Kansas Working Papers in Linguistics

Volume 8, Number 1

Edited by Letta Strantzali

Reprinted 1992

Kansas Working Papers in Linguistics

Volume 8, number 1, 1983

CONTENTS

THE GENERATIVE RELATIONSHIP

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Within a generative framework, allomorphic relation-
ships are formalized as alternations of the structure X/Y,
where X and Y, the participants of X/Y, are different real-
izations of a position, or segment, common to each member
of a morpheme set;[1] e.g. the alternation f/v, with parti-
cipants f and v, which are different realizations of the
final segment of each member of the set lowf-/lo:wv-,
ruwf-/ru:wv-, etc. in contemporary English.[2] Generativists
typically assume that alternations are represented by only
one of their participants, frequently termed basic, in the
linguistic competence of native speakers. This interpreta-
tion is reflected in the assumption of a level of represen-
tation, the underlying level, comprised solely of basic
participants in segments with alternation. Nonbasic partici-
pants, frequently termed derived, are generated from basic
ones by rules of the form A ⟶ B/C, where A represents a
basic participant, B a derived one, and C the environment(s)
in which B is attested as a realization of the alternating
segment. The participants represented by A and B are said
to be generatively related, and the level of representation
at which B occurs is termed surface.[3]

The generative relationship is essentially one of im-
plication: If basic A and environment(s) C, then dervied B.[4]
It is noteworthy that the implicational nature of the rela-
tionship does not require us to assume what may be termed a
vertical arrangement between participants, i.e. the standard
generative arrangement, reflecting the assumption that only
one participant has underlying status and the corollary that
the process of generation always gives rise to a surface re-
presentation. It is also compatible with a horizontal ar-
rangement, in which both participants, basic and derived, have
underlying status, and the process of generation gives rise
to another underlying representation.[5] We need only assume
that the derived participant of such an arrangement surfaces
by convention following its generation. The difference can
be illustrated with siŋ/sæŋ of contemporary English. The
participants of i/æ, with i assigned basic status and æ de-
rived, may be arranged, in principle at least, vertically
or horizontally. If vertically, only i occurs in underlying
representations. The rule generating æ, the details of which
need not concern us, yields a surface representation:

$$U: \quad \underline{i}$$
$$\downarrow$$
$$S: \quad \underline{æ}$$

If horizontally, it yields another underlying representation, which, like the underlying representation of a segment with no alternation, surfaces. Thus:

$$U: \quad \underline{i} \longrightarrow \underline{æ}$$
$$\downarrow$$
$$S: \quad \underline{æ}$$

The compatibility of implication with two types of arrangement raises the issue of which is linguistically significant. The purpose of this paper is to argue for the significance of both, and to suggest a basis for the distinction. The data to be used as evidence are historical, from two of the Slavic languages: Macedonian and Sorbian.[6]

The Macedonian Data

The evolution of certain nouns in Macedonian supports the existence of vertically arranged participants. Morphologically, Macedonian nominal stems are root- or root-S-, where root represents a lexical component, and S a derivational suffix. The nominal system exhibits two formations, singular and plural, each of which has two forms, definite and indefinite. Thus, nouns attest four forms -- singular indefinite, singular definite, plural indefinite, and plural definite -- with number and definiteness expressed by a grammatical morpheme which follows the stem.[7] The nouns which interest us exhibit root- in the stem, and an alternation of f with v in the root final segment. Historically, these nouns attested f/v/s in the final segment of the root. The labial participants appeared in the singular, with f in the indefinite form and v in the definite; the dental participant appeared in both forms of the plural (e.g. from oref-/orev-/ores- 'nut': s.i. oref, s.d. orev-G,[8] p.i. ores-G, and p.d. ores-G). Only two of these nouns retain the inherited pattern of alternation. The others now exhibit v in the plural, and thus attest f/v, with f in the singular indefinite, and v in the other forms (e.g. from oref-/orev- 'nut', the reflex of oref-/orev-/ores-: s.i. oref, s.d. orev-G, p.i. orev-G, and p.d. orev-G).

