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# Coronal Palatalization in Kashubian

**Abstract**

This article analyzes the processes affecting coronal consonants in Kashubian within the framework of Lexical Phonology. Kashubian has a process of Coronal Palatalization, affecting especially underlying //t d s z//. Soft /ts' dz' s' z'/ are the outputs of the process. Since there are no soft, that is palatalized, [ts' dz' s' z'] in the surface inventory of the analyzed language, the process is argued to be accompanied by context-free Hardening. Furthermore, the proposed analysis of //s z// shows that there is a Duke-of-York gambit in Kashubian, namely, a change of hard //s// to a soft /s'/, and then back to hard [s]. Moreover, the analysis of Kashubian adjectives and the lack of //t d// palatalization, despite the apparent presence of the context and the derived environment, show that there are at least two derivational levels in Kashubian. Coronal Palatalization is a Level 1 rule. Velar Softening applies at Level 2. At Level 1, formation of nouns takes place. Derivational morphemes are added to adjectives at Level 1, whereas inflectional adjectival markers are restricted to Level 2. The proposed analysis also demonstrates that the adjectivizing marker //-i// added cyclically to nouns does not surface due to Vowel Deletion.

**Streszczenie**

Niniejszy artykuł analizuje procesy wypływające na głoski przedniojęzykowe w języku kaszubskim w ramach teorii Fonologii Leksykalnej. Proces palatalizacji głosek przedniojęzykowych w języku kaszubskim powoduje zmianę //t d s z// w miękkie /ts' dz' s' z'/. Ponieważ w inwentarzu powierzchniowym głosek kaszubskich nie ma miękkich, tzn. spalatalizowanych spółgłosek przedniojęzykowych, artykuł dowodzi, że procesowi palatalizacji towarzyszy proces twardnienia, który zachodzi niezależnie od kontekstu. Ponadto proponowana analiza //s z// dowodzi, że w kaszubskim występuje proces DOY (Duke-of-York gambit), polegający na zmianie spółgłoski reprezentacji głębokiej, twardego //s// do miękkiego /s'/, a następnie z powrotem do twardego [s] w reprezentacji powierzchniowej.

Ponadto analiza przymiotników w języku kaszubskim i brak palatalizacji //t d// pomimo obecności kontekstu i granicy morfemów pokazuje, że w języku kaszubskim istnieją dwa poziomy derywacji. Palatalizacja spółgłosek przedniojęzykowych zachodzi na poziomie 1, a zmiękczenie miękkopodniebiennych – na poziomie 2. Formacja rzeczowników dokonuje się na poziomie 1. Na poziomie 1 do przymiotników przyłączają się morfemy derywacyjne, a aplikacja morfemów fleksyjnych ograniczona jest do poziomu 2. Proponowana analiza

dowodzi także, że morfem przymiotnikowy //-i// dodawany w komponencie cyklicznym nie pojawia się w inwentarzu powierzchniowym z powodu aplikacji reguły usunięcia samogłoski.

This article discusses Coronal Palatalization[1] in Kashubian.[2] The process is argued to affect //t d s z//[3] by changing them into soft /tʲ dʲ sʲ zʲ/ and later into /ʦʲ ʣʲ sʲ zʲ/ in the context of high front vowels. This is followed by the process of Hardening, since there are no soft [ʦʲ ʣʲ sʲ zʲ] in the surface inventory of Kashubian. The presentation is limited to the segments relevant for the analysis of the data that come from descriptive grammars of Kashubian, and my own fieldwork, conducted in Kashubia in March 2009, in which I interviewed three native speakers from central Kashubia (the area of Sierakowice). The article is organized as follows: Section 1 outlines the sound inventory of Kashubian. Section 2 presents some theoretical background assumptions necessary for the data analysis provided in the ensuing sections. Coronals are investigated in Section 3. The main aim of this article is to present a descriptive account of processes affecting Kashubian coronals and not investigate the application of theoretical assumptions themselves. That is why Lexical Phonology is used as the framework for my analysis.

# 1. Sound inventory of Kashubian

This section looks at characteristic features of the sound inventory of Kashubian, a language spoken in the North of Poland, in the area of about 2,500 square kilometers, enclosed by the Baltic Sea from the North, and by the borders of Polish dialects from the other sides. Kashubian belongs to the subgroup of Lechitic languages, together with, Polabian, Polish and others. In the article, I follow the unified spelling of the 1993 edition of *Słownik języka pomorskiego czyli kaszubskiego* (The Dictionary of Pomoranian or Kashubian Language) by Stefan Ramułt.

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[1] For clarity of discussion, this article analyses the instances of palatalization of //t d s z// only, although the process also affects //n l r//. For a broader discussion of Coronal Palatalization in Polish, see Rubach (1984).

[2] I am grateful for helpful criticism and the improvements suggested in the reviewing process.

[3] I mark underlying representations with double slashes, intermediate representations with single slashes, and surface representations with square brackets.
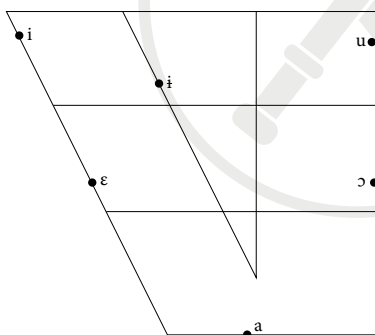
## 1.1. Vowels

Due to a large variety of local sub-dialects of Kashubian, there is no single standard of the Kashubian vowel system. However, the following vowels are attested in the whole of Kashubia: low [a]; mid-low [ɛ], [o], [ɔ]; high [i] and [u]; and [ə].[4] Apart from them, Kashubian has two nasal vowels [ɛ̃] and [ɑ̃]. The vowel system of the dialect of Sierakowice and Sulęczyno, as presented by Treder (Breza and Treder 1981: 33–47), is illustrated in (1).[5] Since the article refers also to Polish vowels, for ease of presentation, the Kashubian vowel chart is accompanied by the Polish one.

(1)  Polish and Kashubian vowel systems

   a.  Sulęczyno and Sierakowice vowel system
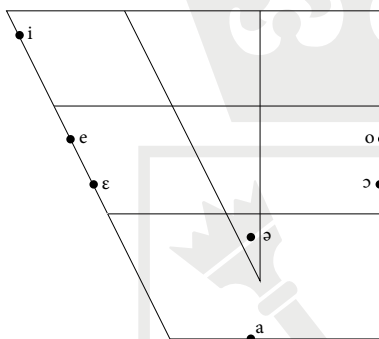


   b.  Polish vowel system



The system presented in (1a) is considered to be the literary standard of Kashubian. The vowels relevant for this article are front [i e ɛ].

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[4] According to Treder (Breza and Treder 1981: 34) the vowels present in the Kashubian system changed historically in the area of Sirakowice: *ô* delabialized to *e* and *u* to *i*; hence the lack of these vowels in the Sulęczyno and Sierakowice system.

[5] Apart from the vowels listed in (1), Kashubian also has floating vowels, namely yers, which are not discussed here. For a discussion of yers in Polish see, for example, Rubach (1984).

The vowel represented by *i* is a high front [i], *e* represents a mid-front [ɛ]. The vowel represented as *é* in the Kashubian orthography denotes a front vowel between [i] and [ɛ], that is tense [e]. Kashubian *ë* denotes a mid-central vowel [ə] which I will treat as [+back] phonologically.

