Fonologi i Norden 2018 (FiNo 2018) Program **Updated: 2018-02-05**	
FRIDAY, FEBRUARY 9 (6 TALKS)	
13.30-14.10	***Laura Downing & Silke Hamann*** "Investigating the diachronic fate of NTh in Bantu languages"
14.10-14.50	***Bert Botma, Janet Grijzenhout & Camilla Horslund*** "Voice and noise don't mix: voiced fricatives in Nordic languages"
14.50-15.30	***Johan Schalin*** "Scandinavian umlaut and contrastive features of vowels"
15.30-16.00	COFFEE
16.00-16.40	***Guri Bordal Steien & Bård Uri Jensen*** "On pragmatic functions of utterance-level declination in two post-L1 languages"
16.40-17.20	***Helene N. Andreassen & Chantal Lyche*** "L3 acquisition of phonological variation: Schwa and (non) sensitivity to phonotactic constraints in Norwegian learners of French"
17.20-18.00	***Nadja Althaus, Allison Wetterlin & Aditi Lahiri*** "Bilinguals let the lexicon do the work: Evidence from Swedish tonal accent"
19.00-	DINNER AT VALVET (http://valvetsteakhouse.se)
SATURDAY, FEBRUARY 10 (8 TALKS AND 9 POSTERS)	
8:45-9:30	COFFEE & BREAKFAST
9.30-10.10	***Malin Svensson Lundmark, Johan Frid, Gilbert Ambrazaitis & Susanne Schötz*** "The effect of Swedish Word Accent on word initial CV coarticulation"
10.10-10.50	***Lotta Aunio*** "Syllable weight and tone in South Mara Bantu languages"
10.50-11.10	COFFEE
11.10-11.50	***Nathan J. Young*** "Introducing *NordAS* – Automatic Segmentation of Nordic Languages"
11.50-12.30	***Man Gao, Malin Svensson Lundmark, Susanne Schötz & Johan Frid*** "A Cross-Language Study of Tonal Alignment in Scania Swedish and Mandarin Chinese"
12.30-14.00	LUNCH BUFFET
14.00-14.40	***Jennifer Bellik & Nick Kalivoda*** "Danish stød in recursive prosodic words"
14.40-15.20	***Bjørn Lundquist*** "Morpho-syntactic restrictions on right- and left-headed maximal prosodic words in Mainland Scandinavian."
15.20-16.50	COFFEE AND POSTER SESSION
16.50-17.30	***Patrik Bye*** "The Tetrameter Template and the Iambic-Trochaic Asymmetry in Verse"
17.30-18.00	CLOSING & Business meeting

Poster Session:

- ***Fanny Carlström Plaza***
  "The phonological and morphosyntactic acquisition of Swedish and French by simultaneously bilingual children: The development of nominal and determiner phrases at the age of 22-32 months"
- ***Ekaterina Fedorova***
  "Variable stress in Russian truncated adjectives and quality sensitivity"
- ***Guohua Hu***
  "Some intonational properties of Chinese imperative discourse"
- ***Anneliese Kelterer***
  "A Feature Geometry account of glottalisation in Chichimeco"
- ***L.B. Kristensen, F. Trecca, K. Tylén, R. Fusaroli, D. Bleses , A. Højen , C. Dideriksen, & M.H. Christiansen***
  "Effects of phonetic reduction on rapid automatized naming"
- ***Tomas Riad***
  "Reshufflings among Swedish fricatives"
- ***Mikael Roll***
  "A morphophonological account of main-clause initial tones in Swedish"
- ***Vi Thanh Son***
  "Vietnamese tones in the syllable /la/ in the North and South and tones in Vietnamese reduplications"
- ***F. Trecca, L.B. Kristensen, K. Tylén, R. Fusaroli, D. Bleses, A. Højen, C. Dideriksen, & M.H. Christiansen***
  "Using non-word repetition to investigate the nature of phonological representations in adult speakers of Danish and Norwegian"

Investigating the diachronic fate of NTh in Bantu languages

Laura J. Downing & Silke Hamann
University of Gothenburg; University of Amsterdam

As Kerremans' (1980) thorough survey shows, a wide range of reflexes of Proto-Bantu *NT are found in modern Bantu languages. While voicing of the post-nasal obstruent (*NT > ND) might be the most well-known (see, e.g., Pater 1995), it is also extremely common for the post-nasal obstruent to undergo aspiration: *NT > NTh. (See Hamann & Downing 2017 for detailed discussion.) In a number of Bantu languages, either the nasal or the stop portion of the NT(h) sequence is deleted, in both cases leaving behind an aspirated or breathy voiced consonant: NTh > Th OR NTh > Nɦ > ɦ, as illustrated in the table below:

