Trade-offs in the contrastive hierarchy: Voicing *versus* continuancy in Slavic

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Outline

- Our approach to phonological representations:
  The Successive Division Algorithm (SDA)
- Contrast and phonological activity:
  What does the SDA actually predict?
- Applying the SDA to Russian
  - Revising Halle's hierarchy
  - Consequences of the change
- Evidence elsewhere in Slavic

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Our approach to phonological representations

Two components of a theory of phonemic contrast:

1. **The Contrastivist Hypothesis:** Only contrastive features are phonologically active.
2. **The Successive Division Algorithm:** Contrastive features are assigned by recursively dividing the underlying inventory.

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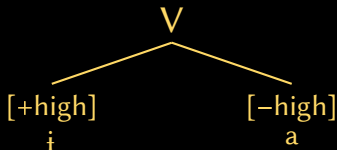
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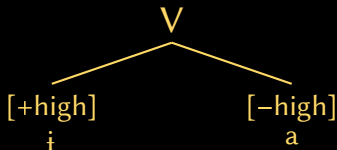
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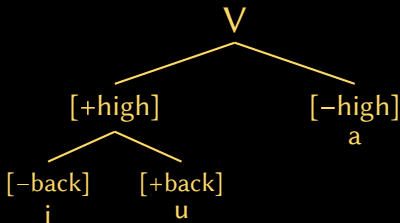
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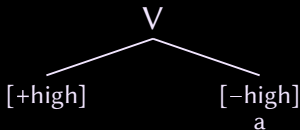
                V   V

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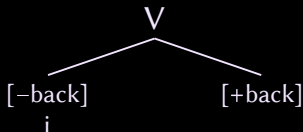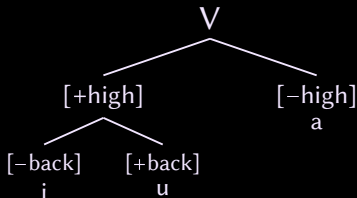Two possible ways of dividing the vowel inventory /i u a/ with
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```
              V
            /   \
      [+high]    [−high]
       /   \         a
 [−back] [+back]
    i       u
```

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back	−	+	

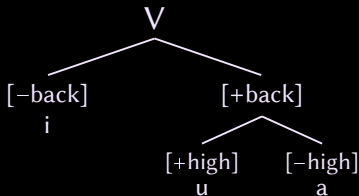|	i	u	a
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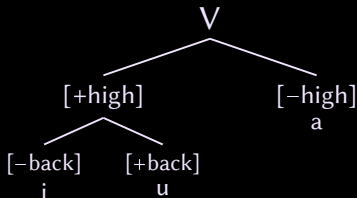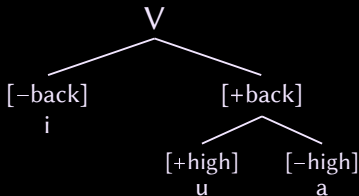[±high] and [±back]:

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```
                    V
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                            a
        ╱      ╲
   [−back]   [+back]
      i         u
```
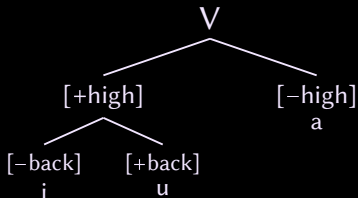
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	i	u	a
high	+	+	−
back	−	+	∅
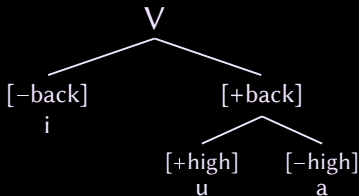
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The SDA and the Contrastivist Hypothesis make testable predictions.

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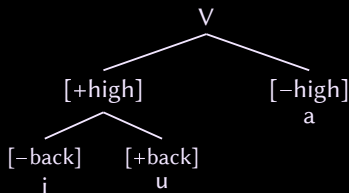# Contrast and phonological activity

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- We can make predictions about trade-offs between potentially contrastive features.