## 1.2. Consonantal system

For the purpose of this article, the following facts of the Kashubian consonantal inventory are relevant.

i.    Among coronal obstruents, we distinguish dental stops [t d], fricatives [s z], affricates [ts dz] and soft postalveolars, namely [ʃ' ʒ' tʃ' dʒ']. The postalveolars in Kashubian do not have hard counterparts (Breza and Treder 1981: 63–68).

ii.   Nowadays, there are no soft prepalatal [tɕ dʑ ɕ z] in the consonantal system of Kashubian, although the segments are assumed to have been historically present in the consonant inventory (Dejna 1973; Breza and Treder 1981).

iii.  Velar segments include [k g x] (Breza and Treder 1981: 68–69).

# 2. Theoretical background

## 2.1. Lexical Phonology

An analysis of palatalization affecting coronal consonants in Kashubian is presented within the framework of Lexical Phonology (Kiparsky 1982; Rubach 1984; Booij and Rubach 1987), which states that phonology and morphology interact whith each other in the word-building process. There are three types of rules: cyclic, postcyclic and postlexical.

I also assume Kiparsky's (1973) notion of the Derived Environment Constraint stating that the application of cyclic rules is restricted to structures derived either morphologically or phonologically, by word-formation rules (WFRs) or by operation of phonological rules, respectively. The concept constitutes part of the Strict Cyclicity Constraint (SCC, henceforth) which governs the application of cyclic rules in the cyclic component (Mascaró 1976; Kiparsky 1982, 1985). Postcyclic rules, on the other hand, apply across the board to words formed in the lexicon, and do not interact with WFRs. They are not subject to the Strict Cyclicity Constraint.

The theory permits the possibility that a rule does not belong to a single component, but may apply both cyclically and postcyclically, or lexically and postlexically (Kiparsky 1985).

The main properties of the rules are summed up in (2) after Rubach (2008: 470).

(2)   Properties of phonological rules

| | | Cyclic | Postcyclic | Postlexical |
|---|---|---|---|---|
| 1. | Interaction with WFRs | yes | no | no |
| 2. | Cyclic application | yes | no | no |
| 3. | Strict Cyclicity Constraint (derived environments) | yes | no | no |
| 4. | Word level | yes | yes | no |
| 5. | Phrase level | no | no | yes |
| 6. | Morphological conditioning | OK | OK | no |
| 7. | Lexical conditioning | OK | OK | no |
| 8. | Exceptions | OK | OK | no |

The outlined assumptions of the theory together with the guidelines for the identification of the status of rules constitute the basis for the analysis of processes affecting Kashubian coronals proposed in the following section.

# 3. Coronal Palatalization in Kashubian

This section investigates palatalization of coronal consonants in Kashubian. Section 3.1.1 reviews the state of the art. Section 3.1.2 looks at a derivational approach to this process (Brzostek 2007). Section 3.2 examines the issue of Coronal Palatalization in Kashubian, specifically, the change *t d → ʨ ʥ*. An analysis of [s z] is provided in section 3.2.2. Section 3.2.3 examines whether Coronal Palatalization in Kashubian as a cyclic or a postcyclic rule and presents a seemingly incompatible analysis of Kashubian adjectives. Derivations and evaluations are presented in Section 3.2.6. Section 4 presents conclusions.

## 3.1. State of investigation

This section presents the existing literature on coronals and coronal changes. In the first part, descriptive accounts of Lorentz (1958–1962), Dejna (1973), and Treder (Breza and Treder 1981) are examined. Brzostek (2007) gives yet another account of Kashubian. However, her analysis is couched in a totally different framework. That is why it will be discussed in the second part of the section.

The literature concerned with the grammar of Kashubian describes the history of the language and its dialects, phonetics and descriptive phonology, as well as morphology. So far, Kashubian has been investigated only in the descriptive mode, with Brzostek (2002, 2007) being the sole exception. Brzostek provides an analysis of 1st Velar Palatalization in the framework of Lexical Phonology (2002), and Obstruent Palatalization in terms of Derivational Optimality Theory (2007). Both descriptive grammars and Brzostek's generative ac-

count constitute an excellent starting point for an analysis of the phonological behaviour of Kashubian coronals.

## 3.1.1. Kashubian coronals: a descriptive background

The lack of prepalatal [ɕ ʑ tɕ dʑ] in Kashubian, as compared to other Lechitic languages, is a central distinctive feature of the language. Although the [ɕ ʑ tɕ dʑ] sounds were historically present in Kashubian, its consonantal system has retained only alveolar [s z ts dz] and postalveolar [ʃˈ ʒˈ tʃˈ dʒˈ] as opposed to other Lechitic languages, e.g. Polish, in which also a series of prepalatal [ɕ ʑ tɕ dʑ] is present.

According to Lorentz (1958–1962: 453–66), the consonants of interest for this article, developed form Proto-Slavic /t d s z/ differently, depending on their contexts:

i.   they remained unchanged before back vowels: _dac_ [da][6] 'to give', _sowa_ [sɔ] 'owl', _sto_ [tɔ] 'one hundred', _toczëc_ [tɔ] 'to roll', _të_ [tə] 'you', _sadzëc_ [sa] 'to plant';

ii.  they underwent softening, giving [tʲ dʲ ɕ ʑ] before front vowels and before consonant-front vowel clusters.[7] The outcomes of this process went through different changes: [tʲ dʲ] became [ts' dz']: _celā_ [ts'ɛ] 'calf', _dzecë_ [dz'ɛ] 'children', _dzesāc_ [dz'ɛ] 'ten' or hardened to [t d]: _trzimac_ [tř] from */trimati/ 'to hold'.

Lorentz (1958–1962) claims that soft [ɕ ʑ] re-developed into [s z]. Nowadays, their softness can be inferred only from their palatalizing context, e.g., _les+e_ [sɛ] 'forest' (loc.sg.), _bliz+e_ [zɛ] 'lighthouse' (loc.sg.).

Unfortunately, Lorentz does not discuss synchronic alternations of coronals. Neither does he discuss their contexts. In the part of the book concerned with lexicography, however, one can find clear examples of different realizations of coronal consonants in affixation, for example, in creating diminutive forms from masc. nouns, as in (3).

| (3) | _nom.sg._ | _diminutive_ | _gloss_ |
|---|---|---|---|
|  | gnôt [t] | gnôc+yk [tsik] | 'one' |
|  | wrzód [t][8] | wrzódz+yk [dzik] | 'ulcer' |
|  | lëst [t] | lësc+yk [tsik] | 'letter' |

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[6] For clarity of presentation, only the fragments relevant for the discussion are transcribed.

[7] However, Treder (Breza and Treder 1981) and Dejna (1973) argue that Kashubian, as all languages in the East Lechitic group, changed all soft [tʲ dʲ] into [tɕ dʑ]. The sounds later hardened into [ts dz]. As Treder points out, in some dialects, especially in the North and North-West dialects of Kashubian, soft [tʲ dʲ] did not harden as in other regions, cf. [dʲvɛʒɛ] 'door', [tʲiptʃʲi] 'currants'.

[8] Actually, _wrzód_ has word-final //d// in UR. It surfaces as [t] due to the process of Final Devoicing, which I disregard here.

| brat̯ [t] | brac+yk [ʦik] | 'brother' |
| but̯ [t] | buc+yk [ʦik] | 'shoe' |

The data in (3) provide clear examples of [t]:[ʦ] and [d]:[ʣ] alternations. The fricatives [ʦ ʣ] appear in the context of the high front vowel [i].