The nouns in question have evidently generalized one participant of f/v/s (i.e. v) at the expense of another

(i.e. s). This type of change, i.e. generalization, which
results in the elimination of alternation or a change in the
distribution of participants and thus in the forms opposed
by them, is common in the evolution of morphological systems,
and can be attributed to the influence of already existing
patterns of alternation, including its absence, or to that of
grammatical oppositions which define the system but are not
strengthened morphophonemically.9 With regard to nouns which
inherited root final f/v/s, generalization of v cannot be
attributed to the influence of an already existing pattern.
There were nouns in Macedonian which inherited alternation
in the root opposing the singular indefinite to other forms
(i.e., which inherited the pattern of opposition attested by
nouns with f/v/s after the generalization of v), but they
have eliminated it via generalization of the participant of
the singular indefinite to the singular definite, resulting
in morphophonemic support for the opposition of singular to
plural (e.g. starec-/starc- 'old man', which has s.i. starec,
s.d. starec-G, p.i. starc-G, and p.d. starc-G in the contem-
porary language, thus opposing singular forms to plural mor-
phophonemically although, historically, e of e/∅ was re-
stricted to the singular indefinite, and must therefore be
interpreted in the plural as the result of innovation).10

        Nor can generalization be attributed to the existence
of a grammatical distinction defining the nominal system but
unsupported morphophonemically. This distinction would oppose
the singular indefinite to other nominal forms, but we have
noted that nouns inheriting alternation which supported this
distinction have eliminated it by generalization of the parti-
cipant of the singular indefinite to the singular definite,
from which we must conclude that the opposition of singular
indefinite to other nominal forms is not relevant systemical-
ly. In any case, even if we assume the relevance of this
distinction,11 we are left with the problem of explaining the
failure of structurally parallel nouns to undergo the same
evolution. For example, Macedonian inherited nouns with the
stem structure root- and k/g/z in the root final segment
exhibiting the same distribution of participants as nouns
with f/v/s (i.e. one participant in the singular indefinite,
one in the singular definite, and one in the plural). Yet
these nouns have not generalized the participant of the singu-
lar definite (i.e. g). They have retained the inherited dis-
tribution (e.g. from saprak-/saprag-/sapraz- 'spouse': s.i.
saprak, s.d. saprag-G, p.i. sapraz-G, and p.d. sapraz-G).

        The only apparent alternative is to assume that root
final alternation in the nouns we are considering has, in
some sense, been eliminated. This interpretation is possible

despite the generalization of v to plural forms only since
Macedonian does not permit voiced obstruents in word final
position, which is the position of root final segments in the
singular indefinite of these nouns (e.g. in oref, the singu-
lar indefinite of oref-/orev- 'nut'). Thus, v was general-
ized to the extent it could be within the constraints im-
posed by the phonological structure of the language with re-
spect to the opposition [+voice]/[-voice] in obstruents. In-
terpreting the notion of complete generalization as the re-
placement of one participant of an alternation by another to
the extent the latter is compatible with the phonological
environments of the former, we can claim that nouns which
inherited f/v/s in the root final segment underwent complete
generalization of v.[12] Since v was incompatible with the
phonological environment of f, the result was f/v, not v
(i.e. a segment without alternation). But, if the nouns in
question have undergone complete generalization (i.e., if
they are structurally identical to nouns without root final
alternation in the linguistic competence of native speak-
ers), there must be a level of representation at which the
final segment of the root is v and only v. This cannot be
the surface level because f and v are both attested in sur-
face representations. It must therefore be the underlying
level, i.e. the only other significant level of representa-
tion. And if the underlying representation of each form of
nouns with f/v has v in root final position, the partici-
pants of f/v must be vertically arranged with f occurring
only in surface representations, generated by the operation
of a rule which devoices obstruents word finally.[13]

The Sorbian Data

The Sorbian verbal system provides evidence for the
existence of horizontally arranged participants. The system
is constituted by eleven formations: present, imperative,
imperfect past, aorist past, active participle, passive
participle, past participle, present adverb, past adverb, in-
finitive, and verbal substantive. The infinitive and adverbs
are nonparadigmatic (i.e. exhibit only a single form). Of
the remaining formations, the present, imperative, and pasts
exhibit forms which express person and number. The other
formations express gender and number, with the active parti-
ciple, passive participle, and verbal substantive expressing
case as well. Morphologically, verbal stems are root-,
root-V-, or root-//root-V-, where root represents a lexical
component, and V a stem formant the final or only segment of
which is a vowel.[14] We are concerned with stems of the
structure root-//root-V- in which the realization of V is i.
Historically, the root had a single realization in

some of these stems, but two in others. Among the latter, four root final alternations, each of dental with palatal, were attested: ś/s, ź/z, ć/c, and ʒ́/z. The root- variant of the stem exhibited both participants, in contrast to the root-V- variant, which exhibited only one, the palatal of ć/c and ʒ́/z, but the dental of ś/s and ź/z (e.g. pwać-/pwac-//pwać-i- 'pay', with root final ć/c; proś-/pros-//pros-i- 'ask', with root final ś/s). Within the conjugational unit, the alternations as such were distributed identically (i.e. opposed the same forms), but they were related inversely with respect to the distinction dental versus palatal (see Table 1[5]).

