

# LINGUISTICS

AT INDIANA  
UNIVERSITY

## From the Chair

May brings us to the climax of the academic year, with graduations and commencement exercises. Four of our linguistics majors received their B.A.s in December 2014, twenty will be receiving their B.A.s this spring and two in August, many continuing on to graduate programs. Eight students will receive their M.A.s in linguistics as well. At the doctoral level, four students have or will have defended their dissertations by June. We congratulate all of our graduates for their diligence and hard work, and wish them success in their future endeavors as they join the ranks of our 1,600 alumni.

In this spring issue of the departmental newsletter, we focus on the research of six of our students, most of whom have received financial support either to carry out their research or to travel to conferences to present their research findings. For these students and others, the contributions from our alumni to our Student Support Fund, our Linguistics Enrichment Fund, our Fred Householder Memorial Research Fund, and our Conference Travel Fund have played a key role in supporting their work.

Thanks to generous donations to the Student Support Fund, we are able this year to offer for the first time full tuition support for one student to attend a two-week session, or partial support for the four-week session, of the LSA Summer Institute, held every other year. Yiwen Zhang, the first recipient of the scholarship, is an M.A. student who will be focusing on semantics. This year's institute will be held at the University of Chicago, with prominent scholars from around the world teaching a wide-variety of courses. The institute provides a unique opportunity for students not only to receive instruction from prominent figures in the field but to interact daily with them and other participants.

Just as our graduates are doing, we are looking ahead to the future, but not losing sight of the path that has brought us to this point. We know that our graduates have served in a variety of professions, not only as academic researchers, but also as doctors and lawyers, language policy and language planning experts, state department officials, to name but a few. We want to continue to develop individuals who will be successful in these fields and many others. Just as you may have gained key life skills and developed strong interpersonal relationships with mentors and peers during your

years in the linguistics program, please consider how you can make a difference in the experiences of future students by contributing to one of the funds mentioned above. Every donation, regardless how large or how small, contributes to the development and enrichment of the students in the program. We hope you will become a partner in this endeavor.

Robert Botne

## Dissertation Defended: Chung-Lin Yang Phonological variation and L2 word learning: The role of orthography in word recognition and production



Research committee: [seated] Chung-Lin, Isabelle Darcy (Second Language Studies, Chair); [standing, L to R] Tessa Bent (Speech and Hearing Sciences), Ken de Jong (Linguistics), Robert Port (Professor Emeritus, Linguistics)

Variation in speech poses a particular challenge for second-language (L2) learners to recognize spoken words. One type of variation is that one word can be pronounced in different ways independent of the phonological contexts (i.e., free variation). For example, the word 'route' can be pronounced as either [rut] or [raʊt]. If a beginning L2 listener learns one pronunciation but hears another variant spoken by different speakers, how can s/he link the newly encountered pronunciation variant to the word that s/he has learned before? Previous studies have shown that non-native listeners may be able to distinguish non-native phonemic and tonal contrasts

if they have seen the corresponding written forms. However, little is known about whether learners can associate two pronunciation variants with the same word when the written form of the word is provided during learning. In my dissertation entitled “Phonological variation and L2 word learning: the role of orthography in word recognition and production”, four psycholinguistic experiments were conducted to examine whether Americans and Taiwanese participants can benefit from the exposure to the written forms when learning the free variation in an invented language. In general, I found that exposure to the written forms is not always helpful in the learning of free variation. The benefit of exposure to the written forms also depends on the type of free variation—native speakers of English learned the [p-b] free variation if the written forms were provided during learning. However, such a benefit was not found in the learning of [t-d] and vocalic free variation. In addition, I also found that those who were exposed to the written forms were able to produce the words they learned more accurately than those who learned the words only by auditory input. In sum, the findings from my dissertation add more support to the role of orthographic information in lexical access. For future research, I will further investigate whether language background would influence how learners make use of the written forms when learning new words in non-native languages.

