Pronunciation Instruction for Brazilians

Pronunciation Instruction for Brazilians: Bringing Theory and Practice Together

By

Márcia Zimmer, Rosane Silveira
and Ubiratã Kickhöfel Alves

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Dedication

We dedicate this book to our students and mentors, who inspired us to write this book, and to our families.

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Foreword

It is a great pleasure to introduce the volume "Pronunciation Instruction for Brazilians: Bringing Theory and Practice Together" by Márcia Zimmer, Rosane Silveira and Ubiratã Kikchöfel Alves. This book offers, amongst many, two major contributions. The first one is expressed in the title: bringing theory and practice together. The authors provide the readers with important concepts and discuss the theoretical background which will allow them to fully understand the Brazilian Portuguese pronunciation issues that are addressed later in the book. This theoretical background is crucial in enabling the reader to find answers to problems they come across when teaching pronunciation in the classroom. Thus, by becoming familiar with the theory readers will understand why Brazilian students present specific characteristics when pronouncing English words. Although it is a brief introduction, Chapter 1 offers elements to explore specific theoretical issues if they are interested in doing so. Important bibliographical references are indicated throughout the book offering readers an opportunity to pursue any issue further. Also, the introduction presented in Chapter 1 addresses clearly and objectively some of the most important aspects of the current debate on theoretical linguistics related to how one acquires a second language.

The other important contribution this book offers is to address relevant matters involving teaching and learning pronunciation with a focus on Brazilian students. Each topic is addressed very clearly with examples and the relevant theoretical issues which were discussed in Chapter 1 are revisited. Thus, the reader is presented with aspects of Brazilian speakers' pronunciation combining theoretical assumptions with empirical findings. This offers a full picture of the peculiarities of Brazilian's pronunciation in English.

In Chapter 3, continuing the specific discussion of Brazilians pronunciation in English, the authors present a number of pronunciation activities in a very clear and user-friendly manner. Suggested exercises provide teachers with excellent material to apply the theoretical knowledge mastered in Chapters 1 and 2. An Answer Key is provided, so that the reader may evaluate the results from the exercises completed.

A list of bibliographical references follows the Answer Key and the reader has a range of titles to research and deepen the issues discussed throughout the book. An index allows the reader to refer to specific topics in the book.

In general the book provides an innovative perspective for Brazilian teachers and students of English as a Second Language on the subject of pronunciation. From a theoretical perspective the book offers insights and empirical arguments for an emergentist view of cognition. I strongly recommend the book from a theoretical and practical point of view.

Thaïs Cristófaro-Silva
Associate Professor – Universidade Federal de Minas Gerais

How to use this book

There seems to be no doubt, given the latest research findings in the field of Second Language Acquisition (SLA), of the need for and relevance of explicit instruction in the acquisition of certain aspects of L2 phonetics and phonology. According to Celce-Murcia, Brinton and Goodwin (1996), as well as Silveira (2004), formal teaching of pronunciation has experienced ups and downs according to changing trends in approaches to the teaching of English as a Second Language (ESL) during the past decades. There have been times when formal teaching of pronunciation has taken center stage, and other times when it has been totally abandoned.

Regardless of the pendular swings in fashion concerning the importance of pedagogical practice in L2 phonetics and phonology, research in the field has drawn attention to the need to provide formal instruction in these areas (Zimmer, 2004; Morley, 1991; Pennington, 1994), and has produced empirical evidence for the relevance of formal teaching by the teacher-researcher (Alves, 2004; Silveira, 2004; Champagne-Muzar, Schneiderman, and Bourdages, 1993; Elliot, 1995). Based on these studies, we claim that pedagogical practice should be aimed at highlighting details which most likely would not be noticed otherwise. There should be occasions when those phonetic-phonological aspects salient to the native ear, but not readily to the foreign learner, should be made salient through explicit instruction in the classroom. Such systematization is crucial not only to reduce the learner's foreign accent, but also to prevent miscommunication problems stemming from failure to establish meaningful phonetic-phonological contrasts in the L2.

Departing from an emergentist approach to Second Language Acquisition, this book presents a discussion of the sources of difficulties which are likely to be faced by Brazilian learners during the process of acquiring English phonetics and phonology, by presenting empirical data garnered from Brazilian studies of this issue. Such data pave the way for presenting the main goal of the book: proposing communicative activities aimed at helping speakers of Brazilian Portuguese to overcome their pronunciation difficulties in English.

