

# Ta(l)king English Phonetics Across Frontiers



# Ta(l)king English Phonetics Across Frontiers

Edited by

Biljana Čubrović and Tatjana Paunović

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P U B L I S H I N G

Ta(l)king English Phonetics Across Frontiers, Edited by Biljana Čubrović and Tatjana Paunović

This book first published 2009

Cambridge Scholars Publishing

12 Back Chapman Street, Newcastle upon Tyne, NE6 2XX, UK

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

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ISBN (10): 1-4438-1303-6, ISBN (13): 978-1-4438-1303-7

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## INTRODUCTION

TATJANA PAUNOVIĆ AND BILJANA ČUBROVIĆ

*Ta(l)king English Phonetics Across Frontiers* is a collection of fourteen research papers by authors from ten universities and six different countries – Serbia and Slovenia in the Balkan region, but also the UK, Spain, Switzerland, Hungary, and Japan. In this sense, this collection indeed takes the study of English phonetics across frontiers, bringing together researchers of different backgrounds, perspectives, and approaches.

The contributions are based on the research studies presented at the *First Belgrade International Meeting of Phoneticians*, organised by Biljana Čubrović at the Faculty of Philology, University of Belgrade, Serbia, in March 2008. Although spoken English has always been an attractive research area for linguists and phoneticians, this was the very first conference in Serbia dedicated exclusively to the issues of English phonetics, phonology, and pronunciation in EFL. The conference, broader in scope and gathering a larger number of researchers, as well as this book, which represents a narrower selection of topics and studies, aimed to highlight some of the important, intriguing, or curious aspects of English phonetics and phonology, relevant today from a variety of standpoints – those of native or global speakers, those of linguistic variety and of language teaching and learning, and those of language contact, development, and change. The kaleidoscopic picture this collection aims to paint thus emerges from the contributions addressing different aspects of English phonetics and phonology from various perspectives.

This volume, however, does not aspire to offer an extensive or state-of-the-art review of the current theoretical issues in English phonetics and phonology. Rather, its intention is to emphasise the necessity of taking a very broad view of what 'spoken English' means today. This integration of different perspectives includes the necessity to take phonetics, as instrumental and experimental analysis, and phonology, as the study of the symbolic representations of cognitive primes and processes, if not as one and the same discipline (cf. Ohala 2007: 3), then at least as two aspects of the same strand of scientific study. "One striking discovery that has

emerged from recent work", state Ramchand and Reiss (2007b), is "the importance of the various interfaces between modules ... in understanding the nature of the language faculty [-] between syntax and semantics, semantics and pragmatics, phonetics and phonology, or even syntax and phonology"; furthermore, "some of the most intellectually engaging and challenging research in recent years has emerged precisely at these interfaces" (Ramchand and Reiss 2007b: 2).

The papers collected here do not deal with crucial theoretical or methodological issues, nor do they aim to illustrate the deep complexity and richness of phonetic or phonological theory. Instead, the aim of this book is to show that, in today's view of 'studying English speech', many small steps need to be taken, which, albeit small, indeed are relevant by virtue of providing diverse and broad empirical data. Because, as Laver pointed out fifteen years ago, "[i]n phonetics just as much as in [other fields], the empirical should be married to the theoretical, each forming a balancing and inseparable reflection in the mirror of the other" (Laver 1994: 3).

This volume takes English phonetics beyond frontiers in yet another way – by drawing attention to some old phonetic questions which have gained new aspects in today's changed socio-cultural context. The array of communicative situations in which English is used is getting wider and more globalised daily, while the growing interest in World Englishes and different English varieties is encouraging research into the characteristics of authentic speech in different communication contexts, and by different speakers of English – as a first, second, foreign or additional language. As a result, English phonetics research, too, has obtained a much wider scope and prospects.

To draw upon John Laver's views once again, while "[m]any traditional approaches to phonetics take the domain of the subject to be the description of spoken language", we also believe that the way English is used today "urges a wider semiotic perspective, in the belief that the proper domain of phonetics as a discipline is the study of *all* aspects of speech" (Laver 1994: 23, emphasis added). In this wake, any research in the field of English phonetics and phonology today is, as put by Hardcastle and Laver (1997: 1), "a necessarily interdisciplinary enterprise," because "in this spectrum ..., the phonetic sciences ... blend the perspectives of the social sciences with those of the life sciences, the natural sciences and the engineering sciences."

That is why many papers in this volume draw, in one way or another, upon the socially relevant contexts in which the phonetic and phonological research questions are investigated, and look into the ways in which "our

organization and control of talking and listening" is realized "within particular *social* and linguistic conventions" (Clark and Yallop 1995: 5).

It has long been recognized that phonetic research needs to consider the social and interactional context of speech. Hardcastle and Mackenzie Beck (2004b: xxix) state that "[t]he natural environment for phonetic production and perception is, of course, within social interaction", while Local (2004: 26) points out that "the natural home of spoken language is talk-in-interaction", but also adds that "despite an upsurge in interest in 'connected speech' in recent years, we still know surprisingly little in detail about the way in which ordinary people *use* the phonetic resources of language in everyday talk to undertake interactional tasks." This echoes Laver's (1994) observation from fifteen years ago, that "[a]s a code, spoken communication can only be successful when used between people skilled in the production and interpretation of the relevant signs" (Laver 1994: 13), of *all* the relevant signals, if spoken language is to work effectively.