	ś/S		Ć/C	
	root-	root-i-	root-	root-i-
1s.pr.	proś-G		pwac-G	
ip.pa.	proś-G		pwac-G	
ps.pt.	proś-G		pwac-G	
vb.sb.	proś-G		pwac-G	

A. Inherited Distribution of P in Ś/S and D in Ć/C

	ś/S		Ć/C	
	root-	root-i-	root-	root-i-
3p.pr.	pros-G		pwać-G	
ew.pr.		pros-i-G		pwać-i-G
iv.	pros-G		pwać-G	
ar.pa.		pros-i-G		pwać-i-G
pa.pt.		pros-i-G		pwać-i-G
ac.pt.	pros-G		pwać-G	
pr.av.	pros-G		pwać-G	
pa.av.		pros-i-G		pwać-i-G
in.		pros-i-G		pwać-i-G

B. Inherited Distribution of D in Ś/S and P in Ć/C

Table 1: Inherited Distribution of Ś/S and Ć/C

Two of the alternations, ś/s and ź/z, have been retained, with the palatal now appearing in the imperative, active participle, present adverb, and third person plural present, as well as the items which inherited it. The other alternations were

eliminated, with the palatal now appearing in the imperfect past, passive participle, verbal substantive, and first person singular present, as well as the remaining items, which inherited it (see Table 2).

$\acute{S}/S$

3p.pr.	pros-G	$\longrightarrow$	pro$\acute{s}$-G
iv.	pros-G	$\longrightarrow$	pro$\acute{s}$-G
ac.pt.	pros-G	$\longrightarrow$	pro$\acute{s}$-G
pr.av.	pros-G	$\longrightarrow$	pro$\acute{s}$-G

$\acute{C}/C$

ls.pr.	pwac-G	$\longrightarrow$	pwa$\acute{c}$-G
ip.pa.	pwac-G	$\longrightarrow$	pwa$\acute{c}$-G
ps.pt.	pwac-G	$\longrightarrow$	pwa$\acute{c}$-G
vb.sb.	pwac-G	$\longrightarrow$	pwa$\acute{c}$-G

Table 2: Changes in the Distribution of $\acute{S}/S$ and $\acute{C}/C$

How are these changes to be motivated systemically? The innovation responsible for the fate of $\acute{c}/c$ and $\acute{з}/z$ must be interpreted as complete generalization within some domain. There is no other interpretation compatible with their elimination. In view of this and the structural identity of $\acute{s}/s$ and $\acute{z}/z$ to $\acute{c}/c$ and $\acute{з}/z$, we must assume that $\acute{s}/s$ and $\acute{z}/z$ were subject to the same innovation. The domain of this change cannot be stated with respect to the conjugational unit since the forms in which the palatal of $\acute{s}/s$ and $\acute{z}/z$ replaced their dental partners are grammatically different from those in which $\acute{c}$ and $\acute{з}$ replaced theirs. However, the domain can be defined with respect to variant structures of the stem. Returning to Table 2, we note that all items in which the palatal of $\acute{c}/c$ and $\acute{з}/z$ replaced the dental exhibited the root- variant. The same is true of those in which the palatal of $\acute{s}/s$ and $\acute{z}/z$ was extended. Thus, we can claim that each of the inherited patterns, abbreviated XP-/XD-// XD-i- and XP-/XD-//XP-i- with X representing the segments preceding final P or D, has generalized the palatal participant of root final alternations within the unsuffixed (i.e. root-) stem variant. More generally, the innovation can be formulated as elimination of alternation within stem variants. Only the unsuffixed variant was affected since it, unlike the suffixed one (i.e. root-i-), exhibited both participants. Among verbs with $\acute{s}/s$ or $\acute{z}/z$, alternation remained with respect to the conjugational unit as a whole since the suffixed variant exhibited the dental participant. Among verbs with

