takes stress on its first syllable, e.g., *golov + ámi* 'head' (inst. pl.), *nes+ê+te* 'carry' (2 pl. press.).[3]

Case b. We contend that stem final accent must not be permitted even within the analysis of Halle 1973, since it gives rise to intolerable complications. These complications are wholly avoided if the Oxytone Rule is replaced by the Post-Stem Rule, which can never accent a stem. The difficulties encountered by the Oxytone Rule here are well illustrated by Halle's treatment of the perfect passive participles formed with the suffix -*n*. Among these, the forms of prefixed stems of the base *daj* 'give' are unique in exhibiting the stress alternation patterns that are characteristic of unaccented adjectives; e.g., the participial forms *pére + da + n + y* 'transmitted' (pl.) but *pere + da + n + á idem* (fem. sg.) parallel precisely the adjectival forms *môlod + y* 'young' (pl.) but *molod + á idem* (fem. sg.). Since Halle's

Oxytone Rule accents the last vowel of the constituent, and since he, moreover, assumed that words normally have no internal constituent structure, he obtained the correct stress assignment by representing these participles as linear strings of morphemes which differed from each other in that the plural form was marked as an exception to the Oxytone Rule, i.e.,

[pere+daj+n+y] (pol.) [pere+daj+n+a] (fem. sg.)
     -Oxy

Because of this marking the plural form was then automatically subject to the Circumflex Rule, which accents the initial syllable of the word; whereas the fem. sg. got final stress by the Oxytone Rule. Halle encountered a serious problem, however, with the remaining accentless stems, for in the perfect passive participle these normally exhibit stress on the stem (or on the pre-stem syllable when the stem vowel is a *yer*), e.g.:

(8)   na + pís + a + n + a   'written'   (fem. sg.)
        peré + sl + a + n + a   'transmitted'   (fem. sg.)
        pere + čít + a + n + a   'read over'   (fem. sg.)
        u + dérž + a + n + a   'restrained'   (fem. sg.)

It is obvious that if these are represented as linear strings of morphemes they would all receive final stress by the Oxytone Rule. Since the only stress retraction rule that might be applicable here (Halle's Metatony Rule) pulls the stress back one syllable only, there is no possibility to obtain the correct output if the participial forms are represented as linear strings of morphemes. To overcome this Halle proposed the (in his system) totally ad hoc solution that all participles in -*n* (except for the derivatives of the verb *daj*) have internal constituent structure such that the word minus the desinence forms a distinct constituent, i.e.

        [[na + pis + a + n] + a]
        [[pere + čit + aj + n] + a]
        [[pere + sol + a + n] + a]
        [[u + derž + a + n] + a]

In addition, Halle postulates (and in this we shall follow him) that with the exception of participles from the stem [daj] participles formed with the suffix [n] are subject to stress retraction by the Metatony Rule.

It hardly needs pointing out that the constituent structure here functions purely as a deus ex machina and that the absence of any independent motivation for the difference in constituent structure of participles from different verbs is a serious flaw in Halle's analysis. A solution emerges once all words are assigned constituent structure, as, e.g., in (9):

(9)   a. $[[[\text{pere} + [\text{daj}]_V]_V + \text{n}]_A + \text{á}]_A$
      b. $[[[[\text{pere} + [\text{čit}]_V]_V + \text{aj}]_V + \text{n}]_A + \text{á}]_A$

It must be noted that the underlying representation in (9a) is not compatible with a solution that includes Halle's Oxytone Rule, for this rule applies already to the constituent

$$[\text{pere} + [\text{daj}]_V]_V$$

yielding an incorrect output. No difficulty arises if the Oxytone Rule is replaced by the Post-Stem Rule since its environment

$$]_{stem} + C_o \underline{\qquad\qquad}$$

is not satisfied here.