Both Treder (Breza and Treder 1981) and Dejna (1973) attempt to explain the lack of soft [ɕ ʑ ʨ ʥ] in the present-day Kashubian.[9] According to Dejna (1973: 103–109, 235–241), the occurrence of only alveolar [s z ʦ ʣ] and post-alveolar [ʃ' ʒ' ʧ' ʤ'] sequences is a result of simplification of the Kashubian consonantal system. By the end of the 12th century, soft [ɕ ʑ ʨ ʥ] emerged from [s' z' ʦ' ʣ'] before front vowels in Kashubian. Later, the sequence of the newly created prepalatals collapsed with alveolar [s z ʦ ʣ]. The change happened not earlier than in the 13th century, i.e. only after [ʨ ʥ] developed from soft [t' d']. Also Treder (Breza and Treder 1981; Breza (ed.) 2001) describes this development as a change of soft [ɕ ʑ ʨ ʥ] into hard [s z ʦ ʣ]. By this, he means the occurrence of hard alveolars in Kashubian whenever soft prepalatals appear in Polish. Treder claims that the process had to take place before the change of short /i/ into /ə/, since the newly created vowel could only appear after hard consonants, hence the words such as *prosëc* [sɔʦ] (inf.) 'to ask for', where the vowel is preceded by hard [s], are pronounced with schwa and not with short [i].

Neither do Breza and Treder (1981) provide a synchronic description of coronal alternations. However, also in their account, one may find different realizations of coronal segments in conjugation and declension.

(4) | *nom.sg.* | *derived form* | *gloss* |
| --- | --- | --- |
| niast̯+a [t] | niasc+y [ɕi] | 'woman' (adj.) |
| robot+a [t] | roboc+y [ɕi] | 'work' (adj.) |
| brat̯ [t] | brac+e [ʦɛ] | 'brother' (loc.sg.) |
| gniôẑd+o [d] | gniôẕdz+e [ʣɛ] | 'nest' (loc.sg.) |
| kòt̯ [t] | kòc+e [ʦɛ] | 'cat' (loc.sg.) |
| ògród̲ [t] | ògrodz+e [ʣɛ] | 'garden' (loc.sg.) |

As we can see in (4), [t d] alternate with [ʦ ʣ]. Front vowels [i ɛ] are the context of these alternations.

To summarize, various descriptive accounts assume that Kashubian had a process affecting [t d s z n l r] in certain contexts. It is held that [t d s z] underwent a change to [t' d' s' z'], and then to [ʨ ʥ ɕ ʑ] in the context of front vowels. Later these sounds hardened, most probably because of too little perceptual contrast between dental [t d s z], prepalatal [ʨ ʥ ɕ ʑ], and post-alveolar [ʃ' ʒ' ʧ' ʤ'].

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[9] Actually [ɕ ʑ ʨ ʥ] exist in some southern Kashubian dialects. According to Lorentz (1958–1962), occurrences of the [ɕ ʑ ʨ ʥ] series are recent changes, most probably reflecting a strong influence of Polish.

Since there was too little contrast to retain these series of coronals, the pre-palatals [tɕ dʑ ɕ z] disappeared from the consonantal inventory of Kashubian. These kind of changes are described in the literature within the framework of the Dispersion Theory of contrast developed by Flemming (1995 [2002], 2004) calling for constraints that maximize the distinctiveness of contrasts, minimize the articulatory effort, without the information transmission being misunderstood, and maximize the number of contrasts.[10] The disappearance of the series of prepalatal [tɕ dʑ ɕ z] satisfies the goal of retaining maximally distinctive contrasts and minimizing articulatory effort. The change is estimated to have occurred between the end of the 12th and the 17th centuries (Dejna 1973; Breza and Treder 1981), that is after the development of soft [tɕ dʑ] from [tʲ dʲ] but before the development of schwa ([ə]) from short [i]. Schwa is a back vowel which appeared only in the context of hard consonants.

### 3.1.2. Kashubian palatalization: a generative approach

Brzostek (2007) provides an analysis of consonant palatalization in terms of Derivational Optimality Theory (DOT, henceforth) (Kiparsky 2000; Rubach 1997a, 1997b). In her analysis of Coronal Palatalization (2007: 157), she notes that there is an asymmetry in the phonological properties of the Kashubian coronal consonants. This is due to the distribution of the feature [±back], as shown in table (5).

| (5) | Kashubian coronal consonants[11] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
|  | t | s | n | l | r | ʦ | ʧˀ | ʃˀ | ɲ |
| cont | − | + | − | − | + | − | − | + | − |
| anter | + | + | + | + | + | + | − | − | − |
| strid | − | + |  |  |  | + | + | + |  |
| back | + | + | + | + | + | + | − | − | − |
| lat | − | − | − | + | − | − | − | − | − |
| nas | − | − | + | − | − | − | − | − | + |

Hard alveolars [t d ʦ dz n l r s z] belong to the Kashubian surface inventory, but they do not have [−back] counterparts. At the same time, postalveolar [ʧˀ dʒˀ ʃˀ ʒˀ] and a prepalatal [ɲ] do not have [+back] counterparts in the inventory. Therefore, anterior segments are hard, while posteriors are soft in Kashubian.

Coronal stops //t d// are underlyingly hard, since they always take /-ə/, a back vowel, as their plural marker (2007: 160). Stem-final consonants that are [+back] take /-ə/, whereas stem-final consonants that are [−back] take /-ɛ/ as

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[10] Compare e.g. Padgett (2009) who offers a case study of Catalan rhotics by appealing to changes preserving and neutralizing contrasts.

[11] For brevity of presentation, voiced obstruents are not listed in (5).

their nom.pl. marker. This is the case with, e.g., soft labial stems as in *pôw* [f] – *pôwi+e* [vjɛ] 'peacock' (nom.sg. – nom.pl.).[12] The fact that coronal stops always take /-ə/ in the nom.pl., e.g. *cud* [t] – *cud+ë* [də] 'miracle' (nom.sg. – nom.pl.), suggests that they are hard in the underlying representation (UR henceforth). Also, stridents //s z ʦ ʣ// belong to the UR. They surface in contexts other than before front vowels in words such as *dzur+a* [ʣ] 'hole', *Puck* [ʦk] city name, *ùst+a* [st] 'lips', and *zwón* [zv] 'bell'. Since both /-ɛ/ and /-ə/ may be the nom.pl. case marker for //ʦ ʣ//, as, for instance, in *zajc* [ʦ] – *zajc+e* [ʦɛ] 'hare' (nom.sg. – nom.pl.) and *spowiédz* [ʦ] – *spowiédz+ë* [ʣə] 'confession' (nom.sg. – nom. pl.), their underlying specification for the feature [±back] is unclear. In this analysis, I will assume that //t d ʦ s z// are [+back] underlyingly.

Brzostek looks at Kashubian Coronal Palatalization in terms of DOT. She argues that high front vowels //i ɛ// are the triggers of the process. Coronal Palatalization changes //t d// to soft /ʦ' ʣ'/. The process is accompanied by a hardening rule, where *ʦ' ʣ' → ʦ ʣ*. I will refer to Brzostek's argumentation and analysis in the following sections.

## 3.2. Coronal Palatalization in Kashubian – a Lexical Phonology account

This section looks at [t d]:[ʦ ʣ] alternations in Kashubian. It is argued that //t d// is changed into [ʦ ʣ] and //s z// into /s' z'/ and later into [s z] via Hardening. Rules are stated schematically, and not in terms of features. For clarity of the argument, only [t d] and [s z] are investigated in detail.