Contrast and phonological activity

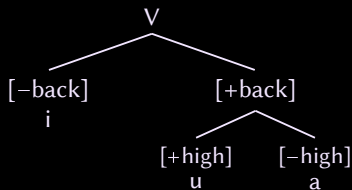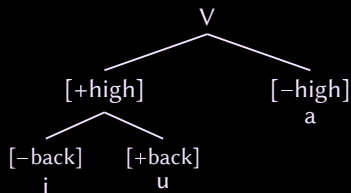Back to our three-vowel example:

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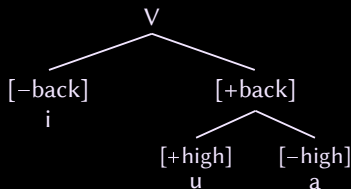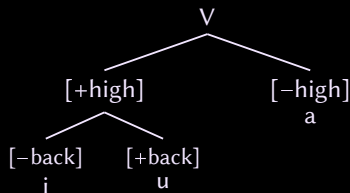
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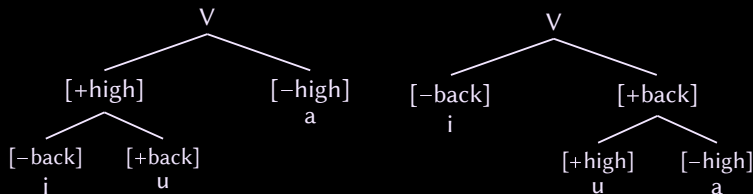# Contrast and phonological activity

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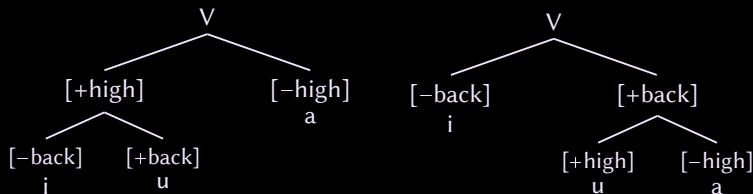
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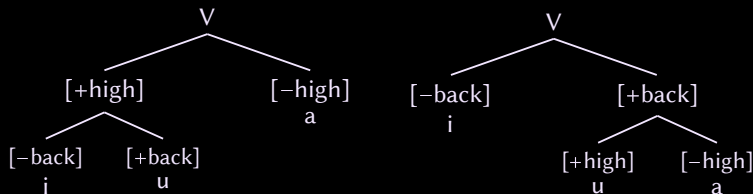
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by

MORRIS HALLE
M.I.T.

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> HALLE (1959: 34)
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> "The hierarchy of features seems to provide an explanation for the intuition that not all features are equally central to a given phonological system."

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- Redundant features are filled in during the derivation, allowing them to be phonologically active.

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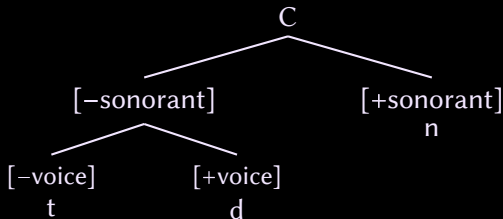
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STOP	p	pʲ	t	tʲ		k	kʲ
	b	bʲ	d	dʲ		g	
AFFRICATE			ts		tʃ		
FRICATIVE	f	fʲ	s	sʲ	ʃ	x	
	v	vʲ	z	zʲ	ʒ		

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- These unpaired obstruents were key to Halle's (1957; 1959) argument against the structuralist separation of morphophonemic and allophonic patterns.

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(Thus Halle's argument: If processes that produce alternations between phonemes are strictly separate from allophony, then there is no unified account of voicing assimilation.)

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- They also trigger regressive assimilatory devoicing:

bʲez ozʲera	'without a lake'
bʲes xlʲeba	'without bread'
bʲes tseni	'without price'
bʲes tʃestʲi	'without honour'

examples from Halle (1959), Timberlake (2002), Calabrese (1995)

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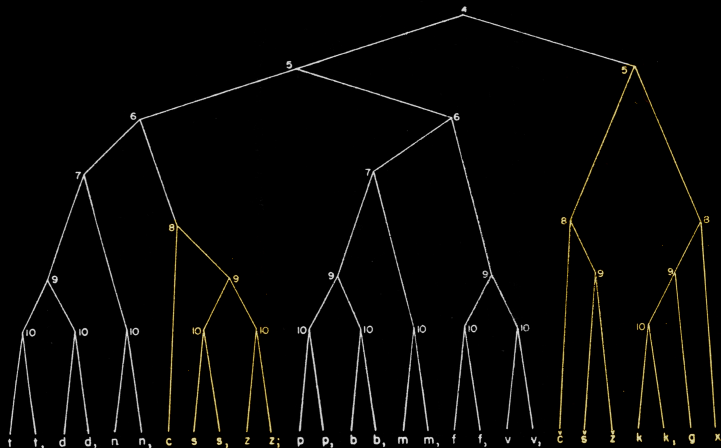
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```
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                   ╱          ╲
        [−cont]              [+cont]
          ʦ              ╱           ╲
              [−voice]              [+voice]
             ╱      ╲              ╱       ╲
     [−sharp]  [+sharp]    [−sharp]   [+sharp]
        s         sʲ           z          zʲ
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ʦ