This book is divided into three chapters. Chapter 1, Cognition and Second Language Acquisition, briefly introduces the reader into the world of cognition, focusing on issues such as L1-L2 transfer, the link between language perception and production, as well as the effects of explicit

instruction. This chapter is of special interest for teachers who are interested in Second Language Acquisition or graduate students in the field of Applied Linguistics. Chapter 2, Transfer processes from Brazilian Portuguese into American English, deals with transfer processes used by speakers of Brazilian Portuguese when undertaking the acquisition of North-American English L2 phonology. These transfer processes will be described and discussed, along with presentation of empirical data providing evidence of the need for explicit instruction. This will set the scene for the proposal laid out in Chapter 3, which presents instructional activities for helping students overcome the difficulties reported in the empirical findings presented in the preceding chapter.

In Chapter 3, we present units dealing with the processes described in Chapter 2. Practical classroom activities are designed and organized in nine separate units – from Intro to Unit 8 – which can be worked from beginning to end or just by choosing some exercises in the range that is presented within each unit. It doesn't mean that the teacher has to cover all the practical units; rather, the teacher can decide which of the processes have to be tackled by the students, according to their degree of proficiency and the type of process that they show when they speak English. For example: if most students in a group produce "dog" as [ˈdɔgɪ], instead of [dɔg], the teacher will know that process 1, which deals with this kind of production, should be addressed. Therefore, apart from the Intro unit in Chapter 3, the teacher will include Unit 1 – partially or totally – in the course.

A table containing all the process described in Chapter 2 and included in each unit of Chapter 3 follows below:

Processes	Examples	Chapter 3 - Units
1) syllable simplification	[ist] for [st] ex.: *start* →[ˈistart] [pi] for [p] ex.: *tape* →[ˈtʰeɪpi]	Unit 1; Unit 8
2) consonant change (substitutions)	[h], [x] for [r] ex.: *ripe* →[haɪp] [t], [s], or [f] for [θ] ex.: *think* →[tɪŋk] [d], [z] or [v] for [ð] - ex.: *this* →[dɪs]	Unit 2

Processes	Examples	Chapter 3 - Units
3) deaspiration of voiceless plosives in initial or stressed position	[t] for [t^h] ex.: *tea* →[ti]; *attend* →[əˈtɛnd]	Unit 3
4) terminal devoicing in word-final obstruents	[s] for [z] ex.: *does* →[dʌs] [k] for [g] ex.: *dog* →[dɔk]	Unit 4
5) delateralization and rounding of lateral liquids in final position	[w] or [ʊ] for [ɬ] or [l] ex.: *feel* →[fiʊ]	Unit 5
6) vocalization of final nasals	[ỹ] or [w̃] for [m] or [n] ex.: *team* →[fiỹ]; *moon* →[mũw̃]	Unit 6
7) velar consonantal paragoge	[ŋg] for [ŋ] ex.: *sing* →[sɪŋg]	Unit 6
8) vowel assimilation	[ʌ] for [ʊ] ex.: *put* →[p^hʌt] [ɛ] for [æ] ex.: *bad* →[bɛd]	Unit 7
9) interconsonantal epenthesis (-ed morpheme)	[id] or [ed] for [d] or [t] ex.: *danced* →[ˈdænsɛd]; *worked* →[ˈwɜrkɛd]	Unit 8

In Chapter 3, each unit is organized following Celce-Murcia, Brinton & Goodwin's (1996) framework for pronunciation instruction, which encompasses focus on form plus integration with the remaining components of the L2 syllabus. This framework includes five stages: (a) description and analysis (i.e., awareness raising), (b) listening discrimination, (c) controlled practice and feedback, (d) guided practice with feedback, and (e) communicative practice and feedback. Stages (a) and (b) provide learners with explicit information about specific phonological components, when and how these can occur, as well as examples of the targeted components. This is the moment when learners gain knowledge about when and how certain L2 phonological features are used, and the focus is on the perception of the sounds. Stages (c), (d) and (e) focus on production, which begins in a very controlled way, moving from minimal pair practice to the production

of contextualized and meaningful sentences. At these final stages, teacher feedback is very important to maximize the probability that other two types of learning can take place: tuning and restructuring of the target L2 phonological features. The selection of the pronunciation components, as well as the communicative functions and the lexical items included in the pronunciation syllabus, should be in accordance with the learners' proficiency level and interests, so that motivation is not hindered.