The derivation of the stress of the participle in (9b) leads to the same conclusion. Here the Post-Stem Rule applies to the constituent

$$[[\text{pere} + [\text{čit}]_V]_V + \text{aj}]_V \\ + \text{P.S.}$$

placing stress on the suffix [aj]. Subsequent application of the Metatony Rule retracts the stress to the stem syllable as required. The Oxytone Rule, on the other hand, would have applied to the constituent

$$[\text{pere} + [\text{čit}]_V]_V$$

which happens to yield the correct output, but for the wrong reason; i.e., because the string contains a prefix. Given the nonprefixed verb

$$[[[[\text{čit}]_V + \text{aj}]_V + \text{n}]_A + \text{o}]_A$$

the Oxytone Rule would apply to the string

$$\text{čit}]_V + \text{aj}]_V$$

from which the correct output could be obtained only if the Metatony Rule were to apply in addition. The Oxytone Rule would thus force us to invoke different rules for the prefixed, than for the unprefixed verb --an obviously undesirable result.

In sum, if the Oxytone Rule is replaced by the Post-Stem Rule we can explain the unique stress pattern of the *Prefix + daj + n* participles, without recourse to any extraordinary or unusual devices. It is neither necessary to treat any forms of these participles as exceptions to any rules, nor to suppose that the stem *daj* is an exception to an (itself exceptional) constituent structure assumed for *n*-participles. Their accentuation follows from the fact that just these *n*-participles are morphologically unique in having no thematic suffix after the stem. Perfect participles in *-n-* of all other verbs have a thematic suffix; e.g.,

$$[[[[\text{pere} + [\text{čit}]_V]_V + \text{aj}]_V + \text{n}]_A + \text{a}]_A \\ [[[[\text{pere} + [\text{pis}]_V]_V + \text{a}]_V + \text{n}]_A + \text{a}]_A \\ [[[\text{za} \quad + [\text{máz}] \quad + \text{a}]] + \text{n}] + \text{a}]$$

If the verb root is accented the stress will remain on the root, as expected. If the verb root is unaccented and also triggers the Post-Stem Rule the accent will go on the thematic suffix, from which it will be retracted to the root by the Metatony Rule, with isolated exceptions such as *želánnyj* "desired."

Case c. We now examine the case where a stem is followed by several suffixes, e.g., by one or more derivational suffixes and an inflectional suffix, or desinence. It is here where the decisive data will be found both with regard to the role that internal constituent structure should play in determining the accentuation and to the choice of the Post-Stem Rule (6) over the Oxytone Rule (5). When we examine Halle's treatment of derivational suffixes we find that he divides them into four distinct classes.

1) 'Inherently accented suffixes' (e.g., *'ást-*, *-ár-*, *-jág-*, *-ít-*, *-át-*, Halle 1973:336) are stressed whether the stem to which they are adjoined is inherently accented or not. For example, from the inherently accented stem *rabót* (cf. *rabótat'* 'to work') we derive *rabot + jág + a* 'work horse, hard worker' with suffixal accent, just as in *brod + jág + a* 'hobo', which is derived from the unaccented stem *brod* (cf. *brodít'* 'to wander'). As noted above (pp. 133ff.), because of

the 'right-most accent wins' principle adopted by
Halle, these suffixes need only be represented as
underlyingly accented to yield the correct output.
If, as proposed here, we adopt the 'left-most ac-
cent wins' principle, we need to mark all such suf-
fixes as triggering Deaccentuation, in addition to
supplying them with an inherent accent. As regards
constituent structure and the choice between rules
(5) and (6), these suffixes are not decisive; they
are compatible with any consistent treatment.