However, as remarked humorously by Carter and McCarthy (1997: 7), "[t]here is spoken English and there is spoken English." And it is "one of the paradoxes of spoken data collection that the more interesting and valuable the data, the more difficult they are to obtain" (Carter and McCarthy 1997: 7). In this vein, the papers in this collection offer valuable, fresh research data, gathered from a variety of speakers of different backgrounds, ranging from native speakers of a regional British English dialect to learners of English as a foreign language of different ages and different L1 backgrounds.

The data from the area of L2 learning and teaching can be especially important, because, as pointed out by Leather and James (1992: 2), "the study of second language speech ... is a clearly interdisciplinary enterprise", appreciated and used in a wide range of scientific fields, since studies in L2 speech rely on both the quantitative acoustic data and phonological explorations. The reason why the acquisition of second language speech has been "a focus of growing interest" lies in the fact that "political, social and demographic trends [have] brought the socio- and psycholinguistic dimensions of multiculturalism to the attention of a wider research community" (Leather and James 1992: 1).

That is why this book can offer valuable information to researchers not only in the fields of English phonetics and phonology, but also in sociolinguistics, applied linguistics and translation studies. Not the least importantly, it may also appeal to EFL teachers from diverse backgrounds, since it provides helpful insights into some important aspects of

phonological acquisition in EFL, such as learners' strategies, substitution patterns, motivation and attitudes, or the role of pronunciation instruction.

\* \* \*

The nine papers grouped in the first section of the book, *Phoneme and beyond*, investigate specific segmental and prosodic properties of English, from different perspectives and relying on different speaker data.

Part One starts out by the discussion of English vowels by three authors. In the first chapter, Maja Marković presents the results of a study focusing on the acquisition of the English high vowels /i:/, ɪ, u:/, ʊ/ by experienced Serbian students of English. As shown by her study, some of these vowels, seemingly similar to the high vowels in the students' L1 vowel system, indeed pose a difficulty for EFL students. Marković discusses her research data in the context of two prominent models of L2 vowel acquisition, the *Speech Learning Model* and the *Perceptual Assimilation Model* (Flege 1995; Best 1995, respectively, see Marković, this volume), and offers possible explanations for the predictions these models make as compared to the acoustic measurements, spectral (F1, F2, F3) and durational, of the English and Serbian vowels produced by her participants. Marković suggests that her data seem to support Flege's model, i.e. the prediction that "new" vowel categories are likely to be acquired more easily and developed into adequate L2 vowel categories.

Vowel substitution patterns in English produced by Japanese speakers are analysed by Takehiko Makino in chapter two. His research data come from a preliminary corpus of Japanese speakers' English, a collection of recordings of English materials read out by Japanese university students. Makino's contribution consisted in transcribing a part of English Learners' Speech Database, and his classification of vowel substitution patterns is based on the quantitative analysis of their frequency of occurrence in the corpus transcribed. Makino's findings, although based on a limited set of data, comply with previous research observations about typical vowel "errors" made by Japanese learners, but also offer some newly observed patterns of substitution. Makino draws attention to the importance of corpus-based data analysis in investigating L2 learners' speech, and points out the necessity of building larger, well-structured language corpora.

The third chapter presents Brian Mott's analysis of a currently widely discussed problem concerning the broad phonological representation (transcription) of unstressed vowels in English. As pointed out by Helen Fraser (2004), "[r]epresentation is a necessary precursor to any speech analysis, whether practical or theoretical." However, "issues to do with

phonetic representation have long been a focus of debate," not only in relation to theoretical questions, but also to practical issues, such as transcription (Fraser 2004: 94). Mott's analysis illustrates Fraser's observations quite clearly, as he focuses on the problem of representing the FLEECE vs. KIT and FOOT vs. GOOSE type of vowels when they occur in weak syllables. Mott analyses a variety of examples from the widely used phonological transcription systems, as presented in the *Cambridge English Pronouncing Dictionary*, or the *Longman Pronunciation Dictionary*, focusing specifically on the context of the *Happy Tensing* (Wells 1982: 257, see Mott, this volume), i.e. the fact that the final vowel of words like *happy* and *honey* has for some time been almost universally represented as the FLEECE-type vowel without length, and not as a KIT-type vowel. However, Mott's analysis of many other specific examples draws attention to the fact that the representation/ transcription of atonic, unstressed vowels, occurring in other relevant phonological contexts, is far from universally consistent. Mott highlights the possible sources of the problem, and suggests that the pedagogical perspective should be taken into account as well, when opting for representation and transcription solutions to this kind of problems.

In the fourth chapter, Erzsébet Balogh discusses the difficulties Hungarian EFL learners have coping with the English dental fricatives. Her empirical study shows that Hungarian EFL learners replace the target fricatives by various Hungarian sounds and sound combinations, but can learn to use the appropriate English dental fricatives, too. The data Balogh analyses were obtained through a reading task in which both voiceless and voiced dental fricatives were targeted. Balogh compares her findings with previous research results (Nemser 1971; Nádasdy 2006, see Balogh, this volume), and points out that Hungarian EFL learners are inconsistent in their use of the Hungarian phoneme substitutes.