Synchronic outcomes of Proto-Bantu *NT; words in Class 9/10 (nasal class)

Proto-Bantu	Chichewa	Central Shona	Venda	English
*-pada	m-phalapala	m-ɦara	phala	'gazelle'
*-kuni	ŋ-khuni	ɦuni	khuni	'(piece of) firewood'
*-ntu	mu-nthu	mu-nɦu	mu-thu	'person'

Work like Givón (1974), Hinnebusch (1973) and Kerremans (1980) has argued that these developments motivate the following historical scenario. First, neither NT > Nɦ nor NT > Th is the result of a one-step change. Rather, these outcomes have developed from a phonologization "seriation": NT > NTh > Nh **or** Th. Further, it is crucially assumed that the nasal in the intermediate NTh sequence must be voiceless, in order to motivate the further developments (to Nh or Th), in particular the loss of the nasal. However, phonetic studies of modern Bantu languages, like Ladefoged & Maddieson (1996), Maddieson (1991) and Huffmann & Hinnebusch (1998: H&H) fail to support these scenarios. In the languages investigated, nasals in an NTh sequence are only variably voiceless. As a result, Maddieson (1991:152) concludes by stating categorically that: "… diachronic development of aspirated nasals did not involve any stage in which the nasal portion became devoiced…"

Maddieson (1991) proposes that gestural realignment can account for the post-nasal aspiration (NT > NTh) step in the diachronic seriation: if the laryngeal [-voice] gesture of a voiceless stop is delayed, aspiration is the straightforward result. As H&H point out, though, aspiration is considered to require an additional gesture. It cannot result simply from realigning [-voice]. (See Hamann & Downing 2017 for discussion.) Further, it is unclear how gestural realignment alone could account for the deletion of the stop or the nasal portion of NT in languages where NTh > Nh or NTh > Th. Neither Maddieson nor H&H discuss these further developments of NTh.

Stanton's (2016) recent survey of the distribution of NCs cross-linguistically also sheds no light on why NTh might undergo further historical change. Both the nasal portion and the release of an NTh are in the optimally perceptible position when they occur intervocalically. Stanton's survey of phonetic studies of NC sequences (and there are surprisingly few of them) suggests, in fact, that ND should be more unstable than NT(h), since the nasal and obstruent closure phases are more balanced in duration for NT(h) than for ND.

In this talk, we present a careful phonetic study of NC sequences in Tumbuka, a Bantu language (N.21, Malawi) where NT > NTh. We will show how the acoustic and perceptual properties of these sequences plausibly motivate the loss of the nasal or stop portion of the NTh sequence found in related languages.

Voice and noise don't mix: voiced fricatives in Nordic languages

Bert Botma, Janet Grijzenhout & Camilla Horslund
Leiden University Centre for Linguistics

Voiced non-sibilant fricatives like [β, v, ð, ɣ] present an aerodynamic challenge: their vocal cord vibration leads to lower airstream velocity, making it relatively difficult to produce turbulence. This phonetic fact leads us to expect that voiced fricatives are diachronically unstable, in that they are susceptible both to sound changes that target their voicing (i.e. devoicing), and to sound changes that target their frication (i.e. lenition).

In our talk we investigate the status of voiced fricatives in Nordic languages. Nordic languages are interesting because they have a relatively large fricative inventory. We first note that most fricatives in Nordic languages are voiceless. This is the case for all sibilants; none of the languages have voiced sibilants, neither underlyingly nor as allophones of voiceless sibilants. However, we do find a class of voiced continuants that includes such sounds as /v, ð, ɣ/, which have traditionally been classified as fricatives in the literature (see e.g. Árnason 2011, Basbøll 2005). We examine a host of synchronic and diachronic processes in which these sounds are involved, including historical alternations in which [v, ð, ɣ] are allophones of /b, d, g/ in intervocalic position (as in Proto Old Norse), diachronic processes in which /ð, ɣ/ were lenited to approximants (as in Faroese), processes of borrowing in which voiced continuants are accommodated as plosives (as in Faroese), and synchronic alternations in which approximants or short vowels are allophones of /b, d, g/ in final position (as in Danish). Our findings are consistent with the expectation that voiced fricatives are unstable. In addition, we observe that the distribution of voiced fricatives is restricted. They are most likely to occur in intervocalic position, where they typically emerge through spirantization of plosives, and where they are themselves subject to further weakening. Voiced fricatives are less likely to occur in initial position, and they are decidedly rare in final position.

