

“Contrast shift” in the Algonquian languages*

Will Oxford
University of Toronto

SUMMARY

This paper examines historical vowel changes in the Algonquian languages from the perspective of the “Modified Contrastive Specification” approach to phonology (Dresher 2009). It is proposed that Algonquian languages fall into two groups with respect to the patterning of changes involving mergers and palatalization: in the “conservative” languages, /e/ merges with /i/ and palatalization is always triggered by /i/, while in the “innovative” languages, /e/ merges with /a/ and palatalization always excludes /i/ as a trigger. I attribute both of these patterns to a single “contrast shift” that occurred in the innovative languages, in which the vowel system came to be organized according to height rather than place. This analysis allows us to see both patterns as being manifestations of a single underlying development.

RÉSUMÉ

Cette communication examine les changements des voyelles dans les langues algonquines du point de vue de l’approche appelé «Modified Contrastive Specification» (Dresher 2009). Il sera proposé que les langues algonquines se répartissent en deux groupes concernant la déphonologisation et la palatalisation : dans les langues «conservatrices», /e/ fusionne avec /i/ et la palatalisation est toujours déclenchée par /i/, tandis que dans les langues «innovatrices», /e/ fusionne avec /a/ et la palatalisation n’inclut pas /i/ comme déclencheur. J’attribue ces correspondances à un «bouleversement de contraste» qui a réorganisé le système vocalique des langues innovatrices par rapport à la hauteur plutôt qu’à la place. Cette analyse nous permet de voir les deux correspondances comme des manifestations d’un seul développement sous-jacent.

1 INTRODUCTION

This paper proposes that the major diachronic patterns in the development of Algonquian vowel systems can be seen to follow naturally from a shift in the underlying contrastive structure of the

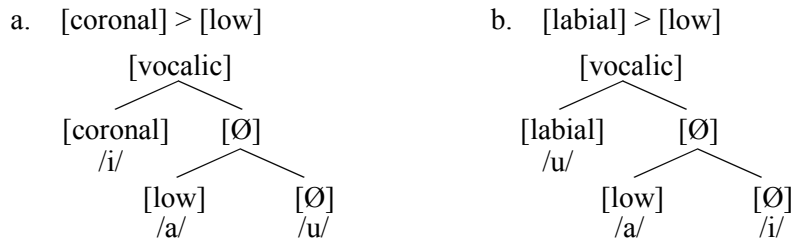
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vowel system (a “contrast shift”). The paper is organised as follows. Section 2 introduces the theoretical framework and clarifies the notion of contrast shift. Section 3 develops an analysis of the Proto-Algonquian vowel system, the starting point for all subsequent changes. Section 4 surveys the developments in the daughter languages and shows that the patterning of a variety of vowel-related changes can be explained as the result of a single contrast shift.

2 THEORETICAL FRAMEWORK

I adopt the approach to contrast known as “Modified Contrastive Specification” (Dresher, Piggott and Rice 1994; Dresher 2009), which has two basic tenets: first, that only contrastive features are phonologically active, and second, that contrastive feature specifications are determined by dividing the inventory according to a feature hierarchy. To see how this approach works, consider a hypothetical language with the three-vowel system /i a u/. Two of the possible contrastive hierarchies for this language are illustrated in (1). (The tree diagrams illustrate the scope of each contrast in the inventory.)¹

(1)



What are the practical implications of the difference between (1a) and (1b)? Note that in (1a), /u/ is not contrastively [labial]—the feature [low] is sufficient to distinguish /u/ from /a/. This hierarchy therefore predicts that /u/ should not be able to trigger labialization. On the other hand, in (1b), /i/ is not contrastively [coronal], which predicts that it should not be able to trigger palatalization.

Aside from its implications for underspecification, the contrastive hierarchy may also play a role in mergers. Following Ko (2010 a,b), I will assume the principle in (2):

- (2) Only two phonemes that differ in the *lowest-ranked feature that distinguishes them* can fall together (i.e. a phoneme can only fall together with its “contrastive sister”).