### 3.2.1. Palatalization of //t d//

In Kashubian, [t d] alternate productively with [ʦ ʣ]. The data from my fieldwork in (6) exemplify this phenomenon.

| (6) | *nom.sg.* | *nom.pl.* | *loc.sg.* | *gloss* |
|---|---|---|---|---|
| | brzôd [t] | brzôd+ë [də] | brzôdz+e [ʣɛ] | 'fruit' |
| | kòt [t] | kòt+ë [tə] | kòc+e [ʦɛ] | 'cat' |
| | brat [t] | brat+e [tə] | brac+e [ʦɛ] | 'brother' |
| | gniazd+o [də] | gniazd+a [da] | gniezdz+e [ʣɛ] | 'nest' |
| | rëmòt [t] | rëmòt+ë [tə] | rëmòc+e [ʦɛ] | 'piece of junk' |
| | gwiôzd+a [da] | gwiôzd+ë [də] | gwiôzdz+e [ʣɛ] | 'star' |
| | arbat +a [ta] | arbat+ ë [tə] | arbac+e [ʦɛ] | 'tea' |

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[12] Soft labial stems are never [−back] in surface forms at the end of words; their softness may only be discovered by their behavior in the formation of nom.pl, where they are followed by [j] as in e.g. *pôwi+e* [vjɛ] 'peacocks', where the underlying soft //v'// decomposes to [vj], as opposed to hard-stem *sklep+e* [pɛ] 'basement'.

| żakét [t] | żakét+ë [tə] | żakéc+e [ʦɛ] | 'jacket' |
| sąsôd [t] | sąsôd+ë [də] | sąsôdz+e [ʣɛ] | 'neighbour' |
| Weńt+a [t] | Weńt+ë [tə] | Weńc+e [ʦɛ] | Kashubian surname |

As shown in (6), there are two kinds of alternations appearing in the data: [d]:[ʣ], and [t]:[ʦ], i.e., [+back] stops alternate with [+back] affricates. A question arises whether it is [t d] or [ʦ ʣ] that are in the UR. Yet, taking into account words such as those in (7), where [ʦ ʣ] appear in the context of [a ə ɔ] and word-finally, it can be assumed that it is //t d// which undergo the change to [ʦ ʣ] in the context of mid-front vowel [ɛ].

(7)     *Kashubian*              *gloss*
        dzëc+e [ʣə]              'children'
        dzëk [ʣə]                'boar'
        żôłãdz+a [ʣa]            'acorn' (gen.sg.)
        ksądz+a [ʣa]            'priest' (gen.sg.)
        cotk+a [ʦɔ]             'aunt'
        dzoba+c [ʣɔ] [ʦ]        'to peck'

The alternations exemplified in (6) are similar to Coronal Palatalization in Standard Polish (Rubach 1984: 31, 59–75) in which coronal //s z t d // change into prepalatal [ɕ ʑ tɕ dʑ][13] before front vowels and /j/. Yet the outputs of the Kashubian rule are hard, that is [+back], segments, and not soft [tɕ dʑ], as it is the case in Polish. If assumed to be a one-stage process, the rule should read as in (8).

(8)     t d → ʦ ʣ / __ ɛ

The presented rule seems to be that of affrication. Brzostek (2007: 163–164) provides numerous arguments for considering the process as a case of palatalization. Firstly, palatalization of labials exists in Kashubian, in words such as *bab+a* [ba] – *babi+e* [bjɛ] 'old woman' (nom.sg. – loc.sg.).[14] What is more, palatalization in the context of /ɛ/ is transparent in the case of Velar Palatalization, e.g. in verb formation [N – V]: *błësk* [k] 'flash' – *błëszcz+e+c* [ʧʼɛ] 'to shine'. Since the same context as in (6) triggers palatalization of velars and labi-

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[13] Actually, Coronal Palatalization also affects //n ł r//. The underlying //n// is changed into prepalatal [ɲ] as a result of the process. Dark //ł//is changed into /l'/, whereas //r// is changed into /řʼ/. Both segments undergo further modifications: /l'/ goes to [l], and /řʼ/ changes into [ʒ]. For further discussion of these processes see Rubach (1984: 198–200).

[14] Even though the transparency of the process is obscured by the appearance of [j] in the given example, Labial Palatalization does exist in Kashubian. The process is accompanied by soft labial decomposition resulting in the appearance of [bj] from the underlying //bʼ//.

als in Kashubian, one can assume a parallel process affecting //t d//. In view of these facts, it may be stated that the examples in (6) document a process of palatalization.[15] Although the rule makes the correct prediction, it is a stipulation to state that //t d// change into hard segments as a result of palatalization. Palatalization by definition consists in the change of the feature [+back] to [−back].[16] Since hard segments cannot be the result of a palatalizing process, an intermediate stage is warranted. Coronal Palatalization, which is now stated as in (9), produces soft /ʦ' ʣ'/.[17]

(9)   Coronal Palatalization (1st approximation)
      t d → ʦ' ʣ' / __ ɛ

At the next stage, the soft /ʦ' ʣ'/ undergo a process of hardening into [ʦ ʣ]. Kashubian also has a spell-out rule of Hardening.

(10)  Hardening (1st approximation)
      ʦ' ʣ' → ʦ ʣ

Although only [ɛ] appears in the data in (6), it is typologically impossible for a midfront vowel [ɛ], to the exclusion of [i], to be the context for palatalization. According to the implicational generalization originally discussed by Chen (Rubach 2003, after Chen 1973), triggers of palatalization spread along the dimension of height from /i/ to /æ/, depending on the language.[18] Every language has a cut-off point on the scale of palatalizing vowels. Palatalization before /æ/ entails palatalization before /ɛ/, /e/, and /i/. Palatalization before /ɛ/ entails palatalization before /e/ and /i/, and palatalization before /e/ entails palatalization before /i/. Since the mid vowel /ɛ/ is the context of palatalization in Kashubian, /e i/ must also be the triggers of the process. We may then state

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[15] The reviewer points out to yet another solution to the problem of coronal palatalization in Polish proposed by Gussmann (2007: 113–179), namely, treating the palatalization changes as largely unpredictable and making them a part of the morphophonological component of the language. However, I shall ignore this solution, as it goes beyond the limited scope of this paper.

[16] Looking at the process from the perspective of Feature Geometry (Sagey 1986, Clements and Hume 1995), Coronal Palatalization is a process of spreading the [−back] feature to the consonant from the following vowel. Stridency cannot be spread according to this model, since the vowel is not [+strid], so the actual change is //t// → /t'/. The process is accompanied by the affrication of the coronals, changing /t' d'/ → /ʦ' ʣ'/, and then by hardening, changing /ʦ' ʣ'/ → [ʦ ʣ] in a spell-out mode. However, for reasons of transparency, I shall simplify the representation of the processes by omitting the palatalization //t d// → /t' d'/ and the affrication /t' d'/ → /ʦ' ʣ'/ and presenting it as a single change: //t d// → /ʦ' ʣ'/.

[17] Also Brzostek (2007) proposes soft /ʦ' ʣ'/ as an intermediate stage in the derivation.

[18] The dimension also includes /j/ which is represented as /i/ at the melodic tier, and differs from /i/ by being [−syll]. Palatalization before /i/ entails palatalization before /j/.

that /ɛ e i/ are the context for Coronal Palatalization in Kashubian.[19] Consider-ing the above-mentioned arguments, the rule should be stated as in (11).

(11)  Coronal Palatalization (2nd approximation)
       t d → ʨ' ʥ' / __ i e ɛ

Note that tense //e//, in some dialects of Kashubian realized as [i], is also pro-posed as a context for the rule. Although no examples of Coronal Palataliza-tion in the context of /e/ have been presented so far, it is typologically impos-sible for /i/ and lax /ɛ/ to cause the change, and, at the same time, for tense /e/ to be excluded.