[+cont]

[−voice]

[+voice]

[−sharp]
s

[+sharp]
sʲ

[−sharp]
z

[+sharp]
zʲ

/ʧ ʃ ʒ k kʲ x g/
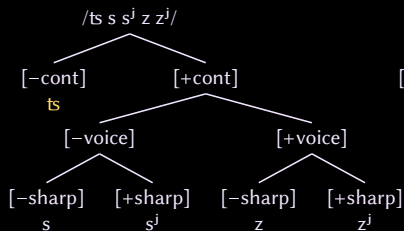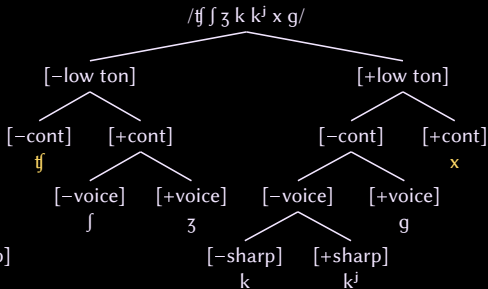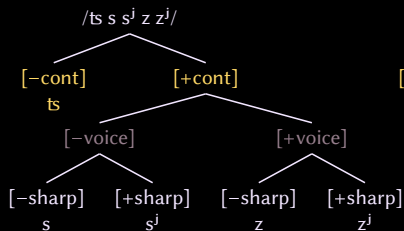
[−low ton]

[+low ton]

[−cont]
ʧ

[+cont]

[−voice]
ʃ

[+voice]
ʒ

[−cont]

[+cont]
x

[−voice]

[+voice]
g

[−sharp]
k

[+sharp]
kʲ

[±continuant] cuts off /ʦ/, /ʧ/, and /x/ before [−voiced] can be assigned to them.

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[±voiced] :	+ ∅

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[±voiced] :	+ ∅		+ −		− −

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- We predict a trade-off.

Specifying the unpaired obstruents

Revising Halle's hierarchy...

[±low tonality] ≫ [±continuant] ≫ [±voiced] ≫ [±sharped]

Strident dentals:
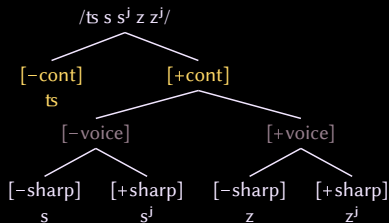
Palatals and velars:
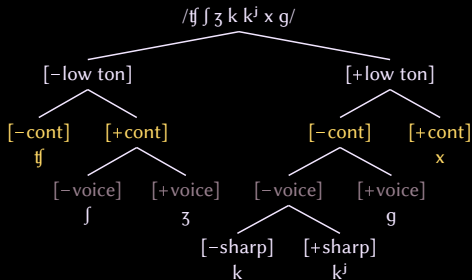
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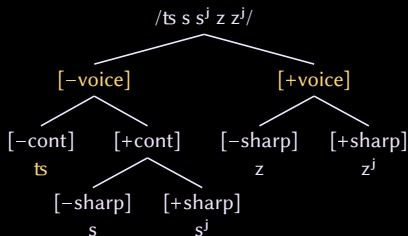
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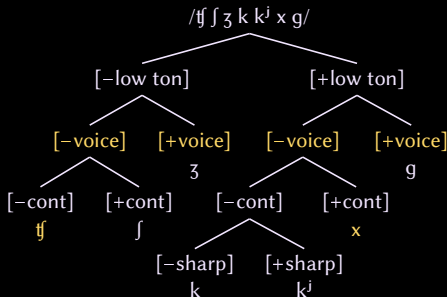
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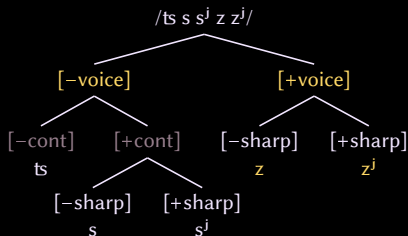
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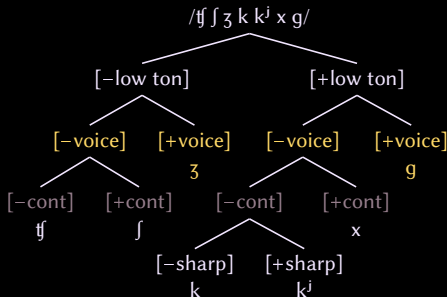
- ...gives us [−voiced] on /ts tʃ x/...
- ...but removes [±continuant] from /z zʲ ʒ g/.