The hierarchy in (1a) therefore predicts that only /a–u/ mergers should be possible, while (1b) predicts only /a–i/ mergers.

The contrastive hierarchy is thus critically important in the phonology of a given language, as it determines both which processes should be possible in that language as well as which mergers are permitted. In order to apply this model to diachronic data, I add one final principle

¹ For simplicity, I adopt privative features here, but nothing in the current paper hinges on this choice. I use the null sign to represent the unmarked member of a privative contrast.

(also assumed by Ko (2010a,b)): contrastive hierarchies may change. Given the pervasive phonological role of the contrastive hierarchy, we expect such “contrast shifts” to have wide-ranging consequences. I will argue that this is exactly the case in Algonquian.

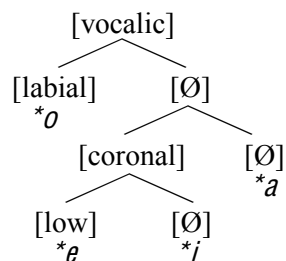
3 PROTO-ALGONQUIAN VOWEL FEATURES

In order to develop a diachronic analysis of Algonquian vowel contrasts, it is necessary to begin with Proto-Algonquian, the reconstructed ancestor of the Algonquian languages. Proto-Algonquian had the four vowel qualities **i* **e* **a* **o* (Bloomfield 1946) plus a length contrast which I will abstract away from in this paper (but see Oxford 2011 for a detailed analysis).

It is worth noting that the symbolization of the Proto-Algonquian vowels should not be taken too seriously. The vowel symbolized as **e* is often referred to as a “low” vowel (e.g. Goddard 1974:109), and its reflexes in relatively conservative Central Algonquian languages such as Fox and Shawnee range as low as [æ] (Miner 1979:11). The vowel symbolized as **o* is a round non-low back vowel that could equally well be written as **u*; its reflexes range from [o] to [u] and it participates in Proto-Algonquian glide formation (→ **w*).

I propose that the properties of the Proto-Algonquian vowel system are best captured by the contrastive hierarchy in (3).

- (3) PROTO-ALGONQUIAN: [labial] > [coronal] > [low]



Only this contrastive hierarchy correctly generates all of the following required feature specifications and sisterhood relationships (based on the descriptions in Bloomfield 1946):

- (4)
- *i is [coronal]:** accounts for the triggering of coronal palatalization by **i*²
 - *o is [labial]:** accounts for the persistence of labiality in the coalescence of **we* (underlying **oe*) to *o* in all Central and Plains languages (Goddard 1994:192)
 - *i, *e are sisters:** accounts for neutralization of short **i*, **e* in initial syllables
 - *o, *a are not sisters:** accounts for the fact that **o*, **a* never undergo neutralization or merger in PA or any of the daughter languages