English consonants, specifically word-final obstruents, are the topic of chapter five. Klementina Jurančič Petek discusses the importance of L1 dialect interference in the pronunciation of English as a foreign language with Slovene EFL learners, focusing in particular on the lenis labiodental fricative /v/ in the word-final position. She relates the observed processes affecting the pronunciation of this phonological unit to the speakers' native Slovene dialects. Jurančič Petek discusses her research findings in the context of the *Natural Phonology theory*, pointing out that the *natural process* of neutralization in word-final position comes first in Slovene, and is then suppressed by the *unnatural rule* of vocalization or labialization. She supports her explanation of these research findings by the order of occurrence proposed by Wieden (1993: 125, see Jurančič Petek, this

volume) in which unnatural rules of L1 are unlikely to affect the acquisition process in L2.

Moving beyond the discussion of segmental properties of English towards a more general-level analysis, in the sixth chapter Alastair Wilson offers a phonological and phonetic description of a "small" regional variety of British English, known as Darlington English. Wilson points out that in the studies of English varieties attention is paid mostly to well-defined urban and rural dialects, while intermediate provincial dialects seem to be neglected. Therefore, he offers a description and systematization of the most prominent consonantal and vocalic features of this "small" variety from northern England, focusing on both the phonetic qualities and the allophonic relations. Wilson compares the Darlington characteristics with those of the surrounding dialects, as well as to those of Standard Southern British English – the term he prefers to the earlier RP. Wilson hopes to draw the attention of dialect researchers to those British English dialects which are "in the shade" of culturally dominant varieties, pointing out that this kind of neglect can lead to the "loss of perceived regional dialectal identity" even by its own speakers. This is important because language identity is a matter closely related to various issues pertaining to the socio-cultural context of language use.

Turning towards the suprasegmental level of analysis, in chapter seven Biljana Čubrović presents the results of a study of the accentuation patterns of recent French loanwords in English. Her study is based on the corpus of about one thousand loanwords that entered English after 1800, based on the *Merriam–Webster's Collegiate Dictionary*. Čubrović offers a plausible classification of accentual patterns found in French loanwords, based on several important cues – not only the number of syllables in the loanword, but also its status in terms of prestige, and its frequency of occurrence in English usage. While the first part of her analysis is based on the corpus data alone, the second part of the study, looking into the prestige and frequency of occurrence of the loanwords, is based on the responses obtained through a questionnaire distributed at the University of Reading, UK. Čubrović concludes that the processes which govern segmental loanword adaptations may diverge from suprasegmental cross-linguistic changes, and points out that the cross-linguistic perspective can offer important insights into both the L1 and L2 phonological systems, at the segmental and suprasegmental levels, as well as into the ways in which the two linguistic systems can interact.

In chapter eight, Jane Setter discusses approaches to prosodic research, particularly in the domain of English intonation and speech rhythm, often identified as especially problematic for EFL learners. To illustrate

different types of English widely researched today – L1, EFL, and World Englishes – Setter presents observations from three different research studies involving Hong Kong, Russian, British, Arabic and Chinese speakers/ learners of English. The first study focuses on the English rhythm. Her analysis is based on a hierarchical method involving the measurement of syllable duration in tonic, stressed, unstressed and weakened syllables in connected speech data. The data are taken from spoken corpora collected from Hong Kong and Russian English speakers. Setter's results show that these two groups of speakers differ both from each other and from British English speakers in terms of the relevant measurements. The second study Setter presents here looks at intonation, using test battery data collected from Arabic and Chinese learners of English, to find out what intonation patterns these speakers use, whether they can perceive and produce intonation patterns equally well, and to what extent they are able to use intonation communicatively. Setter's findings show that these speakers have particular difficulties with nucleus placement, as well as with imitating long intonation patterns. To round off the picture, Setter turns to the results of the third study, in which British listeners were asked to assess the spoken English of Hong Kong English speakers. The listeners indeed commented on individual segments, but highlighted the prosodic features as the most strikingly different from the British English properties. However, Setter points out that these differences need not be overemphasised in pronunciation teaching and learning, because they are relevant only to the extent to which they affect intelligibility, especially when English is used in international contexts.

At the end of Part One, in chapter nine, Ken-Ichi Kadooka presents a classification of English intonation patterns. He begins by stressing that the English intonation patterns constitute one of the most complex intonation systems in the world, from both the phonetic and the semantic perspective. He offers a classification within the framework of *Systemic Functional Linguistics* (SFL), including five simple and two compound tone patterns, and the four strata of organization: semantics, lexico-grammar, phonology, and phonetics. Kadooka points out that clause intonation in English is complex, with the combinations of tonic, pretonic and secondary systems, and that intonation is the area where phonetics, phonology, semantics, and pragmatics interact. Finally, he compares the observed patterns in the intonation system of English to systems observed in languages such as Japanese and Chinese, offering a tripartite classification of language intonation systems, represented by these three languages respectively.

Widening the span and lookout of the book, the five papers in Part Two, *Phonetics and further beyond*, address phonetic issues observed from perspectives as different as diachronic language development and socio-pragmatics. As in Part One, some contributions draw upon L2 learners' spoken language data.

