On Coronals: Are they special?

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Coronals have long been a focus on attention in phonology. In this paper I review some of the properties of coronals that have been argued to make them unique, focusing on the phonological patterning of consonants. I compare the phonological patterning of coronal consonants with the patterning of other places of articulation.

“This book is dedicated to coronals, as opposed to labials, velars and so on, because coronals are often alleged to have properties shared by no other place of articulation.” The special status of coronals: Internal and external evidence. Carole Paradis and Jean-François Prunet (editors). 1991a: 1

At least since the collection edited by Paradis and Prunet 1991a, coronals have been a topic of considerable attention in the phonology literature. My goals in this paper introducing a special issue of Toronto Working Papers in Linguistics on coronals are two-fold. The first is to provide a brief overview of the ways in which coronals have been argued to be special and to evaluate the arguments for their special nature; the second is to preview the papers in this volume. The volume grows out of a workshop on coronals, held at the University of Toronto in November 2007, and the papers in the volume capture, we hope, some of the excitement of the exchanges at that event.

In recent years a large number of questions have been asked about coronals, including the following:

(1) a. What counts as a coronal? How is this term defined phonologically? What counts as a coronal from a phonetic perspective?
   b. What features are appropriate for distinguishing coronals from other places of articulation?
   c. What are the natural classes within coronals? What features distinguish between coronal subplaces of articulation?
   d. Are there coronal vowels as well as consonants?
   e. What is the phonological patterning of coronals, both consonants and vowels?
   f. How are coronals, consonants and vowels, best represented?
   g. Are coronals special or unique in their phonological patterning? Do they show phonological patterning not exhibited by other places of articulation?
In the following pages, I address some of these questions, very briefly reviewing some of the major literature on the topic. There has been much written on coronals, and I do not begin to cover the full range of work on the topic.

1. Defining coronal

It is useful to begin with a brief discussion of how the term ‘coronal’ is defined and how the feature [coronal] has been used, a topic of some debate in the literature. Trask 1996, in a dictionary entry, defines coronal as “(of an articulation) articulated with the tip or blade of the tongue.” In a discussion of the definition of coronal in SPE, he points out that dental, alveolar, palato-alveolar and retroflex segments are [+coronal], noting further that in post-SPE work, palatals have often been considered to be coronal as well (1996: 94).

Keating 1991:30, in a paper on coronal articulations, provides an articulatory definition of coronal: “Coronals can be defined as segments produced with the blade (including the tip) of the tongue.” She also identifies the places of articulation that are generally considered to be coronal: “The generally recognized coronal places of articulation are dental, alveolar, palato-alveolar, retroflex, and palatal.”

Hall 1997, in a book devoted to the study of coronals, defines coronal sounds as articulated with the front part of the tongue (page 4), further arguing for the following classification. Coronal subplaces include interdental, dental, alveolar, retroflex, palato-alveolar, and alveopalatal (page 33) while the palatal place of articulation is not a coronal subplace.

The controversy about what counts as a coronal from the perspective of phonology rests with the treatment of palatals. For the purposes of this overview, the classification of palatals is not important, and there is general agreement otherwise on what a coronal is.

2. The special natures of coronals

Coronals are argued in the literature to be special in a number of ways. In the following discussion, I differentiate between what I call phonological and non-phonological aspects of coronals, defining ‘phonological’ quite narrowly, as involving phonological processes such as assimilation and neutralization. In this section I begin with an overview of some of the non-phonological ways in which coronals have been argued to be special, and then turn to phonological properties in the following section.