   ii) Halle's second class of suffixes have sur-
face stress when added to unaccented stems, but not
when added to accented stems. E.g., *gor + íst + yj*
'mountainous' (from unaccented *gor* [cf. *gor + á*
'mountain']) has suffixal stress,but *sáxar + ist +
yj* 'saccharine' (from inherently accented *sáxar*
'sugar') does not have suffixal stress. Halle as-
sumed that these suffixes are inherently unaccented
and form constituents, i.e., [[gor + ist] + oj] and
[[sáxar + ist] + oj]. Either the Oxytone Rule (5)
or the Post-Stem Rule (6) will then derive the cor-
rect surface stress. An alternative solution is
also available. We can assume that like the suf-
fixes in class i) above, these are inherently ac-
cented but unlike the ones in i) the suffixes of
class ii) are not deaccenting. Given the 'left-
most accent wins' principle that has been adopted
here, the correct surface accentuation can be de-
rived from representations that have internal con-
stituent structure as well as from representations
that do not, i.e., either from [[gor + íst] + oj]
and [[sáxar + íst] + oj] or from [gor + íst + oj]
and [sáxar + íst + oj]. In sum, the first two
classes of derivational suffixes are compatible
with any consistent treatment as regards constitu-
ent structure; words can be assumed to have maximal
constituent structure or none at all. These two
classes of suffixes are similarly indecisive as re-
gards the choice between rules (5) and (6).

   iii) Halle's third class of suffixes does not
exhibit surface stress. Instead, they produce
words with stress on the post-suffixal vowel and
this regardless of whether or not the stem is ac-
cented. At first sight, it would seem that these
suffixes provide a good argument for adopting
Halle's Oxytone Rule (5), as against Kiparsky's
alternative (6), as well as for representing these
words without internal constituent structure. We
need only assume that these suffixes are unaccented

and deaccenting to derive the correct surface stress
by means of the Oxytone Rule (5) as shown in (10);

(10) a) rífm + ač + i ——→ rifm + ač + i ——→ rifm + ač + í
                    Deacc   Oxy

     b) golov + ač + i ——→ vacuous ——→ golov + ač + í
                      Deacc   Oxy

It is obvious that Kiparsky's Post-Stem Rule (6)
would incorrectly assign stress to the suffix *-ač-*
if the underlying representations of (10) were used.
Thus, if no internal constituent structure is to be
assigned, the Oxytone Rule (5) must be chosen over
the Post-Stem Rule (6). This result, however, con-
tradicts the conclusions we drew above from our
discussion of the accentuation of perfect passive
participles in *-n*. This contradiction, however, can
be readily overcome. We need only recall that the
Post-Stem Rule is triggered by specifically marked
stems. The stem *rifm* is not among those triggering
this rule, whereas *rifm + ač*, like all stems formed
with the suffix *-ač-*, does trigger the Post-Stem
Rule. The correct surface stress can then be de-
rived either from the underlying representation in
(10) or, as shown in (11), from underlying repre-
sentations with maximal constituent structure by
utilizing the Post-Stem Rule.

(11) [[[rifm] + ač] + i]   [[[golov] + ač] + i]
         +Deacc -Deacc   +Deacc -Deacc
     -P.S. +P.S.   -P.S.   +P.S.

           No rules applicable on first cycle

Deacc	rifm + ač	vacuous
Post-Stem	not applicable	not applicable

Deacc	not applicable	not applicable
Post-Stem	rifm + ač + í	golov + ač + í

   iv) Suffixes of this class behave like suffixes
of class iii) when adjoined to unaccented stems, and
like suffixes of class ii) when adjoined to stems
that are accented. A typical suffix of this type is
the noun-forming *-nik-*

(12a) with unaccented stem: pro + vod + nik + í 'conductors'
       with accented stem: rabót + nik + i   'workers'

As noted in Halle 1973, when added to feminine stems these suffixes undergo several morphophonemic changes, among which the most interesting, from our point of view, is the fact that the words become subject to Metatony if they have unaccented stems. Thus the feminine counterparts to 12a) have the surface stress shown in 12b).

(12b) with unaccented stems: pro + vod + níc + y 'conductors'
      with accented stems: rabót + nic + y   'workers'

These facts can readily be handled by either approach. In Halle's approach the Oxytone Rule will accent the case endings when the stem is unaccented; when the stem is accented, it will also remain accented on the surface. It is equally straightforward to obtain the correct surface stress from underlying representations with full constituent structure. We recall that the stems *pro + vod* and *rabot* do not trigger the Post-Stem Rule. The stems derived from them--*pro + vod + nik* and *rabot + nik*--, on the other hand, trigger the Post-Stem Rule and thereby form nouns with exclusively desinential stress. In the feminines stress is retracted to the predesinential syllable because the feminines are subject to Metatony.