In chapter ten, Mirna Vidaković presents her study of the phonological features of advertising slogans in English. Her research was based on a corpus of 370 advertising slogans, in which she observed the creative exploitation of sound patterns such as alliteration, assonance and rhyme, and sound symbolism (onomatopoeia and phonesthesia). In addition to this analysis, Vidaković looks into the problems that arise when we attempt to translate such rhetorically rich slogans into another language, in this case Serbian. Vidaković discusses various procedures that can be used to deliver the translated slogan message with the same wit, effectiveness and the same phonological creativity found in the original slogan. She concludes that the same resources are at the translator's disposal – sound patterns and sound symbolism, and that creating the phonological effect has primacy over the semantic content.

Chapter eleven presents an analysis of the phonological processes found in English place names. Ružica Ivanović analyses the most representative examples extracted from the corpus of one thousand English place names - of places officially designated as cities or towns. Ivanović examines these phonological processes diachronically and synchronically, by comparing the earliest recorded spellings of place-names to their current pronunciation. The phonological processes observed in this corpus comprise epenthesis, elision, metathesis, assimilation, and vowel shortening in compounds. She also points out the interesting phonological changes – or the lack thereof – in the pronunciation of compound place-names with the second element *-chester*.

The status of pronunciation in EFL today is discussed by Tatjana Paunović in chapter twelve. She presents the results of a study in which students' attitudes were investigated with respect to various accents and varieties of English – "standard" and "non standard", "native" and "non-native". Paunović states that the notions of "native and non-native" have changed considerably over the past decades, while students' attitudes towards familiar and less familiar English accents do not seem to have. The data were gathered through a questionnaire administered to university students, targeting both their overt attitudes through open-ended questions and covert ones through semantic differential scales and personality traits. Paunović's results show that students expressed a marked preference for the varieties they considered "standard", as compared to the ones they

considered "sub-standard", and this was matched by the participants' positive attitudes to learning English and the importance they assigned to "correct" pronunciation. Paunović points out that attitude research is very important for pedagogical decisions concerning L2 teaching and learning, since attitudes are most intimately related to issues of identity, motivation, and language choices and preferences in language use, as well as to the overall success in L2 learning, particularly with respect to pronunciation.

In chapter thirteen, Milica Savić presents the results of a research study of phonological acquisition with young EFL learners, since, as she points out, the success of pronunciation instruction has been shown to be closely related to various psychological, social, cognitive and identity factors, not the least importantly to the age of learning onset. The study Savić presents here focused on the effectiveness of different approaches to pronunciation teaching with young learners: the listen-and-repeat activities as compared to the awareness-raising activities. She investigated the effectiveness of these approaches and particularly their influence on the acquisition of English vowels by young Serbian EFL learners. Her results show that child interlanguage development, especially the development of the L2 phonological system, is a highly complex process in which a delicate interplay of various factors is at work. Savić emphasizes the importance of this area of research for our understanding of L2 phonology acquisition, for both the theory of L2 acquisition and for classroom practices.

And indeed, what Savić stresses reverberates the views of Hansend Edwards and Zampini (2008), that, despite huge advances in L2 acquisition research, a growing interest in L2 phonological acquisition, and an expansion of the techniques and models for studying L2 speech, "there have been very few works that have provided a broad and thorough overview of the field of L2 phonology". What research findings *have* shown, though, is "that predicting areas of difficulty and explaining L2 phonological acquisition is much more complex", because numerous factors affect "the level of ease or difficulty in L2 phonological acquisition", going "far beyond a general consideration of the learner's age at the onset of acquisition" (Hansend Edwards and Zampini 2008: 1).

Finally, in chapter fourteen, Biljana Radić-Bojanić and Vesna Lazović offer practical tips and hints for reinforcing spelling-pronunciation connections in EFL classroom practice, through a classification of various activities aiming to help L2 students improve not only their spelling skill, but also their pronunciation. The authors support this by the findings of a survey which shows that focused practice indeed helped students improve their performance over the period of three months, during their English course. This last chapter offers a suitable symbolic rounding-off for this

mosaic volume, highlighting the fact that English is spoken by many, many more non-native than native speakers today, and that more speakers can be found learning English in L2 classrooms than in natural settings.

\* \* \*

To conclude, *Ta(l)king English Phonetics Across Frontiers* is a small book with a big ambition – it does not offer many definite answers, if any, but it does hope to have raised many intriguing and inspiring questions, and to have highlighted areas of further study that may attract fellow researchers, not only from the field of phonetics. Because, as Laver (1994) concludes:

"It remains true, nevertheless, that although as speakers and listeners we all have a very well-developed operational understanding of the many-stranded messages transmitted every day through speech, not many people know very much about either the semiotic or the physical basis of how speech actually works [...] *It is the privilege and the pleasure of phoneticians, with their colleagues from related disciplines professionally concerned with speech, to engage themselves in the analysis of the most intricate of our communicative skills, in all its richness and variety*" (Laver 1994: 592, emphasis added).

## References

- Carter, R. and M. McCarthy. 1997. *Exploring Spoken English*. Cambridge: Cambridge University Press.
- Clark, J. and C. Yallop. 1995. *An Introduction to Phonetics and Phonology*. 2<sup>nd</sup> ed. Oxford, UK and Cambridge, USA: Blackwell.
- Fraser, H. 2004. Representing speech in practice and theory. In *A Figure of Speech: A Festschrift for John Laver*, edited by W. J. Hardcastle and J. M. Beck, 93-128. London: Routledge.
- Hansend Edwards, J. G. and M. L. Zampini, eds. 2008. *Phonology and Second Language Acquisition (Studies in Bilingualism)*. Amsterdam: John Benjamins Publishing Company.
- Hardcastle, W. J. and J. Laver, eds. 1997. *The Handbook of Phonetic Sciences*. Oxford: Blackwell.
- Hardcastle, W. J. and J. M. Beck, eds. 2004a. *A Figure of Speech: A Festschrift for John Laver*. London: Routledge.