As discussed above, several subplaces of articulation are included under the definition of coronal, namely dental, alveolar, palato-alveolar, retroflex, and, perhaps, palatal places of articulation. When one compares this with other major places of articulation, a clear asymmetry between coronals and other places of articulation is evident. The labial place of articulation includes labials and labiodentals, and the dorsal place of articulation is sometimes defined to include dorsals and uvulars, and, depending on the analyst, palatals. This imbalance in the possible subplaces within a major place of articulation is one way in which coronals are special. The coronal region is quite large from an articulatory perspective compared with those that define other places of articulation. See Keating 1991 and Hall 1997 for detailed discussion.
Given this asymmetry in the number of subplaces of articulation, it is perhaps not surprising that coronal consonants are viewed as special in terms of frequency. There are more possibilities for coronals in terms of subplaces of articulation than there are for labials and dorsals and thus there are more possible coronal consonants available than there are labial and dorsal consonants. Paradis and Prunet 1991b lay out the arguments for the special status of coronals in terms of frequency with respect to individual languages as well. The following quotation refers to the consonant inventories in Maddieson’s 1984 work (the reference is dated 1987 in the quote below, taken directly from Paradis and Prunet 1991b).

“It has long been known that coronals are the most frequent consonants in languages. Except for Hawaiian (see Maddieson 1987:31), all languages possess at least one coronal stop. Out of 317 languages, 316 have the coronal dental or alveolar /n/, 299 the bilabial /m/, 167 the velar /N/ (Maddieson, 1987: 60). If a language has only one fricative, it will be the coronal /s/ 84% of the time (Maddieson 1987: 52), and liquids are coronal in the overwhelming majority of the languages. As mentioned by Keating (this volume), coronals are also special in that they include more contrasts of both place and manner than do other consonant classes.” Paradis and Prunet 1991b: 1

Thus, not only do coronals occupy a number of subplaces of articulation, but individual languages tend to include coronals, while other consonantal places of articulation might be missing.

Coronal consonants have been argued to be special in acquisition, as pointed out by Paradis and Prunet 1991b: 1: “And acquisitional studies show that coronals with labials are the first consonants acquired by children (see Stoel-Gammon, 1985: 509; Vihman, Ferguson, and Elbert, 1986: 26).” Similarly, Paradis and Prunet 1991b: 2 point to their special patterning in aphasia: “Puel, Nespoulous, Bonafé, and Rascol (1980: 253) point out that coronals also pattern in a unique way in aphasic speech.”

Taking factors such as wideness of distribution, frequency, acquisition, and loss into account, coronals appear to have special properties as compared with other places of articulation; there are more coronals, languages tend to have coronals, and coronals have been argued to be acquired early.

3. The special nature of coronals 2: Phonological properties

Both coronal consonants and front vowels have been argued to show special properties with respect to phonological patterning as well, showing asymmetries when compared with other places of articulation. With respect to consonants, the following are noted in the literature as evidence that coronals are “essentially different from other consonants” (Paradis and Prunet 1991b: 8). Paradis and Prunet 1991b themselves discuss assimilation, neutralization, and transparency, and the other topics listed below are taken up in papers in that volume.

(2) a. Assimilation: Coronals undergo assimilation of place features more readily than do consonants at other places of articulation.
b. Neutralization: Neutralization in coda position to coronal place of articulation is common.

c. Epenthesis: Epenthetic consonant are often coronal

d. Transparency: Coronals may be transparent to harmony processes while noncoronals tend to block harmony across them.

e. Harmony: Consonant harmonies generally involve coronals to the exclusion of other places of articulation.

f. Morpheme structure constraints: Coronals may pattern differently than other places of articulation in morpheme structure constraints.

All of these types of asymmetries are richly illustrated in the volume edited by Paradis and Prunet 1991a.

Vowels have been argued to show similar asymmetries, with front vowels distinguished from back vowels in terms of their susceptibility to assimilation and in terms of their ability to be epenthetic, among other properties. See, for instance, work by Clements 1991, Lahiri and Evers 1991, and Hume 1992, 1996. I do not discuss vowels in this paper.

In the following discussion I illustrate some of the phonological properties that have been argued to be special to coronals, focusing on assimilation targets and the outcome of neutralization.