Another interesting property of voiced fricatives that emerges from our findings is that these sounds do not always pattern as the voiced counterparts of voiceless fricatives – that is, as obstruents – but display phonological behaviour that is associated with sonorants. This appears to be consistent with the description of the sounds as approximant-like in the literature (e.g. Árnason 2011 on Icelandic and Faroese; Basbøll 2005 on Danish). The question, then, is whether voiced fricatives should (still) be viewed as obstruents, as sonorants, or as some category in between. We will attempt to gain a better insight into this issue by investigating both the synchronic behaviour of voiced fricatives, and their diachronic development.

Johan Schalin **University of Helsinki**

Abstract for *talk*: Scandinavian umlaut and contrastive features of vowels

Among the regressive metaphonic vowel modifications that occurred in North Germanic during the era of so called "umlaut", there are numerous very strange unexplained anomalies. In fact very few generalisations are exempt from regular exceptions, and these exceptions to the main rules, albeit explainable as regular in isolation, seem rather detached among themselves.

For example front umlaut was exceptionless only when triggered by a glide *-*j*-. Most infamously, fronting failed to occur in case both the target syllable and the trigger syllable were equally light, as in Pre Scandinavian (PSc) **framiðō* > Old Norse (ON) *framda* 'performed carried out' (instead of expected +*fremda*). Yet as a subordinate exception to this main exception, fronting occurred if the trigger was followed by **z*, as in Pre Scandinavian (PSc) f. nom. sg. **framizō* > Old Norse (ON) *fremra* 'the anterior'. But even this rule, which in itself is an exception to an exception, is subject to a further exception, namely if *-*z* was a hetero-morphemic ending for the nominative of masculine *i*-stems, as in PreSc **staði-z* > ON *staðr* 'place'. No wonder research has frequently invoked morphological generalisations in order to come to terms with such recalcitrant data.

Anomalies in rounding umlaut, albeit much less notorious, are no less awkward. For some reason a round trigger vowel appears largely to have been active for rounding umlaut only if the target vowel was low (typically *a* > *ǫ*). In words such as PreSc f. nom. sg. **lindu* > ON *lind* 'linden' or PreSc m. nom. sg. **rehtuz* > ON *réttr* 'right, entitlement' no traces of rounding umlaut are found. Yet this statement is not necessarily valid if the trigger was a glide *-*w*, as in m. acc. sg. **lingwa* > ON *lyng* 'heather', but even this exception comes with subordinate inverse exceptions in eastern Scandinavian, for example in a word like PreSc **nikw-az*/-*iz*- > OSw *nekęr* 'water monster'.

In two extensive journal articles in ANF 132 and NOWELE 70:2 (both 2017) the author uses such anomalies and thorough target-trigger analysis in order to infer the essence of phonological contrast in Proto-, Transitional and Ancient Scandinavian vowel systems in prominent and non-prominent syllables respectively. Two initial assumptions are taken for given: firstly, the so called "Contrastivist Hypothesis" formulated by Daniel Currie Hall (2007. The Role and Representation of Contrast in Phonological Theory), according to which only features employed for contrast may generate phonological activity. Secondly, a working assumption is accepted that metaphonic umlaut as a rule did not remove or swap into their binary opposites properly contrastive features of targets (cf. Bale, A., Papillon, M., & Reiss, C. 2014: *Targeting underspecified segments* etc. https://doi.org/10.1016/j.lingua.2014.05.015). By these means most perceived umlaut anomalies become resources for problem solving instead of stumbling blocks, as has been the case until now.

On pragmatic functions of utterance-level declination in two post-L1 languages

Guri Bordal Steien[1,2] and Bård Uri Jensen[1,2]

[1]Inland Norway University of Applied Sciences
[2]MultiLing, University of Oslo

The aim of this paper is to discuss pragmatic functions of utterance-level declination in spontaneous French and Norwegian produced by speakers for whom these are post-L1 languages (i.e. learned after one or more other languages). They grew up in the Democratic Republic of Congo and have particularly varied linguistic repertoires as they learned at least one or more Bantu languages as children, French at school (at the age of about six years old), and Norwegian as adults. The current study is part of a larger project in which we seek to understand how multilingual speakers use intonation in their various languages, i.e. to identify language-specific versus idiolect-generalized features.