In sum, the conclusion is drawn that Kashubian has a process of Coronal Palatalization accompanied by a spell-out rule of Hardening.

## 3.2.2. Palatalization of //s z//

It has been shown that Coronal Palatalization in Kashubian is a process paral-lel to that of Coronal Palatalization in other Slavic languages. Section 3.2.1 has demonstrated that the palatalization of //t d// is a process parallel to Coronal Palatalization of //t d// in Polish. In Polish, apart from //t d//, Coronal Pala-talization affects also the continuants //s z//, giving [ɕ ʑ] in the output, as in *las* [s] 'forest' (nom.sg.) – *lesi+e* [ɕɛ] (loc.sg.), or *zaraz+a* [za] 'plague' (nom.sg.) – *zarazi+e* [ʑɛ] (loc.sg.). A question arises whether Kashubian //s z// also un-dergo a similar process. Let us now look at the data in (12) gathered in my fieldwork.

(12) | *nom.sg.* | *nom.pl.* | *loc.sg.* | *gloss* |
|---|---|---|---|
| las [s] | las+ë [sə] | les+e [sɛ] | 'forest' |
| lës [s] | lës+ë [sə] | lës+e [sɛ] | 'fox' |
| wãps [s] | wãps+ë [sə] | wãps+e [sɛ] | 'long, loose jacket' |
| guz [s] | guz+ë [zə] | guz+e [zɛ] | 'button' |
| kòz+a [za] | kòz+ë [zə] | kòz+e [zɛ] | 'goat' |
| bliz+a [za] | bliz+ë [zə] | bliz+e [zɛ] | 'lighthouse' |

As presented in section 3.1.2, underlyingly hard stems take /-ə/ and not /-ɛ/ as the plural marker, as was the case with //t d//. Looking at the data in (12), it can be inferred that also //s z// are underlyingly hard, since /-ə/ is their plural marker. Another observation is that despite the presence of the front vowel /ɛ/ in the loc.sg. case, [s z] do not exhibit any alternations. It might be then

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[19] This assumption may be supported also by examples of Velar Softening such as *dłudż+i* [ʥ'i] 'long', or *dzyrscz+i* [ʧ'i] 'brave'. However, this is not a strong argument, since the UR of the masc. nom.sg. adj. case marker has not yet been determined. I postulate //i//, whereas Brzostek (2007: 193–194) argues that it is //ɨ//, which is later fronted to [i].

concluded that Coronal Palatalization in Kashubian does not affect coronal fricatives.

However, it would be a stipulation to say that //t d n l// undergo Coronal Palatalization, while //s z// are excluded from the process. The //t d s z n l// segments form a natural class: they are [+coronal], [+anterior], and [+back]. One possibility is that //s z// may be excluded from the process of palatalization as the process does not affect segments that are [+strid] or [+cont]. However, there is another solution to this problem.

It seems reasonable to state that //s z//, being members of the Kashubian coronal inventory, also undergo Coronal Palatalization. Bearing in mind that palatalization is a softening process, Coronal Palatalization in Kashubian may now be formulated as in (13).

(13) Coronal Palatalization (3rd approximation)
    t d s z → ʦ' ʣ' s' z' / __ i e ɛ

In (13), soft segments appear as the output of Coronal Palatalization. As stated in 3.2.1, Coronal Palatalization in Kashubian is accompanied by a process of Hardening stated segmentally in (10). Since there are no soft [ʦ' ʣ'] in the surface inventory of Kashubian and there is Hardening applying context-freely, one may assume that soft /s' z'/ also undergo this process. The input of the spell-out rule of Hardening should be then broadened to include all stridents, as in (14).

(14) Hardening (2nd approximation)
    ʦ' ʣ' s' z' → ʦ ʣ s z

It might seem that postulating a rule which changes //s z// → /s' z'/ → [s z] complicates the system. However, it is a reasonable solution, since //s z//, which constitute a natural class with //t d n l//, are not excluded from the process of Coronal Palatalization. Moreover, the rules of Coronal Palatalization and Hardening are motivated independently, therefore it is not an *ad hoc* solution. The process of hardening accompanies, for example, Polish 1st Velar Palatalization, where intermediate soft postalveolar affricates appear as hard [ʧ ʒ] [20] on the surface, in words such as *krzy<u>k</u>* [k] – *krzy<u>cz+e</u>+ć* [ʧɛ] 'scream' N – V. Finally, the process is parallel to the one affecting //t d//, namely, to the derivation changing //t d// → /ʦ' ʣ'/ → [ʦ ʣ]. The rules change a [+back] segment into a [−back] one, and then again into a [+back] one. Such derivations are attested in other Slavic languages closely related to Kashubian, e.g. in 1st Velar Palatalization in Polish, where //k// → /ʧ'/ → [ʧ], that is a [+back] consonant goes

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[20] Segment [ʒ] appears in the surface due to Spirantization of [ʤ], as shown by Rubach (2003a).

to [−back], and then back to [+back] (see, Rubach 2003a). Such changes are known in the literature as Duke-of-York derivations.[21] Therefore, although the system becomes more abstract, Coronal Palatalization affects a natural class of sounds: //t d s z//. The rules will then read as in (15).

(15)  Coronal Palatalization and Hardening in Kashubian (4th approximation)
    a.   Coronal Palatalization
        t d s z → ʦ' ʣ' s' z' / __ i e ɛ
    b.   Hardening
        ʦ' ʣ' s' z' → ʦ ʣ s z

To sum up, a rule of Coronal Palatalization is postulated for Kashubian which affects //t d s z//. The process is accompanied by a spell-out rule of Hardening, since there are no soft [ʦ' ʣ' s' z'] in the surface inventory of Kashubian coronals. [22]

### 3.2.3. Status of Coronal Palatalization: cyclic or postcyclic?

This section looks at the status of Coronal Palatalization in Kashubian and asks the question of whether the rule is cyclic or postcyclic. Section 3.2.3.1 looks at the Strict Cyclicity Constraint and its application to Kashubian. Section 3.2.3.2 looks at a seemingly incompatible data of the lack of Coronal Palatalization in masculine adjectives.

### 3.2.3.1. Derived Environment operation

If we look at the data in (16), we can assume that Coronal Palatalization applies before front vowels irrespectively of the existence of a morpheme boundary between the segments. In (16), the rule appears to apply within one morpheme, whereas in (6), in words such as *kòt* [t] 'cat' – *kòc+e* [ʦɛ] (loc.sg.),

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[21] Duke-of-York derivations were first noted and motivated by Pullum (1976). Rubach (2003a) discusses Duke-of-York derivations in Polish, where some aspects of Kashubian phonology are also mentioned.

[22] Duke-of-York derivations are not allowed in Optimality Theory, which is surface-oriented. McCarthy (2003: 25) divides such derivations into vacuous and non-vacuous. Although vacuous Duke-of-York derivations may be analyzed at one tier, since nothing is dependent on the intermediate stage, non-vacuous Duke-of-York derivations, where the intermediate stage feeds or bleeds other processes before its disappearance, need derivational stages to resolve the arising opacities. The examples given in this article, where underlying //s z// get softened to /s' z'/ and then hardened on the surface to [s z] would be considered by McCarthy as cases of vacuous Duke-of-York derivations and, within the Optimality Theory framework, considered as non-existent. However, in Lexical Phonology such derivations are permissible and do not constitute an additional complication. In addition, Kashubian appears to have non-vacuous Duke-of-York derivations, where velars palatalize in the context of yers. Yet, since the complex phonology of yer vowels is not in the scope of the present article, the discussion of their interaction with palatalization would take us too far afield.