3.1 Assimilation of coronals

In this section I review assimilation in order to more fully understand the claim that coronals are special in their patterning with respect to the phonology.

The claim that is made about the coronal place of articulation is the following, based on asymmetries between the patterning of triggers and targets: coronals assimilate to an adjacent place of articulation in asymmetric assimilation, patterning as targets; they do not pattern as triggers. Other places of articulation, on the other hand, show the reverse patterning, functioning as triggers but not as targets. In this discussion I consider only three major places of articulation, labial, coronal, and dorsal, setting aside laryngeal. I thus set aside the rich discussion on nasals that considers whether the consonant written as /h/ or /N/ is to be considered as one place of articulation or two and, if two, if the latter is placeless or laryngeal. See de Lacy 2002, 2006 for recent discussion.

Catalan can be used to illustrate this asymmetry. As the examples in (3) illustrate, there are contrasts in place of articulation in Catalan nasals in word-final position.

(3) Catalan word-final place of articulation contrasts (Hualde 1992: 379)

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>òm</td>
<td>‘light’</td>
</tr>
<tr>
<td>gran</td>
<td>‘big’</td>
</tr>
<tr>
<td>ban’</td>
<td>‘bath’</td>
</tr>
<tr>
<td>banh</td>
<td>‘bank’</td>
</tr>
</tbody>
</table>

The plain coronal, /h/, assimilates to the place of articulation of the following consonant, as shown by the examples in (4).
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(4) Coronal nasal assimilates to following places of articulation (Hualde 1992: 395)

so/n/ ‘they are’
so[m] poks ‘they are few’
so[ŋ] grans ‘they are big’

The labial and velar nasals fail to assimilate to the place of articulation of a following consonant.

(5) a. Labial nasal fails to assimilate in place
so/m/ ‘we are’
so[m] poks ‘we are few’
so[m] grans ‘we are big’

b. Velar nasal fails to assimilate in place
i. ba[ŋ]ket ‘bank, diminutive’
   ba[ŋ] bo ‘good bank’

ii. si[ŋ] ‘five’
   si[ŋ] bins ‘five wines’

There is some discussion in the literature of the best analysis of the final velar nasal; nevertheless, it fails to assimilate.

Korean is also frequently used as an example of a language in which the coronal shows distinctive patterning in assimilation. As (6) illustrates, coronal consonants assimilate in place of articulation to a following labial or dorsal, while labials and dorsals fail to assimilate to a following coronal.

(6) Korean place of articulation assimilation (Yoon-Jung Kang, personal communication, March 2005)

a. Coronals assimilate in place of articulation
ko/t+p/al o ko[p’]alo ‘straight’
a/n+p/aŋ a[m’p’aŋ] ‘inner room’
pa/t+k/o pa[k’] o ‘to receive and’
ha/n+k/aŋ ha[nk’aŋ] ‘the Han river’

b. Labials and dorsals fail to assimilate
pa/p+t/o pa[p’t’o] ‘rice also’
su/m+t/a su[m’t’a] ‘hide’
i/k+t/a i[k’t’a] ‘ripe’
ka/ŋ+t/o ka[n’d’o] ‘robber’

Thus, based on the patterning of different places of articulation in languages such as Catalan and Korean, the coronal place of articulation is special in its ability to assimilate, as other places of articulation do not show this patterning.

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1 The data in (2) also illustrate processes that tense and voice stops; these are not relevant to the present discussion.
3.2 Neutralization to coronal

Coronals also serve as the output of neutralization. For instance, in Saami, word-final nasals neutralize to coronal, as in (7).

(7) Saami: Word-final consonants neutralize to coronal (Odden 2005: 244)

<table>
<thead>
<tr>
<th>nominative sg.</th>
<th>essive</th>
</tr>
</thead>
<tbody>
<tr>
<td>ahhku[b]-in</td>
<td>ahhku[t]</td>
</tr>
<tr>
<td>tjuoivva[g]-in</td>
<td>tjuoivva[t]</td>
</tr>
</tbody>
</table>

Basque (Hualde 1991) is similar in showing neutralization to coronal in certain environments. There is a coronal-dorsal contrast in morpheme-final position, with neutralization to coronal syllable-finally.