ć/c or ź/z, however, alternation with respect to the conjugational unit was eliminated since the suffixed variant of the stem exhibited the palatal participant. Thus, within this framework, the apparent difference in fate (i.e. retention with a change in the distribution of participants versus elimination) between verbs which inherited XP-/XD-//XD-i- and those which inherited XP-/XD-//XP-i- is a result of the difference in realization of the root final segment of the suffixed stem variant. Each stem type was subject to the same innovation, i.e. complete generalization within stem variants, which, it should be noted, is attested throughout the verbal system, not only among the verbs we are considering. It can therefore be attributed to a systemic tendency towards uniformity in the realization of roots within the stem variants of verbs with root-//root-V-.

Assuming that units relevant in the evolution of a language (i.e. units which function as domains of change) are those in terms of which native speakers analyze surface forms, and that such units therefore occur in underlying representations,[16] we must conclude that the stem variants of verbs with the structure root-//root-i- are underlying units. Since the distribution of root final participants in verbs which have retained alternation is complementary with respect to stem variants (i.e., each participant of ś/s and ź/z occurs in one and only one variant of the stem: ś and ź in the unsuffixed; s and z in the suffixed, e.g. proś-//pros-i- 'ask', the reflex of pros-/proś-//pros-i-), each must occur in underlying representations. There is little doubt, however, that the participants are generatively related. This is evident from new verbs with the stem type root-//root-i- and alternation in the root final segment. All such verbs are denominal from stems with s or z (e.g. roś-//ros-i- 'sprinkle with dew' from ros- 'dew'; hospoź-//hospoz-i- 'treat' from hospoz- 'guest'), which permits us to infer that the dental of ś/s and ź/z implies the palatal.[17] This finding, incidentally, fits in well with the fact that the unsuffixed variant of the stems in question is implied by the suffixed (i.e., root- is implied by root-i-) but not vice versa since V of root-V- has realizations other than i, each of which defines a different stem type. It may well be that the relationship of stem variants with respect to implication determines the assignment of status in root final alternations among these verbs. In any case, we have a situation in which both participants of a generated alternation appear in underlying representations, from which we must conclude that the participants of alternations may be horizontally arranged despite the traditional assumption that the arrangement is always vertical.

Conclusion

If it is true that the generative relationship is
compatible with a horizontal arrangement of participants as
well as a vertical, we are left with the problem of es-
tablishing the reason for the difference in derived parti-
cipants (i.e. underlying in the case of horizontal arrange-
ments; surface in that of vertical) assuming, as we do,
that there is systemic motivation for it. We cannot gener-
alize with certainty on the basis of a single example of
each arrangement, but there is one obvious difference be-
tween the cases we have considered which deserves mention:
f/v in Macedonian is phonetically conditioned; ś/s and ź/z
in Sorbian are morphologically -- more generally, nonphone-
tically -- conditioned. Thus, in one case, the derived
participant (i.e. f of f/v) reflects phonetic constraints
on the concatenation of members of the phonetic inventory;
in the other (i.e. ś of ś/s and ź of ź/z), nonphonetic.
This difference can reasonably be associated with the dis-
tinction underlying versus surface, especially if, following
the standard interpretation, we view underlying phonological
representations as outputs of the syntactic component of the
grammar, i.e. as labeled bracketings which specify the non-
phonetic attributes of morphemes as well as their segmental
and suprasegmental composition, but surface representations
as strings of phonological units unspecified with respect to
nonphonetic attributes, and interrupted only by boundaries
(see Chomsky and Halle 1968:6-14). Within this framework,
the generation of derived participants which reflect non-
phonetic constraints gives rise to other representations in
which there is nonphonetic information, i.e. other underlying
representations. The generation of derived participants
which reflect phonetic constraints gives rise to representa-
tions which are devoid of nonphonetic information, i.e. sur-
face representations.

