WHEN SYNCHRONY MEETS DIACHRONY: (ALVEOLO)PALATAL SOUND PATTERNS IN SPANISH AND OTHER ROMANCE LANGUAGES

DISSERTATION

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This dissertation carries out a thorough investigation of the evolutionary patterns of (alveolo)palatal lateral, obstruent, and approximant sounds in Spanish, i.e. [ʎ, ɟ, j, dʒ, ʒ, ʃ], with further evidence from other Romance languages, such as Portuguese, French, Italian, Rumanian, Galician, and Catalan, among others. These sounds are interconnected in their manifestations across Spanish dialects, where orthographic <ll> and <y> may be pronounced in similar or different ways, giving rise to phonological phenomena such as YEÍSMO, IEÍSMO, ƷEÍSMO, ʃEÍSMO and many patterns of DISTINCTION.

Despite several philological and descriptive accounts on the evolutionary steps of those sounds from their roots in Latin and early Romance (e.g. Menéndez Pidal 1950, 1977; Alonso 1962; Lapes 1981; Lloyd 1987; Penny 2002; etc.), very few have attempted to consider the aforementioned synchronic dialectal patterns in order to shed light on their pathways of variation and change. As a response, this study utilizes the phonetic detail (i.e. articulatory and acoustic features) of (alveolo)palatal segments and their interaction with surrounding sounds to uncover their very origins and evolution in Spanish and other Romance languages. By relying on phonetics to motivate a formal analysis of sound change, and through the observation and analysis of both historical and present-day dialectal data, this dissertation offers a phonetically-grounded theoretical explanation for the evolution of the sounds in question. It builds upon several works already present in the literature (e.g. Wireback 1997; Holt 1997, 2003; Baker 2004; etc.)
and contributes with an integrated account of the phenomena in question. It is grounded on the hypothesis that, given (co-)articulatory and acoustic-auditory constraints in the speech signal during the spoken communication between two individuals, the phonetic cues present in the signal represent a *conditio sine qua non* for the relevant changes and evolution of sounds (see Kavitskaya 2002; Colantoni 2004; Ohala 2012; and references therein). Thus, this study assumes that a *sound change* has its seed intra-linguistically and takes place at the level of the individual, while the *diffusion of change*—which ultimately may lead to a change in the phonemic inventory of all the speakers of a language—becomes possible with the inclusion of other appropriate extralinguistic variables (Ohala 1981, 1989, 2012; Blevins 2004).

The novel approach put forth in this dissertation indicates how the traditionally assumed boundaries between synchrony and diachrony become hazy, once a comprehensive and evolutionary account takes into consideration both historical and current dialectal data. By looking at sound change from the perspective of speaker-listener interaction, different evolutionary pathways are accounted for in a straightforward and non-teleological manner, casting light upon why similar change events may take place in different languages and/or the same language across periods of time. Therefore, the use of synchronic data to understand diachronic evolution reveals itself to be relevant in order to fill in the gap between the present and the past and offers a successful explanation for the evolution of sounds and their current dialectal manifestations.
Dedicated to all my family and friends.
ACKNOWLEDGMENTS

There are many special people who have contributed their efforts and time to the completion of this dissertation and my overall graduate studies. First and foremost, I would like to sincerely thank the members of my dissertation committee: Rebeka Campos-Astorkiza, Fernando Martínez-Gil, and Terrell A. Morgan. Without their endless knowledge, constant support, and superb academic wisdom and experience, this dissertation simply would not have been possible. I thank them very, very much for trusting and believing in me through these past four years. Their determination and excellence as scholars inspire me to give my very best in everything I set out to do. I also wish to express here my deepest and sincere gratitude to Jan L. Macián, whose trust and support have proved crucial during my time and teaching activities at OSU.

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During my very first Spanish class, I heard my Chilean teacher pronounce the words caballo ‘horse’ and mayo ‘May’ with the same sound for both <ll> and <y>. “Why do you pronounce them the same way?” I asked her in my native Brazilian Portuguese. “After all, they are different letters, so they ‘should’ be pronounced differently!” I thought naively, but quite intrigued. “Well, we Chileans pronounce them the same way,” she proudly replied in Spanish. “But in other countries, they pronounce <ll> exactly like you do <lh> in Portuguese, while our <y> is just like your <i>, but with a bit more noise.” Little did I know that this initial innocent question would turn into the topic of my doctoral dissertation nearly two decades later.
CHAPTER 1

INTRODUCTION

1.1 The phenomena under study

This dissertation carries out a thorough investigation of the evolutionary patterns of (alveolo)palatal lateral, obstruent, and approximant sounds in Spanish (i.e. the sounds that correspond with the graphemes <ll> and <y> in this language), with further evidence from related Romance languages, such as Portuguese, French, Italian, Rumanian, Galician, and Catalan, among others. The relevant sounds are indicated in Table 1:

<table>
<thead>
<tr>
<th></th>
<th>Postalveolar</th>
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<tr>
<td></td>
<td>Voiceless</td>
<td>Voiced</td>
</tr>
<tr>
<td>Stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fricative</td>
<td>Non-sibilant</td>
<td>j</td>
</tr>
<tr>
<td></td>
<td>Sibilant</td>
<td>ʒ ʒ̞</td>
</tr>
<tr>
<td>Affricate</td>
<td>dʒ</td>
<td>j</td>
</tr>
<tr>
<td>Approximant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral</td>
<td></td>
<td>ʎ</td>
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Table 1. Synchronic realizations of relevant sounds articulated in the (alveolo)palatal region of the mouth in Spanish varieties.

Table 1 illustrates the segments articulated in the (alveolo)palatal region that are relevant to the present study, considering all current dialects of Spanish. However, when taking a closer look at particular varieties, one quickly notices that the configuration of this table...
hides a series of synchronic differences and distinct evolutionary pathways of the sounds involved. The existence of diverse patterns of allophony and phonemic contrast among such sounds has given rise to phonological phenomena such as YEÍSMO, IEÍSMO, ŽEÍSMO, ŽEÍSMO and DISTINCTION (defined below), which the present dissertation investigates.

In most Spanish dialects, word pairs such as *calló* ‘stopped talking (3rd pers. sing.)’ and *cayó* ‘fell (3rd pers. sing.)’ are pronounced the same way, i.e. [kaʝó], with the graphemes <ll> and <y> representing the non-sibilant fricative [ʝ]. The lack of contrast between the pronunciations of these graphemes represents a phonological phenomenon known in Spanish linguistics as YEÍSMO (Gómez & Molina Martos 2013; Hualde 2005:56; Lipski 1989; Lloyd 1987:344-346; Penny 2000:120, 147; Moreno Fernández 2004:984-988; etc.). However, in other places of the Spanish-speaking world, such as in Northern Mexico, the Southwestern United States, and most of Central America, those two words are frequently pronounced with a palatal approximant [j], i.e. [kajó]—phenomenon henceforth regarded as IEÍSMO. In Uruguay and most of Argentina, that very word pair is also pronounced the same way—only this time, speakers say it with either a voiced sibilant fricative [ʒ] (i.e. [kaʒó]) or with its voiceless counterpart [ʃ] (i.e. [kaʃó]), two phenomena which have been labeled ŽEÍSMO and ŽEÍSMO,1 respectively (e.g. Wolf & Jiménez 1979; Fontanella de Weinberg 1978; Harris & Kaisse 1999; Fernández Trinidad 2010; etc.). Yet, in other regions of the Spanish-speaking world, <ll> and <y> may not be pronounced alike. For example, in rural Northern Spain, Northeastern Argentina, Paraguay, and most of the Andean region of Peru, Bolivia and Ecuador, speakers

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1 Other possible spellings are ‘žeismo’ and ‘šeismo’; ‘zheísmo’ and ‘sheísmo’.
pronounce <ll> with an alveolopalatal lateral [ʎ] (i.e. calló [kaʎó]) and <y> with a non-sibilant fricative [j] (i.e. cayó [kaʝó]). In scattered rural areas of Western Andalusia, on the other hand, the <y> in cayó is pronounced with a voiced sibilant fricative [ʒ] (i.e. [kaʒó]), while the <ll> in calló is still realized as [ʎ] (i.e. [kaʎó]). In specific areas of Central-Northern Highland Ecuador, in the Argentinian province of Santiago del Estero and in scattered areas of Central and Southern Mexico, <ll> is pronounced with [ʒ] (e.g. calló [ka salarié]), while <y> is realized as [j] (i.e. cayó [kaʝó]). Finally, in Amazonian Peru and in the Argentinian northeastern province of Corrientes, the pronunciations of <ll> and <y> also contrast: in the latter region, <ll> is being realized as [j] (i.e. cayó [kaʝó]) while <y> is pronounced with a palatal affricate [ʝʝ] (i.e. cayó [kaʝʝó]); in Amazonian Peru, however, <ll> is realized as [ʝ] or [ʃ] and <y>, as [j]. All these patterns of contrast between the pronunciations of <ll> and those of <y> are hereby labeled DISTINCTION.²

1.2 Goals and research questions

1.2.1 Goals

While there have been many philological and descriptive accounts on the proposed steps for the development of such sounds from their roots in Latin and early Romance (e.g. Menéndez Pidal 1950, 1977; Lloyd 1987; Penny 2002, etc.), very few

² The contrast between the pronunciation of <ll> as [ʎ] and that of <y> as [j] (or the mere existence of the sound [ʎ] in Spanish dialects) is also labeled LLEÍSMO (e.g. Hualde 2005:56; Lipski 1994:200). In this dissertation, however, I acknowledge Alvar’s (1996:219) and Moreno Fernández’s (2004:986) use of the term LLEÍSMO for the pronunciation of both <ll> and <y> as [ʎ], specifically in a few cases in central Spain (e.g. in Alarcón in the province of Cuenca and in a few locations around Toledo). However, due to a lack of substantive research demonstrating that this is a systematic phenomenon in a given dialect, I treat these alleged cases as sporadic idiolectal variation, often based on hypercorrection by the speaker.
have attempted to consider the aforementioned synchronic dialectal patterns in order to shed light upon their pathways of variation and change. Thus, this dissertation utilizes the phonetic detail (i.e. articulatory and acoustic information) of (alveolo)palatal consonants and their interaction with surrounding sounds to unfold their very origins and evolution in Spanish and other Romance languages. By relying on phonetics to motivate a formal analysis of sound change, and through the observation and analysis of both historical and present-day dialectal data, the current study offers a phonetically-grounded theoretical explanation for the evolution of the sounds in question. Moreover, it casts light upon the linguistic mechanisms through which the relevant sound changes were able to occur in the first place and continue to evolve nowadays. It builds upon several works already present in the literature and contributes with an integrated account of the phenomena in question. More specifically, the analysis in the present dissertation differs from previous works (e.g. Wireback 1997; Holt 1997, 2003; Baker 2004; etc.) in that it formalizes sound change by means of a difference in constraint ranking between the grammar of a speaker and that of a listener. Thus, it departs from previous accounts, which formalize *variation in production* instead of actual *sound change*.

Furthermore, it is grounded on the hypothesis that, given (co-)articulatory and acoustic-auditory constraints in the speech signal during the spoken communication between two individuals, the phonetic cues present in the signal represent a *conditio sine qua non* for the relevant changes and evolution of sounds (e.g. Kavitskaya 2002; Colantoni 2004; Ohala 2012; and references therein). Thus, the present study assumes that a *sound change* has its seed intra-linguistically and takes place at the level of the
individual, while the diffusion of change—which ultimately may lead to a change in the phonemic inventory of all the speakers of a language—becomes possible with the inclusion of other appropriate extralinguistic variables (e.g. Ohala 1981, 1989; Blevins 2004). Hence, by tracing the evolution of (alveolo)palatal lateral, obstruent, and approximant sounds in Spanish (cf. Table 1) and related Romance languages from their roots in Romance, this dissertation illustrates the crucial role that phonetics plays in the constant (re)shaping of (alveolo)palatal sound patterns over time. Moreover, it elucidates how the traditionally assumed boundaries between synchrony and diachrony become hazy, once a comprehensive and evolutionary account takes into consideration both historical and current dialectal data. By regarding sound change from the perspective of the speaker-listener interaction, different evolutionary pathways can be accounted for in a straightforward and non-teleological manner, casting light upon why similar change events may take place in different languages and/or the same language across periods of time. Additionally, utilizing the phonetic information of sounds and their current dialectal manifestations provides one with the tools to establish well-informed hypotheses on how the relevant sound changes could have taken place in the past. Therefore, relying on synchronic data to analyze diachronic evolution reveals itself to be relevant in order to fill in the gap between the present and the past and offers a successful explanation for the evolution of sounds and their synchronic dialectal manifestations.

As revealed in Chapters 4 and 5, many current (alveolo)palatal sound changes in progress in varieties of Spanish and other Romance languages display evolutionary patterns that are very similar to those observed throughout the history of these Romance
languages. For example, the delateralization of the alveolopalatal lateral [ʎ] in Corrientes Spanish and varieties of Brazilian Portuguese reflect a similar process that took place in the history of Spanish, French, and certain dialects of Italian. Additionally, the Modern strengthening of the non-sibilant fricative [ʝ] into the sibilant fricative [ʒ] resembles a similar change event argued for in Old Spanish, while its subsequent devoicing into [ʃ] in present-day Buenos Aires mirrors the pathways of [ʒ] from Old to Medieval Spanish. Thus, the analyses provided in this dissertation intend to offer not only a contribution to studies of Spanish phonetics, phonology and dialectology, but also an insight and support to phonetically-grounded formal theories of sound change.

1.2.2 Research questions

Assuming that the current configuration of the (alveolo)palatal lateral and obstruent consonant series in Spanish (cf. Table 1) represents the outcome of different evolutionary pathways from their roots in Spoken Latin and Hispano-Romance throughout the last two millennia, this dissertation addresses the following research questions:

1. What were the origins of the (alveolo)palatal segments of current Spanish, and how did they evolve over the last two millennia?
   a. What is the available evidence for their evolution?
   b. Are any particular steps necessary to account for their development?
   c. How did they evolve and how are they currently realized in dialects of related languages, such as Portuguese, Catalan, French, Italian, etc.?
2. Why and how have their different evolutionary steps given rise to synchronic phonological phenomena such as YEÍSMO, IEÍSMO, ŽEÍSMO, ŽEÍSMO, and DISTINCTION?
3. What role does phonetics play when accounting for their evolution?
4. Why and how can phonetic motivation be integrated in a formal analysis of their diachronic development?

1.3 Dissertation overview

This dissertation is organized as follows. Chapter 2 presents the general theoretical assumptions that guide the present approach to sound change and the models adopted to analyze the phenomena in question, i.e. Ohala’s (1981, 1989, 2003, 2012) listener-based model and the constraint-based model of Optimality Theory (Prince & Smolensky 2004 [1993]; Hayes, Kirchner & Steriade 2004; Jun 2004). Chapter 3 provides a thorough articulatory and acoustic characterization of (alveolo)palatal sounds in Spanish (with further evidence from other Romance languages), reviewing the available phonetic literature and defining the symbols that are used throughout the dissertation. Chapter 4 details the evolutionary pathways of such segments in the history of Spanish and other Romance languages until Medieval times. Chapter 5 completes their evolution from Modern to Contemporary Spanish and depicts their manifestations in current dialects. Chapter 6 provides a phonetically-based formal account of the sound changes in question, casting light upon how the study of synchronic variation offers a revealing insight into diachronic, evolutionary patterns. Concluding remarks and directions for future research are presented in Chapter 7.
CHAPTER 2
THEORETICAL FRAMEWORK

2.1 Introduction

The study of sound change has received considerable direct attention from scholars since at least the nineteenth century (e.g. Paul 1880). Some researchers, however, would even argue that phonetic change has been at the center of linguistic scholarship since the 4th century B.C., with Panini’s description of Sanskrit grammar (Solé & Recasens 2012:1). More recently, several authors, working under different theoretical and methodological frameworks, have contributed to improving our understanding of how sounds vary and change over time, focusing on different aspects of language (e.g. phonetics and phonology: Ohala 1981, 1993, 2003, 2012; Kiparsky 2003, 2008; sociolinguistics: Labov 1994, 2001; Guy 2003; etc.), and using divergent approaches (e.g. Neogrammarian sound change: Hale 2003; user-based phonology: Bybee 2001, 2008; etc.), among many other perspectives (e.g. Blevins 2004; Bermúdez-Otero 2006, 2007; Miller 2010; Solé & Recasens 2012). In Spanish and other Romance languages, more specifically, the interest in sound change has given rise to a rich amount of philological and descriptive research, concerned with comparative evidence in the evolution of these languages (e.g. Alonso 1967, 1969; Ariza, 1994; Cano Aguilar 2004;
However, upon considering these studies and the substantial amount of time that they have spent unveiling the evolution of sounds, one may reasonably wonder why it is important for scholars to dedicate their efforts to the study of sound change in the first place. After all, today’s speakers of a given language do not know—and, arguably, do not need to know—how words were pronounced in the past. This disregard for the past was at the center of the structuralist enterprise at the beginning of the 20th century (e.g. Saussure 1916 [1983]) and informed the initial stages of generative approaches of the 1950s and 1960s, targeting the synchronic description of “an ideal speaker-listener, in a completely homogeneous speech-community” (Chomsky 1965:3). However, as Guy (2003:398) points out, today’s speakers do know something about sound (and language) change. For example, young speakers living in an urban area of central Spain will most probably associate the pronunciation of the alveolopalatal lateral [ʎ] in a word such as ella ‘she’ [éʎa] with that of other dialects and/or older speakers—or at least with some kind of “different way” of saying this word, which they pronounce as [éja]. Likewise, television broadcasters and older speakers of River Plate Spanish are likely to use the voiced postalveolar fricative [ʒ] in words that are pronounced by younger speakers with its voiceless counterpart [ʃ]. Thus, speakers tend to display some degree of awareness about ongoing change events in their linguistic variety. Therefore, the importance of studying sound change lies in the fact that, for linguists, it sheds light upon the origins of
synchronic patterns, and how and why these have come to exist in the first place. Metaphorically, researching the evolution of sound inventories is as relevant as studying the history of a country, since it provides us with a better understanding of the intricacies of its current state. Linguistically, the study of sound change reveals the consequences that a given change event incurs to other phonological domains. For example, the change of a sound may produce modifications in segment inventories, syllable structure, stress patterns, etc. Considering the past is crucial not only to understand the present, but also to inform us about why and how similar change events may take place cross-linguistically and also over time within the history of the same language. The possibility of a change event to repeat itself in the evolution of one language or take place at some point in the history of another justifies regarding diachronic development as an indispensable tool to appreciate both how language works and how speakers shape language evolution.

To understand the underpinnings of the development of (alveolo)palatal sounds and their current dialectal picture in Spanish and other Romance languages, it is necessary to go beyond describing their historical pathways. Thus, we must frame the characteristics of these sounds (cf. Chapter 3) within an appropriate theoretical background that provides the mechanisms through which these sounds may evolve. This chapter presents the assumptions of different—albeit complementary—theoretical frameworks that are deemed appropriate to the study of phonetically-based (alveolo)palatal sound change in Spanish and other Romance languages. Specifically, we define our approach to what exactly constitutes the origins of a sound change, as opposed to its spread within a given speech community (§2.2.1). Furthermore, we lay out the
assumptions under which we investigate the constraints on the genesis of (alveolo)palatal sound change (§2.2.2) and describe the formal approach that guides our analysis (§2.3), based upon the interaction among speakers and listeners during oral communication (§2.4). We then characterize and exemplify our own theoretical model (§2.4) and offer some concluding remarks (§2.5).

2.2 The concept of sound change

2.2.1 The origins of sound change vs. change spread

Most linguistic approaches to sound change often consider it from a broad perspective that oversees the important details that emerge when taking a closer look into a given change event. Thus, several works in the sound change literature approach a given change generally through a comparison between an initial “point A” and a final “point B,” which is commonly illustrated by the linguistic notation “A > B.” Nevertheless, many factors come into play in the process of several sound changes and the orthographic sign “>” frequently overshadows what occurs in the middle of a change event, i.e. it misses the phonetic gradience associated with variation in production that is necessary for a sound change to take place. If it is right to assume that the cycle of every change event has a beginning, a period of diffusion, and a final stage of completion in the inventory of all speakers of a language, then it is reasonable to compartmentalize the study of the factors characterizing each step. Moreover, if we are interested in knowing the internal causes of a given change, then we ought to explore the very first step, i.e. the
origins of sound change in the interaction among speakers and listeners during oral communication.

To study the origins of (alveolo)palatal evolution in Spanish and other related languages, we focus on the initial phase of sound change and view it as operating at the level of the individual. Therefore, we concentrate on the possibility and the seed of each change event, rather than its spread within speech communities, which characterizes the stage following its inception and involves a much more complex scenario with the inclusion of extralinguistic variables, such as age, gender, education, etc. We center our approach on the initiation of each sound change, by exploring phonetically-motivated restrictions whose interaction may have a listener form a different pronunciation norm than the one projected by the speaker. Our approach, then, departs from other studies that focus instead on the constraints that target the diffusion of a given sound change—a goal generally associated with sociolinguistic work (Labov 1994, 2001).

2.2.2 The origins and possibilities of sound change

By viewing sound change as the possibility of its initiation, we frame our approach within well-established theoretical models in the literature. Janda (2003), for example, metaphorically correlates the actuation of sound change with the beginning of the universe, by proposing a “Big Bang” theory of sound change. In this model, phonetic

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3 We acknowledge that not all sound changes are exclusively phonetically motivated, and other factors may also play a role in the evolution of sounds, e.g. language processing constraints (Frisch 2004), the functional load of a contrast within the system (Martinet 1978), frequency (Bybee 2001), analogy (Wanner 2006), etc. In this dissertation, however, we choose to focus on the phonetic restrictions that can motivate the beginning of a sound change.
restrictions play a crucial role for providing the conditions under which a change in the pronunciation norm may arise, and also for explaining similar recurring patterns of sound change in non-related languages:

Insisting on the obligatory early presence of finely detailed phonetic conditioning explains why regularity holds: purely phonetic environments guarantee that a change is applicable whenever the most general type of conditions are met—and thus why grammatically or functionally based exceptions are absent from this stage (Janda 2003:420).

The need to focus on the phonetic conditions (i.e. constraints) in the study of the possible beginning of a change event is also embedded in the Neogrammarian model revisited and put forth by Hale (2003). In this approach, Hale compartmentalizes the historical record of a language into three filtering subsystems (or modules), each having its own set of restrictions, namely, “Constraints on change,” “Constraints on diffusion,” and “Limitations of the documentary record,” which, altogether, lead to the “Historical record” of a language, as represented in Figure 1:
While the study of sound change is carried out under the constraints that condition its possibility at the individual level (as indicated by the first module in Figure 1), the success of its diffusion and eventual phonologization in the inventory of all speakers of a language is determined by sociolinguistic constraints (second module in Figure 1). Philology, on the other hand, is responsible for revealing the actual documentation of a change event and provides us with tools to discover and have access to a given sound change in the historical record of a language (cf. third module in Figure 1). Thus, while the third box in Figure 1 is responsible for offering much of the data regarding the documented evolution of a sound, our analyses of said evolution are grounded on claims about the first module, i.e. the linguistic constraints that create the conditions for a possible sound change to occur and further spread under appropriate sociolinguistic conditions. Specifically in the case of the evolution of (alveolo)palatal sounds in Spanish...
and other Romance languages, we rely on data from documents written by Latin grammarians, Medieval and Modern authors, and contemporary dialectologists. The compartmentalization in Hale’s model is, therefore, crucial in order to frame our analysis and understand the origins of (alveolo)palatal sound change. However, it is also important to point out that the arrows going through each of the three modules need not entail that an individual change event will always become the “new norm” and reach the inventory of all language speakers in a speech community. For example, even though a sound change may arise from the linguistic constraints in the first module, it is also possible that constraints on its diffusion may block it from spreading to all speakers in a speech community. Moreover, it may also happen that a given change event never becomes documented in the history of a language or that such documentation is lost and never found, thus never reaching the actual historical record of a language. Furthermore, sociolinguistic constraints may act at different speeds in two different languages, which may produce similar change events at (apparently) different times, although its origins may have taken place concomitantly at the individual level. The outcomes of the delaterization process undergone by the alveolopalatal lateral consonant [ʎ] in Romance languages illustrate these scenarios very well. While documentation for this change has been available since the 10th century for some Leonese dialects (Menéndez Pidal 1950), and started to emerge in Spanish and French in late medieval times (Lloyd 1987; Pope 1934), evidence for Portuguese varieties has been registered only in the 20th century (Castro 1991; Aguilera 1999). Therefore, while the internal conditions for this change (e.g. its articulation and interaction with vowels) have been present all along in those
languages from the beginning, the loss of its lateral component has been recorded at different times in different languages and dialects. This indicates that, although the motivation for this change event may have always been present and constrained in the first module of Hale’s model (cf. Figure 1), constraints on its diffusion (i.e. the second module) and/or documentation (i.e. the third module) have clearly not taken effect at the same time and in the same language.

Our focus, then, lies in exploring and understanding the internal conditions that may lead to a possible sound change. To do this, we focus our analysis on developing a model of sound change based on its initiation phase, i.e. the first box in Hale’s model. We assume that such initiation takes place in the communication among speakers of a linguistic variety. More precisely, it occurs in the oral communication between two individuals: a speaker and a listener. From this perspective, sound change operates at the level of the individual and is conceived as a possible formulation, by the listener, of a pronunciation norm that differs from the one intended by the speaker. This new formulation stems from the listener’s reinterpretation of a sound due to acoustic ambiguity in the speech signal, which is itself motivated by the speaker’s variation in production. Thus, we assume that a sound change stands as “the set of differences between the grammar generating the primary linguistic data (PLD) used by an acquirer and the grammar ultimately constructed by that acquirer” (Hale 2003:345). By focusing on internal linguistic constraints, we consider that the possibility of a sound change at the level of the individual takes place mainly throughout the course of language acquisition, in which children formulate linguistic hypotheses and structures that differ from the ones
intended by their caregivers, which has been defined in the literature as “imperfect learning” or “imperfect transmission” across generations (Archangeli 1997:31).

2.3 Optimality Theory

In order to describe the interaction of linguistic constraints in two different grammars (i.e. the grammar generating the primary linguistic data that an acquirer uses and the grammar that this acquirer constructs) as formally accounting for sound change, we couch our analysis within the constraint-based framework of Optimality Theory (OT) (Prince & Smolensky 2004 [1993]). This model formalizes the conflicting forces that shape the phonology of sounds. Thus, an optimal output form is selected by conflicting ranked constraints, which may or may not be violated in this conflict process. OT offers, then, an approach to characterize the phonological patterns of (alveolo)palatal segments that have emerged, through sound change, in the history of Spanish and other Romance languages. By illustrating what grammars are made of, OT provides a formal model to depict sound change as a difference in grammars. One of the fundamental premises of OT is that an actual output form is selected from a pool of possible candidates, all of them evaluated in parallel. The basic machinery of OT consists of three main parts: \textsc{Gen} (the function that considers a given input and generates possible output candidates), \textsc{Con} (the set of constraints that characterize grammars) and \textsc{Eval} (the function that evaluates candidates and selects the optimal output). Thus, a given input is submitted to \textsc{Gen} for the consideration of possible candidates, which then are evaluated by \textsc{Eval} according to the constraints present in \textsc{Con}. In order to illustrate this machinery, let us consider a
grammar with constraints “X,” “Y,” and “Z,” in which “X” dominates “Y” and “Y” dominates “Z”, i.e.: X >> Y >> Z. If we submit an input /I/ for evaluation under these constraints, GEN may produce a set of possible output candidates, say “A,” “B,” and “C.” The evaluation of candidates in OT is represented in a tableau, where constraints are displayed horizontally and the optimal candidate is indicated by a pointing hand on the first column. Asterisks signal violations of a constraint, while an exclamation mark indicates that a candidate is ruled out due to a fatal violation. Shaded areas in a tableau denote that violations are irrelevant for the evaluation at hand. Tableau 2.1 illustrates a hypothetical evaluation of candidates “A,” “B,” and “C” for input /I/:

<table>
<thead>
<tr>
<th>/I/</th>
<th>CONSTRAINT X</th>
<th>CONSTRAINT Y</th>
<th>CONSTRAINT Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>C</td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Table 2. Tableau 2.1: Candidate B is selected as the optimal candidate given the constraint ranking X >> Y >> Z.

As illustrated in Tableau 2.1, in the grammar of a particular language or dialect, candidate B emerges as the optimal candidate for input /I/ given the constraint ranking X >> Y >> Z, since candidates A and C both violate a more highly ranked constraint, i.e. constraint X, and even though candidate B itself violates constraints that are low-ranked in the system. However, in the grammars of other languages or dialects, these constraints may be organized in a different ranking of domination, which may then select another optimal candidate, as illustrated in Tableau 2.2:
Table 3. Tableau 2.2: Candidate A is selected as the optimal candidate under the constraint ranking Y >> X >> Z.

Tableau 2.2 predicts that A will be selected as the optimal candidate under the constraint ranking Y >> X >> Z, as candidates B and C both violate a constraint that is more highly ranked, i.e. constraint Y. By comparing Tableaux 2.1 and 2.2, it is possible to visualize how different rankings of the same constraints result in cross-linguistic and/or cross-dialectal differences.

In addition to GEN, CON and EVAL, two other principles of OT regarding the input and underlying representations are worth characterizing, i.e. Richness of the Base (ROTB) and Lexicon Optimization (LO) (Prince & Smolensky 2004 [1993]). The ROTB principle states that constraints must operate at the output level or on the correspondence between an input and an output. Thus, they do not operate directly on the input, as was the case in previous serially-based generative frameworks (e.g. Chomsky & Halle 1968). On the other hand, determining a given underlying representation falls under the LO principle, according to which the selection of underlying forms will derive from a set of possible inputs and indicate the representation that is most harmonic with the output, given the constraint ranking of a language (Prince & Smolensky 2004 [1993]; Ito, Mester & Padgett 1995). Thus, in Tableaux 2.1 and 2.2, constraints “X,” “Y,” and “Z” evaluate
the shape of the candidates and their relation to the input. While “A” is the most harmonic candidate with /l/ in Tableau 2.1, “B” is the most harmonic in Tableau 2.2, given the different constraint rankings and the fact that the principle of LO would establish these candidates as underlying forms.

2.3.1 Phonetically-based Optimality Theory

Upon considering the OT machinery, a question naturally arises regarding the nature of OT constraints, i.e. what their characteristics are in CON. In the classical version of OT (Prince & Smolensky 2004 [1993]) constraints are considered universal and innate, that is, speakers of all languages are born with all constraints, and what determines a sound pattern in a given language is its particular constraint ranking. Thus, the difference among sound patterns and languages is determined by their different constraint rankings. The formulation of constraints in OT falls under two basic families, i.e. Faithfulness constraints and Markedness constraints. While the former evaluate the relationship between two forms (e.g. Input-Output, Output-Output), the latter assess the shape or configuration of sounds in an output candidate. To establish the universality of Faithfulness and Markedness constraints, scholars have relied upon typological tendencies observed in known languages and/or phonetic evidence of sound patterns. If we assume that phonetics plays a crucial role in the initiation of sound change during the speaker-listener interaction, then it is reasonable to predict that phonetic detail (e.g. articulatory and acoustic factors) will be directly encoded in the formulation of our OT constraints. This viewpoint is in alignment with phonetically-based OT approaches to
phonology that consider phonetics to play a direct role into shaping phonological patterns (e.g. Steriade 2001; Flemming 2002, 2004; Hayes & Steriade 2004; Jun 2004; Wright 2004; Bradley & Delforge 2006; Bradley 2006; among others). It departs from other works that also rely on phonetic information to inform constraints, but confer a more abstract role to them (e.g. Archangeli & Pulleyblank 1994; Walker 2004, 2005; among others).

The direct encoding of phonetics into OT constraints follows from a grounded definition of markedness, which comprises speakers’ knowledge of how speech is produced and perceived. This knowledge provides the basis for markedness constraints. According to Hayes and Steriade (2004:1), the typological effects that are found in sound inventories derive precisely from such knowledge:

The effect phonetic knowledge has on the typology of the world’s sound systems stems from the fact that certain basic conditions governing speech perception and production are necessarily shared by all languages, experienced by all speakers, and implicitly known by all. This shared knowledge leads learners to postulate independently similar constraints.

This definition of markedness constraints is relevant for our purposes since it delimits the role of phonetics in the shaping of sounds and how the origins of sound change may take place in part because of their articulatory and acoustic patterns. Thus, we depart from other approaches that define and use markedness in the strictly typological sense, i.e. by using the frequency of a segment’s occurrence to determine if a given structure is marked (infrequent) or unmarked (frequent). For example, it is well known that the alveolopalatal
lateral segment [ʎ] is not very common in the languages of the world. In a typological sense, then, it could be considered a marked sound, by which one could posit the markedness constraint *[ʎ]. In our approach, however, we strive to understand what are the conditions (i.e. phonetically-based markedness constraints) that contribute for this segment not to be frequent in the languages of world in the first place.

Another common assumption in classical versions of OT is the universality and innateness of constraints, i.e. the postulation that speakers of all languages are born with all constraints provided by Universal Grammar (UG). However, by following phonetically-based versions of OT, we depart from this notion and assume, instead, that markedness constraints may be universal due to certain phonetic patterns, but they need not be innate (Hayes & Steriade 2004:6). Rather, they emerge throughout the course of acquisition. This approach follows recent developments in the research on the phonetics-phonology interface (e.g. Clements & Ridouane 2011) and the OT literature on sound change (e.g. Gess 1996; Boersma 1998; Hayes 1999; Holt 2003), according to which language learners organize phonological categories and constraint ranking throughout the acquisition period of their languages. For example, Lindblom et al. (2011) examined the attested preference of languages for labial, dental/alveolar and velar places of articulation through computational experiments that were centered on the place of articulation in voiced stops from different languages, and designed to produce “optimal” stop+vowel syllables in order to determine the perceptual cost, the articulatory cost, and the mode of learning of such segment sequence. Their findings confirm not only the preference for those places of articulation in known languages, but also speakers’ constant re-use of
place features in giving rise to voiced stop inventories. These authors argue, then, for the feasibility of user-based accounts of phonological facts and point out the crucial role played by phonetic restrictions in shaping the formal structure of sound patterns throughout their historical evolution. Thus, in the course of language acquisition, similar constraints may arise and display the same ranking cross-linguistically because of the presence of similar or equal phonetic contexts, which entails that constraints may not necessarily be innate (e.g. Gess 2003:68). In classical versions of OT, scholars frequently resort to the argument that, if a given phonological process is absent in one language, for example, it is because certain universal constraints are low-ranked and their effects are, thus, not visible. While this may work descriptively, it does not represent an informative approach as to why that phonological process is absent from that language or did not appear in its evolution at all. By solely relying on the rankings of the constraints themselves, classical versions of OT reach a point of circularity that is only informative within its own premises and falls short of providing a grounded motivation for said process or the lack thereof. In contrast, if we assume that phonetics motivates and informs markedness constraints, we achieve a grounded and well-motivated explanation for a given phonological process and also for the lack thereof. Therefore, if constraints are not innate but emergent, then UG does not stand as a mere repository of pre-established constraints; rather, it provides “a set of abstract analytical predispositions that allow learners to induce grammars from the raw facts of speech (…)” (Hayes & Steriade 2004:6).
2.3.2 Optimality and sound change

As sound systems are in a constant path of evolution, it is important to note that they do not always present a static configuration and frequently display variation among and within dialects. Thus, we assume that phonetically-based constraint rankings are inherently unstable (cf. Bernhardt & Stemberger 1998), which helps to account for the great variability that is found in sound production and perception cross-linguistically and within dialects of the same language. Additionally, it is worth pointing out what is meant by “optimal,” especially considering the evolution of sounds. As critics of OT have pointed out (cf. Boersma 2003 and references therein), if phonological patterns arose, through sound change, from any kind of optimization process, then it would be fair to consider that sound change would serve the purpose of improving sound systems, i.e. that sound change would have a goal and be a teleological mechanism. In our approach, however, the mechanism of *initiation* of sound change is free of teleology (Ohala 1981; 2003; Blevins 2004). Thus, we depart from classical OT approaches that use the term “optimal” to satisfy a purpose or a goal in the *initiation* of sound change. Rather, by “optimal” we assume a candidate that is selected by a specific constraint ranking that derives from the phonetic conditions that are present in the *interaction* between speakers and listeners and *not* from the need to satisfy a goal or a purpose. More precisely, a sound change is formally captured by the difference in constraint ranking in the grammar generating the primary linguistic data and in the grammar that is acquired. If any glimpse of “grammar improvement” results from this process, then it is just that—a result—, but the motivations for constraint reranking itself do not necessarily play any teleological
role. As our analysis in Chapter 6 will show, this non-teleological and context-specific optimization approach is particularly relevant for a grounded understanding of the different evolutionary pathways of (alveolo)palatal sounds in Spanish and other Romance languages. Moreover, it successfully accounts for why, from a phonetic perspective, these multiple evolutions were able to arise from the same historical sources.

2.3.3 Constraint reranking and the explanation of sound change

If we posit that, during the process of sound change, phonetically-based constraints are reorganized in the grammar of the listener throughout acquisition (as compared to how they were organized in the mind of the speaker who provided the input for that listener), then we must be explicit as to what may cause the reranking of constraints in the first place. After all, sounds do not change and evolve solely due to their internal phonetic characteristics. If they did, then we presume that at some point sound systems would evolve toward an equal configuration. Thus, we consider that, whereas the ranking of OT constraints provides a mechanism through which listeners-turned-speakers are able to produce a given sound pattern, the motivation for sound change per se lies in the interaction between the speaker’s variation in production (according to constraint rankings that may determine faithful or unfaithful outputs) and the listener’s interpretation (as input) of one of the unfaithful realizations to the original speaker’s input. Therefore, while the OT model allows for constraint reranking, it does not explain when, how, or why such reranking may take place (McMahon 2000; 2003). In other words, OT grammars provide an adequate approach for constraint storing and
ranking that enables speakers to produce meaningful sounds but does not say anything about how or why constraints may be reranked in the course of history. Thus, we assume that a sound change is formally captured by the difference in constraint rankings observed in the OT grammars of the speaker and that of the listener-turned-speaker. The motivation for such reranking is, thus, not theory-internal and relies on external, complementary factors. In the following section we detail how phonetic mechanisms inform constraint (re)ranking over time in the interaction between speakers and listeners.

2.4 The role of the speaker and the listener in sound change

If we assume that a sound change begins at the individual level during the natural interaction between a speaker and a listener, then it is reasonable to posit that it will be quite difficult to observe and capture the exact moment in which a change event takes place in real life. After all, we, as observers, cannot be present during every single interaction between children and their caregivers. However, a phonetic-centered approach does let us recreate a possible scenario in which the beginning of a change event occurred. The work of several scholars (e.g. Ohala 1981, 1989, 1993, 2003, 2012; Beddor 2009, 2012; Müller 2010, 2011; Müller & Mota 2009; among others) has focused on the internal, phonetic constraints that lead to a possible initiation of sound change. By excluding changes that are culture- and/or language-specific and others that result from the role of writing, paradigm analogy, or dialect borrowing, this approach centers on the physiological mechanisms that are shared by all human beings, no matter their linguistic background, that is, “the physical phonetic properties of the speech production and
perception systems” (Ohala 2003:671). Whereas variation in production is essential to provide the conditions for a possible sound change, perception represents the key factor to activate it. Ohala’s and other scholars’ approach, then, builds a model centered on the listener’s contribution to sound change, according to which sound systems are considered to be in a constant state of synchronic variation and the change of a given sound may arise due to the listener’s misperception of the speech signal. We can assume, then, that misperceptions hold the key for a possible sound change “in that they constitute a change of norms: the listener forms a phonological norm that differs from that intended by the speaker” (Ohala 1993:244). During the speaker-listener interaction, Ohala (ibid.) formalizes three possible scenarios: (1) no sound change (by the correction of the intended signal), (2) sound change through hypocorrection, and (3) sound change through hypercorrection. Figure 2 illustrates the scenario in (1), in which no sound change takes place:
In Figure 2, a phonetic realization [yt] may result from the co-articulation between the high back vowel /u/ and the dental stop /t/, especially when the sequence /ut/ is pronounced rapidly. Lindblom (1963) and Ohala (1992) demonstrated that this is indeed the case, as the very low F1 and F2 frequencies of /u/ increase in this phonetic context, reaching the acoustic space where we expect to find the front rounded vowel /y/. This one time production [yt] represents variation in production and not necessarily sound change. As shown in Figure 2, the listener, upon hearing [yt], is able to reconstruct the sequence /ut/ in the exact way that the speaker intended, probably due to exposure to other instances where the acoustic result of /ut/ did not resemble that of [yt]. If this is the case, then no sound change takes place, as the listener is able to normalize the exposed acoustic variation. However, another scenario also may be possible: the listener may interpret what s/he hears at face value, failing to normalize it. If this interpretation differs from the sequence intended by the speaker, then a sound change occurs. This second scenario is named “hypocorrection” and is illustrated in Figure 3:
During hypocorrection (Figure 3), a sound change occurs through the interpretation, by the listener, of a representation that differs from that intended by the speaker. Such different interpretation becomes evident when the listener starts producing it as a speaker, and his/her realization of a certain sound sequence now differs from the one stored in the original speaker’s mind. The /u/-fronting illustrated in Figure 3 specifically mirrors a case of sound change in the history of Tibetan, where /ut/ historically became /y/ (Ohala 1981, 1989). Cases of vowel nasalization also illustrate hypocorrection very well. For example, in the evolution of French, the word bon /bon/ ‘good’ was pronounced as [bɔ̃] with the articulation of the nasal consonant and partial nasalization of the preceding vowel. At a given point in the 10th century, however, listeners failed to detect the presence of the nasal consonant in the coda, internalizing the sequence as /bɔ/, instead (Pope 134:169). This failure in recognition may have come from speakers’ weak pronunciation of coda-/n/ and/or from this consonant being masked due to ambient noise. The fact is that when the
listener-turned-speaker started producing the internalized sequence /bôt/ as [bôt], a sound change arose, given the difference between the original speaker’s grammar and that of the listener-turned-speaker.

If the listener activates sound change based upon the speaker’s variation in production, then it is also possible that the same listener may apply correcting and normalization processes inappropriately. When the initiation of a sound change takes place because the listener undoes specific perturbations in the speech signal and stores a representation that differs from both what s/he heard and what the speaker him/herself intended, a third scenario in sound change arises, namely, “hypercorrection,” which is illustrated in Figure 4:

As shown in Figure 4, the speaker produces a sound sequence that corresponds with what s/he has stored and the listener hears it correctly, as well. However, the listener attributes a different characteristic to the signal and ends up forming a different representation than the one originally stored and intended by the speaker. When the listener starts producing
this new sequence, then a sound change has taken place. Cases of dissimilation involving similar sounds illustrate this scenario very well. For example, Ohala (2012:29) cites the case of the English word “sword,” whose orthography retains the presence of an earlier labiovelar glide /w/, but the word is now pronounced [sɔrd]: “Presumably the vowel and the glide were too similar and so the glide was eliminated” by the listener. Ohala (1993:250-251) also mentions the case of Latin /kwǐŋkwe/ > */kǐŋkwe/ (cf. Italian /tʃǐŋkwe/ “five”), where speakers initially pronounced this word with lip rounding on both syllables. Judging by its subsequent evolution in Italian, a reconstruction as */kǐŋkwe/ is in order and reveals the loss of the labiovelar glide in the first syllable. Assuming that this non-distinctive lip rounding also affected the nuclear vowels /i/ and /e/ (Devine & Stevens 1977), Ohala posits that a listener, through hypercorrection, may have considered the lip rounding in the first syllable as a perturbation triggered by the lip rounding on the second syllable, and thus mis-applied the corrective process by reconstructing the word as */kǐŋkwe/.

When establishing the differences between hypo- and hypercorrection, Ohala (1993:246) points out that hypocorrection occurs “if the listener fails to correct the perturbations in the speech signal,” which eventually “become part of the pronunciation norm.” On the other hand, a sound change based upon hypercorrection reveals the “listener’s ability to undo or reverse the predictable perturbations found in speech” (Ohala 1993:250)—in other words, the listener mis-applies corrective processes that would have helped him/her identify and parse the message as intended by the speaker. From these two possible scenarios of sound change, we can infer that the origins of a
change event take place at the level of the individual. If favorable sociolinguistic conditions are met, then this change event may be carried on and diffused to other individuals of the speech community (e.g. Ohala 1981, 1993; Blevins 2004). It is important to note that, while the listener has a central role in this model by standing as the actual activator/initiator of a possible sound change, the speaker is equally important for creating the variation and ambiguity in the speech signal. Therefore, the articulatory patterns of sounds also play a decisive role, in that they pre-condition a potential sound change. This approach offers a clear view of the role that the interaction between speakers and listeners plays in the evolution of sounds. It departs from other traditional approaches to sound change that are exclusively based upon articulatory factors and that tend to anthropomorphize sounds, by attributing a change mainly to the articulatory complexity of a given sound (e.g. Coseriu 1973; Lloyd 1987; Martinet 1955; etc.). As shown in Figures 2-4, variation in production indeed represents the raw material for a possible sound change, but the role of the listener must be recognized and given its equal share; otherwise, variation in production will remain just that, i.e. variation, and not necessarily change. This reasoning stems from the fact that we, as listeners, constantly filter out and normalize the varying patterns that we are exposed to during our perception of sounds, “as long as [we] have evidence or expectations of the environment or factors leading to the variation” (Ohala 2012:25). This accounts for the seemingly slow pace for a given sound change to complete its course and then become part of the phonemic inventory of all speakers in our speech community. Had it not been for this “filtering system” and our ability to normalize variation, then we could predict that sounds would
change within a much faster pace than they actually do. The capacity to normalize stems from the various sources of experience that the listener is exposed to when acquiring the pronunciation norm in his/her speech community, such as pronunciations of multiple speakers, reactions of other listeners at his/her attempt to pronounce sounds, and also spelling in the case of literate cultures (Ohala 1989:184-185). Ohala (2012:25 and elsewhere) compares listeners’ compensation for variation in speech sounds with the types of normalization that we find in vision: “When we see someone at a distance they subtend a very small angle, equal to the angle subtended by something small that is close by. But we don’t judge them to be as small as the nearby object because we normalize the estimated size, correcting for the effects of distance.” In other words, following our experiences, we know that the actual size of a person who is very far from us cannot be as small as an object that is close to us. A handful of works have empirically attested listeners’ normalization of speech variation, in which the phonetic context that triggers such normalization is often regarded as an imagined speech sound (e.g. Ohala, Riordan & Kawasaki 1978; Beddor, Krakow & Goldstein 1986; Ohala & Feder 1994). The insights of Ohala’s framework are crucial for our analysis of (alveolo)palatal sound change because they provide a phonetically-based theoretical approach to account for the (re)ranking of OT constraints observed in the grammar of the speaker and that of the listener (see Chapter 6; also cf. Holt 1997).

However, it is necessary to point out that not all listeners perceive sounds the same way in a given language and variation in perception is also expected to play a role in the evolution of sounds. Beddor (2012), for example, reports on empirical evidence
that shows that listeners respond differently to the effects of co-articulated speech. Some of them—who the author labels as innovative—put more weight on the acoustic cues that result from coarticulation than other listeners typically do: “for some (…) listeners, the coarticulatory cues are dominant and sufficient cues for making their perceptual decisions” (2012:38). Innovative listeners, then, are more likely to contribute to sound change, as they rely more upon the effects of coarticulated speech to make their perceptual decisions, as opposed to more conservative listeners, who do not put as much weight on the perceptual cues resulting from coarticulation. As an example, the author conducts an experiment in which she analyzes the degree of listeners’ attentiveness to vowel nasalization in two scenarios: (i) when the nasal consonant is absent from the signal, i.e. [V]; and (ii) when the nasal consonant is present in the signal, i.e. [VN]. She reports that listeners differed in the degrees to which they identify vowel nasalization in both contexts, since they assign different individual weights to the coarticulation of supralaryngeal gestures. While conservative listeners do not tend to use coarticulatory information as the source for their perceptual decision—hence relying more on reconstructing the signal—, innovative listeners, on the other hand, tend to put more weight on the signal itself and thus rely directly upon the effects of coarticulatory speech in order to inform their perceptual assessment. According to Beddor (2012:53):

> [t]hese [different] weights shape how listeners categorize, discriminate, and access words in real time. The perception grammars of innovative listeners have strong potential to contribute to sound change in that they are likely manifested in conversational interactions either through their expectations about coarticulated speech or through their own productions.
Thus, for our purposes, we regard the innovative listener as the initiator of a given sound change, although we also acknowledge that the speech signal may not be perceived equally among all listeners of a language.

2.5 A non-teleological constrained-based model of sound change

The theoretical insights from the previous approaches inform the basis for the model under which we carry out our analysis of the evolution of (alveolo)palatal sounds in Spanish and other Romance languages. In order to illustrate our approach, let us suppose that in a hypothetical language, a speaker has the underlying representation /I/, whose faithful output [I] is determined by the constraint ranking X >> Y >> Z, as illustrated in Tableau 2.3:

<table>
<thead>
<tr>
<th>/I/</th>
<th>CONSTRAINT X</th>
<th>CONSTRAINT Y</th>
<th>CONSTRAINT Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>*!</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>III</td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Table 4. Tableau 2.3: Candidate [I] is the output of underlying representation /I/, given the constraint ranking X >> Y >> Z.

If the listener perceives the sound [I] (i.e. the faithful output to the speaker’s input /I/) and reconstructs it as his/her input, then the exact same constraint ranking X >> Y >> Z will determine the faithful output to the listener’s input and, consequently, no sound change
will take place. Let us assume, however, that variation is inherent in the production of underlying form /I/. In this case, the speaker may realize it with different outputs, say [I] and [II], in different occasions (e.g. according to a slow or fast speech rate), as some constraints may be unranked with respect to one another. Thus, the speaker may realize /I/ as the faithful output [I] or as an unfaithful output, such as [II]. This scenario is illustrated in Tableau 2.4, where the dotted line expresses the unranking between constraints “X” and “Y” (cf. Antilla 1997; Antilla & Cho 1998; Morris 1998; among others, for more on production variation in OT):

<table>
<thead>
<tr>
<th>/I/</th>
<th>CONSTRAINT X</th>
<th>CONSTRAINT Y</th>
<th>CONSTRAINT Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>*</td>
<td>!</td>
<td>*</td>
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<tr>
<td>II</td>
<td>*</td>
<td>!</td>
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<td>III</td>
<td>*!</td>
<td>!</td>
<td>!</td>
</tr>
<tr>
<td>IV</td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Table 5. Tableau 2.4: Candidates [I] and [II] may surface as the output of underlying representation /I/, following the constraint ranking X, Y >> Z.

If the experience of the listener during the acquisition period enables him/her to normalize this variation in the speaker’s production of /I/ and/or s/he is a conservative listener, then s/he will interpret [I] as the most harmonic candidate and, consequently, will interpret it as input /I/—exactly as the input /I/ stored in the original speaker’s grammar. Therefore, no sound change will have occurred. This case corresponds roughly to Ohala’s first scenario in the speaker-listener interaction (see Figure 2), namely, “correction”. Since the listener, upon normalizing the speaker’s variation in production,
stored the same underlying form as the one in the original speaker’s grammar (with its faithful output determined by the same constraint ranking \( X >> Y >> Z \)), then no sound change will have occurred when the listener turns into speaker.

If, however, we consider an innovative listener, who relies heavily on the signal cues from the speaker’s articulation of sounds and is exposed more often to the output \([II]\) (which is one of the unfaithful realizations to the underlying form /I/ in the speaker’s grammar), then it is reasonable to postulate that this listener will normalize the speaker’s variation in favor of \([II]\). When this innovative listener proceeds to reinterpret \([II]\) as input /II/—and produces it later as the faithful output \([II]\)—, then a sound change will have occurred. In other words, whereas the faithful output to the speaker’s input is [I], the faithful output to the listener’s input is \([II]\). Thus, a sound change /I/ > /II/ is captured by the difference in the constraint ranking between the faithful realization to the speaker’s input /I/ and the listener’s interpretation (as input) of one of the unfaithful realizations to the original speaker’s input /I/. One may wonder, however, whether a sound change will really have taken place in this case, since one of the sounds produced by the speaker may be the exact same output produced by the listener-turned-speaker. It is important to keep in mind, however, that \([II]\) represents only one out of the possible outputs produced by the speaker and, because s/he has a different underlying representation, i.e. /I/ (hence a different constraint ranking determining its faithful realization, as compared to the one stored by the listener)—, the speaker will likely produce other outputs in other occasions, as well. In this case, we can indeed model a sound change because the faithful output to the listener-turned-speaker’s internalized underlying form /II/ is determined by a different
constraint ranking than the faithful output to the underlying representation stored (and intended) by the speaker, i.e. /I/.