(8) Basque: Syllable-final consonants neutralize to coronal (Hualde 1991: 13)

| o[g]i | ‘bread’ |
| o[t]-apur | ‘bread crumb’ |
| i[d]i | ‘ox’ |
| i[t]-zan | ‘ox driver’ |

In addition, in languages with coda conditions, codas are sometimes restricted to coronal places of articulation. For instance, in Italian, codas are either coronal (s, l, r), or a nasal or stop that is homorganic to the following place of articulation.

Thus, coronal place of articulation is special in that it is the outcome of neutralization in languages such as Saami and Basque; the other major places of articulation do not exhibit this patterning in these languages.

3.3 Accounts of the special properties of coronals

Let us assume for the moment that the properties of coronals outlined above make this place of articulation special in some way and ask how these properties might be accounted for. Most accounts arise in some way or another out of a proposal originally made by Kean 1975: “Kean (1975: 48) proposes a universal markedness theory in which /t/ is the universally unmarked consonant and coronal the unmarked articulation” (based on frequency, acquisition; quoted from Paradis and Prunet 1991b, page 2). The core observation then is that the coronal place of articulation is unmarked with respect to other places of articulation, and the special properties of coronals are attributed to their being unmarked with respect to other places of articulation.

Coronal unmarkedness has been captured in different ways. In a representational theory of phonology, it has been argued that the asymmetric patterning of coronals is due to their representation. In particular, the place feature of a coronal is absent from its phonological representation while the place features of other places of articulation are present. This yields place of articulation representations along the following lines, using feature geometry; see, for instance, Avery and Rice 1989 for such an account. (Note that Avery and Rice 1989 propose a difference in the representational complexity of labials and dorsals, with dorsals being more complex. I set this aside here.)
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These representations provide a natural interpretation for assimilation asymmetries: coronals are targets of assimilation because they do not have a specified place of articulation feature while labials and dorsals already have specified feature; labials and dorsals are triggers because they have a feature to give, while coronals are missing such a feature. Neutralization to coronal place of articulation also receives a natural account: coronals are, literally, the least marked place of articulation of these three, lacking a place feature altogether, so are a natural outcome of neutralization, which comes about through the loss of a specified feature.

While featural underspecification is one way proposed to account for coronal asymmetries, arguments against coronal underspecification are present in the literature; see, for instance, the influential review by McCarthy and Taub 1992 of the Paradis and Prunet volume. Partly in response to critiques such as McCarthy and Taub, alternative ways of capturing coronal asymmetries have been proposed. One important one involves the use of a fixed markedness hierarchy, as proposed in Optimality Theory; see, for instance Prince and Smolensky 1993 and Lombardi 2002. The general idea of a place hierarchy is as follows. All places of articulation are marked in some way. However the coronal place of articulation is less marked than are the other places. Such a hierarchy formalized as in (10), assuming that dorsals are the most marked of the major places of articulation.

\[(10) \quad *\text{Dorsal} >> *\text{Labial} >> *\text{Coronal}\]

Given this hierarchy, it is not surprising to find that coronals exhibit special patterning. For instance, they are the likely output of neutralization because they represent the most preferred outcome, given their position on the markedness hierarchy.

In recent work that builds on the notion of a hierarchy, de Lacy 2002, 2006 argues that the place of articulation hierarchy should be formalized as a series of constraints, as in (11).

\[(11) \quad \{\text{Dorsal}\}, \{\text{Dorsal, Labial}\}, \{\text{Dorsal, Labial, Coronal}\}\]

A dorsal violates all three constraints, and is thus the most marked; a coronal violates only one, and thus patterns as the least marked. Again neutralization falls out naturally from these constraints.