Our findings are relevant not only for the issue
with which we have been concerned (i.e. the arrangement of
participants in generative relationships), but for one
other in generative phonology: the psychological reality
of the distinction phonology versus morphology, which was
usual in pregenerative frameworks but ignored in generative,
perhaps because it cannot be formalized if the arrangement
between participants is consistently of one type. In effect,
we have concluded that there is a level, the underlying
level, at which all of the realizations of a morpheme which
can properly be called allomorphs (i.e. which are distributed
with respect to nonphonetic attributes of the environment)
are represented.[18] Thus, there is a level at which the re-

sults of analysis traditionally termed morphological is
represented. There is no such level without recognition
of horizontal arrangements. It should be emphasized in
this regard that the existence of such arrangements is not
incompatible with the notion of invariance, i.e. the hypo-
thesis that, of the participants of an alternation, one has
more basic, probably best equated with lexical, status. It
is simply the case that basic status is not reflected in
the distinction underlying versus surface since, although
basic participants are always underlying, underlying parti-
cipants may not be basic. They may be derived, by rules
which generate them horizontally.

NOTES

1 A morpheme set is the unit comprised of morphemes
which exhibit the same pattern of allomorphy.
 Technically, an alternation may exhibit any number
of participants. The number of participants is determined
by that of allomorphs which differ with respect to the real-
ization of a given position. Alternations of the type with
which we are concerned are traditionally termed morphophone-
mic.

2 Forms cited in this paper are in broad phonetic
transcription. The acute accent denotes palatal articula-
tion in consonants, and tenseness in vowels; c denotes a
voiceless dental affricate, and 3 the voiced counterpart.
There are several abbreviations: D-dental, P-palatal,
U-underlying, S-surface, s.-singular, p.-plural, i.-indefinite,
d.-definite, pr.-present, iv.-imperative, ip.-imperfect,
ar.-aorist, pa.-past, pt.-participle, ac.-active, ps.-passive,
av.-adverb, vb.-verbal, sb.-substantive, in.-infinitive, and
ew.-elsewhere.
 It should be noted that alternations which are
phonetically and distributionally parallel (e.g. f/v and s/z
in the nominal system of contemporary English) are usually
interpreted as manifestations of a single alternation formal-
ized in terms of features (e.g. [+voice]/[-voice], which sub-
sumes f/v and s/z in the English nominal system.

3 In addition to explicit rules of the form A $\longrightarrow$ B/C,
which generate the derived participant of alternations, there
are implicit ones of the form A $\longrightarrow$ A/D, which generate nonal-

ternating segments as well as the basic participant of al-
ternating segments when it appears in surface representations.
Note the assumption of this paper that alternations are
generated from one of their participants, and that the under-
lying and surface representations of nonalternating segments
are identical. In this respect, we are following those who
argue against absolute neutralization (see Kiparsky 1968b).

There is probably disagreement on the existence of
nongenerated alternations, an issue with which this paper is
not concerned. Early studies seem to assume that all alter-
nations are generated. This interpretation was challenged
in 1972 with the appearance of Vennemann's well known paper
on inversion, in which it is argued that the participants of
an alternation may exhibit a <u>via</u> relationship, which is non-
generative.

4 To my knowledge, there has been little if any
attention to defining a basis for the generative relation-
ship. Analyses and handbooks have been concerned only
with the attributes of levels of representation and the
mechanics of rule writing. It should be emphasized in this
regard that the generative relationship cannot be defined
in terms of levels of representation and/or the form of
phonological rules. Levels and rule schemata reflect the
relationship; they do not determine it.
Vennemann 1972 seems to suggest an implicational
relationship between the participants of via alternations.
If this relationship exists, such alternations are generated
in the technical sense provided implication is the basis
for the generative relationship, and the question of the
existence of nongenerated alternations remains open.

5 Thus, technically, the peculiarity of the derived
participant in horizontal arrangements is that it occurs at
both the underlying and surface levels, in contrast to the
derived participant in vertical arrangements, which occurs
only at the surface level. With this understanding, we will
continue to make reference only to the underlying status of
the derived participant in horizontal arrangements since it
is this status which distinguishes it from the derived parti-
cipant in vertical arrangements.

6 There are two Sorbian languages, termed <u>Upper</u> and
<u>Lower</u> by Slavists for geographical reasons. The reference
in this paper is exclusively to Upper Sorbian, which is re-
ferred to as <u>Sorbian</u> for convenience. A survey of Sorbian
verbal morphology, with which this paper is concerned, is
available in Elson 1978. A somewhat more complete survey
can be found in Ermakova 1973. For discussion of Macedonian

nominal morphology, also a concern of this paper, see Lunt
1952 and Koneski 1967. On the use of linguistic change as
evidence for synchronic analysis, see Kiparsky 1968a.