As in Ohala’s model, we can portray sound change in yet another scenario. In this case, the listener perceives the speaker’s output correctly, but actively reverses or undoes the perturbations found in the ambiguous speech signal, leading to the formulation of an underlying representation that differs from the one intended by the speaker and, therefore, a sound change. In our illustrative case, this change event is also formally captured by different constraint rankings. For example, let us suppose that, for the underlying form /I/, the speaker produces the faithful output [I] determined by the constraint ranking X >> Y >> Z (cf. Tableau 2.3). If the innovative listener, upon properly perceiving this output [I], actively mis-applies corrective processes that identify it as the most harmonic output for /I/ (e.g. in cases of dissimilation), s/he may posit a different underlying form /II/, whose faithful output is determined by another, different constraint ranking Y >> X >> Z. As seen in §2.3, the selection of an underlying form is determined by the principle of Lexicon Optimization (LO). By considering these various possible scenarios and different results in the interaction between speakers and listeners, we are able to illustrate how the (non-)application of LO will follow the type of listener we consider: LO applies in cases of sound change—as the innovative listener internalizes a representation that is most harmonic with the speaker’s output that s/he is more often exposed to—while it is blocked in cases of correction, where the conservative listener internalizes the same representation intended by the speaker.
As will be shown in Chapter 6, this non-teleological, constraint-based approach allows us to successfully account for the multiple, divergent evolutionary pathways that (alveolo)palatal consonants have taken in the history of Spanish and other Romance languages from their similar Latin sources. Moreover, it provides an approach to understand why analogous sound changes may originate in different languages or in the same language across periods of time, provided the same phonetic motivations are present now and then.

2.6 Concluding remarks

Based upon the theoretical models described and illustrated in the previous sections, our analyses in this dissertation will focus on modeling the motivations for the initiation phase of sound change. Thus, we will not be concerned with how a sound change, after initiated, spreads through the lexicon and/or the speech community until it is incorporated into the sound inventory of all language users. Phonetics, then, will inform our OT constraints at the “Big Bang” moment that characterizes a change event (Janda 2003); the different constraint rankings between the faithful outputs of the underlying representations stored by the speaker on one hand, and the listener-turned-speaker on the other, will formally represent our understanding of sound change. By considering the inherent variation in the production and perception of sounds and opening up the realm of possible pathways that a given change may take, the current approach will successfully account for the diverse evolutionary routes that (alveolo)palatal sounds have taken throughout the history of Spanish and other Romance languages. In order to
explain these different pathways of change (Chapter 6), we will first draw a phonetic characterisation of such (alveolo)palatal sounds (Chapter 3) and then review both the historical data and the previous accounts available for their evolution (Chapters 4 and 5).
CHAPTER 3

THE PHONETICS OF SPANISH (ALVEOLO)PALATALS

3.1 Introduction

Several phonetic studies have elucidated the general articulatory and acoustic characteristics of (alveolo)palatal consonants across world languages (e.g. Ladefoged & Maddieson 1996) and in languages of the Romance branch, such as Spanish (e.g. Navarro Tomás 1967; Quilis 1981, 1993; Martínez Celadrán & Fernández Planas 2007), Portuguese (e.g. Cristófaro Silva 1998; Cagliari 2009; Ferreira Netto 2011), Catalan (e.g. Recasens 1991), Italian (e.g. Schmid 1999), etc. Although details of these general descriptions may vary, they all observe the intrinsic complexity associated with the articulation of sounds in the alveolopalatal and palatal regions, in addition to the presence or absence of voicing and stridency that such segments may display along those places of articulation. This chapter provides a detailed characterization of both articulatory and acoustic patterns of each (alveolo)palatal segment that is relevant to the current investigation and the phonetic symbols that represent them in this dissertation. While focusing on data from varieties of Spanish, the following discussion also includes evidence from other languages whenever relevant (especially from those of the Romance family), and whenever descriptions of these sounds in Spanish are not abundant in the
literature. Knowing the articulatory and acoustic characteristics of these sounds is crucial to understand the basic motivations for their diachronic pathways (Chapter 4), as well as their patterns of synchronic dialectal variation (Chapter 5). Moreover, it provides an essential tool to inform our theoretical assumptions (Chapter 2) in order to account for (alveolo)palatal sound changes in Spanish and related languages (Chapter 6).

This chapter is organized as follows. In §3.2 I present a description of palatal vowels, i.e. [i, e], and the approximant [j]. In §3.3 I detail the articulatory complexity and varying acoustic patterns of the alveolopalatal lateral consonant [ʎ]. The palatal stop [ɟ], affricate [ʝ], and fricative [ʎ] are characterized in §3.4. Next, the voiced postalveolar affricate [dʒ] is described in §3.5, and the postalveolar fricatives [ʒ, f], in §3.6. Section 3.7 concludes.

3.2 Phonetic characterization of palatal vowels and the palatal approximant

3.2.1 Articulation

Spanish has two vowels articulated throughout the palatal region: the mid front vowel [e] and the high front vowel [i]. In the articulation of both palatal vowels, the tip of the tongue touches the lower incisors and the tongue dorsum is elevated to make contact with the hard palate, while leaving a narrow central channel through which the air escapes (Navarro Tomás 1967:46-48, 50-51). In the articulation of [i], more specifically, this opening is narrower than in the articulation of [e], as the former is higher than the latter. During the realization of both vowels, the lips are unrounded, although they are
more stretched in the articulation of [i]. Figure 5 illustrates the articulatory patterns of both vowels.

Figure 5. Articulation of palatal vowels [i] (left) and [e] (right). The shaded areas indicate the parts of the hard palate in contact with the tongue dorsum (Navarro Tomás 1967:47, 51).

Recent improvements in electropalatography techniques (e.g. Fáundez-Zanuy et al. 2005; Toutios & Konstantinos 2006) have made it possible to precise the area of contact between the tongue and the hard palate during the articulation of sounds, which is illustrated by electropalatographs. In the production of Spanish [i] and [e], more specifically, electropalatographs reveal how the sides of the tongue make more contact with the hard palate than other, non-palatal vowels, as illustrated in Figure 6.
Besides the palatal vowels [e] and [i], Spanish also presents a vocalic, albeit non-syllabic, palatal segment [j], whose articulation is similar to that of [i], but presents a shorter duration and lacks the steady-state portion of the latter. The sound represented by the symbol [j] has received a few different names in manuals of general and Hispanic linguistics, such as (palatal) glide in English or deslizante, deslizada, and paravocal in Spanish. Hispanic linguists often classify this sound according to its position in the syllable, e.g. semivocal ‘semivowel’ (if it is found after a nuclear vowel in a diphthong, as in voy [bój] ‘I go,’ in which case the symbol [i] can also be found) or semiconsonante ‘semiconsonant’ (if it is found before a nuclear vowel in a diphthong, as in tierra [tjéra] ‘dirt’). Martínez Celadrán and Fernández Planas (2007:166) classify Spanish [j] as a palatal approximant semivowel. In articulatory terms, such denomination follows from the fact that its production mirrors that of vowel [i] and offers no significant air obstruction, as does the fricative [ʝ] (cf. §3.4). In this dissertation, however, I follow the classification of the International Phonetic Association (IPA) (2005), which classifies [j]
as a palatal approximant segment. As such, I consider it as part of a syllable onset (e.g. pollo ‘chicken’ [pó.jo]) and acknowledge that it does not represent the exact same sound as the glide in syllable nuclei (e.g. diodo ‘diode’ [djó.ðo]).

Despite the lack of substantive literature describing the articulation of Spanish [j], scholars have offered their description of this sound in other related languages, which provides further evidence for the current study. Recasens (1990:275), for example, provides additional articulatory detail for [j], by claiming that this sound is articulated with the front of the tongue dorsum, while the tongue tip is always down. The electropalatographs in Figure 7 illustrate the articulatory similarity between the palatal approximant [j] and the palatal vowel [i] in Spanish:

Figure 7. Electropalatograph of Spanish [j] (left) and [i] (right). The dark and shaded areas indicate the activation of electrodes in the contact between the tongue dorsum and the hard palate. (Martínez Celdrán & Fernández Planas 2007:169)

3.2.2 Acoustics

The articulatory patterns of the sounds described in §3.2.1 are reflected in their acoustic characterization, chiefly in the different values of their first two formants: F1, a

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4 The palatal approximant also may be represented by the symbol [ʝ].
function of tongue height (i.e. the higher a vowel is articulated, the lower its F1) and F2, a function of tongue frontness and backness (i.e. the more fronted a vowel is articulated, the higher its F2). The latter also correlates with the roundness of the vowel: the higher the F2 of a vowel, the more unrounded it will be. Among all five Spanish vowels, [i] and [e] present the highest F2 values. Moreover, as [i] is the most fronted vowel, its F2 presents an even higher value than that of [e]. Conversely, as [i] is articulated higher than [e], it is expected that its F1 will be lower than that of [e]. Indeed, Martínez Celdrán and Fernández Planas (2007:175) report mean F1 values of 313Hz for [i] and 457Hz for [e], while their mean values of F2 stand at 2,200Hz for [i] and 1,926Hz for [e], in the speech of a male Spanish speaker. Spectrograms capture these different frequency values and illustrate the larger distance between the F1 and F2 of [i] in comparison with those of [e] and other vowels, as shown in Figure 8.

Figure 8. Spectrogram of Spanish vowels [i, e, a, o, u] (from left to right) in the voice of a male Spanish speaker, illustrating a larger distance between the first two formants for the high front vowel [i]. (Martínez Celdrán & Fernández Planas 2007:177)
In regard to the mean values of the formants for Spanish [j], little consensus can be found in the literature, which reflects the great variability that this segment displays as well as the lack of a steady-state portion in its formants, making it difficult to find an agreed upon point from which to measure them. Borzone de Manrique (1976:123), for example, reports on Buenos Aires Spanish [j] during the production of diphthong [je] in absolute initial position (e.g. hieło ‘ice’), displaying quite imprecise formant values in graphics: while the first formant values are in the range of over 300 to 500 mels, the second formant values go from over 1,700 to 1,800 mels. Colantoni (2004:88) converts these estimates into the following Hertz values: 254-471 Hz for F1 and 2,246-2,757 Hz for F2. In a subsequent study, Borzone de Manrique (1980) finds slightly different range values for [j] in the same initial position, i.e. 250-500 Hz for F1 and 1,700-1,800 Hz for F2. Colantoni (2001:32-33), on the other hand, provides mean values for [j] from other Argentine provinces, such as Córdoba, San Luis, and San Juan, and finds an average frequency of 390 Hz for F1 (which is in the range of Borzone de Manrique’s results), but 1,473 Hz for F2, which is lower than the values reported Borzone de Manrique. This difference may stem from different methodologies: whereas Borzone de Manrique reports her results from wordlist recordings, Colantoni retrieves hers from sociolinguistic interviews. Thus, although both studies contribute to advancing our understanding of the acoustic characteristics of [j], their methodological inconsistencies suggest that their results be taken with caution.

However, regardless of this variation, scholars agree that the structure of the formants of [j] represent smooth transitions from or into the nuclear vowels with which it
forms a diphthong. Smooth formant transitions typically indicate longer transitions as opposed to abrupt, short ones (cf. Figure 11), which may prove relevant for an insight into the motivation of some of the sound changes considered in this study (cf. Chapter 6). Figure 9 illustrates how the difference between the first two formants of [j] decreases as they transition into the following vowel [o] during the sequence [bjo] in the word *biológico* ‘biological’.

Figure 9. The distance between F1 and F2 of [j] decreases as this segment transitions into the following vowel [o] in the sequence [bjo]. (Martínez Celdrán & Fernández Planas 2007:168)

An opposite pattern, with a progressive increase in the difference between F1 and F2 during the realization of [j], is expected in diphthongs where [j] is found after the nuclear vowel, as shown in Figure 10.
The distance between the F1 and the F2 of [j] increases as it transitions from the following vowel [ɔ] in the sequence [tɔi]. (Martínez Celdrán & Fernández Planas 2007:165)

A spectrogram comparison between similar sequences containing [i] and [j] reveals the presence of a steady portion in the formant structure of the former as compared to that of the latter, as illustrated in Figure 11.

Figure 11. Spectrograms of sequences [bi.ɔ] (right) and [bjo] (left). A steady portion is seen in the formant structure of [i], while the formant structure of [j] is reflected in its smoother transition into the following nuclear vowel [ɔ]. (Martínez Celdrán & Fernández Planas 2007:165)
3.3 Phonetic characterization of the alveolopalatal lateral consonant

3.3.1 Articulation

In the articulation of the alveolopalatal lateral [ʎ], the tongue dorsum is raised to establish contact with the hard palate while the tip of the tongue may or may not touch the upper incisors (Ladefoged & Maddieson 1996:189; Quilis 1963; Straka 1965). However, palatal contact may vary from language to language. Bladon & Carbonaro (1978) provide articulatory data showing that the occlusion for Italian [ʎ] is realized about two-thirds of the way back on the hard palate, while in dialects of Peninsular Spanish the same occlusion occurs over a more extended area. While the place of articulation of this sound is traditionally characterized as only palatal, there is articulatory evidence that reveals some degree of contact with the alveolar ridge as well (e.g. Quilis 1993:311, Recasens & Espinosa 2006), rendering a dorso-alveolopalatal occlusion, followed by a brief period of explosion during its release (e.g. Recasens 1991:317). Thus, I follow the classification proposed in Martínez Celdrán and Fernández Planas (2007:140-141), regarding this consonant as an alveolopalatal sound instead of only palatal. Because of this articulation, the air may flow continuously and without friction through both or either one of the sides of the tongue, which justifies the lateral approximant manner of articulation of this consonant. Figure 12 illustrates the configuration of the tongue and the area of its contact with the hard palate.
The extensive area of contact between the tongue dorsum and the hard palate during the articulation of [ʎ] becomes clearer when it is compared to the articulation of other lateral approximant sounds, such as the alveolar [l] and the palatalized [l̥]. The larger contact area between the tongue and the hard palate in the production of [ʎ] is reflected in the electropalatographs in Figure 13.

The larger area of contact in the articulation of the alveolopalatal lateral consonant makes its production susceptible to a considerable amount of variation “both from
individual to individual and from one phonetic context to another” (Ladefoged & Maddieson 1996:191), since it does not require a precise articulation as its alveolar counterpart /l/ does. Recasens and Espinosa (2006:297) exemplify this variation in multiple Romance languages, most of which present an alveolopalatal closure (e.g. in most dialects of Catalan, French, Italian, Occitan, Portuguese, and Spanish), while in some varieties [ʎ] is realized “with a very front closure at the alveolar zone, e.g. in Italian and Spanish (…).” The authors also report on articulatory data suggesting that in the production of Majorcan Catalan [ʎ], the closure location is produced at the dentoalveolar zone, with the airflow escaping “though lateral channels located at the postpalate and at the velar zone” (ibid.:305-306). Indeed, Recasens (1991:317) compares the articulation of [ʎ] with that of palatal nasal [ɲ] in Catalan and argues that the dorsal contact area of the former is less central than that of the latter, suggesting that the dorsal contact during the realization of [ʎ] may be subject to co-articulatory effects: “l’activitat dorsal [in the production of [ʎ]] sigui menys resistant als efectes coarticulatoris per part dels sons adjacents.” This variation is evident in Brazilian Portuguese, in which some speakers do not articulate or perceive the alveolopalatal lateral consonant; instead, they produce a two-segment sequence, i.e. an alveolar lateral [l] followed by the semivowel [j], creating homonyms such as ólhos [ɔljoʃ] ‘eyes’ and óleos [ɔljoʃ] ‘oils,’ which are contrastive for other speakers (i.e. ólhos [ɔlhoʃ] ‘eyes’ vs. óleos [ɔljoʃ]) (Cristófar Silva 1998:65).
3.3.2 Acoustics

Acoustic descriptions of the alveolopalatal lateral are not abundant in the literature (cf. Colantoni 2004:86). However, Quilis (1981:281) reports that the duration of [ʎ] presents an average of 73.2 ms in Peninsular Spanish. Its F1 and F2 present mean values of 290 Hz and 2,047 Hz, respectively (Quilis 1993:311-314), although in Brazilian Portuguese higher values have been attested, i.e. 389 Hz (F1) and 2,091 Hz respectively (Stein 2011:10), suggesting a lower and more fronted realization than Castilian Spanish [ʎ]. These values (i.e. a low F1 and a high F2) are expected due to the articulation of this consonant with a raised and fronted tongue body (Ladefoged & Maddieson 1996; Ladefoged 2001). Its F2 is generally higher than the F2 of non-front vowels and presents values close to those of front vowels. Following the large contact area between the tongue dorsum and the hard palate, the F1 of [ʎ] is often lower than the F1 of any following vowel (Quilis 1993:314). In comparison with the formant values of the alveolar lateral /l/, for example, Quilis (1981:286) reports that intervocalic [ʎ] presents a smaller dispersion area than its alveolar counterpart, and the frequencies of its first two formants place it right above palatal front vowels /i/ and /e/, as shown in Figure 14:
By observing the dispersion areas of /ʎ/ and /l/ in Figure 14, we are able to notice that the acoustic characteristics of the alveolopalatal lateral are similar to those of palatal front vowels [i] and [e], which reflects similar articulatory patterns, i.e. all three segments are articulated with the tongue dorsum in a high and fronted position. In contrast, the same cannot be said about the acoustics of alveolar [l], which presents a more dispersed and variable acoustic pattern and seems to be situated further away from the acoustic space of [e] and [i]. This information reveals itself to be pertinent for the present discussion, as it indicates possible clues for a phonetic motivation in the evolutionary pathways of the alveolopalatal lateral. For example, the interaction between an alveolar lateral [l] and a palatal front vowel may produce a palatalized sequence that approximates the acoustic spaces of [l] and [i, e] and generates acoustic cues that can lead the listener to reinterpret the sequence as only one segment. In other words, [l] may palatalize before [i, e] and thus become more similar to [ʎ], whose characteristics are akin to palatal vowels. Indeed, this represents one of the sources for the emergence of...
the palatal lateral [ʎ] in Romance (e.g. Lloyd 1987; etc.).

On the other hand, if it is right to assume that similar acoustics result in similar perception, the co-articulation between [ʎ] and a following palatal front vowel may not offer the necessary cues for the listener to interpret it as a two-palatal segment sequence, due to the similar formant values shared by the consonant and the front vowel. Additionally, the fact that [ʎ] displays formant structures renders it more vowel-like (as opposed to other palatal sounds) and suggests that its boundaries with a following vowel will not be as clear and defined. Thus, in a sequence of [ʎ] followed by [i] for example, the acoustics resulting from the similar dorsal articulation of both segments may not offer the necessary cues for the listener to parse it as a two-palatal-segment sequence. Instead, the listener may reanalyze it as a sequence of an alveolar lateral consonant [l] (from the closure in the dentoalveolar zone during the production of [ʎ]) followed by a palatal vowel (from the dorsal articulation of both [ʎ] and [i]). In fact, this “depalatalization” of [ʎ] when followed by a palatal vowel occurs in dialects of Brazilian Portuguese, in which speakers produce sequences of /ʎi/ and /ʎe/ as [li] and [le], respectively, e.g. *filhinho* [fĩl̃³ɲO] ‘son-DIM’, *colher* [kulɛ] ‘spoon,’ etc.

The differences between the alveolopalatal lateral [ʎ] and the alveolar lateral [l] become evident when one considers their formant structures reflected in spectrograms. Figure 15 illustrates a comparison between the spectrograms of the sequences [lo] and [ʎo] in Peninsular Spanish, while Figure 16 depicts the spectrogram of [ala] and [aʎa] in Brazilian Portuguese. Both figures show a lower F1 and a higher F2 for [ʎ] due to its front-palatal articulation and we also note the abrupt F2 transition of the alveolopalatal
lateral into the following non-front vowel, as compared to a gradual F2 transition in the alveolar lateral.

Figure 15. Spectrograms of [lo] (left) and [Ło] (right) in Peninsular Spanish. (Martínez Celdrán & Fernández Planas 2007:140)

Figure 16. Spectrogram of [ala] (left) and [aŁa] (right) in Brazilian Portuguese. (Stein 2011:10)
These transitions would be quite different with other vowels. For example, in a sequence of [ʌ] and a palatal vowel, we would expect the transitions from the consonant into the vowel to be gradual and not as abrupt as in the case of [ʌ] with non-front vowels, as illustrated in Figures 15 and 16.

3.4 Phonetic characterization of the palatal stop, affricate, and fricative

3.4.1 Articulation

The subtle phonetic differences in palatal consonants are best noticed when one considers the articulation of the palatal stop [j], the palatal affricate [ʃʃ] and the palatal fricative [ʃ]. Ladefoged (2001:144), for example, details how uncommon palatal stops are in the languages of the world and the specificity required for their production, which often renders that of an affricate:

Palatal stops are slightly less common (...). They occur, for example, in the Akan languages of Ghana. Because of the shape of the roof of the mouth, the contact between the front of the tongue and the hard palate often extends over a fairly large area. As a result, the formation and release of a palatal stop is often not as rapid as in the case of other stops, and they tend to become affricates.

Despite the subtlety in their pronunciation, their allophonic distribution in Spanish suggests that, while the palatal stop or affricate are often realized after a pause, a nasal or a lateral consonant, the palatal fricative [ʃ] is generally produced elsewhere, although such a categorization may not hold true for all Spanish dialects (e.g. Quilis 1993:291-292; Díaz-Campos & Morgan 2002:246; cf. Chapter 5). In the articulation of all three
palatals, the tip of the tongue touches the lower incisors, while its dorsum is raised towards the hard palate, and the degree of contact determines the realization of each consonant. Hualde (2005:43) describes the palatal stop [j] and the palatal affricate [ʝʝ] as actually the same segment, but with the former being frictionless and the latter displaying “some affrication”. As for Spanish [ʝ], some authors consider it a fricative (e.g. Navarro Tomás 1967), while others treat it as an approximant (e.g. Martínez Celdrán & Fernández Planas 2007). These different characterizations stem from the different degrees of constriction that this consonant may display depending on factors such as style, register, dialect, phonological context, etc. In emphatic speech, for example, it is expected that speakers pronounce [ʝ] with more friction than they would in a more casual and relaxed conversation. Navarro Tomás (1967:127, 129) and Ladefoged & Maddieson (1996:166) provide illustrations of the pronunciations of [ʝ], [ʝʝ] and [ʝ], as replicated in Figure 17 and Figure 18.

Figure 17. Articulation of the palatal stop [j] (left) and the palatal fricative [ʝ] (right), represented by the symbols [ŷ] and (fricative) [y], respectively. The shaded areas indicate the parts of the hard palate in contact with the tongue dorsum. (Navarro Tomás 1967:127, 129)
Figure 18. X-ray tracings of Hungarian palatal stop [ɟ] (left) and palatal fricative [ʝ] (right). (Ladefoged & Maddieson 1996:166)

Both figures show how contact between the tongue dorsum and the hard palate comes to a full and precise occlusion in the articulation of the palatal stop, while there is only an approximation (with varying degrees) between the former and the latter in the production of the fricative [ʝ].

The similarity and differences between the fricative [ʝ] and the approximant [j] must also be addressed, because they represent different realizations among current YEÍSTA dialects of Spanish and their interaction with surrounding vowels plays an important role in our analysis (cf. Chapter 6). In articulatory terms, the difference between both segments lies in the fact that there is more palatal stricture (i.e. more contact between the tongue dorsum and the hard palate) that creates more palatal obstruction during the articulation of [ʝ] than during that of [j]. Thus, Martínez Celdrán and Fernández Planas (2007:169) define the former as a true consonant and the latter as a semivowel, despite the classification of both as consonants by the IPA. The electropalatographs in Figure 19 illustrate the articulatory difference between both segments, with a larger contact area in the articulation of [ʝ] (left).
3.4.2 Acoustics

The subtlety in the articulation of the palatal segments [ʝ], [ʝ̃], and [j] produces different acoustic patterns, which help us to characterize and define these consonants more clearly. Quilis (1993:224-225) indicates that Spanish [ʝ] presents a formant structure with an F1 value that is lower than that of vowels (hence indicating a higher articulation), and an F2 with less intensity than that of neighboring vocalic segments. Spectrograms of [ʝ] additionally reveal a similar formant structure (although with less intensity) to that of front palatal vowels and a lack of the typical noise found in the production of true fricative segments. Figure 20 shows the spectrogram for the sequence [aja], in which one observes a decrease in intensity during the articulation of [ʝ] as compared to that of neighboring vowels.
In regard to the acoustic differences between [j] and [ʝ], the spectrogram in Figure 21 depicts a subtle lower intensity in the beginning of F1 and F2 in the articulation of [ʝ] as compared to that of [j], in the production of sequences [z.ʝe] and [sje] in *las hierbas* “the grasses” and *las siervas* “the serves-FEM-PL,” respectively. The lower intensity in the beginning of the formant structure of [ʝ] derives from more constriction between the tongue and the hard palate during its production (cf. Figure 19).
In the case of the palatal affricate [ʝʝ], one notices two acoustically different phases deriving from its articulation: an initial silent stage followed by a brief frication during its release. The spectrogram in Figure 22 illustrates the acoustic result of the articulation of [ʝʝ] in the word cônyuge ‘spouse,’ in which the initial occlusive stage is reflected in the absence of noise (white space), while its brief fricative stage is depicted by the aperiodic noise right before the beginning of the formant structure of the following vowel [u].
Figure 22. Spectrogram of the word *cónyuge* ‘spouse.’ The white space in the articulation of [ʃʃ] reflects its initial occlusive stage, followed by a brief fricative stage (aperiodic noise). (Martínez Celdrán & Fernández Planas 2007:60)

A comparison between spectrograms of [elʃʃáte] and [éje] reveals a clear release phase in the production of the affricate [ʃʃ], as illustrated in Figure 23. Moreover, we expect that different surrounding vowels would result in different transition patterns: for example, if [ʃ] were preceded and followed by the non-front vowel [o] in a sequence such as [oʃo], we would expect an abrupt transition from the preceding vowel into the consonant and from the latter into the following vowel.
It is important to establish a distinction between the symbols [ʝʝ] and [dʒ], although their articulatory patterns may sometimes produce similar acoustic results, especially in emphatic speech (Martínez Celdrán & Fernández Planas 2007:63). Several authors use the latter symbol indistinctively from the former (e.g. Quilis 1993; Aguilar 1998), especially within the American tradition, which represents this sound with the symbol [ʃ]. However, the second element (i.e. the release) in the production of [ʝʝ] is not the same as the second element of [dʒ]: while the former is a true palatal consonant, the latter represents a postalveolar (or palato-alveolar) segment which has the postalveolar [ɾ] as its voiceless counterpart and whose second segment is characterized by a considerable amount of noise and assibilation as compared to the short friction in the release of [ʝʝ].
Thus, as seen in §3.2 and §3.4, there are five voiced segments that I treat as different “true” palatal segments in this dissertation: the front vowels [e] and [i], the approximant [j], the fricative [ʝ], and the affricate [ɟʝ]. Following Ladefoged’s (2001:144) and Hualde’s (2005:43) descriptions of the stop [ʝ], I consider it the same segment as the affricate [ɟʝ]. I opt, however, to use the latter due to its more precise representation of the segment’s production in Spanish (Martínez Celdrán & Fernández Planas 2007:58-63).

3.5 Phonetic characterization of the voiced postalveolar affricate: Articulation and Acoustics

As the palatal affricate [ɟʝ], the voiced postalveolar [dʒ] is characterized by two stages in its articulation. However, the place of constriction of its first segment and the friction of its second stage differ from those of the palatal affricate. The articulation of [dʒ] is characterized by an initial dentoalveolar occlusion, followed by a considerable amount of prepalatal frication. Quilis (1981:263) reports that this affricate presents an average duration of 84.8 ms, which corresponds to half the duration of its voiceless counterpart [tʃ]. In the frication stage, energy concentrates at 2,184 Hz, which is 332 Hz lower than that of [tʃ], i.e. 2,516 Hz. Quilis (ibid.:264) also notes that this difference in the concentration of energy between these affricates is due to a wider contact between the tongue dorsum and the hard palate in the articulation of [dʒ], which is also more fronted than the voiceless affricate.

While this segment is more common in River Plate Spanish, particularly in the words yo “I” and ya “already,” it is also observed in the emphatic speech of Peninsular varieties, where the more common palatal affricate [ɟʝ] is often replaced with the
postalveolar [dʒ] in emphatic speech (Martínez Celadrán & Fernández Planas 2007:63-65; Fernández Trinidad 2010:287). In a spectrogram a white area depicts the first occlusive stage, while the noise of its frication is reflected in the strong concentration of aperiodic energy before the start of the formant structure of the following vowel, as seen in Figure 24, which illustrates the subject pronoun yo “I” at the beginning of a sentence.

![Spectrogram of yo [dʒo]. The occlusive stage (white area) is followed by frication prior to the formant structure of vowel [o]. Notice the constant presence of a voice bar at the lower frequencies. (Fernández Trinidad 2010:287)](image)

3.6 Phonetic characterization of postalveolar fricatives

3.6.1 Articulation

Despite being found in several dialects of Spanish, the postalveolar fricatives [ʒ] and [ʃ] are two realizations typically associated with River Plate Spanish (Navarro Tomás 1967; Canfield 1981; Lipski 1994; Hualde 2005). As pointed out by Ladefoged and Maddieson (1996:139-175), fricative sounds result from a precise tense constriction between articulators, which generates a turbulent airstream in the vocal tract. Sibilant fricatives, in particular, are coronal sounds articulated in the dental, alveolar, and
postalveolar (or prepalatal) regions of the mouth (Ladefoged & Maddieson 1996:145-154). Because of this, they tend to have energy concentration in high frequencies and, during their articulation, “an exactly defined shape of the vocal tract has to be held for a noticeable period of time” (ibid.: 137). The concentration of energy changes according to the point of constriction: fricatives that are realized further back from this point present, in general, energy concentration at lower frequencies. In the articulation of [ʒ] and [ʃ], the tongue blade touches the postalveolar or prepalatal region, while the tongue dorsum is raised toward the palate and the tongue tip is lowered toward the incisors. Such articulatory complexity renders both [ʒ] and [ʃ] more resistant to co-articulatory effects when compared to their alveolar counterparts [z] and [s] respectively, in which constriction is produced over the dental or alveolar region and the tongue dorsum is thus free to adapt to the configuration of surrounding sounds (Recasens 1991:267, 282). Additionally, Ladefoged and Maddieson (1996:148) point out that [ʃ] has a wider (and further back) constriction than [s], in addition to adding some degree of lip rounding as opposed to alveolar [s].

Regarding the voiced postalveolar [ʒ], Navarro Tomás (1967:131) describes its place of articulation as being more fronted than that of [j], reaching the alveolar ridge. The shape of the tongue during the articulation of these segments also differs: while it is flat for [ʒ], it is more convex for [j]. However, Colantoni (2001:45) disputes this latter characterization for [ʒ] (and [ʃ]), by arguing that in Buenos Aires Spanish “the tongue is not flat but slightly cupped”—a description shared by Recasens (1991:281) for Catalan [ʒ]. Additionally, in River Plate Spanish the voiceless postalveolar fricative [ʃ] often
follows from a devoicing process undergone by [ʒ], which remarkably mirrors a similar change event that took place in 16th-century Spanish (cf. Chapter 4). Such devoicing process can be better understood once we take into account the production of voiced fricatives, which are not as common as voiceless fricatives in the languages of the world. Voiced fricatives present a tendency to devoice, as they are phonetically more difficult to produce: “high volume velocity is needed to produce the turbulent noise characteristic of fricatives, and [at the same time] the vibrating vocal cords [generating voicing] impede the flow of air through the vocal tract” (Johnson 2003:124). Thus, the need for turbulence conflicts with the generation of voicing, which then may lead to the devoicing of fricatives in some languages, such as River Plate Spanish (cf. Rohena-Madrazo 2011:10-17).

3.6.2 Acoustics

In regard to the acoustics of fricatives, Ladefoged and Maddieson (1996:173) point out the lack of a great number of descriptive studies, probably due to a wide range of variation in the production of these segments across languages. Nevertheless, the authors mention that postalveolar fricatives [ʒ] and [ʃ] have spectral peaks at lower frequencies than their alveolar counterparts, [z] and [s]. Recasens (1991:282), for example, reports that the concentration of energy for the F1 of Catalan [ʃ] is found between 2,000 Hz and 3,200 Hz, and from 3,500 Hz to 4,500 Hz for its F2. The spectrograms in Figures 25 and 26 show the frequency patterns of [ʒ] and [ʃ], respectively, as produced by a female speaker of Buenos Aires Spanish.
Figure 25. Spectrogram of the sequence [aʒar] in the last name Gallardón. (Fernández Trinidad 2010:281)

Figure 26. Spectrogram of the sequence [aʃar] in the last name Gallardón. (Fernández Trinidad 2010:281)

In Figure 25 one observes the concentration of energy mixed with vertical striations originating from the glottal pulses in the production of [ʒ]. Furthermore, it is possible to identify the distribution of energy between 1,600Hz and about 5,000Hz (with its concentration at around 3,700Hz), in addition to the presence of a voice bar at the lower frequencies. The voiceless fricative [ʃ] in Figure 26 presents aperiodic energy from 1,700Hz to 8,000Hz, with its concentration at around 3,800Hz and no voice bar or striations (Fernández Trinidad 2010:281).
3.7 Summary and discussion

This chapter has demonstrated the inherent complexity that is involved in the production of (alveolo)palatal sounds, particularly those related to the phonological phenomena under investigation, i.e. YEÍSMO, IEÍSMO, ŽEÍSMO, ŽEÍSMO, and DISTINCTION. By considering the articulatory and acoustic details of those segments, it is possible to gain better insight as to why their realizations vary extensively across Spanish-speaking dialects. For instance, the articulatory patterns of the alveolopalatal lateral may provide an understanding of its varying realizations in current Spanish dialects as well as in its evolution from Latin to the Romance languages. Similarly, the phonetic characteristics of the voiced postalveolar fricative [ʒ] provide a motivation for its devoicing patterns, not only in current River Plate Spanish but also in the evolution from Old to Modern Spanish. Therefore, the relevance of phonetic information becomes evident and reveals itself to be a conditio sine qua non for an attempt to understand the phonetic motivation for the initiation of a great number of sound changes, especially those related to segments produced in the (alveolo)palatal region.

Nevertheless, raw phonetic detail alone does not offer a thorough explanation for (alveolo)palatal and other types of sound changes, since phonetic variation is intrinsic in sound production. A further mechanism is then warranted to model the origins of sound change from phonetic variation. As shown in Chapter 2, Ohala (1981, 1989, 1993, 2003, 2012) formalizes a listener-based account, according to which the listener holds the key to the initiation of a sound change. In this framework, the listener introduces a change by reinterpreting the speech signal in a different way than that intended by the speaker, often
due to acoustic ambiguity in the signal. Hence, when the former fails to filter out the variation in speakers’ production of sounds, a possible sound change may arise and spread in the speech community, under favorable sociolinguistic conditions. A sound change is thus conceived at the individual level, while its diffusion takes place with the inclusion of appropriate sociolinguistic variables (e.g. gender, age, social class, etc.). A few studies of dialectal Spanish (e.g. Colantoni 2001, 2004) have successfully applied phonetic information to understand the underpinnings of phonetically-motivated sound change, despite failing to formalize the role of that information during the speaker-listener interaction. Thus, a comprehensive study of the manifestation of (alveolo)palatal segments in dialects of present-day Spanish and other related languages is necessary in order to provide an insight into their synchronic varying patterns as well as to offer a phonetic motivation for their complex evolution in the history of these Romance languages, which is the subject of Chapter 4.
CHAPTER 4

REFLECTIONS ON THE PAST:
THE EVOLUTION OF (ALVEOLO)PALATALS IN THE HISTORY OF
SPANISH AND OTHER ROMANCE LANGUAGES

4.1 Introduction

Tracking the origins of (alveolo)palatal sounds in Spanish and related Romance languages (e.g. Portuguese, Catalan, French, Italian, Rumanian, etc.) is fundamental in order to fully understand how their current dialectal manifestations have come to be so varied (cf. Chapter 5). Most important, the more insights one has into the past of those sounds, the more revealing the mechanisms of their current phonetic and phonological change processes may be, since often times synchronic processes may reflect similar diachronic events in the history of those languages. This chapter traces the evolutionary pathways of the alveopalatal lateral [ʎ] and (alveolo)palatal obstruents [ʝ, ʒ, ʃ, ʒ] in the history of Spanish and other Romance languages, from their origins in Latin to their patterns in late Medieval times. In addition to unveiling their evolution, I review the insights of (and challenges posed by) accounts that are found in the literature to explain the series of different phonetic changes that led to the emergence of the aforementioned sounds. I present historically documented data as well as possible sound reconstructions
that have been proposed based upon comparative evidence (e.g. Menéndez Pidal 1950, 1977; Boyd-Bowman 1980; Lapesa 1986; Lloyd 1987; Reppetti & Tuttle 1987; Ariza 1990, 2012; Wireback 1997; Holt 1997, 2003; Penny 2000, 2002; Baker 2004; Echenique Elizondo & Sánchez Méndez 2005; Alkire & Rosen 2010; among others). As will be discussed, there is much disagreement in regard to particular sound reconstructions due to the lack of available historical data, which has often generated a considerable amount of speculation by scholars. In order to overcome this challenge, I consider the reconstructions that are most plausible from a grounded, phonetic perspective and that are in agreement with similar change processes observed in close related languages or in the evolution of the language in question.

This chapter is organized as follows. In §4.2 I present the evolutionary pathways of the Latin sources that led to the emergence of the alveolopalatal lateral /ʎ/, while §4.3 details the sound changes that gave rise to the palatal obstruent /ɟ/. Next, §4.4 discusses the emergence of the voiced postalveolar sibilant fricative /ʒ/ and its development into /ʃ/ in Medieval Spanish. In §4.5 I provide a schematic representation of these sound changes and offer concluding remarks.

4.2 The evolution of the alveolopalatal lateral /ʎ/

Multiple Latin sources gave rise to the alveolopalatal lateral /ʎ/ in the history of Spanish and other Romance languages. Based upon the documented chronological development of these multiple sources, and the various results they produced in the history of Western and Eastern Romance languages, it is possible to characterize the
emergence of /ʎ/ within two separate stages, namely, a first-stage /ʎ/ (henceforth \( \lambda_1 \)) which emerged in spoken Latin and, thus, is common to most of the Romance languages; and a second-stage /ʎ/ (henceforth \( \lambda_2 \)), whose scope in the Romance world is more limited and emerges in the history of only a few of the Romance languages, including Spanish. The subsequent development of both alveolopalatal laterals is also important to consider in order to justify their chronological differentiation. For example, while \( \lambda_1 \) emerged in the history of all Western Romance languages and, particularly in Old Spanish, is believed to have evolved into the sibilant fricative /ʒ/—while presenting different evolution patterns in related languages—, \( \lambda_2 \) prevailed well into Modern and Contemporary Spanish and started to lose its lateral articulation in the last few centuries in many Spanish dialects, the result of which has produced a merger with the coetaneous palatal /j/ (i.e. yeismo, cf. Chapter 5). In §4.2.1, I discuss the different pathways of change for the principal sources of \( \lambda_1 \) (i.e. spoken Latin [-lj-, -k’l-, -g’l-]) and in §4.2.2, those of \( \lambda_2 \) (i.e. Latin [kl-, pl-, fl-, l:]). In both sections, I mention some exceptions and provide comparative evidence from other Romance languages in order to motivate their various similar (or different) evolutionary patterns.

4.2.1 First-stage /ʎ/ (\( \lambda_1 \))

4.2.1.1 /-lj-/

A crucial development that presented numerous consequences to the consonant and vowel inventories of Latin was the emergence of a high front glide [j] in its spoken
varieties—a sound commonly referred to as YOD in studies of Spanish linguistics.\(^5\) This palatal segment derived chiefly from a reduction in Latin hiatuses, in which both atonic /i/ and /e/ were disyllabified and pronounced as [j] (Ariza 2012:27-30), as illustrated by the examples in (1):\(^6\)

(1) Reduction of Latin hiatuses: /i, e/ pronounced as [j] in spoken Latin (the original hiatus is represented by a period <.> in the relevant syllable):

- **AILENU**: a[lje]nu ‘foreign, alien’
- **AILU**: a[lj]u ‘garlic’
- **CILLA**: ci[lj]a ‘eyebrow’
- **CONSILLU**: consi[lj]u ‘council’
- **FILLU**: fi[lj]u ‘son’
- **FOLLA**: fo[lj]a ‘leaf’
- **MELLORE**: me[lj]ore ‘better’
- **MULLERE**: mu[lj]ere ‘woman’
- **PALE.A**: pa[lj]a ‘straw’
- **TALE.ARE**: ta[lj]are ‘to cut’
- **VIRILLA > viri[lj]a ‘groin’

One of the consequences of the emergence of this glide was the palatalization of the preceding alveolar lateral /l/ in spoken Latin and the eventual emergence of \(\acute{s}\)\(_1\), as shown in (2):

---

\(^5\) Menéndez Pidal (1950, 1977, and elsewhere) organized the emergence of YOD into four main historical groups: YOD #1: from TI and CI (e.g. FORT[j]A ‘strength’, *MINAC[j]A ‘threat’); YOD #2, from LI and NI (e.g. PAL[j]A ‘straw’, ARAN[j]A ‘spider’); YOD #3, from MI, BI, and GI and DI (e.g. VINDEM[j]A ‘grape harvest’, LAB[j]U ‘lip’, RAD[j]U ‘ray’, FUG[j]O ‘I escape’); and YOD #4, from various sources, e.g. CT, X [ks], RI, SI, PI, and syncope of various intervocalic consonants.

\(^6\) The data presented in this chapter has been collected primarily from Menéndez Pidal (1950, 1977); Boyd-Bowman (1980); Lapesa (1986); Lloyd (1987); Reppetti & Tuttle (1987); Ariza (1990, 2012); Rini (1991); Wireback (1997); and Penny (2002).
(2) Palatalization of the preceding alveolar lateral /l/ by a following YOD and the emergence of \( \lambda_1 \): [lj] > /ʎ/:  

a[lj]enu > a[ʎ]enu ‘foreign, alien’  
a[lj]u > a[ʎ]u ‘garlic’  
ci[lj]a > ci[ʎ]a ‘eyebrow’  
consi[lj]u > consi[ʎ]u ‘council’  
fi[lj]u > fi[ʎ]u ‘son’  
fo[lj]a > fo[ʎ]a ‘leaf’  
me[lj]ore > me[ʎ]ore ‘better’  
mu[lj]ere > mu[ʎ]ere ‘woman’  
pa[lj]a > pa[ʎ]a ‘straw’  
ta[lj]are > ta[ʎ]are ‘to cut’  
viri[lj]a > viri[ʎ]a ‘groin’

The emergence of \( \lambda_1 \) (< [lj]) is assumed to have taken place already in spoken Latin, since it is attested in the history of nearly all Western and Eastern Romance languages (some of which still preserve it), e.g. Latin MULIERE > Old French moillier, Provençal molher, Catalan muller, Old Italian mogliera, Old Galician muller, Portuguese mulher, etc. (Alonso 1962:81). While there is no evidence for the presence of \( \lambda_1 \) in the history of Spanish (since the orthographic evidence of the oldest available documents indicate a likely pronunciation of [ʒ] where [ʎ] would have been expected, cf. §4.4), most scholars agree that the overwhelming evidence from related Romance languages strongly supports the reconstruction of \( \lambda_1 \) at some point in the development of Proto-Spanish. Equally important, however, is the subsequent evolution of this “pan-Romance” \( \lambda_1 \) (< [lj]) attested in the history of most Romance languages, namely, its delateralization, which gives rise to a palatal glide [j], e.g. Latin MULIERE, PALEA, FOLIA > Rumanian mu[j]ere; Modern French pai[j]e, feu[j]e; Asturian mu[j]er (Alonso 1962:81), etc. Ariza (2012:27)
summarizes this evolution straightforwardly: “toda /l/ se convierte en /y/.”\(^7\) As will be discussed further in §4.4, this piece of comparative evidence is crucial in order to develop a grounded reconstruction in the development of the sibilant /ʒ/ (< \(\lambda_1\)) in Old Spanish and the non-merger between \(\lambda_1\) and \(\lambda_2\) (< Latin [pl-, kl-, fl-, l-]) in the history of this language.

4.2.1.2 /-k’l-, -g’l-/  

The syncope of a postonic vowel (e.g. /ʊ̯/ > /o/ > \(\emptyset\)) in the Classical Latin groups -CUL- and -GUL-\(^8\) (derived from frequent diminutive sequences such as -ECULU, -OCULU, -EGULA, etc., cf. Ariza 2012:27) gave rise to the earlier velar + lateral consonant clusters /-k’l-, -g’l-/ in spoken Latin. The subsequent evolution of these groups represents one of the differences between the development of Western and Eastern Romance languages. In Western Romance, /-k’l-, -g’l-/ evolved into an alveolopalatal lateral /ʎ/, i.e. \(\lambda_1\) (which eventually merged with the evolution of /-lj-/), as illustrated in (3):

\[\lambda_1 /\lambda_2\]

---

\(^7\) Here the symbol /\(\emptyset\)/ represents /\(\lambda\)/, and /y/ indicates the approximant /\(\j\)/. Following the Spanish tradition, Ariza distinguishes between a “semiconsonant” (or on-glide) [\(\text{y}\)], which is realized before a nuclear vowel in a diphthong, and a “semivowel” (or off-glide) [\(\text{i}̯\)], which is pronounced after a vowel in the realization of a diphthong. For convenience, the author chooses to represent both segments as “Y”: “Por comodidad expositiva, a ambas se les puede representar con Y” (2012:27).

\(^8\) And also in -TUL-, when */t’l/ > /k’l/, cf. VETULUS NON VECLUS in the Appendix Probi, a Late Latin document written by grammarian Probus, who recommended how some words should be pronounced and, thus, put in evidence the popular pronunciation of the time.
(3) Palatalization of velar + lateral consonant clusters in Western Romance languages, where /-k’l-, -g’l-/ > /ʎ/ (with /ʎ/ subsequently delateralizing in some of these languages):

(AURICULA >) ORICLA > French oreille, Provençal aurelha, Catalan orella, Portuguese orelha, Proto-Spanish *ore[ʎ]a, ‘ear’

(OCULUS >) OCLU > French œil, Provençal uelh, Catalan ulla, Aragonese uello, Portuguese olho, Proto-Spanish *o[ʎ]o, ‘eye’

(REGULA) > REGLA > French reille, Provençal relha, Catalan relha, Old Galician rella, Portuguese relha, Proto-Spanish *re[ʎ]a, ‘ploughshare’

In Eastern Romance varieties, however, the voiceless obstruent was preserved and the lateral eventually vocalized into /j/ in languages such as Italian. In Rumanian, this sequence /-kj-/ incurred a further change and developed into a postalveolar affricate /tʃ/ (<ch> in current Rumanian orthography). The Latin sequence -GUL-, on the other hand, presented multiple pathways of evolution in Eastern Romance. The example in (4) illustrate the aforementioned patterns:

(4) Preservation of the voiceless obstruent and vocalization of the lateral in Italian, with a subsequent change /-kj-/ > /-tʃ-/ in Rumanian. The sequence -GUL- may or may not have evolved into /-g’l-/ in these Eastern Romance languages:

(AURICULA >) ORICLA > Italian orecchio, Rumanian ureche ‘ear’

(OCULUS >) OCLU > Italian occhio, Rumanian ochiu ‘eye’

TEGULA > Italian tegola,9 but Rumanian țiglă (<TEGLA), ‘tile’

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9 The syncope of /-ā-/ from Latin -GUL- also occurred in some words of Italian and followed the same evolutionary pathway as /-g’l-/ in Western Romance, e.g. (COAGULU) > COAGLU > Italian caglio [káʎo] ‘curd’ (cf. Portuguese coalho [koáʎo]).
Based on this evidence, two main explanations can be found in the literature for the evolution of Latin -cul- and -gul- into an alveolopalatal lateral /ʎ/ in the Western Romance languages. The most generalized and accepted account is that of Romanists and language historians such as Menéndez Pidal (1950), Craddock (1980), Lapesa (1981), Lanthrop (1984) Pensado (1984), Lloyd (1987), Torreblanca (1988), Ariza (1990, 2012), Penny (2002), among many others. According to this view, both velar consonants /k/ and /g/-while in coda position after the syncope of the following postonic vowel—weakened their occlusion into *[x] and *[ɣ], respectively, before further vocalizing into a palatal glide *[j], i.e. [-k.l-, -g.l-] > *[-x.l-, -ɣ.l-] > *[-j.l-]. The resulting glide [j], then, would have palatalized the following alveolar lateral /l/ of the next syllable and eventually given rise to the alveolopalatal lateral /ʎ/, in an evolutionary pathway along the lines of (5):

(5) Palatalization of velar + lateral consonant clusters: /-k’l-, -g’l-/ > /ʎ/, according to mostly accepted accounts in the literature:

LENTIC(U)LA > lente[k.l]a > *lente[x.l]a > *lente[j.l]a > lente[ʎ]a ‘lentil’

NOVAC(U)LA: nava[k.l]a > *nava[x.l]a > *nava[j.l]a > nava[ʎ]a ‘razor’

OC(U)LU: o[k.l]o > *o[y.l]o > *o[jl]o > *o[jl]o > o[ʎ]o ‘eye’

VERMIC(U)LU: verme[k.l]o > *verme[x.l]o > *verme[j.l]o > verme[ʎ]o ‘red’

(VETULUS >) VEC(U)LU: ve[k.l]o > *ve[x.l]o > *ve[j.l]o > ve[ʎ]o ‘old’

RE(G)ULA: re[g.l]a > *re[y.l]a > *re[j.l]a > re[ʎ]a ‘ploughshare’

TE(G)ULA: te[g.l]a > *te[y.l]a > *te[j.l]a > te[ʎ]a ‘tile’
The main reason to propose the evolutionary pathway exemplified in (5) stems from a reportedly similar evolution in Hispano- and Luso-Romance, in which other consonant groups also would have had a velar consonant in coda position that vocalized into a glide [j]. Such is the case of /-ks-/ and /-kt-/ for example, in which the velar voiceless obstruent [k] developed into [j] before assibilating or affricating the following segments, as illustrated in (6):

(6) Vocalization of the velar obstruent [k] and palatalization of the following segments: /-ks-/ > /(j)ʃ/, /-kt-/ > /tʃ/:

MATAXA: mata[k.s]a > … *mata[js]a > Portuguese made[ʃ]a, Old Spanish made[ʃ]a ‘skein’

AXE: a[k.s]e > … *a[js]e > Portuguese e[ʃ]o, Old Spanish e[ʃ]e ‘axis’

LACTE.\(^{10}\) la[k.t]e > … *la[ʃ]e > Portuguese le[ʃ]e, Old Spanish le[ʃ]e ‘milk’

Rini (1991:118), however, rejects the notion that a \textit{preceding} glide could have phonetically palatalized a following consonant, since most cases of palatalization in Romance—including the cases of assibilation and affrication—have derived from a \textit{following} glide. He adds: “(…) as a native speaker of English, I cannot say I have ever witnessed the palatalization of any consonant by a preceding yod, i.e., ‘I told him’ *[aʃ]

\(^{10}\) Note that the vocalization of velar /k/ in the group /-kt/- did not palatalize the following dental consonant /ʃ/ in Portuguese (Rini 1991), cf. LACTE: la[kt]e > *la[ʃ]e > Portuguese le[ʃ]e. The affricate pronunciation /ʃ/ in current Standard Brazilian Portuguese (cf. [lejt(i)] ‘milk’) derives from the raising of unstressed /e/ before the affrication of the preceding dental consonant /ʃ/. The reconstruction of this sound change is warranted by both historical evidence (e.g. Mattoso Câmara 1970, Cristófaro Silva & Oliveira Guimarães 2009) and dialects of Brazilian Portuguese in which /e/ has not yet been raised or when it has, it has not yet palatalized the preceding /ʃ/, e.g. \textit{leite} [lêʃe] or [lêʃi] ‘milk’, \textit{noite} [nôʃte] or [nôʃti] ‘night’, in the varieties spoken in Southern Brazil (Cristófaro Silva 1998).
tšould him, ‘exciting’ *[eksajtšin]” (1991:111, n. 4). He also points out the fact that, while /-ks-/ eventually evolved into /ʃ/ in Old Spanish and in /if/ in Portuguese, the same cannot be said for /-kt-/: although this sequence palatalized and eventually developed into Spanish /ʃ/, e.g. FACTU, NOCTE, LACTE > Spanish he[tʃ]o ‘fact, event’, no[tʃ]e ‘night’, le[tʃ]e ‘milk’, it did not follow the same path in the history of Portuguese, e.g. FACTU, NOCTE, LACTE > Portuguese f[ej]to ‘event’, no[jt]e ‘night’, le[jt]e ‘milk’ (cf. footnote 6 for the development of /ʃ/ in Brazilian Portuguese). In light of this comparative evidence regarding the (non-)palatalization of consonant groups /-k’l-, -g’l-, -kt-, -ks-/, Rini proposes an additional step for the evolution of /-k’l-, -g’l-/ (and, consequently, for that of /-ks-, -kt-/), namely, the glide [j] resulting from the vocalization of the obstruent would have incurred metathesis first, and only then would have palatalized the preceding consonant—just as it did in the case of /-lj-/, as illustrated in (7):

(7) Evolution of /-k’l-, -g’l-/, incorporating the additional step of metathesis of [j] proposed by Rini (1991:118):

ocl: o[k.l]o > *o[x.l]o > *o[j.l]o > *o[lj]o > o[ʎ]o ‘eye’

re: re[g.l]a > *re[y.l]a > *re[j.l]a > *re[lj]a > re[ʎ]a ‘ploughshare’


In order to justify the metathesis of [j], Rini (1991:119) resorts to a likely process of analogy between the intermediate stage */-jl-*/ (< /-k’l-, /-g’l-/) and the highly frequent occurrences of existing /-lj-/ (from -LI- and -LE-): “Thus the development of Latin /-k’l-/, /-g’l-/, and /-t’l-/ after vocalization of the syllable-final consonant, [j], with metathesis to
[lj] was swept up in the change of Latin primary /lj/.” In Eastern Romance, Rini (1991:119) argues, [j]-metathesis did not occur because [j] never emerged: “Like the retention of voiceless stops, there was a tendency to maintain a cluster here, even if altered in form: NOCTE > It. notte, Rum. noapte. Consequently no yod was produced in this case and thus no possible metathesis.”