*[\*Chung-Lin received conference travel support from the department to present his work at Phonology 2013 – Annual Meeting on Phonology, held at the University of Massachusetts, Amherst, and at the 9th International Mental Lexicon Conference, held at McMaster University, Ontario, Canada]*

### **Dissertation Profile: Traci C. Nagle** **Bengali Vowel Chain Shift**

**Advanced Ph.D. student, General Linguistics**

My research explores a type of sound pattern that presents a number of challenges to linguistic theory. The language I am exploring is Bengali, spoken in India and Bangladesh. The vowels in Bengali verb stems change depending on the quality of the vowels in suffixes added when the verbs are conjugated. For instance, a Bengali verb stem that contains the vowel sound [e] (like in the English word ‘hate’) will change to the vowel sound [i] (like in ‘heat’) when certain suffixes are added to the stem. Likewise, if a Bengali verb stem contains the vowel sound [æ] (like in ‘hat’), it will change to [e] (‘hate’) when those same suffixes are added. Linguists call this pattern a chain shift, because the changes form a kind of chain: [æ] becomes [e], and [e] becomes [i].

These types of sound patterns pose problems for linguistic theory because they require a speaker to make generalizations about phenomena in his/her language that are contra-

dicted elsewhere. In Bengali, for instance, a speaker needs to know that [i] is preferable to [e] in a verb stem when particular suffixes are added, and must also know that [e] is preferable to [æ] in the same context. But crucially, the speaker is not allowed to simply change [æ] to [i] (skipping over the less-preferred [e]), even though he/she knows that [i] is preferable to [e] in that context. Such patterns are predicted by linguistic theorists and by certain theoretical models to be difficult to learn, yet children acquiring Bengali learn this pattern routinely.



Much research has attempted to reshape linguistic theory and models to accommodate sound patterns like these, but this theory has been applied primarily to idealized data from abstract grammatical descriptions of languages, rather than to actual utterances collected from actual speakers. A few researchers have recently begun to test whether and how actual speakers apply such patterns to new or made-up words, and have revealed that speakers resist applying these patterns to new words in some cases. My research uses experiments to investigate the ability of Bengali speakers to apply this chain-shift pattern to new words. Preliminary studies have shown that Bengali speakers also resist applying this vowel-change pattern to newly coined verbs. My dissertation will test two hypotheses about why this pattern is not being applied as grammars would predict.

*[\*Traci has received support for her research project from the Fred Householder Research Fund.]*

## Dissertation Profile: Heather Rice

### Acquisition of Russian Palatalization

Advanced Ph.D. student, General Linguistics

For my dissertation work in second language (L2) phonological acquisition, I consider how American English speaking learners of Russian acquire the well-known palatalization contrast. In the summer of 2014, I conducted three discrete perception experiments, designed to investigate how a phonological contrast that utilizes a secondary articulatory feature is acquired in L2.

Presently I am analyzing the results from the first of these experiments, Russian-to-English mapping. In this task I examine the perceived phonetic distance of Russian plain and palatalized consonants to English categories. Previous research has shown that performance on a discrimination task with nonnative sounds can be predicted through cross-language mapping of nonnative sounds and that this approach can be extended to L2 learners. In this dissertation, I analyze mapping and discrimination results from of both naive and experienced L2 learner groups.

In other L2 studies of the Russian palatalization contrast, American English-speaking learners are found to perceive palatalized consonants as two consecutive categories, /consonant + jod/. It follows that any plain and palatalized consonant pair, /C/ and /Cj/ will be perceived in English as simply /C/ + /j/. I test twelve consonant pairs, all minimally contrasting for palatalization. I examine the quantity, in addition to the types, of categories mapped. The null hypothesis is correct if the twenty-four segments consistently map to twelve discrete English categories. To illustrate, Russian /p/ and /pj/ are predicted to map to the general English category /p/.

Preliminary results of the data indicate that the null hypothesis is wrong. Twenty-four input segments are mapped to a total of twenty-three, not twelve, English categories. I am presently analyzing when and why particular input segments are mapping to particular English categories. The results of this first task feed directly into the discrimination task in that the data directly indicate how well subjects are able to discriminate the palatalization contrast, and whether any perceptual ability is modulated by such factors as word position, vocalic context, and talker gender. These early findings show that there is no simple 2-to-1 category mapping from Russian to English. The picture forming is al-



ready much more complex, and more interesting, than the null hypothesis proposes.

For the next step, and to conclude my dissertation, I will analyze results from the third experiment, consonant identification, in an effort to address my overarching question of how secondary palatalization is acquired in L2, as a generalized feature or on a segment-by-segment basis.