- Hardcastle, W. J. and J. M. Beck. 2004b. Introduction. In *A Figure of Speech: A Festschrift for John Laver*, edited by W. J. Hardcastle and J. M. Beck, xxvii-xxii. London: Routledge.
- James, A. and J. Leather, eds. 1992. *Second-Language Speech, Structure and Process*. Berlin: Walter de Gruyter.
- Laver, J. 1994. *Principles of Phonetics*. Cambridge: Cambridge University Press.
- Leather, J. and A. James. 1992. Introduction. In *Second-Language Speech, Structure and Process*, edited by A. James and J. Leather, 1-7. Berlin: Walter de Gruyter.
- Local, J. 2004. On the Interactional and Phonetic Design of collaborative completions. In *A Figure of Speech: A Festschrift for John Laver*, edited by W. J. Hardcastle and J. M. Beck, 263-282. London: Routledge.
- Ohala, J. J. 2007. Methods in Phonology. In *Experimental approaches to Phonology*, edited by M-J. Solé, P. S. Beddor and M. Ohala, 3-6. Oxford: Oxford University Press.
- Ramchand, G. and C. Reiss, eds. 2007a. *The Oxford Handbook of Linguistic Interfaces*. Oxford: Oxford University Press.
- Ramchand, G. and C. Reiss. 2007b. Introduction. In *The Oxford Handbook of Linguistic Interfaces*, edited by G. Ramchand and C. Reiss, 1-7. Oxford: Oxford University Press.



**PART I.**

**PHONEME AND BEYOND**



# DIFFERENT STRATEGIES IN ACQUIRING L2 VOWELS: THE PRODUCTION OF HIGH ENGLISH VOWELS /i:, ɪ, u:, ʊ/ BY NATIVE SPEAKERS OF SERBIAN

MAJA MARKOVIĆ

## Outline

This paper presents some of the results of a broader study of L2 vowel acquisition. The high vowels /i:, ɪ, u:, ʊ/ have been chosen because of their seeming similarity to the L1 vowel system of the native speakers of Serbian. The subjects of the study were first year students of English at Novi Sad University. They were recorded pronouncing a number of isolated English words containing the high vowels /i:, ɪ, u:, ʊ/ and a number of Serbian words containing the high vowels /i/ and /u/ in long and short syllables. Both spectral (F1, F2 and F3 values) and durational qualities were measured and statistically analyzed. The results show various degrees of acquisition of L2 vowels – from complete substitution with L1 vowels, through modification in the direction of L2 vowels to satisfactory acquisition.

## 1. Introduction

A number of previous studies have examined the perception and production of second language (L2) sounds by adult learners, in relation to various factors affecting the acquisition of L2 phonological system. The acquisition of vowels has been the focus of a number of recent studies, and has opened up numerous issues regarding the categorial perception and production of L2 sounds.

The goal of this study was to investigate how first language (L1) phonological knowledge affects the learners' acquisition of phonological contrasts and phonetic realizations in a second language, on the example of the English high vowels /i:, ɪ, u:, ʊ/.

A speaker of any language is "attuned" (Best 1995) to his or her own native language phonological system with its specific categories and

contrasts, and therefore commonly has difficulty perceiving and producing the phonological categories of L2. The process of acquiring the phonological categories of L2 is therefore greatly impeded by the categories of one's L1. The results of some studies have also showed that, in establishing the new categories in the foreign language, non-native speakers may resort to different phonetic cues from the native speakers (Flege et al. 1997; Bohn and Flege 1992; Escudero 2002; Rauber et al. 2005).

Two of the most influential models of L2 vowel acquisition, Flege's *Speech Learning Model* – SLM (Flege 1995) and Best's *Perceptual Assimilation Model* – PAM (Best 1995) explain the perception and production of L2 phoneme categories in relation to the categories found in the learners' native language. Flege's model predicts that the L2 sounds which are sufficiently phonetically different from L1 targets are perceived as "new" or "foreign" and are more likely to be earlier developed into new categories by non-native speakers. Best's model predicts that the discriminability of L2 vowels greatly depends on L1 assimilation possibilities. If a foreign category is close to an L1 target, it will be assimilated to it. Therefore, if two distinct L2 sounds are good candidates for a single L1 category, discrimination is expected to be poor.

This paper presents the results of a production experiment where we investigated the production of the English high vowels /i:, ɪ, u:, ʊ/ by a group of first year students of English at Novi Sad University. We attempt at showing how the prior L1 phonological knowledge affects the acquisition of L2 categories by relatively proficient speakers of English whose native language is Serbian. Our goal is also to test the two models of acquiring L2 sounds, and to show that the degree to which L2 sounds have been acquired greatly depends on the articulatory and auditory similarities/differences compared to L1 sounds.