Wireback (1997), however, offers a substantially different account in order to explain the palatalization of */-k’l-/ -/g’l-/ and the emergence of the alveolopalatal lateral */X/ from these sources in Western Romance. According to his proposal, these sequences first evolved into */-kʎ-, -gʎ-/, after which both velar consonants would have eroded due to lenition until they finally disappeared, leaving */ʎ/ as a result in intervocalic position (cf. (3) above). Wireback centers his proposal basically on two arguments: (i) after the syncope of /û/, /k/ and /g/ (from */-k’l-, -g’l-/) most likely would not have been in coda position, but would have resyllabified with the following lateral and formed the acceptable syllable onsets in Latin, /kl/ and /gl/ (1997:70):

(...) it is unclear why /k/ and /g/ should become syllable final after syncope. Before syncope, the initial syllable structure of the Romance sequence in OCULU ‘eye’ would be /o-ku-lu/, with the velar consonant in the syllable onset. After the syncope of the unstressed /u/ produces */o-ku-lu/, the /k/ cannot remain in its original onset position now that its vocalic nucleus has been lost. At this point, the stranded /k/ must be reassigned to the preceding syllable as a coda, or become part of the following syllable onset along with /l/. From the existence of words like CLAVIS ‘key’, CLAVUS ‘nail’, and GLANS ‘acorn’, we know that /kl/ and /gl/ were possible syllable onsets in Latin, so it is likely that Romance */k’l/ and */g’l/ were syllabified in the same way.

It is misleading to say that the /k/ remained in syllable-final position after syncope, because before syncope /k/ was syllable initial, and immediately after syncope it was not yet reincorporated into the syllable structure. Thus, both /ok-.lu/ and /o-klu/ must

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11 I acknowledge that the metathesis stage proposed by Rini (1991) remains controversial and his argument is not unanimously accepted in the literature.
be derived syllabifications, so if /k/ was to be syllabified in the syllable coda, it had to be according to existing Latin syllable-structure patterns.

And (ii) by assuming that word-initial /kl-/ and post-consonantal, word-medial /Ckl-/ both evolved into */kʎ/ (cf. §4.1.2.3), then the same evolution would necessarily need to be posited for /-k’l-, g’l-/.

Different mechanisms would then account for the different results of this putative */kʎ, gʎ/ throughout the Romance languages, namely, obstruent spirantization in intervocalic position and delateralization of */ʎ/ in word-initial and word-medial, postconsonantal position:

Using Latin /kl/ and Romance /k’l/ as examples, since the palatalization of /kl/ and /k’l/ to [kʎ] produced a heavy onset cluster in articulatory terms, a simplification of some sort was likely; the role of obstruent lenition was to provide the pattern that cluster reduction would follow. In weak contexts like word-medial intervocalic position, obstruent spirantized and was eliminated, leaving */ʎ/. In strong contexts like word-initial or post-consonantal position, the word boundary or preceding consonant supported the obstruent, thereby imposing some degree of simplification upon the lateral, e.g. delateralization to /j/ followed by fusion with the obstruent to /č/ [= tʃ] (Repetti and Tuttle 1987:54-69).

Wireback (1997:81-82), then, proposes a series of four stages for the evolution of Romance /-k’l-, -g’l/, namely:

(i) regular intervocalic palatalization: /k’l/ → [kʎ], /g’l/ → [gʎ];

(ii) extension of this palatalization to postconsonantal clusters in Hispano-Romance: /Ck’l/ → [Ckʎ], /Cg’l/ → [Cgʎ];

(iii) voicing of intervocalic Romance clusters: [kʎ] → [gʎ]; and

(iv) merger of [gʎ] (< /k’l, g’l/) with ʎ (< /lj/): [gʎ] > */ʎ/.
A few problems are at hand with Wireback’s proposal for /kʎ/, gʎ/ as an initial development in both Western and Eastern Romance. For example, word-initial /kl-, gl-/ and word-medial, postconsonantal /-Ck’l-, -Cg’l-/ never palatalized in Gallo-Romance varieties such as French and Catalan, e.g. clave > French clé, Catalan clau ‘key’; masculu > French mâle, Catalan mascle ‘male’. If one accepts Wireback’s proposal, then one would also need to suggest the emergence of *[kʎ-, gʎ-, Ckʎ-, Cgʎ-] in these dialects and then posit an additional ad hoc mechanism of depalatalization, whereby these sequences mysteriously would have gone back to their original state, i.e. [kl-, gl-, Ckl-, Cgl-] > *[kʎ-, gʎ-, Ckʎ-, Cgʎ-] > [kl-, gl-, Ckl-, Cgl-]. Given the available evidence, these additional steps of an initial /kl-, gl-, Ckl-, Cgl-/palatalization and then a subsequent /ʎ/-depalatalization in the history of the aforementioned languages would seem counterintuitive and very unlikely. Foreseeing this criticism, Wireback argues that the reason why Latin initial /kl-, gl-/ did not palatalize in Gallo-Romance varieties is because word-medial /Ckl-, Cgl-/ never palatalized either, therefore the latter could “not transmit the palatalized variants to the Latin groups” (Wireback 1997:87), although he fails to explain why the latter did not palatalize in Gallo-Romance in the first place. Furthermore, Wireback’s account does not convincingly explain the fact that in some varieties of Eastern Romance, such as Italian and Rumanian, the intervocalic voiceless sequence /-k’l-/ palatalized into */kʎ/ (e.g. auric(U)la > Italian *ore[k.kʎ]o > ore[k.kj]o, Rumanian *ure[kʎ]e > *ure[kj]e > ure[tʃ]e ‘ear’), but the intervocalic voiced sequence /-g’l-/ remained unchanged or never even emerged (e.g. teg(U)la > Italian te[go]l’a, Rumanian tî[gl]ă ‘roof tile’). In order to explain such a disparity between voiceless and
voiced consonants, the author invokes Torreblanca’s (1990) theory of articulatory energy, according to which the “principal cause of palatalization is a high level of articulatory energy, and voiceless consonants presuppose a higher level of articulatory energy than voiced consonants” (Wireback 1997:83). However, if a high level of articulatory energy is assumed as a phonetic motivation for the palatalization of voiceless obstruent + lateral sequences, then Wireback’s proposal of */g’l/-palatalization into /gʎ/ in Western Romance lacks its own phonetic motivation. In sum, the author’s account reveals itself circular in nature and leaves several questions unanswered. Moreover, by stipulating the reconstructed stages */-kʎ-, -gʎ/- and */Ckʎ, Cgʎ/ for necessarily both Western and Eastern Romance, it ends up having to resort to ad hoc mechanisms that are difficult to motivate and are unwarranted based upon available, comparative data.

The most accepted theory of velar obstruent vocalization in the intervocalic sequences */-k’l-, -g’l/- by Menéndez Pidal (1950) and others still proves to be the simplest and most direct change pattern toward the development into ʎ₁ in Western Romance. Assuming that degrees of lenition, such as obstruent voicing and spirantization, eventually affected obstruents in postvocalic environments in this language family (e.g. Latin patre > Spanish padre ‘father,’ duplare > Spanish doblar, Lloyd 1987:212), it is conceivable that at some point */-k’l/- (< -cul-) voiced into *[-g’l-] and then followed the course of the coetaneous */-g’l/- (< -gul-) in Western Romance, i.e. spirantizing into *[ɣ₁] and eventually vocalizing into *[j₁]. Alternatively, assuming that both velars remained in coda position, it may also have been the case that both may have neutralized into *[ɣ], in the same spirit as voiced stop codas in current Spanish, e.g.

Be that as it may, the palatalization of /-k’l-/ and /-g’l-/ and their evolution into /ʎ/ becomes more credible if one accepts Rini’s (1991) argument for a metathesis of yod after the velar obstruent vocalization in those consonant groups, since palatalization of /l/ would be more easily warranted by a following /j/ than by a preceding one, and also because /-k’l-, -g’l-/ present the very same evolutionary result as spoken Latin /-lj-/ in Western Romance. The question whether /-k’l-, -g’l-/ should or should not have syllabified as an onset (i.e. /-kl-, -gl-/) after the syncope of /-ǔ-/ (instead of /k/ and /g/ becoming part of the preceding syllable’s coda and then vocalizing to a yod), will depend essentially upon scholars’ assumptions on whether intervocalic -CL- and -GL- (<-CUL- and -GUL-, cf. Appendix Probi OCULUS NON OCLU) should necessarily have had the exact same pronunciation as word-initial CL- and GL- (cf. Latin CLAVE ‘key,’ GLANS ‘acorn’). In other words, it may have been the case that the velar consonants of word-initial CL- and GL- were pronounced as stops, while the velar consonants of intervocalic -CL- and -GL- already had a weakened pronunciation of some sort, in a similar fashion as contemporary Spanish. For example, in Spanish, orthographic <gl> may appear word-initially or between vowels (e.g. glándula ‘gland’ and regla ‘rule’), but speakers from most dialects pronounce it differently according to each context: [gl] word-initially, but [yl] between vowels (i.e. [glândula], but [réyla], respectively), even though both sequences are acceptable syllable onsets. In the particular development of Romance /-k’l-, -g’l-/ > *[γ.l], however, it may have been the case that the weakening of *[γ] was in such an advanced stage, that speakers could no longer resyllabify it with the following [l]. As
complex onsets tend to be formed by consonants that are maximally different in sonority (e.g. a voiceless stop [k] and an alveolar lateral [l]), an extremely reduced [ɣ] would have made the difference in sonority with the following [l] not great enough, hence disfavoring a potential consonant cluster with the lateral. Moreover, traces of the intervocalic vowel from the original sequences -CUL- and -GUL- may still have surfaced phonetically, instead of disappearing altogether as orthographic ‘OCLU’ might suggest. Therefore, this may have prevented speakers from syllabifying the weakened velar with the following lateral, in a hypothesized phonetic sequence such as *[ɣ".l]. Following the subsequent vocalization of the velar approximant and the disappearance of the remaining vocalic segment, the emergent palatal glide [j] remained in coda position (i.e. [-j.l-]), eventually metathesizing with the following lateral (i.e. [-j.l-] > [-lj-]).

The fact that intervocalic -CL- and -GL- consistently evolved into /ʎ/ in Western Romance, while word-initial CL- and GL- present a very complex and widely varied evolution in this set of languages (see §4.2.2.1) leads one to conclude that (i) the evolutionary pattern of the former probably occurred much earlier than that of the latter due to contextual factors, namely, one would more likely expect weakening to occur in word medial, intervocalic position than in word-initial position; and (ii) Western Romance /-k’l/- and /-g’l/- may not have had necessarily the same pronunciation as Latin /kl/- and /gl-/. This motivates the hypothesis that /-k’l/- and /-g’l/- may indeed have vocalized into [-j.l-] due to an advanced stage of obstruent weakening in Western Romance. In Eastern Romance, however, the lack of velar lenition motivated /-k’l/- and /-g’l/- to resyllaby as [-kl-] and [-gl-] and thus present the same pronunciation as word-
initial /kl-/ and /gl-/.

Therefore, reconstructions such as OC(∪)LU: o[k’l]o > *o[y’l]o > *o[ŋl]o > *o[ŋl]o > o[ʎ]o ‘eye’ represent the pattern that will be assumed in the formal analysis presented further in this dissertation (cf. Chapter 6).

4.2.2 Second-stage /ʎ/ (ʎ2)

4.2.2.1 /pl-, kl-, fl-/

One of the most complex—and difficult to resolve—problems in the historical phonology of Spanish and its related Romance languages represents the evolution of the Latin initial groups /pl-, kl-, fl-/ (e.g. Ariza 2012:113-118; Reppetti & Tuttle 1987; Wireback 1997:57-92). As will be discussed, the complexity of their development stems from the multiple different evolutionary pathways that they have followed in the history of the Romance languages and their various dialects. Moreover, many times even within the history of a single language, /pl-, kl-, fl-/ may present distinct results. Therefore, in the discussion that follows, I present comparative data from several Romance languages, but focus on the development of these initial consonant groups in Ibero-Romance and the explanations that have been proposed for them in the literature. The information in (8), modified from Ariza (2012:113) (after Lausberg 1965), exemplifies some of the different evolutionary results of Latin /pl-, kl-, fl-/ across modern Western and Eastern Romance languages:
(8) Evolution of /pl-, kl-, fl-/ across some Eastern and Western Romance languages:

<table>
<thead>
<tr>
<th>LATIN</th>
<th>/pl-/</th>
<th>/kl-/</th>
<th>/fl-/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rumanian</td>
<td>pl</td>
<td>kj</td>
<td>fl</td>
</tr>
<tr>
<td>Italian</td>
<td>pj</td>
<td>kj</td>
<td>fj</td>
</tr>
<tr>
<td>Sardinian</td>
<td>pr</td>
<td>kr</td>
<td>fr</td>
</tr>
<tr>
<td>French</td>
<td>pl</td>
<td>kl</td>
<td>fl</td>
</tr>
<tr>
<td>Catalan</td>
<td>pl</td>
<td>kl</td>
<td>fl</td>
</tr>
<tr>
<td>Aragonese</td>
<td>pl</td>
<td>kl</td>
<td>fl</td>
</tr>
<tr>
<td>Ribagorzan</td>
<td>pl ʃ</td>
<td>kl ʃ</td>
<td>fl ʃ</td>
</tr>
<tr>
<td>Leonese</td>
<td>pr</td>
<td>kr</td>
<td>fr</td>
</tr>
<tr>
<td>Spanish</td>
<td>ʎ</td>
<td>ʎ</td>
<td>ʎ</td>
</tr>
<tr>
<td>Galician</td>
<td>tʃ</td>
<td>tʃ</td>
<td>tʃ</td>
</tr>
<tr>
<td>Portuguese</td>
<td>ʃ</td>
<td>ʃ</td>
<td>ʃ</td>
</tr>
</tbody>
</table>

As illustrated in (8), the Latin sequence /kl-/ evolved into /kj-/ in Rumanian, while /pl-, fl-/ remained unchanged. However, in French, Catalan and Aragonese all three sequences suffered no alterations, while the lateral consonant of these groups vocalized in Italian and rhotacized in Sardinian and Leonese. In Ribagorzan, the obstruent remained unchanged while the lateral palatalized into /ʎ/. On the other hand, in Galician the three sequences developed into the affricate /tʃ/, while in Portuguese they eventually gave rise to the sibilant fricative /ʃ/ (< /tʃ/ in Old Portuguese) and in Spanish they evolved into the alveolopalatal lateral /ʎ/ (i.e. ʎ2). The data in (9) illustrates their evolution into /ʎ/ in a few Spanish words:
(9) Evolution of Latin /pl-, kl-, fl-/ into Spanish /ʎ/:

PLAGA > … [ʎ]aga ‘wound’
PLANU > … [ʎ]ano ‘flat’
PLANCTU > … [ʎ]anto ‘lament’
PLENU > … [ʎ]eno ‘full’
PLICARE > … [ʎ]egar ‘to arrive’
PLORARE > … [ʎ]orar ‘to cry’
PLUVIA > … [ʎ]uvia ‘rain’
CLAMARE > … [ʎ]amar ‘to call’
CLAUSA > … [ʎ]osa ‘enclosed field’
CLAVE > … [ʎ]ave ‘key’
FLAMMA > … [ʎ]ama ‘flame’
FLACCIDU > … [ʎ]acio (later lacio) ‘lank’
FLORETU > … [ʎ]redo (toponym)

The data in (10), on the other hand, exemplify how Latin /pl-, kl-, fl-/ evolved into Galician and Old Portuguese /tʃ/ and then Portuguese /ʃ/:

(10) Evolution of Latin /pl-, kl-, fl-/ into Galician and Old Portuguese /tʃ/ and Portuguese /ʃ/:

PLAGA > … [tʃ]aga > [ʃ]aga ‘wound’
PLENU > … [tʃ]eio > [ʃ]eio ‘full’
PLICARE > … [tʃ]egar > [ʃ]egar ‘to arrive’
PLORARE > … [tʃ]orar > [ʃ]orar ‘to cry’
PLUVIA > … [tʃ]uvia > [ʃ]uvia ‘rain’
CLAMARE > … [tʃ]amar > [ʃ]amar ‘to call’
CLAVE > … [tʃ]ave > [ʃ]ave ‘key’
FLAGRAT > … [tʃ]eira > [ʃ]eira ‘smells’
FLAMMA > … [tʃ]ama > [ʃ]ama ‘flame’

Although the main goal of this section is to explain how Latin /pl-, kl-, fl-/ could have begotten such different sounds as /ʎ/ and /tʃ/ (>). /ʃ/) in two so closely related languages like Spanish and (Old) Portuguese, it is worth pointing out that by no means were /ʎ/ and
the only evolutionary results of the aforementioned Latin groups. In many Spanish words, they have remained unchanged, such as in (11), while in Portuguese the lateral consonant rhotacized in many words or remained intact in others, as shown in (12):

(11) Latin /pl-, kl-, fl-/ > Spanish /pl-, kl-, fl-/:
PLICARE > plegar ‘to fold’
PLAGA > playa ‘beach’
PLATEA > plaza ‘town square’
PLANGERE > plañir ‘to wail’
PLACITU > plazo ‘term, period’
PLUMBU > plomo ‘lead’
CLAVU > clavo ‘nail’
CLAVICULA > clavija ‘peg’
CLARU > claro ‘clear, light’
FLACCUS > flaco ‘thin’
FLORE > flor ‘flower’
FLUXU > flojo ‘weak’

(12) Latin /pl-, kl-, fl-/ > Portuguese /pr-, kr-, fr-/ or /pl-, kl-, fl-/:
PLAGA > praia ‘beach’
PLATEA > praça ‘town square’
PLANGERE > planger ‘to wail’
PLACITU > prazo ‘term, period’
CLAVU > cravo ‘nail’
CLAVICULA > cravelha ‘peg’
CLARU > claro ‘clear, light’
FLACCUS > fraco ‘weak, loose’
FLORE > flor ‘flower’
FLUXU > frouxo ‘weak’

Many have been the attempts to account for the evolution of Latin /pl-, kl-, fl-. In regard to the words that still preserve these consonant groups, some authors have proposed that they represented “learned words” (i.e. cultismos) that were probably introduced in
Spanish and Portuguese at a time when the early evolution into /ʎ/ and /ʃ/ (> /ʃ/), respectively, had already crystalized in popular words. This argument is based on the existence of word pairs that reveal the same Latin root, but present a different evolution, e.g. Spanish *plano vs. *llano (< PLANU), *pleno vs. *lleno (< PLENU), etc. Although this explanation seems likely, it is difficult to maintain it for every single word that does not present the evolution of /pl-, kl-, fl-/ into /ʎ/ or /ʃ/ (> /ʃ/). For example, many of the words that still preserve the original Latin consonant groups in Spanish and Portuguese very likely belonged to the everyday vocabulary of speakers, instead of being “learned” by them at a later time, e.g. *flor ‘flower’, *plaza ‘town square’, etc. Additionally, the fact that these words do not have a “learned” counterpart with initial /ʎ/ (i.e. *llor, *llaza, etc.) represents further evidence that they may have indeed belonged to popular speech since the early stages of Proto-Spanish and Proto-Portuguese. Nevertheless, the evolution of Latin /pl-, kl-, fl-/ into /ʎ/ in some words of Spanish and into /ʃ/ in some words of Old Portuguese still requires an explanation and many scholars have attempted to provide it.

In light of the comparative evidence exemplified in (8) and the “exceptions” illustrated in (11) and (12), one must agree with Lloyd (1987:224) when he points out that the /pl-, kl-, fl-/ clusters appeared in a great variety of Latin words, which then gave rise to multiple results mirroring “a number of different linguistic forces (...) affecting their development.” Lausberg (1965:332-335), on the other hand, indicates that the lateral component of those clusters probably had a different pronunciation in some areas where Popular Latin was spoken, which then could have given rise to so many different evolutionary patterns. By considering the data from Italian and Rumanian (cf. (8)), Lloyd
suggests that such a “different pronunciation” was indeed a palatalized lateral, which initially resulted from the co-articulation between velar /k/ and the following lateral /l/. In other words, a palatal lateral would first have emerged from a compromised articulation located midway between the velar and the alveolar places of articulation. Given that in Rumanian only /kl-/ incurs some type of change—while /pl-/ and /fl-/ remain intact—, Lloyd (ibid.) and Repetti and Tuttle (1987:57) hypothesize an initial set of /pl-, kʎ-, fl-/ clusters, with the palatal lateral /ʎ/ of /kʎ/ later spreading to the other groups by phonetic analogy (cf. Tuttle 1975:407-408). Although the authors do not provide any concrete evidence for the proposed stage */kʎ/ in Spanish, they and other scholars (e.g. Ariza 2012:115) suggest that /pʎ-, fʎ-, kʎ-/ are still found in a variety of Aragonese, namely, the Upper Aragonese dialect, which is “known for its preservation of other archaic features” (Lloyd 1987:225). Indeed, Echenique Elizondo & Sánchez Méndez (2005:152) report the occurrence of such clusters in Medieval Upper Aragonese, in words such as pllano ‘plain’ (< PLANU), cllau ‘key’ (< CLAVE), fllama ‘flame’ (< FLAMMA), etc. In Modern Upper Aragonese, however, these pronunciations are only kept in the region of Ribargoza (cf. Ribargozan in (8)), while in other areas the lateral consonant tends to vocalize, e.g. [pʎ]orá > [pj]orá ‘to cry’ (Martín Zorraquino & Fort Cañellas 1996:300). Recently, Müller and Mota (2009) designed a study to test the palatalization of /l/ when preceded by plosive consonants, using experimental data from speakers of Catalan and Occitan. The authors recorded the subjects’ reading of two randomized word lists: one containing word-initial /pl-, bl-, kl-, gl-/ and another containing /pj-, bj-, kj-, gj-/.

Next, they extracted the first 20 milliseconds of the lateral
and the glide in each sequence and calculated the distance between their F2 and their F1 in order to determine the degree of ‘palatality’ of the lateral, under the assumption that the magnitude of F2-F1 is directly correlated with the degree of palatalization. Their results confirm the hypothesis that velar plosives favor /l/-palatalization in onset clusters more than labial plosives, as “velar + lateral and velar + yod clusters may resemble each other during the first few milliseconds of the sound (...). This could not be seen in labial + lateral clusters” (Müller & Mota 2009:1698). As for the articulatory patterns that produce /l/-palatalization in velar + lateral clusters, the authors hypothesize that velar plosives tend to undergo closure fronting during their release, which would account for the “palatalized acoustic structures in the first part of the lateral” (ibid.). The results from Müller and Mota’s (2009) study provide preliminary, experimental evidence for Lloyd’s (1987) and Repetti and Tuttle’s (1987) hypothesis, i.e. that /l/-palatalization first began when /l/ was preceded by velars and possibly spread later to preceding labials by analogy, as no phonetic evidence was found for the latter. This scenario is particularly revealing when one considers the comparative evidence in (8) and also from other dialectal areas of Italian (cf. Repetti & Tuttle 1987) and Occitan (cf. Müller 2001): the languages and dialects in which /pl-, fl-/ palatalize, so does /kl-, while the opposite is not true, i.e. the areas where /kl-/ palatalizes, one does not necessarily observe the palatalization of /pl-, fl-/, cf. Rumanian in (8)).

Once the original Latin clusters /pl-, kl-, fl-/ become */pʎ, kʎ, fʎ/, one needs to account for their subsequent distinct evolution. For example, in the next evolutionary stage of */pʎ, kʎ, fʎ/ into Old Spanish, Penny (2002:71) argues that the initial obstruent
consonants assimilated to the following /ʎ/ and were absorbed by it, although the author is not explicit as to how or why voiceless obstruents would ever assimilate to a resonant such as /ʎ/. Lloyd (1987:225), on the other hand, maintains that the obstruents in */pʎ-, kʎ-, fʎ-/* were simply dropped in Old Spanish due to the heavy articulatory nature of the clusters. Further evidence from documents of the 11th and the 12th centuries may present a more revealing explanation, which takes into account the process of obstruent lenition. Menéndez Pidal (1968:238), for example, cites cases of orthographic representations that indicate that the voiceless stops in /pl-/ and /kl-/ may have weakened their pronunciation by that period, e.g. *flausa < CLUSA*, *flano < PLANU*, *aflamare < ADCLAMARE*, etc. Indeed, Torreblanca (1990:319-24) points out confusion of CL- with FL- and PL- in Leonese (e.g. CLUSA > plosa, flausa, flosa), which leads him to propose that /kʎ-/* started to be first pronounced as [pʎ-]. Once /kʎ-/* changed to /pʎ-/*, Old Spanish would have the sequences /pʎ-, fʎ-/ from the original Latin /pl-, kl-, fl-/. Tuttle (1975:408-9), then, connects the simplification of /pʎ-, fʎ-/ into /ʎ-/* as part of—and in a similar fashion as—the general weakening and loss of word-initial /f-/. More precisely, the voiceless plosive /p/ first lenited into a bilabial fricative */ɸ/* and then into a glottal fricative /h/, which then coincided with the debuccalization of prevocalic initial /f-/, as in /f/] > /h/ > Ø (cf. FILIU > hijo ‘son’). Evidence for this proposed evolution of original /pl-/* is found in Leonese toponyms such as Hllantada, Hlantada (< Latin PLANTATA), where the <H> seems to suggest some kind of aspirated sound (Entwistle 1980:340; Torreblanca 1990:324-25). Wireback (1997:77) agrees with this explanation, but notes that the change of initial prevocalic /f-/* into */ɸ/* was the actual initiator of that of /f/] before /ʎ/: “(…) the extension
of [ɸ] (< /f/) aspiration from a prevocalic to a preconsonantal context before /ʎ/ triggered the loss of the initial obstruent in Spanish (…).” In sum, the evolution of Latin /pl-, kl-, fl-/ into Spanish /ʎ/ could be reconstructed as in (13):

(13) Reconstruction of Latin /pl-, kl-, fl-/ into Spanish /ʎ-/:

/pl-, kl-, fl-/ > /pl-, kl-, fl-/ > */pʎ-, kʎ-, fʎ- > */pʎ-, kʎ-, fʎ- > */ϕʎ- > */hʎ- > /ʎ-/ 

The overall lack of voiceless obstruent lenition in word-initial position in the history of Galician-Portuguese would account for the evolution of */pʎ-, kʎ-, fʎ- (< /pl-, kl-, fl-/) into Galician and Old Portuguese /tʃ-/ (> /ʃ-/ in Modern Portuguese). The presence of the obstruent before the alveolopalatal lateral would eventually have incurred a simplification of the latter into a yod, i.e. */pʎ-, kʎ-, fʎ- > */pj-, kj-, fj-/. Next, the coarticulation of /k/ + /j/ may have generated a palatalized sequence whose acoustic result resembled that of a postalveolar affricate [tʃ]. Assuming that */pj/ and fj/ followed the same pathway of /kj/ by analogy, we reach the unification stage of the three sequences as /tʃ/, which emerged as a phoneme in Galician and Old Portuguese. The data in (14) exemplify this proposed evolution:

(14) Latin /pl-, kl-, fl-/ > /tʃ/ in Old Portuguese:

CLAMARE > *[kʎ]amare > *[kj]amar > [tʃ]amar ‘to call’
CLAVE > *[kʎ]ave > *[kj]ave > [tʃ]ave ‘key’
Indeed, Repetti and Tuttle (1997:102-106) propose that the elimination of laterality in a cluster such as /kʎ-/ was due to a more fortis pronunciation in conservative areas of Western Iberia, whereas in Castile a lenis pronunciation entailed further deletion of the plosive and survival of the alveolopalatal lateral. Interestingly, however, both Spanish and Old Portuguese present the same evolution of original Latin clusters /pl, kl, fl/ to an affricate /tʃ/ when the former were found in word-medial position after a nasal consonant or the sibilant /s/. Illustrative examples are found in (15):

(15) Word-medial /pl, kl, fl/ preceded by a nasal consonant or /s/ change to /tʃ/ in both Spanish and Old Portuguese:

AMPLU > … an[tʃ]o ‘broad’
CONCLAVARE > … Spanish con[tʃ]abar, Old Portuguese con[tʃ]avar
IMPLERE > … Spanish hen[tʃ]ir, Old Portuguese en[tʃ]er ‘to fill’
(MACULA >) *MANCLA > … man[tʃ]a ‘stain’
INFRAE > … in[tʃ]ar ‘to inflate, swell’
MASCULU > … ma[tʃ]o ‘male’

Assuming that /pl, kl, fl/ in this case would also have developed initially into */pʎ, kʎ, fʎ/, Penny (2002:72) postulates that the consonant preceding the voiceless obstruents (i.e. a nasal in the majority of the cases) prevented them from weakening in Spanish. Being preserved in this phonetic context, the plosives then would have “devoiced the palatal lateral before being absorbed [by it].” Lloyd (1987:226), on the other hand, connects the emergence of the word-medial affricate /tʃ/ after a consonant to that of word-initial /tʃ/ in Old Portuguese. According to Lloyd, the /tʃ/ resulting from */Npʎ, Nkʎ, Nfʎ/ was generalized to all positions in Old Portuguese, “while Castilian continued to preserve the
palatal [ʎ] in initial position.” This argument, however, ignores the fact that Latin word-initial /pl-/ also gave rise to /tʃ-/ in a few Spanish words, which are treated here as exceptions. Illustrative examples of /pl-/ > /tʃ-/ in Spanish are given in (16):

(16) Word-initial /pl-/ evolving into /tʃ-/ in Spanish:

*PLATTU > … > [tʃ]ato ‘snub-nosed’
(POPULUS ›) *PLOPPU > … [tʃ]opo ‘black poplar’
PLUTEU > … [tʃ]ozo, whence [tʃ]oza ‘hut’

When taking into account the evolution of Latin /pl-, kl-, fl-/ into /tʃ/ in Western Iberia due to the lack of obstruent lenition (cf. (14)), the same development of these consonant clusters in word-medial position in Spanish and Old Portuguese becomes clearer to understand, i.e. the presence of a preceding consonant—particularly a nasal consonant—militates against the weakening of the obstruents in the sequences */Cpʎ, Ckʎ, Cfʎ/. With the preservation of these, the following alveolopalatal lateral eventually delateralizes and the clusters evolve in the same fashion as they did word-initially in Old Portuguese, resulting in the postalveolar affricate /tʃ/.

Despite the complexity of the different outcomes in the evolution of Latin /pl-, kl-, fl-/ across the Romance languages (cf. (8)), the development of these clusters into /ʎ/ is of utmost importance in the history of Spanish, since they represent some of the sources of ʎ₂. As will be discussed in §4.2.2.2, the emergence of this second alveolopalatal lateral merged with another /ʎ/ that originated from the palatalization of lateral geminate /lː/ in Old Spanish, to which we now turn.
As is well known, most Latin consonants also appeared in geminate forms. The different evolutionary pathways of the lateral geminate /lː/ illustrate yet another major difference in the development of consonant inventories within the Hispano- and Luso-Romance branches. For example, while /lː/ palatalized to /ʎ/ in most popular words of Old Spanish, it underwent degemination to an alveolar lateral /l/ in Old Portuguese, as shown in (17):

(17) Palatalization (Old Spanish) and degemination (Old Portuguese) of Latin /lː/:

ANELLU > anî[ʎ]o (OSp.), but ane[l] (OPort.) ‘ring’
BELLU > be[ʎ]o (OSp.), but be[l]o (OPort.) ‘beautiful’
CABALLU > caba[ʎ]o (OSp.), but cava[l]o (OPort.) ‘horse’
CAPILLU > cabe[ʎ]o (OSp.), but cabe[l]o (OPort.) ‘hair’
CASTELLU > casti[ʎ]o (OSp.), but caste[l]o (OPort.) ‘castle’
COLLU > cue[ʎ]o (OSp.) ‘neck’, but co[l]o (OPort.) ‘lap’
GALLU > ga[ʎ]o (OSp.), but ga[l]o (OPort.) ‘rooster’
STELLA > estre[ʎ]a (OSp.), but estre[l]a (OPort.) ‘start’
VALLE > va[ʎ]e (OSp.), but va[l]e (OPort.) ‘valley’

In (semi-)learned words, however, Spanish also presents cases of /lː/-degemination, such as VACILLARE > vacilar ‘to hesitate’, PELLICULA > película ‘film’ (cf. pelleja ‘sheepskin’). Ariza (1990:150, 2012:203) also cites /ld/ as yet another possible result from the evolution of /lː/ in Spanish, as observed in semi-learned words such as celda ‘cell’ (< CELLA, cf. Port. cela), and rebelde ‘rebel’ (< REBELLE). Ariza’s explanation for the latter evolution focuses on the claim that speakers would try to reproduce a lateral geminate [lː], but since they did not have it in their consonant inventory, a pronunciation
such as [ld] emerged due to an articulatory proximity between [d] and [l]. In word-medial and word-final position after syncope of the following vowel, /ʎ/ (< /lː/) depalatalizes into /l/, e.g. galgo ‘greyhound’ (< GallICu), cabALgAR ‘to ride a horse’ (< cabALLICARE), piel ‘skin’ (< pelle), mil ‘thousand’ (< mille).

As Ariza (2012:204) points out, the palatalization of Latin /lː/ is a relatively late phenomenon, as it took place in only a handful of Romance languages. Moreover, the fact that the evolution of /lː/ into /ʎ/ merges with that of Latin /pl-, kl-, fl-/ in Spanish (cf. section 4.2.2.1) provides us with a motivation to separate it chronologically from the earlier, pan-Romance /ʎ/ (i.e. ʎ1 in this dissertation). In fact, the alveolopatalal lateral /ʎ/ that emerges from the palatalization of Latin /lː/ seems to be a particular development of Spanish and a few other Ibero-Romance languages, such as Catalan and Aragonese, where, contrary to Spanish, the evolution of Latin /-lj-, -k’l-, -g’l-/ and /lː/ did merge into /ʎ/, cf. Catalan ore[ʎ]a ‘ear’ (< ORICLA) and estre[ʎ]a ‘star’ (< STELLA).12

Most attempts to explain the evolutionary paths of Latin /lː/ focus on its palatalization in Spanish, while they only describe its development in other languages. Lloyd (1987:243), for example, points out that /lː/ displayed a higher occurrence than other Latin voiced geminates (e.g. /mː/, /dː/ and /gː/), and argues that its palatalization—instead of degemination—in Spanish occurred in order to avoid confusion with many words that already contained simple [l]. In terms of phonetic motivation, Lloyd claims

12 Although it is not the focus of the present discussion, it is worth mentioning that Latin /lː/ followed yet another path in its evolution within the Hispano-Romance family. In some dialects of Western Leonese, for example, /lː/ evolved into a segment commonly transcribed as [th] or [tʃ] by Spanish authors and referred to as “la [th] vaqueira” (Ariza Viguera 1990:151; Echenique Elizondo & Sánchez Méndez 2005:397). Face (2008:119) lists this phonetic symbol as representing “a voiceless retroflex sound that has been described as apicopalatal (…), though based on other descriptions it appears to be alveopalatal rather than palatal.”
that the geminate character of /lː/ could have contributed for the tongue to spread out over a larger area of contact during its articulation: “Instead of greater duration [as is common with geminate consonants], the realization would then have a palatal quality which would be sufficient to distinguish the geminate from the simple counterpart.” Lloyd’s view echoes that of Straka (1979:305), whose explanation also hints at a phonetic palatalization in the realization of /lː/: “(…) las imágenes estomatológicas muestran nitidamente que una l enérgica da un contacto representando aproximadamente algo intermedio entre la l ordinaria y la l palatal.” In regard to the development of /lː/ in Old Portuguese, a functional motivation may help to explain its degemination into /l/. As is well known, Latin intervocalic /l/, as well as intervocalic /n/, were lost in the evolution of Portuguese, as illustrated in (18):

(18) Latin intervocalic /l/ and /n/ > Ø in Portuguese:
    SALIRE > saír ‘to leave’
    DOLORE > dor ‘pain’
    NEBULA > névoa ‘cloud’
    CALIENTE > quente ‘hot’
    CAELU > céu ‘sky’
    MANU > mão ‘hand’
    GERMANU > irmão ‘brother’
    CANES > cães ‘dogs’
    LANA > lã ‘wool’
    PERSONA > pessoa ‘person’
    TENERE > ter ‘to have’

According to a functional view, once the simple intervocalic /l, n/ were lost in Old Portuguese, then the intervocalic geminates /lː, nː/ were free to degeminate and replace the former as the new /l, n/. In regard to the Spanish data, a functional motivation seems
appropriate and complementary to the phonetic motivation for the palatalization of the
geminates /lː/ and /nː/, i.e. the retention of simple intervocalic /l/ and /n/ favored the
palatalization in the articulation of their geminate counterparts, which eventually evolved
into /ʎ/ and /ɲ/, respectively, e.g. a[n]o ‘year’ (< ANNU) vs. herma[n]o (< GERMANU) (cf.
also (17)). While theoretical accounts will be discussed in more detail in Chapter 6, it is
important to note for now that the evolution of ʎ₂ (< /pl-, kl-, fl-, lː/) proves fundamental
for the development of palatal consonants in the history of Spanish. This consonant, ʎ₂,
later incurred delateralization and began to merge with the voiced palatal obstruent /ɟ/ (cf.
section 4.3), giving rise to a phenomenon widely known as YEÍSMO in Modern Spanish
(cf. Chapter 5).

4.3 The evolutionary pathways of the palatal obstruent /ɟ/

Interconnected with the development of the two alveopalatal laterals in the history
of Spanish (i.e. ʎ₁ and ʎ₂) is the evolution of the palatal obstruent /ɟ/, which emerged
from various Latin sources, such as /j-, -dj-, -gj-, -jj-, gé-, gí-, é-/ . As will be discussed, in
Proto-Spanish this obstruent was realized phonetically probably as either a stop [j] or as
an affricate [ʃʃ] (Penny 2002:62-68). In Old Spanish, however, palatal /ɟ/ developed a
contextually-determined alternation between [j] (pronounced after nasals and word-
initially after a pause) and an approximant allophone [ʃ], pronounced elsewhere, mainly
in intervocalic position. Considering the phonetics of a palatal stop (cf. Chapter 3), it is
likely that /ɟ/ was actually realized as a palatal affricate [ʃʃ] word-initially and after a
nasal consonant. However, for ease of representation, the symbol [ʃ] will be used
throughout this chapter to represent the overall realization of /j/ in the respective phonetic contexts. In §4.3.1, I discuss the development of Latin initial /j-/ while in §4.3.2 I detail the evolution of Latin /-dj-, -gj-, -j-/ . Section 4.3.3 summarizes the evolution of Latin /gé-, gí-, é-/. As in the development of /ʌ₁/ and /ʌ₂/, I review the main accounts that have been proposed in the literature and mention divergent cases, particularly in regard to the segments /dʒ/ and /ʒ/, which arose in the evolution of other Romance languages instead of /j/.

4.3.1 /j-/  

As mentioned in §4.1.1, a non-syllabic vocoid [j] (yod) emerged early in Latin from different sources. One of them was a reduction in hiatuses, in which atonic /i/ and /e/ were pronounced as [j]. As Penny (2002:62) points out, word- and morpheme-initial /i/ is believed to have been pronounced [j] since Early Latin, in words such as *IANUARIUS* ‘January’ and *CONIUGES* ‘spouse.’ This glide soon incurred fortition and consonantized in different degrees of friction throughout the Romance languages, as exemplified in (19):

(19) Consonantization of Latin /j-/ in Italian, Portuguese, and French respectively:

<table>
<thead>
<tr>
<th>Latin</th>
<th>Italian</th>
<th>Portuguese</th>
<th>French</th>
</tr>
</thead>
</table>
| [j]OVIS (-DIE) | [dʒ]ovedi | … | [ʒ]eudi | ‘Thursday’  

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As the data in (19) shows, the degree of friction that Latin /j-/ incurred was so high in many of the Romance languages that it evolved into a sibilant affricate /dʒ/ or a sibilant fricative /ʒ/. Early attestation of some kind of fricativization of /j-/ is found in Popular Latin misspellings such as ZANUARIO ‘January’ (< IANUARIO), ZIACONUS ‘deacon’ (< DIACONUS), OZE ‘today’ (< HODIE), SUSTUS ‘just, fair’ (< IUSTUS) (Penny 2002:62; Alkire & Rosen 2010:61). However, in other areas and languages, the degree of friction of Latin /j-/ varied. In the evolution from Hispanic Latin to Proto- and Old Spanish, for example, /j-/ increased its degree of palatal constriction and fronted its articulation, evolving into a sibilant fricative /ʒ/ in most words, although a palatal plosive /ɟ/ also emerged in fewer cases, in which it has been preserved until the present day.13 The data in (20) and (21) illustrate these two evolutionary patterns, respectively:

(20) Latin /j-/ > … Old Spanish /ʒ/:  

[j]OCU > … [ʒ]uego ‘game’
[j]OVIS (-DIE) > … [ʒ]ueves ‘Thursday’
[j]UDAEU > … [ʒ]udio ‘Jewish’
[j]UDICE > … [ʒ]uez ‘judge’
[j]USTU > … [ʒ]usto ‘just’
[j]UNIU > … [ʒ]uño ‘June’
[j]UNCTU > … [ʒ]unto ‘joined’
[j]URARE > … [ʒ]urar ‘to swear’
[j]UVENE > … [ʒ]oven ‘young’

---

(21) Latin /j-/ > Old and Current Spanish /ɟ/:  

<table>
<thead>
<tr>
<th>Latin</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>[j]AM</td>
<td>[j]a ‘already’</td>
</tr>
<tr>
<td>[j]ACET</td>
<td>[j]ace ‘he lies’</td>
</tr>
<tr>
<td>[j]UGU</td>
<td>[j]ugo ‘yoke’</td>
</tr>
<tr>
<td>[j]UNCTA</td>
<td>[j]unta ‘yoke of oxen’</td>
</tr>
</tbody>
</table>

With very few exceptions (i.e. [j]ugo ‘yoke’ and [j]unta ‘pair of oxen’), the data in (20) and (21) reveal two general patterns in the evolution of Latin /j-/ in Spanish: (i) it evolves into the palatal plosive /ɟ/ before the non-back vowel /a/, and (ii) it eventually develops into /ʒ/ before back vowels, mainly /u/. To these two evolutionary patterns one must add a third evolution, i.e. Ø, when /j-/ is found before front vowels /i, e/, as in enero (< IA-, IENUARIU) ‘January’, echar (< IA-, IECTARE) and enebro (< *IEN[i/E]PERU) ‘juniper,’ etc. While the change of /j-/ into /ʒ/ reflects a straightforward case of fortition (in this case, an increase of constriction) in the pronunciation of the original Latin glide, the evolution of /j-/ into the sibilant /ʒ/ before back vowels is more complex, as the words that displayed this segment eventually merged with the words that presented /ʒ/ from the evolution of θ1, e.g. MULIERE > mu[θ]er > … > Old Spanish mu[ʒ]er (> Medieval Spanish mu[ʃ]er > Modern Spanish mu[x]er) ‘woman’ and IOCU > [ʒ]uego (> Medieval Spanish [ʃ]uego > Modern Spanish [x]uego) ‘game’. For this reason, the emergence of /ʒ/ in the history of Spanish deserves a separate discussion, which is the goal of §4.4. For now, it is important only to keep in mind this special development of Latin /j-/. Therefore, I will focus here on the evolution of /j-/ into the plosive /ɟ-/ , since its results merged with those of Latin /-dj-, -gj-, -jj- (and subsequently with those of θ2, cf. Chapter 5).
4.3.2 /-dj-, -gj-, -jj-/  

In word-medial position, Latin intervocalic /-dj-, -gj-, -jj-/ also evolved into a palatal /j/ in the history of Spanish. More specifically, the voiced dental stop in /-dj-/ and the velar stop in /-gj-/ are believed to have been palatalized in spoken Latin and merged with intervocalic /-jj-/ , which presumably already had a strong articulation and was believed to be realized as a palatal plosive [j] (Penny 2002:64). The three sequences /-dj-, -gj-, -jj-/ evolved then into the palatal obstruent /j/ in Proto-Spanish and merged with the /j/ from Latin initial /j-/ , e.g. IACET > [j]ace ‘he lies’ (cf. §4.3.1). In intervocalic position, however, /j/ developed an approximant allophone [ʝ] in Old Spanish, represented by the graphemes <y> and <i> in historical documents. The data in (22) illustrates these series of changes:  

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14 Notice that, while /-dj-, -gj-, -jj-/ are the main intervocalic sources of the obstruent /j/, Ariza (2012:130-131) also cites a few cases where of this consonant emerged from the palatalization of /-bj-/ , e.g. HABEAT > haya ‘there to be, 3rd person-subjunctive’ and FOVEA > hoya ‘hole, pit’. However, it is more common that /-bj-/ is preserved as such, cf. rubio ‘blond’, labio ‘lip’, lluvia ‘rain’, etc. This variation is not seen with the groups /-dj-, -gj-, -jj-/ , which palatalize across the board. Ariza adds, “Lo ‘normal’ es la conservación [of /-bj-/], y solo en contadas ocasiones encontramos la palatalización” (ibid.). Thus, it is possible to hypothesize that /-dj-, -gj-/ are more frequently palatalized into /j/ , as the dental and velar stops share the same articulator (i.e. the tongue) with the palatal glide, as opposed to /-bj-/ , which presents two segments with different articulators (i.e. the lips for /b/ and the tongue for /j/).  

15 Alvar et al. (1995:221) point out that a similar palatalization of /-dj-/ is observed in current varieties of Andalusian Spanish, e.g. sacuyendo for sacudiendo ‘shaking’ in Berméz, Córdoba.
(22) Latin [-dj-, -gj-, -jj-] > [-j-] in Proto-Spanish and [j] in intervocalic position in Old Spanish:

PODIU > Proto-Sp. po[j]o > Old Sp. po[j]o ‘hill, bench’
RADIARE > Proto-Sp. ra[j]ar > Old Sp. ra[j]ar ‘to scratch, score’
EXAGIU > Proto-Sp.ensa[j]o > Old Sp. ensa[j]o ‘essay’
FAGEA > Proto-Sp. fa[j]a > Old Sp. fa[j]a (later ha[j]a) ‘beech tree’
MAIU > Proto-Sp. ma[j]o > Old Sp. ma[j]o ‘May’
MAIORE > Proto-Sp. ma[j]ore > Old Sp. ma[j]or ‘greater’

However, Alarcos Llorach (1954:337) correctly points out that the same result did not occur in Spanish when the aforementioned Latin sound was preceded by a palatal vowel. In this case, the palatal obstruent seems to have been dropped in Old Spanish, as observed in words such as corre < CORRIGIA ‘strap’, fastio < FASTIDIU ‘boredom’ (hastio in contemporary Spanish), peor < PEIORE ‘worse,’ etc. In this case, it is possible to hypothesize that a preceding palatal vowel may offer a phonetic motivation for the likely “drop” of the following palatal obstruent, which would have weakened until it disappeared, as illustrated in (23):

(23) Latin /-dj-, -gj-, -jj-/ > */-j-/ > Ø / V_pal____ in Old Spanish:

CORRIGIA > *corre[j]a, *corre[j]a > *corre[j]a > corre ‘strap’
(cf. Portuguese corre[j]a)
PEIORE > *pe[j]or, *pe[j]or > *pe[j]or > peor ‘worse’
It is worth noting that a similar development of /j/ is also observed in words of Judeo-Spanish and other contemporary Spanish varieties, e.g. estrea (< estrella) ‘star’, cae (< calle) ‘street’, ea (< ella) ‘she’, among others, as will be discussed in Chapter 5.

4.3.3 /gé-, gí-, ě-/  
When found in initial stressed syllable, a voiced velar stop /g/ followed by a front vowel developed into a palatal plosive /ɟ/, mirroring the evolution of /j-, -dj-, -gj-, -jj-/.

Additionally, the emergence of a word-initial glide [j-] deriving from the diphthongization of the Latin open-mid front vowel /ě/ also became a non-continuant /j/ in Old Spanish. Illustrative examples are given in (24):

(24) Latin /gé-, gí-, ě-/ > /j-/ in Old Spanish.\textsuperscript{16}

\begin{itemize}
  \item GENERU > [j]erno ‘son-in-law’
  \item GELAT > [j]ela ‘frezzes’
  \item GEMMA > [j]ema ‘yoke’
  \item GENTE > [j]ente ‘people’
  \item GYPSU > [j]esso ‘plaster’
  \item EQUA > [j]egua > [j]egua ‘mare’
  \item HERBA > [j]erba > [j]erva ‘grass’
\end{itemize}

In unstressed syllables, however, */j-/ (< /ge-, gi-/) was later dropped in its evolution into Modern Spanish, as evidenced in (25)\textsuperscript{17}:

\textsuperscript{16} In learned words (cultismos), /gé-, gi-, ě-/ developed into /j/ in Old Spanish, e.g. [j]emir ‘to moan’, [j]enio ‘genius’, [j]ente ‘people’, etc.

\textsuperscript{17} Words such as iermano ‘brother’ from Old Spanish, jermanos, iermanos, giermanis ‘brothers’ from Leonese, and yenair ‘January’ from Mozarabic (Lloyd 1987:248), in addition to the data in (26), support the reconstruction of the palatal plosive [j] at this stage in Old Spanish.
(25) Latin unstressed /ge-, gi- > */j-/ > Ø in Modern Spanish:

GERMANU > *[j]er mano > (h)er mano ‘brother’
GELARE > *[j]el ar > (h)el ar ‘to freeze’
GENESTA > *[j]i niesta > (h)iniesta ‘broom plant’
GINGIVA > *[j]en cia > encia ‘gums’

The Spanish data in (24) and (25) contrast with the resulting postalveolar fricative /ʒ/ and affricate /ɕ/ in words of other Romance languages, such as Italian, Portuguese, and French, as illustrated in (26):\(^\text{18}\)

(26) Latin /gɛ-, gj-/ and /ge-, gi-/ > Italian /dʒ/, Portuguese and French /ʒ/, respectively:


Other Romance languages, however, preserved the palatal segment (arguably /j/) from Latin /ge-, gi-/, as in Old Leonese yermanos, jermanos, iermanos [jermános] ‘brothers’ (< GERMANUS) (Zamora Vicente 1967:36).