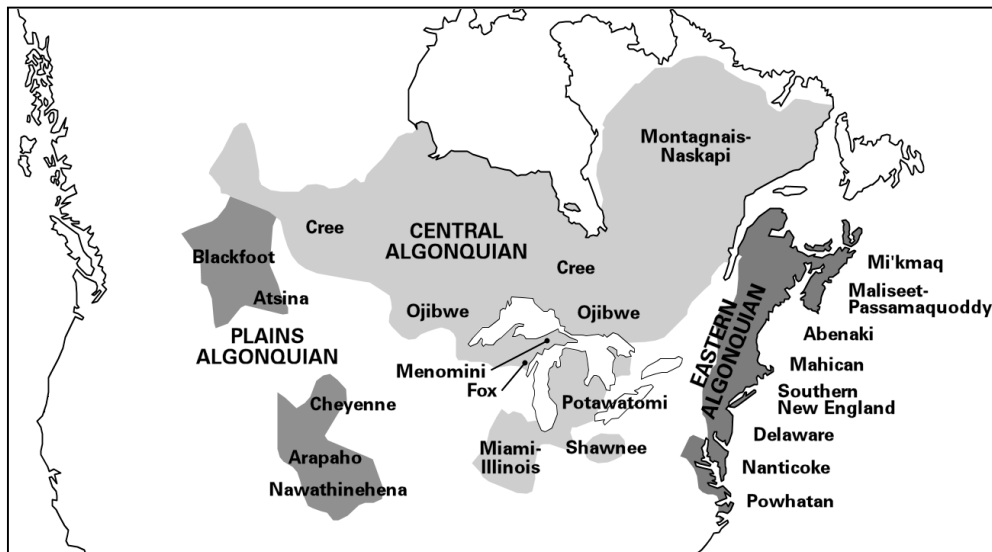
Note that the Proto-Algonquian contrastive hierarchy begins with a place contrast. In this respect, the hierarchy may be marked, as it appears to be more usual for contrastive hierarchies to begin with a height contrast (e.g. Jakobson and Halle 1956, Dresher 2009).³

² Although **e* is also contrastively [coronal], I assume that its [low] specification prevents it from triggering palatalization due to a constraint along the lines proposed by Barrie (2003). Such a constraint mirrors the cross-linguistic generalization that low vowels rarely trigger palatalization (Kochetov 2011).

4 DEVELOPMENTS IN THE DAUGHTER LANGUAGES

This section examines the vowel changes across the Algonquian family in light of the contrastive hierarchy determined above for Proto-Algonquian. As shown in the map in Figure 1 below, the Algonquian family is conventionally divided into three groups: Plains, Central, and Eastern. Of these groups, only Eastern Algonquian is generally regarded as a genetic subgroup (Goddard 1980). The Central and Plains groupings are areal, but they correlate with linguistic factors to some degree, as the Plains languages have undergone dramatic innovations while the Central languages are relatively conservative.

Figure 1. Approximate locations of major Algonquian languages (early distribution; map based on Sturtevant 1967 and Mithun 1999:xviii–ixx)



I will propose below that in Central Algonquian and Blackfoot, the Proto-Algonquian contrastive hierarchy has largely been retained. I will refer to these languages as the “conservative” group.⁴ On the other hand, the languages on the periphery of the Algonquian area—the Eastern languages and the Plains languages other than Blackfoot—appear to have undergone a contrast shift in which a height feature was added to the top of the contrastive hierarchy. I will refer to these languages as the “innovative” group. As I will show, the posited contrast shift accounts for a variety of systematic patterns that distinguish the conservative and innovative groups.

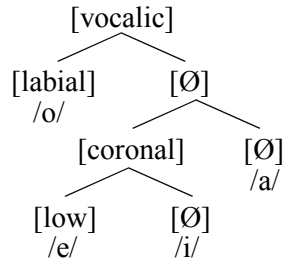
4.1 THE CONSERVATIVE SYSTEM (CENTRAL ALGONQUIAN, BLACKFOOT)

Nearly all vowel-related changes in the Central Algonquian languages and Blackfoot are consistent with the predictions of the Proto-Algonquian contrastive hierarchy, repeated in (5).

³ But see Ghini 2001:27 for an opposing view.

⁴ I intend the term “conservative” to refer only to the contrastive structure of the vowel system. In most other respects, notoriously divergent Blackfoot is far from conservative.

- (5) CENTRAL ALGONQUIAN, BLACKFOOT: [labial] > [coronal] > [low] (retained from PA)



Two groups of changes are particularly common: mergers involving **e* and innovative cases of palatalization (or similar processes such as assibilation). Both type of changes pattern consistently across the languages with the conservative system of vowel contrasts, as shown in (6) and (7).