We begin by giving a brief overview of the English and Serbian vowel systems, inferring the potential difficulties that the native speaker of Serbian encounters while mastering the two English vowels. In the subsequent section we present the methodology and results of the production experiment, followed by discussion. The final section of the paper includes general conclusions and certain methodological steps for overcoming the observed difficulties in the acquisition of the L2 vowel categories.

## 2. English and Serbian vowels

English has twelve monophthongs or "relatively" pure vowels (Gimson 1994: 97), traditionally divided into "long" and "short", or "tense" and "lax" categories. The vowels produced with a relatively front tongue position are high vowels /i:, ɪ/, mid /e/ and low-to-mid /æ/. In the central region there are mid vowels /ɜ:, ə/ and low-to-mid /ʌ/. The back region of the traditional vowel quadrilateral is occupied by high vowels /u:, ʊ/<sup>1</sup>, high-to-mid /ɔ:/, low-to-mid /ɒ/ and the low vowel /ɑ:/.

In contrast to the complex vowel system of English, Serbian has a typical five vowel system attested in a number of other worlds' languages (Lass 1991: 143), where all vocalic phonemes are evenly distributed in the vowel space. Front vowels are /i, e/, the low vowel /a/ is central and /u, o/ belong to the group of back vowels.

The five vowels of Serbian can be realized as short and long, but vocalic length is not regarded to be phonemic, merely being the exponent of "long" or "short" tonic (falling or rising) accent. A closer analysis reveals that length, i.e. the quantity of a sound, to a great extent affects the quality of some of the vowels. The front vowel /e/ and the back /o/ exhibit the most conspicuous effects of this influence. This was shown in the series of works by Ivić and Lehiste (Ivić and Lehiste 1963, 1967, 1970; Ivić 1996), but is generally neglected in the phonetic and phonological literature on the Serbian language. The degree to which quantity affects the quality of vowels varies across dialects, but is strongly manifested in the dialect of the subjects of this study (see Ivić and Lehiste 1967; Ivić 1996; Marković and Bjelaković 2006).

The vowels of Serbian relevant for this study (/i, u/) are not significantly influenced by length, as they have only a slightly more centralized position in the vowel space when uttered in short than in long syllables.

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<sup>1</sup> Recent studies have shown that the high "back" vowels /u:, ʊ/ have undergone dramatic changes in contemporary English, both in the American and British varieties, as the two high back vowels have been considerably shifted to the anterior region in the vocalic space. The change is even more striking in the long vowel, especially in the pronunciation of younger speakers of British English (cf. Hawkins and Midgley 2005).

### 3. Methods and subjects

The subjects of the study were 15 female first year students of English at Novi Sad University. The criterion for choosing the subjects was the same regional background, i.e. that the subjects speak the same dialect (standard urban variety of Novi Sad city). All subjects were approximately the same age (18-20).

The subjects were recorded uttering isolated English words containing one of the high vowels /i:, ɪ, u:, ʊ/ and isolated words in Serbian containing the vowels /i, u/ in long and short syllables.<sup>2</sup> When creating the list of words we took care to choose words in similar phonetic contexts in the two languages. The recordings were made in the soundproof room of the Faculty of Philosophy in Novi Sad. They were digitalized at a sampling rate of 44.1 kHz and analyzed using *Praat 4.3.36* program for speech analysis (Boersma and Weenink 2005). The formant frequencies of F1, F2 and F3 were measured, as well as the vocalic duration. The mean values of each formant were calculated and the data on standard deviation was obtained for each speaker. The control values of formant frequencies of vowels produced by native speakers of English, used as the basis of comparison in this study, were from different sources. A native female speaker of standard British English (in her twenties) was recorded reading the same list of words as our Serbian subjects. Apart from these, we used the data on formant frequencies in RP from the literature (Deterding 1990; Deterding 1997).

The mean values obtained were used as the basis of plotted graphs of F1 and F2 in which the comparison of native and non-native production was visually represented.

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<sup>2</sup> The list comprised the following words: *bead, beat, dean, flee, keen, meager, plea, please, scheme, seen, steed; chin, gin, gym, rib, sit, stick; boot, brewed, brute, Luke, rouge, scoop, through, too; book, foot, look, put, stood*. The words in Serbian were: *Din, fin, mig, s kim, sin, stid; čim, Džim, džin, riba, sit, stik; lúk, put, ruž, ruža, skup, tu; buka, luk, putuje, student, šut*.

## 4. Results

### 4.1. Front vowels

The English long high front vowel /i:/ has similar F1 and F2 values to those of the Serbian high front vowel /i/ in long syllables, as seen from the mean values in Table 1:

The short vowel /ɪ/ in English, on the other hand, is articulated as a considerably lower and retracted vowel compared to the long /i:/ sound. This is reflected in the significantly higher values of F1 and lower values of F2, as seen in Table 2. Such articulatory and acoustic characteristics indicate a more central position of /ɪ/ in the vowel space, compared to the peripheral position of its long equivalent. The Serbian vowel /i/ in short syllables exhibits only slight centralization in the articulatory/acoustic vowel space, as indicated by small differences in F1 and F2 frequencies compared to the same vowel in its long realization. These data are represented in Table 2.