We wish to provide a very flexible and practical way to make the teaching of pronunciation both communicative and fun, allowing the teachers to use this book either as a whole and comprehensive course of pronunciation and conversation, or as a resource for additional activities which can complement their classes according to the students' needs.

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Chapter One

Cognition and Second Language Acquisition

1.1 An emergentist view of cognition

Emergentism in science is a wide framework for thinking about different areas of knowledge, such as physics, geology, biology, and cognition, to name a few. According to MacWhinney, "emergentist accounts emphasize complex interactions between multiple factors across multiple time scales" (2006, 731). The phrases "multiple interactions" and "multiple time scales" incorporate the core features of this approach to cognition and language acquisition.

The idea of multiple interactions involves a continuum between micro and macro structures and mechanisms, ranging from interactions at the gene level to interactions between the learner and the environment surrounding him. It also indicates a strong reliance on domain general mechanisms in human cognition that permeate the emergent patterns of learning and development across one's lifespan (Elman et al, 1996).

When we highlight the phrase multiple time scales, we want to underscore the importance of time in cognitive and linguistic development. As Elman (2003, 430) points out, "explaining why a behavior changes over time can be key to understanding the behavior itself". Most higher–level cognitive processes evolve in time and are also constrained by time. A good example is speech production. Producing spoken language involves the reduction of dimensions in the mapping of a nonlinear channel—the phonetic–phonological, syntactic, semantic representations—to a linear channel such as the phono–articulatory tract (Bates & Goodman, 2001). Therefore, speech production does not consist of a simple sum of isolated sounds bound together in a sequence; rather, it is an orchestration of articulators—such as lips, teeth, tongue tip, blade and root—whose movements, or interaction of gestures over time, results in the production of sounds. It all means that the idea of a single, "pure" sound followed by another pure sound, and so on, does not match the dynamics of speech production, during which sounds influence and are highly influenced by the other sounds that follow and precede one another. L1 and L2 learners make sense of meaning in the ambient language by extracting patterns from the flowing dynamics of sounds in time.

How can the cognition of language processing and, in a narrower sense, speech production be viewed in an emergentist framework? First of all, by viewing the brain as a complex cognitive system endowed with plasticity, which is to some extent shaped by experience (Elman et al, 1996), that is, resulting from multiple interactions distributed across different cortical areas. Specialized modules in the brain can thus be viewed as an emergent result from such interactions and the human experience of learning (Hernandez, Li & MacWhinney, 2005; Ellis & Larsen–Freeman, 2007). Second, cognition can be viewed in an emergentist framework because it focuses on the process of learning, that is, on the role of cognitive change over time. One of the various approaches which emphasize the process of learning over time within the broader emergentist framework is connectionism.

The connectionist paradigm, aided by computational simulation of neural networks, has provoked a great deal of debate in psychology and linguistics by claiming that processes such as learning and cognition are constrained by the way neurons operate in the brain. Connectionist studies are carried out taking into consideration the physical environment in which these processes occur. The principles that govern cognition are those specifying the processes taking place in these units and their connections, such that complex behaviors emerge out of simple units. According to Broeder and Plunket (1994), an important feature of connectionist systems is their capacity to generate spontaneous generalizations by extension from particular experiences. Such a capacity makes cognition extremely flexible and plastic. Learning, under this perspective, implies changing existing connections among units in neural networks. Previous knowledge therefore plays a fundamental role, since every new piece of information is integrated into the neural network, changing the knowledge encoded therein. These changes are not abrupt: they unfold in time. The notion of timing is thus materialized not only through the architecture of the neural network, but also through the existing knowledge that has been gradually processed over the learner's lifetime. Thus, learning evolves in time and is dependent on the cognitive structure, on the input structure, and on the learner's experience.

After a brief account of the main features of emergentist principles regarding cognition, it is now time to turn to how emergentism envisages language acquisition.