In a previous study of these speakers' intonation patterns in French and Norwegian, we found that all of them produced falling intonation contours, here referred to as utterance-level declination (Jensen and Steien 2017), in some utterances, but not all. As far as we know, such intonation contours are not common in Norwegian produced by first language speakers (Kristoffersen 2000) or French by European speakers (Delais-Roussarie et al. 2015). We hypothesized that this is a feature that originates from the Bantu languages in the speakers' repertoires, where such contours are commonly attested (Downing and Rialland 2016). In this paper, we are concerned with the pragmatic functions of these contours in the two post-L1 languages, and in particular whether they carry similar meanings in both of them.

Our method consists of two steps. First, we developed an algorithm to detect utterance-level declination automatically. The algorithm first extracted contour tops by investigating equal-length windows of pitch data from the utterance, and then assessing the strength of any negative correlation between the pitch of the contour tops and time through the utterance. Second, we conducted qualitative analysis of utterances with and without declination with reference to the interactional context in which they were produced. Drawing on insights from Conversation Analysis, we analyzed the utterances in light of concepts such as turn design (Drew 2013) and emotion (Ruusuvuori 2013). We will present our first results, investigating whether utterance-level declination has similar functions in French and Norwegian.

References

Downing, L. and Rialland, A. (2016). Introduction. In Downing, L. and Rialland, A. (eds.) *Intonation in African Tone Languages* (p. 1-6). Berlin: Mouton de Gruyter.

Delais-Roussarie, E., Post, B., Avanzi, M., Buthke, C., Di Cristo, A., Feldhausen, I., Jun, S.-A., Martin, P., Meisenburg, T., Rialland, A., Sichel-Bazin, R., Yoo, H. (2015). In Fronta, S. and Prieto, P. (eds) Inotnational phonology of French: Developing a ToBI system for French., *Intonation in Romance* (p. 63-100). Oxford, Oxord Univeristy Press.

Drew, P. (2013). Turn Design. In Sidnell, J. and Stivers, T. (eds.). *The Handbook of Conversation Analysis* (p.131-149. Chichester: Wiley-Blackwell.

Jensen, B. U. and Steien, G. B. (2017). Intonasjonstrekk i flerspråklige taleres idiolekter i to post-S1 språk. *NOA norsk som andrespråk 33*(2), 5-29.

Kristoffersen, G. (2000). *The Phonology of Norwegian.* Oxford: Oxford University Press.

Ruusuvuori , J. (2013). Emotion, Affect and Conversation. In Sidnell, J. and Stivers, T. (eds.). *The Handbook of Conversation Analysis* (p. 330-349. Chichester: Wiley-Blackwell.

L3 acquisition of phonological variation: Schwa and (non) sensitivity to phonotactic constraints in Norwegian learners of French

Helene N. Andreassen, UiT The Arctic University of Norway
Chantal Lyche, University of Oslo

According to Bayley and Regan (2004), the mastery of phonological variation forms an integrated part of the competence of the post-L1 speaker who aims a near-native production. In French, two phonological variables are acquired rather late, i.e. liaison and schwa. Both involve deletion of word boundaries which complicates lexical recognition, as well as sensitivity to register and modality. The two phenomena do however vary in that liaison – with inter-vocalic consonant realization – doesn't entail additional difficulty for production, while schwa, when absent, creates consonant sequences often not perceived and difficult to produce. While post-L1 acquisition of liaison is rather extensively studied, schwa is not, which according to Hannahs (2007) might reflect the complexity of the influencing factors. We know however, from L1 studies, that phonotactic constraints, on the syllabic as well as the segmental level, do influence schwa alternation (for an overview, see Andreassen, 2013), and in this paper, we present a first, detailed study of Norwegian learners of French, which aims to understand the importance of phonotactics during post-L1 acquisition.

The study is based on conversational data from two corpora of Norwegian learners of French, 16 informants from Tromsø, proficiency level A2, and 8 informants from Oslo, proficiency level B1/B2. Schwa behavior is extracted using the newly developed IPFC schwa coding system (Isely et al., 2017), of which a pilot has already been tested on parts of the Norwegian learner data by Andreassen and Lyche (2016). While the latter, initial analysis indicates a gradual sensibility towards phonotactic context, other factors such as frequency and access to written representations are observed as playing an important role. In this paper, we aim to identify an acquisitional path by going in detail into the phonotactic context of schwa and how it behaves, as well as the realization of the secondary cluster in the case of schwa absence. To detect L1 influence, we take into account L1 phonotactic as well as prosodic constraints. To determine sensibility towards phonological variation in general, we take into account previous analyses of liaison in the same corpora (Andreassen & Lyche, 2015).