Coronal Palatalization applies also across a morpheme boundary. If this was the case, the rule, not restricted by the derived environment, would have to be postcyclic.

(16)   *Kashubian*          *gloss*
      <u>dz</u>ec+ë [ʣɛ]        'children'
      <u>dz</u>edz+ë+c [ʣɛ]     'heir'
      <u>dz</u>eł+o [ʣɛ]        'masterpiece'
      <u>c</u>epł+o [ʦɛ]        'hot'
      <u>c</u>ela [ʦɛ]          'cell'
      <u>c</u>encz+i [ʦɛ]       'thin'

However, other data contradict the assumption that Coronal Palatalization in Kashubian is a postcyclic rule. The word *deputát* 'life interest' is an interesting example. Here, although the appropriate context for the rule is met, the word-initial [d] does not palatalize. We could assume that the word is an exception to Coronal Palatalization. However, the fact that //t// is palatalized in the derived form *deputác+e* [ʦɛ] (loc.sg.) contradicts the assumption. If *deputát* were an exception to the rule, the predicted form would be *\*deputát+e* [dɛputatɛ]. On the other hand, if the rule were postcyclic, and applied both within morphemes and across morpheme boundaries, the word would be pronounced as *\*[dʑɛputaʦɛ]. There must thus be some restriction on the application of Coronal Palatalization. The word *deputát* and other words where coronals behave similarly, as e.g. *temperament* 'temperament', *telefón* 'telephone', prove that the application of the rule is restricted to morpheme boundaries.

Since there is no soft [ʦ' ʣ'] in the surface inventory of Kashubian, the conclusion is that the rule of Hardening accompanying Coronal Palatalization applies in a spell-out manner. The rule should also account for the possible underlying soft //ʦ' ʣ'//, therefore it must apply across the board, irrespective of the presence of the derived environment. Thus the rule must be postcyclic.

Considering the above-mentioned facts, it is concluded that Kashubian Coronal Palatalization, like its equivalent in Polish, is a cyclic rule, namely, it applies only in derived environments. Hardening in Kashubian is postcyclic, that is, it applies across the board.

### 3.2.3.2. Problematic cases

This section discusses an apparent lack of Coronal Palatalization in adjectives such as *bògat+i* [ti] 'rich', and *młod+i* [di] 'young'. The section also proposes the final version of the rules of Coronal Palatalization and Hardening.

As noted in Section 3.2.3.1, Coronal Palatalization (15a) is cyclic in Kashubian, changing hard dentals //t d s z// into /ʦ' ʣ' s' z'/ in the context of front vowels. The process is accompanied by Hardening to [ʦ ʣ s z].

However, the adjectival declension exemplified in (17) seems to contradict this generalization.

(17)  *Adj. masc. nom.sg.*     *gloss*
      bògat+i [ti]            'rich'
      młod+i [di]            'young'
      zmiart+i [ti]          'thin'
      bani+at+i [ti]         'bulbous'
      grëb+at+i [ti]         'chubby'

In (17), [t] appears instead of [ts] counter to the predictions made by the rules in (15). Notice that the condition of the environment is fulfilled here by the masc. nom.sg. marker [i].

Let us now look at a schematic analysis in (18).

(18)  *młodi* 'young' (nom.sg.)
                 UR mło//d+i//
      Cycle 2    d+i              WFR: nom. sg. masc. /-i/
                 *dʑ'+i           Coronal Palatalization (15a)
      Postcyclic *dʐ+i            Hardening (15b)

The derivation in (18) shows that the rule makes the wrong prediction. Since the rule in (15a) is incompatible with the proposed analysis, it should be restricted to some morphologically specified context. As may be seen in the data presented in (6) and (17) (cf., *kòt* [t] – *kòc+e* [tsɛ] 'cat', nom.sg. – loc.sg.), the context for Coronal Palatalization is that exhibited in (6), and includes inflectional morphemes, as opposed to the inflectional morphemes exhibited in (17), where rule (15a) does not apply.

Brzostek (2007) presents a solution to the problem of unexpected palatalization in words such as *dłudż+i* [dʒ'i] 'long' (adj.). She postulates that since the addition of the masc. nom.sg. marker does not cause palatalization, as in, e.g. *młod+i* [di] 'young', a back vowel //ɨ// should be postulated as the underlying representation of the suffix.[23] Since there is no [ɨ] in the surface inventory of Kashubian, underlying //ɨ// must front into [i] at some point of the derivation. The rule, formulated as in (19), applies after Coronal Palatalization has operated.

(19)  Vowel Fronting
      ɨ → i

Vowel Fronting must take place after the application of Coronal Palatalization, so that words such as, *młod+i* [di] 'young' can escape the process, but before

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[23] For the discussion of //ɨ// as an underlying segment, see Brzostek (2007: 192–202).

Velar Softening, since forms such as *dłudż+i* [ǯ'i] 'long' need to be accounted for. This means that Vowel Fronting must be a cyclic process. The derivations of *dłudż+i* and *młod+i* are presented in (20).

(20)    Derivation of the words *dłudż+i* and *młod+i*

dłu//g+ɨ//      mło//d+ɨ//

--              --              Coronal Palatalization (15a)

g+i             d+i             Vowel Fronting (19)

ǯ'+i                            Velar Softening (26)

The paradox may also be solved with the help of other assumptions of the theory. Kiparsky (1982) and Rubach (1984: 220–221) argue that lexicons of some languages contain derivational levels. English proves to be an excellent example of such a language, since it has Level 1 affixes that are of Germanic origin and Level 2 affixes that are of Romance origin. Each of the levels has rules restricted to that level. Kiparsky (1982) claims that there are word formation rules applying on one level accompanied by certain phonological rules assigned solely to that level. There are 3 derivational levels. The theory predicts that Level 1 affixes must be cyclic, while there is no proof that Level 2 affixes are cyclic only.

Let us then assume that affixes are added at at least two levels in Kashubian, and that Coronal Palatalization, as a cyclic rule, falls into Level 1 only. Also at Level 1, WFRs add derivational and inflectional morphemes of the nominal declension. Coronal Palatalization applies giving the end result of *brat* [t] – *brac+e* [ʦɛ] 'brother' (loc.sg.) at this level. Crucially, the inflectional morphemes of the adjectival declension are added at Level 2. Since Coronal Palatalization is assigned to Level 1, it cannot apply to the adjective *młod+i* [di] 'young', where /-i/ is the masc. nom.sg. morpheme. Consequently, the output of the derivation is *młod+i* [di] and not \**młodz+i* [ʣi]. The rules should be thus stated as in (21).

(21) Coronal Palatalization and Hardening in Kashubian (final version)
    a.    Coronal Palatalization
          t d s z → ʦ' ʣ' s' z' / __ i e ɛ
          Condition: applies at Level 1
    b.    Hardening
          ʦ' ʣ' s' z' → ʦ ʣ s z

However, the data in (22) seem to contradict the predictions made by Coronal Palatalization (21a). The examples in (22) exhibit a very productive process of denominal adjectivization in Kashubian (Breza and Treder 1981: 105).

