Secondary palatalization in Kazym Khanty:
a challenge for privative features

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Background. In Kazym Khanty (KK; Ob-Ugric, Uralic), vowels contrast in labiality, backness, and height. Coronal consonants have palatalized counterparts: /t s n λ/ vs. /t´ ś ń λ´/, except for the liquids /l r/, which can only be non-palatalized. The data come from the KK dictionary [Solovar 2014], descriptive works [Tereshkin 1966; Sipos 2022], and sources on Khanty orthography [Koshkareva 2013; Nemysova et al. 2014].

	Front		Back	
	Illab.	Labial	Illab.	Labial
Close	i	ʉ		u
Mid	e	ɵ	ă	o
Open	ɛ		a	

	Lab.	Cor.	Pal.	P.-alv.	Vel.
Stop	p	t	t´		k
Fricative		s	ś	š	χ
Lat. Fric.		λ	λ´		
Nasal	m	n	ń		ŋ
Lat. Appr.		l			
Trill		r			
Glide	w		j		

Table 1. Vowels and consonants of Kazym Khanty.

Empirical pattern. In KK, non-coronal (i.e. labial and velar) consonants are secondarily palatalized before /i/ (1a). Secondary palatalization is the acquisition of secondary palatal articulation [Bateman 2007], e.g. /mi/ > [mʲi]. Hard coronals are not palatalized, and [ɨ] is the surface realization of /i/ after them (1b).

(1) a. /**mi**s/ > [**mʲi**s] ‘cow’
/i**ki**/ > [i**kʲi**] ‘boy’
b. /**si**ri/ > [**sɨ**ri] ‘beforehand’
/**śi**ra/ > [**śi**ra] ‘for (post.)’

Theoretical problem. Such a pattern can be easily covered with binary SPE features that are non-privative [Chomsky, Halle 1968]. In binary features, both members of the opposition are marked: [–coronal] segments acquire secondary palatal articulation before /i/. However, representing this type of palatalization can be a challenge for a theory that operates only privative features, in which only one member of the opposition can be active.

Element Theory (ET), which uses privative elements in representations, proposes that it creates less overgeneration than binary features, for instance, [–lateral] cannot be active, because such a feature would also characterize vowels, nasals, voiceless stops, etc. that cannot act as a context of a rule [Kaye et al. 1990; Backley 2011]. However, if a theory of privative features cannot represent a class that seems to be natural, it can either add a new element for that class or propose an additional mechanism of such process.

The case of Kazym Khanty palatalization presented above is a challenge for ET: |A| is the element that stands for coronality in most cases, but there is no element for [–coronal] segments, so it is hard to expain why velars and labials undergo palatalization while coronals

do not. As ET tends to reduce the number of element set, it would be theoretically undesirable to add another element to the set of existing ones just to represent one class. A segment in a representation can have a head which is the most prominent (phonetically and phonologically) element and operators [Backley 2011].

Another way to capture the [–coronal] class is to explain why [+coronal] segments do not undergo secondary palatalization while [–coronal] do. An attempt of such explanation is presented below.

Analysis. I propose an analysis of KK palatalization with ET representations that contain elements associated with an autosegmental tier and computation formulated with Optimality Theory (OT) constraints [Prince, Smolensky 1993].

I propose to encode the coronal/non-coronal distinction through the presence of |I| rather than by introducing a privative counterpart of |A|. |I|-presence and |I|-headedness must be distinguished: non-palatalized coronals contain |I| (2a), but palatalized coronals, as well as other palatalized segments that have undergone palatalization are |I|-headed. All other non-palatalized segments do not contain |I| (2b). Coronals that do not have a palatalized counterpart also have |I|: /r/ is represented as non-headed |I|, while /l/ is |A I| [Backley 2011].

(2) a. |I H| – [s]
|I H| – [ś]
b. |U L| – [m]

Secondary palatalization has been greatly examined for Polish velars, e.g. [Gussmann 2007]. Following Zdziebko [2023], I treat palatalization as an interaction between |I|-spreading and headedness and Agree constraints (3a). I extend this approach by introducing *SPREAD to block redundant |I|-spreading to the consonant that already contains |I| (3b).

(3) a. AGREE|I|(CV) – if V is |I|-headed, the preceding C must also be so
AGREE HEAD/OPERATOR(|I|) – |I| cannot play a different head/operator role in the V and the preceding C
IDENTHEAD|I| – do not change the head/operator status of |I|
DEPLINK|I| – do not insert |I|
b. *SPREAD – |I| cannot spread from V to C if C already has |I|

I treat [i] and [ɨ] as two headedness variants of the same underlying /i/, rather than as two distinct vowel qualities: [i] is represented as headed |I|, while [ɨ] is non-headed |I|. Agree constraints are ranked higher than IdentHead|I| and DepLink|I|, and *Spread has the highest rank (4).

(4) *SPREAD ≫ AGREE ≫ IDENTHEAD|I|, DEPLINK|I|

Thus, if C is |I|-headed, Agree Head/Operator(|I|) requires [i] to surface: /śi/ > [śi]; if C lacks |I|, Agree|I|(CV) requires |I|-spreading: /mi/ > [mʲi], *[mi], *[mɨ]; non-palatalized coronals that have |I| are subject to *Spread, so |I| cannot spread: /si/ > [sɨ], *[śi], *[si].

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