*[\*Heather's work has been supported in part by a Householder Research award.]*

## Dissertation Profile: Yu-Jung Lin

### Orthography and Phonological Awareness in Children

Advanced Ph.D. student, General Linguistics

Evidence suggests that alphabetic orthographic representations facilitate awareness among young children across different educational backgrounds. One study<sup>1</sup> compared three groups of children, two of which were Cantonese-speaking children from Guangzhou who have learned Pinyin (the Mandarin transcription system used in China and many other countries) and Cantonese-speaking children from Hong Kong who did not learn Pinyin. The results showed that children in Guangzhou outperformed their counterparts from Hong Kong on onset and coda analyses, which reflected an effect of alphabeticity in the first learned script on phonological awareness.

Lin, Yang, and Lin (2013) used a phoneme monitoring task to compare the influence of Zhuyin (the Mandarin transcription system used in Taiwan) and Pinyin on phonological awareness. Their work indicated that phonological categories, when accessed in real time, show different patterns between Zhuyin and Pinyin users, even though both groups speak Mandarin as one of the first languages. Clues to these phonological categories can be found in the differences between these two transcription systems.

My current research, using a larger corpus, used a phoneme monitoring task to test responses from Zhuyin and Pinyin users. The target vowels in the present research include three high vowels /i/, /u/, and /y/. Two research questions were asked: first, is the activation of the orthographic information of phonetic transcriptions mandatory at the pre-lexical processing stage? Orthographic informa-



<sup>1</sup>Cheung, Chen, Lai, Wong, and Hills (2001)

<sup>2</sup>Cutler, Treiman and van Ooijen (2010)

tion is saved with the lexical representation of words,<sup>2</sup> even though the activation of orthographic information can be manipulated at the pre-lexical processing stage. However, the role of the orthographic information in English can be very different from that of Chinese. Therefore, the first goal of the present research is to look into the role of the orthographic information of Zhuyin and Pinyin in sound processing. Besides the orthographic effect, phonetic and phonological properties also matter. Thus, the second research goal is to discuss the relationship between ‘phonological similarity’ and ‘orthographic effect’. It is said that the three target vowels /i/, /u/, /y/ have glides allophones [j], [w], [ɥ]. However, different from the glides that occur in syllable-initial position, glides preceded by onset consonants have been considered by many scholars<sup>3</sup> to be part of a sound, instead of one independent sound unit. Do the different analyses of these allophones capture the phonological representation in Chinese native speakers’ minds? Is the phonological representation of these allophones mainly shaped by transcription systems? How do acoustic information and orthographic information interact with each other when they conflict? I am hoping to use the data from current research to answer these questions.

[\*Yu-Jung received a Householder Research award in support of this work.]

### Research Profile: Andrew Lamont Typology and the Coda Condition

#### M.A. student in Computational Linguistics



A common restriction on clusters occurring across syllable boundaries is that their members must agree in place features. This is exemplified by the English prefix *in-*, which undergoes place assimilation to following obstruents, forming homorganic clusters as in *impossible*. English is not an ideal

case study, however, because this restriction doesn’t hold at all syllable junctures (e.g. the prefix *un-* doesn’t assimilate in *unbearable*). The goal of this project was to develop a broad typology of languages in which homorganicity is strictly enforced.

The typology at this stage of development included 32 languages representing 17 language families. The main criterion for inclusion in the survey was for a language’s phonology to avoid, in most cases, heterorganic clusters like that in *unbearable*. By looking at these strict systems, one is able to study the properties of place agreement as a phonological conspiracy as well the possible repair mechanisms that are employed cross-linguistically. This expanded dataset is necessary to revisit competing theoretical hypotheses and allow one to develop a unified theory that accounts for the data cross-linguistically.

Two main insights emerge from the data. First, the behavior of consonants at syllable junctures suggests that place agreement results from a restriction on clusters, not on features in coda position. This is evidenced by exotic systems in which codas can assimilate to following onsets, and onsets can assimilate to preceding codas. Such a system is attested in Nankina, a Finisterre language spoken in Papua New Guinea; root-final coronals assimilate to following suffix onsets as in *wikga* ‘your house’ (underlyingly *wit-ka*), and suffix-initial coronals assimilate to preceding root codas as in *jikgΔ* ‘bag (agent)’ (underlyingly *jik-te*).

The second insight pertains to the variable distribution of lateral consonants in these languages. Overwhelmingly, these languages disallow laterals in clusters (i.e. an underlying sequence like *alta* would not surface faithfully). However, there are languages that enforce place agreement of laterals. Kuman, a Chimbu-Wahgi language spoken in Papua New Guinea, underlyingly has both a velar lateral *ɭ* and a coronal lateral *l*, the former surfacing as the latter before coronal fricatives, as in *talsi* ‘the day after tomorrow’ (underlyingly *tal-si*). One can derive the difference by restricting agreement to segments that contrast for place. Thus, a language like Kuman, which contrasts laterals for velar and coronal place, allows homorganic lateral clusters, but a language like Ponapean, which has only a phonemic coronal lateral, does not.