1.2 Language acquisition and emergentism

Emergentism conceives of language acquisition as being performance oriented (Seidenberg & McDonald 1999, 570). This is to say that the target in acquisition is the ambient language to which the learner is exposed. The "poverty of the stimuli", one of the most important tenets of Generative Linguistics, is strongly rejected, as well as the notion of "competence", and the postulation of a specific language acquisition device. As Seidenberg and McDonald (1999) point out, learning a language does not imply the acquisition of an abstract system of linguistic rules. The postulation of the existence of underlying deep structures derived in various strata through generative rules, which would be in turn responsible for surface structures, is no longer required. Instead, language acquisition is guided by probabilistic constraints and regularities in the ambient linguistic input.

According to Christiansen, Allen and Seidenberg (1998, 261), there are sufficient details which the learner can extract from language in use, so as to overcome the apparent "poverty of the stimuli" postulated by Chomsky (1975) in the context of arguments for a generative grammar. It is also imperative to stress that the reliance on statistical and probabilistic information present in the input entails continuity between learning and processing. Seidenberg and McDonald (1999, 576) state that both the processes of language learning and language use involve the same cognitive mechanisms. This should not be surprising, given that the ambient language is not only the source of information from which generalizations can be made but is also the actual target of language acquisition. Furthermore, the absence of certain structural patterns in the input works as implicit negative evidence, since the reinforcement of forms present in the input tends to lower the probability of the emergence of those structures which cannot be observed in the ambient language. In short, learning can be seen as the result of the capacity to observe simultaneously multiple probabilistic constraints, so that aspects which would not be relevant when considered in isolation become relevant when they are processed along with other probabilistic aspects also present in the input.

Linguistic input takes on a fresh role in emergentism: it is seen as being sufficiently rich to drive learning, based on its probabilistic information. This assumption can be summed up in four main claims: 1) the linguistic environment is rich in distributional regularities which guide language learning; 2) language acquisition requires the exploration of probabilistic constraints contained in the various types of linguistic and nonlinguistic information; 3) it is hard to make a clear distinction between linguistic and

nonlinguistic knowledge, since learning depends on both the structured input and on the learner's previous knowledge; 4) the distributional information can provide implicit negative evidence (Rhode & Plaut, 2003; Seidenberg & Zevin, 2006). Some of these principles rely on the concept of statistical learning, which was studied by Harris (1955) in the structuralist–distributionalist tradition, and was later revisited by Saffran and colleagues (Saffran, 2001; Seidenberg, MacDonald and Saffran, 2001; Saffran, Aslin and Newport, 1996).

As for the traditional notion of phonological acquisition in a symbolic paradigm, it seems that an input representation conceived as a deep structure far apart from the output form cannot be accepted without reservation. An input form cannot be distinct from the oral stimulus to which the learner is exposed. Joanisse (2000) makes it clear that the ambient language is not only the starting point from which the learner will extract the regularities of the linguistic system, but it is also the end–point, or target, of language acquisition itself.

It follows from these arguments that it is pertinent to bring into this discussion issues such as age of the language learner (the critical period), access to Universal Grammar (UG), and the concept of markedness, all of which issues are considered, from a symbolic perspective, but not in emergentist aproaches, to influence the ultimate L2 attainment . These issues will be discussed in the following section 1.3, where the notion of transfer, as well as the relationship between input perception and output production, will be reviewed.

1.3 SLA and the notion of transfer

In this section, the acquisition of an L2 draws on the notion of statistical learning—which is guided by statistical and probabilistic aspects in the input—and the notion of transfer from L1 knowledge into the construction of L2 knowledge.

1.3.1 L2 Learning

According to Gasser (1990), L2 knowledge is acquired in a similar way to L1 knowledge. L2 acquisition also relies heavily on L2 stimuli, that is, the input plays a paramount role in an emergentist approach to SLA. These assertions could lead one to erroneously infer that the production of L2

items would merely consist of copying the input, without moderation by any single cognitive barrier. However, if that were the case, students would always produce the target language exactly as native speakers do. Intra and extralinguistic aspects are heavily influential on the language production of learners, as stated by Celce–Murcia et al. (1996). Some of these aspects are regarded as crucial in the symbolic paradigm. The postulation of a critical period as theoretical support for the maturational program in language acquisition, the discussion of access to Universal Grammar, and the concept of markedness are all issues that are tackled in a distinct fashion by emergentist and connectionist views of SLA.