References

Andreassen, H. N. (2013). *Schwa: Distribution and acquisition in light of Swiss French data.* (PhD), University of Tromsø. http://hdl.handle.net/10037/5193

Andreassen, H. N., & Lyche, C. (2015). Enchaînement, liaison, accentuation chez les apprenants norvégophones. *Bulletin VALS-ASLA, 102*, 105-121.

Andreassen, H. N., & Lyche, C. (2016). *Le schwa dans la parole conversationnelle d'apprenants et l'impact des facteurs phonologiques: Un début d'analyse*. Journées FLOraL-IPFC, Nov 21-22, Paris. http://hdl.handle.net/10037/10220

Bayley, R., & Regan, V. (2004). Introduction: The acquisition of sociolinguistic competence. *Journal of Sociolinguistics, 8*(3), 323-338.

Hannahs, S. J. (2007). French phonology and L2 acquisition. In D. Ayoun (Ed.), *French applied linguistics* (pp. 50-74). Amsterdam: John Benjamins.

Isely, R., Racine, I., Detey, S., Andreassen, H. N., & Eychenne, J. (2017). *Le traitement du schwa dans IPFC: codage, décodage et illustration avec des données du projet IPFC-Suisse*. Journées FLOraL-IPFC 2017, Nov 27-28, Paris.

Bilinguals let the lexicon do the work: Evidence from Swedish tonal accent

Nadja Althaus[1], Allison Wetterlin[2,3], & Aditi Lahiri[3]
[1]University of East Anglia, Norwich, UK
[2]University of Agder, Kristiansand, Norway
[3]University of Oxford, Oxford, UK

Language development involves discovering the regularities of one's native language. How do bilinguals deal with regularities that are only useful in one of their languages? Swedish tonal accent presents a test case for this, as it carries low functional load (few minimal pairs exist, and not all regional varieties use tonal accent). We therefore investigated lexical access in (a) monolingual vs. bilingual native Swedish speakers whose other native language is non-tonal.

In Swedish, Accent 2 (*färja*$_2$-"ferry") is the most common pattern for disyllabic words and functions as a default. Accent 1 is less predictable for disyllables. Many disyllabic Accent 1 words are underlyingly monosyllabic (where all monosyllables have Accent 1) with an epenthetic vowel (e.g., /fingr/ > *finger*$_1$) in the singular but become disyllabic and have Accent 2 in the plural (*fingrar*$_2$). Truly disyllabic Accent 1 patterns (*sesam*$_1$ - "sesame") belong to specific semantic classes or are loanwords (Wetterlin et al., 2007).

Our first set of experiments addressed lexical access via semantic fragment priming. Here, subjects heard the first syllable of a prime word, and then made a lexical decision regarding a visually presented target that was either semantically related to the prime or not. The prime fragment was either presented with the accurate or with the opposite tonal accent. Experiment 1 used as prime words disyllabics that have no accent competitor, such that the mispronounced prime was not the beginning of an existing lexical entry (e.g. *ponny*$_1$-"pony" with fragments *pon*$_1$, **pon*$_2$). Experiment 2 used primes that do have an accent competitor with segmentally identical first syllable (e.g. *paddel*$_1$-"paddle" and *padda*$_2$-"toad", with fragments *pad*$_1$ and *pad*$_2$), such that mispronunciations are in fact first syllables of different words. Our results showed that (a) monolinguals restrict priming to correct accent pronunciations, and (b) bilinguals behave like monolinguals for Accent 2 patterns, but struggle with Accent 1 (the less predictable class). In particular, mispronunciations of Accent 1 patterns in Experiment 1 (no lexical competition) still led to significant priming. In Experiment 2, however, where lexical competition exists, only accurately pronounced accent patterns led to priming. This demonstrates that bilinguals do encode Accent 1 when the lexical neighbourhood requires it.
In Experiment 3 we used eye tracking to investigate on-line processing of accent by monolinguals and bilinguals. We used a fragment completion task (Felder et al., 2009) where subjects heard a first syllable fragment and then had to choose between two visually presented target words. The words were, as above, pairs of words whose first syllables contain the same segments but require opposing tonal accent. To analyse eye movements, we fitted a growth curve model to the time course patterns exhibited for the different groups of words and participants. Monolinguals' eye movements were consistent with the hypothesis that disyllabic Accent 1 is encoded in the lexicon, whereas underlying monosyllables (e.g. *finger*$_1$) and Accent 2 are unspecified (Wetterlin et al., 2005). Bilinguals' eye movements indicated that Accent 2 is, as in monolinguals, not lexically specified. By contrast, both disyllabic and underlyingly monosyllabic Accent 1 patterns appear to be specified in the lexicon.