(22)    Masc. and fem. denominal adjectives

|  | nom.sg. | adj. masc. | adj. fem. | gloss |
|---|---|---|---|---|
| a. | kòt̲ [t] | kòc̲+y̲ [ɕi] | kòc̲+ô [ɕi][24] | 'cat' |
|  | niast̲+a [ta] | niasc̲+y̲ [ɕi] | niasc̲+ô [ɕi] | 'woman' |
|  | kret̲ [t] | krec̲+y̲ [ɕi] | krec̲+ô [ɕi] | 'mole' |
|  | robòt̲+a | roboc̲+y̲ [ɕi] | roboc̲+ô [ɕi] | 'work' |
| b. | kòz̲+a [za] | kòz̲+y̲ [zi] | kòz̲+ô [zi] | 'goat' |
|  | lës̲ [s] | lës̲+y̲ [si] | lës̲+ô [si] | 'fox' |
|  | szôłtës̲ [s] | szôłtës̲+y̲ [si] | szôłtës̲+ô [si] | 'village administrator' |

According to the analysis presented in this article, the examples in (22) should be considered as instances of Coronal Palatalization. Yet the data in (22a) lead one to the conclusion that rule (21a) makes the wrong prediction. Since Coronal Palatalization is assigned to Level 1 affixes and the declension of adjectives takes place at Level 2, the outputs should be *kòt̲+i [ti], *niast̲+i [ti], and *kret̲+i [ti]. The answer to this dilemma is that the underlying structure of the adjectives listed in (22) is more complex than the one of adjectives such as młod+i 'young', or bògat+i 'rich' (Brzostek 2007, after Rubach 1984). Looking at the examples in (22a), we can see that an adjectivizing suffix must be postulated, since the stems kòt, kret, and niast- are nouns. The suffix is not a part of the words listed in (17), since their stems are already adjectival. Moreover, the adjectivizing suffix does not surface due to vowel deletion.[24]

The palatalizing context in (22) must be present in the UR of the words. The conclusion is drawn from the fact that since the masc. nom.sg. marker /-i/ exemplified in (17), e.g., młod+i 'young', does not cause palatalization, it cannot trigger the process in data (22). Furthermore, the suffixes visible in (22), the masc. /-i/ and the fem. /-i/, are gender markers, not adjectivizing suffixes. The question is how to represent the adjectivizing marker in the UR. It is certain that it must be a [+high] and [−back] segment. What is more, /j/ should be excluded (Brzostek 2007), since the segment would cause Iotation, i.e., palatalization before /j/ turning //s z// into [ʃ' ʒ'] (Rubach 1984). This is contradicted by the data in (22b). The examples surface as lës̲+i [si] adj. 'fox', and not *lë[ʃ'i] as predicted by the rule. Therefore, the list of possible palatalizing segments is reduced to /i e ɛ/. The question of the identity of the palatalizing segments is subject to further investigation. However, looking at the parallel with Polish, it may be assumed that it is /i/ rather than /e/ or /ɛ/ (Brzostek 2007, after Rubach

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[24] The fem. adj. endings are pronounced differently, depending on the dialect. The pronunciation may vary from [i] to [ɐ], or even [a] where the influence of Polish is strong (Breza and Treder 1981: 41). The speakers in my fieldwork pronounced the fem. nom.sg. endings as [i]. However, it seems that the underlying representation of the marker is different, since it does not cause Velar Softening, as presented in (24) below. I will not discuss the problem further, since it is beyond the scope of this article.

1984). However, such a statement would be stipulative. The question is not central to the issue of the palatalization process, and it will not be developed further in this article.[25] Coronal Palatalization accompanied by Vowel Deletion, where a vowel is deleted before another vowel, is presented schematically in (23).

(23)　　*masc. nom.sg.*

| | |
|---|---|
| kò//t+i+i// | UR |
| ʦ'+i+i | Coronal Palatalization (21a) |
| ʦ'+i | Vowel Deletion |
| ʦ+i | Hardening (21b) |

Looking at the data (22) and the processes in (23), the question is how the rules are ordered, and to which level they belong. There are a few possible solutions to the problem of the unexpected palatalization in the data presented in (22). The assumption that all nominal declension takes place at Level 1 and all adjectival declension at Level 2 must be modified, since it makes wrong predictions. If all adjectival WFRs took place at Level 2, and, at the same time, Coronal Palatalization applied at Level 1, the output of *kòc+y* [ʦi] would be *\*kòt+y* [ti] 'cat'. There would be no context for Coronal Palatalization to apply at Level 1 to the nom. stem *kòt*, if the adjectival marker were to be added only at Level 2. One possibility is to modify the preliminary assumption: derivational adjectival morphemes are restricted to Level 1, whereas at Level 2 only inflection of adjectives takes place. This hypothesis explains the instances of Coronal Palatalization exemplified in (22). In *kòc+y* [ʦi] 'cat' (adj.), for example, the unspecified high front adjective marker is added at Level 1, feeding Coronal Palatalization. Next, the output of Level 1, with the already palatalized segment, enters Level 2. The masc. nom.sg. marker is added by a WFR at this level. The rule is followed by Vowel Deletion formulated as in (24).

(24)　　Vowel Deletion
　　　　$V \rightarrow \emptyset$ / __ V

This conclusion appears to be challenged by the data in (25).

(25)　　Stem-final velar adjectives

| *masc. nom.sg.* | *fem. nom.sg.* | *gloss* |
|---|---|---|
| dłu<u>dż</u>+i [ʤ'i] | dłu<u>g</u>+ô [gi] | 'long' |
| dżib<u>cz</u>+i [ʧ'i] | dżib<u>k</u>+ô [ki] | 'flexible' |
| dzyrs<u>cz</u>+i [ʧ'i] | dzyrs<u>k</u>+ô [ki] | 'outgoing' |
| wiôl<u>dż</u>+i [ʤ'i] | wiôl<u>g</u>+ô [gi] | 'huge' |

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[25] I will arbitrarily represent the adjectivizing morpheme as /-i/.

As seen in the data, the stem-final //k g// change to [ʧ’ ʤ’] in the masc. nom.sg. forms. What is more, the stems *dług-*, *dżibk-*, *dzyrsk-*, and *wiôlg-* are adjectival stems, so the suffix /-i/ is the masc. nom.sg. marker and, therefore, a Level 2 inflectional morpheme. It cannot be assumed that there is an underlying adjectivizing morpheme causing the change, as is the case with the data in (22). The process is that of 1st Velar Palatalization.

The process of 1st Velar Palatalization is a regular one and affects [k g x]. It is triggered by front vowels. The outputs of 1st Velar Palatalization are soft [ʧ’ ʒ’ ʃ’], as in, e.g., verb formation N → V: *drog*+ô [g] 'expensive' – *pò+droż+ë+c* [ʒ’ɛ] 'become expensive'. Note that in the case of //g// palatalization, the process is accompanied by spirantization.[26] Looking at the data in (25), we can see that the alternations result from a different process. Velar //k g// soften into [ʧ’ ʤ’]. The process may be stated as in (26).

(26) Velar Softening
        k g → ʧ’ ʤ’ / __ i

The problem is solved if we assume that 1st Velar Palatalization accompanies Level 1 WFRs, whereas Velar Softening triggers changes at Level 2. The application of Coronal Palatalization and Velar Softening is presented schematically in (27).

(27)    Application of Coronal Palatalization and Velar Softening to adjectives

|  | kò//t+i+i// | mło//d+i// | dłu//g+i// |  |
|---|---|---|---|---|
| Level 1 |  |  |  |  |
|  | t+i |  |  | WFR: adj. /-i/ |
|  | ȿ’+i |  |  | Coronal Palatalization (21a) |
| Level 2 |  |  |  |  |
|  | ȿ’+i+i | d+i | g+i | WFR: nom.sg. /-i/ |
|  |  |  | ʤ’i | Velar Softening (26) |
|  | ȿ’+i |  |  | Vowel Deletion (24) |
| Postcyclic | ȿ+i |  |  | Hardening (21b) |

However, the distribution of the [−back] adjectivizing marker becomes problematic when looking at the instances of Labial Palatalization[27] of the adjectives exemplified in (28).