(13) [[[pro + [vod]] + nik] + i   [[[pro + [vod]] + nic] + y]
         -P.S.   +P.S.   -P.S.   +P.S.
         -Met.   +Met.

     [[[rabót] + nik] + i   [[[rabot] + nic] + y]
        -P.S.   +P.S.   -P.S.   +P.S.
        -Met.   +Met.

Halle's treatment of the four classes of suffixes can be summarized in tabular form as shown below:

Suffix class	Accented	Constituent forming	Deaccenting
i) -ast-	+	not applicable	not applicable
ii) -ist-	-	+	-
iii) -ač-	-	-	+
iv) -nik-	-	-	-

It is apparent at once that the three binary features that serve to characterize the four classes of suffixes are not orthogonal, for if they had been orthogonal two binary features would have sufficed to distinguish four classes of suffixes. The

incomplete utilization of the distinctive power inherent in the feature mechanism is, however, not the most serious shortcoming of Halle's account. A much more fundamental flaw is that in Halle's account the accentuation of derived words is made to depend on differences in word internal constituent structure for which there is absolutely no semantic, syntactic, or morphological justification. One might have expected such differences in constituent structure to correlate at least in a rough way with the productivity of suffixes. But it is just not the case that suffixes which in Halle's system form a constituent with the stem to which they are added (such as the adjective-forming *-ist-* or the dimunitive *-ik-*, see Halle 1973:339) are as a group either more or less productive than suffixes which do not form a constituent. Nor is there any meaning difference that can be associated with the two bracketings assumed by Halle. Segmental phonology lends no support to them either.

The arbitrariness of this solution is especially disturbing when the same suffix must be given two different kinds of constituent structure with no concomitant difference other than stress itself. This is the case not only with the past passive participle *-n* (see discussion above, pp. 138ff.) but also with past passive participle *-en* which attaches to different stems than *-n*. In Halle's analysis *-en* (like *-n*) sometimes forms a constituent and sometimes not. For example, *kúplennyj* 'bought' (from *kupljú*) and *ugovorénnyj* 'persuaded' (from *u + govorjú*)

[[kup + i + en] + yj] and [u + govor + i + en + yj]

(Halle 1973:333-4) although they are morphologically parallel formations.

A striking example of this unsatisfactory situation is Halle's treatment of the suffix *-ʋk-*. When added to accented stems, this suffix leaves the stress on the stem; when added to unaccented stems, in certain cases, the surface stress is on the postsuffixal syllable; in other cases it is on the presuffixal syllable, and in yet other cases it is on the suffix itself.

(14) a) accented stems: fem. beréz+k+i   'little birches'
                          masc. goróš+k+i   'little peas'

     b) unaccented stems: fem. golóv+k+i   'little heads'
                          masc. gorod+k+í   'little towns'

c) unaccented stems: fem. golóv+oč+k+i 'little heads'
                       masc. gorod+óč+k+i 'little towns'

Consider first the masculine nouns. In order to handle the forms in (14b) and (14c) Halle assumes the underlying representations (15a) and (15b) respectively.

(15)   a. [gorod + ъk + i]

       b. [[gorod + ъk] +ъk + i]

The unmotivated character of these underlying representations is particularly blatant here, for if [gorod +ъk] is a constituent in (15b), why is it not also a constituent in the obviously related word (15a)?

These criticisms of Halle's solution indicate that a different, fully motivated solution must be sought. Since the alternative solution, however, involves crucially a special surface stress retraction rule, we digress here briefly in order to discuss this new rule.