Penny (2002:67) hypothesizes that the loss of the initial palatal obstruent /j/ when found in unstressed syllable during its evolution from Old to Modern Spanish may be due to a possible analogy with Latin unstressed, close mid-front vowel /e/, which did not diphthongize into /je/ as did the stressed, open mid-front vowel /ɛ/. Since /jɛ/ (from the diphthongization of /ɛ/ and from the palatalization of /ɡɛ/) appeared exclusively in

\(^{18}\) Although some Portuguese words do present variation in their evolution of Latin unstressed /ge-, gi-/ and stressed /gê-, gi-/, cf. [i]rmão ‘brother’ (< GERMANU), but [ʒé]lo ‘ice’ (< GELUM).
stressed position, Old Spanish words with unstressed /je/ such as *yenero* ‘January’ (< IE-, *ianuariu*) and *yermano* ‘brother’ (< GERMANU) would have sounded unfitting to speakers, who then regularized the sequence /je/ with its counterpart /e/, i.e. *yermano* > *ermano* (later *hermano*), *yenero* > *enero*, etc. Although an analogical motivation for the deletion of /j/ in this context seems plausible, so does a phonetic motivation. For example, it is conceivable that the yod in /je/ (< Latin /j/, e.g. IE-, *ianuariu*) and the palatal plosive /ʒ/ from the palatalization of /ge-/ may have weakened for being in an unstressed position within the word, and the fact that they were followed by a palatal vowel only contributed to their further monophthongization into /e/. Be it as it may, in light of the data presented, it is clear that stress has played a contributing role in the evolution of this segment in the history of Spanish. While acoustic cues of /j/ were recovered by the listener in word-initial stressed syllables, the same cannot be said for word-initial unstressed syllables, which are perceptually weaker (as formalized further in Chapter 6). In languages such as Italian, French and Portuguese, on the other hand, a stronger pronunciation led to the palatalization of Latin /j-, gē-, ge-, gi-/ in the form of a sibilant affricate /dʒ/ or fricative /ʒ/, which, due to their high intensity frication, are more perceptually salient than /j/. Both sibilants, then, offered more possibility for the listener to recover their acoustic cues in either stressed or unstressed word-initial position, hence accounting for why they did not “disappear” in word-initial unstressed syllables of most words, as did /j/ in Old Spanish.
4.4 The evolution of /ʒ/ in Old Spanish

4.4.1 Latin /j-/ > … Old Spanish /ʒ/

The emergence of the palatal sibilant fricative /ʒ/ plays a crucial role in the development of Spanish (alveolo)palatal sounds because its sources derive from the evolution of ʎ as well as from most of the Latin words with initial /j-/.

In regard to the latter, as mentioned in §4.3.1, Old Spanish /ʒ/ arose from word-initial Latin /j-/ when followed by back rounded vowels—mainly /u/—, as illustrated in (27) (while the non-sibilant palatal plosive /ʝ/ emerged before /a/ (cf. (21)):

(27) Latin /j-/- / ___V_[+round] > … Old Spanish /ʒ/:

[j]OCU > … [ʒ]uego ‘game’
[j]OVIS (-DIE) > … [ʒ]ueves ‘Thursday’
[j]UDEAU > … [ʒ]udio ‘Jewish’
[j]UDICARE > … [ʒ]uzgar ‘to judge’
[j]UDICE > … [ʒ]uez ‘judge’
[j]UNCU > … [ʒ]unco ‘cane; reed’
[j]USTU > … [ʒ]usto ‘just, fair’
[j]UNIU > … [ʒ]uño ‘June’
[j]UNCTU > … [ʒ]unto ‘joined’
[j]URARE > … [ʒ]urar ‘to swear’
[j]UVENE > … [ʒ]oven ‘young’

The same segment /ʒ/, or its affricate counterpart /dʒ/, emerged in other Romance languages, such as French, Portuguese, and Italian, regardless of the following vowel’s quality, as shown in (28):
While the evolution of Latin /j/- into /ʒ/ in French and Portuguese, and into /ʁʒ/ in Italian, is very consistent, the scenario in Spanish is more complex. In order to distinguish both evolutionary pathways /ʒ/ and /ʁj/ from Latin /j/-, Lloyd (1987:250-252) presents two different accounts. In agreement with Malkiel (1976), Lloyd argues that examples with /ʒ/, such as those in (27), reflect cases of learned words, since several of them belong to the area of justice and administration. Moreover, he points out that the existence of doublets in Old Spanish, such as yunta-junta and yurar-jurar, could only provide further evidence that, while popular words tended to preserve the plosive [ɾ], a more prestigious pronunciation made use of [ʒ] in Old Spanish, which also echoes Malkiel’s (1983) attribution of sociolinguistic factors to the variation between [ɾ] and [ʒ] in the aforementioned words. Following Lloyd’s and Malkiel’s account, then, the sibilant fricative /ʒ/ would have appeared in Old Spanish due to the prestige of its pronunciation and eventual borrowings from other Romance languages (e.g. French, cf. (28)), although

(28) Latin /j/- > French, Portuguese /ʒ/; Italian /ʁʒ/

(DE-) [j]AM > de[ʒ]à, [ʒ]à; [ʁʒ]ə ‘already’
[j]OVIS (-DIE) > [ʒ]eu, ..., [ʁʒ]ovedi ‘Thursday’
[j]UDICARE > [ʃ]uger, [ʃ]ulgar; [ʁʒ]udicare ‘to judge’
[j]UNCU > [ʃ]onc, [ʃ]onco; [ʁʒ]unco ‘cane; reed’
[j]USTU > [ʃ]uste, [ʃ]usto; [ʁʒ]usto ‘just, fair’
[j]URARE > [ʃ]urer, [ʃ]urar; [ʁʒ]urare ‘to swear’
a few exceptions persisted (cf. (21)). Subsequently, the great number of such words “so overwhelmed the few original words that the normal outcome appeared to be /ʒ-/ rather than /j-/ (…)” (Lloyd 1987:250-251). Alarcos Llorach (1954:340-341), on the other hand, offers a more general explanation, by claiming that the different outcomes /j/ and /ʒ/ resulted from varying pronunciations of the same word within discourse. Thus, after a word ending in a consonant, Late Latin /j-/ could have been pronounced as initial /ʒ-/ whereas its original pronunciation would have been maintained after a word ending with a vowel, e.g. elo júez [elo jüet] vs. elos juezes [elos ʒueðes] (Lloyd 1987:252). Despite being conceivable, such explanations are highly speculative in nature and seem to ignore the phonetic environment that may have contributed to the different evolutionary patterns of Latin /j-/ in Old Spanish, namely, /j-/ evolves into /y/ before /a/ and into /ʒ/ before a rounded vowel, mainly /u/. Ariza (2012:167-168) hints at a possible phonetic motivation for the emergence of /ʒ/. He argues that, during the co-articulation between Latin /j/ and a back vowel, the backing of the tongue caused by /o/ and /u/ would have produced a narrower articulation, which arguably would have led to more friction and the eventual emergence of /ʒ/: “Cuando /i̯/ iba seguida de vocal velar se produjo un retraimiento lingual, lo que suponía un mayor cierre articulatorio, por lo que /i̯/ > /ʒ/, ya que todavía no existía /y/. Pensemos que esto también ocurre en posición intervocálica en un contorno velar: INODIO > enojo” (ibid.). However, the author does not develop this hypothesis any further, especially in regard to the fact that a narrower articulation of /j/ probably would have rendered that of a palatal stop [j] and not that of a postalveolar sibilant fricative [ʒ]—hence less (and not more) friction. Nevertheless, the phonetic motivation of Ariza’s
account seems more credible than Alarcos Llorach’s and Lloyd’s analogical explanation, although it is possible that both viewpoints, when considered together, may provide a complementary solution for the emergence of /ʒ/ in Old Spanish. Therefore, considering that word-initial Latin /j-/ incurred at least some degree of fortition across all Romance languages, it is worth pursuing Ariza’s (2012:167-168) insights and provide an account of the phonetic motivation for the eventual evolution of /j-/ into /ʒ-/ before back vowels in Old Spanish. Thus, as formalized further in Chapter 6, I propose that /j-/ first strengthened into a palatal stop /ɟ/, which was pronounced as an affricate *[ɟʝ]-] before back and non-back vowels. Subsequently, *[ɟʝ]-] would have fronted its articulation toward the prepalatal region before back vowels (hence acquiring sibilance and being realized as [ɗʒ]) due to a dissimilation process between the two very close tongue body gestures, i.e. that of the consonant [ɟʝ] and that of back vowels [u, o]. The eventual emergence of Old Spanish /ʒ/ (< Latin /j-/), therefore, could have taken the following evolutionary pathway: *[ɟʝ] > *[ɗʒ] > [ʒ]. The non-backing of the tongue body gesture in the production of /a/, on the other hand, would not have provided a conducive phonetic motivation for an increasing frication of [ɟʝ] before this vowel. This proposal works in tandem with the emergence of /ʒ/ in the reconstructed evolution of Spanish ʎ₁, as discussed below.

4.4.2 Western Romance /-ʎ-/ > … Old Spanish /-ʒ-/  

As discussed in §4.1.1, the sequence /-lj-/ palatalized in Early Latin, giving rise to an alveolo-palatal lateral /ʎ/ in most Romance languages. In Western Romance, the
sequences /-k’l-, -g’l-/ produced the same result. Thus, through comparative evidence, it is strongly believed that all three sequences evolved into ʎ1 in Proto-Spanish. A further documented development of ʎ1, however, was its delateralization and obstruentization, which led to the emergence of the sibilant /ʒ/ in Old Spanish, as evidenced in Hispano-Romance texts from the 9th, 10th and 11th centuries, such as the Glosas Emilianenses and the Glosas Silenses, written in the monastery of San Millán de la Cogolla, among others. The appearance of /ʒ/ is hypothesized from an observed change in the orthography of certain words throughout the Old Spanish period. For example, Latin words that presented orthographic <li>, <ll>, <cl> and <gl> are found to be written with various orthographic representations, such as <gg>, <g>, <gi>, <i>, <j>, <ih>, <ji>, etc. (Menéndez Pidal, 1950:58-60). For example, a word such as Latin MULIERE ‘woman’ gives way to mugger or mugier. Lapesa (1986:167) also cites the case of paja ‘straw,’ ojo ‘eye,’ and vieju ‘old’ (< Late Latin PALIA, OCLU, VECLU). Because of this orthographic variation, scholars argue that it is difficult to interpret their real phonetic value, although most agree that it should have been either [dʒ] or [ʒ]. In light of this, many speculative accounts have surfaced in the literature. Menéndez Pidal (1950:275), for instance, puts forth a hypothesis to explain the change in the pronunciation of ʎ1, by arguing that

Lo corriente es hallar en Castilla grafías que no pueden indicar [], sino que algún sonido que ha perdido ya su carácter de lateral, y que sin duda debemos interpretar [ḻ] o [z]: mortagga 937, taggare 964, magguelo 979, 1044 Cardeña Cartul., págs. 330, 367, 305, 161; Uallegio 1011 Oña, Ualleijo 1057 Oña < vallicůlů; conçego 1057, Nogga 1034, Cascaihares 1011, que unidas a la grafía latinizante relias 974, y la más corriente espejo 1096, se usan mezcladas durante el siglo XII. La grafía latinizante li pudiera indicar ɿ;
Based on Menéndez Pidal’s philological research and speculative insights, many scholars have proposed the direct change /ʎ/ > /ʒ/ in Old Spanish without providing a compelling explanation of the phonetic mechanisms for such a change. Dámaso Alonso (1962:84) is one of the few who explicitly poses the question of how an alveopalatal lateral would have changed directly into a sibilant fricative: “(…) supuesto que existió un grado primitivo l, ¿cómo se pasó de l a z?” Before embarking into an attempt of explanation, it is worth noting what happened to the same alveolopalatal lateral /ʎ/ in some of the Western Romance languages related to Spanish, since comparative evidence often provides insights into an otherwise impossible task to solve, which is precisely to decipher how words were pronounced more than a thousand years ago.

For example, in other varieties of Ibero-Romance (e.g. Old Catalan, Old Aragonese, and Old Portuguese), ʎ₁ has been preserved, e.g. Old Gal.-Port. ouelia [ové́ːʎa] ‘sheep’ and molier [moʎɛ́r] ‘woman,’ Arag. maglolo [maʎólo] ‘hawthorn,’ etc. (Menéndez Pidal 1950:53-55). In Old Eastern and Central Leonese, however, evidence shows that ʎ₁ delateralized and supposedly evolved into a voiced palatal fricative [j], represented by the grapheme <y> (although, in this case, <y> could also indicate an approximant [j]). Ariza (1990:122) cites the occurrence of fiyos ‘children’ found in a document of Sahagún from 1171, while Lapesa (1986:166) presents the case of paya

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19 Menéndez Pidal’s phonetic symbols [l], [y], [ʎ] and [ʒ] correspond to IPA [ʎ], [j], [l̃dʒ], and [ʒ], respectively.
‘straw,’ güeyu ‘eye,’ and vieyu ‘old’. Moreover, Menéndez Pidal (1950:277) confirms the almost exclusive use of <y> for words which derived from Latin <li>, <cl>, and <gl>. These findings have led scholars to propose the emergence of an earlier YEÍSMO in Old Leonese (not to be confused with the YEÍSMO of Modern Spanish, although the latter may offer valuable insights for the evolution of ʎ₁ as well).

In regard to the attempts to explain the evolution of ʎ₁ into /ʒ/ in Old Spanish, some have relied on the very articulation of the alveolopalatal lateral, while others have taken into account the functional load of this segment within the overall consonant system of the language. Lloyd (1987:44), for example, argues that this segment developed a fricative component in its articulation, while Alonso (1961:180) considers that such a component is inherent in the pronunciation of the /ʎ/ and claims that “en la ʎ lateral hay un rehilamiento [friction] que le es propio, o sea una vibración, adicional a la de las cuerdas vocales, producida por las vibraciones de las mucosas linguales al ser sacudidas por el soplo en la zona lateral de la articulación.” However, other authors endorse the hypothesis that a change from ʎ₁ to /ʒ/ took place in order to prevent the former from merging with ʎ₂ (< /pl-, kl-, fl-, 1:/). According to this view, the putative fricative component of ʎ₁—which should have been non-distinctive until then—would have emerged as distinctive between the two alveolopalatal laterals. Although such an account seems feasible and can fit the Old Spanish data well, it fails to provide a reason for the merger between ʎ₁ and ʎ₂ in other Ibero-Romance varieties, such as Catalan, Navarro-Aragonés, and a few dialects of Leonese, as pointed out by Lapesa (1986:166): “La evolución de la geminada /ll/ y la de los grupos /c’l/, /g’l/, /l + yod/ llegaron a un
mismo resultado /ʎ/ en algunas zonas del Occidente leonés (/purtielu/, igual que /biełu/, /uołuś/ ‘ojos’, /paļa/ en San Ciprián de Sanabria), en navarro-aragonés (caballo, castiello, igual que viello, palla) y en catalán occidental (cavall, castell, vell, ull, palla, todos con /ʎ/).

Thus, although the assumed change /ʎ/ > /ʒ/ in Old Spanish has been proposed by several scholars in the literature, overall it is difficult to argue for it with no intermediate steps, based upon three main reasons: (i) this change is unattested elsewhere in the history of Spanish and any other Romance language; (ii) it is highly unlikely, in phonetic terms, for a lateral whose articulation covers a wide area to the palate to move directly to a precise articulation of a postalveolar sibilant fricative /ʒ/ with no intermediate steps; and (iii) abundant comparative evidence with the evolution of /ʎ/ in other Western Romance languages at different times of their evolution—and also with the evolution of /ʎ₂/ in Modern Spanish—strongly suggests an intermediate delateralized stage, whereby /ʎ₁/ gave rise to a central palatal segment *[j] or *[ʝ], which, in turn, evolved into /ʒ/, as formalized in Chapter 6.

Granda Gutiérrez (1966) is one of the few scholars who proposed an intermediate step in the evolution of /ʎ₁/ into /ʒ/ in Old Spanish. In fact, Granda Gutiérrez sketches a general evolution of Latin /-lj-, -k’l-, -g’l-/ and /l:/ into the languages of Central and Eastern Iberia, as schematized in (29):
Granda Gutiérrez’s (1966:94) account on the evolution of Latin /-lj-, -k’l-, -g’l- and /l:/ in Central and Eastern Iberia:

a. -k’l-, -g’l-, -lj- > (j/j) > ʎ (= ʎ₁), in Catalan, Navarro-Aragonese, and Mozarabic
   l: > ʎ (= ʎ₂)

b. -k’l-, -g’l-, -lj- > (j/j) > j > j, in southeastern Menorca and Riberas del Navia
   l: > ʎ (= ʎ₂) > j

c. -k’l-, -g’l-, -lj- > (j/j) > j, in western Leon and Asturias, Balearic Islands, etc.
   l: > ʎ (= ʎ₂)

d. -k’l-, -g’l-, -lj- > (j/j) > j > ʒ, in Castile and Central and Eastern Leon
   l: > ʎ (= ʎ₂)

Granda Gutiérrez’s account runs into a few problems. For example, his proposal for the Catalan, Navarro-Aragonese, and Mozarabic data (cf. (29a)) seems highly unlikely, because it fails to recognize the emergence of /ʎ/ from Latin /-lj-, -k’l-, -g’l- and also inexplicably proposes the change */j, j/ > /ʎ/, which is not attested in any Romance language. In regard to the Spanish data (cf. (29d)), his account does not recognize ʎ₁ as a historical stage in the evolution of Latin /-lj-, -k’l-, -g’l- and, instead, suggests that these sequences would have lost their lateral component altogether and developed a central palatal segment before giving rise to /ʒ/. Furthermore, Granda Gutiérrez fails to account for the fact that the proposed stage *j/j never merged with the coetaneous palatal plosive /ɟ/ (cf. section 4.3). In fact, this has been the main argument in the literature for a direct evolution of ʎ₁ into /ʒ/, i.e. the hypothesis that if ʎ₁ had delateralized into */j/ or */j/, then it would necessarily have merged with /ɟ/, as Ariza (1994:93) states:
Uno de los argumentos más sólidos en contra de una evolución de la yod segunda no nasal

pálea > pál a > *páya > páža

era que, de haber existido el estadio [páya], se tendría que haber fundido la /y/ < LY con la /γ/ < I, GY, etc., o, como se pregunta Dámaso Alonso, por qué [mayór] no pasó a [mažor].

Dámaso Alonso (1962:84) considers the same hypothesis, but is more cautious in his evaluation and opens for an actual delateralization of ʎ1, albeit not providing a definitive answer to the problem of how ʎ1 became /ʒ/ in light of the fact that one will never know how exactly sounds were pronounced in the past:

(...) pudo también haber causas desconocidas que, en lejana época, mantuvieron la -γ- de mayo mientras se operaba la serie muller > muyer > mužer. Es posible que la -γ- de mayo y la del castellano prelit. muyer no hayan sido siempre iguales; es posible que la -γ- < I < -lj-, etc., tuviera desde el principio algún rehilamiento. Hay aquí, como siempre, en los lingüistas, una tendencia a sentenciar. La verdad es que no sabemos. No sabemos siquiera si la pluralidad de grafías del castellano primitivo (g, gg, i, j, ih, etc.) cubría un solo sonido o una serie de palatales distintas, de las que todas suculbieron menos ʒ.

Lapesa (1981:167, n.10), on the other hand, chooses to consider the evolution of ʎ1 together with that of ʎ2. By observing that both alveolopalatal laterals did not merge in the history of Spanish, he proposes three different scenarios to explain their development, as summarized in (30):
Lapesa’s (1981:167, n.10) three possible scenarios for the evolution of \( \lambda_1 \) and \( \lambda_2 \):

a. When Latin /l:/ palatalized into \( \lambda_2 \), \( \lambda_1 \) had already changed to /\( \breve{y} \)/, /\( \breve{y} \)/, or /\( \breve{y} \)/;

b. In dialects where Latin /l-\( \breve{j} \)-, -k’l-, -g’l-/ eventually evolved into a central palatal segment, /\( \breve{y} \)/ emerged first, but somehow was kept different from \( \lambda_2 \).

c. Latin /l-\( \breve{j} \)-, -k’l-, -g’l-/ evolved into either /\( \breve{y} \)/ or /\( y \)/ from the start and never gave rise to \( \lambda_1 \).

Lapesa leans toward scenario (30b) and proposes that both alveolopalatal laterals coexisted in Spanish (although they never merged), which echoes Lloyd’s (1987:44) hypothesis that \( \lambda_1 \) had developed a “non-distinctive fricative element” that emerged as distinctive when \( \lambda_2 \) came about. The problem with both Lapesa’s and Lloyd’s explanations is that neither author provides a clear definition as to what precise phonological property that “fricative element” of \( \lambda_1 \) would have so as to keep it in contrast with \( \lambda_2 \), especially when no other Ibero-Romance language had a \( \lambda_1 \) with such a particular feature. Finally, neither Lapesa nor Lloyd provide evidence—documentary or otherwise—to support their proposed subtle distinction between both /\( \breve{y} \)/’s.

Martínez-Gil and Zampaulo (2012) follow Granda Gutiérrez’s (1966) hypothesis of an intermediate stage in the shift \( \lambda_1 > /\( \breve{y} \)/ \) in Old Spanish and propose a phonological account to explain the lack of merger between the delateralization of \( \lambda_1 \) and the existing palatal plosive /\( y \)/. The authors’ explanation is based on the theoretical concept of phonetic enhancement of phonological contrasts (e.g. Stevens & Keyser 1989; Keyser & Stevens 2001; see also recent developments of enhancement in Optimality Theory, e.g. Flemming 2002, 2004; Hall 2007, 2011), whereby some redundant features act to
increase the acoustic/perceptual prominence of certain phonological distinctions, resulting in a more prominent differentiation of phonemic contrasts. Thus, they claim that the emergence of */j/ (< k̹̊) would have been intolerably close—both in articulatory and perceptual terms—to the coetaneous palatal plosive /j/ (< /j-, gé-, gi-…/). Therefore, an enhancement of the contrast between */j/ and /j/ would have taken place, whereby */j/ first would have lost its dorsal features and then later fronted its articulation to the prepalatal area, hence acquiring stridency by the feature [+strid]. The autosegmental representation in (31) illustrates these changes:

(31) Martínez-Gil and Zampaulo’s (2012) account of /k̹̊/ > */j/ and */j/ > /ʒ/:
Although Martínez-Gil and Zampaolo’s (2012) account provides a plausible formal explanation for the avoidance of the merger between */j/ (< \(\lambda_1\)) and /ʒ/, it is also worth exploring the relative chronology of the changes in question. More precisely, it is possible to postulate that the delateralization of \(\lambda_1\) first gave rise to a palatal glide */j/ early enough in Hispanic Latin, which evolved independently from /ʒ/ (recall the strong realization of /ʒ/ even in intervocalic position, e.g. *MAIIUS [május] ‘May’). The evolution of this palatal glide *[j] (< \(\lambda_1\)), thus, entails a series of fortition processes that this segment would have incurred until assibilating into /ʒ/ in Old Spanish (i.e. *[^j] > *[j] > [ʒ]), thus keeping the contrast with intervocalic /ʒ/, which, in turn, developed an intervocalic allophone [j] by the time when /ʒ/ (< *[j] < *[j] < \(\lambda_1\)) had already emerged.

This hypothesis is consistent with the history of /ʎ/ in other Romance languages, such as French, Portuguese, dialectal Italian, etc., and also with /ʎ/-delateralization in current varieties of northeastern Argentinian Spanish (cf. Chapter 5). For example, Alonso (1961:160), mentions a French text from 1687, which reveals the prestige of the alveolopalatal lateral pronunciation in Paris at that time, while also recognizing its increasing delateralization in the popular speech of the bourgeoisie: “…dans la petite bourgeoisie de Paris on trouve beaucoup de gens…que pour dire bataillon, postillon, bouteille, mouillé, bouillon, et autres mots,…disent batayon, postiyon, boutaiye, mouysé, bouyon.” Nascentes (1953), on the other hand, mentions the delateralization of /ʎ/ in stigmatized varieties of Brazilian Portuguese, while also citing a similar development in the history of varieties of Peninsular Portuguese, French, Provençal, Venetian and Lobardian Italian, among others. Colantoni (2004), in turn, provides phonetic evidence
for the current emergence of [j] from the delateralization of /ʎ/ in northeastern Argentina.

For the subjects of her study, the new glide [j] (< /ʎ/) remains in contrast with /ɟ/ (phonetically realized as an affricate\(^{20}\)) until eventually assimilating into /ʒ/ by the influence of Buenos Aires speech.

By the 16\(^{th}\) century, the voiced sibilant fricative /ʒ/ (< *[j] < *[j] < ʎ₁) of Old Spanish had gone through a devoicing process together with all the other sibilants (e.g. Joos 1952; Kiddle 1977) and evolved into the voiceless postalveolar /ʃ/, which in turn dissimilated into a velar (or uvular or glottal) fricative by the mid 17\(^{th}\) century (e.g. Penny 2002:101; Zampaulo 2013; etc.). The examples in (32) illustrate this proposed evolution:

(32) Evolution from Latin /-lj-, -k’l-, -g’l-/ to contemporary Spanish /x/.


OC(U)LU ‘eye’: o[k’l]o > *o[y’l]o > *o[j’l]o > *o[ʃ]o > *o[ʒ]o > *o[ʃ]o > o[ʒ]o > o[x]o


4.5 Summary and concluding remarks

As discussed in the previous sections, several have been the Latin sources that gave rise to the alveolopalatal lateral /ʎ/ and the palatal obstruents /ɟ/ and /ʒ/ in Old Spanish and other Romance languages. By considering (i) the comparative data presented throughout this chapter, (ii) the chronology of the sound changes reflected in the

\(^{20}\) Colantoni (2004) uses the symbol [d̃j], which I interpret as being a palatal affricate.
orthographic representation of words, and (ii) the hypothesis and plausibility of the phonetic motivation for the sound changes in question, I propose the following evolutionary pathways for those (alveolo)palatal sounds in Old Spanish, from their roots in Latin:\(^{21}\)

(33) Proposed evolutionary pathways of /ʎ/, /ɟ/, and /ʒ/ from Latin to Old Spanish:

<table>
<thead>
<tr>
<th>Spoken Latin</th>
<th>/-lj-, -k’l-, -g’l-/</th>
<th>/j-, -jj-, -dj-, -gj-, gé-, gi-, é-/</th>
<th>/pl-, kl-, fl-, l:/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic-Romance</td>
<td>ʎ₁</td>
<td>ʝ₁</td>
<td>ʝ₁</td>
</tr>
<tr>
<td>Proto-Spanish – I</td>
<td>*[j]</td>
<td>*[ʝ]</td>
<td>*[ʝ]</td>
</tr>
<tr>
<td>Proto-Spanish – II</td>
<td>*[ʒ]</td>
<td>*[dʒ]</td>
<td>*[ʝ]</td>
</tr>
<tr>
<td>Old Spanish – I</td>
<td>*[ʒ]</td>
<td>*[dʒ]</td>
<td>*[ʝ, j]</td>
</tr>
<tr>
<td>Old Spanish – II</td>
<td>/ʒ/</td>
<td>/j/</td>
<td>ʎ₂</td>
</tr>
</tbody>
</table>

It is important to note that, while the representation in (33) is meant to account for most of the data in the evolution of Old Spanish /ʎ, ʝ, ʒ/, one must keep in mind the several exceptions discussed throughout this chapter and documented elsewhere. For example, Menéndez Pidal (1977:152,159) cites the case of learned words in which Latin /-lj-/ never palatalize into ʎ₁, such as peculiar ‘peculiar,’ concilio ‘council’ (cf. popular concejo), etc. Moreover, Boyd-Bowman (1980:85) provides evidence for semi-learned words in which

\(^{21}\)The evolutionary pathways proposed in (33) differ in some respects from a previous version in Martínez-Gil & Zampaulo (2012).
ʎ₁ never evolved into a postalveolar fricative /ʒ/ in Old Spanish; instead, it followed the
same path as ʎ₂, by delateralizing starting in the 16th century and eventually merging with
the palatal obstruent /ʝ/—a phenomenon referred to as YEÍSMO in Modern Spanish (cf.
Chapter 5), as illustrated in (34):

(34) Cases of ʎ₁ that did not evolve into a postalveolar /ʒ/ in Old Spanish:

MARABILIA > maravi[ʎ]a > maravi[j]a ‘wonder’
MURALIA > mura[ʎ]a > mura[j]a ‘rampart’
HUMILIARE > humi[ʎ]are > humi[j]ar ‘to humiliate’

Despite eventual exceptions, the evolutionary pathways in (33) help us understand the
general history of the (alveolo)palatal lateral and obstruent sounds from Latin to Old
Spanish and provide the necessary background to motivate a phonoetically-based analysis
of their evolution into contemporary Spanish (cf. Chapter 6). In the next chapter, the
subsequent evolution of ʎ₂ and the current dialectal picture of Spanish (along with
evidence from varieties of other Romance languages) are discussed. Specifically, I
examine the progressive delateralization of ʎ₂ and its merger with /ʝ/ (YEÍSMO) in several
dialects of Modern Spanish (as well as the preservation of ʎ₂ in parts of Castile and South
America). Additionally, I present other related sound changes that occurred in the last
200 years, namely, the assimilation of /ʝ/ into /ʒ/ (YEÍSMO) in River Plate Spanish at the
turn of the 19th century and its current devoicing process into /ʃ/ (JEÍSMO).
CHAPTER 5

REFLECTIONS ON THE PRESENT: THE STATUS OF (ALVEOLO)PALATALS IN CURRENT SPANISH VARIETIES AND OTHER RELATED LANGUAGES

5.1 Introduction

Since around the 16th century, the second-stage alveolopalatal lateral /ʎ/ (i.e. \( \kappa_2 < \) Latin /pl-, kl-, fl-, l/) has been undergoing a process of delateralization in most dialects of Spanish, the result of which frequently eliminates the contrast between /ʎ/ and the palatal obstruent /ɟ/, in favor of the latter (Lipski 1989). This merger of both consonants into /ɟ/ has been traditionally known as YEÍSMO and reveals itself when speakers pronounce orthographic <ll> and <y> typically as [j] after a pause, nasal or lateral consonants (e.g. yo [jo] ‘I’, lleno [jeno] ‘full’, cónyuge [kónjuxe] ‘spouse’, conllevar [konljeβár] ‘to entail’, el yate [eljáte] ‘the yacht’, etc.) or as [j] elsewhere, particularly after or between vowels (e.g. la lluvia [lajúβja] ‘the rain’, ayuntamiento [ajuŋtamjé̃to] ‘town hall’ caballo [kaβájo] ‘horse’, etc.). In certain dialectal areas of the Spanish-speaking world, however, the palatal obstruent /ɟ/ from the YEÍSTA pronunciation has taken on different articulatory paths, either fronting its articulation toward the prepalatal region (e.g. yo [jo] > [ʒo] ‘I’, i.e. ʒEÍSMO) and in some areas even devoicing such a pronunciation (e.g. [ʒo] > [ʃo] ‘I’, i.e. ʃEÍSMO), or reducing the amount of central palatal
constriction (e.g. *caballo* [kaβájo] > [kaβájo] ‘horse’, i.e. IEÍSMO). Nevertheless, despite the fact that YEÍSMO has been advancing steadily over the last four centuries, there are many Spanish varieties that display different patterns of DISTINCTION between the pronunciation of orthographic *<ll>* and *<y>*. For example, in many varieties the former is still associated with /ʎ/ (i.e. ʎ2), while the latter is associated with the obstruent /ʝ/. In other dialects, however, a contrast can be observed between a sibilant obstruent /ʒ/ (for orthographic *<ll>* ) and a non-sibilant obstruent /ʝ/ (for orthographic *<y>*). Additionally, for some speakers of a few dialectal areas, an alveolarpalatal lateral /ʎ/ (for orthographic *<ll>* ) may be in contrast with /ʒ/ (for orthographic *<y>*), while in one particular variety the delateralization of /ʎ/ gives rise to a contrastive pronunciation between a palatal glide [j] (for orthographic *<ll>* ) and the coetaneous palatal obstruent [ʝ] (for orthographic *<y>*).

Elucidating these various pronunciations of orthographic *<ll>* and *<y>* throughout the dialects of the Spanish-speaking world represents the main goal of this chapter, as it becomes relevant and crucial in order to illustrate the continuous evolutionary thread of Spanish (alveolo)palatal sounds. Moreover, it demonstrates how recent sound changes—or changes currently in progress—mirror those which are reconstructed throughout the history of Spanish. Thus, a current dialectal picture stands as one of the best means through which one can reconstruct the changes that took place historically; and, more importantly, it provides the tools to establish a unified account linking both the past and the present of (alveolo)palatahs in Spanish. Whereas the main focus remains on the dialectal variation of these sounds in this language, historical and dialectal data from other Romance languages such as Portuguese, Galician, Catalan, French, etc., are also in
order, as they frequently reveal very similar pathways of (alveolo)palatal sound change in the evolution of the sound systems of the aforementioned languages. It is important to point out, however, that the dialectal picture drawn in this chapter has its own limitations, as it relies partially on impressionistic data from previous dialectal studies. Thus, while this chapter represents an attempt to gather what has been published in relation to the topic at hand, it also identifies areas upon which future research will shed light and further dialectal and phonetic studies will contribute to advancing our knowledge of (alveolo)palatal sound manifestations in contemporary Spanish varieties.

This chapter is organized as follows. Section 5.2 reviews the rise of yeísmo in the transition from Medieval to Modern Spanish. Section 5.3 provides the current dialectal picture of (alveolo)palatal sounds in varieties of Spain (§5.3.1), Hispanic America and elsewhere (§5.3.2), and also how these segments manifest themselves in various phonemema, such as yeísmo, zeísmo, jeísmo, ieísmo, lleísmo and distinction. Similar patterns and related phenomena in other Romance languages are summarized in §5.4. Section 5.5 concludes.

5.2 The rise and spread of yeísmo in Modern Spanish

Several authors have attempted to provide evidence of the first occurrences of yeísmo in the history of Spanish, relying upon sporadic misspellings of words in poems, diaries, and general documents of medieval authors. Lloyd (1987:344), for example, mentions the isolated case of yeva for lleva ‘he carries’ already in the Libro de Alexandre from the 13th century. Lapesa (1986:383), on the other hand, cites the sporadic case of the
word ayo for hallo ‘I find’ in a text written by a monk from Toledo at the end of the 15th century. In other Spanish documents, however, there is an abundance of erratic examples that have been interpreted as cases of orthographic hypercorrection, where words were written with <ll> instead of <y>. A manuscript of the Libro de Alexandre shows llago for yago ‘I lie down,’ whereas a glossary of El Escorial indicates llema for yema ‘egg yolk’ and papagallo for papagayo ‘parrot’ (Lloyd 1987:344). These examples have led scholars to posit that the substitution of /ʎ/ for /ʝ/ (LLEÍSMO) indicates “a strong reaction against the tendency toward the merger” (Lloyd 1987:345). In the 16th century, however, the sporadic character of these cases gave rise to a steady increase in orthographic misspellings between <ll> and <y>. Lapesa (1986:383), for instance, provides the hypercorrected form sullo(s) for suyo(s) ‘his, her.’ Examples of YEÍSMO in texts of Spanish travelers found in the American colonies, however, clearly outnumber the ones discovered in Spain. Among many of them, Parodi (1977:243-244) cites ayá for allá ‘over there’ in Honduras in 1528, hoyando for hollando ‘setting foot on’ in Mexico City in 1537, cogoio for cogollo ‘heart (of lettuce)’ in Cusco in 1549, allan for hayan ‘they have (Pres. Subjunctive)’ in Mexico City 1574, and papagallos for papagayos ‘parrots’ in Venezuela in 1575. Guitarte (1971) also contributes with evidence found in Puebla, Mexico, from letters of a Spanish dyer from Brihuega (Spain), who evidently confuses the orthography of <ll> and <y> in words such as vallan, hayarés, salla, alla, valla, yamáis for vayan, hallarés, saya, haya, vaya, llamáis. As Lloyd (1987:345) points out, these examples may belong to Spanish writers, but it is impossible to pinpoint a single geographical area as the birthplace of YEÍSMO. Some doubt is even cast upon a few of
these orthographic representations, as they may potentially reveal cases of lexical interference from other words rather than concrete evidence of a sound change in progress, e.g. *papagallo* ‘parrot’ (cf. *gallo* ‘rooster’).

Recent research has also witnessed an interest in the origins of Modern Spanish *yeísmo*. Kania (2010) carries out one of the most thorough studies regarding the spread of this phenomenon in Latin American Spanish, particularly in colonial Mexico. The author gathers data from 279 documents written in Mexico between 1525 and 1800, and which display a wide range of textual production, such as letters, notes, crime reports, trial testimonies, inventories, wills, petitions and official reports. She reports no evidence of *yeísmo* in the documents written in the first half of the 16th century and only one case in the second half. However, she finds incidence of a possible lack of contrast between /ʎ/ and /ʝ/ (i.e. *haya* for *halla* ‘he finds’) in the text of 4 out of 28 authors from the second half of the 17th century. This proportion doubles in the first half of the 18th century and reaches a proportion of 15 (out of 33) authors in the second half of the latter century. Kania (2010:228) concludes, then, that the slow spread of *yeísmo* must have been due not only to internal factors but also to external ones. As for the former, the low frequency of these consonants in Spanish words of the time may have played a role in the initial low incidence of the merger. Among the 500 occurrences of words containing the alveopalatal lateral and the palatal obstruent (word repetitions included), the author reports that the former occurs in only 13 words (i.e. *ella, ello, llegar, llevar, llamar, calle, hallar, allí, caballero, lleno, allá, valle, llamado*), while the latter shows up in only seven of them (i.e. *yo, ya, mayor, cuyo, cuya*, and the plurals of *rey* and *ley*). As for the external
factors, it is likely that a social reaction against the merger between /ʎ/ and /ʝ/ may also have contributed to its low spread, as the pronunciation of the alveolopalatal lateral still held high prestige. Furthermore, the level of education of writers may also reveal their knowledge of the correct orthography of words. Kania (ibid.) reports that such information was available in the texts of six authors from the 16th and the 17th centuries: while half of them were two priests and a scribe (who, therefore, must have had at least some level of instruction), the other half was represented by a baker, a commissioner and an Andalusian commoner. Thus, it is possible to hypothesize that the merger between /ʎ/ and /ʝ/ was not only present in the speech of the lower classes, but was also beginning to be part of the pronunciation of those who displayed at least some level of education in Spain and in Spanish America.

Despite the sporadic evidence for the merger beginning in the 16th century, diverging opinions have contributed to an increasing controversy surrounding the date of YEÍSMO on both sides of the Atlantic Ocean. Some scholars (e.g. Penny 2002:106) argue that, while the merger could have existed since Old Spanish time, evidence in Spain is only attested in the 18th century, contrary to the sporadic examples found in American Spanish in the 16th century. Other authors (e.g. Alonso 1961:161-176), however, reject the hypothesis of Old Spanish YEÍSMO and rely upon the lack of direct commentary from 17th century grammarians and also the lack of concrete evidence from 16th and 17th century texts written in Spain. The latter argument echoes Alonso’s (1961:163-164) claim that <ll> was indeed pronounced as [ʎ] in Spain until the 18th century:
He repasado con el mayor cuidado los libros de todos los que en los siglos XVI y XVII escribieron sobre pronunciación de nuestra lengua. (...) Pero ni siquiera los andaluces (Nebrija 1517; Francisco Delicado, 1534; Cristóbal de las Casas, 1570; Juan Sánchez, 1586; Mateo Alemán, 1609; Bernardo de Aldrete, 1606 y 1614; Juan Bautista de Morales, 1623; Juan de Robles, 1631; Juan Villar, 1651, etc.) hablan en ninguna ocasión de confusiones de \( ll \) con \( y \) [while they do mention some confusion between \(<b>\) and \(<v>\), \(<x>\) and \(<j, g>\), \(<s>\) and \(<ss>\), \(<z>\) and \(<c>\), \(<s>\) and \(<ç>\), and \(<g>\) and \(<h>\)].

Alonso (ibid.) also reports a specific passage by Andalusian scholar Bernardo de Aldrete (1565-1645), who offered indirect comments about the existence and pronunciation of \( /ʎ/ \) in Spanish at the time of the war for the Kingdom of Granada, when the Moorish attempted to produce \( [ʎ] \), but ended up pronouncing it as \( [lj] \): “En la guerra del reino de Granada, en la rebelión de los moriscos, a los aljamiados que no avían desde niños aprendido nuestra lengua i con su pronunciación, para conocerlos les hazían dezir cebolla, y el que era morisco dezía xebolia.” Moreover, the alveolopalatal lateral was present in commentary that compared its pronunciation with that of its alveolar counterpart, as seen in the words of Extremaduran scholar Gonzalo Correas in 1626: “La \( l \) sola haze su ofizio libremente; mas doblándola con otra, las dos hazen letra propia española, como la ke suena en estas diziones: \( llave, llaga … lluvia \). El portugués la suple con \( lh, filho \); el italiano con \( gli, figliolo, fillolo, hixo \)” (Alonso 1961:168).

Data from Judeo-Spanish has often been invoked in the discussion regarding the origins of YEÍSMO in Modern Spanish. Penny (2000:186; 2002:106) claims that the non-lateral results from the merger between the alveolopalatal lateral and the palatal obstruent are universal in varieties of Judeo-Spanish and its emergence is partially due to the small number of minimal pairs which displayed a phonemic contrast between both sounds. As the expulsion of the Jews from Spain took place at the end of the 15\(^{th} \) century, Penny
argues that it is plausible to conceive the occurrence of YEÍSMO in Spain long before the 18th century and, indeed, already in Old Spanish time. However, Alonso (1961:184-185) rejects such an argument by claiming that the YEÍSMO of Judeo-Spanish is a later phenomenon that took place after the expulsion of the Jews from the Iberian Peninsula, in addition to the fact that even some YEÍSTA dialects still keep an alveolopalatal lateral pronunciation in a few words:

(...) en ladino se ha mantenido y se mantiene ll, lo cual indica que en la lengua hablada de los siglos XVI y XVII se practicaba la ll todavía: la pronunciación real se transcribía directamente con los caracteres Raxí (rabinicos) y no podemos suponer la presión escolar de la escritura castellana. También se mantiene la ll, entre los yeístas de algunos dialectos, en ciertas palabras conservadas en los romances, como donzella, castillo (...).

However, one must consider the data from Judeo-Spanish with caution, as the evolution of its /ʎ/ presents different outcomes, whenever it is assumed to have changed and merged with the palatal obstruent. For example, Alonso (1961:185) provides evidence that in some dialects /ʝ/ has been dropped by contact with a preceding or a following palatal vowel, e.g. cuchío, estrea, aquea, sia, ai, gáina for Spanish cuchillo, estrella, aquella, silla, allí, gallina (which is also characteristic of several current Spanish varieties, especially in Central and North America, cf. §5.3.3). Penny (2000:188), on the other hand, also cites a different evolution which resembles that of some Leonese dialects, in which the alveopalatal lateral was subject to depalatalization instead of delateralization, e.g. kaleja, pileyu, pelixku/pelixkar for Spanish calleja, pellejo, pellizo/pellizar (a similar evolution is found in dialects of Brazilian Portuguese, cf. §5.4).
Despite the controversy involving the geographical and temporal beginnings of Spanish yeísmo, scholars seem to agree that its origins are due to an articulatory, acoustic, and perceptual similarity between /ʎ/ and /ɟ/ (RAE 2011:220). The diffusion of yeísmo within the Spanish-speaking world, however, has relied on the appropriate sociolinguistic conditions it has found in each area over the years. Hence, urban environments have stood as favorable scenarios from which speakers spread the innovating yeista pronunciation in Spain, especially since most of the surviving pockets of the distinction between /ʎ/ and /ɟ/ in this country are relegated to non-urban areas (e.g. ALPI 1962; Zamora Vicente 1967; Alvar 1996a; García Mouton & Moreno Fernández 1994; García Mouton & Molina Martos 2009, 2012). Seville and other cities in Andalusia have been judged as probably the most fertile region for the diffusion of yeísmo, which was then carried over to other areas of Spain, following Andalusian immigration to the north. Yet, as Moreno Fernández (2004:987) correctly points out, this does not mean that other regions could not have already employed a yeista pronunciation before the contact with southern Spanish speech. Indeed, Alonso (1961:162, 204) vehemently discards the widely shared hypothesis that the phenomenon of yeísmo was entirely a product of Andalusia:

(…) se ha creído que el seseo y el yeismo han sido productos andaluces exportados e impuestos a los colonos americanos del siglo XVI. Es la opinión unánime entre los profanos, y lo es casi unánime todavía entre los filólogos, pero como mero arrastre de opinión y no como conocimiento elaborado. (…) Las zonas yeistas de Asturias, Santander, Valladolid (y otras menores y no precisadas de Castilla la Vieja), están aisladas, tanto de Andalucía como entre sí, por tierras conservadoras de la ll (…).
Lloyd (1987:346), therefore, concludes that, whenever and wherever the origins of YEÍSMO took place in the transition from Medieval to Modern Spanish, the exact course of its diffusion may be impossible to define with scientific rigor. The fact that it was probably not an accepted form of speech at first and only sporadic evidence is confirmed from time to time in Medieval Spain makes it difficult to pinpoint any single area of spread. In Spanish America, on the other hand, documents reveal a likely occurrence of the merger since the time of conquest. Colonies, then, may have offered a fertile territory for YEÍSMO to become part of the accepted speech within communities before it did so outside of the lower social classes in Spain (Parodi 1977:247), although even data from 18th century texts suggest that YEÍSMO was not a widespread feature throughout the former Spanish colonies (cf. Ramírez Luengo (2012:298) for the lack of YEÍSMO in 18th-century Honduras, El Salvador, and Nicaragua). Thus, it is safe to conclude that the delateralization of $\lambda_2$ and its eventual merger with /j/ may have been initiated in multiple places within the Castilian territory sometime between the 16th and the 17th centuries, probably in the uneducated speech of the lower social classes. The orthographic evidence from mostly Andalusian travelers only illustrates how the merger may have been more advanced in southern Spain, but by no means excludes the possibility of having taken place in isolated areas in the center and in the north of the Iberian Peninsula as well.

Having established the historical grounds from which YEÍSMO arose and started to spread within Spain and toward its former colonies, I now provide a description of the current status of (alveolo)palatal sounds in Spanish varieties and how they are distributed today throughout the Spanish-speaking world.
5.3 Current realizations of (alveolo)palatals in varieties of Spanish

5.3.1 Peninsular varieties

5.3.1.1 Main non-bilingual regions

The spread of YEÍSMO in recent times has made itself evident in many parts of Spain. Navarro Tomás (1964), for example, argues that the YEÍSTA pronunciation spread north and reached Castile by 1930 as a variable among speakers who still distinguished between /ʎ/ and /ʝ/. However, today it is widely recognized that most of the country is YEÍSTA (Lloyd 1987:347), and the younger generations no longer display a contrast between /ʎ/ and /ʝ/ in urban areas, despite the persistence of a few patches of DISTINCTION throughout the country (e.g. García Mouton & Molina Martos 2012). It is safe to argue, then, that while /ʎ/ is more frequently pronounced in nonurban areas in the north (e.g. Alonso 1961; Alvar 1996a; Chapman et al. 1983; Moreno Fernández 2004), it may also be found in a few towns in the center and south of Spain, as further discussed below.

Beginning with the north, in the region of Cantabria, Nuño Álvarez (1996:187) reports data revealing a predominantly YEÍSTA dialect, especially in its central and northern areas and the capital Santander. However, cases of distinction between /ʎ/ and /ʝ/ are still found in southern Cantabrian towns. Additionally, the author cites other phenomena related to such consonants, such as a glide-like pronunciation of /ʝ/ (e.g. pollo ‘chicken’ and poyo ‘stonebench’ as [pójo]) or its complete loss by contact with a palatal vowel (e.g. ovillo ‘ball of yarn’ [oβίu], traendo ‘bringing,’ leendo ‘reading’), particularly in the mountainous areas. Around Western Santander, Nuño Álvarez reports the
occurrence of [dj] as the pronunciation of /ʝ/ in word-initial position, e.g. *diendo* ‘going’ and *diesca* ‘tinder’ (cf. Standard Spanish *yendo* and *yesca*).

Data from Castile and Leon also indicate that a YEÍSTA pronunciation is gaining ground, especially in urban environments, such as Valladolid, Palencia, Zamora, Ávila and Segovia, although a few areas may still conserve a DISTINCTION between the alveolopalatal lateral and the palatal obstruent, e.g. León and Zamora (Alonso 1961:178). Moreno Fernández (2004:989) and Hernández Alonso (1996:219), on the other hand, report that /ʎ/ can still be found in the city of Burgos, despite the fact that 60% of their informants no longer displayed a contrast between /ʎ/ and /ʝ/. Moreno Fernández (*ibid.*) refers to this as a “partial YEÍSMO,” since the distinction is reported mainly for older speakers, pronounced in more formal situations and very likely to fade in the coming years. A similar pattern is found in Covarrubias (Chapman et al. 1983), where the alveolopalatal lateral surfaces more frequently in the speech of those who are older than 40 years of age.

In Castile-La Mancha, most cities are YEÍSTAS, while there are still a few patches of DISTINCTION between /ʎ/ and /ʝ/, particularly in the north of this region (García Mouton & Molina Martos 2012). Moreno Fernández (1996:219) reports that Toledo represents the main focus of YEÍSMO, while in Guadalajara and Cuenca the alveopalatal lateral has almost completely given way to the palatal obstruent. However, the author also cites cases of sporadic LLEÍSMO in Alarcón (Cuenca), where an alveolopalatal lateral pronunciation is observed not only in words with orthographic <ll>, but also in words written with <y>, e.g. *yugo* [ʎúɣo] ‘yoke’ and *yunque* [ʎúŋke] ‘anvil’ (Moreno Fernández...
While palatal [ʝ] occurs as the main allophone of the palatal obstruent, Moreno Fernández (ibid.) cites an occlusive pronunciation [ɟʝ] in words that begin with <hie-> and <ye->, such as guieso ‘plaster,’ guierro ‘iron,’ guierba ‘grass,’ and guierno ‘son-in-law’ (cf. Standard Spanish yeso, hierro, hierba, hierno). This pronunciation is attested mainly in southern Guadalajara and northern and western Cuenca (ibid.: 220). Madrid has also been reported as mostly yeísta (Alonso 1961:177; Gómez & Molina Martos, 2013). However, recent dialectal studies uncover a much more complex scenario for this region, where not only /ʎ/ is evidently fading, but also the palatal obstruent of yeísta areas may present multiple allophones. Ruiz Martínez (2003), for example, provides a detailed phonetic study on the Spanish spoken in northeastern Madrid and reports five possible allophones for the palatal obstruent /ʝ/, namely, a voiced palatal fricative [ʝ] (e.g. lleva [ʝéβa] ‘he/she carries,’ gallina [ɡajínə] ‘chicken’), a voiced palatal affricate [ɟʝ] (e.g. llovió [ʝoβjó] ‘it rained,’ ya [ʝa] ‘already’), a voiced postalveolar fricative [ʒ] (e.g. allí [aʒi] ‘over there,’ mayo [máʒo] ‘may’), a voiced postalveolar affricate [dʒ] (e.g. llenos [dʒénos] ‘full-Pl.,’ ayuda [adʒúda] ‘help’), and a palatal approximant [j] (e.g. ayuntamiento [aʝuntamʝénto] ‘city hall’) (2003:169). While the fricatives correspond to more than half the realizations (55%), the glide allophone occurred in 23% of the data (2003:170).