**Table 1.** Formant frequencies of the English vowel /i:/ and the Serbian vowel /i/ in long syllables

Formant	English	Serbian
F1	303 Hz	338 Hz
F2	2653 Hz	2738 Hz

**Table 2.** Formant frequencies of the English vowel /ɪ/ and the Serbian vowel /i/ in short syllables

Formant	English	Serbian
F1	418 Hz	344 Hz
F2	2315 Hz	2626 Hz

The graphs in figures 1 and 2 represent the position of the English vowels /i:, ɪ/ and the Serbian long and short realizations of the vowel /i/ respectively.<sup>3</sup>

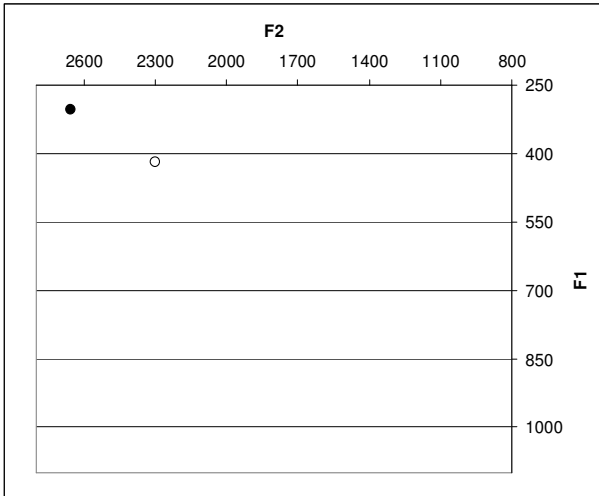
<sup>3</sup> The same set of symbols is used in all F1:F2 graphs in the paper:

Serbian vowels: ■ long; ▲ short

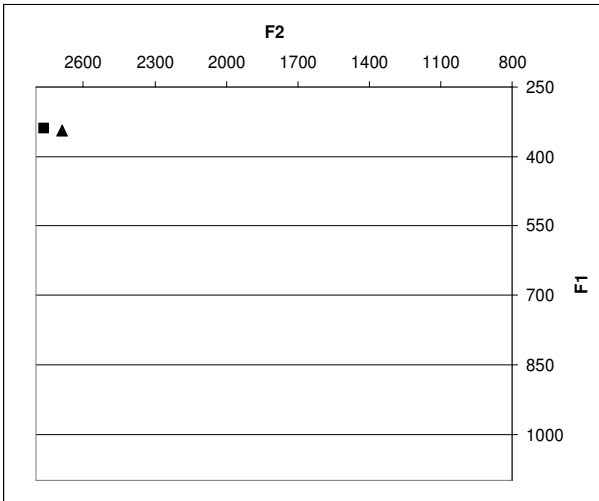
English vowels produced by the subjects: □ long; Δ short

English vowels produced by native speakers: ● long; ○ short

**Figure 1.** Plotted F1:F2 graph of the English vowels /i:/, ɪ/



**Figure 2.** Plotted F1:F2 graph of the Serbian vowel /i/ in long and short syllables



Upon these data, several predictions can be made regarding the potential difficulties and transfer from L1 in our subjects' production of equivalent English vowels. Firstly, being very similar to an L1 sound in terms of formant frequencies and the position of articulatory organs, the English vowel /i:/ can be expected to be completely substituted by the long sound /i/ from the subjects' L1.

The short English vowel /ɪ/, on the other hand, due to its considerably different articulatory and acoustic characteristics, opens up two possibilities: it can either exhibit transfer from L1, in which case the subjects run into danger of considerable "foreign accent", or it can be acquired as a new category.

The results of F1, F2 and F3 frequencies of the subjects' production of the English long sound /i:/ reveal that there is minimal or no modification of their L1 sound /i/, i.e. there is a complete substitution by the L1 sound. The data in Table 3 show that the formant frequencies of the English sound /i:/ produced by the subjects are very similar to those of the Serbian sound /i/ in long syllables.

**Table 3.** F1 and F2 values of the English sound /i:/, Serbian long /i/ and the English sound /i:/ produced by the subjects

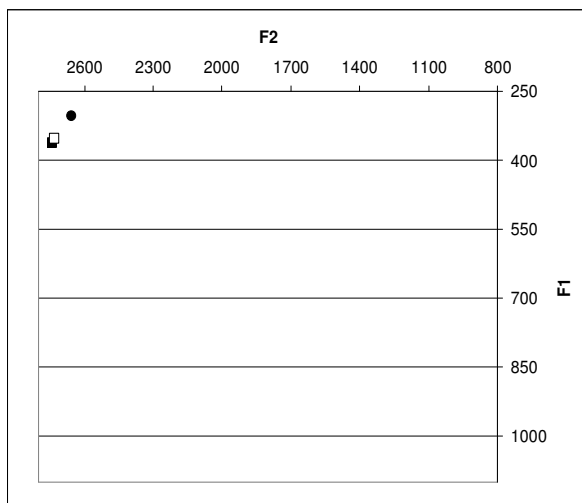
Formant	English /i:/	Serbian long /i/	Subjects' /i:/
F1	303 Hz	338 Hz	353 Hz
F2	2653 Hz	2738 Hz	2731 Hz

Another important characteristic of the English long /i:/ sound is its diphthongal pronunciation, most clearly audible in final open syllables (Gimson 1994; Collins and Mees 2003: 96). This diphthong glides from a somewhat central and lower position to the frontmost high position in the vowel space, and is most commonly represented by the IPA symbol [ɪi] or [ɨi]. The spectrogram of the diphthongized vowel /i:/ is recognizable by a gentle rise of F2 from the beginning of the vowel to approximately half of its duration and an almost unnoticeable gradual fall of F1 throughout the duration of the vowel.