- (6) MERGER PATTERN (CONSERVATIVE): **e* merges with *i*⁵
- Neutralization of short **i* and **e* in initial syllables in Proto-Algonquian (Bloomfield 1946:93, Pentland 1979:403)
 - Initial short **e* > *i* in Fox (Bloomfield 1946:6) and Shawnee (Miller 1959:20)
 - Partial merger of short **e* > *i* in Miami-Illinois (Costa 2003:122,134)
 - Complete merger of short **e* > *i* Ojibwe-Potawatomi, Cree-Montagnais-Naskapi (Bloomfield 1946:86), and Blackfoot (Berman 2006:266)
 - Complete merger of long **e*: > *i*: in Woods Cree, Northern Plains Cree (Pentland 1979:104) and Blackfoot (Berman 2006:266)
- (7) PALATALIZATION PATTERN (CONSERVATIVE): *i* is always included as a trigger⁶
- Proto-Algonquian **t/*θ*-palatalization triggered by **i*, **i*: (Bloomfield 1946)
 - Montagnais-Naskapi *k*-palatalization triggered by *i*, *i*:, *e*: (MacKenzie 1980:51)
 - Betsiamites Montagnais *t*-palatalization triggered by *i*: (Drapeau 1981)
 - Blackfoot *k*-assibilation triggered by Proto-Algonquian **i*, **i*: and *t*-assibilation triggered by Blackfoot *i*, *i*: (Berman 2006:265; Proulx 1989:52-3)

These patterns follow from the contrastive hierarchy inherited from Proto-Algonquian. The consistent merger of **e* with *i* follows from the sisterhood of these phonemes, while the ability of *i* to trigger palatalization is predicted by its contrastive specification as [coronal].

4.2 THE INNOVATIVE SYSTEM (EASTERN ALGONQUIAN, CHEYENNE/ARAPAHO)

The innovative system developed, apparently independently, on the eastern and western peripheries of the Algonquian area. The contrast shift that gave rise to the innovative system appears to date back to the divergent protolanguages: Proto-Eastern-Algonquian in the east and

⁵ The one exception to this pattern is Northern East Cree, in which long **e*: merges with *a*: (MacKenzie 1980:99). This suggests that NEC may have shifted towards the innovative system discussed below.

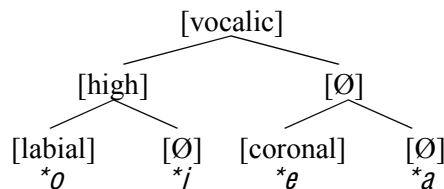
⁶ The inclusion of /e/ as a trigger is variable. See footnote 2 for a possible explanation of the failure of contrastively [coronal] /e/ to trigger palatalization in some cases.

Proto-Arapaho-Atsina/Pre-Cheyenne in the west.⁷ These protolanguages underwent important changes in which the high vowels **i* and **o* patterned as a natural class.⁸

- (8) HIGH VOWEL PATTERNS (INNOVATIVE)
- a. Proto-Eastern-Algonquian lost the length contrast on the high vowels **i*, **o*, but retained it on the non-high vowels **e*, **a* (Goddard 1980:149)
 - b. Proto-Arapaho-Atsina and Pre-Cheyenne underwent the complete merger of **o*, **o:* with **i*, **i:* (Goddard 1974:105, 1986:345)

The changes in (8) can be expressed only if the high vowels are a phonological class. However, this is not the case under the conservative place-based hierarchy inherited from Proto-Algonquian, in which **i* and **o* have absolutely nothing in common (see (5) above). In order for the high vowels to become a class in the divergent protolanguages, a height contrast must come to outrank the inherited place contrasts, as shown in (9).

- (9) EASTERN AND PLAINS PROTOLANGUAGES: **[high]** > [labial] > [coronal]



I therefore conclude that Proto-Eastern-Algonquian and Proto-Arapaho-Atsina/Pre-Cheyenne must have shifted to the hierarchy in (9), thus organizing the vowel system primarily by height rather than by place. As a result of this contrast shift, **i* and **o* are now the natural class [high] and their sisterhood accounts for their merger in the Plains languages.