It was noted in Halle 1973 that in many, though not in all Russian words when the surface accent comes to reside on one of two consecutive yer vowels, it is retracted to the vowel that precedes the two-yer sequence. Thus, for example, the oxytone nouns *úgol* 'corner', *úgol'* 'coal', *úgor'* 'eel', *úzel* 'knot, bundle' have penult, rather than final accent in the nom. sg.; this is due to the operation of the rule under discussion as illustrated in (16):

(16) a.   ugъl+ó̆ (cf. gen. sg. ugъl+á)
     Surface stress   úgъl+ó̆
     Retraction
     Other rules   úgol

     b.   volokъn+á (nom. pl.) volokъn+ó̆ (gen. pl.)
                                                           'fibre'
        Met.   volokó̆n+a   volokó̆n+ъ
        Surface stress   not applicable   volókъn+ъ
        Other rules   volókn+a   volókon

The conditions to which this rule is subject are somewhat more restricted than those given by Halle 1973. The rule requires not only that there be yer vowels in two consecutive syllables, but also that the second of these be unaccented or word final. Moreover, the rule must apply after, rather than

before, Metatony.

We return now to the discussion of the nouns formed with the diminutive suffix -ъk-. In view of the results of the preceding pages we shall assume that the words have full constituent structure and that Kiparsky's Post-Stem Rule (6) rather than Halle's Oxytone Rule is operative here. We shall assume that feminine nouns of this type like feminine nouns with -nic- are subject to Metatony. As shown in (17) below it is readily possible to derive the correct surface accentuation:

(17) a. [[[gorod] + ъk] + i]   b. [[[golov] + ъk] + i]
        -P.S.   +P.S.   -P.S.   +P.S.
        -Met.   +Met.
              no rules apply on the first cycle

P.S.	not applicable	not applicable
P.S. 'Left-most accent wins'	gorod + ъk + í vacuous	golov + ъk + í vacuous
Met.	not applicable	golov + ó̆k + i
Surface stress Retraction	not applicable	not applicable
Yer rules	gorod + k + í	golóv + k + i

c. [[[gorod] +ъk] + ъk] + i]   d. [[[golov] + ъk] + ъk] + i]
   -P.S. + P.S. + P.S.   -P.S. + P.S. + P.S.
   -Met.   +Met.
        no rules apply on the first cycle

P.S.	not applicable	not applicable
P.S.	gorod + ъk + ó̆k	golov + ъk + ó̆k
P.S. 'Left-most accent wins'	gorod + ъk + ó̆k + í gorod + ъk + ó̆k + i	golov + ъk + ó̆k + í golov + ъk + ó̆k + i
Met.	not applicable	golov + ó̆k + ъk + i
Surface stress retraction	not applicable	golóv + ъk + ъk + i
Other rules	gorod + ó̆č + k + i	golóv + oč + k + i

We see then that the suffix -ъk- is underlyingly unaccented, and that just like the 'strong' case endings, which are also underlyingly unaccented, it is or is not accented depending on whether the stem to which

it is attached triggers the Post-Stem Rule. The
difference between the masculine nouns (17a) and
(17c) and the feminine nouns (17b) and (17d) is
then readily captured by letting Metatony apply to
the feminine nouns only, thus illustrating again
the fact noted already with respect to the suffixes
-nik-/-nic- (see (2a) and (12b) above) that in some
feminine nouns the stress is retracted relative to
that of their masculine counterparts.

    It is worth noting that in the words under
discussion the accentuation of the suffix *-ʋk-* is
determined by whether or not the stem to which it
is attached triggers the Post-Stem Rule. Since the
stems *gorod* and *golov* belong to the 'mobile' ac-
centual paradigm, they do not trigger the Post-
Stem Rule, as shown by the fact that they have
initial stress in 'strong' case forms, e.g.,
górod + u, gólov + u. Hence the *-ʋk-* suffix im-
mediately following these stems is inherently unac-
cented. On the other hand, the derived stems
[*gorod + ʋk*] and [*golov + ʋk*] trigger the Post-
Stem Rule both when an inflectional suffix is ad-
joined to them as well as when the suffix adjoined
is derivational.