7   There are two other forms -- a vocative, which is
singular, and a special plural used with cardinal numbers
(see Lunt 1952:32-33) -- which we ignore because they are
not attested by all nouns. Their evolution is compatible
with the evolution proposed in this paper for the other forms
of the nouns we are considering.

8   Stems in isolation are cited with a dash following
the final segment. In word-level forms, the boundary between
stem and grammatical ending is marked with a dash if there is
an overt ending. The realizations of grammatical endings
here and elsewhere in this paper are irrelevant to the dis-
cussion, and so denoted with G for convenience. For Mace-
donian, they are available in Lunt 1952 and Koneski 1967;
for Sorbian, in Elson 1978 and Ermakova 1973.

9   We are assuming that a linguistic system is de-
fined in part by a set of grammatical oppositions or dis-
tinctions of the form [+F]/[-F], where F represents a gram-
matical feature (e.g. [past], [plural]), which, in turn, re-
presents a grammatical category (e.g. tense, number). We
are also assuming that allomorphic relationships may be
functional within linguistic systems. A relationship is
functional if the distribution of allomorphs coincides with
the terms of a grammatical opposition which is relevant.
Thus, if the opposition [+past]/[-past] is relevant within
a system, and there is an allomorphic relationship which op-
poses a realization in the forms which are [+past] to one in
forms which are [-past], the relationship is functional with
respect to the opposition. If an allomorphic relationship
coincides with no opposition which is relevant, it is non-
functional. For further discussion of the relationship
between patterns of allomorphy and grammatical oppositions,
including a more precise definition of the notion of func-
tional allomorphy, see Elson 1980.

10   In some instances, the allomorph of the singular
has been used to form a new plural, thus eliminating alter-
nation; e.g. the stem son- 'dream' with son-G in all forms,
plural as well as singular, although, historically, it was
restricted to those of the singular.

11   The distinction was not only grammatically irre-
levant, but phonetically as well; i.e., there was no phone-
tic attribute common to the singular definite and plural

forms, in either the stem or grammatical ending, on the basis of which generalization can be motivated.

12   This is the traditional assumption. Native scholars apparently feel it requires no justification although the singular indefinite was not affected.

13   The existence of such a rule is demonstrated unambiguously by borrowed nouns which had final voiced obstruents in the donor language. All such nouns have a voiceless final in the singular indefinite of Macedonian (e.g., s.i. mitink 'meeting', borrowed from English; cf. s.d. miting-G, which preserves a voiced obstruent since the segment in question is nonfinal in the singular definite).
It should be noted that the hypothesis of complete generalization is compatible with the retention of k/g/z in the nouns mentioned above. For discussion, see Elson 1975, in which it is claimed that f/v/s was eliminated despite distributional identity to other alternations (e.g. k/g/z) because, unlike the others, it opposed labials, not velars, to a dental. It was therefore analyzed as an exception to the general pattern, and eliminated for that reason.

14   There are two other stem constituents, which need not concern us since they are absent in the verbs we are considering. Note that two slashes are used to separate root- and its realizations from root-V- and its realizations in stems with the structure root-//root-V-. The realizations of each stem variant (i.e. root- and root-V-) are separated by a single slash.

15   In the tables, Ś/S abbreviates ś/s and ź/z, and Ć/C abbreviates the other alternations. Note that forms of the present are not alike with respect to the distribution of participants and stem variants. In Table 1, forms other than the first person singular and third person plural of the present are subsumed under elsewhere (i.e. ew.pr.).

16   For discussion of these assumptions, see Kiparsky 1968a.

17   New verbs from nonverbal stems exhibiting a final palatal attest the palatal without alternation; e.g. śérś-// śérś-i- 'widen' from adjectival śérś- 'wider'; krótś-// krótś-i- 'shorten' from adjectival krótś- 'shorter'. It should also be noted that deverbal nouns from verbs with a root final alternation of palatal with dental attest the dental (e.g. rozraz- 'defeat' from rozraź-//rozraz-i- 'de-

feat'), while those from verbs with a nonalternating pala-
tal attest the palatal (e.g. waźer- 'weigher' from waź-//
waź-i- 'weigh'), which is further evidence for the hypothesis
that, in verbs with alternation, the dental implies the
palatal.

18 See Aronson 1968:18-30 for a survey of different
interpretations of allomorphy.

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