Patterns of vowel assimilation and dissimilation in diphthongs and triphthongs in the Romance languages. Articulatory and perceptual motivation

Daniel Recasens
Universitat Autònoma de Barcelona

Based on historical data on spontaneous (i.e., context-independent) and conditioned (i.e., context-dependent) diphthongization processes in the Romance languages (Recasens, 2023), the goal of this investigation is to study the patterns of vowel height assimilation and dissimilation triggered by glide(s) in diphthongs and triphthongs derived from stressed vowels and to attempt to interpret those patterns in articulatory and acoustico-perceptual terms. Assimilation data show that mid low vowels change to mid high when preceded by [j] but do not when followed by the palatal glide (e.g., there are instances of [jɛ] > [je] but not of [ɛj] > [ej]), and a similar scenario holds for diphthongs and triphthongs with the labiovelar glide [w]. These V-to-C assimilatory trends appear to match experimental data showing that (alveolo)palatal consonants exert more prominent carryover effects on vowels than consonants of other places of articulation. Dissimilatory data, on the other hand, reveal the existence of high and mid high vowel lowering effects triggered by both glides [j] and [w] at the regressive rather than the progressive level (e.g., there are instances of [ij] > [ej] and [ej] > [ɛj] but not of [ji] > [je] and [je] > [jɛ]), which suggests that dissimilatory changes occur whenever the vowel articulation is not heavily constrained by the preceding consonant. Assuming that dissimilatory processes are perceptually motivated, i.e., they are ruled by the need to differentiate two similar phonetic segments which co-occur in the same word (Ohala, 1992), the latter finding implies that perception follows production. Other findings on sound changes which have taken place in the Romance languages will be addressed if time permits: (a) postvocalic (alveolo)palatal consonants are more likely to trigger stressed mid high vowel raising when the vowel is /o/ (/o/ > [u]) than when it is /e/ (/e/ > [i]); (b) /a/ raises to a mid front vowel before syllable-final [j] rather than before syllable-initial (alveolo)palatal consonants; (c) on/off-gliding is a prerequisite for the consonant-induced formation of rising diphthongs and the chances that on/off-gliding occurs are determined by the duration and the frequency extent of the vowel formant transitions.

Ohala, J. J. (1992) What's cognitive, what's not, in sound change. In G. Kellermann & M. D. Morrissey (eds.), *Diachrony within synchrony: Language history and cognition*, 309–255. Frankfurt: Peter Lang Verlag.

Recasens, D. (2023) *Consonant-induced sound changes in stressed vowels in Romance*. Beihefte zur Zeitschrift für romanische Philologie, Band 477. Walter de Gruyter.

Vowel inventories, syllable structure and rhythm types in the Romance languages: Are there typological generalizations regarding diphthongs?

Stephan Schmid (Universität Zürich)

Phonological typology has been concerned, among other things, with the size of stressed vowel inventories and the occurrence of marked features such as front rounded vowels, nasal vowels, or vowel quantity. Regarding unstressed vowels, patterns of vowel reduction have been related to syllable structure complexity, in line with the so-called 'rythm class hypothesis'. Both approaches have been applied to Romance varieties, mostly in the Italo-Romance domain (cf. Schmid 2014, 2024), but for the time being typological generalizations regarding diphthongs seem to be lacking.

As is well-known, diphthongization constitutes instead a classical topic in (diachronic) Romance linguistics (e.g., Schürr 1956; Sánchez Miret 1988; Maiden 2016; Recasens 2022, 2013, Filipponio 2025). On the one hand, the diphthongization of lat. Ĕ, Ŏ –> /jɛ/, /wɔ/ has been a matter of debate: while some scholars see it as a reflex of open syllable lengthening, others relate it to metaphony; note that metaphonetic diphthongization is still a synchronically active morphonological process in several Romance varieties (e.g., Neapolitan). On the other hand, some northern Romance varieties also show the diphthongization of lat. ĭ in open syllables (e.g., lat. NĪVE(M) > engad. *naiv* [na̯i̯f] 'snow').

The current contribution undertakes the first steps towards an examination of Romance dipththongs from the point of view of the above-mentioned rhythm class hypothesis. Inherent diphthong properties such as dynamics (rising vs. falling) and quality (opening vs. closing) will be related to possibile conditioning factors such as syllable structure (open vs. closed) and prosodic structure (oxytone vs. paroxytone words). At this point, it should be stressed that the goal of the contribution is mainly to raise new research questions, rather than to provide a coherent typology of Romance diphthongs.

