The perceptual dimensions of sonority-driven epenthesis

Michelle A. Fullwood

July 2013

Abstract

Vowel epenthesis often appears to preferentially target consonant clusters with rising sonority. One explanation for this is perceptual faithfulness (Fleischhacker (2002); Steriade (2006)): rising sonority clusters are more susceptible to epenthesis because the perceptual distance between the underlying /C_1C_2/ sequence and its correspondent output sequence [C_1VC_2] is small, thus incurring a smaller faithfulness cost. This raises the question of how to compute the perceptual distance between two sonority contours /C_1C_2/ and [C_1VC_2] in terms of the sonority of C_1, C_2 and V. In this paper, I propose that the appropriate metric is SONORITY ANGLE, the angle formed by the contours C_1C_2 and C_1V, and apply it in analyzing two case studies of sonority-driven epenthesis, Chaha and Irish. A comparison is made to another possible metric, SONORITY RISE (Flemming (2008)), the ratio of the gradients of the two contours, as well as to Syllable Contact, which represents an alternative, markedness-based approach to the problem of sonority-driven epenthesis.

Contents

1 Introduction

Vowel epenthesis often appears to preferentially target consonant clusters with rising sonority. There are two broad classes of explanation within Optimality Theory for such sonority-driven epenthesis.

One is faithfulness-based: the perceptual distance between the underlying /C_1C_2/ sequence and its correspondent output sequence [C_1VC_2] is small when the cluster is of rising sonority. Thus, epenthesis into such a sequence incurs a smaller faithfulness cost than epenthesis into a cluster of falling sonority. This is the basis of the analysis proposed by Fleischhacker (2002, 2005) to explain why rising sonority obstruent-sonorant clusters are more easily epenthesised in to than falling sonority sibilant-stop clusters.

This faithfulness-based approach raises the question of how the perceptual distance between two sonority contours /C_1C_2/ and [C_1VC_2] should be computed in terms of the sonority of C_1, C_2 and V. Fleischhacker's analysis rested on empirical determinations of sonority contour faithfulness, and did not attempt to determine such a relation.

Steriade (2006) proposed that input and output sonority contours should match in terms of whether they are rising or falling, and to what degree, but did not suggest a concrete mathematical relation. Flemming (2008) formalizes Steriade's approach with the metric SONORITY RISE, the ratio of the gradients of the two contours.

In this paper, I suggest an alternative metric, SONORITY ANGLE, namely the magnitude of the angle made by the vectors C_1-C_2 and C_1-V, and explore the ramifications of this choice.

SONORITY ANGLE makes the same broad predictions as SONORITY RISE – that clusters of rising sonority, having a relatively small angle between the underlying sonority contour /C_1-C_2/ and the overt sonority contour [C_1-V], are perceptually more similar to their epenthetic output, and therefore more likely to undergo epenthesis, than clusters of falling sonority. Crucially, however, the exact hierarchy of susceptibility of clusters to epenthesis is predicted to be different.

I take two instances where the predictions of SONORITY ANGLE and SONORITY RISE differ and illustrate with case studies of sonority-driven epenthesis in two different languages, namely Chaha and Irish, that the predictions of SONORITY ANGLE are more in line with the data than those of SONORITY RISE.

The other broad class of explanation for sonority-driven epenthesis is markedness-based. Syllable Contact Murray & Vennemann (1983) holds that across a syllable boundary, falling sonority clusters are more harmonic than rising sonority ones. Hence, rising sonority clusters are preferentially broken up by epenthesis.

Syllable Contact forms the basis for the main existing analysis of Chaha epenthesis by Rose (2000). I show that the faithfulness-based analysis, powered by the metric of SONORITY ANGLE, is more economical. In the case of Irish, Syllable Contact makes incorrect predictions regarding the data.

The layout of this paper is as follows. Section 2 lays out the theoretical background for the sonority contour faithfulness approach to sonority-driven epenthesis. I introduce the proposed SONORITY ANGLE metric as well as the competing SONORITY RISE metric Flemming (2008), then lay out the alternative markedness-based approach to sonority-driven epenthesis, namely SYLLABLE CONTACT.

Section 3 consists of a case study of sonority-driven epenthesis in Irish. Similarly to Irish, I show that the data are in line with the predictions of SONORITY ANGLE and not SONORITY RISE, while a Syllable Contact-based analysis would have to be very complicated to explain the same facts.

Section 4 is a major case study of epenthesis positioning in Chaha. I detail the facts of epenthesis positioning in Chaha, based on the data given in Rose (2000), and show that the sonority contour faithfulness approach explains these facts, with SONORITY ANGLE as the metric for comparing sonority contours. I compare it to SONORITY RISE and show that the former is the more successful analysis, and that overall, the approach just outlined is more economical than the Syllable Contact-based approach of Rose (2000).

Section 5 looks at various issues regarding SONORITY ANGLE, such as its robustness. Section 6 concludes.

2 Theoretical machinery

3 Case study: Irish

4 Case study: Chaha

5 Issues

6 Conclusion

References

Fleischhacker, Heidi. 2002. Cluster-dependent epenthesis asymmetries. In *UCLA Papers in Phonology 5*, .

Flemming, Edward. 2008. Asymmetries between assimilation and epenthesis. MIT ms.

Murray, Robert W. & Theo Vennemann. 1983. Sound change and syllable structure in Germanic phonology. *Language* 59. 514–528.

Rose, Sharon. 2000. Epenthesis positioning and syllable contact in chaha. *Phonology* 17. 397–425.

Steriade, Donca. 2006. Contour correspondence: evidence from cluster interruption. Handout, OCP3.