While both the representational account and the hierarchical account make use of the notion of coronal unmarkedness, there are theoretical differences between them. In the remainder of this paper, I do not examine these, but rather address a different question, an empirical one, namely whether the phonological evidence from assimilation targets and neutralization given for the special status of coronals is confirmed as more languages are taken into account. I thus focus on the empirical issue of whether the special status of coronals should be enshrined in a theory, be it through representations or
constraints, rather than the theoretical issues of how to capture the special status of coronals.

4. Beyond the initial observations about coronals: coronals and rich inventories

In section 2 it was pointed out that one feature of coronals is that many coronal subplaces are possible. In the examples of assimilation of coronal and neutralization to coronal place of articulation discussed in sections 3.1 and 3.2, the languages in question do not have phonologically contrasting coronals in the relevant position. When assimilation in such languages is examined, their patterning is somewhat different. For instance, in Polish, Czaykowska-Higgins 1992: 139 shows that there are four places of articulation for nasals, labial, dental, prepalatal, and what she calls placeless. The placeless, /N/, is the target of assimilation; the dental assimilates only optionally to non-coronals, and the prepalatal and the labial fail to assimilate as well. This is illustrated in (12) through (15); see Czaykowska-Higgins 1992 for details.

(12) Polish: Assimilation of /N/
ra/N/bać  ro[m]bać  ‘hew’ 140
wste/N/ga  fste[n]ga  ‘ribbon’ 140

(13) Optional assimilation of /n/
fu[n]kcja ~ fu[n]kcja  ‘function’ 143
pa[n]#buk ~ pa[m]buk  ‘Lord God’ 143

(14) No assimilation of /ń/²
ha[ń]ba  ‘shame’ 144

(15) No assimilation of /m/
ta[m]#xod’zi  ‘there (he) walks’ 145

Czaykowska-Higgins proposes that that the coronal nasal optionally debuccalizes at the phrase level. At the word level, /N/, the placeless nasal, assimilates while the coronal nasal does not.

Polish illustrates that there are languages in which a coronal fails to show obligatory assimilation, but rather the nasal identified as placeless is the general assimilator. Polish differs from the languages discussed previously in this paper in having more than one coronal subplace of articulation. Sanskrit, another language with multiple coronals, shows a different facet of such a system. Sanskrit has labial, dental, retroflex, and palatal nasals. The dental assimilates, but only to coronal places of articulation, not to non-coronal places of articulation, as in (16) through (17); data is from Arsenault 2008.

² Note that the palatal nasal can decompose into a palatal glide and a nasal consonant; in this case assimilation is optional, as with /n/, yielding [hajmba].

8
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(16) Sanskrit: Dental assimilates to coronals
a. Assimilation in dental-coronal sequences
   tat + ₹aukate → ta[dʒ]aukate ‘it approaches’
   etat + ṭattram → eta[tʃ]attram ‘this umbrella’
   pa:tas + ṭalati → pa:ta[s]alati ‘the foot is disturbed’
   tatas + ṭa → tata[ʃ]a ‘and then’
   ta:n + ḍimbha:n → ta:[n.d]imbha:n ‘those infants’
   ta:n + ḍana:n → ta:[n.d]ana:n ‘those people’

b. Assimilation in coronal-dental sequences
   i:+ te → i:[ʈ]e ‘he worships’
   i:s + ta- → i[s]a- ‘desired’

(17) Sanskrit: No assimilation of dental to other places of articulation
   maha:n + bha:gah → maha:nbh:a:gah ‘great poet’
   maha:n + kavih → maha:nkavih ‘illustrious’

Thus there are differences between languages with a single coronal place of articulation in a relevant position and one with multiple coronal places of articulation in that position, as discussed by Avery and Rice 1989. In the former, the coronal is the target for general assimilation, while in the latter the coronal does assimilate, but only locally, to other coronal places of articulation; it fails to assimilate to labials and dorsals.