To the west, in Extremadura, Alonso (1961:177) reports the general presence of yeísmo, with a few pockets of distinction between /ʎ/ and /ʝ/, especially in the south. Álvarez Martínez (1996:177) also reports cases of distinction in a few areas, such as Madroñera, which is surrounded by yeísta towns (cf. also Ortés 2011 for data on current
DISTINCTION near Badajoz). Regarding the realization of the palatal obstruent in YEÍSTA areas, however, Álvarez Martínez mentions the presence of an postalveolar fricative [ʒ], resembling the one produced in River Plate Argentinian Spanish. This YEÍSMO is found mainly in southern Cáceres, as well as in northern Badajoz (Alvar 1996a:178). Alonso (1961:182) and Zamora Vicente (1967:334) also comment on such a pronunciation, particularly in Mérida, providing the following examples: *caballo* [kaβáʒo] ‘horse,’ *mayo* [máʒo] ‘May’ and *silla* [síʒa] ‘chair’ (Zamora Vicente, *ibid*). In southern Spain, Andalusia has traditionally been considered the epicenter of YEÍSMO, with most of its territory being YEÍSTA today. However, such a general statement hides several cases of small areas in which speakers still practice the DISTINCTION between /ʎ/ and /ɟ/. Zamora Vicente (1967:311), for example, cites the presence of the alveolo-palatal lateral in areas surrounding Huelva, Granada, and Jaén, while Penny (2000:121) also cites rural Seville and Cádiz. In parts of Western Andalusia, particularly in small towns around Seville, three forms of DISTINCTION can be found, namely, a contrast between /ʎ/ and /ʒ/, another between /ʎ/ and /ʒ/, and yet a third between /ʒ/ and /ʒ/ (Hidalgo Caballero 1977:135-136; Zamora Vicente 1966:312). In the small town of Olivares (to the west of Seville), for example, some speakers differentiate between word pairs such as *pollo* [póļo] ‘chicken’ and *poyo* [póʒo] (Emilia Alonso-Marks, p.c.). Outside the Iberian Peninsula, in the Canary Islands, speakers are essentially YEÍSTAS, despite a few impressionistic reports on reminiscent areas of DISTINCTION (e.g. Alonso 1961:185; Alvar 1996a:334).
5.3.1.2 Main bilingual regions

In Spain, regions where different languages coexist with Spanish also present cases of YEÍSMO and DISTINCTION between the alveolopalatal lateral and the palatal obstruent consonants. In the northwest, for example, Galicia is essentially YEÍSTA in Spanish as well as in most varieties of Galician (Porto Dapena 1977:35-36; Dubert Garcia 2013:40). Ferreiro (1996:190) additionally reports that YEÍSMO is widespread in Galician (particularly among young speakers), although /ʎ/ is still considered to be part of the consonant inventory of this language, supposedly contrasting with the approximant /j/ in a few dialects, e.g. *mollo* [móʎo] ‘I wet’ vs. *moio* [mójo] ‘I grind’. Indeed, Freixeiro Mato (2006:180) cites the delateralization of /ʎ/ among young speakers of Galician as the source for a new phoneme to emerge in the system, i.e. the palatal obstruent /ɲ/: “Moitos falantes novos, das vilas e das cidades principalmente, trocaron o fonema lateral palatal sonoro /ʎ/ polo fricativo mediopalatal sonoro /ɲ/, inexistente no sistema tradicional, de forma que se produce unha forte tendencia á perda do carácter lateral deste fonema: *muller* [muˈʎɛɾ] > [muˈɲɛɾ]” (emphasis added). However, the author (*ibid.*:181) points out that the emergent /ɲ/ still maintains a contrast with the existing glide [j] (i.e. DISTINCTION), despite the fact that the younger generation does not practice this:

(... ) este fenómeno [delateralization] non se pode confundir coa natural realización da semivogal [j] en casos como maio [ˈmajo] ou vaia [ˈbaja], que nunca deberían realizarse como mallo [ˈmæʎo] ou [ˈmæjo], pertencente ao verbo mallar, nin como valla [ˈbaʎa] ou [ˈbaɟa], do verbo valer, aínda que, por interferencia do español, tal confusion xa se produza entre os falantes que realizan a deslateralización, principalmente novos.
Dubert García (2013), on the other hand, offers a more precise, updated dialectal picture of YEÍSMO in Galicia. The author indicates that the YEÍSTA pronunciation of the region—both in Spanish and in Galician—presents several phonetic realizations of the palatal obstruent. Among those, he cites the palatal obstruent \[\ddot{j}\] as the most frequent allophone, “a veces realizado como una oclusiva sin barra de explosión, \[\ddot{\ddot{j}}\]” (2013:43), in addition to a palatal glide \[j\] and fronted, affricate realizations such as \[\ddot{dz}\]. While the Spanish spoken in Galician is characterized as YEÍSTA, the dialectal scenario of Galician is more complex. Dubert García (ibid.) characterizes the existence of three possibilities for the realization of the palatal segments in question (2013:50-51):

(i) a variety \(\alpha\), which is more conservative and where \(/\ddot{\ddot{j}}/\) surfaces in the speech of older speakers, particularly in rural areas, and is in contrast with a palatal glide \(/j/\), e.g. mollo [mó\(\ddot{o}\)] ‘I wet’ vs. moio [mó\(\ddot{jo}\)] ‘I grind’;

(ii) a variety \(\beta\), which represents most of Galician speakers and distinguishes between a palatal obstruent \(/\ddot{j}/\), phonetically realized as \([j, \ddot{dz}, j]\), and a glide \(/j/\), e.g. callo [ká\(\ddot{j}o\)] ‘I stop talking’ vs. caio [ká\(\ddot{jo}\)] ‘I fall’; and

(iii) a variety \(\gamma\), represented by younger speakers, who strengthen the glide and level it with the palatal obstruent \(/\ddot{j}/\), e.g. mollo [mó\(\ddot{jo}\)] ‘I wet’ vs. moio [mó\(\ddot{jo}\)] ‘I grind’.

In yet another study, Dubert García (1999:74-75) also reports an IEÍSTA pronunciation in western Galicia, particularly in the region of Santiago de Compostela, where \(<\ll>\) is realized as a glide \(j\), e.g. traballas [tra\(\beta\)ájas] ‘you work’, palla [pá\(j\)a] ‘straw’, muller [mujér] ‘woman’. To the east, however, in the towns along the border between Galicia and Asturias, Alarcos Llorach (1996:137) reports the co-occurrence of YEÍSMO and
DISTINCTION throughout the area (e.g. *fiyu* [fi̞u] and *fillo* [fi̞llo] ‘son’). Borrego Nieto (1996:145) reports a similar pattern in regions of Leonese dialects, i.e. while the region around the town of La Cabrera (Leon) is YEÍSTA (e.g. *agu[j]a* ‘needle,’ *nava[j]a* ‘razor,’ and *abe[j]a* ‘bee’), in Sanabria (Leon) speakers still produce the alveolopalatal lateral (e.g. *mu[ʎ]er* ‘woman,’ *fi[ʎ]o* ‘son,’ and *vie[ʎ]a* ‘old’). In Asturias, the two biggest cities, Oviedo and Gijón, are predominantly YEÍSTAS, while in the rest of the region the evolution of /ʎ/ has given rise to various realizations, such as [ʎ], [j], [ɾ], [ts], and [ʃ] (cf. Alonso 1961:178-179; Álvarez Martínez 1996:122).

In the Basque Country, Hualde (2005:291) argues that speakers still maintain the DISTINCTION between /ʎ/ and /j/ in both Basque and Spanish, particularly because in this region “the pronunciation of /ʎ/ has a very positive social consideration (at least in some circles).” Hualde goes even further and claims that, for some speakers, the transfer of a YEÍSTA pronunciation from Spanish to Basque is “little less than an affront to the language and these speakers carefully maintain the contrast in both languages” (*ibid.*). However, he also points out that YEÍSMO will likely prevail, as the youngest generations are losing the DISTINCTION between /ʎ/ and /j/ in both languages.

A similar scenario is observed in the Valencian Community. Segura (2003), for example, reports that in the area of Baix Vinalopó, 84% of 60-year-olds (and older speakers) still produce the alveolopalatal lateral /ʎ/ (e.g. *cava[ʎ]* ‘horse’), while 98% of speakers between 9 and 27 years of age realize the glide (e.g. *cava[j]* ‘horse’). Moratal Canales (2011) finds a similar pattern in Gandía (south of Valencia), although some of his young speakers still preserve /ʎ/ in Valencian (but not in Spanish). In Catalonia,
although most speakers are YEÍSTAS in Spanish, they do produce [ʎ] and practice DISTINCTION in Catalan, despite reported cases of /ʎ/-delateralization in the Catalan of Balearic dialects, e.g. palla [pája] (sometimes [páə]) ‘straw,’ and ull [új] ‘eye’ (Recasens 1991:323-324; Echenique Elizondo & Sánchez Méndez 2005:297).

5.3.2 Hispanic American dialects and other varieties

Since the 16th century, the development of /ʎ/ and /ʝ/ outside of Spain—mainly in Hispanic America—has followed multiple pathways and today provides a rich area to explore their mergers and contrasts in the various dialectal areas. After surveying the status of (alveolo)palatals in the main parts of Hispanic America, brief comments are provided on the status of their pronunciation in other areas of the Spanish-speaking world, such as the Philippines and Equatorial Guinea.

5.3.2.1 The United States, Mexico and Central America

When summarizing the general dialectal features of the Spanish spoken in the United States, Canfield (1981:15, 80-87) reports the occurrence of a palatal glide [j] in the pronunciation of intervocalic <ll> and <y> in words such as valla ‘fence’ and vaya ‘go-Pres. Subj. 1st, 3rd pers.’ along the US-Mexico border. In Northern New Mexico and Southern Colorado, however, the glide is often dropped after a palatal vowel, e.g. capilla [kapía] ‘chapel’ and ella [éja] or [éа] ‘she’ (Canfield 1981:80; Elias 2012). Alonso (1961:196) also confirms the loss of the glide in the same region and in the state of Arizona, e.g. gaina ‘hen,’ estrea ‘star,’ biete ‘ticket,’ poito ‘little chicken,’ cabeo ‘hair,’
The same pattern is also reported for Northern Mexico, “from Monterrey northward and westward” (Canfield 1981:62), for the Yucatan Peninsula, and for most of Central America (although the allophone [j] still surfaces in phrase-initial position). In the latter, especially in Guatemala, Honduras, El Salvador and Nicaragua, Alonso (1961:198) and Lipski (1994:90, 258, 265, 271, 290) report the occurrence of a hypercorrect and stigmatized palatal fricative [ʝ] in hiatus combinations beginning with /il/, e.g. Mariya ‘Maria,’ Dario ‘Dario,’ diya ‘day,’ teniya ‘I, he, she had,’ riyo ‘river,’ feyo ‘ugly,’ etc.

While most of the Mexican territory can be considered YEÍSTA, the realizations of palatal obstruents in Mexican Spanish offer a much more complex scenario. Alonso (1961:192) and Lipski (1994:279) (citing Lope Blanch 1966), for instance, report on the pronunciation of <ll> as a voiced postalveolar fricative [ʒ], e.g. caballo [kabalo] ‘horse,’ in Veracruz, Oaxaca and Puebla, in contrast with a palatal fricative [j], as in mayo ‘May’ [majo], despite the fact that the realization of [ʒ] is sociolinguistically stigmatized (Lipski ibid., citing Garza Cuarón 1987:44-47). In the Yucatán Peninsula, however, <ll> and <y> are pronounced with a weak glide [ʝ], similarly to the one observed in the northern region (Lipski 1994:281).

Martín Butragueño (2013), however, provides the most current report on Mexican YEÍSMO. The author summarizes the relevant data contained in the Atlas Lingüístico de México and carries out a statistical study of the documented variants. He reports on the possible occurrence of a total of six general scenarios for the pronunciation of <ll> and <y>: a closed palatal [ʝ], an open palatal [j], a voiced palatal affricate [jʝ], word-internal deletion, and an alveolopalatal lateral [ʎ] and a voiced postalveolar fricative [ʒ] emerging.
postlexically, i.e. [ʎ] after [l] (as in *el yerno* ‘the son-in-law,’ *el llavero* ‘the keychain’, and [ʒ] after [s] (as in *las yemas* ‘the yokes’) (2013:194, 201). After the analysis of 1,738 tokens, his results indicate that the factor *dialectal zones* is statistically significant in regard to the occurrence of palatal allophones. Thus, while in the Northwest [j] and ∅ prevail, in the Northeast only [j] is significant. In Midwestern and Mideastern Mexico, three allophones are significant: [j], [ʒ], and [ʝ], with postlexical [ʎ] occurring also in the Midwest. In the Southeast, however, only [j], postlexical [ʎ], and ∅ are statistically significant realizations. Therefore, it is possible to characterize Mexican Spanish into two main dialectal areas as far as the realization of (alveolo)palatal obstruents: a general IEÍSTA region to the north and along the US-Mexico border and to the east in the Yucatan Peninsula; and a general YEÍSTA pronunciation throughout most of the country, with the possibility of a postalveolar allophone emerging (mainly postlexically) in a few areas in the center and in the south (i.e. Oaxaca, Puebla, and Veracruz).

5.3.2.2 The Dominican Republic, Cuba, Puerto Rico, Venezuela and Colombia

In Cuban, Dominican, Puerto Rican and Venezuelan Spanish, the alveolopalatal lateral is non-existent and their YEÍSTA pronunciation reflects a palatal obstruent [j] in phrase-initial position and a palatal approximant [ʝ] elsewhere (Saciuk 1980; Lipski 1994:231, 238, 331, 350), although many times both can also be found in free variation. Colombian Spanish, however, presents different dialectal areas according to the realization of palatales. Both its Atlantic and Pacific coasts and the Amazonian region are YEÍSTAS, with the coastal regions presenting intervocalic palatal patterns similar to the
one found in Central America and northern Mexico, i.e. the realization of a glide [j] as in *valla*, *vaya* [bája] (Canfield 1981:15; Lipski 1994:212; Montes 1996:137; Rodríguez Cadena 2008:144, 148). In the central Andean region, however, rural areas still preserve the distinction between /ʎ/ and /j/, despite the fact that main cities like Bogotá are YEÍSTAS today. The department of Antioquia—represented mainly by the city of Medellín—, on the other hand, may present a palatal obstruent /j/ even in intervocalic position, e.g. *mayo* [májo] ‘May,’ *caballo* [kaβaβo] ‘horse’, instead of a palatal fricative [j], as is the case of most YEÍSTA dialects (Canfield 1981:36).

### 5.3.2.3 Ecuador

Despite its small size in comparison with other South American countries, Ecuador provides a rich variety of patterns regarding the realization of (alveolo)palatal segments (e.g. Alonso 1961:190; Lipski 1994:248-249). Throughout the Pacific coast region, with Guayaquil and Esmeraldas as the main cities, a YEÍSTA pronunciation is observed, with a weak palatal fricative (or even a glide) being pronounced in words with <ll> and <y>, e.g. *valla* and *vaya* [bája/bája] (Canfield 1981:15, 48-51). In the Andean region, however, two contrastive patterns are found, namely, a DISTINCTION between the alveolopalatal lateral /ʎ/ and the palatal obstruent /j/ (e.g. *valla* [báxa], *vaya* [bája]), and another DISTINCTION between a postalveolar fricative /ʒ/ and the palatal obstruent /j/ (e.g. *valla* [báʒa], *vaya* [bája]). While the former is attested in the southern Andean region (for example, in the provinces of Cañar, Azuay, and Loja) and also in the extreme northern highlands, the latter is observed in the central-northern highlands, including areas around...
Quito and Ambato. Thus, it appears safe to claim that both YEÍSMO and a two-way DISTINCTION characterize Ecuadorian Spanish. In addition, a few scholars (e.g. Toscano Mateus 1953:100-101; Córdova 1996:192) also indicate the existence of a voiceless postalveolar fricative /ʃ/ in central rural areas, where a DISTINCTION between /ʃ/ and /ʝ/ is reportedly observed in the speech of uneducated speakers, who may or may not be bilingual in Spanish and Quechua:


Recent research, however, suggests that the DISTINCTION between /ʒ/ and /ʝ/ in the central highlands may not last for too long, as quiteño speakers younger than 25 years of age are now associating <ll> and <y> with the obstruent /ʝ/, many times pronouncing words with a voiced postalveolar affricate allophone [dʒ] (Haboud & De la Vega 2008:168).

The origins of the /ʒ/ vs. /ʝ/- DISTINCTION in the central highlands of Ecuador has been the subject of discussion and scrutiny in the recent literature, not only because it represents a zone of linguistic contact between Spanish and Quechua, but also because similar patterns are also attested in other Quechua-influenced geographical areas where Spanish is spoken, such as the Argentinian province of Santiago del Estero (§5.3.2.6). Most scholars agree that the DISTINCTION between /ʒ/ and /ʝ/ in the Ecuadorian central highlands first originated in the pronunciation of the Quechua spoken in this area, and

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22 “ʃ” corresponds to [ʃ] in the present discussion.
speakers of this variety later transferred it to their pronunciation of Spanish. One reason
to suppose this shift relies on the fact that in most other Andean regions where Quechua
and Spanish are coexist, speakers still preserve the contrast between /ʎ/ and /ʒ/ in both
languages, in addition to also having a phoneme /ʒ/ in their Quechua inventory (Toscano
Mateus 1953:101). Despite the possible role that the contact between Spanish and
Quechua may have in the rise of the /ʒ/ vs. /ʎ/-DISTINCTION in some areas, more research
is still necessary in order to shed a definitive light upon when and how the hypothetical
transfer from Quechua to Spanish may have occurred.

Another unresolved problem is the reason for the emergence of /ʒ/ (pronounced
for orthographic <ll>) in the aforementioned areas. It is frequently assumed that /ʒ/
derived from a Quechua phoneme /ʎ/. As most Quechua varieties pronounce <ll> as [ʎ],
then it is often argued that the Quechua of central highland Ecuador must have had /ʎ/
the past as well, from which /ʒ/ eventually emerged. However, no proof for a direct
change /ʎ/ > /ʒ/ has been found for the relevant Quechua dialects and many authors seem
to guide such a hypothesis based on a reconstructed, similar change in Old Spanish (cf.
Chapter 4), arguing that the current [ʒ] is the phonetic realization of an underlying
representation /ʎ/ (cf. Granda 1992). However, as in Old Spanish, due to a lack of
documented proof for the change */ʎ/ > /ʒ/, a more phonetically grounded reconstruction
is in order, namely, one which considers the result of the delateralization of /ʎ/ to be more
likely a palatal glide [j], which in turn increases its degree of palatal constriction and
eventually fronts its articulation toward the prepalatal area (i.e. [j] > [j] > [ʒ]), while
maintaining the contrast with /ʒ/ (cf. Chapter 6). The fact that the same DISTINCTION
pattern between /ʒ/ and /ʝ/ arose in two historically and geographically different Quechua-speaking regions such as central highland Ecuador and the Argentinian province of Santiago del Estero (e.g. Granda Granda 1992:66-67), lends support to the theoretical approach followed in the present dissertation, i.e. that similar sound change processes may arise in varieties of the same language (and in different languages), provided that innovative listeners reinterpret the acoustic signal of speakers’ articulation of sounds in a way that differs from the one that those speakers intended (cf. Chapter 2).

5.3.2.4 Chile and Peru

Chilean Spanish is predominantly yeísta, although some authors still claim the existence of a distinction between /ʎ/ and /ʝ/ in a few small areas in the far south of Chile (Alonso 1961:189; Canfield 1981:33; Lipski 1994:200). Wagner (1996:226) confirms the existence of distinction in such areas, but suggests that it may not be very systematic, as both the alveolopalatal lateral and the palatal obstruent may surface in the speech of the same speaker: “La provincia de Cautín [in the south] merece un apartado especial. Allí subsiste la /ʎ/, pero en la localidad donde se pronuncia coexiste con la [j], incluso en un mismo individuo, lo que ocurre en Carahue: gallina [gaʎínæ], estrella [ehtʃeʎa], Toltén: calle [káʎe], yuguillo [juɣíʎo], Villarica: cebolla [seβóʎa]”. A few areas in Northeastern Chile have also been proposed to have distinction, although Lipski (1994:200) argues that they represent a continuum of “a macro-Bolivian dialect of Spanish”.

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The Spanish varieties spoken in Peru also offer a considerable amount of variation in regard to the production of (alveolo)palatal segments. Yeismo is a linguistic feature of the capital city Lima and the entire coastal region, although a weak, ieista-like pronunciation of /ʝ/ is attested throughout the coast, where /ʝ/-deletion is also observed after /i/ (Canfield 1981:15; Lipski 1994:322; Caravedo 2013:261). The distinction between /ʎ/ and /ʝ/ is observed throughout most of the Andean region (e.g. Canfield 1981:15, 73), especially in the south, in cities such as Cusco and Puno (Lipski 1994:319; Godenzzi 2013), despite the occurrence of an incipient yeismo in the northern highlands among educated urban speakers (cf. Lipski ibid.). The Amazon region, however, represents an important dialectal area, with a reported case of distinction between a postalveolar fricative /ʒ/ and a palatal obstruent /ʝ/ (e.g. Calvo Pérez 2008:2004; Caravedo 1996:157; 2013)—resembling the situation observed in central highland Ecuador and the central-northern province of Santiago del Estero in Argentina (see § 5.3.2.6). Caravedo (1995), however, carries out a sociolinguistic study of this variety—particularly in the areas of Iquitos, Yurimaguas, Chachapoyas, and Pucallpa—and reports a more complex scenario. According to data collected from word elicitation tasks, spontaneous interviews, radio recordings and personal observations, Caravedo reports that words with orthographic <y> are always pronounced with either a weak fricative [j] or an approximant [j] by all speakers (both educated and uneducated), even in phonological contexts where a “stronger” obstruent [ʝ] would be expected, e.g. after nasal consonants in words such as cónyuge ‘spouse’ and inyección ‘injection’ (1995:133). Words with orthographic <ll>, on the other hand, present a great amount of sociophonetic
variation. While uneducated speakers tend to favor affricate allophones such as [dʒ] or fricatives such as [ʒ], educated speech tends to favor a non-sibilant fricative [j] (Caravedo 2013:280, 283). Although Caravedo considers the phonetic realizations of <y> as allophones of a phoneme /j/ and those of <ll> as allophones of /ʎ/, the fact that an alveolopalatal lateral [ʎ] never surfaces in her study (and she does not provide any historical background of the region) makes the existence of a phoneme /ʎ/ rather difficult to maintain. Therefore, based upon Caravedo’s (1995, 2013) data, it is possible to consider the Amazonian dialect of Peru as an area of distinction between “stronger” palatal segments (e.g. [dʒ, ʒ] for <ll>) and very “weak” palatal segments (e.g. [j] for <y>).

5.3.2.5 Bolivia and Paraguay

Bolivian and Paraguayan Spanish are considered the two varieties in which most speakers practice distinction between /ʎ/ and /j/ (Canfield 1981:28, 70; Lipski 1994:188, 307-308). However, some particularities are worth considering. In Paraguay, for example, /j/ is usually realized as [ʃ] or [ʃ], even in intervocalic position, e.g. valla [báλa] and vaya [bája] (Canfield 1981:71; Lipski 1994:308; Alvar 1996:203; Palacios 2008:286). As for Bolivian Spanish, Coello Villa (1996:175-176) divides it into three main dialectal areas regarding the segments in question, i.e. zona A (central and southwestern highlands), zona B (northern and eastern plains), and zona C (central southern valleys). While all three areas can be generally characterized by a /ʎ/ vs. /j/-distinction, zona B (e.g. Santa Cruz de la Sierra) and zona C (e.g. Tarija) also offer
cases of an incipient YEÍSMO (Canfield 1981:15), as many younger speakers no longer produce the alveolopalatal lateral (Terrell A. Morgan, p.c.).

5.3.2.6 Argentina and Uruguay

The Spanish spoken in Argentina and Uruguay is often associated with the speech of Buenos Aires and Montevideo, respectively. However, this generalization hides a more complex dialectal scenario for the Spanish spoken within the two countries. Lipski (1994:170, 341) and Canfield (1981:15) describe the presence of a voiced postalveolar fricative /ʒ/ for words written with both <ll> and <y> (i.e. YEÍSMO) in the porteño variety spoken in the province of Buenos Aires, in Southern Coastal Argentina and in most of Uruguay. However, since approximately the 1940s, /ʒ/ has been incurring a devoicing process, by which many speakers—particularly the younger generations—associate orthographic <ll> and <y> with /ʃ/, i.e. YEÍSMO (Wolf & Jiménez 1979). Thus, as Canfield (1981:24-25) points out, words such as valla and vaya can be pronounced as [báʒa] or as [báʃa], depending on the age of the speaker. Chang (2008:61), for example, provides more current data on the variation between YEÍSMO and YEÍSMO in today’s Buenos Aires and finds that speakers born before 1945 tend to preserve the voiced sibilant [ʒ], while speakers born after 1975 produce the voiceless [ʃ] exclusively and “the middle-aged speaker born in between showed a high degree of variability between voiced and voiceless allophones” (ibid.). Additionally, King (2009) finds that the variation between [ʒ] and [ʃ] in Buenos Aires is also determined by the social prestige attached to each pronunciation and speakers’ general linguistic attitudes, with younger speakers choosing
to use the voiced sibilant [ʒ] in more formal contexts (e.g. a job interview), while pronouncing [ʃ] in more informal situations among peers of similar age.

The origins of ʒEÍSMO in the River Plate region of Buenos Aires and Montevideo have been the object of many studies in the phonetic, phonological, and sociolinguistic literature. For example, while Guitarte (1992) argues that /ʒ/ was a general feature of porteño speech in the 19th century, Fontanella de Weinberg (1984, 1995) presents evidence that such a pattern began toward the end of the 18th century and carried through well into the 19th century, when a palatal fricative [j] was a possible allophone and, therefore, YEÍSMO was still part of the porteño dialect. The strongest evidence she presents is an explicit comment from a theater critic published in the newspaper El Mensajero Argentino on June 6, 1826, in which the sibilant pronunciation [ʒ] by one of the actors is heavily reprimanded:

El no dar a la ll su pronunciación verdadera también es bastante frecuente en Buenos Aires; pero no tanto que sirva de excusa a nadie, y mucho menos a los señores del teatro. Alguno hay de ellos que al pronunciar llanto, batalla y otras palabras con ll parece que pronuncia un ch medio líquido pero prolongado; y que dice chchchanto, batachcha, etc. No hallamos otro modo de escribir esta pronunciación viciosísima (cited by Fontanella de Weinberg 1995:2).

According to Fontanella de Weinberg (1995), this criticism reveals not only that ʒEÍSMO was already part of popular speech, but also that it was in competition with a more prestigious YEÍSTA pronunciation. The devoicing process (ʃEÍSMO), on the other hand, is attested to have emerged between 1946 and 1949, “at which time a phonemic mutation, the change of the voiced palatal fricative /ʒ/ to a voiceless /ʃ/ took root and rapidly spread
into the colloquial usage of all classes” (Honsa 1965:278). Fernández Trinidad (2010), however, carries out a very detailed phonetic study on porteño Spanish and also confirms the existence of a third possible allophone, namely, a voiced postalveolar affricate allophone [ʥ], of which 100% of occurrences take place in initial position, both after a pause and at the beginning of a phrase, particularly with the words yo ‘I’ and ya ‘already.’

Within the phonological literature, Harris and Kaisse (1999) contribute with one of the most thorough studies in order to describe the phenomenon of ƷEÍSMO (and its apparent exceptions) in porteño Spanish, by proposing a series of different underlying representations and phonological rules. The authors claim that [ʒ] is a surface reflex of an underlying vowel /i/ in the pronunciation of most ƷEÍSTA words. For example, a word such as yate ‘yacht’ would have the underlying representation /iate/, which, after incurring “syllabification” and “stress assignment” rules, would be represented as [já.te]. A subsequent “coronalisation” rule would then apply to the initial glide, rendering the ƷEÍSTA pronunciation [ʒá.te]. The same coronalisation rule would apply to the plural form of words ending in [j], e.g. rey [rɛj] ‘king’, but reyes [rɛʒes]. In other words, following plural suffixation and “syllabification,” the “coronalisation” rule would apply to the form [rɛɟes], rendering the ƷEÍSTA pronunciation [rɛʒes]. At the post-lexical level, however, the same rule would not apply for a similar sequence (e.g. el rey es [el.rɛj.ɛs] ‘the king is’), since the glide would not be resyllabified as the onset of the following syllable.

According to Harris and Kaisse’s account, exceptions to the “coronalisation” rule can also be found at the word level. For example, words such as hiato ‘hiatus’ are not
pronounced as *[ʒá.to]*, because they have a special underlying representation, namely, with an underlying syllabic /i./, as opposed to a non-syllabic /i/ in the case of /iate/. Thus, starting with /i.ato/, “syllabification” and “stress assignment” would beget [i.á.to]. At this stage in the derivation, “coronalisation” would not apply, due to the absence of the glide [j] in the onset of the first syllable. Instead, a different mechanism, namely, “Attach Onset”, would be responsible for the form [já.to] only at the end of the derivation process (Harris & Kaisse 1999:152). The same explanation would hold for other exceptions to ʒEÍSMO, such as *paranoia* [paranolá] ‘paranoia’, which would have a syllabic /i./ underlyingly, impeding “coronalisation” from applying early in its derivation process, as opposed to *tramoya* [tramóza] ‘plot’, with a non-syllabic /i/ underlyingly.

In general, Harris and Kaisse’s (1999) synchronic, phonological account of ʒEÍSMO (and its apparent exceptions) offers a description of the phenomenon in question, but leaves us in the dark as to why it happens. Furthermore, other issues arise in regard to their own data and the explanatory power of their argument. For example, under the authors’ view, a word such as *hielo* ‘ice’ would not incur the “coronalization” rule because it would be blocked by a putative syllabic /i./ in its underlying representation (as opposed to *yendo* ‘going’, for example, which does incur coronalization after syllabification, surfacing as [ʒéndo]). However, Harris and Kaisse’s proposal of different underlying representations is arbitrary in nature. In other words, because one observes the occurrence of [ʒ]endo and [j]elo, then it is automatically inferred that the answer *must* be found underlyingly in order to motivate the different derivations. However, as Colantoni (2001:147) rightly points out, it is possible to find a pronunciation such as [ʒ]elo for *hielo*
in some varieties of Argentinian Spanish—including the very same dialects considered
by Harris and Kaisse—especially among uneducated speakers. Using the authors’
assumptions, then, one could propose another rule or ad hoc mechanism, or even a
change from syllabic /i/ to non-syllabic /i/ in the underlying representation of hielo in
order to solve the problem, but this would only offer another description to fit the data,
and not a convincing explanation. Thus, if we take into consideration the evolution of
ʒEÍSMO in Argentinian Spanish (e.g. Fontanella de Weinberg 1987), we are able to posit
that a ʒEÍSTA pronunciation of words such as hielo is entirely possible, since it presents a
similar phonetic environment to that of words such as yendo before they started to be
pronounced with a sibilant fricative [ʒ] in the early 19th century. In other words, assuming
that hielo may be realized phonetically as [jélo]~[ʝélo] (depending on factors such as
speech rate, for example), the occurrence of pronunciations such as [ʒélo] should not
surprise us at all, particularly if we view it from an evolutionary standpoint. External
factors such as social prestige, education, and even orthography may hold the spread of
this innovative pronunciation. However, as Colantoni points out (2001:147), the fact that
it can already be found in the speech of the lower classes indicates that it may become the
norm in the future. Under the theoretical assumptions of the present dissertation, then,
hielo, hiato, etc., are not to be considered as “exceptions” to ʒEÍSMO (as in Harris &
Kaisse’s 1999 account) that require additional ad hoc mechanisms; rather, they embody
the very seed from which we may observe the phenomenon of ʒEÍSMO itself arise in the
interaction between speaker and listener, and (perhaps) eventually spread and become the
norm of the speech in River Plate Argentinian Spanish in the future.
In other parts of Argentina, however, other patterns of (alveolo)palatal behavior are attested. For instance, Canfield (1981:25) and Lipski (1994:172) indicate the occurrence of YEÍSMO in western Argentina, particularly in Mendoza. They also mention a DISTINCTION between the postalveolar fricative /ʒ/ and the palatal obstruent /j/ in the province of Santiago del Estero, a similar pattern found in regions of other countries, cf. §5.3.2.1, §5.3.2.3 and §5.3.24 (cf. also Vidal de Battini 1964:122). In the northeastern provinces of Misiones and Corrientes, as well as in parts of Formosa and Chaco, along the border with Paraguay, the DISTINCTION between /ʎ/ and /j/ is attested for almost all speakers (Canfield 1981:15; Lipski 1994:171). However, Colantoni (2004) observes the current delateralization of /ʎ/ and the emergence of the glide in this region—especially in Corrientes—by which some speakers present a DISTINCTION between [j] (for orthographic <ll>) and [ʝ] (for orthographic <y>), e.g. calló [kajó] ‘stopped talking-3rd pers. sing.’ and cayó [kaʝó] ‘fell-3rd pers. sing.’

Finally, in regard to Uruguayan Spanish, Thun and Elizaincín (2000) provide the most detailed study concerning the pronunciations of <ll> and <y>. Their atlas confirms the advance of the voiceless fricative /ʃ/ especially among women and young speakers, while its voiced counterpart /ʒ/ still prevails in a few areas. An alveolopalatal lateral pronunciation [ʎ] and the palatal fricative [ʝ] are only irregularly found and are stylistically conditioned, namely, surfacing sporadically in reading tasks.
5.3.2.7 The Philippines, Equatorial Guinea and varieties of Judeo-Spanish

The dialects of Spanish spoken in the Philippines and in Equatorial Guinea, in addition to Judeo-Spanish, compose the main varieties found outside of Spain and Latin America. For the Philippine dialect, especially in chabacano (a Spanish creole), Alonso (1961:185) reports a generalized YEÍSMO, while Quilis (1996:238-242) describes the presence of the alveopalatal lateral in words such as lleno [ʎéño] ‘full’ and calle [káʎe] ‘street.’ Quilis (ibid.) also reports the maintenance of /ʎ/ in the Spanish learned as a native language, despite its weaker realization, which resembles that of a palatalized segment [l], e.g. calle [kalе]. This palatalized lateral is also observed in the speech of Guineans, although YEÍSMO is widespread. Quilis (1996:384) reports that the alveolopalatal lateral does not form part of the inventory of Guinean indigenous languages, so it represents rather a learned sound that may be delateralized, depalatalized or even dropped in contact with a palatal vowel:


The loss of a palatal obstruent after a palatal vowel is also a widespread feature of the YEÍSTA pronunciation in most regions where Judeo-Spanish is still spoken today. Alonso (1961:184-195), for example, cites the cases of cuchío, sia, aí, anio, gaina, aquea, estrea and cabeo in the Spanish of Constantinople, and castio, frenio, mantio, bolsio, cuchio.
anio, maravia in the variety spoken in Morocco. Cárdenas (2004:14) reports the same pattern in Levantine Judeo-Spanish, while Alonso (1961:195) claims that the palatal consonant is kept in Bosnian and Bucharest Judeo-Spanish. Additionally, Penny (2000:180) indicates that the sequence /lj/ was generally merged with the palatal lateral /ʎ/ before its delateralization, which produced cases such as kayenti ‘hot’ and yensu ‘canvas’ (cf. Standard Spanish caliente and lienzo).

5.4 Realizations of (alveolo)palatals in other related languages

Some of the changes and dialectal patterns of Spanish (alveolo)palatal segments discussed above have also taken place—or are currently happening—in the evolution of other Romance languages. Thus, it is worth noting that these changes are not exclusive to only one language, but rather, may arise in other linguistic varieties as well, provided that the same internal conditions are present and external factors are conducive to the spreading of the change. Such is the case of the delateralization of the alveolopalatal lateral /ʎ/ in the history of French and in dialects of Italian and Brazilian Portuguese, as discussed below.

5.4.1 French

In the history of French, for example, Pope (1934:55, 274) mentions that /ʎ/ (from Latin /-lj-, -k’l-, -g’l-/) persisted well into the 17th century, although the first traces of its delateralization date as far back as the 12th century (Bruña Cuevas 2003:47-49). In the 16th century, the emergence of the glide [j] in the realization of /ʎ/ became more
frequently attested, especially in the speech of the *petite bourgeoisie* of Paris. This palatal glide, then, became the accepted norm in French only in the 19th century, despite the fact that one may still hear [ʌ] in varieties of Swiss and Belgian French, and in a few areas of France, such as Gap (Walter 1982:175) and Perpignan (Bruña Cuevas 2003:49). As evidence for the delateralization of /ʎ/ in the history of French, Alonso (1961:160) mentions a text from 1687 by Hindret, who reveals the prestige of [ʌ] in Paris at that time, while also recognizing the increasing delateralization process in popular speech:

“…dans la petite bourgeoisie de Paris on trouve beaucoup de gens…que pour dire bataillon, postillon, bouteille, mouillé, bouillon, et autres mots,…disent batayon, postiyon, boutaiye, mouyé, bouyon.”

### 5.4.2 Brazilian Portuguese

In Brazilian Portuguese, on the other hand, alveolopalatals present an interesting pattern of allophony. The alveolopalatal lateral /ʎ/ may have five different realizations, depending on the dialect: (i) an alveolopalatal lateral [ʎ] (e.g. *folha* [fõˈʎɐ] ‘leaf’), which is considered to be part of Standard Portuguese; (ii) a sequence of alveolar lateral and a palatal glide [lj] (e.g. *filho* [fĩˈʎu] ‘son’), which may be realized interchangeably with [ʎ] by some speakers; (iii) a palatal [j] (e.g. *trabalhar* [trabajá] ‘to work,’ *mulher* [muˈjɛ] ‘woman’), which is heavily stigmatized and frequently associated with the speech of uneducated speakers of the lower social classes; (iv) an alveolar lateral [l] before palatal vowels (e.g. *filhinho* [fĩˈʎĩu] ‘son-DIM’, *colher* [kuˈlɛ] ‘spoon’), particularly in some dialects of the northeast; and (v) ∅ when [j] (< /ʎ/) is preceded by a palatal high vowel.
(e.g. *milho* [miu] ‘corn’, *filho* [fiu] ‘son’) (Aguilera 1989; Giangola 2001). Thus, while in Standard Portuguese there is *distinction* between /ʎ/ and /j/ (cf. *telha* [téʎɐ] ‘roof tile’ vs. *teia* [téjɐ] ‘web’), the delateralization of /ʎ/—and the subsequent emergence of the palatal glide—produces cases of *ieismo*23 in the speech of uneducated speakers (cf. *telha* ‘roof tile’ and *teia* ‘web’ both pronounced as [téjɐ]). While Amaral (1981) and Aguilera (1999) report the occurrence of the glide only in stigmatized rural dialects of Southern and Southeastern Brazil (also referred to as *caipira* dialect), Giangola (2001) registers the alveolar lateral in the *baiano* dialect of the northeast. In the latter region, Freire and Marques de Lucena (2011) also observe the realization of the standard [ʎ], with an increasing use of non-standard allophones [l], [j] and ∅ as the level of speakers’ instruction decreases.

5.4.3 Italian

In regard to Italian, Canepari (1980) offers a detailed description of the main dialects, including the phonetic behavior of (alveolo)palatal sounds. For example, in the regions of Southern Tuscany, Umbria, Marche, Campania, and Sicilia, he reports the delateralization of the (geminate) alveolopalatal lateral /ʎʎ/ into a (geminate) palatal glide /jj/, e.g. *taglio*, *tagliato* [táj.jo, taj.já:to] ‘I cut, cut-Past Participle’, *meglio* [méj.jo] ‘better’, *pigliare* [pij.járe] ‘to take, grab’, *figlio* [fi(j).jo] ‘son’, *foglio* [fój.jo], *famiglia* [famij.jja] ‘family’ (1990:57, 60, 62, 72, 82). In Calabria, however, /ʎʎ/ varies between “una realizzazione standard, una intermedia e quella dialettale [ʎʎ/jj/ggj]: *figlio*

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23 Also referred to as *IOTACISMO* in Portuguese linguistics (Aguilera 1989).
[ˈfiːːjo/ˈfiːːɡjo]” (1980:79). According to Ducibella (1934:425), the delateralization of /ʎʎ/ into /jj/ is documented already in Old Sicilian. The geminate glide, in turn, “was reinforced a little and became ɡhj [i.e. [ʝ]] as it was pronounced in Palermo two centuries ago; (…). The ɡhj of the XVIIth century was progressively reinforced and became gghj [i.e. [dʒ]].”

5.5 Summary and concluding remarks

This chapter has provided a general dialectal picture of the behavior of (alveolo)palatal segments in varieties of Spanish, with further evidence of similar change events from other languages. As previously discussed, these dialectal data illustrate a series of mergers, contrasts, and other change phenomena such as deletion (∅) before or after a palatal vowel (as reported for dialects in the southwest of the United States, Northern Mexico, varieties of Judeo-Spanish, and Central American Spanish). Focusing on the Spanish data, Table 6 summarizes the areas where <ll> and <y> have the same pronunciation, while Table 7 indicates the Spanish dialects where speakers pronounce <ll> and <y> contrastively:24

24 Both tables represent rough generalizations and do not intend to be an exhaustive account of every single varying pattern found in Spanish dialects, particularly in regard to sociolinguistic factors, such as education, gender, languages in contact, etc. It should also be noted that younger generations tend to abandon contrastive pronunciations that are typically associated with a region, which often leads to an emergent leveling of previously documented contrasts. However, these tables represent an effort to gather the general contrast and distribution patterns that have been reported in the literature for the varying pronunciations of Spanish <ll> and <y>. In both tables, the symbol ‘ʝ’ assumes an actual affricate realization [ɟʝ] (cf. §3.4), whereas ‘∅’ indicates the deletion of the palatal consonant when it is adjacent to a palatal vowel.
### Table 6

<table>
<thead>
<tr>
<th>Spanish Dialects</th>
<th>No Distinction</th>
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<tr>
<td></td>
<td>VEÍSMO</td>
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<td></td>
<td>Most of Spain;</td>
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<td>most of Mexico;</td>
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<td>most of</td>
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<td>Colombia;</td>
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<td>Coastal Ecuador;</td>
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<td>Southern coastal</td>
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<td></td>
<td>Chile; Western</td>
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<td></td>
<td>Argentina</td>
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<table>
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<tr>
<th>Complementary distribution</th>
<th>Free variation</th>
<th>Complementary distribution</th>
<th>Free variation</th>
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<tr>
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<td>j, j, j, ð</td>
<td>j, j, j, ð</td>
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<tr>
<td>&lt;y&gt;</td>
<td>j, j</td>
<td>j, j, j, ð</td>
<td>j, j, j, ð</td>
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</tbody>
</table>

Table 6. Spanish dialects where speakers do not distinguish the pronunciation of <ll> from that of <y>.

### Table 7

<table>
<thead>
<tr>
<th>Spanish Dialects</th>
<th>Distinction</th>
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<tr>
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<td>Eastern</td>
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<td>Paraguay;</td>
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<td>Highland Bolivia and</td>
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<td>Peru; Southern</td>
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<td>Highland Ecuador;</td>
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<td>scattered areas in southern</td>
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<td>Chile; the Philippines</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>&lt;ll&gt;</td>
<td>ñ</td>
</tr>
<tr>
<td>&lt;y&gt;</td>
<td>j, j</td>
</tr>
</tbody>
</table>

Table 7. Spanish dialects where speakers distinguish the pronunciation of <ll> from that of <y>.

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25 In Table 7, the allophones [ñ, l, l, ð] are deemed to be in free variation for the pronunciation of <ll> in Equatorial Guinea, while the same holds for [dʒ, ʒ] in Amazonian Peru. For the pronunciation of <y>, however, [j, j] are found in complementary distribution.
By organizing the general patterns of (alveolo)palatal segments in current dialects of Spanish—and also considering further evidence of similar sound changes in other Romance languages (§5.4)—one observes how several of the evolutionary pathways taken by these sounds can “repeat themselves” in the same language (or in related languages) at different historical stages and geographical areas. Thus, in order to fully understand and explain how (alveolo)palatal segments have been evolving in the language(s) in question, it is crucial to bring together both the diachrony and the synchrony of these sounds. In other words, an approach that uses today’s dialectal variation as a tool to understand historical evolution, and, conversely, takes into consideration the historical development of sounds to understand today’s variation, can succeed in providing a unified, evolutionary thread that accounts for why similar change events occur more than once in the history of a language. Therefore, assuming that current patterns of (alveolo)palatal merger or contrast are the result of diachronic evolution (cf. Blevins & Garrett 1998; Blevins 2004), the groundwork is now laid to propose an evolutionary formal account that allows for a simpler and more comprehensive explanation, which represents the goal of Chapter 6.
CHAPTER 6
A PHONETICALLY-BASED ACCOUNT OF (ALVEOLO)PALATAL SOUND CHANGE IN SPANISH AND OTHER ROMANCE LANGUAGES

6.1 Introduction

As illustrated in the previous chapters, several have been the evolutionary pathways of (alveolo)patalal sounds from their emergence in spoken Latin to their manifestations in current varieties of Spanish and related Romance languages. The previous discussion also demonstrates how many of such sounds incurred similar change events in the evolution of the aforementioned languages and how much (alveolo)patalal variation in today’s dialectal scenario helps us to understand the motivation for the beginning of many of the historical changes. By applying the theoretical assumptions on sound change guiding this dissertation (cf. Chapter 2) and taking into account the phonetic characterization of the relevant sounds (cf. Chapter 3), this chapter formalizes the reconstructed and illustrated changes (cf. Chapters 4 and 5) that have steered (alveolo)patalal evolution in the development of Spanish and other Romance languages. More importantly, the speaker-listener interaction and the constraint-based model adopted here provides us with the tools to put forth an integrated proposal that not only accounts for how and why most of the discussed sound changes could emerge in the first
place, but also reveals the mechanisms through which similar change events may “repeat themselves” time and again in the development of the aforementioned languages, e.g. the delateralization of /ʎ/, the change in place of articulation from /ʝ/ to /ʒ/, the devoicing of /ʒ/ into /ʃ/, etc. (cf. Chapters 4 and 5). For visual convenience, I illustrate in (1) the proposed evolution of most of the (alveolo)palatal sounds and their pathways of change to be formalized further in this chapter. The changes associated with the phoneme and allophones indicated in parentheses are beyond the scope of this dissertation.26

26 This chart does not include all the contrasts found in current Spanish varieties (cf. Chapter 5), nor does it illustrate specific details of particular reconstructed changes (cf. Chapter 4).
This chapter is organized as follows. In §6.2 I exemplify the approach to sound change assumed in this dissertation as constraint reranking between the grammar of the speaker and that of the listener. In §6.3 I formalize the changes that lead to the emergence of the two alveolo-palatal laterals (ι₁ and ι₂) in distinct periods within the history of Spanish, i.e. /-lj-, -k’l-, -g’l-/ > ι₁; /l/, pl-, kl-, fl-/ > ι₂. In §6.4 I detail the mechanisms...
for the emergence of the palatal obstruent /ɟ/ in Hispano-Romance, i.e. /j-, -jj-, -dj-, -gj-,
gê-, gi-, ė-/> /ɟ/. In §6.5 I formalize the subsequent development of /ʎ/ and /ɟ/, particularly
in regard to the emergence of historical /ʒ/ (i.e. /ʎ1/> *[j] > *[ʝ] > /ʒ/ intervocally; /ɟ/ >
*[dʒ-] > /ʒ-/> /ɟ- before back vowels), and its devoicing into /ʃ/ in Medieval Spanish. In §6.6 I
offer remarks on the further development of /ʎ2/ (i.e. /ʎ2/> *[j] > [ʝ] > /ɟ/) and its subsequent
merger with the evolution of /ɟ/ (i.e. [ʝ] > [j, j]). Finally, in §6.7 I discuss contemporary
dialectal realizations, focusing on those change events that are similar to the historical
ones (e.g. /ɟ/> /ʒ/> /ʃ/ in River Plate Argentinian Spanish) and analyzing particular
dialectal changes, such as the weakening and deletion of /ɟ/ in intervocalic position in
Spanish varieties of the U.S. and Northern Mexico. Section §6.8 concludes.

6.2 Sound change as constraint reranking

Considering the theoretical approaches discussed in Chapter 2, let us assume that
a given speaker has /I1/ as an input, and that among many possible realizations, its
faithful output [O1] (i.e. the exact same realization as /I1/) is determined by a constraint
ranking in which C1 dominates C2 and C3, as in (2):

(2) C1 >> C2 >> C3.

Under this ranking, candidates that violate C1 will be automatically ruled out for not
satisfying the most highly ranked constraint, regardless of their compliance with or
violation of C2 and C3. If other candidates satisfy C1, then the selection of the most
harmonic output given the ranking in (2) will be determined according to their (non)violation of C₂. Tableau 6.1 illustrates this scenario.

<table>
<thead>
<tr>
<th>/I₁/</th>
<th>C₁</th>
<th>C₂</th>
<th>C₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. [O₁]</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. [O₂]</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. [O₃]</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8. Tableau 6.1. Selection of [O₁] as the output of /I₁/

In Tableau 6.1, candidate #2 violates the most highly ranked constraint C₁, and thus must be ruled out. The selection of the output of /I₁/ will, then, be determined according to the ranking of the other constraints C₂ and C₃. In Tableau 6.1, candidate #3 incurs one violation of C₂, while candidate #1 does not. Therefore, candidate #1, i.e. [O₁], is selected as the most harmonic output of /I₁/ given the constraint ranking in (2). As previously mentioned, it also happens to be the faithful realization of /I₁/.

Now, let us assume that there is much variation associated with the realization of /I₁/. In other words, it is possible that the same speaker or other speakers produce it in ways that are not faithful to /I₁/. In our example, let us represent these unfaithful realizations as [O₂] and [O₃]. The selection of these additional outputs is determined but a different configuration of the ranking in (2), i.e. by a reranking of constraints C₁, C₂, and C₃. The possibility of this variation in production stems from the inherent unstable character of constraint rankings, as discussed in Chapter 2. Thus, for example, if C₃ dominates both C₁ and C₂, as in (3),

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then we expect candidate #2, i.e. [O₂] to surface as the most harmonic (albeit unfaithful) realization of /I₁/, as illustrated in Tableau 6.2:

<table>
<thead>
<tr>
<th>/I₁/</th>
<th>C₃</th>
<th>C₁</th>
<th>C₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. [O₁]</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. [O₂]</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>3. [O₃]</td>
<td>*!</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

Table 9. Tableau 6.2. Selection of [O₂] as the output of /I₁/

In Tableau 6.2, both candidates #1 and #3 fatally violate the most highly ranked constraint, i.e. C₃, and are, thus, ruled out. Candidate #2, i.e. [O₂], is then selected as the output of /I₁/, given the ranking in (3) and despite the fact that it violates (now lowly ranked) C₁.

Considering the inherent variation associated with the speaker’s production of /I₁/, the outputs [O₁] (i.e. the faithful realization of /I₁/, determined by the constraint ranking C₁ >> C₂ >> C₃) and [O₂] (i.e. one of the unfaithful realizations of /I₁/, determined by C₃ >> C₁ >> C₂) are, then, possible. Now, given the speaker-listener interaction discussed in Chapter 2 (cf. Ohala’s 1981, 1989, 2003, 2012, etc.), let us assume that the listener internalizes as his/her input one of the speaker’s unfaithful realizations to the original input /I₁/, e.g. [O₂]. In this case, a sound change occurs and is, thus, formalized as a difference in constraint ranking between the faithful realization to the speaker’s input and the faithful realization to the listener’s input, which itself represents one of the unfaithful
realizations to the original speaker’s input. In other words, while the speaker has the input /I₁/ and its faithful realization [O₁] is determined by C₁ >> C₂ >> C₃, the listener has /I₂/ and its faithful realization is determined by C₃ >> C₁ >> C₂ (in the grammar of the speaker), which corresponds to the original speaker’s [O₂], i.e. an unfaithful realization to the original speaker’s input. The listener’s selection of /I₂/ is determined by Optimality Theory’s (OT) Lexicon Optimization principle (cf. Chapter 2; Prince & Smolensky 2004 [1993]; Inkelas 1994; Ito, Mester & Padgett 1995), as defined in (4) (following Ito, Mester & Padgett (1995):

(4) Out of a set of potential inputs (e.g. /I₁/, /I₂/, /I₃/ … /Iₙ/), select as the underlying representation the input that is most harmonic with the output.

Thus, in our example, the faithful realization to the listener’s /I₂/ is now an unfaithful realization to the speakers’ /I₁/. The constraint reranking observed in this comparison illustrates how the present dissertation formalizes a sound change, as schematized in (5):

(5) /I₁/ > /I₂/, captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

**Speaker’s grammar: /I₁/**

*Faithful output: [O₁]*, determined by C₁ >> C₂ >> C₃.

*Other possible, non-faithful outputs:*
E.g. [O₂], determined by C₃ >> C₁ >> C₂.
etc.

(where ‘etc.’ entails all other unfaithful outputs, e.g. [O₃].)
Listener’s grammar: /l_2/

Faithful output: [O_2], determined by C_3 >> C_1 >> C_2 in the original speaker’s grammar, which represents a non-faithful realization to the speaker’s input /l_1/.

6.3 Pathways for the emergence of /ʎ/

6.3.1 /lj/ > ʎ_1

As reviewed in Chapter 4 (§4.2.1.1), one of the oldest sources for the emergence of ʎ_1 was the interaction between an alveolar lateral [l] and a following palatal glide [j] in Latin. Considering the articulatory characteristics of these segments, it is possible that a regressive place assimilation process may take place, leading to an eventual palatalization of [l] in the sequence [lj]. If the listener fails to interpret the acoustic effect of such palatalization as how the speaker intended it to be (i.e. two segments, /l/ + /j/), the listener may eventually interpret it as one segment, i.e. /ʎ/. This represents not only one of the mechanisms for the emergence of historical /ʎ/ in the Romance languages, but also a process that is still productive in present-day languages such as Spanish and Portuguese, as suggested by regular orthographic mistakes by native speakers such as familia (Standard Spanish familia ‘family’) and familha (Standard Portuguese família ‘family’) (Lipski 1989; Stein 2011).