This shift was motivated purely by the high-vowel changes that occurred in the Eastern and Plains protolanguages, but the feature specifications and sisterhood relations in the reorganized vowel system make further predictions about which processes should be possible in the Eastern and Plains daughter languages. It turns out that these predictions are strikingly confirmed. Let us return to the two groups of changes discussed for the conservative languages in (6–7) above: mergers involving **e* and innovative cases of palatalization (or similar processes). The patterns are once again consistent, but they differ from those in (6–7) in exactly the ways that the new hierarchy predicts.

- (10) MERGER PATTERN (INNOVATIVE): **e* merges with or shifts to *a*
- a. Partial merger of PEA **ə* (=PA short **e*) with *a* in Abenaki (Warne 1975:39)
 - b. Complete merger of PEA **a* with **ə* in Mi'kmaq and Maliseet-Passamaquoddy (Hewson 1973; LeSourd 1993)
 - c. Shift of PEA **e:* to long *a:* in Southern New England Algonquian (Goddard 1978)

⁷ Proto-Arapaho-Atsina and Pre-Cheyenne are not generally grouped together as “Proto-Plains-Algonquian”, but the two protolanguages nevertheless share important innovations.

⁸ On the characterization of **o* as a high vowel, recall from section 3 that PA **o* could equally well be written as **u*. Goddard (1980:149) refers to Proto-Eastern-Algonquian **i* and **o* as “the high vowels.”

- d. Merger of PEA **e:* with short *a* in Western Abenaki (Warne 1975)
 - e. Vowel harmony involving reflexes of **e(:)* and **a(:)* in Arapaho (Goddard 1974)
 - f. Shift of **e(:)* to *a(:)* in Cheyenne (Goddard 1986)
- (11) PALATALIZATION PATTERN (INNOVATIVE): *i* is excluded as a trigger
- a. Southern New England *k*-palatalization triggered by PEA **e:* but not by PEA **i:* (the facts are complex; see Goddard 1981, 1990 for full details)
 - b. Cheyenne “yodation” (**k > kj*) triggered by **e*, **e:* only (Goddard 1986)

Parallel to the conservative languages, these patterns follow from the contrastive hierarchy inherited from the divergent Eastern and Plains protolanguages. The consistent merger of **e* with *a* follows from the sisterhood of these phonemes, while the inability of *i* to trigger palatalization follows from its lack of a contrastive [coronal] specification (as the feature [labial] is sufficient to differentiate the high vowels **i* and **o*).⁹ The contrast shift in (9) thus accounts not only for the early changes in (8), but also for the later changes in (10) and (11).

5 CONCLUSION

Once the distinction between “conservative” and “innovative” vowel systems is recognized, Algonquian vowel changes display strikingly uniform patterns. Under the conservative system, **e* merges with *i* and *i* always triggers palatalization, while under the innovative system, **e* merges with *a* and *i* is excluded as a palatalization trigger. If we assume a contrast shift from a place-based system to a height-based system—which is independently required in order to account for the behaviour of high vowels—the differences between these two patterns fall out as a direct consequence of the features and relationships made available by the two systems. We have thus unified a broad range of diachronic developments by showing that they are all manifestations of a single underlying change. It is in this way that the “contrast shift” model can provide insight into phonological change, as it allows us to identify relationships among diachronic developments (such as high-vowel changes, mergers, and palatalization) that might not otherwise be evident.

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⁹ The fact that the *i–o* contrast involves [labial] rather than [coronal] results from the ranking of [labial] above [coronal] in (9). This ranking was inherited from Proto-Algonquian, but is also required on independent grounds in the Eastern languages, as the reflex of PEA **o* has triggered rounding in both Mi’kmaq (Hewson 1973:158) and Abenaki (Warne 1975:56) and must therefore be contrastively [labial].

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