What is special about coronals in languages like Korean and Catalan is that they change their place of articulation from one major place to another. In languages such as Polish, the coronal is not the shifter, but rather the placeless nasal is, and in languages like Polish, the plain coronal shifts its place of articulation to another coronal but not to another major place of articulation. In many Slavic languages, there is a consonantal place of articulation that can undergo a more general shift in place of articulation, namely the dorsal consonant. In many Slavic languages, palatalization shifts a dorsal to a coronal; in addition, there may be shifts of coronals within the coronal zone. This is exemplified for Serbian in (18) and (19).

(18) Serbian: First palatalization (Radisic 2007: 11)
   ru/k/a + itsa → ru[tʃ]itsa ‘hand’
   pra/x/ + iti → pra[s]iti ‘dust’

(19) Serbian: Second palatalization (Radisic 2007: 12)
    numberOfRows + i →  numberOfRows[s]i ‘nut’
   pe/k/ + i → pe[ʦ]i ‘to bake’

Within the coronals, a process known in the literature as iotation shifts coronal places of articulation. See, for instance, Morén 2005 and Radisic 2007, this volume for details.

Based on patterning as a general assimilator, we might want to identify the placeless nasal as special in Polish and the dorsal as special in a language such as Serbian, while the coronal is special in languages such as Catalan and Korean. This is, perhaps, a first indication that other consonantal places of articulation can show the same
patterning as coronals do, calling into question the special nature of coronals from the perspective of the phonology. However, given the nature of the inventories in languages such as Polish, Sanskrit, and Serbian, with more than one coronal subplace allowed in assimilator position, one might conclude, as did Avery and Rice 1989, that coronals are special generally, attributing the patterning in languages with more than one coronal subplace of articulation to the fact that there is more than one subplace. In the remainder of this paper I step back from languages with more than one coronal subplace, returning to a study of assimilation and neutralization in the absence of a rich coronal inventory in a target position in a language. I again pose the question of whether coronals in fact differ in their phonological patterning from other places of articulation in such a case.

5. A return to assimilation: languages with a single coronal series

Consider first Chukchi (Chukot in Ethnologue). Chukchi has three nasals, labial, coronal, and dorsal. In this language, the dorsal assimilates (20), while the coronal and labial fail to assimilate, to a following place of articulation, as shown in the forms in (21).

(20) Chukchi: Velar assimilates in place to a following consonant (Kenstowicz 1986: 81-82)

- te[n]/- ‘good’
- ta[n]- al?-an ‘good life’
- ta[m-p]era-k ‘to look good’
- ta[n-t]ott[o]y ‘good pillow’

- Ṽato-k ‘to go out’ ga-Ṽato-len → ga[n]t-o-len ‘went out’
- Ṽape-k ‘to get off’ ga- Ṽape-lin → ga[mp]e-lin ‘got off’

(21) Coronal and labial fail to assimilate

- a. Coronal does not assimilate in place to a following consonant.
  - ya-[n-p]era-w-len ‘decorated’
- b. Labial does not assimilate in place to a following consonant.
  - mok- ‘many’ na-mok-o-kin → na-[mk]o-kin ‘often’
  - imot ‘load’ imot-[m]-ti → [m]ti-t ‘loads’

Not only are coronals and dorsals subject to assimilation, but labials are as well. In Sri Lankan Portuguese Creole, the labial assimilates and not the coronal. (I set aside the few instances of final dorsals in this language.)