    In view of the preceding we should expect
that when *-ʋk-* is directly attached to a primary
stem that belongs to the oxytone accentual para-
digm--and that thus is shown to trigger the Post-
Stem Rule--the *-ʋk-* suffix will be always accented.
This expectation, however, is not borne out; when
the suffix *-ʋk-* is added to such stems they lose
their capacity to trigger the Post-Stem Rule;
e.g., cf., *star + ik + á* 'old man' (gen. sg.),
but *star + ič + k + á* 'little old man' (gen. sg.),
not **star + ič + k + a.*

    That idiosyncratic lexical markings on mor-
phemes change as they are combined with other
morphemes to form words, is hardly a novel obser-
vation. It should be noted that like many deriva-
tional processes these changes are again not fully
automatic but have idiosyncratic exceptions of
their own. This fact is illustrated well by the
accentual patterns of the adjectives derived with
the suffix *-ov-* which we examine next.

    In a pioneering study, Hartmann 1936 showed
that the accentual pattern of the stem determines
in many instances the accentuation of the derived
adjective. In particular, he observed that ad-
jectives formed with stems that are inherently
accented have stem stress throughout; adjectives
derived from stems belonging to the oxytone

accentual paradigm have stress on the *-ov-* suffix,
whereas adjectives derived from stems belonging to
the mobile paradigm have stress on the case end-
ing. We illustrate this in (18):

(18) Accented stem: beréz + ov + yj 'pert. to birch'
                          (cf. beréz + u 'birth' (acc.
                                      sg.))

    Unaccented stem trig-
    gering Post-stem Rule: stol + óv + yj 'pert. to table'
                          (cf. stol + ú 'table' (dat.
                                        sg.))

    Unaccented stem not
    triggering Post-
    Stem Rule: pol + ev + ój 'pert. to field'
                          (cf. pól + ju 'field' (dat.
                                      sg.))

    As shown in (19) these accentuations can read-
ily be derived if it is assumed that the adjective
case endings are all 'weak' (accented), and that
-ov- is an inherently unaccented suffix which re-
ceives the accent when adjoined to a stem trigger-
ing the Post-Stem Rule.

(19) [[[beréz]$_N$+ov]$_A$+ój]$_A$ [[[stol]$_N$+ov]$_A$+ój] [[pol]$_N$+ev]$_A$+ój]$_A$
    -P.S.   +P.S.   -P.S.
                no rules apply on first cycle

P.S.	not applicable	stol+óv	not applicable

P.S. 'left-most accent wins'	not applicable beréz+ov+oj	not applicable stol+óv+oj	not applicable pol+ev+ój

    It has long been known that there are numerous
exceptions to this lawlike behavior. (A useful list
is given in Kiparsky 1962:262-4.) These exceptions
fall into several distinct classes. A) A large num-
ber of inherently accented stems lose their stem
accent in the adjective; i.e., the *-ov-* suffix, like
the plural suffixes in nouns such as *professor*, be-
comes deaccenting. The majority of these adjec-
tives show desinential stress implying that inher-
ently accented stems do not trigger the Post-Stem
Rule. B) In a small number of cases, however, this
is not true: the adjective shows stress on the *-ov-*
suffix, implying that the accented stem is marked

here as triggering the Post-Stem Rule. We illustrate this in (20):

(20) Accented stems not triggering the Post-Stem Rule:
    birž + ev + ój 'pert. to the stock exchange'
      (cf. bírž + a 'stock exchange' (nom. sg.))
    tekst + ov + ój 'textual'
      (cf. tékst + am 'text' (dat. pl.))

    Accented stems triggering the Post-Stem Rule:
    počt + óv + yj 'postal'
      (cf. póčt + a 'post office' (nom. sg.))
    produkt + óv + yj 'pert. to groceries'
      (cf. prodúkt + am 'product' (dat. pl.))

A different type of exceptional behavior is illustrated by the adjectives in (21). Here the stems are unaccented and trigger the Post-Stem Rule; i.e., they belong to the oxytone accentual paradigm. In the adjectives, however, the idiosyncratic lexical property of triggering the Post-Stem Rule is lost, resulting in desinential stress.