We agree with Munro and Bohn (2007) that a great deal of research on age and speech learning revolves around issues concerning the fact that L2 learners who learn a language after early childhood—the so–called late learners—show patterns of speech perception and production which are distinct from early learners. The matter of the problem resides in how differences in performance concerning age–related effects are interpreted. The Critical Period Hypothesis has been presented as one of the main explanations why older learners, despite being initially faster at learning the L2 system, tend not to reach degrees of proficiency as high as those attained by younger learners. This hypothesis seems to account for the existence of both a genetically determined maturational program and innate language acquisition mechanisms which would facilitate L2 learning during childhood (Jonhson and Newport, 1989; Newport, 1990). Flege and colleagues, on the other hand, in their numerous studies on the effects between AOA (age of arrival) and AOL (age of learning) accent, have provided a different explanation for the general better performance of early learners, based on the role of the experience with the mother language (Flege, 1998, 2003; Flege, Munro, MacKay, 1995; Flege, Yeni–Komshian & Liu, 1999; Flege,1988). Connectionist researchers (Rhode and Plaut, 1999), in turn, claim that production data relative to effects of late exposure to an L2 can be explained without falling back on maturational changes or innate devices. In their view, L2 adult learners may fail to reach high levels of proficiency simply because their cognitive system has been largely committed to other cognitive tasks—including L1 comprehension and production. Children, in turn, are more likely to reach a better performance level owing to the fact that their cognitive system is not entirely entrenched in L1 knowledge. This view is in accordance with the findings by many scholars (Seidenberg and Zevin, 2006; MacWhinney, 2006, 2007; Flege, 2002, 2003; McClelland, 2001; Marinova–Todd et al., 2000; Plaut and Kello, 1999) that the brain retains its plasticity throughout life. Therefore, differences between proficiency

levels reached by adults and children are more likely to be related to the amount of available data in the ambient language rather than differences in terms of innate abilities or a maturational program. In short, learners' oral production may be directly linked to their linguistic experience with the source language as well as the target language.

Concerning the stipulation of a Universal Grammar (UG), the generative approach assumes that human beings inherit the set of principles and parameters which guide language acquisition. The principles are the same for all languages; language acquisition consists of the specification of these principles by setting binary (yes/no) parameters. The debate on the role of UG in the SLA arena revolves around three distinct intra–theoretical viewpoints: a) the first hypothesis, stemming directly from the maturational hypothesis, postulates that L2 learners have no access to UG (e.g., Meisel, 1991); b) the second position, which establishes partial access to UG, insofar as only the values of those parameters instantiated through the L1 are available for later use by the L2 learners. This may account for the difficulties faced by learners in their task of resetting in the L2 those parameters which had been previously set for the L1 (Bley–Vroman, 1983; Schachter, 1989); c) the third hypothesis advocates full access to UG, which shapes L2 acquisition entirely (Epstein, Flynn and Martohardjono, 1996; Finger, 2003).

On the other hand, the emergentist framework for language acquisition dispenses with the UG construct, given its commitment to biological plausibility in the process of language learning. Ellis (1999) states that such hypotheses do not present any plausible explanation in terms of cognitive processing, given that a) cortical modularity and specialization may be the result, and not the cause, of learning and developing automaticity; b) functional imaging studies are revealing a whole range of different brain areas involved in language processing, extending beyond the classical language centres; c) considerable individual differences have been found in cerebral cortical specialization; d) none of the implicated brain areas are employed solely by language, but are also involved in other cognitive functions.

Another issue frequently discussed in the field of SLA is markedness. Within the generative tradition, Eckman (1986, 198) defines markedness as follows: "A phenomenon A in some language is more marked than B if the presence of A in a language implies the presence of B; but the presence of B does not imply the presence of A." Silveira (2004) provides a good example of markedness by explaining that a language like English, which has three–element consonantal sequences in word–final position, is more marked than Brazilian Portuguese, which in turn allows only sequences of

two consonants in the same position.