In order to provide a formal account of this process, I first assume that the interaction between [l] and [j] may be perceived by the listener as regressive place assimilation when the target consonant [l] incurs at least some degree of gestural reduction in speaker’s production of [lj] (Jun 2004). Speakers’ reduction of an articulatory gesture—which may or may not lead to place assimilation—follows from the
conflict between two forces, namely, ease of articulation and ease of perception (Lindblom 1983). In other words, the minimization of effort during sound production conflicts with the maintenance of redundant perceptual cues that insure the transmission of information in spoken language. This conflict is widely attested and has been considered under various approaches in the literature (e.g. Martinet 1955; Boersma 1998; Kirchner 2001, 2004; Flemming 2002, 2004; etc.). In order to formalize the drive to ease articulation in the current analysis, I invoke Jun’s (2004:70-71) constraint family WEAKENING, as defined in (6):

(6) \text{WEAK(ENING)}: \text{Conserve articulatory effort in the production of a segment.}

As \text{WEAK} constraints militate for the minimization of articulatory effort, violations of these constraints are evaluated according to the effort cost incurred by the articulation of a given candidate (Jun 2004:70; Kirchner 2001, 2004). In order to measure articulatory effort—and thus account for both complete and partial gestural reduction—Jun (2004:80) proposes to subdivide \text{WEAK} into continuous constraints that reveal the possibility of a gradient reduction of gestures, as stated in (7):

(7) \text{WEAK(ENING)}_m: \text{Do not produce an articulatory gesture whose effort cost is at least } m.

Assuming that “the impetus to lenite more effortful gestures is stronger than the impetus to lenite easier gestures” (Kirchner 2001, 2004), the fixed ranking of constraints follows
from the most effortful (i.e. complete gestures) to the least effortful, as represented in (8) (Jun 2004:80):

(8) \( \text{WEAK}_{1x} \gg \text{WEAK}_{0.9x} \gg \text{WEAK}_{0.8x} \ldots \gg \text{WEAK}_{0.5x} \ldots \gg \text{WEAK}_{0.1x} \)

where \( 1x \) represents the effort cost for the complete gesture of a segment, \( 0.9x \) represents the effort cost of nine-tenths of a complete gesture, etc. The “complete gesture” of a segment is assumed to represent 100% of the phonetic realization of the input. For example, a phonetic realization such as [b] is assumed to represent 100% of the input /b/, i.e. its complete gesture (Jun 2004:71, cf. Steriade 1997). Therefore, candidates that present the assumed complete gesture of their input will incur one violation of \( \text{WEAK}_{1x} \). However, if a candidate presents only half the gesture, it will violate \( \text{WEAK}_{0.5x} \) once, although it will still satisfy \( \text{WEAK}_{0.6x}, \text{WEAK}_{0.7x}, \ldots \text{WEAK}_{1x} \). \( \text{WEAK} \) constraints may also apply to different gestures, such as tongue tip, tongue body, glottal gesture, etc. Additionally, I extend Jun’s (2004) model by proposing that \( \text{WEAK} \) can also make reference to gestures in different syllabic positions, such as onset and coda. For example, candidates that present the complete gesture of their input segment in coda position will incur one violation of \( \text{WEAK}_{1x(\text{coda})} \). On the other hand, if a candidate presents only half the gesture in the coda, it will violate \( \text{WEAK}_{0.5x(\text{coda})} \), while still satisfying \( \text{WEAK}_{0.6x(\text{coda})}, \text{WEAK}_{0.7x(\text{coda})}, \ldots \text{WEAK}_{1x(\text{coda})} \). Thus, while the constraint family \( \text{WEAK} \) represents a force toward conserving articulatory effort in gestures through a fixed ranking (cf. (8)), its gradient nature helps us to account for cases of partial gestural reduction (as opposed to
complete gestural elimination), especially in cases of partial place assimilation (see further details below).

However, as previously mentioned, the drive to conserve articulatory effort conflicts with the push for maintenance of the perceptual cues of input segments. In Jun’s model, this force is formalized in the Faithfulness constraint family PRESERVE, as defined in (9):

\[(9) \text{PRESERVE}: \text{Preserve perceptual cues of input segments.}\]

PRES militates for a maximal preservation of input cues, such as those related with place of articulation, manner of articulation, voice, etc. However, the preservation of cues may also present a gradient character, which motivates the possibility of a further subdivision of PRES into continuous constraints, as stated in (10):

\[(10) \text{PRESERVE}_n: \text{Preserve at least } n \text{ per cent of the perceptual cues of input features}\]

where \( n \) represents a percentage between 100 (i.e. maximal preservation of input cues) and 1 (i.e. minimal preservation of input cues), as represented in (11):

\[(11) \text{PRES}_{100} \gg \text{PRES}_{99} \gg \text{PRES}_{98} \ldots \gg \text{PRES}_{75} \ldots \gg \text{PRES}_1.\]
For example, $PRES_{100}(\text{place})$ requires the preservation of 100% of the place cues from an input segment (which entails their complete gesture), while $PRES_{99}(\text{place})$, $PRES_{98}(\text{place})$ … $PRES_1(\text{place})$ involve the preservation of a lower percentage of place cues. Thus, if a candidate presents the full articulation of a segment, it will satisfy $PRES_{100}(\text{place})$ and, consequently, all other lower-percentage $PRES(\text{place})$ constraints. However, if a candidate presents only half the articulation of an input segment, it will satisfy $PRES_{50}(\text{place})$, but will violate $PRES_{51}(\text{place})$, $PRES_{52}(\text{place})$, $PRES_{53}(\text{place})$ … $PRES_{100}(\text{place})$. Likewise, $PRES_{99}(\text{voice})$, $PRES_{98}(\text{voice})$ … $PRES_1(\text{voice})$ involve the preservation of a lower percentage of voice cues.

Thus, in the interaction between $\text{WEAK}$ and $PRES$, $\text{WEAK}_{\downarrow x}$ is expected to be in direct conflict with $PRES_{100}$, as the former militates against the complete gesture of segments, which in turn would preserve all segment cues, hence satisfying $PRES_{100}$. Therefore, it becomes impossible to satisfy both constraints at the same time and one of them must outrank the other. For example, in the case of regressive place assimilation, $\text{WEAK}$ outranks $PRES(\text{place})$. However, because the manner cues of the input segment are maintained, this means that $PRES(\text{manner})$ must outrank both $\text{WEAK}$ and $PRES(\text{place})$, as formalized in the following ranking: \{$PRESERVE$ constraints for manner cues\} $>>$ $\text{WEAKENING} >>$ \{PRESERVE constraints for place clues\} (Jun 2004:72). Conversely, in cases where no assimilation or gestural reduction takes place, we assume that all $PRES$

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27 Jun (2004) remains silent in regard to what precisely “manner of articulation cues” would be and also if a gradient character of $PRES(\text{manner})$ would be possible. Thus, I assume here that a candidate with a partial gestural reduction will violate $PRES(\text{place})$, but will still keep the manner associated with its input, hence satisfying $PRES(\text{manner})$, which will not assume gradient values in this dissertation. I acknowledge, however, that this represents a fruitful area upon which further research will shed light.
constraints dominate \textit{Weak}, i.e. \{\texttt{Preserve} constraints for manner cues\}, \{\texttt{Preserve} constraints for place clues\} $\gg$ \textit{Weakening}.

In the specific case of the interaction between \textit{[l]} + \textit{[j]}, the regressive place assimilation targeting the first segment—observed throughout the evolution of \textit{/ʎ/} in the history of the Romance languages—indicates that $\texttt{Pres}_{\text{palatal}}$ and $\texttt{Weak}_{\text{alveolar}}$ must outrank $\texttt{Pres}_{\text{alveolar}}$. In other words, at least \textit{some} reduction of the alveolar gesture takes place, while the palatal gesture is preserved in the production of \textit{/l/ + /j/}. Thus, in order to account for the place assimilation of the target consonant \textit{[l]}, I infer that its articulation undergoes \textit{partial} gestural reduction, while still maintaining some degree of its original gesture, which for the present purposes may be arbitrarily set at 75\% (i.e. three-fourths of its articulatory gesture). The constraint ranking in (12) motivates the partial regressive assimilation observed in the speaker’s production of \textit{/l/ + /j/} as [ʎ]:

\begin{equation}
\texttt{Pres}_{100}\text{(palatal)}\ldots\gg\texttt{Pres}_{75}\text{(palatal)}\ldots, \texttt{Weak}_{\text{x(alveolar)}}\ldots\gg\texttt{Pres}_{100}\text{(alveolar)}\ldots\gg\texttt{Pres}_{75}\text{(alveolar)}\ldots\gg\texttt{Weak}_{0.75}\text{(alveolar)}\ldots, \texttt{Weak}_{\text{x(palatal)}}\ldots\gg\texttt{Weak}_{0.75}\text{(palatal)}-\!
\end{equation}

Notice that, as the input manner is maintained, $\texttt{Pres}_{\text{(manner)}}$ is assumed to be highly ranked and does not appear in (12). Additionally, because the alveolar gesture is the one that incurs some degree of reduction, $\texttt{Weak}_{\text{x(alveolar)}}$ must outrank $\texttt{Pres}_{\text{alveolar}}$. On the other hand, because the palatal gesture is preserved, all $\texttt{Pres}_{\text{palatal}}$ constraints outrank $\texttt{Weak}_{\text{palatal}}$. The ellipsis indicated in (12) assumes lower values of the same constraint family, i.e. “$\texttt{Pres}_{100}\text{(palatal)}\ldots\gg\texttt{Pres}_{75}\text{(palatal)}\ldots$” entails all fixed values of $\texttt{Pres}_{\text{palatal}}$ constraints, from 100 to 1.
The selection of the candidate [ʎ], i.e. one of the possible productions of speakers’ /lj/, is illustrated in Tableau 6.3 (The boxes in each candidate represent the articulatory gestures encoding the input place features, while their manner is indicated inside each box. ‘TT’ refers to the ‘tongue tip’ gesture, while ‘TB’ denotes the ‘tongue body’ gesture. Phonetic symbols represent the acoustic effects of gestures.)

<table>
<thead>
<tr>
<th>/l/ + /j/</th>
<th>Articulation</th>
<th>Acou. effect</th>
<th>PRES (palatal)</th>
<th>WEAK (alveolar)</th>
<th>PRES (alveolar)</th>
<th>WEAK (alveolar)</th>
<th>WEAK (palatal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TT lat</td>
<td>[lj]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>TB approx</td>
<td></td>
<td>100</td>
<td>75</td>
<td>100</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>TT lat</td>
<td>[ʎ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>TB approx</td>
<td></td>
<td>100</td>
<td>75</td>
<td>100</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>TT approx</td>
<td>[j]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>TB</td>
<td></td>
<td>100</td>
<td>75</td>
<td>100</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>TT lat</td>
<td>[l]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>TB</td>
<td></td>
<td>100</td>
<td>75</td>
<td>100</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>TT lat</td>
<td>[‰]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>TB ap.</td>
<td></td>
<td>100</td>
<td>75</td>
<td>100</td>
<td>75</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 10. Tableau 6.3. Regressive place assimilation in the articulation of [l] + [j]

In Tableau 6.3, candidate #1 is ruled out for its complete tongue tip gesture, which crucially violates WEAK_{l,alveolar}. Candidates #4 and #5 are also ruled out because they not only present a full articulation of the alveolar lateral (hence violating WEAK_{l,alveolar}), but they also do not preserve 100% of the cues of input /j/. Thus, they fatally violate PRES_{100,palatal}. On the other hand, candidates #2 and #3 satisfy both PRES_{palatal} and
\textsc{Weak}_{\text{alveolar}}$, so the winner will be determined according to how much of the alveolar
cues are preserved. Candidate \#2 is, then, selected as the most harmonic output because it
preserves at least 75\% of the alveolar cues of the input (hence satisfying $P_{\text{RES}_{75}}(\text{palatal})$),
while candidate \#3 does not and must be, then, ruled out.

It is important to point out, however, that the constraint ranking in Tableau 6.3
represents \textit{one} of the possible outputs produced by the speaker, and so other outputs are
also possible. For example, the production of [lj] faithfully represents the input /lj/ and
indicates no reduction or place assimilation. Therefore, [lj] entails a different constraint
ranking than [ʎ], i.e. one in which all $P_{\text{RES}}$ constraints dominate all $\text{Weak}$ constraints:
$P_{\text{RES}}(\text{palatal})$, $P_{\text{RES}}(\text{alveolar}) >> \text{Weak}_{\text{alveolar}}$, $\text{Weak}_{\text{palatal}}$. Put another way, if \textit{all} $P_{\text{RES}}$
constraints—with its continuous values—were ranked higher than $\text{Weak}$ constraints, we
would expect the constraint ranking to select a candidate whose production preserves
100\% of the cues for place of articulation of the input /lj/ (represented by candidate \#1)
that the speaker has underlyingly.

Thus, if /lj/ is realized as [ʎ], this means that the speaker produced a segment
chosen by a constraint ranking that differs from the ranking that selects the faithful
realization to the input, i.e. that of [lj]. This derives from the inherent unstable nature of
constraint rankings (cf. Chapter 2). If the listener, then, interprets /ʎ/ as the input from the
acoustic signal, it means that the constraint ranking of the faithful realization to the input
internalized by the listener is now the constraint ranking of [ʎ], not that of [lj] (whose
constraint ranking represents the faithful realization to the input of the original speaker).
Considering our assumptions on sound change (cf. Chapter 2 and §6.2), while the speaker
has the input /lj/ (and so the constraint ranking of [lj] is the faithful one to his input /lj/),
the listener, on the other hand, internalizes one of the speaker’s non-faithful realizations
to the original input /lj/. In this case, the listener internalizes /ʎ/ as the input by virtue of
Lexicon Optimization (LO) (Prince & Smolensky 2004 [1993]). Therefore, in the present
account, it is shown how the sound change /lj/ > /ʎ/ is captured by a difference in the
constraint ranking between the realization that is faithful to the speaker’s input and the
listener’s interpretation (as input) of a speaker’s realization that is not faithful to the
original speaker’s input, as schematized in (13):

(13) /lj/ > /ʎ/, captured by the difference in the constraint ranking between the
faithful realization to the speaker’s input and the listener’s interpretation (as
input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

Speaker’s grammar: /lj/

Faithful output: [lj], determined by PRES(palatal), PRES(alveolar) >> WEAK(alveolar),
WEAK(palatal).

Other possible, non-faithful outputs:
E.g. [ʎ], determined by PRES100(palatal)…>> PRES75(palatal)…, WEAK1x(alveolar)…>>
PRES100(alveolar)…>> PRES75(alveolar)…>> WEAK0.75x(alveolar)…, WEAK1x(palatal)…>>
WEAK0.75x(palatal)…, etc.

Listener’s grammar: /ʎ/

Faithful output: [ʎ], determined by PRES100(palatal)…>> PRES75(palatal)…,
WEAK1x(alveolar)…>> PRES100(alveolar)…>> PRES75(alveolar)…>> WEAK0.75x(alveolar)…,
WEAK1x(palatal)…>> WEAK0.75x(palatal) in the original speaker’s grammar, which
represents a non-faithful realization to the speaker’s input /lj/.
6.3.2 /k’l-, -g’l-/ > ʎ₁

In the evolution of Western Romance, ʎ₁ also emerged from spoken Latin /-k.l-, -g.l-/ and, therefore, the pathways of this change must be accounted for. Assuming that both obstruents had the same fate by weakening in coda position after the syncope of the original intervocalic /ŭ/ (< -CUL- and -GUL-) (cf. Chapter 4), it is conceivable to posit that their eventual vocalization into a reconstructed glide */j/ followed a reduction in their constriction. In the present approach, this process is captured by the outranking of WEAK\(_{(\text{velar coda})}\) constraints (i.e. the drive to conserve the articulatory effort of a velar input in coda position) over PRES constraints (i.e. the drive to preserve the perceptual cues of input features). However, because obstruent weakening in this case did not lead to a full segment deletion, not all WEAK\(_{(\text{velar coda})}\) constraints outranked PRES constraints. Thus, the resulting glide in coda position [ʎ₁] must have violated at least some of the lower WEAK\(_{(\text{velar coda})}\) constraints, while still complying with some PRES constraints. If we consider, for example, the fate of voiced velar stop /g./ in this case (and assume that the voiceless obstruent in /k.l/ had the same evolution), its eventual vocalization can be formalized as in (14):

\[
\begin{align*}
\text{WEAK\(_{1x}(\text{velar coda})\)} & \gg \text{WEAK\(_{0.75x}(\text{velar coda})\)} \gg \text{WEAK\(_{0.5x}(\text{velar coda})\)} \gg \text{WEAK\(_{0.25x}(\text{velar coda})\)} \gg \text{WEAK\(_{0.10x}(\text{velar coda})\)} \gg \text{PRES\(_{0}(\text{stop})\)} \\
\text{PRES\(_{1x}(\text{velar})\)} & \gg \text{PRES\(_{0.75x}(\text{velar})\)} \gg \text{PRES\(_{0.5x}(\text{velar})\)} \gg \text{PRES\(_{0.25x}(\text{velar})\)} \gg \text{PRES\(_{0.10x}(\text{velar})\)}
\end{align*}
\]

By ranking WEAK\(_{1x}(\text{velar coda})\) \gg WEAK\(_{0.75x}(\text{velar coda})\) \gg WEAK\(_{0.5x}(\text{velar coda})\) above PRES\(_{0}(\text{velar})\), we infer that all candidates having from 100% to 50% of the input gesture will
be automatically ruled out. On the other hand, candidates that show 25% or less of the input gesture will be evaluated according to their violations of $\text{Pres}_{\text{velar}}$, i.e. they will be evaluated on what percentage of the place cues they preserve. Additionally, we expect a candidate with 0% of place cue preservation (i.e. total deletion) to be ruled at this stage, as $\text{Pres}_{\text{velar}}$ outranks $\text{Weak}_{0.25x(\text{velar coda})}$ and other $\text{Weak}_{\text{velar coda}}$ constraints of lower values. Tableau 6.4 illustrates this scenario. (The boxes in each candidate represent the articulatory gestures, while the phonetic symbols represent their acoustic effects. ‘TB’ refers to the ‘tongue body’ gesture. Full lines indicate a complete occlusion, while dotted lines represent an incomplete occlusion.)

<table>
<thead>
<tr>
<th>/g./</th>
<th>Articulation</th>
<th>Acoustic effect</th>
<th>Weak (velar coda)</th>
<th>Pres (velar)</th>
<th>Weak (velar coda)</th>
<th>Pres (stop)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>$lx$ 0.75x 0.5x 100 75 50 25 0.25x 0.1x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>TB: stop</td>
<td>[g.]</td>
<td>*! * *</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>2.</td>
<td>TB: approx</td>
<td>[ɣ.]</td>
<td>*! * *</td>
<td>*</td>
<td>* * *</td>
<td>*</td>
</tr>
<tr>
<td>3.</td>
<td>TB: ap.</td>
<td>[ɣ.]</td>
<td>*! * *</td>
<td>*</td>
<td>* * *</td>
<td>*</td>
</tr>
<tr>
<td>4.</td>
<td>TB: approx</td>
<td>[j.]</td>
<td>* * *</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>TB:</td>
<td>Ø</td>
<td>* * * *!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 11. Tableau 6.4. Weakening and eventual vocalization of /g./ into /j./.

In Tableau 6.4, candidate #1 presents a faithful realization of the input and, for this reason, it fatally violates the most highly ranked constraint $\text{Weak}_{lx(\text{velar coda})}$. Candidates #2 and #3, on the other hand, fatally violate the next two highly ranked constraints respectively, i.e. $\text{Weak}_{0.75x(\text{velar coda})}$ and $\text{Weak}_{0.5x(\text{velar coda})}$, and are then ruled out.
Candidates #4 and #5, however, comply with $\text{WEAK}_{1x}(\text{velar coda}) \ldots \gg \text{WEAK}_{0.5x}(\text{velar coda})$, and so their evaluation depends on how much of the input cues for velar place they preserve. As candidate #5 does not preserve any percentage of the input, it is ruled out. Thus, candidate #4 emerges as the winner, as it incurs one less violation of $\text{PRES}_{\text{velar}}$ than candidate #5. In other words, candidate #4 preserves at least 25% of the input cues for velar place of articulation and is then selected as the output of /g./, given the constraint ranking in Tableau 6.4.

It is important to note, however, that weakening of the velar gesture does not necessarily lead to a full realization of a palatal glide. Instead, the superscripted symbol [\text{j}] is meant to represent here some fronting of the tongue body gesture from the velum to the back of the palate, whose acoustic effect begins to resemble that of a palatal glide. Thus, I assume that an extreme reduction of the original tongue body gesture on the velum produces some fronting of the tongue body toward the back of the palate, in part due to an assimilation caused by the overlap with the tongue tip gesture of the following alveolar lateral. Hence, given this assumption, a very reduced velar place of articulation would beget [\text{j}] and not, for example, a bilabial [\text{β}], which would not preserve any information about the original velar gesture. Note, moreover, that the constraint $\text{WEAK}_{\text{velar coda}}$ can be applied to all cases in which velar obstruents in coda position are believed to have vocalized into *j/* in the evolution of Hispano- and Luso-Romance, i.e. /k.l, k.s, k.t, g.l, g.n/. I follow Rini (1991), however, in assuming a subsequent metathesis stage, i.e. $\ddot{l}A/ > /l\text{j}/$, after which /l\text{j}/ is free to evolve into [\text{ʎ}] along similar lines and the analysis illustrated in Tableau 6.3.
As with the change /lj/ > /ʎ/, the emergence of /j.ʎ/ from /g.ʎ/ can also be understood from the speaker-listener interaction. Following our approach on the formalization of sound change, /g.ʎ/ > /j.ʎ/ is captured by the difference in the constraint ranking between the faithful realization to the speaker’s input (i.e. [g.ʎ]) and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. /j.ʎ/), as shown in (15):

(15) /g.ʎ/ > /j.ʎ/, captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input, by virtue of LO:

**Speaker’s grammar: /g.ʎ/**

*Faithful output:* [g.ʎ], determined by \(\text{PRES}_{\text{velar}}\), \(\text{PRES}_{\text{stop}}\) \(\gg\) \(\text{WEAK}_{\text{velar coda}}\).

*Other possible, non-faithful outputs:*
E.g. [j.ʎ], determined by \(\text{WEAK}_{\text{velar coda}}\) \(\gg\) \(\text{WEAK}_{0.75\text{velar coda}}\) \(\gg\) \(\text{WEAK}_{0.5\text{velar coda}}\) \(\gg\) \(\text{PRES}_{\text{100velar}}\) \(\gg\) \(\text{PRES}_{\text{75velar}}\) \(\gg\) \(\text{PRES}_{\text{50velar}}\) \(\gg\) \(\text{PRES}_{\text{25velar}}\) \(\gg\) \(\text{PRES}_{\text{10velar}}\) \(\gg\) \(\text{WEAK}_{0.25\text{velar coda}}\) \(\gg\) \(\text{WEAK}_{0.1\text{velar coda}}\) \(\gg\) \(\text{PRES}_{\text{stop}}\).

**Listener’s grammar: /j.ʎ/**

*Faithful output:* [j.ʎ], determined by \(\text{WEAK}_{\text{velar coda}}\) \(\gg\) \(\text{WEAK}_{0.75\text{velar coda}}\) \(\gg\) \(\text{WEAK}_{0.5\text{velar coda}}\) \(\gg\) \(\text{WEAK}_{0.25\text{velar coda}}\) \(\gg\) \(\text{WEAK}_{0.1\text{velar coda}}\) \(\gg\) \(\text{PRES}_{\text{stop}}\) in the original speaker’s grammar, which represents a non-faithful realization to the speaker’s input /g.ʎ/.
As the proposed metathesis stage \(^{\ast} \hat{\beta}.l/ > /l\hat{\beta}/\) is assumed to have occurred due to the
effects of analogy with the more highly frequent sequence /lj/ (cf. Chapter 4), the reasons
for this change are beyond the scope of this dissertation and, thus, will not be formalized
here.\(^{28}\)

6.3.3 \(l:/ > \lambda_2\)

A second alveolo-palatal lateral /\lambda/ (i.e. \(\lambda_2\)) emerged later in the history of Spanish
from the Latin sources /l/, pl-, kl-, fl-/\). In regard to the lateral geminate /l:/, as discussed
in Chapter 4, Straka (1979:305) provides evidence that the long duration of this segment
may increase the raising of the tongue body, generating a palatal quality to its overall
production: “(…) las imágenes estomatológicas muestran nítidamente que una l enérgica
da un contacto representando aproximadamente algo intermedio entre la l ordinaria y la l
palatal.” I interpret this ‘palatal quality’ in the production of /l:/ as the activation of a
tongue body gesture, in addition to the tongue tip gesture on the alveolar region. If the
alveolar gesture, then, gets reduced, an actual palatalized lateral [l\|^\hat{\beta}\] emerges and may
eventually become a fully articulated alveolo-palatal lateral [\(\lambda\)], as was the case in the
history of Spanish. Moreover, if we take into account the fact that the duration of Spanish
/l\|^\lambda/ is usually 33% longer than the duration of its alveolar counterpart /l/ (Lavoie 2000), it
is reasonable to infer that, in the palatalization process /l:/ > /\lambda/, part of the long duration
of the original lateral geminate is also preserved. Otherwise, the non-preservation of this

\(^{28}\) For a different approach, see Baker’s (2004:109-118) analysis and the implementation of his
proposed CONDENSE constraint, which would have begotten the emergence of [\(\lambda\)] in this case by
forcing a co-articulation between the preceding [\(\}\)] and the following [l].
duration would entail the production of a singleton [l]. In a formal analysis, then, palatalized realizations would comply with the constraint $\text{PRES}_{\text{duration}}$, while the singleton [l] would violate it. A candidate whose acoustic effects is [l̃], thus, satisfies $\text{PRES}_{\text{duration}}$ and $\text{PRES}_{\text{palatal}}$, although it still violates some $\text{PRES}_{\text{alveolar}}$ constraints, as per the reduction of the original tongue tip gesture from the input /lː/. The force to conserve articulatory effort during the production of geminates is formalized here as the constraint $\text{WEAK}_{\text{geminate}}$, which, in the present case, will penalize both the tongue tip (i.e. $\text{WEAK}_{\text{geminate, alveolar}}$) and the tongue body (i.e. $\text{WEAK}_{\text{geminate, palatal}}$) gestures. The constraint ranking in (16) determines the selection of [l̃]:

\begin{equation}
\text{PRES}_{\text{duration}}, \text{PRES}_{\text{palatal}} \gg \text{WEAK}_{1x(\text{geminate, alveolar})} \gg \text{WEAK}_{0.8x(\text{geminate, alveolar})} \gg \text{WEAK}_{0.5x(\text{geminate, alveolar})} \gg \text{PRES}_{100(\text{alveolar})} \gg \text{PRES}_{80(\text{alveolar})} \gg \text{WEAK}_{0.3x(\text{geminate, alveolar})} \gg \text{WEAK}_{1x(\text{geminate, palatal})} \gg \text{WEAK}_{0.8x(\text{geminate, palatal})}
\end{equation}

Under this ranking, singletons would fatally violate highly ranked $\text{PRES}_{\text{duration}}$, while faithful realizations to the input /lː/ would violate higher values of $\text{WEAK}_{\text{geminate, alveolar}}$, as illustrated in Tableau 6.5.
In Tableau 6.5, candidate #1 fatally violates $\text{WEAK}_{\text{geminate, alveolar}}$ by not conserving any effort in the articulation of the tongue tip gesture during the realization of the input, while the degeminated realization [l] from candidate #2 does not preserve the duration cues from /lː/ nor its palatal quality. Thus, it fatally violates the most highly ranked constraints $\text{PRES}_{\text{duration}}$ and $\text{PRES}_{\text{palatal}}$. The palatalized lateral [l̃] from candidate #3 is then selected, for satisfying $\text{PRES}_{\text{duration}}$, $\text{PRES}_{\text{palatal}}$, despite the fact that it still violates $\text{PRES}_{100\text{(alveolar)}}$ due to its reduction of the tongue tip gesture. If the listener, then, interprets the palatal quality in [l̃] as an inherent characteristic of the lateral in question, then a sound change may occur. In the present analysis, this is captured by the difference in constraint ranking between the faithful realization to the speaker’s input (i.e. [lː]) and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. /l̃/), as indicated in (17):

<table>
<thead>
<tr>
<th>/lː/</th>
<th>Articulation</th>
<th>Acou effect</th>
<th>$\text{PRES}_{\text{dur.}}$</th>
<th>$\text{PRES}_{\text{pal.}}$</th>
<th>$\text{WEAK}_{\text{geminate, alveolar}}$</th>
<th>$\text{WEAK}_{\text{geminate, palatal}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>TT: lateral</td>
<td>[lː]</td>
<td>*! *</td>
<td>*</td>
<td><img src="image1" alt="image" /></td>
<td><img src="image2" alt="image" /></td>
</tr>
<tr>
<td></td>
<td>TB: a.</td>
<td></td>
<td></td>
<td></td>
<td><img src="image3" alt="image" /></td>
<td><img src="image4" alt="image" /></td>
</tr>
<tr>
<td>2.</td>
<td>TT: lat.</td>
<td>[l]</td>
<td>*! *</td>
<td>*</td>
<td><img src="image5" alt="image" /></td>
<td><img src="image6" alt="image" /></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><img src="image7" alt="image" /></td>
<td><img src="image8" alt="image" /></td>
</tr>
<tr>
<td>3.</td>
<td>TT: lat.</td>
<td>[l̃]</td>
<td>*</td>
<td></td>
<td><img src="image9" alt="image" /></td>
<td><img src="image10" alt="image" /></td>
</tr>
<tr>
<td></td>
<td>TB: a.</td>
<td></td>
<td></td>
<td></td>
<td><img src="image11" alt="image" /></td>
<td><img src="image12" alt="image" /></td>
</tr>
</tbody>
</table>

Table 12. Tableau 6.5. Palatalization of /lː/.
(17) /lː/ > /ʎ/, captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

**Speaker’s grammar: /lː/**

*Faithful output:* [lː], determined by \( \text{PRES}_{\text{duration}}, \text{PRES}_{\text{palatal}}, \text{PRES}_{\text{alveolar}} \gg \text{WEAK}_{\text{geminate}} \).

*Other possible, non-faithful outputs:*

E.g. [lʃ], determined by \( \text{PRES}_{\text{duration}}, \text{PRES}_{\text{palatal}} \gg \text{WEAK}_{\text{s}}(\text{geminate, alveolar}) \gg \text{WEAK}_{\text{0.8x}}(\text{geminate, alveolar}) \gg \text{PRES}_{\text{0.5x}}(\text{geminate, alveolar}) \gg \text{PRES}_{\text{0.1x}}(\text{geminate, alveolar}) \gg \text{WEAK}_{\text{0.8x}}(\text{geminate, palatal}) \gg \text{WEAK}_{\text{0.5x}}(\text{geminate, palatal}) \gg \text{WEAK}_{\text{0.3x}}(\text{geminate, palatal}) \gg \text{WEAK}_{\text{1x}}(\text{palatal}) \).

**Listener’s grammar: /ʎ/**

*Faithful output:* [ʎ], determined by \( \text{PRES}_{\text{duration}}, \text{PRES}_{\text{palatal}} \gg \text{WEAK}_{\text{s}}(\text{geminate, alveolar}) \gg \text{WEAK}_{\text{0.8x}}(\text{geminate, alveolar}) \gg \text{WEAK}_{\text{0.5x}}(\text{geminate, alveolar}) \gg \text{PRES}_{\text{0.1x}}(\text{geminate, alveolar}) \gg \text{PRES}_{\text{0.8x}}(\text{geminate, alveolar}) \gg \text{WEAK}_{\text{0.8x}}(\text{geminate, palatal}) \).

Next, the sequence /ʎ/ is free to evolve into [ʎ] along similar lines and the analysis illustrated in Tableau 6.3.^{29}

---

^{29} For a different proposal, see Baker (2004:175), who views the palatalization of /lː/ as a result of his proposed \text{CONDENSE} constraint outranking his markedness constraint *\text{PALATAL}*. In this case, however, Baker is not explicit as to how \text{CONDENSE} works to beget a palatal gesture in the realization of /lː/. Additionally, he is not clear as to why or how *\text{PALATAL}* suddenly emerges in the analysis and what its role actually is, other than making the selected candidate [ʎ] violate a given constraint.
6.3.4 /pl-, kl-, fl-/ > ʎ₂

Around the same time that /ʎ/ emerged from the palatalization of /l:/ in Old Spanish, it also did from words that were originally written with /pl-, kl-, fl-/ in Latin. The discussion in Chapter 4 illustrates the complexity of the change /pl-, kl-, fl-/ > … /ʎ/ and the substantial body of research carried out on this topic. Thus, I assume the reader is aware of the details and rationale for the proposed pathways of change that led to the emergence of Spanish ʎ₂ in this case. I will, then, focus only on presenting a formal analysis of the proposed steps. I start by assuming the first palatalization to have emerged in the velar + lateral cluster, i.e. /kʎ-, pl-, fl-/; which is in agreement with the vast majority of the literature (Lloyd 1987, Penny 2002, Tuttle 1975, Holt 1997, Baker 2004, etc.). Indeed, Lloyd (1987:225) suggests that /kl/ > /kʎ/ may be viewed as a case of assimilation of the alveolar lateral to the dorsovelar articulation of /k/. In other words, the raising of the back of the tongue body in the articulation of /k/ would cause a retraction of the tongue tip toward the palate in the articulation of /l/. The effects of this co-articulation have been explored by Müller and Mota (2009:1698, cf. Chapter 4), who report on a small closure fronting of the velar stop /k/ in the production of the cluster [kl-] (as opposed to no change in the closure of the other obstruents /p/ and /ʃ/ in their respective clusters [pl-] and [fl-]). However, as Latin /kl-/ is reconstructed as *[kʎ-] in Ibero-Romance, I assume that this likely closure fronting of the velar stop was too short to produce an actual palatalized velar *[kʃ]. Therefore, if Lloyd’s (1987:225) intuition is right and we consider that the tongue tip in the articulation of the lateral does indeed retract toward the palate in the production of [kl-], then we may also hypothesize that at
least some tongue body gesture is now activated in the production of the lateral. If this is the case, we may interpret the acoustic effect of this realization of /kl-/> to be [kl<sup>1</sup>]. In our formal analysis, then, we expect a candidate with an output such as [kl<sup>1</sup>] to satisfy top-ranked <span>PRES</span>(manner) and <span>PRES</span>(velar), but violate other constraints related to the lateral in this complex onset. I propose, then, the constraint <span>WEAK</span>(complex onset, Voiceless Obst+L), which militates for conserving articulatory effort in the production of complex onsets with voiceless obstruents followed by /l/. Thus, an output such as [kl<sup>1</sup>] violates at least some percentage of <span>WEAK</span> (complex onset, Voiceless Obst+L, alveolar) and at least <span>PRES</span>100(alveolar), as determined by the constraint ranking in (18):

<equation>
(18) \text{PRES}(_\text{stop manner}), \text{PRES}(_\text{lateral manner}), \text{PRES}100(_\text{velar}) \gg \text{PRES}75(_\text{velar}) \gg \text{WEAK}_{1x}(_\text{complex onset, Voiceless Obst+L, velar}) \gg \text{WEAK}_{0.75x}(_\text{complex onset, Voiceless Obst+L velar}) \gg \text{WEAK}_{1x}(_\text{complex onset, Voiceless Obst+L, alveolar}) \gg \text{WEAK}_{0.75x}(_\text{complex onset, Voiceless Obst+L, alveolar}) \gg \text{PRES}100(_\text{alveolar}) \gg \text{PRES}75(_\text{alveolar}).
</equation>

Note that in (18), <span>PRES</span>(_stop manner) and <span>PRES</span>(_lateral manner) are unranked in relation to each other, while <span>PRES</span>(_velar) dominates <span>WEAK</span>(complex onset, Voiceless Obst+L, velar & alveolar), which, in turn, is ranked higher than <span>PRES</span>(_alveolar). Tableau 6.6 illustrates the selection of [kl<sup>1</sup>] as the output of /kl-/, given the constraint ranking in (18):\textsuperscript{30}

\textsuperscript{30} In Tableau 6.6, top-ranked <span>PRES</span>(_manner) represents the constraint that rules out a candidate with the complete deletion of a gesture. However, in other tableaux (e.g. Tableaux 6.3, 6.9, and 6.12) candidates with the complete deletion of a gesture are ruled out through the interplay between <span>WEAK</span> and <span>PRES</span>(_place) constraints. I interpret these different strategies to rule out candidates with gestural deletion as the consequence of the type of place assimilation at hand. In cases of regressive place assimilation (i.e. Tableaux 6.3, 6.9, and 6.12) <span>PRES</span>(_manner) is assumed to be top-ranked and does not surface on the tableau because the selection of the output is determined by <span>WEAK</span> and <span>PRES</span>(_place) constraints. On the other hand, in cases of progressive place assimilation (i.e. Tableau 6.6), <span>PRES</span>(_manner) does surface to rule out candidates with complete gestural
Table 13. Tableau 6.6. Selection of [kl\text{\textsuperscript{j}}] as the output of /kl/-.

In Tableau 6.6, candidates #3 and #4 fatally violate the most highly ranked constraint, i.e. \textit{PRES\textsubscript{manner}}. Candidate #5, on the other hand, fatally violates \textit{PRES\textsubscript{100}(velar)}, as per the reduction in the tongue body gesture. Candidate #1 represents the faithful realization of the input /kl/ and, because of this, it violates all \textit{WEAK\textsubscript{complex onset, Voiceless Obst+L}} constraints. Candidate #2, then, emerges as the winning candidate for not violating \textit{WEAK\textsubscript{1x}(complex onset, Voiceless Obst+L, alveolar)}, despite the fact that it violates \textit{WEAK\textsubscript{complex onset, Voiceless Obst+L, velar}} and does not preserve 100% of the alveolar place cues. The palatal quality in [\textit{j}] in the sequence [kl\text{\textsuperscript{j}}] is assumed to emerge from the reduction of [l] and its subsequent reduction. I acknowledge, however, that further research is necessary to shed light upon the overall role of \textit{PRES\textsubscript{manner}} constraints in determining optimal outputs and banning candidates with complete gestural reduction.
assimilation to [k]. Thus, if the listener interprets [kl] as /kl/, then a sound change occurs, as the underlying representation in the listener’s grammar differs from the representation in the original speaker’s grammar (i.e. /kl/). In terms of constraint reranking, this sound change is captured by the difference in constraint ranking between the faithful realization to the speaker’s input (i.e. [kl]) and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. /kl/), as indicated in (19):

\[(19) /kl/ > /kl/, \text{ captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:}\]

**Speaker’s grammar: /kl/**

*Faithful output: [kl], determined by *\text{PRES}_{\text{manner}} >> \text{PRES}_{\text{place}} >> \text{WEAK}_{\text{complex onset, Obstr+L}}.***

*Other possible, non-faithful outputs:*

*E.g. [kl], determined by *\text{PRES}_{\text{stop manner}}, \text{PRES}_{\text{lateral manner}}, \text{PRES}_{\text{100(velar)}}\ldots >> \text{PRES}_{\text{75(velar)}}\ldots >> \text{WEAK}_{\text{Ix(complex onset velar)}}\ldots >> \text{WEAK}_{\text{0.75x(complex onset velar)}}\ldots >> \text{WEAK}_{\text{1x(complex onset alveolar)}}\ldots >> \text{WEAK}_{\text{0.75x(complex onset alveolar)}}\ldots >> \text{PRES}_{\text{100(alveolar)}}\ldots >> \text{PRES}_{\text{75(alveolar)}}.***

etc.

**Listener’s grammar: /kl/**

*Faithful output: [kl], determined by *\text{PRES}_{\text{stop manner}}, \text{PRES}_{\text{lateral manner}}, \text{PRES}_{\text{100(velar)}}\ldots >> \text{PRES}_{\text{75(velar)}}\ldots >> \text{WEAK}_{\text{Ix(complex onset velar)}}\ldots >> \text{WEAK}_{\text{0.75x(complex onset velar)}}\ldots >> \text{WEAK}_{\text{1x(complex onset alveolar)}}\ldots >> \text{WEAK}_{\text{0.75x(complex onset alveolar)}}\ldots >> \text{PRES}_{\text{100(alveolar)}}\ldots >> \text{PRES}_{\text{75(alveolar)}} \text{ in the original speaker’s grammar, which represents a non-faithful realization to the speaker’s input /kl/}.
Once this step is achieved, the palatalized lateral in the sequence /kl/ is free to evolve into [ʎ] along similar lines and the analysis illustrated in Tableau 3, thus giving rise to the reconstructed cluster *[kʎ]. As the palatalization of the lateral in the /pl-, fl-/ clusters is assumed to have stemmed from a systemic regularization (cf. Tuttle 1975:409; Chapter 4) and not from precise phonetic factors (e.g. Müller & Mota 2009), we now reach the stage of the reconstructed, regularized clusters */pʎ-, kʎ-, fʎ-/*.

Although some scholars propose that all voiceless obstruents in this case were simply dropped due to the overall gestural complexity of the clusters (cf. Lloyd 1987; Tuttle 1975), it is worth pursuing an approach that illustrates how their “drop” could have occurred, which consequently led to the simplification of these clusters into /ʎ-. Thus, I interpret that the drive for obstruent deletion in Cʎ- clusters in Spanish was motivated by a highly ranked constraint WEAK(Cʎ-,obstruent), which militates for conserving articulatory energy in the realization of clusters formed by a voiceless obstruent consonant and an alveolopalatal lateral [ʎ]. As the obstruents were the ones that disappeared, I infer that all WEAK(Cʎ-,obstruent) constraints had to dominate WEAK(Cʎ-,palatal), which, in turn, had to be outranked by PRES(palatal). The ranking in (20) determines the selection of [ʎ-] as the output of /Cʎ-/ clusters:

\[
\text{(20) } \text{WEAK}_{1}(C\tilde{\gamma},\text{obstruent}) \gg \text{WEAK}_{0.5}(C\tilde{\gamma},\text{obstruent}) \gg \text{PRES}_{100}(\text{palatal}) \gg \text{PRES}_{50}(\text{palatal}) \gg \text{WEAK}_{1}(C\tilde{\gamma},\text{palatal}) \gg \text{WEAK}_{0.5}(C\tilde{\gamma},\text{palatal}) \gg \text{PRES}_{100}(\text{obstruent}) \gg \text{PRES}_{50}(\text{obstruent})
\]
Under this ranking, we expect all obstruents in Cʎ- clusters to delete, as candidates with [pʎ-], [kʎ-], or [fʎ-] would violate the most highly ranked constraint $\text{WEAK}_{1x}(Cʎ-,\text{obstruent})$, which militates against the complete gesture of the obstruents in these clusters. Candidates with a weakened realization of these obstruents, for example, [φʎ-], [xʎ-] and [hʎ-] would satisfy $\text{WEAK}_{1x}(Cʎ-,\text{obstruent})$, but would fatally violate the next highly ranked constraint, $\text{WEAK}_{0.5x}(Cʎ-,\text{obstruent})$ (cf. Chapter 4 for the hypothesis on the possible existence of this fricative stage in the evolution of the obstruents in /pʎ-, kʎ-, fʎ-/). The series of ellipses in (20) entail lower values of constraints (e.g. in “$\text{WEAK}_{0.5x}(Cʎ-,\text{obstruent})$…,” the ellipsis entails all other lower values of $\text{WEAK}_{x}(Cʎ-,\text{obstruent})$, from 0.4 to 0.1). Thus, all $\text{WEAK}_{x}(Cʎ-,\text{obstruent})$ must be top-ranked, which causes the full deletion of the obstruents in Cʎ- clusters. A candidate with only an initial alveolopalatal lateral would emerge, then, as the winner. Tableau 6.7 illustrates how the ranking in (20) selects [ʎ-] as the output of /pʎ-, kʎ-, fʎ-/ (due to space restrictions, I include in this tableau only the phonetic symbols indicating the perceptual consequences of the articulatory gestures involved.)
| /pʎ-/
<table>
<thead>
<tr>
<th>WEAK(C-ʎ)</th>
<th>PRES(place)</th>
<th>WEAK(C-ʎ)</th>
<th>PRES(place)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>obstruent</td>
<td>palatal</td>
<td>palatal</td>
</tr>
<tr>
<td></td>
<td>lx</td>
<td>0.5x</td>
<td>100</td>
</tr>
<tr>
<td>1. [pʎ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>2. [ɸʎ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3. [ʎ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4. [j]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

| /kʎ-/
<table>
<thead>
<tr>
<th>WEAK(C-ʎ)</th>
<th>PRES(place)</th>
<th>WEAK(C-ʎ)</th>
<th>PRES(place)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>obstruent</td>
<td>palatal</td>
<td>palatal</td>
</tr>
<tr>
<td></td>
<td>lx</td>
<td>0.5x</td>
<td>100</td>
</tr>
<tr>
<td>1. [kʎ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>2. [xʎ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3. [ʎ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4. [j]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

| /fʎ-/
<table>
<thead>
<tr>
<th>WEAK(C-ʎ)</th>
<th>PRES(place)</th>
<th>WEAK(C-ʎ)</th>
<th>PRES(place)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>obstruent</td>
<td>palatal</td>
<td>palatal</td>
</tr>
<tr>
<td></td>
<td>lx</td>
<td>0.5x</td>
<td>100</td>
</tr>
<tr>
<td>1. [fʎ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>2. [hʎ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3. [ʎ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4. [j]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Table 14. Tableau 6.7. */pʎ-, kʎ-, fʎ- > /ʎ/ in Old Spanish.

In Tableau 6.7, candidates #1 are all ruled out for fatally violating \( \text{WEAK}_{1x}(C-ʎ, \text{obstruent}) \), despite the fact that they comply with all \( \text{PRES} \) constraints. A weakened realization of the obstruents in these clusters, represented in Tableau 6.7 by candidates #2 (i.e. the bilabial fricative \( [ϕ] \), the velar fricative \( [x] \), and the glottal fricative \( [h] \) as per the debuccalization of \( /f/ \)), satisfy \( \text{WEAK}_{1x}(C-ʎ, \text{obstruent}) \), but fatally violate \( \text{WEAK}_{0.5x}(C-ʎ, \text{obstruent}) \). Candidates #2 are, thus, ruled out. Candidates #4 comply with \( \text{WEAK}(C-ʎ, \text{obstruent}) \), but are ruled for fatally violating \( \text{PRES}_{100}(\text{palatal}) \). Candidates #3, i.e. \( [ʎ] \), emerge as the winners, for satisfying all \( \text{WEAK}(C-ʎ, \text{obstruent}) \) and \( \text{PRES}(\text{palatal}) \) constraints. Thus, we can formalize the changes \( /pʎ/ > /ʎ/ \), \( /kʎ/ > /ʎ/ \), \( /fʎ/ > /ʎ/ \) in Old Spanish as a difference in constraint ranking between the
faithful realizations to the speaker’s input (i.e. [pʎ, kʎ, fʎ]) and the listener’s eventual interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. /ʎ, ʎ, ʎ/), as indicated in (21):

(21) /pʎ-, kʎ-, fʎ-/ > /ʎ/, captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

**Speaker’s grammar:** /pʎ-, kʎ-, fʎ-/  

**Faithful output:** [pʎ-, kʎ-, fʎ-], determined by \( \text{Pres}_{\text{place}} \gg \text{Weak}_{\text{(Cʎ-,obstruent)}} \gg \text{Weak}_{\text{(Cʎ-,palatal)}} \)  

**Other possible, non-faithful outputs:**  
E.g. [ʎ-, ʎ-], determined by \( \text{Weak}_{\text{(Cʎ-,obstruent)}} \gg \text{Weak}_{\text{0.5x(Cʎ-,obstruent)}} \), \( \text{Pres}_{\text{100(palatal)}} \gg \text{Pres}_{\text{50(palatal)}} \gg \text{Weak}_{\text{(Cʎ-,palatal)}} \gg \text{Weak}_{\text{0.5x(Cʎ-,palatal)}} \gg \text{Pres}_{\text{100(obstruent)}} \gg \text{Pres}_{\text{50(obstruent)}} \)  

etc.

**Listener’s grammar:** /ʎ-, ʎ-, ʎ-/  

**Faithful output:** [ʎ-, ʎ-, ʎ-], determined by \( \text{Weak}_{\text{(Cʎ-,obstruent)}} \gg \text{Weak}_{\text{0.5x(Cʎ-,obstruent)}} \), \( \text{Pres}_{\text{100(palatal)}} \gg \text{Pres}_{\text{50(palatal)}} \gg \text{Weak}_{\text{(Cʎ-,palatal)}} \gg \text{Weak}_{\text{0.5x(Cʎ-,palatal)}} \gg \text{Pres}_{\text{100(obstruent)}} \gg \text{Pres}_{\text{50(obstruent)}} \) in the original speaker’s grammar, which represents a non-faithful realization to the speaker’s input /pʎ-, kʎ-, fʎ-/.  

As discussed in Chapter 4, however, */pʎ-, kʎ-, fʎ-/ had a different evolution in Old Portuguese. Here, instead of being deleted, all obstruents were preserved, which pushed for the eventual evolution of *[ʎ] into *[j], i.e. */pʎ-, kʎ-, fʎ-/ > */pʝ-, kʝ-, fʝ-/. In the present formal analysis, then, we predict that \( \text{Pres}_{\text{place}} \) for /p, k, f/ must be highly ranked, as the three obstruents remained unchanged at this stage. Next, if we consider the
amount of contact between the tongue body and the palate in the articulation of [ʎ] and [j] (cf. the electropalatographs Figures 13 and 19 in Chapter 3), we are able to notice that there is a lesser degree of palatal contact in the production of [j]. This leads us to posit that, while a candidate representing [pʎ] would have 100% of the assumed tongue body gesture of input /pʎ/, a candidate representing [pj] would have a lower percentage, say, 75%, for example. Thus, because the output [pj] would still preserve at least 75% of palatal place cues of the input, it is reasonable to rank the constraint $P_{RES}(palatal\ place)$ between $WEAK_{1x(C\cdot -palatal)}$ and $WEAK_{0.75x(C\cdot -palatal)}$, hence eliminating the chance of a full deletion of the tongue body gesture in these clusters. This ranking is indicated in (22):

$$
(22) \quad P_{RES100}(place \ of \ the \ obstruent), \ WEAK_{1x(C\cdot -palatal)} \gg \ P_{RES100}(palatal \ place)\ldots \gg \ P_{RES75}(palatal \ place)\ldots \gg \ WEAK_{0.75x(C\cdot -palatal)} \gg \ WEAK_{1x(C\cdot ,obstruent)}.
$$

Under this ranking, we expect all obstruents to be maintained, as they comply with the most highly ranked constraint $P_{RES100}(place \ of \ the \ obstruent)$. A faithful realization of /ʎ/ would incur a fatal violation of the next highly ranked constraint, $WEAK_{1x(C\cdot ,palatal)}$. By ranking $P_{RES100}(palatal \ place)$ and $P_{RES75}(palatal \ place)$ above $WEAK_{0.75x(C\cdot ,palatal)}$, we assure that maintenance of some of at least 75% of the palatal place cues of the input. Tableau 6.8 illustrates how the outputs [pj-, kj-, fj-] are selected from the constraint ranking in (22). (Due to space restrictions, I include in this tableau only the phonetic symbols indicating the perceptual consequences of the articulatory gestures involved.)
In Tableau 6.8, candidates #4 all fatally violate a highly ranked constraint $PRES_{100}(\text{place of the obstruent})$ and are, thus, ruled out. Candidates #1, on the other hand, satisfy this constraint, but violate top-ranked $WEAK_{1x(C\ell_\text{-palatal})}$, for containing a full realization of $[\lambda]$. Because of this, they must also be ruled out. Candidates #2 and #3 satisfy the two top-ranked constraints, because they preserve the place of the obstruent and do not violate $WEAK_{1x(C\ell_\text{-palatal})}$. However, the next ranked constraints, i.e. $PRES_{100}(\text{palatal place})$ and $PRES_{75}(\text{palatal place})$, become crucial in selecting the optimal output between candidates #2 and #3: while both violate $PRES_{100}(\text{palatal place})$, candidates #2 satisfy $PRES_{75}(\text{palatal place})$, as they preserve 75% of the palatal place cues of the input. Because of this, /pj-/, /kj-/, and

<table>
<thead>
<tr>
<th>Tableau 6.8a.</th>
<th>/pʎ-/</th>
<th>$PRES_{\text{place}}$</th>
<th>$WEAK_{\text{C\ell_\text{-palatal}}}$</th>
<th>$PRES_{\text{place}}$</th>
<th>$WEAK_{\text{C\ell_\text{-palatal}}}$</th>
<th>$PRES_{\text{place}}$</th>
<th>$WEAK_{\text{C\ell_\text{-palatal}}}$</th>
</tr>
</thead>
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<tr>
<td>bilabial</td>
<td>palatal</td>
<td>palatal</td>
<td>palatal</td>
<td>palatal</td>
<td>palatal</td>
<td>palatal</td>
<td>palatal</td>
</tr>
<tr>
<td>100</td>
<td>$lx$</td>
<td>100</td>
<td>75</td>
<td>0.75x</td>
<td>$lx$</td>
<td>$lx$</td>
<td>$lx$</td>
</tr>
<tr>
<td>1. [p6]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. [pj]</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3. [p]</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>4. [\lambda]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tableau 6.8b.</th>
<th>/kʎ-/</th>
<th>$PRES_{\text{place}}$</th>
<th>$WEAK_{\text{C\ell_\text{-palatal}}}$</th>
<th>$PRES_{\text{place}}$</th>
<th>$WEAK_{\text{C\ell_\text{-palatal}}}$</th>
<th>$PRES_{\text{place}}$</th>
<th>$WEAK_{\text{C\ell_\text{-palatal}}}$</th>
</tr>
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<tr>
<td>velar</td>
<td>palatal</td>
<td>palatal</td>
<td>palatal</td>
<td>palatal</td>
<td>palatal</td>
<td>palatal</td>
<td>palatial</td>
</tr>
<tr>
<td>100</td>
<td>$lx$</td>
<td>100</td>
<td>75</td>
<td>0.75x</td>
<td>$lx$</td>
<td>$lx$</td>
<td>$lx$</td>
</tr>
<tr>
<td>1. [k6]</td>
<td>*!</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. [kj]</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3. [k]</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4. [\lambda]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tableau 6.8c.</th>
<th>/fʎ-/</th>
<th>$PRES_{\text{place}}$</th>
<th>$WEAK_{\text{C\ell_\text{-palatal}}}$</th>
<th>$PRES_{\text{place}}$</th>
<th>$WEAK_{\text{C\ell_\text{-palatal}}}$</th>
<th>$PRES_{\text{place}}$</th>
<th>$WEAK_{\text{C\ell_\text{-palatal}}}$</th>
</tr>
</thead>
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<td>labiodental</td>
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<td>palatal</td>
<td>palatal</td>
</tr>
<tr>
<td>100</td>
<td>$lx$</td>
<td>100</td>
<td>75</td>
<td>0.75x</td>
<td>$lx$</td>
<td>$lx$</td>
<td>$lx$</td>
</tr>
<tr>
<td>1. [f6]</td>
<td>*!</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. [fj]</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3. [f]</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4. [\lambda]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

Table 15. Tableau 6.8. */pʎ-, kʎ-, fʎ-/* > */pj-, kj-, fj-/* in Old Portuguese.
/fj-/ emerge as the most optimal output of /pʎ-/ and /fʎ-/ given the constraint ranking in (22). Thus, we can formalize the change */pʎ-, kʎ-, fʎ-/ > */pj-, kj-, fj-/ in Old Portuguese as a difference in constraint ranking between the faithful realization to the speaker’s input (i.e. [pʎ-, kʎ-, fʎ-]) and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. /pj-, kj-, fj-/), as indicated in (23):

(23) /pʎ-, kʎ-, fʎ-/ > /pj-, kj-, fj-/ captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

**Speaker’s grammar:** /pʎ-, kʎ-, fʎ-/

*Faithful output:* [pʎ-, kʎ-, fʎ-], determined by \( \text{PRES} \text{(place of the obstruent)} \gg \text{W} \text{E} \text{A} \text{K}_{1x}(Cʎ-, \text{palatal}) \gg \text{W} \text{E} \text{A} \text{K}_{1x}(Cʎ-, \text{obstruent}) \gg \text{W} \text{E} \text{A} \text{K}_{1x}(Cʎ-, \text{palatal}) \) etc.