(22) Sri Lankan Portuguese Creole: labial assimilates (Smith 1978)

- a. ma:m ‘hand’
- b. before coronal ma:[n]-su ‘hand, genitive singular’
- c. before labial ma:[m]-pə ‘hand, dative singular’
- d. before velar ma:[n]-ki ‘hand, verbal noun’
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(23) Coronal fails to assimilate

a. si:[n] ‘bell’

b. before coronal
   si:[n]-su ‘bell, genitive singular’

c. before labial
   si:[n]-pə ‘bell, dative singular’

d. before dorsals
   si:[n]-ki- ‘bell, verbal noun’

What are the consequences of these assimilations? While coronals were observed to be special in that they pattern as general assimilators, being targets and not triggers, in these languages we see that labials and dorsals as well as coronals can exhibit asymmetric patterning in terms of assimilation. Two conclusions have been drawn based on such cases. One possibility is that targets of assimilation do not serve as a valid diagnostic of markedness, with other diagnostics pointing to the coronal place of articulation being less marked than the labial or dorsal. See de Lacy 2002, 2006 for this direction of research. Another possibility is that the notion of universal substantive phonological markedness, with the coronal place of articulation being less marked than the labial or dorsal places, should be reconsidered. See, for instance, Haspelmath 2006, Hume 2003, 2008, Hume and Tserdanelis 2002, and Rice 2007 for different versions of this type of proposal.

6. A return to neutralization

Not only have coronals been argued to be special with respect to assimilation, they have also been claimed to be special with respect to neutralization, with neutralization of place of articulation to coronal (or glottal, which I set aside here). However, instances of neutralization to other places of articulation are reported in the literature. In Carib of Surinam consonants neutralize to a dorsal, a pattern also found in Tlachicilco Tepehua. These languages are illustrated in (24). In the former, labials and coronals neutralize to the velar fricative [x] before a consonant, while in Tlachichilco Tepehua, stops neutralize to a dorsal or uvular before a consonant.

(24) a. Carib of Surinam: Neutralization to dorsal (Hoff 1968)
   ena[p]i+taj̊  ena[x]taj̊  ‘he will eat’ 60
       enapi       ‘to eat’ 60
   wi:[t]o+sa    wi[x]sa    ‘I go’ 66
       wi:to       ‘to go’ 168
   woni:[k]i+poro (w)oni[x]poro ‘to sleep’ 157
       woni:[k]i     ‘to sleep’

b. Tlachichilco Tepehua: Neutralization to [k/q] (Watters 1988)
   /ʃap/ ʃa[p]’a ‘X pants’ ʃa[wk]i ‘X panted’
   /ʃut/ ʃo[t]’a ‘X drinks it’ ʃo[q] ʃ ‘X drank it’
Not only is neutralization to a dorsal possible, so is neutralization to labial, as shown by the data from Manam in (Austronesian), where a nasal can neutralize to either a labial or a dorsal in word-final position, as in the (ii) forms.

(25) Manam: Neutralization to [m] or [ŋ] (Lichtenberk 1983 30-31)
   a. da/ŋ/
      i. mata-da[ŋ]-igu ‘my tears’
         eye-water-1sg adnominal
      ii. da[m], da[ŋ] ‘water’
   b. ze/m/ ‘chew’
      i. búa ú-ze[m]-i ‘I chewed a betel nut’
         betel nut 1sg relalis-chew-3sg obj
      ii. bua u-ze[m]-Ø ‘I chewed betelnuts’
         bua u-ze[ŋ]
         betel nut 1sg realis-chew-3pl.obj
   c. ?a/n/ ‘eat’
      i. údi gó-ʔa[n]-i ‘eat the banana!’ 31
         banana 2sg ir-eat-3sg obj
      ii údi go-á[ŋ] ‘eat the bananas!’
         udi go-ʔá[m]
         banana 2sg irrealis-eat-3pl obj

Just as languages have coda conditions restricting places of articulation to coronals (see section 3.2), they may also have coda conditions that require dorsals. For instance, Ecuador Quichua is reported to allow only dorsal stops in codas, while other manners of articulation are coronal.

(26) Coda condition and velars
    Ecuador Quichua: k, g, s, n, l, y

Thus we conclude that dorsals and labials as well as coronals can result from neutralization.