This classical view of markedness is also disregarded by emergentism. Joanisse (2000) claims that markedness could be defined by the statistical information contained in the structured input. By this term we mean input containing relevant information, such as its articulatory complexity, its frequency of production in some contexts, and absence in others. This kind of information can be gradually perceived and tallied by the learner (Ellis, 2005). Such ability configures the power of statistical learning, and is certainly performance–oriented. Therefore, more or less marked structures do not have to be associated with the existence of an UG; we can revisit the concept of markedness by associating it with the human capability for tallying important and salient input characteristics, guided by the frequency and consistency of certain segments, gestures or segmental sequences. Thus, consistent and frequent sequences tend to be easier to produce. Phonetic constraints active during the production and perception processes define some structures as being more complex than others. The least frequent and consistent structures are seen by connectionism as the hardest to be acquired. The structures hardest to produce with respect to acoustics and articulation, which are less frequent and articulatorily more complex, are said to be especially prone to changes.

In fact, markedness is such a broad and tautologic concept that Haspelmath (2006) describes twelve different senses for this term, grouped into four larger classes: markedness as complexity, as difficulty, as abnormality, and as a multidimensional correlation. We agree with Haspelmath (2006) that

> the term 'markedness' is superfluous, because some of the concepts that it denotes are not helpful, and others are better expressed by more straightforward, less ambiguous terms. In a great many cases, frequency asymmetries can be shown to lead to a direct explanation of observed structural asymmetries, and in other cases additional concrete, substantive factors such as phonetic difficulty and pragmatic inferences can replace reference to an abstract notion of 'markedness' (25).

The discussion above on the (ir)relevance of markedness leads us to the conclusion that this construct does not help to clarify the issue of interlanguage processes in second language acquisition; rather, it causes a great deal of confusion and ambiguity. In the same way, we claim that constructs such as age, markedness and access to UG do not parallel the importance of the learner's linguistic experience, in terms of exposure to the target language. Such experience is the product of the learners' capacity to generalize from the data available in the input.

The ability to generalize is fundamental to human cognition. Being that one of the goals of this book is to highlight the role of explicit instruction in minimizing oral productions which are deviant from the target language, it is worth pointing out that such deviant productions result from the learner's experience with the L1 and L2 inputs, which in turn give rise to the generalization of knowledge from the L1 into the L2 (L1–L2 transfer), and also to overgeneralizations of L2 input. The first type of these generalizations—which will be dealt with in the next section—is interlanguage transfer of both phonetic–phonological and grapho–phonic–phonological knowledge, whereas the second type of generalization is intralanguage transfer.

Although intralanguage transfer is not the main focus of this book, it is important to emphasize that not all deviant productions in the L2 emanate from the experience with the L1. The oversystematization of regularities perceived in the L2 input also results in pronunciation errors. A good example is the tendency of Brazilians to stress the first syllable instead of the last one, as in the word hotel (Silveira, 2004), even though the correct stress pattern for this word in Brazilian Portuguese is exactly the same as in English. The effect of L1–L2 transfer will be described and discussed in the following section.

1.3.2 The Transfer of L1–L2 Knowledge

This section discusses the two forms of interlanguage transfer which seem to influence most strongly deviant L2 oral production: 1) phonetic–phonological transfer, which occurs during L2 oral production; 2) grapho–phonic–phonological[1] transfer, which happens during oral reading in the L2, but can also occur during speech production itself. These two types of transfer should not be seen as totally distinct entities, to be considered separately, since the acquisition of a single L2 phonetic–phonological feature can involve both sorts of transfer simultaneously. However difficult the theoretical task of separating these types of transfer may be, the conceptual distinction between them remains germane because it enables researchers and teachers to understand L2 learners' interlanguage[2] systems more clearly.

1.3.2.1 L1–L2 Phonetic–Phonological Transfer

Gasser (1990, 189), among many other researchers, has stated that the transfer of L1 patterns into the L2 system is precisely one of the aspects of SLA which connectionist simulations can best replicate. The new linguistic patterns of L2 are perceived by the learner in a way which is biased towards the L1 patterns, which are deeply entrenched in the learner's cerebral cortex. A foreign accent can thus be described as the product of the activation of acoustic–articulatory patterns which are identical or very similar to the preexisting L1 patterns, since the learner treats the L2 lexical items as if they consisted of strings of L1 acoustic–articulatory units (Zimmer, 2004).