(21) kluč + ev + ój 'pert. to key'
           (cf. ključ + á 'key' (gen. sg.))
    korm + ov + ój 'pert. to a ship's bow'
           (cf. korm + á 'bow' (nom. sg.))

Rarer still are examples of the opposite development; i.e., where a stem belonging to the mobile accentual paradigm triggers the Post-Stem Rule in the derived adjective.

(22) dom + óv + yj 'pert. to house'
          (cf. dóm + u 'house' (dat. sg.))
    sad + óv + yj 'pert. to garden'
          (cf. sád + u 'garden' (dat. sg.))
    dub + óv + yj 'oaken'
          (cf. dúb + u 'oak' (dat. sg.))

In sum, in the modern language the accentual properties of the noun stem no longer determine the accentuation of the derived adjectives in -ov-. Nonetheless, the situation is not one of total arbitrariness: there are obvious correlations which a complete grammar must take into account.

To conclude this review of the Russian accentual system, we compare the accentual behavior of derivational and inflectional suffixes. Just as there are two kinds of accented derivational suffixes, one triggering Deaccentuation and the

other not triggering this rule, so there are two kinds of 'weak' (inherently accented) case endings. The first type is exemplified by the locative singular suffixes -u and -i, which appear on the surface invariably accented, regardless of the accentual character of the noun stem. The second type is illustrated by such normal 'weak' case endings as the dative plural -am, which is stressed on the surface when its stem is unaccented, and stressless on the surface when its stem is accented. We illustrate these facts in (23).

(23)   locative singular: dative plural:

a) unaccented na beregú 'on the shore' bereg + ám 'shores'
   stems
              v grudí 'on the breast' grud + jám 'breasts'

b) accented   v bredú 'in a delirium' bréd + am 'deliria'
   stems

The counterparts of the unaccented derivational suffixes are 'strong' case endings, such as the accusative singular -u or the nominative plural -i. As was noted above, these are characteristically subject to the Post-Stem Rule after some stems but not after others. We have seen precisely the same accentual behavior in our discussion of the suffixes -ьk- and -ov-. Modern Russian does not have 'strong' case endings that trigger Deaccentuation, although Old Russian and many other Slavic languages have a vocative, which is unaccented and deaccenting.

Finally as noted above (p. 137), the Metatony rule is triggered both by derivational and inflectional suffixes. Metatony accounts for the predesinential stress in such (dat.) plural forms as kazák + am 'cossacks', veretën + am 'spindles', kolbás + am 'sausages', as well as the presuffixal stress in such nouns as the diminutives in -ik-, e.g., fonár + ik 'lantern' (cf. fonar + jú 'lantern' (dat. sg.)), dokumént + ik 'document' (cf. dokumént + u 'document' (dat. sg.)).

This completes our review of the accentual system of Modern Russian. We believe that the preceding provides some support for the principle (4), that 'each productive derivational and inflectional suffix creates a new constituent' and, therefore, also for the phonological cycle. We have not encountered any instances where these

assumptions led to any obviously counterintuitive results. Quite the contrary, we have found in a number of cases that the assumption of maximal constituent structure clarified and simplified the solutions. While these considerations fall short of fully establishing principle (4), they are as powerful arguments in its favor as one might expect to encounter in science. Until something better comes along, principle (4) is the best working hypothesis we have.

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NOTES

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[1]Kiparsky 1973:834 assumed that the 'right-most-accents wins' principle was valid for Slavic and Lithuanian, whereas in Sanskrit and Greek he postulated a 'left-most accent wins' principle.

[2]We have replaced the feature [+stress] used in Halle 1973 with [+accented] used in Kiparsky 1973.

[3]A seeming exception to this is the instrumental plural suffix -ьmí which appears in a few nouns of the 'third' declension: *det'mí* 'children', *ljud'mí* 'people', *dver'mí* 'doors', *dočer'mi* 'daughters', *lošad'mí* 'horses. These cases are regular if it is assumed that the stems end with palatalized consonants and the case ending is *mí*.

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