The absence of diphthongal pronunciation in our subjects' production gives a conspicuous auditory effect of L1 transfer, and reflects complete substitution by the L1 phoneme.

Figure 3 represents the plotted graph of the native speakers' pronunciation of the English sound /i:/ and our subject' production of the L1 sound /i/ in long syllables and the English sound /i:/.

**Figure 3.** Plotted F1:F2 graph of the English vowel /i:/ produced by native speakers and our subjects and the Serbian vowel /i/ in long syllables



The graph in Figure 3 indicates complete overlapping of L1 and L2 sounds in the vowel space of the subjects of this study. Such transfer from L1 confirms the prediction we anticipated prior to the analysis of the data, and strongly supports Flege's SLM claims that the sounds which are more similar to L1 categories are not likely to be developed in the interlanguage of foreign learners.

The mean F1 and F2 values of the short vowel /ɪ/ produced by our subjects are given in Table 4.

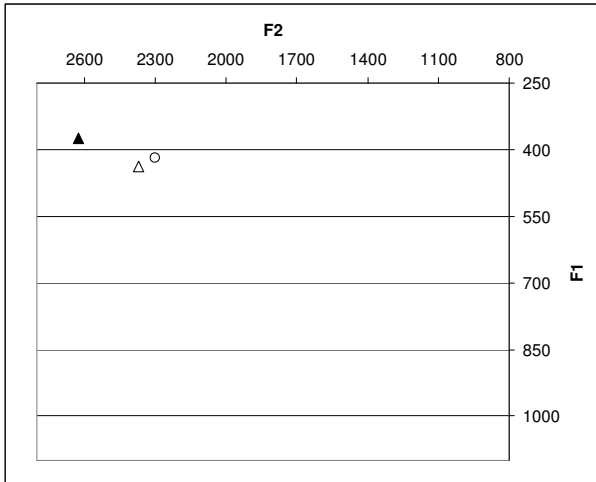
**Table 4.** F1 and F2 values of the English sound /ɪ/, Serbian short /i/ and the English sound /i/ produced by the subjects

Formant	English /ɪ/	Serbian short /i/	Subjects' /ɪ/
F1	418 Hz	344 Hz	437 Hz
F2	2315 Hz	2626 Hz	2370 Hz

The data in Table 4 clearly indicate that the subjects have developed the new L2 category, without any transfer from L1. This complies with the second anticipated "scenario" predicted at the beginning of our study, also confirming Flege's model of phoneme acquisition. At this level of learning English, the subjects have obviously recognized the existence of the

centralized, [ə]-like pronunciation of the short vowel /ɪ/. As shown in the previous study by Paunović (2002: 509), this vowel is not well acquired at lower levels of learning, owing to its centralized pronunciation.

**Figure 4.** Plotted F1:F2 graph of the English vowel /ɪ/ produced by native speakers and our subjects and the Serbian vowel /i/ in short syllables



In the graph in Figure 4 it can be seen that there is no overlapping in the vowel spaces of L1 and L2 sounds, and that the quality of the subjects' L2 sound well approximates that of native speakers'.

## 4. 2. Back vowels

The acquisition of the English vowels traditionally referred to as "back" poses a serious problem to the foreign learner, as both /u:/ and /ʊ/ have undergone striking changes in contemporary English owing to considerable articulatory fronting (Gimson 1994; Collins and Mees 2002: 98; Hawkins and Midgley 2005).

This tendency has been particularly noticeable in the pronunciation of /u:/ by younger generations over the past forty years. In acoustic terms it is reflected in rather high values of F2, compared to the low values of the (proto)typical high back vowel [u]. In Serbian, on the other hand, /u/ is

realized with the expected low F2. Table 5 displays the mean values of F1 and F2 frequencies in both languages.

**Table 5.** Formant frequencies of the English vowel /u:/ and the Serbian vowel /u/ in long syllables

Formant	English	Serbian
F1	308 Hz	381 Hz
F2	1513 Hz	757 Hz

**Table 6.** Formant frequencies of the English vowel /ʊ/ and the Serbian vowel /u/ in short syllables

Formant	English	Serbian
F1	420 Hz	400 Hz
F2	1367 Hz	856 Hz

The short vowel /ʊ/ is a lower and centralized sound compared to the typical back realization. However, due to the process of fronting of the long vowel /u:/ in contemporary English, it has lower F2 values. The short vowel /u/ in Serbian exhibits similar shift as in the high front vowel /i/, being only slightly centralized.

The graphs in figures 5 and 6 represent the position of the English vowels /u:/, /ʊ/ and the Serbian long and short realizations of the vowel /u/ respectively.

On the basis of these data, we can again predict several "scenarios" of acquiring these vowels. On the one hand, they are significantly different from the subjects' L1 vowel categories. Therefore, we could either expect a high level of transfer, and the presence of a strong "foreign accent", or else we can expect them to be better acquired owing to the different sounding quality (as in the case of /ɪ/, cf. Flege 1995). On the other hand, since the product of /u:/ fronting is a vowel of exceptionally marked quality, not widely attested in the worlds' languages, the subjects obviously face a more complex task when acquiring this category in their interlanguage.