A good example of phonetic–phonological L1–L2 transfer occurring at the segmental level is the acquisition of the dental fricatives [θ] and [ð] by Brazilian learners of English. Zimmer (2004) found that Brazilians may replace these fricatives by a set of segments such as [t], [d], [f] and [v]. Productions such as [f] instead of [θ], or [d] instead of [ð], may be strongly connected to the role of perception in categorical contrasts, in terms of segments, between the L1 and the L2. This happens because of the tendency L2 learners have to assign to L2 phonemes the segmental patterns of their L1, so that L2 phones tend to be assimilated to a similar L1 category, that is, they are perceived as if they were L1 phones. This suggests that most deviant L2 phonetic productions seem to surpass what can be explained by the mere articulatory difficulty of the learner, as shall be presented in detail in the next section. However, this latter suggestion does not rule out the possibility that some failures in producing the target forms may be the sole result of articulatory difficulties learners sometimes face. Still regarding the production of the target [ð], the production of [t] rather than [ð] seems to be a consequence of spelling interference, that is, grapho–phonic–phonological transfer, which will also be examined in the following section.

Another interesting example of L1–L2 transfer is the transfer of syllabic patterns from the L1 into the L2. Zimmer (2004, 65) lists processes of simplification of consonant clusters resulting in epenthesis (e.g., [ɪskul] for the target 'school') and final epenthesis after obstruents (plosives, fricatives and affricates), (e.g. [dɑgɪ] for the target 'got'). The syllable repair strategies discussed here consist of a process of adjustment of the Brazilian Portuguese syllable pattern. Brazilian Portuguese does not allow initial /sk/ sequences, and its coda inventory is restricted to /l/, /r/, /N/ and /S/, besides the semivowels /j, w/ (Collischonn 2001, 108).

It is worth mentioning that epenthesis in words such as 'take', 'have' and 'base' need not always be subject to the same explanation as that just given,

since, unlike words such as ‘ask’ and ‘risk’, the former words have a final orthographic but unsounded vowel. The presence of an epenthetic vowel might thus be conforming to the vowel existing in orthography, which presence is a result of the so–called GPC[3] rules, rephrased here as grapho–phonic–phonological transfer, a topic to be further discussed below.

1.3.2.2 L1–L2 Grapho–Phonic–Phonological Transfer

Zimmer (2004) made an empirical and a computational study investigating the L1–L2 transfer of grapho–phonic–phonological knowledge (Zimmer and Plaut, 2007). The evidence garnered from those two approaches suggests that it is not only phonological knowledge that underlies transfer during L2 speech and reading aloud, but also the principles of the L1 and L2 alphabetic systems. Although Brazilian Portuguese and English make use of the same alphabetic system, the relationships between orthography and speech production are distinct: in Brazilian Portuguese, the correspondence between graphemes—that is, letters or strings of letters representing a phoneme and its phonetic production—is more transparent than in English, where the correspondence can be highly opaque, due to historical aspects of orthography. Therefore, in L2 speech and oral reading, Brazilian learners tend to assign the same phonemes they would activate when speaking or reading in their L1, as a result of their entrenched L1 alphabetic knowledge.

Going back to the example mentioned above, concerning the final epenthesis in words such as ‘take’ [tejkɪ], it is now clear that two sources of transfer might be in action: 1) L1–L2 pattern transfer, a case in which an epenthetic vowel is produced to conform to a syllabic structure of the L1; this is also the case with words like ask and risk; 2) L1–L2 grapho–phonic–phonological transfer, in which case the final vowel in [tejkɪ] is a result of spelling. If the latter kind of transfer is the only one still active in the learner’s interlanguage systems, then words such as ask and risk would no longer present final epenthesis, since they contain no final vowel in their spelling.

Silveira (2004) collected data from Brazilian EFL learners to test the hypothesis that orthography is an important variable that contributes to the occurrence of vowel epenthesis in English words ending in a silent –e grapheme (e.g., take). Her study shows that orthography appeared to be a relevant factor in determining the rate of vowel epenthesis, since words ending with a consonantal grapheme followed by a silent ‘e’ triggered significantly higher epenthesis rates than those ending in a consonantal