Filipponio, Lorenzo. 2025. Metaphony and diphthongization in the Romance languages. In Michele Loporcaro (ed.), *Oxford Encyclopedia of Romance Linguistics*. Oxford, Oxford University Press. Doi: https://doi.org/10.1093/acrefore/9780199384655.013.434

Maiden, Martin. 2016. Diphtongization. In Adam Ledgeway & Martin Maiden (eds.), *Oxford Guide to the Romance languages*, 647–657. Oxford, Oxford University Press.

Recasens, Daniel. 2022. Processes affecting vowels. In Christoph Gabriel, Randall Gess & Trudel Meisenburg (eds.), *Manual of Romance Phonetics and Phonology*, 127–149. Berlin, de Gruyter.

Recasens, Daniel. 2023. *Consonant-induced sound changes in stressed vowels in Romance*. Berlin, de Gruyter.

Sánchez Miret, Fernando. 1988. *La diptongación en las lenguas rómanicas.* München, LINCOM.

Schmid, Stephan. 2014. Syllable typology and the rhythm class hypothesis: Evidence from Italo-Romance dialects. In: Javier Caro Reina & Renata Szczepaniak (eds.), *Syllable and Word Languages*, 421–454. Berlin, Mouton de Gruyter.

Schmid, Stephan. 2024. Segmental phonology, phonotactics, and syllable structure in the Romance languages. In Michele Loporcaro (ed.), *Oxford Encyclopedia of Romance Linguistics*. Oxford, Oxford University Press. Doi: https://doi.org/10.1093/acrefore/9780199384655.013.433

Schürr, Friedrich. 1956. La diphthongaison romane. *Revue de linguistique romane* 20: 107–144, 161–248.

Prominence as a cue to the diphthong/hiatus distinction: A preliminary analysis on Campidanese Sardinian.

Andrea Brugnoli

A diphthong and a hiatus might be defined phonologically as a tautosyllabic and a heterosyllabic vocalic sequence, respectively. However, the acoustic correlates of this distinction have been proved elusive and, although some correlates have been pinpointed, such as duration, slope of formant trajectory, length/presence of steady states (Aguilar 1999, Gubian et al. 2015, Cronenberg et al. 2024), none of them comprehensively allow to fully capture the distinction between these two phonological categories.

In this talk, first a brief overview of the monophthong inventory of Campidanese Sardinian will be provided based on the data collected in the town of Sinnai (Cagliari). Subsequently, I will present some preliminary results of the analysis of the diphthong inventory focusing on the parameter of direction (opening/closing/height-harmonic), i.e. how the vowels that make up the diphthong are ordered in terms of sonority (e.g. /ia/ vs. /ai/), and especially on the parameter of prominence (rising/falling), i.e. which vowel of the diphthong is the most prominent or "stressed" (e.g. /ˈia/ vs. /iˈa). More specifically, it will be shown how the parameter of prominence in a vowel sequence seems to correlate with the distinction between stressed and unstressed monophthongs and how this correlation might also be used as a cue to better understand the distinction between diphthong and hiatus from an acoustic point of view.

Aguilar, L. (1999). Hiatus and diphthong: Acoustic cues and speech situation. Differences. In: Speech Communication 28. 57−74.

Cronenberg, J., Chitoran, I., Lamel, L., Vasilescu, I. (2024). Crosslinguistic Comparison of Acoustic Variation in the Vowel Sequences /ia/ and /io/ in Four Romance Languages. In: Interspeech 2024. 3689-36-93

Gubian, M., Torreira, F., Boves L. (2015). Using Functional Data Analysis for investigating multidimensional dynamic phonetic contrasts. In: Journal of Phonetics 49. 16−40.

Time-resolved variation in Southern Bavarian diphthong trajectories

Aleese Block

Analyses of vowels vary widely in both theoretical framing and methodological execution. Traditional approaches are often static, relying on set point measurements (i.e., midpoint for monophthongs and the onset/offset for diphthongs) to describe vowel quality. Even when movement in diphthongs is quantified, it is often reduced to acoustic distance or vector direction between static onset and offset points, which can unfortunately neglect the dynamic nature of the diphthong's trajectory.

In this talk, I will discuss the application of time-resolved formant and variation measures to the diphthong inventory of Southern Bavarian German, characterized by a large diphthong inventory. I will look at what this can reveal about the internal structure of diphthongs and whether there are differences in diphthong structure based on factors like directionality and trajectory length.

Ultimately, this approach could deepen our understanding of diphthongal contrasts by linking dynamic acoustic patterns to phonological structure. I argue that time-resolved measures can supplement accounts that prioritize either the static targets or the transitional path of diphthongs and can offer new evidence for the categorization and internal organization of vowel systems. In doing so, this work aims to contribute to broader efforts to integrate dynamic methodologies into the analysis of complex vowel inventories.

Gestural representation and sound change in diphthong systems

Patrycja Strycharczuk
University of Manchester

In this presentation, I discuss the phonological representation of diphthong vowels, focusing on the connection between the phonological structure and sound change.