*Other possible, non-faithful outputs:* E.g. [pj-, kj-, fj-], determined by \( \text{PRES}_{100} \text{(place of the obstruent)} \gg \text{W} \text{E} \text{A} \text{K}_{1x}(Cʎ-, \text{palatal}) \gg \text{PRES}_{75}(\text{palatal place}) \gg \text{W} \text{E} \text{A} \text{K}_{0.75x}(Cʎ-, \text{palatal}) \gg \text{W} \text{E} \text{A} \text{K}_{1x}(Cʎ-, \text{obstruent}) \) etc.

**Listener’s grammar:** /pj-, kj-, fj-/

*Faithful output:* [pj-, kj-, fj-], determined by \( \text{PRES}_{100} \text{(place of the obstruent)} \gg \text{W} \text{E} \text{A} \text{K}_{1x}(Cʎ-, \text{palatal}) \gg \text{PRES}_{75}(\text{palatal place}) \gg \text{W} \text{E} \text{A} \text{K}_{0.75x}(Cʎ-, \text{palatal}) \gg \text{W} \text{E} \text{A} \text{K}_{1x}(Cʎ-, \text{obstruent}) \) in the original speaker’s grammar, which represents a non-faithful realization to the speaker’s input /pʎ-, kʎ-, fʎ-./

In the next phase of their evolution in Old Portuguese, */pj-, kj-, fj-/ all evolve into /tʃ/ (cf. Chapter 4). A possible phonetic motivation for the emergence of /tʃ/ comes from the cluster containing the velar segment, i.e. /kj/. Research shows that the palatalization of [kj] into [tʃ] is a very common sound change in the languages of the world (Chang,
Plauché & Ohala 2001), while a palatalization of labials is less likely. Thus, considering that velar clusters were more frequent than labial clusters (Tuttle 1975), I assume that /pj-, fj-/ followed the evolution of /kj-/ by analogy, hence regularizing all three clusters eventually into /tʃ/, i.e. /pj-, kj-, fj-/ > /tʃ/. Although analogical processes are not formalized in this dissertation, it is worth illustrating how the palatalization process in /kj/ > /tʃ/ was possible in the first place. Therefore, by considering the interaction between a velar stop /k/ and palatal glide /j/, it is possible to hypothesize a regressive place assimilation, whereby the target segment, i.e. /k/, first fronts its articulation toward the palate, generating the acoustic effect of a voiceless palatal stop, which results in a sequence such as [cj]. In order for this to happen, in the present formal analysis \textsc{Pres}(palatal) and \textsc{Weak}_{jx(kj, velar)} must outrank \textsc{Pres}(velar) and \textsc{Weak}_{(kj, palatal)} constraints, since the palatal cues of the input are maintained and at least some percentage of the velar gesture is reduced. The constraint ranking in (24) determines the output [cj]:

$$
\begin{align*}
\textsc{Pres}_{100}(palatal) & \gg \textsc{Pres}_{75}(palatal) \ldots > > \textsc{Weak}_{jx(kj, velar)} \ldots > > \textsc{Pres}_{100}(velar) \ldots > > \\
\textsc{Pres}_{75}(velar) & \gg \textsc{Weak}_{0.75x(kj, velar)} \ldots , \textsc{Weak}_{jx(kj, palatal)} \ldots > > \textsc{Weak}_{0.75x(jk, palatal)}.
\end{align*}
$$

Under this ranking, we expect all candidates with any reduction of the palatal gesture to be ruled out due to a fatal violation of highly ranked constraint \textsc{Pres}(palatal). Candidates that preserve the velar gesture, on the other hand, will fatally violate \textsc{Weak}_{jx(kj, velar)}. The next highly ranked constraint \textsc{Pres}(velar) will determine the most harmonic output based on the percentage of velar cues that are preserved. Tableau 6.9 illustrates how the output [cj] is selected as the most optimal for the input /kj/, given the constraint ranking in (24):
In Tableau 6.9, candidates #4, #5, and #6 are ruled out due to their fatal violation of $\text{Pres}_{100(\text{palatal})}$. Candidate #1 (i.e. the faithful output), on the other hand, fatally violates top-ranked $\text{Weak}_{1 \times (\text{kj}, \text{velar})}$ due to its full realization of the velar consonant /k/. Candidates #2 and #3 both satisfy $\text{Weak}_{1 \times (\text{kj}, \text{velar})}$ and $\text{Pres}_{100(\text{palatal})}$ constraints, so the winner is determined by the next ranked constraint, $\text{Pres}_{(\text{velar})}$. As candidate #3 does not preserve any of the velar cues of the input, it fatally violates $\text{Pres}_{75(\text{velar})}$, which candidate #2 satisfies. Hence, [cj] emerges as the output of /kj/ given the constraint ranking in (24).

A sound change such as /kj/ > /cj/ can be, then, understood in terms of a difference in constraint ranking between the faithful realization to the speaker’s input (i.e.}

```
<table>
<thead>
<tr>
<th>/k/ + /j/</th>
<th>Articulation</th>
<th>Aco. effe.</th>
<th>$\text{Pres}_{\text{place}}$</th>
<th>$\text{Weak}_{(\text{kj})}$</th>
<th>$\text{Pres}_{\text{place}}$</th>
<th>$\text{Weak}_{(\text{kj})}$</th>
<th>$\text{Weak}_{(\text{kj})}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB</td>
<td>stop</td>
<td>[kj]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>TB</td>
<td>approx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB</td>
<td>stop</td>
<td>[cj]</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>TB</td>
<td>approx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB</td>
<td>stop</td>
<td>[j]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>TB</td>
<td>approx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB</td>
<td>stop</td>
<td>[k']</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>TB</td>
<td>ap.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB</td>
<td>sto</td>
<td>[kj]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>TB</td>
<td>ap.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 16. Tableau 6.9. Regressive place assimilation in the articulation of [k] + [j]
```
[kj-]) and the listener’s interpretation (as input) of one of the unfaithful realizations to the
speaker’s input (i.e. /cj-/), as indicated in (25):

(25) */kj/ > */cj/ captured by the difference in the constraint ranking between the
faithful realization to the speaker’s input and the listener’s interpretation (as
input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

Speaker’s grammar: /kj/

Faithful output: [kj], determined by PRes\(_{\text{palatal}}\), PRes\(_{\text{velar}}\) >> WEAk\(_{\text{kj, palatal}}\),
WEAk\(_{\text{kj, velar}}\).

Other possible, non-faithful outputs:
E.g. [cj-], determined by PRes\(_{100(\text{palatal})}\)…>> PRes\(_{75(\text{palatal})}\), WEAk\(_{1x(\text{kj,velar})}\)…>>
PRes\(_{100(\text{velar})}\)…>> PRes\(_{75(\text{velar})}\), WEAk\(_{0.75x(\text{kj,velar})}\)…,
WEAk\(_{1x(\text{kj,velar})}\)…>> WEAk\(_{0.75x((\text{kj,palatal})}\) in the original spea-
ker’s grammar, which represents a non-faithful realization to the speaker’s input /kj/.

Listener’s grammar: /cj/

Faithful output: [cj], determined by PRes\(_{100(\text{palatal})}\)…>> PRes\(_{75(\text{palatal})}\),
WEAk\(_{1x(\text{kj,velar})}\)…>> PRes\(_{100(\text{velar})}\)…>> PRes\(_{75(\text{velar})}\)…>> WEAk\(_{0.75x(\text{kj,velar})}\),
WEAk\(_{1x(\text{kj,velar})}\)…>> WEAk\(_{0.75x((\text{kj,palatal})}\) in the original speaker’s grammar, which
represents a non-faithful realization to the speaker’s input /kj/.

In order to understand the next evolutionary phase, i.e. */cj-/ > /tʃ/’, it is necessary to
consider the phonetics of the segments involved. As Ladefoged (2001:244) points out,
palatal stops are very uncommon in the languages of the world, as their release frequently
renders the pronunciation of an affricate: “Because of the shape of the roof of the mouth,
the contact between the front of the tongue and the hard palate often extends over a fairly
large area. As a result, the formation and release of a palatal stop is often not as rapid as
in the case of other stops, and they tend to become affricates.” Hence, if we consider
what the actual realization of the reconstructed */cj/ (< */kj/) may have been, it is likely that it might have been realized as a voiceless palatal affricate [çç], i.e. with a palatal stop closure and a fricative release (cf. Chapter 3 for its voiced counterpart [ʝʝ] as the actual realization of a voiced palatal stop /ʝ/). Considering the fact that [çç-] (< */kj-/ < */kʎ-/ < /kl-) was found in word-initial position and was the onset of a stressed syllable, it is possible that this environment favored a stronger pronunciation. The fronting of [çç-] toward the prepalatal region would, then, have represented such stronger pronunciation because of the inherent sibilant character of this region, in which case its realization would have resembled that of a postalveolar affricate [ʃʃ]. In other words, as a central palatal affricate, [çç-] was a non-sibilant segment. Thus, its acquisition of sibilance only came with the fronting of its articulation toward the prepalatal region, where it was realized as [ʃʃ].

If we consider that consonants in onset position hold great perceptual importance (Beckman 1999; Fougeron & Keating 1997), then we can better understand the motivations for the strengthening of (a non-sibilant) [çç-] into (a sibilant) [ʃʃ-]. Indeed, Baker and Wiltshire (2003:36-37) propose the constraint HONSET in order to formalize the force toward making input onsets maximally strong: “HONSET is a gradient constraint that compares the sonority of different candidates (…) and militates for candidates of lesser sonority (hence greater strength) in onsets.” HONSET is defined in (26):

(26) HONSET: Be strong in onsets. (Baker & Wiltshire 2003:37)

---

31 After HNUC from Prince & Smolensky (1993[2004]); cf. also Baković’s (1994) STRONG ONSET.
If it is right to assume that a consonant strength hierarchy represents roughly an inverted sonority hierarchy (Lavoie 2000:213), we are able to establish a fixed gradient ranking for \textsc{Honset}. For example, if vowels have the highest sonority value and stops have the lowest, we can propose an \textsc{Honset} ranking as indicated in (27):

\begin{quote}
(27) \textsc{Honset}\textsubscript{stops} \gg \textsc{Honset}\textsubscript{affricates} \gg \textsc{Honset}\textsubscript{fricatives} \gg \textsc{Honset}\textsubscript{nasals} \gg \\
\textsc{Honset}\textsubscript{liquids} \gg \textsc{Honset}\textsubscript{glides} \gg \textsc{Honset}\textsubscript{vowels}
\end{quote}

The fixed ranking in (27) captures the tendency of onsets being obstruents (i.e. stops, affricates, and fricatives). Thus, under this hierarchy, we expect vowels to be the least preferred segments in onset position, as vowels are the least “strong” of all onsets. Hence, \textsc{Honset}\textsubscript{vowels} is the lowest-ranked of all \textsc{Honset} constraints. Stops, on the other hand, are the most preferred segments in onset position because they are the “strongest” (i.e. the least sonorous) of all onsets, followed by affricates and fricatives. In a competition between a stop and a fricative in onset position, for example, a candidate with a stop consonant will prevail, as the candidate with a fricative will have violated a more highly ranked \textsc{Honset} constraint, i.e. \textsc{Honset}\textsubscript{stops}. Additionally, if it is right to assume that sibilants are ‘stronger’ segments than non-sibilants (within a sonority scale), then it is reasonable to subdivide \textsc{Honset}\textsubscript{affricate} into \textsc{Honset}\textsubscript{sib-affricate} and \textsc{Honset}\textsubscript{non-sib-affricate}, and \textsc{Honset}\textsubscript{fricative} into \textsc{Honset}\textsubscript{sib-fricative} and \textsc{Honset}\textsubscript{non-sib-fricative}, respectively. It is important to note, however, that \textsc{Honset} can be applied to onsets of different prosodic levels, i.e. utterance-initial position (\textsc{Honset}\textsubscript{u}: Be a strong onset utterance-initially), word-initial position (\textsc{Honset}\textsubscript{w}: Be a strong onset word-initially), foot-initial position (\textsc{Honset}\textsubscript{f}: Be
a strong onset foot-initially) and, lastly, in general syllable-initial position (HONSET: Be a
strong onset), regardless of its position within the prosodic hierarchy.

In the present analysis, we can formalize the strengthening process */cç-/> [tʃ-]
by ranking $\text{Pres}_{\text{manner}}$ constraints over HONSET and $\text{Pres}_{\text{palatal}}$, as indicated in (28):

\[
(28) \text{Pres}_{\text{stop}}, \text{Pres}_{\text{fricative}} \gg \text{HONSET}_{\text{stop}} \gg \text{HONSET}_{\text{sis-af}} \gg \text{HONSET}_{\text{non-sis-af}} \gg \ldots \gg \text{Pres}_{\text{palatal}}
\]

Under this ranking, any candidate that does not include the stop or fricative manners in its
realization will violate one of the two highly ranked constraints, i.e. \text{Pres}_{\text{stop}} and
\text{Pres}_{\text{fricative}}, and will then be ruled out. The next ranked constraints, i.e. \text{HONSET}_{\text{stop}} \gg
\text{HONSET}_{\text{sis-af}} \gg \text{HONSET}_{\text{non-sis-af}} \ldots, will militate for the strengthening of the
input, preferably as a stop, then as a sibilant affricate, a non-sibilant affricate, and so on.
(The ellipsis in (28) entails the fixed HONSET ranking indicated in (27).) Tableau 6.10
illustrates the selection of [tʃ] as the most harmonic output, given the constraint ranking
in (28):
<table>
<thead>
<tr>
<th>Articulation</th>
<th>Acoustic effect</th>
<th>PRES\textsubscript{(manner)}</th>
<th>HONSET</th>
<th>PRES\textsubscript{(palatal)}</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>stop</td>
<td>fricative</td>
<td>stop</td>
</tr>
<tr>
<td>TB</td>
<td>sto</td>
<td>[\textipa{\tilde{c}\text{-}\textipa{\textendash}}]</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>TB</td>
<td>fric</td>
<td>[\textipa{\textendash}fj\textendash]</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>TB</td>
<td>sto</td>
<td>[\textipa{\textendash}c\textendash]</td>
<td>*!</td>
<td>*</td>
</tr>
<tr>
<td>TB</td>
<td>fric</td>
<td>[\textipa{\textendash}ch\textendash]</td>
<td>*!</td>
<td>*</td>
</tr>
</tbody>
</table>

Table 17. Tableau 6.10. */cç/ > [tf] in Old Portuguese.

In Tableau 6.10, candidates #3 and #4 both fatally violate both PRES\textsubscript{(manner)} constraints and are, then, ruled out. Candidates #1 and #2, on the other hand, satisfy PRES\textsubscript{(manner)}, but violate the next highly ranked constraint HONSET\textsubscript{(stop)}. Thus, the selection of the optimal output is relegated to HONSET\textsubscript{(affricate)}. As candidate #1 (i.e. the faithful realization to the input) fatally violates HONSET\textsubscript{(sib-affricate)}, candidate #2 emerges as the winner. Note, however, that other possible affricates such as [p\textipa{\textendash}ch] or [p\textipa{\textendash}f] (with a bilabial stop closure) could also emerge as candidates in Tableau 6.10. However, as bilabial affricates are rare cross-linguistically, I assume that their candidacy would be banned by a highly ranked markedness constraint (e.g. *BILABIAL-AFFRICATE), which, for our purposes, has been omitted from Tableau 10.

Thus, a sound change such as */cç/ > /[tf]/ can be understood in terms of a difference in constraint ranking between the faithful realization to the speaker’s input (i.e.
[\text{cç}] and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. /\text{tʃ}/), as indicated in (29):

(29) */\text{cç}/ > /\text{tʃ}/ captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

**Speaker’s grammar: */\text{cç}/**

*Faithful output:* [\text{cç}], determined by \text{PRES}(\text{manner}), \text{PRES}(\text{palatal}) \gg \text{HONSET}

*Other possible, non-faithful outputs:*
E.g. [\text{ʃ}], determined by \text{PRES}(\text{stop}), \text{PRES}(\text{fricative}) \gg \text{HONSET}(\text{stop}) \gg \text{HONSET}(\text{non-sib-affricate}) \gg \text{HONSET}(\text{non-sib-affricate}) \gg \text{PRES}(\text{palatal})

**Listener’s grammar: */\text{tʃ}/**

*Faithful output:* [\text{ʃ}], determined by \text{PRES}(\text{stop}), \text{PRES}(\text{fricative}) \gg \text{HONSET}(\text{stop}) \gg \text{HONSET}(\text{non-sib-affricate}) \gg \text{HONSET}(\text{non-sib-affricate}) \gg \text{PRES}(\text{palatal}) in the original speaker’s grammar, which represents a non-faithful realization to the speaker’s input /\text{cç}/.

The emergence of /\text{tʃ}/ in word-medial position after a consonant in the history of both Spanish and Portuguese can also be understood along the same lines. In other words, the preceding consonant (most often a nasal) contributed for the occlusion of the obstruents in */NpʎV, NkʎV, NfʎV/ to remain unchanged. Subsequently, these obstruents were free to follow the same pathway of change as */pʎ-, kʎ-, fʎ-/ did in Old Portuguese (i.e. by
first evolving into */pj, kj, fj/ and eventually giving rise to */ʃ/ as illustrated in Tableaux 6.8, 6.9, and 6.10.\(^{32}\)

### 6.4 Pathways for the emergence of */ʃ/

#### 6.4.1 */j, -jj, ū/ > */ʃ/

The emergence of the palatal obstruent */ʃ/ in Hispano-Romance derived from various Latin sources, namely, */j, -jj, ū/, gé-, gi-, -dj-, -gj-. In regard to word-initial */j/,
we observe a straightforward process of consonantization, by which the glide strengthened and became a non-continuant segment. This fortition process is determined by the effects of a highly ranked HONSET\(_w\). In the present analysis, we motivate this process by ranking $\text{PRES}_{\text{palatal}}$ over HONSET\(_w\), which, in turn, dominates $\text{PRES}_{\text{approximant}}$ and WEAK, as indicated in (30):\(^ {33}\)

\[
(30) \quad \text{PRES}_{\text{palatal}} \gg \text{HONSET}_{\text{w stop}} \gg \text{HONSET}_{\text{w fricative}} \gg \text{HONSET}_{\text{w glide}} \gg \text{PRES}_{\text{approx}}, \text{WEAK}.
\]

Given the constraint ranking in (30), we expect the output to preserve the palatal place of articulation of the input */ʃ/, by satisfying $\text{PRES}_{\text{palatal}}$. Next, we predict the strongest segment in onset position to be a stop, rather than a fricative or a glide, as they would

\(^{32}\) For a markedness-based explanation, see Holt’s (1997) proposal of the constraint */-NCʎ-/, which would have caused [ʎ] to first devoice and then palatalize the preceding voiceless obstruent, eventually giving rise to */Ntf/.

\(^{33}\) This ranking ensures that only palatal non-stops strengthened. In order to prevent other word-initial segments with other places of articulation from strengthening to a stop (e.g. */f/ > */p*/), I assume that all $\text{PRES}_{\text{manner}}$ constraints (e.g. $\text{PRES}_{\text{fricative}}$, $\text{PRES}_{\text{lateral}}$, etc.) are top-ranked, except for $\text{PRES}_{\text{approximant}}$, which is low-ranked in (30).
violate HONSET\_w stop. Any candidate that does not preserve the manner of the input (i.e. approximant) will violate P\textsubscript{RESapprox}, while any reduction in the realization of the input will violate WEAK. The selection of the palatal stop \([\mathrm{-}]\) for the input /\mathrm{j-}/ is illustrated in Tableau 6.11.

<table>
<thead>
<tr>
<th>/\mathrm{j-}/</th>
<th>Articulation</th>
<th>Acous. effect</th>
<th>P\textsubscript{RES (palatal)}</th>
<th>HONSET_w stop</th>
<th>HONSET_w fricative</th>
<th>HONSET_w glide</th>
<th>P\textsubscript{RES (approx.)}</th>
<th>WEAK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. TB:</td>
<td>approx</td>
<td>[\mathrm{j}]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>2. TB:</td>
<td>fric</td>
<td>[\mathrm{j}]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. TB:</td>
<td>stop</td>
<td>[\mathrm{j}]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 18. Tableau 6.11. /\mathrm{j-}/ > /\mathrm{j-}/.

In Tableau 6.11, all candidates satisfy the most highly ranked constraint P\textsubscript{RES(palatal)}. However, candidate #1 (i.e. the faithful realization of the input) and candidate #2 both fatally violate the next ranked constraint, HONSET\_w stop, and are thus ruled out. Candidate #3, then, emerges as the selected output of /\mathrm{j-}/, as it satisfy HONSET\_w stop, although it incurs one violation of all the other, lowly ranked constraints. In the current approach, I formalize the fortition /\mathrm{j-}/ > /\mathrm{j-}/ as a difference in constraint ranking between the faithful realization of the speaker’s input (i.e. \([\mathrm{j-}]\)) and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. \([\mathrm{j-}]\), as indicated in (31):

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(31) /j-/ > /ʝ-/ captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

**Speaker’s grammar: /j-/**

*Faithful output: [j-]*, determined by $\text{PRES}_{\text{palatal}}, \text{PRES}_{\text{manner}} \gg \text{HONSET}_{\text{w stop}} \gg \text{HONSET}_{\text{w fricative}} \gg \text{HONSET}_{\text{w glide}} \gg \text{WEAK}.$

*Other possible, non-faithful outputs:*

E.g. [ʝ-], determined by $\text{PRES}_{\text{palatal}} \gg \text{HONSET}_{\text{w stop}} \gg \text{HONSET}_{\text{w fricative}} \gg \text{HONSET}_{\text{w glide}} \gg \text{PRESapprox, WEAK}.$ etc.

**Listener’s grammar: /ʝ-/**

*Faithful output: [ʝ-]*, determined by $\text{PRES}_{\text{palatal}} \gg \text{HONSET}_{\text{w stop}} \gg \text{HONSET}_{\text{w fricative}} \gg \text{HONSET}_{\text{w glide}} \gg \text{PRESapprox, WEAK}.$ in the original speaker’s grammar, which represents a non-faithful realization to the speaker’s input /j-/.

A similar evolutionary pathway can be posited for Latin /é/ and /-jj-/ in Hispano-Romance. In other words, the glide that emerged from the diphthongization of /é/ into /jé/ and the intervocalic geminate /-jj-/ were both found in onset position. Thus, they incurred a very similar fortition process as the one illustrated for Latin /j-/ in Tableau 6.11—only in this case HONSETstop applied instead of HONSETstop.

### 6.4.2 /ge-, gi/ > /ʝ/

The palatal obstruent /ʝ/ also emerged from the palatalization of word-initial /ge-, gi-. This process can be interpreted as partial regressive place assimilation, whereby the target segment, i.e. /g/, first fronts its articulation toward the palate, generating the acoustic effect of a voiced palatal stop [ʝ]. In this sense, it represents a similar
assimilation process as the one previously discussed for the change /kj/ > /cj/ (cf. Tableau 6.9), the major difference being the presence of voice in /ge, gi/ > /je, ji/. In the same spirit, then, I posit that $PRES_{\text{palatal}}$ and another constraint that militates to conserve articulatory energy in the production of [ge, gi]—let us call it $WEAK_{(ge, gi)}$—are top-ranked. I motivate this $WEAK$ constraint by the fact that both /g/ and the palatal vowels /e, i/ are produced with a tongue body gesture. Thus, it would be more costly to produce [ge, gi] as opposed to [be, bi], for example, where the sounds are produced with different articulators, i.e. the first segment with the lips, and the second with a tongue body gesture. By the same token, [ge] and [gi] are also more costly than [go, gu] in articulatory terms, as the tongue body moves from the “back” (i.e. the velar area) to the “front” (i.e. the palatal area) in [ge, gi], whereas it stays in the velar area in [go, gu]. Thus, assuming that the articulation of /g/ undergoes partial gestural reduction in [ge, gi], $PRES_{\text{palatal}}$ and $WEAK_{Ix(ge, gi, velar)}$ must dominate $PRES_{\text{velar}}$ and $WEAK_{(ge, gi, palatal)}$, as indicated in the constraint ranking in (32):

\[
(32) \ PRES_{100}(\text{palatal}) \ldots \gg \ PRES_{75}(\text{palatal}) \ldots, \ WEAK_{Ix(ge, gi, velar)} \ldots, \ PRES_{100}(\text{velar}) \gg \ PRES_{75}(\text{velar}) \ldots, \ WEAK_{0.75}(ge, gi, velar) \ldots, \ WEAK_{Ix(ge, gi, palatal)} \ldots, \ WEAK_{0.75}(ge, gi, palatal).
\]

Under this ranking, we expect all candidates with any reduction of /e, i/ to be ruled out due to a fatal violation of highly ranked constraint $PRES_{100}(\text{palatal})$. A candidate with a full realization of the velar gesture will fatally violate top-ranked $WEAK_{Ix(ge, gi, velar)}$. $PRES_{\text{velar}}$ constraints will determine, then, the optimal output according to the percetange of
preservation of input velar cues. For visual convenience, I illustrate in Tableau 6.12 how [je] would be selected as an output of /ge/ (and I assume the same would be true for /gi/ > [ji]):

<table>
<thead>
<tr>
<th>/g/ + /e/</th>
<th>Articulation</th>
<th>Acou. effect</th>
<th>PRES(place)</th>
<th>WEAK(ge,gi)</th>
<th>PRES(place)</th>
<th>WEAK(ge,gi)</th>
<th>WPRES(ge,gi)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>palatal</td>
<td>velar</td>
<td>palatal</td>
<td>velar</td>
<td>palatal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>75</td>
<td>1x</td>
<td>100</td>
<td>0.75</td>
</tr>
<tr>
<td>1</td>
<td>TB stop TB</td>
<td>[ge]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TB vowel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>TB stop TB</td>
<td>[je]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TB vowel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>TB</td>
<td>[e]</td>
<td>*</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TB vowel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>TB stop TB</td>
<td>[g]</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>TB stop TB</td>
<td>[g̃e]</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TB vo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 19. Tableau 6.12. Regressive place assimilation in the articulation of [g] + [e].

In Tableau 6.12, candidates #4 and #5 are ruled out as they fatally violate PRES100(palatal). Candidate #1 (i.e. the faithful output), on the other hand, satisfies PRES(palatal) constraints, but fatally violates top-ranked WEAK1x(ge-gi,velar). Because candidates #2 and #3 satisfy both PRES(palatal) and WEAK1x(ge-gi,velar), the winner is determined by the next highly ranked constraint, PRES(velar). Candidate #2 emerges, then, as the most optimal output because it preserves at least 75% of the velar gesture of the input, while candidate #3 is ruled out because it does not preserve any percentage of the velar gesture. In the present approach, the sound change /ge/ > /je/ is, then, understood in terms of a difference in constraint
ranking between the faithful realization to the speaker’s input (i.e. [ge]) and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. /je/), as schematized in (33):

(33) /ge/ > /je/ captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input, by virtue of LO:

**Speaker’s grammar: /ge/**

*Faithful output:* [ge], determined by $\text{PRES}_{\text{velar}},\text{PRES}_{\text{palatal}} \gg \text{WEAK}_{\text{ge-gi-velar}},\text{WEAK}_{\text{ge-gi-palatal}}$

*Other possible, non-faithful outputs:*

E.g. [je-], determined by $\text{PRES}_{100(\text{palatal})} \gg \text{PRES}_{75(\text{palatal})} \ldots \gg \text{WEAK}_{1x(\text{ge-gi-velar})} \ldots \gg \text{PRES}_{100(\text{velar})} \gg \text{PRES}_{75(\text{velar})} \gg \text{WEAK}_{0.75x(\text{ge-gi-velar})} \ldots \gg \text{WEAK}_{1x(\text{ge-gi-palatal})} \ldots \gg \text{WEAK}_{0.75x((\text{ge-gi-palatal})}$

etc.

**Listener’s grammar: /je/**

*Faithful output:* [je], determined by $\text{PRES}_{100(\text{palatal})} \gg \text{PRES}_{75(\text{palatal})} \ldots \gg \text{WEAK}_{1x(\text{ge-gi-velar})} \ldots \gg \text{PRES}_{100(\text{velar})} \gg \text{PRES}_{75(\text{velar})} \gg \text{WEAK}_{0.75x(\text{ge-gi-velar})} \ldots \gg \text{WEAK}_{1x(\text{ge-gi-palatal})} \ldots \gg \text{WEAK}_{0.75x((\text{ge-gi-palatal})}$ in the original speaker’s grammar, which represents a non-faithful realization to the speaker’s input /ge/.

As discussed in Chapter 4, the palatalization of word-initial /ge-, gi-/ in Hispano-Romance had different outcomes according to the presence or absence of stress: while /j/ has survived until the present day in words with stressed /ge-, gi-/, in unstressed /ge-, gi-/, /j/ eventually weakened and disappeared in Old Spanish. If we consider that: (i) in unstressed position, [je, ji] tended to be weaker and shorter in duration than stressed [jé, jí]; and (ii) both segments of each sequence in [je, ji] were articulated with the same
tongue body gesture in the same place of articulation, then we can hypothesize that the place cues of the palatal consonant were not necessarily preserved in the production of /je, ji/, since the vowels [e, i] would have already secured the palatal place of articulation. This reasoning motivates, then, the low ranking of a Pres constraint that militates for the maintenance of place of articulation cues of the palatal consonant, which I label here as Pres(place, je-, ji-, consonant). This constraint would, then, be ranked below its Weak counterpart, i.e. Weak(palatal, je-, ji-, unstressed), which militates for the conservation of articulatory effort in the production of the palatal consonant in unstressed /je, ji/.

The ranking in (34) formalizes the constraint hierarchy that determines the deletion of /ʃ/ in the realization of /je, ji/:

\[
(34) \text{Weak}_{\lambda}(\text{palatal}, \text{je}-, \text{ji}-, \text{unstressed}) \ldots \gg \text{Weak}_{0.75\lambda}(\text{palatal}, \text{je}-, \text{ji}-, \text{unstressed}) \ldots \gg \\
\text{Weak}_{0.5\lambda}(\text{palatal, je-, ji-, unstressed}) \ldots \gg \text{Pres}_{100}(\text{place je-, ji-, vowel}) \ldots \gg \text{Pres}_{50}(\text{place je-, ji-}, \text{vowel}) \ldots \gg \\
\text{Weak}_{\lambda}(\text{vowel, je-, ji-}, \text{unstressed}) \ldots \gg \text{Weak}_{0.5\lambda}(\text{vowel, je-, ji-}, \text{unstressed}) \ldots \gg \\
\text{Pres}_{100}(\text{place je-, ji-, consonant}) \ldots \gg \text{Pres}_{50}(\text{place je-, ji-, consonant}).
\]

Under this ranking, we expect all outputs with a palatal consonant in the onset to be ruled out regardless of their realization, as all Weak(palatal, je-, ji-, unstressed) constraints are highly ranked, above Pres constraints. Thus, a candidate with no palatal consonant in the onset, but with a palatal vowel, is expected to emerge as the most optimal, given the ranking in (34). I assume this ranking applies to both unstressed /je/ and unstressed /ji/. Therefore,

---

34 I assume here that a palatal fricative [ʃ] and a palatal approximant [ʒ] would also violate Weak(palatal, je-, ji-, unstressed) constraints, as [ʃ] and [ʒ] would represent weakened realizations of /ʃ/. Thus, one may interpret ‘ʃ’ in “Weak(palatal, je-, ji-, unstressed)” as a cover symbol for all voiced palatal oral segments.
for visual convenience, Tableau 6.13 only illustrates how [e] is selected as the most harmonic output of unstressed /je/. (In this tableau, I include only the phonetic symbols indicating the perceptual consequences of the articulatory gestures involved.)

<table>
<thead>
<tr>
<th>/je-/</th>
<th>WEAK_{(je-, unstressed)}</th>
<th>PRES_{(place, je-)}</th>
<th>WEAK_{(je-, unstressed)}</th>
<th>PRES_{(place, je-)}</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>palatal cons.</td>
<td>palatal vowel</td>
<td>vowel</td>
<td>palatal cons.</td>
</tr>
<tr>
<td>1. [je]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>2. [je]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3. [je]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4. [e]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ∅</td>
<td></td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Table 20. Tableau 6.13. /je/> /e/ in Old Spanish.

In Tableau 6.13, candidate #1 represents the faithful realization of the input /je-/ and, thus, fatally violate WEAK_{(je-, unstressed)}. Candidate #2, on the other hand, contains a weakened realization of the input consonant, and so satisfies WEAK_{(je-, unstressed)}, but fatally violates the next ranked constraint, WEAK_{(0.75)(palatal, je-, ji-, unstressed)}. The palatal glide in candidate #3 fatally violates WEAK_{(0.5)(palatal, je-, ji-, unstressed)} and is, thus, ruled out. Candidate #5 satisfies all WEAK constraints, but fatally violates PRES_{(place je-, vowel)}. It is, then, ruled out. Candidate #4 emerges as the output of /je-/ for complying with all WEAK_{(palatal, je-, ji-, unstressed)} constraints, despite containing a full realization of the input vowel and thus violating the lowly ranked constraint WEAK_{(1)(vowel, je-, ji-, unstressed)}. In the present approach, the sound change /je/> /e/ is, then, captured by the difference in constraint ranking between the faithful realization to the speaker’s input (i.e. [je-]) and
the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. /e-/), as indicated in (35):

(35) /je-/ > /e-/ captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

**Speaker’s grammar: /je-/**

*Faithful output: [je], determined by \( \text{PRES}_{\text{place je-, ji-, vowel & cons.}} \gg \text{WEAK}_{\text{je-, unstressed}} \)*

*Other possible, non-faithful outputs:
E.g. [e-], determined by \( \text{WEAK}_{\text{x}}(\text{palatal}, \text{je-, ji-, unstressed}) \gg \text{WEAK}_{0.75x}(\text{palatal}, \text{je-, ji-, unstressed}) \gg \text{PRES}_{100}(\text{place je-, ji-, vowel}) \gg \text{WEAK}_{1}(\text{vowel}, \text{je-, ji-, unstressed}) \gg \text{WEAK}_{0.50x}(\text{vowel}, \text{je-, ji-, unstressed}) \gg \text{PRES}_{100}(\text{place je-, ji-, consonant}) \gg \text{PRES}_{50}(\text{place, je-, ji-, consonant}) \)* etc.

**Listener’s grammar: /e-/**

*Faithful output: [e], determined by \( \text{WEAK}_{\text{x}}(\text{palatal, je-, ji-, unstressed}) \gg \text{WEAK}_{0.75x}(\text{palatal, je-, ji-, unstressed}) \gg \text{WEAK}_{0.50x}(\text{palatal, je-, ji-, unstressed}) \gg \text{PRES}_{50}(\text{place je-, ji-, vowel}) \gg \text{WEAK}_{1}(\text{vowel, je-, ji-, unstressed}) \gg \text{WEAK}_{0.50x}(\text{vowel, je-, ji-, unstressed}) \gg \text{PRES}_{100}(\text{place je-, ji-, consonant}) \gg \text{PRES}_{50}(\text{place, je-, ji-, consonant}) \)* in the grammar of the original speaker, which represents a non-faithful realization to the speaker’s input /je-/.

6.4.3 /-dj-, -gj-/ > /y/

The obstruent /y/ also emerged in intervocalic position in Hispano-Romance from the Latin sources /-dj-, -gj-/.

Assuming that postvocalic stops generally lenited in Western Romance (cf. /-g-.>- /-j- in Tableau 6.4), it appears safe to posit that the voiced stops in original Latin /-dj-, -gj-/ should have suffered extreme reduction (e.g. being realized as [\(^0\)]
ɣ) so as not to incur palatalization by the following glide in the languages of this family. As such, this extreme reduced articulation continued weakening until both approximants eventually disappeared. Comparative evidence for this evolutionary stage is found in Gallo- and Luso-Romance, e.g. Latin MAIU, RADIU, EXAGIU > Portuguese ma[j]o, ra[j]o, ensa[j]o, French mai, ra[j]on, essai ‘May’, ‘ray’, ‘essay’. This hypothetical reconstruction is motivated by the following reasoning: If postvocalic, voiced obstruent lenition had not occurred in Western Romance, we would have expected Latin /-dj-, -gj-/ to have palatalized into *[dʒ, ɟʝ]—an unlikely event in Western Romance, especially considering the presence of the intervocalic glide in words of today’s Portuguese and French as previously mentioned. In varieties of Eastern Romance, however, we do find the palatalization of Latin /-dj-, -gj-/ precisely because overall lenition of postvocalic obstruents did not take place in the languages of this family, cf. Italian ma[dʒ]o, ra[dʒ]o, sa[dʒ]o ‘May, ray, essay’. Thus, in the present analysis, I propose that these voiced obstruents followed by [j]35 were eventually deleted in Western Romance by the dominance of all WEAK_{(Vdj,Vgj-)} constraints (which militate to conserve articulatory effort in the production of postvocalic /d, g/) over PRES_{(place of stop)} constraints. I motivate WEAK_{(Vdj,Vgj-)} by the fact that the tongue is the active articulator in both /d/ and /g/ and surrounding sounds. Thus, it would be more costly to use the same articulator in these sequences, as opposed to other postvocalic sequences involving different articulators, as is the case of postvocalic /b/, which relies on lip gestures in its production. The selection of the glide as the optimal output of /-dj-, -gj-/ is determined by the ranking in (36):

35 And also, in a few cases, the bilabial stop [b] from /-bj-/ e.g. Latin FOVEA > Spanish ho[j]a ‘hole, pit’.
Under this ranking, we expect any candidate with a realization of a postvocalic /d/ or /g/ to fatally violate W\textsc{eak}_{(-Vdj,Vgj)-} constraints. On the other hand, a candidate with any reduction of the following palatal segment will violate P\textsc{res}_{100(palatal)} and, thus, will also be ruled out. A candidate with only the realization of the palatal segment will, then, emerge as the winner, as it will satisfy highly ranked W\textsc{eak}_{lx(-Vdj,Vgj)-} and P\textsc{res}_{(palatal)}. As this ranking applies to /-dj/- and /-gj/-, for visual convenience Tableau 6.14 only illustrates how [-j-] is selected as the most harmonic output of /-dj-/. (In this tableau, I include only the phonetic symbols indicating the perceptual consequences of the articulatory gestures involved.)

<table>
<thead>
<tr>
<th>/-dj-/</th>
<th>W\textsc{eak}_{(-Vdj,Vgj)-}</th>
<th>P\textsc{res}_{(palatal)}</th>
<th>W\textsc{eak}_{(palatal)}</th>
<th>P\textsc{res}_{(place of stop)}</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>dental</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>\textit{lx}</td>
<td>0.75x</td>
<td>0.5x</td>
<td>100  50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>\textit{lx}</td>
</tr>
<tr>
<td>1.   [dj]</td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>2.   [ðj]</td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>3.   [ð]</td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>4.   [j]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.   ∅</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 21. Tableau 6.14. /-dj-/ > /-j-/ in Western Romance.

In Tableau 6.14, candidates #1, #2, and #3 all contain at least some realization of the voiced stop /d/ and, thus, fatally violate W\textsc{eak}_{(-Vdj,Vgj)-} (i.e. W\textsc{eak}_{lx(-Vvoiced dental-j-)}), W\textsc{eak}_{0.75x(-Vvoiced dental-j-)}, and W\textsc{eak}_{0.5x(-Vvoiced dental-j-)}, respectively. Candidate #5, on the
other hand, satisfies \( \text{WEAK}_{V-\text{voiced dental-j}} \) constraints, but fatally violates \( \text{PRES}_{\text{palatal}} \). Candidate #4 emerges, then, as the output of /-dj-/ as it satisfies \( \text{WEAK}_{V-\text{voiced dental-j}} \), despite violating \( \text{WEAK}_{Jx(\text{palatal})} \) and \( \text{PRES}_{(\text{dental})} \). In the present approach, /-dj-/ \( > /-j-/ \) in Western Romance is formalized as the difference in constraint ranking between the faithful realization to the speaker’s input (i.e. [dj]) and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. /j/), as indicated in (37):

\[
\begin{align*}
\text{(37)} & \quad /-\text{dj-}/ > /-\text{j-}/ \text{ captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:} \\
\text{} & \quad \text{Speaker’s grammar: } /-\text{dj-}/ \\
\text{Faithful output: } & \quad [\text{dj}], \text{ determined by } \text{PRES}_{(\text{dental})}, \text{ PRES}_{(\text{palatal})} \quad >> \text{WEAK}_{Jx(\text{V-dj})}, \text{ WEAK}_{(\text{palatal})} \\
\text{} & \quad \text{Other possible, non-faithful outputs:} \\
\text{} & \quad \text{E.g. } [\text{j}], \text{ determined by } \text{WEAK}_{Jx(\text{V-dj})} \ldots >> \text{WEAK}_{0.75x(\text{V-dj})} \ldots >> \text{WEAK}_{0.5x(\text{V-dj})} \ldots, \text{ PRES}_{100(\text{palatal})} \ldots >> \text{PRES}_{50(\text{palatal})} \ldots >> \text{WEAK}_{Jx(\text{palatal})} \ldots >> \text{WEAK}_{0.5x(\text{palatal})} \ldots >> \text{PRES}_{100(\text{place of stop})} \ldots >> \text{PRES}_{75(\text{place of stop})} \ldots >> \text{PRES}_{50(\text{place of stop})} \ldots, \text{ etc.} \\
\text{} & \quad \text{Listener’s grammar: } /-\text{j-}/ \\
\text{Faithful output: } & \quad [\text{j}], \text{ determined by } \text{WEAK}_{Jx(\text{V-dj})} \ldots >> \text{WEAK}_{0.75x(\text{V-dj})} \ldots >> \text{WEAK}_{0.5x(\text{V-dj})} \ldots, \text{ PRES}_{100(\text{palatal})} \ldots >> \text{PRES}_{50(\text{palatal})} \ldots >> \text{WEAK}_{Jx(\text{palatal})} \ldots >> \text{WEAK}_{0.5x(\text{palatal})} \ldots >> \text{PRES}_{100(\text{place of stop})} \ldots >> \text{PRES}_{75(\text{place of stop})} \ldots >> \text{PRES}_{50(\text{place of stop})} \ldots \text{ in the original speaker’s grammar, which represents a non-faithful realization to the speaker’s input } /-\text{dj-}/. \\
\end{align*}
\]

The emerging glide /-j-/ (< /-dj-, -gj-/) was, then, subject to a fortition process in Hispano-Romance similar to that incurred by Latin /j-/ as illustrated in Tableau 6.11.
In this case, however, the strengthening of /-j-/ is motivated by HONSET and not HONSET\text{\textsuperscript{w}} (as was the case in Tableau 6.11).

6.5 Further development of \textipa{ʎ} and /ʡ/ (before back vowels)

As discussed in Chapter 4 and illustrated in the chart in (1), \textipa{ʎ} and /ʡ/ before back vowels (especially /u/) eventually merged into the fricative /ʒ/ in Old Spanish, e.g. MULIERE > *mu[ʎ]er \ldots > mu[ʒ]er ‘woman’, IURARE > [j]urar \ldots > [ʒ]urar ‘to swear’. This sibilant fricative, in turn, devoiced into [ʃ] in Medieval Spanish (e.g. mu[ʃ]er, [ʃ]urar), before dissimilating into the velar fricative [x] (cf. today’s Spanish mu[x]er and [x]urar). In §6.5.1, I formalize the proposed changes incurred by \textipa{ʎ} (i.e. \textipa{ʎ} > *[\textipa{-j-}] > *[\textipa{-ʝ-}] > /-ʒ-/), while in §6.5.2, I detail the suggested evolutionary steps of /ʡ/ before back vowels (i.e. /ʡ-/ > *[dʒ]- > /ʒ-/). Finally, in §6.5.3, I formalize the devoicing of /ʒ/ into /ʃ/ in Medieval Spanish.

6.5.1 \textipa{ʎ} > *[\textipa{-j-}] > *[\textipa{-ʝ-}] > /-ʒ-/  

By considering the dialectal data exposed in Chapter 5 and the evolution of the alveolopalatal lateral across the languages of the Romance-speaking world, it is reasonable to suppose that the delateralization of this segment first produces the emergence of a palatal glide, which, depending on the language, may soon acquire some frication and evolve into /j/. If we take into account the regressive place assimilation by
which [ʎ] arises (cf. Tableau 3),\textsuperscript{36} I posit that a subsequent total reduction of the alveolar gesture leaves the segment with only the tongue body gesture, i.e. the gesture representing the palatal glide [j].\textsuperscript{37} In the present analysis, this scenario can be formalized by top-ranking all \textit{WEAK}_\text{(ʎ-alveolar)} (i.e. conserve articulatory effort in the alveolar gesture of [ʎ]) and \textit{PRES}_\text{(palatal)} constraints above \textit{WEAK}_\text{(j-palatal)} and \textit{PRES}_\text{(alveolar)} constraints. The dominance hierarchy in (38) specifies the proposed ranking:

\begin{equation}
\textit{WEAK}_{1x(\text{ʎ-alveolar})} \text{...} >> \textit{WEAK}_{0.75x(\text{ʎ-alveolar})} \text{...} >> \textit{PRES}_{100(\text{palatal})} \text{...} >> \textit{PRES}_{75(\text{palatal})} \text{...} >> \textit{WEAK}_{1x(\text{j-palatal})} \text{...} >> \textit{WEAK}_{0.75x(\text{j-palatal})} \text{...} >> \textit{PRES}_{100(\text{alveolar})} \text{...} >> \textit{PRES}_{75(\text{alveolar})}.
\end{equation}

Under the constraint ranking in (38), candidates with alveolar gestures in the realization of /ʎ/ will be ruled out, as they will fatally violate \textit{WEAK}_\text{(ʎ-alveolar)} constraints. On the other hand, candidates with a reduction of the palatal gesture will violate the next highly ranked constraint \textit{PRES}_{100(\text{palatal})}. Thus, we expect a candidate with the palatal glide [j] to emerge as the winner, due to its compliance with the push for conserving articulatory effort in the production of the tongue tip gesture, i.e. \textit{WEAK}_\text{(j-alveolar)}, and the maintenance of palatal place cues, i.e. \textit{PRES}_\text{(palatal)}. Tableau 6.15 illustrates this scenario:

\textsuperscript{36} Note that, in the articulation of [ʎ], the tongue tip still establishes contact with the alveolar ridge (Quilis 1993:311; Recasens & Espinosa 2006), making it an alveolopalatal lateral segment (cf. Chapter 3).

\textsuperscript{37} Here I assume that the laterality of [ʎ] is attached to the tongue tip gesture.
<table>
<thead>
<tr>
<th>/\</th>
<th>Articulation</th>
<th>Acous. effect</th>
<th>( WEA K_{1x}(\text{ʎ-alveolar}) )</th>
<th>( PRES_{\text{place}}(\text{palatal}) )</th>
<th>( WEA K_{0.75x}(\text{ʎ-alveolar}) )</th>
<th>( PRES_{\text{place}}(\text{alveolar}) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TT lat</td>
<td>[( /\ ) ]</td>
<td>*! *</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TB approx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>TT approx</td>
<td>[( /j/ ) ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3</td>
<td>TT lat</td>
<td>[( /l/ ) ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>TB approx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>TT lat ap.</td>
<td>[( /l/ ) ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>TB approx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>TT lat</td>
<td>[( /j/ ) ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Table 22. Tableau 6.15. /\ > */j/ in Proto-Spanish.

In Tableau 6.15, candidates #1, #3, and #4 all violate the most highly ranked constraint, i.e. \( WEA K_{1x}(\text{ʎ-alveolar}) \), for not conserving any articulatory effort in the tongue tip gesture and are, thus, ruled out. Candidate #5, on the other hand, does satisfy \( WEA K_{1x}(\text{ʎ-alveolar}) \), as it presents a reduction of 75% of the tongue tip gesture. However, it then fatally violates the next ranked constraint, i.e. \( WEA K_{0.75x}(\text{ʎ-alveolar}) \). Candidate #2 emerges as the most optimal output given the constraint ranking in (38), by presenting only the tongue body gesture and, thus, satisfying both \( WEA K_{0}(\text{ʎ-alveolar}) \) and \( PRES_{\text{palatal}} \). In the present approach, the emergence of the glide from /\ is formalized as a difference in constraint ranking between the faithful realization to the speaker’s input (i.e. [\( /\ \) ]) and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. */j/), as shown in (39):
(39) /ʎ/ > /j/ captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

**Speaker’s grammar: /ʎ/**

*Faithful output:* [ʎ], determined by $\text{PRES}_{(\text{alveolar})}$, $\text{PRES}_{(\text{palatal})} \gg \text{WEAK}_{(ʎ)}$.

*Other possible, non-faithful outputs:*

E.g. [j], determined by $\text{WEAK}_{j(x(\text{alveolar})} \ldots \gg \text{WEAK}_{0.75x(\text{alveolar})}$, $\text{PRES}_{100(\text{palatal})}$

$\ldots \gg \text{PRES}_{75(\text{palatal})} \ldots \gg \text{WEAK}_{j(x(\text{palatal})} \ldots \gg \text{WEAK}_{0.75x(\text{palatal})}$

$\ldots \gg \text{PRES}_{100(\text{alveolar})} \ldots \gg \text{PRES}_{75(\text{alveolar})}$.

etc.