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[26] For more detailed discussion of palatalization of velars in Kashubian see Brzostek (2001, 2007: 215–263).

[27] Labial Palatalization in Kashubian is broadly discussed in Brzostek (2007). For an analysis of a similar process in Polish, see Rubach (1984).

(28)  *Adj. masc. nom.sg.*           *gloss*
      grë<u>b+i</u> [bʼi]            'fat'
      no<u>w+i</u> [vʼi]            'new'
      zdro<u>w+i</u> [vʼi]          'healthy'
      czeka<u>w+i</u> [vʼi]         'interested'

Recall that Kashubian has hard and soft stems, and that the choice of the nom.
pl. marker depends on the [±back] feature. The distinction between [+back]
and [−back] features corresponds to the distinction between hard and soft
stems. As noted in Brzostek (2007), there is a nom.pl. marker allomorphy in
Kashubian with regard to stem-final labials. This indicates that Kashubian has
hard labials as in *łó<u>w</u>* [f] – *ło<u>w+ë</u>* [və] 'chase' (nom.sg. – nom.pl.), and soft
labials as in *pô<u>w</u>* [f] – *pô<u>wi+e</u>* [vjɛ] 'peacock' (nom.sg. – nom.pl.). Underly-
ing soft labials are always hard word-finally. We may thus treat the instances
soft labials in (28) as underlying soft labials. However, it is also known that
underlyingly hard labials surface as soft in the context of /i/ (Brzostek 2007),
so the examples in (28) will be cases of Labial Palatalization. Also, it is impor-
tant to notice that the process applies in Kashubian both inside morphemes
and across morpheme boundaries, but not across word boundaries (Brzostek
2007: 99). So the theory predicts that Labial Palatalization must apply in the
postcyclic component.

   Considering the above-mentioned arguments, neither of the presented so-
lutions appears to be fully satisfying. Introducing derivational levels into the
system considerably complicates the phonological system of Kashubian. On
the other hand, introducing //ɨ// as the underlying masc. nom.sg. adjectival
marker increases the abstractness of representations. For this reason, I will
assume the first solution for the purposes of this article, namely, introducing
derivational levels to the phonological system of Kashubian.

### 3.2.4. Derivations

Sections 3.1, 3.2.3.1 and 3.2.3.2 argued that Kashubian has a rule of Coronal
Palatalization accompanied by a spell-out rule of Hardening. Kashubian Coro-
nal Palatalization is cyclic and restricted to Level 1. Since Hardening applies
across the board, but not across word boundaries, also affecting underlyingly
soft //ʦʼ ʣʼ//, it must be postcyclic. Furthermore, I assume in this article that
WFRs add derivational and inflectional morphemes of the nominal declen-
sion, and derivational morphemes of the adjectival declension at Level 1. At
the same time, inflectional markers of adjectives are added at Level 2. The pro-
cess is followed by that of Vowel Deletion. Example (29) shows derivations of
the noun *kòc+e* 'cat' (loc.sg.) and the adj. *kòc+y* 'cat'. Derivation (30) presents
the nouns *kòc+e* 'cat' (loc.sg.), *les+e* 'forest' (loc.sg.), and exemplifies the Duke-

of-York gambit of //s z//. Example (31) presents the derivation of the adjectives *kòc+y* 'cat' and *bògat+i* 'rich'.

(29)   Derivation of the words *kòc+e* 'cat' (loc.sg.) and *kòc+y* (adj. masc. nom.sg.)

| | | | | |
|---|---|---|---|---|
| UR | kò//t+ɛ// | | kò//t+i+i// | |
| Level 1 | | | | |
| | t+ɛ | WFR: loc.sg. /-ɛ/ | t+i | WFR: adj. /-i/ |
| | ɕ'+ɛ | | ɕ'+i | Coronal Palatalization (21a) |
| Level 2 | | | | |
| | | | ɕ'+i+i | WFR: nom.sg. /-i/ |
| | | | ɕ'+i | Vowel Deletion (24) |
| Postcyclic | ɕ'ɛ | | ɕ'+i | |
| | ɕɛ | | ɕ+i | Hardening (21b) |

As we see, the processes take place at two derivational levels. The inflection of adjectives is restricted to Level 2. At Level 1, the WFR rule creating the loc.sg. form of the noun provides a derived environment for rule (21a) to apply. The [−back] adj. suffix also creates a feeding change for rule (21b). At Level 2, the masc. nom.sg. case marker is added to the adjective. The process is accompanied by Vowel Deletion. Finally, the rule of Hardening applies postcyclically.

Derivation (30) shows the Duke-of-York gambit in Kashubian, as argued for in Section 3.2.2.

(30)   Derivation of the words *kòce* 'cat' (loc.sg.) and *lese* 'forest' (loc.sg.)

| | | | |
|---|---|---|---|
| UR | kò//t+ɛ// | //las+ɛ//[28] | |
| Level 1 | | | |
| | t+ ɛ | s+ɛ | WFR: loc.sg. /-ɛ/ |
| | ɕ'+ɛ | s'+ɛ | Coronal Palatalization (21a) |
| Postcyclic | ɕ'+ɛ | s'+ɛ | |
| | ɕ+ɛ | s+ɛ | Hardening (21b) |

As shown in (30), the loc.sg. Word Formation Rule creates a derived environment and Coronal Palatalization applies, followed by the context-free Hardening.[28]

Example (31) presents the derivation of *kòc+y* 'cat' (adj.), and *bògat+i* 'rich'. The adjectivizing suffix is added to the stem *kòt* at Level 1, feeding Coronal Palatalization. The masc. nom.sg. marker is added at Level 2, creating *kòc+y* 'cat' (adj.) and *młod+i* 'young'.

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[28] For clarity of presentation the *a* → *ɛ* vowel change in the stem will not be discussed here.

(31)   Derivation of the words *kòcy* 'cat' (nom.sg.) and *bògati* 'rich' (nom.sg.)

| | | | |
|---|---|---|---|
| UR | kò//t+i+i// | bòga//t+i// | |
| Level 1 | | | |
| | t+i | | WFR: adj.    /-i/ |
| | ts'+i | | Coronal Palatalization (20a) |
| Level 2 | | | |
| | ɕ'+i+i | t+i | WFR: masc. nom.sg. /-i/ |
| | ɕ'+i | | Vowel Deletion (24) |
| Postcyclic | ɕ'+i | t+i | |
| | ɕ+i | | Hardening (21b) |

# 4. Conclusions

This paper examined the processes affecting Kashubian coronals, in particular //t d s z//. The analysis was couched within the framework of Lexical Phonology (Kiparsky 1982; Rubach 1984; Booij and Rubach 1987). The data, apart from descriptive sources, were drawn from my own fieldwork conducted in the area of Sierakowice in 2009.

It was argued that Kashubian, similarly to Polish, has a process of Coronal Palatalization accompanied by Hardening. The analysis of //s z// showed that there is a Duke-of-York gambit in Kashubian, namely a change of hard //s z// to a soft sound /s' z'/, and then back to [s z]. It was also shown that Coronal Palatalization is cyclic, whereas Hardening is postcyclic. Kashubian has two derivational levels. Coronal Palatalization is restricted to Level 1, whereas Velar Softening applies at Level 2. The formation of nouns take place at Level 1. Derivational morphemes apply to adjectives at Level 1, whereas inflectional adjectival markers are restricted to Level 2.

The primary goal of the present article has been to further the understanding of the phonological processes governing Kashubian coronal alternations. It sheds new light on the sound changes affecting coronal obstruents, thus contributing towards the documentation and description of the language.

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