The first part of the talk describes a model of vowel representation developed in Strycharczuk et al. (2024). I observe that variable diphthongisation occurs frequently in multiple accents of Anglo-English, such that the same vowel can have a more monophthongal or more diphthongal quality, and that slightly diphthongised 'in-between' vowels are ubiquitous. I argue that this phenomenon arises from structural properties of vowels. A crucial assumption is that tense monophthongs and diphthongs are composed of two discrete gestural targets: a nucleus and an offglide, timed sequentially. A monophthong has two targets with identical parameters. Computational modelling shows that monophtongs can become diphthongs through variation in the nucleus. Variable degrees of diphthongisation emerge from gradient variation in gestural parameters. By establishing structural similarity between tense monophthongs and diphthongs, this model allows us to account for historical changes, such as diphthongisation and monophthongisation, as instances of wider type of changes in vowel quality. Additionally, the two-target representation is consistent with phonological weight and phonetic duration in long vowels.

In the second part of the talk, I consider other diphthong systems, in which phonological weight, phonetic duration and capacity for diphthongisation pattern differently than in Anglo-English. The first case is Scottish English, where vowel duration varies allophonically, such that a diphthong can be long or short (Scobbie, Hewlett & Turk, 1999). The second case is /a/-tensing in American English, where a short monophthong undergoes diphthongisation (Labov, 2011). I discuss the representational adjustments required to capture these cases, and potential diachronic pathways involved. I argue that diphthongisation invariably involves the presence of two targets, but that gestural coordination varies between systems, and that it's closely linked with phonetic duration.

References

Labov, W. (2011). The exact description of a speech community: Short a in Philadelphia. In Language change and variation (pp. 1-58). John Benjamins Publishing Company.

Scobbie, James M.; Hewlett, Nigel; Turk, Alice (1999). "Standard English in Edinburgh and Glasgow: The Scottish Vowel Length Rule revealed". In Paul Foulkes; Gerard J. Docherty (eds.). Urban Voices: Accent Studies in the British Isles. London: Arnold. pp. 230–245.

Strycharczuk, P., Kirkham, S., Gorman, E., & Nagamine, T. (2024). Towards a dynamical model of English vowels. Evidence from diphthongisation. Journal of Phonetics, 107, 101349.

Monophthongization and Diphthongization in Upper Saxon

Beat Siebenhaar

The Upper Saxon dialects underwent both the Early New High German monophthongization and diphthongization processes (e.g., MHG zît > [tsa͡ɪt], MHG lieb > [liːb]). In this regard, they do not differ from present-day Standard German. However, within the broader landscape of High German dialects, this equivalence to the Standard positions Upper Saxon as particularly distinctive. To simplify: East Central German dialects with the Upper Saxon dialects correspond to the Standard while East Upper German dialects underwent only the diphthongization (MHG zît > [tsa͡ɪt], MHG lieb = [liəb]); West Central German dialects, roughly speaking, only participated in the monophthongization (MHG zît = [tsiːt], MHG lieb > [liːb]); while West Upper German dialects remained largely within the framework of the Middle High German system (MHG zît = [tsiːt], MHG lieb = [liəb]).

Despite sharing these historical developments with the modern German Standard, the system of monophthongs and diphthongs in the Upper Saxon dialects is nonetheless clearly distinct from Standard German. This is primarily due to the fact that the closing Middle High German diphthongs ei, ou, and öu have not been preserved as diphthongs, as is the case in most other dialects, but have instead undergone monophthongization to [eː] and [oː] (partially also [ɑː])— e.g., MHG fleisch > [fleːʃ].

Over the past hundred years, regional language developments in the central areas of the Upper Saxon dialect region are marked by both vertical and horizontal leveling processes and a substantial loss of traditional base dialects in favor of regional colloquial forms. These processes have led to a significant decline in the frequency of the mentioned monophthongized forms, even though they remain present to some extent.

As part of the IVaL project, we investigate the everyday language of animal keepers from Leipzig Zoo using recordings spanning the past 20 years. The main analytical focus is on the linguistic development of individual speakers for whom we have recordings covering large portions of this time span. In addition, the rest of the corpus comprises of recordings from approximately 200 other speakers and consists of well over 2.5 million phonetic segments. This extensive dataset allows us to form a comprehensive picture of regional language use.

In this talk, I will first outline the methodology we use to automatically distinguish monophthongs from diphthongs, given the sheer volume of data. I will then present preliminary findings based on the still-incomplete dataset: first, the overall distribution of monophthongs and diphthongs across the sample, and second, the individual developments of selected speakers over the 20-year period. Finally, I will address several factors that appear to influence speakers' choices in phonetic realization.