[\*Andrew was supported in part by a departmental travel grant to present his research at Phonology 2014 - Annual Meeting on Phonology, held at MIT.]

<sup>3</sup>For example, Duanmu (2007)

## Research Profile: Zachary Branson

### Agreement and Definiteness in Chimpoto

#### 2nd year Ph.D. student, African Linguistics

My recent research project, begun as part of coursework in the Field Methods course, focused on the morphosyntax of the noun phrase in Chimpoto, a Bantu language of Southwestern Tanzania. In this language, noun modifiers agree with the noun—similar to what one finds in Spanish—following one of two agreement paradigms. Adjectives take an agreement marker closely resembling the form of the noun class prefix. Other modifiers, such as possessives and quantifiers, take a different agreement marker, which is identical for several classes.

An unusual property of Chimpoto is that adjectives can also take the agreement marker normally associated with the other noun modifiers. This optionality is limited to two (of 12) classes. Use of this second agreement pattern makes the noun phrase definite.

Bare nouns and noun-adjective phrases are indefinite by default. Use of other modifiers—or the use of the agreements normally associated with these modifiers—with adjective roots, makes the noun phrase definite. The nature of, and conditions determining, definiteness are a current topic of great interest. This study contributes to the on-going conversation, bringing in data from a non-Indo-European language.

*[\*Zac received a departmental travel grant to present this research at the 45th Annual Conference on African Linguistics held at Kansas University.]*

## Research Profile: Brandon Rhodes

### Rollin' in the Data in 3D

#### Senior major in Linguistics

In our introductory phonetics and phonology classes, I think we all learned at least three things about American English: /l/ has the special status of being the only lateral consonant; we have two /l/'s, namely the 'light' and 'dark' (i.e. the different qualities of /l/ in 'light' and 'full'); and one does not ask a professor to explain the articulation of /r/.



Dr. Kelly Berkson, Dr. Kenneth de Jong, and I are collaborating with Dr. Steven Lulich from the Department of

Speech and Hearing Sciences to address each of the aforementioned things in more detail by examining the Mid-western variety of English. The Mid-western variety is infamous for its post-vocalic (post-vowel) /l/ production because /l/ loses its claim to fame, lateral articulation. Furthermore, we're using this variety to examine a general characteristic of American English: complex (multi-constriction) /r/ and /l/ articulations that vary by syllable position.

To address these questions, we have a process that revolves around an ultrasound machine—the same technology used to 'see' babies before they're born. Among the many awesome resources in Dr. Lulich's lab, we have the capability to exploit this technology to construct three-dimensional (3D) representations of the tongue moving in relation to the palate; however, we must do so indirectly. First, we get an impression of the speaker's palate (like one would do at a dentist), and we scan it into the computer, using a 3D scanner. Then, we have the speaker read a list of items with an ultrasound transducer placed under their jaw. The transducer takes pictures of the various parts of the tongue—from one side to the other—over time. Each picture gives us a slightly different idea of how the tongue is moving, and eventually the combination of all these pictures will show us the complete picture of how the tongue moves during these articulations. After we get this data, we combine it with the 3D representation of the palate. With that done correctly, we can see each part of the tongue moving with respect to the palate. We then analyze all of those pictures to construct a motion picture of the whole tongue moving with respect to the palate in 3D. We synchronize this motion picture with the audio recordings, and, ultimately, we can see a 3D representation of these articulations in real-time.

*[\*Brandon has accepted a fellowship offer for the Ph.D. program in linguistics at the University of Chicago, where he will begin his graduate studies in Fall 2015.]*

**IU Linguistics polo shirts. Deep crimson color.**

Spring is here and summer is just around the corner. For each \$100 in donations to any of our departmental funds, donors may receive an IU Department of Linguistics polo shirt, perfect for those warm summer days. In order to receive this gift, donors must fill out a pledge sheet (available at <http://www.indiana.edu/~lingdept/donations/>) and return it to the IU Foundation. (Online orders cannot receive a shirt, but are still welcome.)



Department polo shirt modeled by Markus Dickinson. *Photo: Stephanie Dickinson*