7. Conclusions, and looking ahead

Coronals have been treated as special in terms of phonological processes (e.g., assimilation, neutralization, epenthesis) and in terms of what I have called non-phonological properties including frequency, acquisition, and so on. Observations about the asymmetric patterning of coronals are embedded in theoretical treatments of place of articulation, with coronals, in some way or another, treated as the least marked place of articulation of labial, dorsal, and coronal.

The kinds of exceptions to the special phonological patterning of coronals discussed in sections 5 and 6 receive different types of treatments in the literature. Given that the special status of coronals is attributed to their unmarked nature, the discussion
largely revolves around markedness of places of articulation. One possible way of thinking about the fact that coronals fail to pattern as special cross-linguistically in terms of assimilation targets is that the diagnostic for unmarkedness/markedness might not be valid; for instance, de Lacy 2002, 2006 argues that target of assimilation is unilluminating with respect to markedness, and should not be considered to be a markedness diagnostic; if so, systematic asymmetries with respect to patterning as a general assimilation target are not expected. It is possible that the data is not properly understood; de Lacy suggests that the neutralization in Carib might not be to a dorsal but rather a laryngeal.

Are coronals special? They are definitely special in what I have called non-phonological patterning: the number of potential places of articulation, their cross-linguistic frequency, their commonness in languages. However, there are reasons to be suspicious of whether coronals show special patterning with respect to the other places of articulation in terms of phonological processes, and one must ask if they are indeed special from this perspective, even when languages with more than one coronal place of articulation are taken into account. Perhaps another way of putting this, voiced by Yoonjung Kang in her concluding remarks at the workshop, is to say that each place of articulation is worthy of careful study in order to understand what its properties are and what those properties are due to. Perhaps it is only when we understand labials, dorsals, and, in addition, laryngeals, a place of articulation that I have set aside in this paper, as well as coronals that we will be able to understand how they relate one to another.

The papers presented at the workshop, and the papers in this volume, address a wide range of issues around coronals. Coronals show asymmetrical phonological patterning with respect to other places of articulation in some languages, as discussed in section 3 of this paper. Myles Leitch examines a number of very unusual alternations in the Bantu language Dibole, where the voiced coronal stop patterns as a sonorant and a coronal affricate is epenthetic. Elham Rohany Rahbar studies vowels in Persian, arguing that front vowels, and in particular the vowel /e/ have special properties that are not shared by other vowels. Kyumin Kim examines the assimilation of epenthetic vowels to adjacent consonants in Korean and in two Bantu languages, Shona and Sesotho, arguing that the differences in patterning between the languages are due to the different properties of the coronals in the languages.

Others study asymmetries within coronal consonants in languages with rich coronal contrasts. Paul Arsenault looks at a number of Indo-Aryan languages, proposing that coronal distinctions in these languages are best captured through apicality and retraction, without reference to the feature [anterior]. Lidia Jarmasz, in a study of Polish coronal stops and fricatives, argues that the underlying organization of these is different than one might expect, with the dental/alveolar stops and fricatives forming a class, while the dental/alveolar affricates form a class with the retroflex fricatives, and the retroflex affricates do not have fricative pairs. Milica Radisic examines another Slavic language, Serbian, with a focus on the patterning of the velar consonant /g/. In Serbian, as in Polish, there are coronal contrasts, and in this language not only do coronals shift in their places of articulation, but velars shift to coronals, the topic of this paper.

Rebecca Roeder studies a very particular instance of a coronal, namely the environment in which the initial consonant of the morpheme the is deleted in a variety of
British English, investigating the phonological factors that affect its reduction and deletion.

These papers point to the very interesting properties of coronals. Whether coronals have special status or not from a phonological perspective is open to debate, and depends in many ways on how ‘special’ is defined. However, we can certainly say that coronals are worthy of continued careful attention.

References

ON CORONALS: ARE THEY SPECIAL?