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- Minimally, we predict that omitting [±continuant] from these segments will not lead to what Nevins (2015) calls an 'Oops, I Need That' problem.
- More than this, though, there seems to be positive evidence for underspecification of [±continuant].

The other unpaired obstruents: Variation

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- However, to the extent that different dialects of Russian show similar phonological patterns, we expect their inventories to have the same specifications.
- If this segment variously shows up as [g] and [ɣ]/[ɦ], this is consistent with—but does not entail—the idea that it is unspecified for continuancy.

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Alternations resulting from the First Velar Palatalization

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		[+low tonality] → [−low tonality]		
[−voiced]	[+continuant]	x	→	ʃ

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		[+low tonality]	→	[−low tonality]
[−voiced]	[+continuant]	x	→	∫
[−voiced]	[−continuant]	k	→	ʧ

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[+voiced]	∅	g	→	ʒ

Adjectives:

POSITIVE	COMPARATIVE	GLOSS
tʲixij	tʲiʃe	'quiet(er)'
ʒarkij	ʒarʧe	'hot(ter)'
dorogoj	doroʒe	'dear(er)'

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[−voiced]	[−continuant]	k	→	ʧ
[+voiced]	∅	g	→	ʒ

Verbs:

3RD PLURAL	3RD SINGULAR	GLOSS
maxut	maʃet	'wave(s), wag(s)'
pekut	peʧet	'bake(s)'
strigut	striʒet	'shear(s)'

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Denominal adjectives:

NOUN	ADJECTIVE	GLOSS
ʧerepaxa	ʧerepaʃij	'turtle' / 'testudinian'
volk	volʧij	'wolf' / 'lupine'
vrağ	vraʒij	'enemy' / 'hostile'

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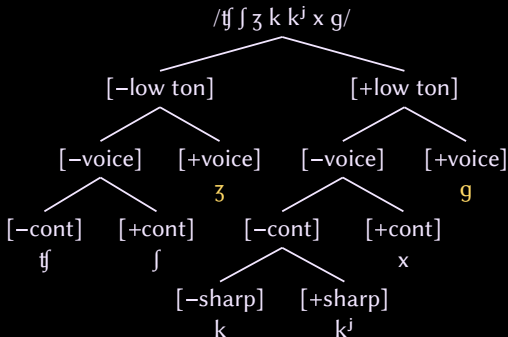
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[−voiced]	[−continuant]	k	~	ts

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These alternations are not productive in Modern Russian, but they are consistent with the prediction that /z zʲ/ are also unspecified for continuancy.

Elsewhere in Slavic

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Serbian: /g/ has no continuant counterpart, and alternates with /ʒ/ and with /z/. Radišić (2009) argues for a contrastive hierarchy that leaves /g/ unspecified for continuancy.

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mu**x**-a	mu**ʃ**-e	'fly'

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mux-a	muʃ-e	'fly'
nog-a	noz-e	'leg'
rozg-a	rozdz-e	'twig'

.../g/ becomes either /z/ or /dz/, whichever is phonotactically less marked (/dz/ after /z/; /z/ elsewhere).

sources: Radišić (2009) on Serbian; Schaarschmidt (1998) on Sorbian

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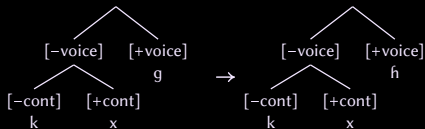
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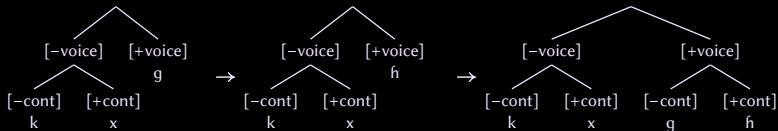
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- But it does make predictions about how many features can be specified, and about trade-offs between potential specifications.
- These predictions are, in principle, falsifiable.
- As regards voicing and continuancy in Slavic, though, it appears that they are not actually false.

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