**Listener’s grammar: /j/**

*Faithful output:* [j], determined by $\text{WEAK}_{j(x(\text{alveolar})} \ldots \gg \text{WEAK}_{0.75x(\text{alveolar})}$, $\text{PRES}_{100(\text{palatal})}$

$\ldots \gg \text{PRES}_{75(\text{palatal})} \ldots \gg \text{WEAK}_{j(x(\text{palatal})} \ldots \gg \text{WEAK}_{0.75x(\text{palatal})}$

$\ldots \gg \text{PRES}_{100(\text{alveolar})} \ldots \gg \text{PRES}_{75(\text{alveolar})}$ in the original speaker’s grammar, which represents a non-faithful realization to the speaker’s input /ʎ/.

After the delateralization of $\lambda_1$, it is likely that the emerging glide /j/ may have displayed different degrees of constriction in its articulation. In fact, as discussed in Chapter 3, a comparison between the electropalatographs of [j] and [j] show very little difference, with the tongue body touching the hard palate a little more in [j] than in [j] (cf. Figure 19). Thus, I assume that [j] and [j] may have co-existed in free variation at some point after the delateralization of $\lambda_1$. In the present analysis, the selection of the

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38 Note that, in the reconstructed evolution of Spanish (alveolo)palatals illustrated in the chart in (1), the proposed intervocalic glide */-j/* (< $\lambda_1$) still remains in contrast with the intervocalic palatal stop /ɟ/ (cf. §6.4). Support for the reconstruction of this contrast is found in current varieties of Argentinian and Peruvian Spanish (i.e. the Argentinian province of Corrientes and the Amazonian region of Peru), where speakers do maintain a DISTINCTION between intervocalic /j/ and intervocalic /ɟ/.
faithful output [j] is determined by top-ranking $\text{PRES}_{\text{palatal}}$ and $\text{PRES}_{\text{approximant}}$ above all $\text{WEAK}$ and $\text{HONSET}$ constraints, as indicated in (40):

\[(40) \text{PRES}_{\text{palatal}}, \text{PRES}_{\text{approximant}} \gg \text{WEAK}_{\text{palatal}} \text{ (stop, lateral)}, \text{HONSET}_{\text{stop, fric., nasal, lateral}}\]

Under the ranking in (40) we expect any realization that is not faithful to the input to be ruled out, due to a fatally violating either of the top-ranked $\text{PRES}$ constraints, as illustrated in Tableau 6.16.\(^{39}\)

<table>
<thead>
<tr>
<th></th>
<th>$\text{PRES}_{\text{palatal}}$</th>
<th>$\text{PRES}_{\text{approximant}}$</th>
<th>$\text{WEAK}_{\text{palatal}}$</th>
<th>$\text{HONSET}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>stop</td>
<td>lat</td>
<td>stop</td>
<td>fric</td>
</tr>
<tr>
<td>1. [j]</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>2. [j]</td>
<td>*!</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3. [j]</td>
<td>*!</td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>4. [k]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Table 23. Tableau 6.16. */j/ $\gg$ [j].

In Tableau 6.16, candidates #2 through #5 all preserve the palatal place of articulation of the input /j/, but fatally violate $\text{PRES}_{\text{approximant}}$. Thus, the faithful output [j] in candidate #1 emerges as the winner. The selection of the fricative [j], on the other hand, will be determined by the ranking of $\text{PRES}_{\text{approximant}}$ below $\text{WEAK}$ and $\text{HONSET}$ constraints, in (41):

\[39\] In Tableaux 6.16 and 6.17, I assume that $\text{PRES}_{\text{nasal}}$ is ranked above $\text{WEAK}_{\text{palatal nasal}}$, due to the occurrence of palatal nasal consonants in onset position, e.g. Latin ARANEA $\gg$ Spanish ara[n]a 'spider'.
(41) \( \text{PRES}_{\text{palatal}} \gg \text{WEAK}_{\text{palatal (stop, lateral)}} \gg \text{HONSET}_{\text{stop, fric., nasal, lateral}} \gg \text{PRES}_{\text{approximant}} \)

Under the ranking in (41), we expect the optimal output to preserve the input’s palatal place of articulation and satisfy \( \text{WEAK}_{\text{palatal (stop, nasal, lateral)}} \) constraints, as shown in Tableau 6.17:

<table>
<thead>
<tr>
<th>/\text{-j}/</th>
<th>\text{PRES}_{\text{palatal}}</th>
<th>\text{WEAK}_{\text{palatal}}</th>
<th>\text{HONSET}</th>
<th>\text{PRES}_{\text{approximant}}</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>\text{PRES}_{\text{palatal}}</td>
<td>\text{WEAK}_{\text{palatal}}</td>
<td>\text{HONSET}</td>
<td>\text{PRES}_{\text{approximant}}</td>
</tr>
<tr>
<td>\text{stop}</td>
<td>\text{lat}</td>
<td>\text{stop}</td>
<td>\text{fric}</td>
<td>\text{nasal}</td>
</tr>
<tr>
<td>1. ([j])</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ([ɟ])</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. ([ʝ])</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. ([ʎ])</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 24. Tableau 6.17. */j/ > \([j]\). In Tableau 6.17, candidates #3, #4 and #5 all fatally violate \( \text{WEAK}_{\text{palatal}} \) constraints (i.e. \( \text{WEAK}_{\text{palatal stop}}, \text{WEAK}_{\text{palatal nasal}}, \) and \( \text{WEAK}_{\text{palatal lateral}}, \) respectively). Candidates #1 and #2, on the other hand, satisfy \( \text{WEAK}_{\text{palatal}} \) constraints, but violate \( \text{HONSET}_{\text{stop}} \). Thus, the determination of the most harmonic output is relegated to \( \text{HONSET}_{\text{fricative}} \), which selects candidate #2, since candidate #1 fatally violates it.

In the next step, the variation between \([j]\) and \([ʝ]\) eventually settles in favor of the fricative, as the ranking in (41) becomes more frequent. The subsequent evolution of \([j]\)
into [ʒ] reveals a fortition process by the acquisition of sibilance, while still preserving its fricative manner. In other words, the fortition process that derives from the acquisition of sibilance entails a fronter realization, i.e. from the central palatal region toward the prepalatal region. Therefore, PRESmanner must outrank HONSETstop and both HONSET sib-fricative and HONSET non-sib-fricative. Assuming that [ʒ] has a more fronted articulation than [ʝ], it is reasonable to posit that [ʒ] would incur a violation of lowly ranked PRESplace. The ranking in (42) indicates this scenario:

\[(42) \text{PRES}_\text{manner} >> \text{HONSET}_\text{stop} >> \text{HONSET}_\text{sib-fricative} >> \text{HONSET}_\text{non-sib-fricative} >> \text{PRES}_\text{place}.\]

Under the constraint ranking in (42), we predict that in the fortition of /ʝ/, a palatal stop [ʝ] would be blocked from surfacing because it would fatally violate the most highly ranked constraint PRESmanner. Thus, a sibilant fricative [ʒ] is expected to surface as the most harmonic output given the constraint ranking in (42), as shown in Tableau 6.18:

<table>
<thead>
<tr>
<th>/ʝ/</th>
<th>PRES manner</th>
<th>HONSET stop</th>
<th>HONSET fricative</th>
<th>PRES place</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>sib</td>
<td>non-sib</td>
</tr>
<tr>
<td>1. [ʝ]</td>
<td>*</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. [ʒ]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>3. [ʝ]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Table 25. Tableau 6.18. [ʝ] > [ʒ].

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In Tableau 6.18, candidate #3 (i.e. the palatal stop [j]) is ruled out for representing a strengthened realization of the input that does not preserve the fricative manner of articulation. Thus, it fatally violates \( \text{PRES}_{\text{manner}} \). Candidates #1 and #2, on the other hand, satisfy \( \text{PRES}_{\text{manner}} \). However, as both of them violate the next ranked constraint \( \text{HONSET}_{\text{stop}} \), the selection of the winning candidate is relegated to \( \text{HONSET}_{\text{fricative}} \). Candidate #2 surfaces as the output, as it satisfies \( \text{HONSET}_{\text{sib-fricative}} \), while candidate #1 is ruled out, as it fatally violates it. When the listener interprets /ʒ/ as the input from the acoustic signal, a sound change occurs. In the present approach, then, /j/ \( > /ʒ/ \) can be formalized as a difference in constraint ranking between the faithful realization to the speaker’s input (i.e. [j]) and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. /ʒ/), as shown in (43):

(43) /j/ \( > /ʒ/ \) captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

**Speaker’s grammar: /j/**

*Faithful output:* [j], determined by \( \text{PRES}_{\text{manner}}, \text{PRES}_{\text{place}} \gg \text{HONSET}_{\text{stop}} \gg \text{HONSET}_{\text{sib-fricative}} \gg \text{HONSET}_{\text{non-sib-fricative}} \).

*Other possible, non-faithful outputs:*

E.g. [ʒ], determined by \( \text{PRES}_{\text{manner}} \gg \text{HONSET}_{\text{stop}} \gg \text{HONSET}_{\text{sib-fricative}} \gg \text{HONSET}_{\text{non-sib-fricative}} \gg \text{PRES}_{\text{place}} \).

*Listener’s grammar: /ʒ/**

*Faithful output:* [ʒ], determined by \( \text{PRES}_{\text{manner}} \gg \text{HONSET}_{\text{stop}} \gg \text{HONSET}_{\text{sib-fricative}} \gg \text{HONSET}_{\text{non-sib-fricative}} \gg \text{PRES}_{\text{place}} \) in the original speaker’s grammar, which represents a non-faithful realization to the speaker’s input /j/.
6.5.2 /ɟ/- > *[dʒ]- > /ʒ-/

As discussed in Chapter 4 and proposed in the chart in (1), the palatal obstruent /ɟ/ of Hispano-Romance eventually evolved into the sibilant fricative /ʒ/ in most words where it was found in word-initial position followed by a back vowel, particularly /u/. If it is right to assume that the phonetic realization of /ɟ/ often renders that of a palatal affricate [ɟʝ] (Ladefoged 2001), then it is likely that an intermediate affricate stage was also part of the evolution from /ɟ/- to /ʒ-. Thus, before back vowels, a first phonetic change would have involved the fronting of [ɟʝ] toward the prepalatal region, where it would have acquired sibilance and would have been realized as an affricate [dʒ]. As [ɟʝ] remained the same before non-back vowels, I propose that its fronting to [dʒ] before /u, o/ derived from a dissimilation process between the tongue body gesture of the consonant and that of the back vowels. In other words, the initial palatal + velar gesture in [ɟʝu-, ʝo-] gave way to a postalveolar + velar gesture in [dʒu-, ʒo-]. In order to motivate the proposed dissimilation between the two close tongue body gestures (i.e. the palatal gesture and the velar gesture), I invoke the Obligatory Contour Principle (OCP) (Goldsmith 1976; McCarthy 1981, 1986; Steriade 1982; Odden 1986; Yip 1988) and formalize it as a violable constraint that militates against the realization of sequences with two very close tongue body gestures. In the present discussion, a highly ranked OCP(palatal non-continuant + Vback) would have pushed toward a change in the place of articulation of non-continuant palatal segments before back vowels /o, u/. This would have driven [ɟʝ] to front its place of articulation at least toward the prepalatal region,

40 This merits further research, as the process of dissimilation has not been deeply explored in Optimality Theory (but cf. Alderete 1997; González 2008).
hence acquiring sibilance. In this case, however, I assume that the constraints \( \text{PRES}_\text{affricate} \) (i.e. preserve the affricate manner), \( \text{PRES}_\text{TB gesture} \) (i.e. preserve tongue body gesture) and \( \text{PRES}_\text{vowel} \) (i.e. preserve vowel) would also be highly ranked, in order to keep the dissimilation as minimal as possible and, thus, prevent the place of articulation of \( [\ddot{\mathbf{j}}\ddot{j}] \) from changing toward even further regions, for example, as a dental affricate \( [\ddot{d}\ddot{z}] \). The ranking in (44) indicates this constraint hierarchy:

\[
(44) \text{PRES}_\text{vowel}, \text{PRES}_\text{affricate}, \text{PRES}_\text{TB gesture}, \text{OCP}_{(\text{palatal non-continuant} + \text{Vback})} >> \text{PRES}_\text{palatal}
\]

Under this ranking, realizations that do not present an affricate manner of articulation (e.g. a stop or a fricative) are expected to be ruled out, as they would incur a fatal violation of \( \text{PRES}_\text{affricate} \). While a realization as \( [\dddot{\mathbf{j}}\dddot{j}\mathbf{u}-, \dddot{\mathbf{j}}\dddot{j}\mathbf{o}-] \) would fatally violate \( \text{OCP}_{(\text{palatal non-continuant} + \text{Vback})} \), an affricate output that does not preserve its tongue body gesture would incur a fatal violation to \( \text{PRES}_\text{TB gesture} \). Tableau 6.19 illustrates this scenario:

<table>
<thead>
<tr>
<th>( [\dddot{\mathbf{j}}\mathbf{u}-, \dddot{\mathbf{j}}\mathbf{o}-] )</th>
<th>( \text{PRES}_\text{vowel} )</th>
<th>( \text{PRES}_\text{affricate} )</th>
<th>( \text{PRES}_\text{TB gesture} )</th>
<th>( \text{OCP}_{(\text{palatal non-continuant} + \text{Vback})} )</th>
<th>( \text{PRES}_\text{palatal} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. [\mathbf{ju}, \mathbf{jo}]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. [\mathbf{ju}, \mathbf{jo}]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. [\dddot{\mathbf{j}}\mathbf{u}, \dddot{\mathbf{j}}\mathbf{o}]</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \Rightarrow 4. ) [\mathbf{d}\dddot{\mathbf{z}}\mathbf{u}, \mathbf{d}\dddot{\mathbf{z}}\mathbf{o}]</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. [\mathbf{dzu}, \mathbf{dzo}]</td>
<td></td>
<td>*!</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Table 26. Tableau 6.19. \( [\dddot{\mathbf{j}}\mathbf{u}-, \dddot{\mathbf{j}}\mathbf{o}-] \rightarrow [\mathbf{d}\dddot{\mathbf{z}}\mathbf{u}-, \mathbf{d}\dddot{\mathbf{z}}\mathbf{o}-] \).
In Tableau 6.19, candidates #1 and #2 fatally violate $P_{RES}^{affricate}$. Candidate #5, on the other hand, fatally violates $P_{RES}^{TB \_gesture}$ because the dental affricate $[dZ]$ would entail the activation of the tongue tip gesture. Candidates #3 and #4 both satisfy $P_{RES}^{affricate}$ and $P_{RES}^{TB \_gesture}$. However, candidate #3 (i.e. the faithful $[\text{jju}-, \text{jjio}-]$) fatally violates $OCP_{(palatal \_non-continuant + V\_back)}$. Thus, candidate #4 emerges as the winner, despite having a prepalatal place of articulation, hence violating low-ranked $P_{RES}^{palatal}$. Note that another possible solution for the dissimilation process in question could be a complete deletion of the vowels [u, o]. However, a candidate with this solution would be ruled out for incurring a fatal violation to highly ranked $P_{RES}^{vowel}$.

Note, also, that Tableau 6.19 represents a hypothetical scenario for the emergence of a fronted allophone $[d\_3\text{-}]$ before back vowels. It is quite likely, however, that initially, non-sibilant $[\text{jj\text{-}}]$ and sibilant $[d\text{\_3\text{-}}]$ co-existed in free variation or varied according to speech rate or style, in which case $OCP_{(palatal \_non-continuant + V\_back)}$ would be unranked in relation to $P_{RES}^{palatal}$. Assuming that, at some point in Proto-Spanish, the ranking between these constraints was stabilized as in (44), then $[d\text{\_3\text{-}}]$ became the only allophone of /j-/ in the particular context before back vowels. By considering the emergence of the sibilant fricative /ʒ/ in Old Spanish (see §6.5.1), I propose that $[d\_3\text{-}]$ (< /j-/ before back vowels) was then reanalyzed by listeners as a word-initial allophone of /ʒ/ (and no longer as an allophone of word-initial /j/ before back vowels). In other words, the voiced sibilants of words such as $[d\_3\text{uar}]$ ‘to swear’ and $a[\_3\text{o}]$ ‘garlic’ were interpreted as allophones of /ʒ/ in their evolution from Proto-Spanish to Old Spanish. This hypothesis works in tandem with the general development of ‘weakened’ allophones of other voiced obstruents. For
example, as Lloyd (1987:327) and Penny (2002:76-81) point out, voiced stops /d/ and /g/ had lenited in intervocalic position by the thirteenth century, giving rise to the approximant allophones [ð] and [ɣ], respectively. In fact, a similar pattern will be proposed for the evolution of /ʒ/ intervocally and in word-initial position before /a/ (see §6.6). Thus, it is likely that [ʒ] and [dʒ] may have been initially interpreted as allophones of the same phoneme, [ʒ] being the ‘weak’ allophone and [dʒ] being the ‘strong’ allophone. However, the variation in orthographic representation revealed by Menéndez Pidal (1950) points toward a possible confusion by speakers in regard to the complementary distribution of [ʒ] and [dʒ]. In other words, both segments may also have been found in free variation during the initial stage of Old Spanish. This would explain varying orthographic representations such as *mugger, muger, mujer* ‘woman’, which, in part, has led many scholars (e.g. Menéndez Pidal 1950, Alonso 1962, among others) to propose that /ʎ/ (i.e. ʎ₁) had evolved directly into either [dʒ] or [ʒ] (most likely into the latter).

Yet, by considering the later emergence of voiceless /ʃ/, and also the fact that words with intervocalic [ʒ] were more frequent than words with word-initial [dʒ], it may have been the case that the initial, hypothetical free variation between [dʒ] and [ʒ] eventually ceased in Old Spanish, in favor of the fricative [ʒ]. Listeners, subsequently, may have internalized /ʃ/, of which the sole allophone was then [ʒ] (and not [dʒ] anymore). Thus, words such as *jurar* ‘to swear’ and *mujer* ‘woman’ were now pronounced as [ʒuɾar] and [muʒer], respectively. As this hypothesis does not involve
necessarily a phonetic step, the assumed deaffrication of word-initial [dʒi-] into [ʒi-] will not be formalized here.

6.5.3 /ʒ/ > /ʃ/

As Penny (2002:98-101) points out, the voiced sibilant fricative /ʒ/ devoiced into /ʃ/ during the 16th century, as did the other two Old Spanish voiced sibilants, /dʒ/ and /z/. While accounting for the overall sibilant devoicing in 16th-century Spanish is beyond the scope of this dissertation (cf. Bradley & Delforge 2006 for a comprehensive account), it is worth illustrating how the devoicing of /ʒ/ into /ʃ/ can be accounted for under the present approach. As mentioned in Chapter 3, voiced fricatives are inherently more difficult to produce, as “high volume velocity is needed to produce the turbulent noise characteristic of fricatives, and [at the same time] the vibrating vocal cords [generating voicing] impede the flow of air through the vocal tract” (Johnson 2003:124). Thus, we may infer that, during the production of a voiced fricative such as [ʒ], the need for turbulence conflicts with the need to maintain voicing. Throughout the evolution of Spanish, this conflict is often resolved in favor of the need for turbulence, the result of which produces the devoicing of fricatives, illustrated in the devoicing of /ʒ/ into /ʃ/ from Old to Medieval Spanish, and a similar change event currently taking place in varieties of Argentinian and Uruguayan Spanish (cf. Chapter 5). Therefore, in the present approach, it is possible to formalize the need for the maintenance of voicing as the faithfulness constraint PRESvoicing, which may present gradient values in the same spirit as PRESplace, as indicated in (45):

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(45) \( \text{PRES}_{100}^{100} \rightarrow \text{PRES}_{99}^{99} \rightarrow \text{PRES}_{98}^{98} \rightarrow \ldots \rightarrow \text{PRES}_{1}^{1} \)

where \( \text{PRES}_{100}^{100} \) militates for the maintenance of 100% (i.e. the maximal preservation) of the input cues for voicing, and \( \text{PRES}_{1}^{1} \) pushes for the preservation of 1% (i.e. the minimal preservation) of the input cues for voicing. As the place and manner of articulation in a change such as \(/\mathcal{z}/ \rightarrow /\mathcal{f}/ \) are preserved, I infer that \( \text{PRES}_{\text{place}}, \text{PRES}_{\text{manner}}, \) and \( \text{WEAK} \) must be all highly ranked. Thus, it is necessary to bring other constraints that conflict with \( \text{PRES}_{\text{voicing}} \), i.e. constraints that militate for the turbulence of noise in fricatives to be voiceless. As Smith (1997) and Widdison (1997) point out, voiceless sibilants tend to be preferred over voiced sibilants, as the former are more perceptually salient because of their longer duration and higher noise intensity. If we recall that consonants are also more perceptually salient in onset position (Beckman 1997, 1998), then we can conclude that sibilants in such position will tend to be voiceless. I invoke, then, Bradley & Delforge’s (2006:32) markedness constraint \( \sigma[s] \), as formalized in (46):

(46) \( \sigma[s] : \text{A sibilant in syllable-initial position is } [-\text{voice}]. \) (Bradley & Delforge’s 2006:32)

This constraint militates for sibilants in onset position to be voiceless and, thus, will rule out any candidates that display some degree of voicing (hence, we expect it to conflict directly with \( \text{PRES}_{\text{voicing}} \)). As the history of Spanish shows, a voiceless palato-alveolar
phoneme /ʃ/ emerged from its voiced counterpart. In the present approach, then, a voiceless realization of input /ʒ/ can be motivated top-ranking $σ[s$ over $\text{PRES}_{\text{voicing}}$, as indicated in (47):

\[(47) \quad σ[s >> \text{PRES}_{100\text{voicing}} \ldots >> \text{PRES}_{50\text{voicing}}\]

This ranking predicts that any candidate with a complete or partial preservation of voicing in the output will be ruled out by highly ranked $σ[s$. Thus, [ʃ] should emerge as the selected output, given the dominance hierarchy in (47). This scenario is illustrated in Tableau 6.20:

<table>
<thead>
<tr>
<th>/ʒ/</th>
<th>$σ[s$</th>
<th>$\text{PRES}_{\text{voicing}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>1. [ʒ]</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>2. [ʒ̥]</td>
<td>*!</td>
<td>*</td>
</tr>
<tr>
<td>3. [ʃ]</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

Table 27. Tableau 6.20. /ʒ/ → [ʃ]

In Tableau 6.19, both candidate #1 (i.e. fully voiced [ʒ]) and candidate #2 (i.e. partially voiced [ʒ̥]) are ruled out for their fatal violation of highly ranked $σ[s$, as this constraint militates for a sibilant in onset position to be completely voiceless. Candidate #3 emerges, therefore, as the output in this constraint ranking, because it satisfies $σ[s$, even
though it violates lowly ranked all $\text{PRES}_{\text{voicing}}$ constraints. In the present approach, then, the devoicing of /ʒ/ into /ʃ/ is formally captured by a difference in constraint ranking between the faithful realization to the speaker’s input (i.e. [ʒ]) and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. /ʃ/), as shown in (48):

(48) /ʒ/ $>$ /ʃ/ captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

**Speaker’s grammar: /ʒ/**

*Faithful output: [ʒ], determined by $\text{PRES}_{100_{\text{voicing}}} \ldots \gg \text{PRES}_{50_{\text{voicing}}} \gg \sigma[s].$

*Other possible, non-faithful outputs:*  
  E.g. [ʃ], determined by $\sigma[s] \gg \text{PRES}_{100_{\text{voicing}}} \ldots \gg \text{PRES}_{50_{\text{voicing}}}$, etc.

**Listener’s grammar: /ʃ/**

*Faithful output: [ʃ], determined by $\sigma[s] \gg \text{PRES}_{100_{\text{voicing}}} \ldots \gg \text{PRES}_{50_{\text{voicing}}}$ in the grammar of the original speaker, which represents a non-faithful realization to the speaker’s input /ʒ/.

### 6.6 Further development of /ʎ/ and /ʃ/

As discussed in Chapter 4, the evolution of the obstruent /ʃ/ (except in word-initial position before back vowels, cf. §6.5.2) and that of /ʎ/ crossed their pathways around late Medieval, early Modern Spanish, giving rise to YEÍSMO. In regard to the evolution of /ʃ/, the chart in (1) suggests that this voiced stop developed a lenited allophone [ʃ] in intervocalic position at some point in Old Spanish. This hypothesis is supported by the
fact that other voiced stops are attested to have evolved in a similar fashion. For example, Penny (2002:78) points out that the Old Spanish phoneme /d/ was pronounced as an approximant [ð] in words like *cadena* ‘chain’ (< Latin *cænna*). As for bilabial /b/ and velar /g/, their approximants allophones [β] and [γ], respectively, are believed to have emerged by the 15th century, also in intervocalic position, e.g. *segar* ‘to reap’ (< Latin *sēcāre*), *cabe* ‘fits’ (< Latin *capit*) (Penny 2002:76, 97). Therefore, it is safe to claim that the effects of lenition had been established over the voiced stops /b, d, g, Ɪ/ in intervocalic position, during the Old and Medieval Spanish periods. In terms of the present approach, I formalize these contextual lenition effects as ranking HONSET below the highest values of the spirantization constraint WEAkVoicedStop(V_V) (i.e. conserve articulatory effort in the production of voiced stops intervocally). However, as the obstruent was not fully deleted, WEAkVoicedStop(V_V) must have been blocked by a PRES constraint, namely, PRES_place. The ranking in (49) formalizes the dominance hierarchy among the aforementioned constraints:

\[
\text{(49)} \quad \text{PRES}_{\text{place}} >> \text{WEAK}_{1x\text{VoicedStop}(V_V)} \ldots >> \text{HONSET}_{\text{stop}} >> \text{HONSET}_{\text{fricative}} >> \text{HONSET}_{\text{glide}} >> \text{WEAK}_{0.5x\text{VoicedStop}(V_V)} \ldots >> \text{WEAK}_{0.25x\text{VoicedStop}(V_V)}.\]

The ranking in (49) predicts that a lenited output of a voiced obstruent will necessarily preserve its place of articulation, as PRES_place is the most highly ranked constraint. The second highly ranked constraint, WEAK_{1xVoicedStop(V_V)}, will rule out any output with a voiced stop realization in intervocalic position. The hierarchy of HONSET constraints will,
then, determine the degree of ‘strength’ of the lenited output, as illustrated in Tableau 6.21:

<table>
<thead>
<tr>
<th>/j/</th>
<th>(\text{PRES}_{\text{place}})</th>
<th>(\text{WEAK}_{\text{VoicedStop}}(V_V))</th>
<th>(\text{HONSET}_{\text{stop}})</th>
<th>(\text{HONSET}_{\text{fric}})</th>
<th>(\text{HONSET}_{\text{glide}})</th>
<th>(\text{WEAK}_{\text{VoicedStop}}(V_V))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>palatal</td>
<td>(Ix)</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(0.5x)</td>
</tr>
<tr>
<td>1.</td>
<td>([-j-])</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(0.25x)</td>
</tr>
<tr>
<td>2.</td>
<td>([-j-])</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(0.25x)</td>
</tr>
<tr>
<td>3.</td>
<td>([-j-])</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(0.25x)</td>
</tr>
<tr>
<td>4.</td>
<td>(\emptyset)</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(!*)</td>
<td>(0.25x)</td>
</tr>
</tbody>
</table>

Table 28. Tableau 6.21. /j/ \(\rightarrow\) [-j-] in Old Spanish.

In Tableau 6.21, candidate #4 (\(\emptyset\)) incurs a fatal violation of highly ranked \(\text{PRES}_{\text{place}}\) and is then ruled out. Candidate #1 (i.e. the voiced palatal stop /j/) satisfies \(\text{PRES}_{\text{place}}\), but fatally violates \(\text{WEAK}_{\text{fric}}\). The selection of the output of /j/ is then relegated to the degree of lenition in palatal constriction. As \(\text{HONSET}_{\text{fric}}\) outranks \(\text{HONSET}_{\text{glide}}\), candidate #3 is ruled out and candidate #2, i.e. [j], emerges as the optimal output, despite the fact that both candidates violate \(\text{HONSET}_{\text{stop}}\). A similar analysis can be posited for the voiced stops /b, d, g/. In terms of formalizing the emergence of the allophone [j], I follow the current approach indicating a difference in constraint ranking between the faithful realization to the speaker’s input (i.e. [-j-]) and the listener’s interpretation (as input) of one of the unfaithful realizations to the speaker’s input (i.e. [-j-]), as shown in (50):

(50) /j/ \(\rightarrow\) [-j-] captured by the difference in the constraint ranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the speakers’ input, by virtue of LO:

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Speaker’s grammar: /y/ \(\rightarrow [\text{[j-], -j-]}\)

*Faithful intervocalic output:* \([-\text{j-}],\) determined by \(\text{PRES}_{\text{place}} \gg \text{HONSET}_{\text{stop}} \gg \text{HONSET}_{\text{fric}} \gg \text{HONSET}_{\text{glide}} \gg \text{WEAK}_{\text{1xVoicedStop}(V\_V)} \ldots \gg \text{WEAK}_{0.5xVoicedObst(V\_V)} \ldots \gg \text{WEAK}_{0.25x(VoicedObstV\_V)}\).

*Other possible, non-faithful intervocalic outputs:*

E.g. \([-\text{j-}],\) determined by \(\text{PRES}_{\text{place}} \gg \text{WEAK}_{\text{1xVoicedStop}(V\_V)} \ldots \gg \text{HONSET}_{\text{stop}} \gg \text{HONSET}_{\text{fricative}} \gg \text{HONSET}_{\text{glide}} \gg \text{WEAK}_{0.5xVoicedStop(V\_V)} \ldots \gg \text{WEAK}_{0.25xVoicedStop(V\_V)}\).

Listener’s grammar: /y/ \(\rightarrow [\text{[j-], -j-]}\)

*Faithful intervocalic output:* \([-\text{j-}],\) determined by \(\text{PRES}_{\text{place}} \gg \text{WEAK}_{\text{1xVoicedStop}(V\_V)} \ldots \gg \text{HONSET}_{\text{stop}} \gg \text{HONSET}_{\text{fricative}} \gg \text{HONSET}_{\text{glide}} \gg \text{WEAK}_{0.5xVoicedStop(V\_V)} \ldots \gg \text{WEAK}_{0.25xVoicedStop(V\_V)}\) in the original speaker’s grammar, which represents a non-faithful, intervocalic realization to the speaker’s input /y/.

As previously mentioned, /y/ (with its allophones [j-, -j-]) further merged with the evolution of \(\lambda_2\) in late Medieval, early Modern Spanish. Thus, I posit that the delateralization of \(\lambda_2\) initially gave rise to a palatal glide *[j]*, in the same fashion as \(\lambda_1\), according to the present approach (cf. Tableau 6.15). This glide subsequently incurred fortition and merged with the evolution of /y/, namely, as a palatal stop [j] word-initially and as a palatal fricative [j]. In regard to the former, we can motivate the same evolutionary pattern as that of word initial Latin /j/-, namely, by the ranking of HONSET over PRES\(_{\text{manner}}\) and WEAK (cf. Tableau 6.11). In intervocalic position, however, I assume that [-j-] (< \(\lambda_2\)) rapidly leveled with [-j-] (< /y/), as the difference in palatal constriction between the two probably was not high enough to maintain a hypothetical contrast (recall the reconstructed free variation stage between [-j-] and [-j-] from \(\lambda_1\), cf. Tableau 6.16). Moreover, any attempt to strengthen these segments to an intervocalic palatal stop was
blocked by the effects of highly-ranked WEAK\VoicedStop(V_v) over HONSET (cf. Tableau 6.20). Thus, by the Modern Spanish period, YEÍSMO had already arisen in a few dialects, where speakers had merged \(\lambda_2\) with /j/ (cf. Chapter 4). However, many current dialects still preserve \(\lambda_2\) as such (cf. Chapter 5), while others are displaying the same evolutionary cycle of /\lambda/ once again, i.e. by giving rise to a palatal glide [j] as its first immediate evolutionary step, as formalized in Tableau 6.15.

6.7 Contemporary dialectal realizations

When considering the evolutionary pathways of (alveolo)palatal sounds in the history of Spanish as depicted in the chart in (1), one quickly notices that the different realizations of these sounds in contemporary varieties of Spanish reflect different historical stages. For example, in the history of Argentinian Spanish (Fontanella de Weinberg 1984, 1987), the palatal obstruent /j/ of the YEÍSTA pronunciation has incurred the same strengthening process incurred by the palatal fricative *[j] proposed in the delateralization of \(\lambda_1\) in Proto-Spanish. Although the voiced sibilant fricative [ʒ] is realized across the board in onset position in the speech of today’s YEÍSTAS, an affricate allophone [dʒ̞] may also surface in a few words, such as in yo ‘I’ and ya ‘already’, when found in absolute word-initial position (Fernández Trinidad 2010). This fact lends further support to the hypothesis put forth for the emergence of /ʒ/ in Old Spanish, i.e. that both [dʒ̞] and [ʒ] may have initially been found in complementary distribution, after which [ʒ] took over as the most frequent allophone of /ʒ/. A similar scenario may, thus, be envisioned for the coronalization of [j-] and [-j-] (cf. Tableaux 6.17 and 6.18) in Buenos
Aires at the turn of the 19th-century. The devoicing process currently taking place in the River Plate region follows in the footsteps of the evolution of /ʒ/ > /ʃ/ from Old to Medieval Spanish (cf. Tableau 19), whereby /ʒ/ is realized with partially voiced or totally devoiced allophones (e.g. [ʒ], [ʃ]), until the voiceless fricative is eventually selected and phonologized by the listener. As in the historical change, the vast majority of scholars claim that /ʃEÍSTAS do not have an affricate allophone *[ʃ], despite Penny’s claim that “[ʃ] occurs in urban speech in the River Plate area” (2002:106). Further research will shed more light on this issue.

Other patterns have also emerged since the inception of yeísmo. As discussed in Chapter 5, varieties of U.S. Spanish and Northern Mexican Spanish tend to be /ieÍSTAS, by realizing [j] (< /ʃ/) in intervocalic position (ma[j]o ‘May’), and many times even deleting this segment altogether when it is found next to a palatal vowel (e.g. ea ‘she’). This mirrors a similar change event in Old Spanish, e.g. CORRIGIA > … corre[j]a > correa ‘strap’) (cf. §4.3.2). In evolutionary terms, these sound changes represent different degrees of weakening in the realization of the intervocalic palatal obstruent. Under the present approach, then, a candidate with the approximant [j] will be selected by a constraint ranking in which \( \text{PRES} \) (place) is top-ranked, while \( \text{WEAK}_{\text{VoicedObst(V_V)}} \) outranks HONSET, as indicated in (51):

\[
(51) \quad \text{PRES}_{\text{place}} \gg \text{WEAK}_{\text{VoicedObst(V_V)}} \quad \ldots \quad \gg \text{WEAK}_{0.5 \cdot \text{VoicedObst(V_V)}} \quad \ldots \quad \gg \text{HONSET}_{\text{stop}} \gg \text{HONSET}_{\text{fricative}} \gg \text{HONSET}_{\text{glide}}.
\]
Under the ranking in (51), we expect the realization of the palatal obstruent /ɟ/ to be with a minimal percentage of frication, in this case less than 50%. Thus, any candidate with either a palatal stop [j] or a palatal fricative [ʝ] will fatally violate \( \text{WEAK}_{1x\text{VoicedObst}(V_V)} \) and \( \text{WEAK}_{0.5x\text{VoicedObst}(V_V)} \), respectively. A candidate with the total conservation of palatal effort, i.e. \( \emptyset \), will be ruled out by highly ranked \( \text{PRES}_{(\text{place})} \). Tableau 6.22 illustrates the selection of [j] as the output of intervocalic /ɟ/:

<table>
<thead>
<tr>
<th>/j/</th>
<th>( \text{PRES}_{(\text{place})} )</th>
<th>( \text{WEAK}_{\text{VoicedObst}}(V_V) )</th>
<th>( \text{WEAK}_{\text{VoicedObst}}(V_V) )</th>
<th>HONSET stop</th>
<th>HONSET fric</th>
<th>HONSET glide</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>palatal</td>
<td>( 1x )</td>
<td>( 0.5x )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. [-j-]</td>
<td></td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>2. [-j-]</td>
<td></td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4. ( \emptyset )</td>
<td></td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Table 29. Tableau 6.22. /j/ \( \rightarrow [-j-] \) in varieties of U.S. Spanish and Northern Mexican Spanish.

In Tableau 6.22, candidate #1 and candidate #2 incur a fatal violation of \( \text{WEAK}_{1x\text{VoicedObst}(V_V)} \) and \( \text{WEAK}_{0.5x\text{VoicedObst}(V_V)} \), respectively. Whereas candidate #4 is ruled out for violating highly ranked \( \text{PRES}_{(\text{place})} \), candidate #3 emerges as the optimal output for satisfying both \( \text{PRES}_{(\text{place})} \) and \( \text{WEAK}_{\text{VoicedObst}(V_V)} \) constraints. Further research on these varieties is needed, however, because \( \text{WEAK}_{\text{VoicedObst}(V_V)} \) militates for all voiced obstruents to lenite intervocally and more data are still needed in regard to the behavior of /b, d, g/ in intervocalic position in the Spanish dialects where /j/ lenites. The cases where the approximant [j] is deleted, on the other hand, are determined by a top-ranked \( \text{WEAK} \) constraint that militates for the conservation of articulatory effort in the
production of an intervocalic palatal consonant adjacent to a palatal vowel. I call this spirantization constraint \( \text{WEAK}(\text{Vpal})\text{Cpal}(\text{Vpal}) \) and motivate it because the tongue body gesture of the palatal consonant and that of the palatal vowel would be the same, hence the drive to conserve articulatory effort. Thus, if \( \text{PRES}(\text{vowel}) \) and \( \text{WEAK}(\text{Vpal})\text{Cpal}(\text{Vpal}) \) outrank \( \text{PRES}(\text{place}) \) and \( \text{HONSET} \) constraints, we expect the palatal consonant to delete and only the palatal vowel to emerge as the optimal output, as it does in the cases of deletion of intervocalic \(/j/\) next to a palatal vowel in varieties of U.S. Spanish, in Northern Mexican Spanish, and in Old Spanish. Tableau 6.23 illustrates the selection of the palatal vowel in this scenario. (For visual convenience, I illustrate the deletion of \(/j/\) in the sequence \(/e.j/\) and assume that the same would apply to other similar cases, such as \(/i.j/\).)

<table>
<thead>
<tr>
<th></th>
<th>(-e.j-)</th>
<th>\text{PRES}(\text{vowel})</th>
<th>\text{WEAK}(\text{Vpal})\text{Cpal}(\text{Vpal})</th>
<th>\text{PRES}(\text{place}) \text{palatal}</th>
<th>\text{HONSET} \text{stop}</th>
<th>\text{HONSET} \text{fric}</th>
<th>\text{HONSET} \text{glide}</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(-e.ɟ-)</td>
<td>*!</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>2</td>
<td>(-e.ʝ-)</td>
<td>*!</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3</td>
<td>(-e.j-)</td>
<td>*!</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4</td>
<td>(-e.-)</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Table 30. Tableau 6.23. \(/j/ \rightarrow \emptyset\) in varieties of U.S. Spanish, Northern Mexican Spanish, and in Old Spanish.

In Tableau 6.23, candidates #1-#3 all have a realization of the palatal consonant after the palatal vowel \(/e/\) and, therefore, present a fatal violation of \( \text{WEAK}(\text{Vpal})\text{Cpal}(\text{Vpal}) \). Candidate #4 (i.e. \([-e.-]\)) emerges, then, as the optimal output, since it satisfies both top-ranked constraints \( \text{PRES}(\text{vowel}) \) and \( \text{WEAK}(\text{Vpal})\text{Cpal}(\text{Vpal}) \).
In other dialects, however, an intervocalic fricative allophone of /ʝ/, i.e. [ʝ], strengthens into a voiced sibilant [ʒ]. Such is the case of scattered rural areas in Western Andalusia. The coronalization process [ʝ] > [ʒ] illustrates a similar evolutionary pathway as the proposed *[ʝ] stage (from Λ₁) in Proto-Spanish (cf. Tableau 6.17) and as [ʝ] from the yeïsta pronunciation that was the norm in 19th-century Buenos Aires. The only difference is that, in these areas of rural Western Andalusia, they still preserve Λ₂. Hence, a new kind of distinction emerges, i.e. one between /ʎ/ and /ʒ/ (cf. Chapter 5). However, other dialects that preserve Λ₂ (e.g. Paraguay, the Andean region of Peru, Ecuador, Bolivia, Northeastern Argentina, etc.) still maintain the same contrast with the palatal obstruent /ʝ/ from the Old Spanish period, with the exception of one area, i.e. the Northeastern Argentinian province of Corrientes. In this region, Λ₂ is currently under a delateralization process from which the palatal glide [j] is emerging, exactly as the proposed steps for Λ₁ in Proto-Spanish and Λ₂ in late Old Spanish (cf. Tableau 6.15). In Corrientes Spanish, however, the emerging glide [j] contrasts with the palatal obstruent [ʝ] (Colantoni 2004). This reveals itself to be crucial for the present analysis, because it suggests that a similar contrast may also have been possible in Proto-Spanish, as argued in this chapter. Moreover, it suggests that in this dialect, /ʝ/ has not undergone a process of lenition intervocally. Corrientes Spanish /ʝ/ illustrates, then, a ranking in which PRES(place) and PRES(manner) outrank WEAK(Vpal)Cpal(Vpal) constraints, so that /ʝ/ is realized as [-ʝ-], hence contrasting with [-j-] (< /ʎ/).
6.8 Summary and concluding remarks

This chapter has presented a formal analysis of the changes discussed in Chapters 4 and 5. By invoking a small group of constraints (i.e. WEAKENING, PRESERVE, HONSET, of [s, and OCP) and assuming the interaction between the speaker and the listener in the emergence of a sound change (cf. Chapter 2), the present discussion has accounted for how and why similar (alveolo)palatal change events may “repeat themselves” in different periods within the history of a language. Although acknowledging that not every sound change may have its seed in phonetics (recall the assumed analogical processes involved in the evolution of Latin /pl-, kl-, fl-), the present approach has illustrated how the use of phonetically based constraints help us to capture the inherent gradient character associated with most of the discussed changes. By the same token, it has been shown that the emerging nature of constraints and their (re)ranking during sound variation and change brings diachrony and synchrony together. In other words, a diachronic approach helps us explain why synchronic patterns have come to be so varied. Conversely, historical issues greatly benefit from the insights of synchronic dialectal realizations, and, thus, hypotheses for sound reconstruction are performed under a grounded perspective, with a lessened degree of speculation.
CHAPTER 7

FINAL REMARKS

7.1 Summary and concluding remarks

This dissertation has provided a thorough investigation of the evolutionary pathways of (alveolo)palatal lateral, obstruent, and approximant sounds in Spanish (i.e. [ʎ, ʝ, j, dʒ, ʒ, ʃ]), with further evidence from related Romance languages. More specifically, the previous chapters offered a detailed discussion of the phonetics, phonology, history, and current dialectology of these sounds, and how they manifest themselves in the phenomena known as YEÍSMO, IEÍSMO, ƷEÍSMO, JEÍSMO and the several patterns of DISTINCTION. By unfolding the continuum between the past and the present of (alveolo)palatal sounds, the current study offers a novel approach to the study of sound change in Spanish, i.e. one that utilizes the manifestations of sounds in present-day dialects to shed light upon issues in its historical evolution, and conversely, takes diachronic development as a critical tool to account for synchronic dialectal patterns. Thus, it challenges traditional research in sound change, by regarding synchrony and diachrony not as two completely dichotomic perspectives, but as complementary viewpoints toward a successful understanding of patterns of sound variation and change across languages and within varieties of the same language.
By using phonetic information to motivate a formal analysis of (alveolo)palatal sound change, the present study has explored the tools that help answer why those changes could happen in the first place—as opposed to only describing their evolution—and, most important, how it is possible for them to “repeat themselves” in distinct periods within the history of a language. The presence of similar phonetic environments—both in the past and in the present—ensure a grounded motivation for similar patterns of sound change to arise. Put another way, once the same phonetic conditions are met, similar change events may take place during the speaker-listener interaction at different points in time. In terms of the formal analysis provided in chapter 6, similar phonetic environments may give rise to similar constraint (re)rankings in the evolution of a language. Thus, considering the phonetic characteristics of sounds, their inherent variation in production, and how the seed of change arises in the speaker-listener interaction, the present study exemplifies how related evolutionary pathways can arise and be accounted for in a straightforward, non-teleological manner. For example, the change /ʎ/ > /j/ in the history and dialects of Spanish, Portuguese, French, Italian, and other Romance languages is understood as the listener’s interpretation (as input) of the full reduction of the tongue tip gesture and the deletion of the laterality in the speaker’s production of /ʎ/ as [j], which is determined by the effects of top-ranking WEAK(ʎ, alveolar) and PRES(palatal) (cf. Tableau 6.15). The strengthening of /j/ into [ʒ], on the other hand, is determined by the outranking of HONSET over PRES(place) in the speaker’s production of /j/, while still maintaining its fricative manner, hence crucially satisfying top-ranked PRES(fricative) (cf. Tableau 6.18). When the listener interprets /ʒ/ as the input from the acoustic signal, the change /j/ > /ʒ/
occurs. Next, the devoicing of postalveolar /ʒ/ into /ʃ/ follows from the listener’s interpretation of /ʃ/ as input, which is determined by top-ranking σ[s over PRESvoicing in the speaker’s production of /ʒ/ (cf. Tableau 20).

Thus, at a theoretical level, the present study lends support to phonetically based approaches to phonological patterns. It illustrates how a small group of phonetically-motivated constraints (e.g. WEAKENING and PRESERVE) and constraints that make reference to different prosodic positions (e.g. HONSET and σ[s) help to capture and formalize the inherent gradience associated with (at least the beginning of) phonetic changes. Moreover, the model adopted in the previous discussion demonstrates how a sound change at the level of the individual can be formalized—and manifests itself—as a constraint reranking between the faithful realization to the speaker’s input and the listener’s interpretation (as input) of one of the unfaithful realizations to the original speaker’s input. More specifically, the inherent phonetic variation in the speaker’s production of a given underlying representation is formalized by different constraint rankings. A sound change will emerge when the listener interprets (as input) one of the unfaithful realizations to the original speaker’s input, which is itself determined by a different constraint ranking than the faithful realization to the speaker’s input. Therefore, the proposal put forth in this dissertation combines—and builds upon—theoretical insights of two previously competing approaches, i.e. one thoroughly phonetic and focused on the language user (Ohala 1981, 1989, 1993, 2012), and another centered on the abstraction of constraints as the individual’s phonological competence (Prince & Smolensky 2004 [1993]).
7.2 Future research

While this study brought together insights from much of the phonetics, phonology, dialectology and history of (alveolo)palatal sounds in Spanish, its analyses and hypotheses have begotten many questions that await to be answered. In regard to the synchronic data, much remains to be done in order to unveil and confirm the current status of (alveolo)palatal patterns in parts of the Spanish-speaking world. For example, if we follow the same methodology in Ruíz Martínez’s (2003) phonetic study on the Spanish spoken in Northeastern Madrid and apply it to other Spanish varieties, we hypothesize that additional (alveolo)patalal allophones will be found in areas that are categorically considered YEÍSTAS. In other words, detailed acoustic analyses may reveal more variation in production from speakers, which meets the prediction of the theoretical approach pursued in this dissertation. For example, one may find additional (alveolo)patalal realizations and sound patterns to [ʃ, ʃ] in a traditional YEÍSTA dialect, such as a palatal approximant [j], a sibilant affricate [dʒ], and even postalveolar fricative [ʒ], which Ruíz Martínez’s (2003) reports for Northeastern Madrid Spanish. Under the present approach, these realizations would be determined by different constraint rankings in the grammar of speakers. The emergence of a new change event would then arise from the listener’s interpretation (as input) of an unfaithful realization to the original speaker’s input. While the precise moment of change (i.e. the “Big Bang” moment under Janda’s (2003) terms) would be arguably impossible to witness, it still would be feasible to predict under the present study’s approach and empirically verify in the laboratory. One telling case is the reported [j]-coronalization and emergence of intervocalic [ʒ] in rural
areas of Western Andalusia. Further recordings and acoustic analysis will elucidate the systematicity of its contrast with intervocalic /ʎ/ (e.g. va[ʎ]a vs. va[ʒ]a) and testify the occurrence of this pattern of DISTINCTION, which also falls under the predictions of the theoretical model put forth in this dissertation. By the same token, phonetic experiments will reveal if such pattern of DISTINCTION holds in different prosodic positions, such as word-initially (e.g. [ʎ]ave ‘key’ vs. [ʒ]ate ‘yacht’) or if in said position speakers pronounce <y> as [ʝ] or strengthen it into a postalveolar affricate [dʒ] (which the current theoretical model would predict by top-ranking HONSET over Pres(place)).

A phonetic approach that makes use of recordings and acoustic analysis will also shed more light upon patterns of [ʎ]-delateralization in Corrientes Spanish, and the DISTINCTION between the emergent glide [ʝ] and the obstruent [ʃ], supporting the hypothesis of a similar change event in Proto-Spanish (cf. (1) in Chapter 6). Fieldwork in neighboring provinces such as Misiones, Chaco, and Formosa may also bring forth more data and a broadened view on this process, which is predicted under the current model by top-ranking Weak(ʎ, alveolar) and Pres(palatal) constraints (cf. Tableau 6.15). Also predicted in the present analysis is the possible affrication of /ʒ/ and /ʃ/ into [tʃ] and [dʒ], respectively, by top-ranking HONSET over Pres(place). Indeed, Fernández Trinidad (2010) reports the occurrence of voiced [dʒ] for words such as ya ‘already’ and yo ‘I’ in phrase-initial position River Plate Spanish. The occurrence of voiceless [tʃ] (< /ʃ/) in the speech of ŠEÍSTA speakers has been claimed by Penny (2002:106), but still awaits further empirical verification from phonetic studies.
The development of the (alveolo)palatal sound patterns discussed for Central Highland Ecuador, the Argentinian province of Santiago del Estero and Amazonian Peru are also predicted under the current model and represent a special interest to dialectologists, phonologists and language historians. In regard to the distinction documented between /ʒ/ and /ʝ/ in quiteño and santiagueño Spanish, further research will shed light not only upon the current manifestations of such contrast, but also upon its history. One may investigate whether its development took place on both regions concomitantly or whether the contrast arose in one region prior to the other. By the same token, this research can elucidate whether they would be connected historically; in other words, whether there was ever an immigration wave from one region to the other. Moreover, by unveiling the linguistic history of these regions, one may support (or refute) the hypothesis and analysis put forth in this dissertation, i.e. that an alveolopalatal lateral [ʎ] delateralizes into [j~ʝ] (cf. Tableaux 6.15, 6.16, and 6.17) before incurring coronalization into [ʃ] (cf. Tableau 6.18), instead of changing into the latter directly. In Amazonian Peru, additional fieldwork can add to the results obtained by Caravedo (1995, 2013) and further attest the distinction between [dʒ, ʒ] (for <ll>) and [j] (for <y>). By researching the linguistic history of the region, one may unveil the development of the obstruent pronunciation of <ll>. In other words, one may find out if there ever was an actual alveolopalatal lateral pronunciation of <ll> in this region, from which [dʒ, ʒ] arose, or if speakers in this region were always yeistas to begin with, in which case one would need to explain when, how, and why the distinction between [dʒ, ʒ] and [j] emerged.
On theoretical grounds, the present study invites additional research in regard to further understanding the nature of the constraints used in its analysis. For example, Jun’s (2004) model concerns how categorical and gradient place assimilation can be formalized in a phonetically-based OT account. Thus, it assumes that information related to manner of articulation is preserved during place assimilation. However, one may further investigate whether manner of articulation can also present gradient values, i.e. $\text{PRES}_{100}(\text{manner}) > \text{PRES}_{99}(\text{manner}) > \text{PRES}_{98}(\text{manner}) \ldots > \text{PRES}_{1}(\text{manner})$, following the gradient reduction of gestures. Moreover, a precise investigation into what exactly constitutes “manner cues” would enhance the scope of Jun’s model. For example, perceptual studies may reveal if and how listeners are able to identify the assumed cues of manner of articulation, depending on the degree of gestural reduction. In other words, how much reduction may a gesture incur while still preserving identifiable information related to manner that the listener is able to correctly perceive? What would the consequences be for the formalization of $\text{PRES}(\text{manner})$ and its role in constraint (re)ranking with $\text{PRES}(\text{place})$ and $\text{WEAK}$ during the speaker-listener interaction? The results of this further investigation will contribute to improving our understanding of how listeners internalize different underlying representations than the ones stored in the speaker’s grammar and, thus, will also shed light upon the underpinnings of sound change at the level of the individual.
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