Taken together, our results indicate that bilinguals are less likely to discover regularities (such as the regular pattern of accent alternation in underlyingly monosyllabic Accent 1 patterns), and instead encode information in the lexicon, but only under pressure from the lexical neighbourhood.

The effect of Swedish Word Accent on word initial CV coarticulation

Malin Svensson Lundmark, Johan Frid, Gilbert Ambrazaitis & Susanne Schötz
Lund University

This study examines articulatory coordination in word onset CV sequences, using EMA data on 19 Swedish speakers. Within the framework of Articulatory Phonology [1], Mandarin Chinese words /ma/ have displayed CV timing differences between the lexical tones [2]. This effect has not been found for pitch accents in German [3]. Since Swedish makes use of tones, we hypothesize an effect of the Swedish word accents, Accent 1 and Accent 2, on CV coarticulation.

We examined both temporal and spatial data of Swedish disyllabic words with the onset /ma/. Nineteen Scania Swedish speakers were recorded in an EMA (Carstens AG501) at the Lund University Humanities Lab. The dataset consists of 1200 tokens, divided into Accent 1 and Accent 2, with identical word onsets: /ma/. Data was collected from lip and tongue body movements. Articulatory measurements included: time lags of overlapped consonantal and vocalic gestures, consonantal constriction duration, consonantal time-to-peak velocity, vocalic tongue body height, and vocalic gesture duration.

As hypothesized, the results revealed gestural CV timing differences between the word accents in /ma/: larger time lags for Accent 1 words, hence more overlap of the consonantal and the vocalic gesture in Accent 2. Moreover, the vocalic gesture was significantly longer for Accent 2 than for Accent 1, and tongue body height also differed between the accents.

Such effects of the tonal condition on the spatiotemporal movements of the tongue body did however not show up for the lip aperture. Neither acceleration nor duration of the movement of the lips (responsible for the bilabial closure) differed between the accents.

Our study shows that articulatory coordination of identical /ma/-sequences is affected by tonal environment. This conclusion is supported by the effect of the word accents on the tongue body movement: height, duration, and in timing with the lips. Presumably, these assorted coarticulation patterns of identical word onsets result in variations in acoustic space between the word accents, which may be used as anticipatory cues by the listener.

[1] Browman, C. P., Goldstein, L. (1992). Articulatory Phonology: An Overview. Phonetica, 49, 155–180.

[2] Gao, M. (2008). *Tonal alignment in Mandarin Chinese: An articulatory phonology account* (Unpublished doctoral dissertation). Yale University, New Haven.

[3] Mücke, D., Nam, H., Hermes, A., & Goldstein, L. (2012). Coupling of tone and constriction gestures in pitch accents. In P. Hoole et al. (Eds.), *Consonant Clusters and Structural Complexity* (pp. 157-176). Munich, Mouton de Gruyter.

Syllable weight and tone in South Mara Bantu languages

Lotta Aunio (lotta.aunio@helsinki.fi)

University of Helsinki

Ikoma-Nata-Isenye (ISO 639-3 ntk) and Ngoreme (ISO 639-3 ngq) are Great Lakes Bantu languages spoken in the southern Mara region in Western Tanzania. These four language varieties have retained the vowel length contrast reconstructed for Proto-Bantu. However, these varieties have deviated from Proto-Bantu in that the tone bearing unit (TBU) is the syllable and not the mora. This has allowed syllable-weight-sensitive tone rules to arise that are not commonly found in Bantu languages (Odden 1999). Within Great Lakes Bantu, there are other languages, that have the syllable as the TBU, but tone rules do not operate based on syllable weight. Most languages in the area that have retained a vowel-length contrast have also retained the mora as the TBU.

In Ikoma-Nata-Isenye and Ngoreme, syllables with lexical long vowels are considered heavy by tone rules. In addition, there are conditioned long vowels caused by prenasalization, labialization, and palatalization. These vowels are phonetically shorter than the contrastive long vowels, but they are considered heavy by tone rules.

The South Mara language varieties all show tone–syllable weight interaction, but do so in different contexts. For example, Ikoma *lexical* tones are *not* sensitive to syllable weight (Aunio 2010), but Nata has developed an accent-like nominal tone system in which toneless words are not allowed and in which syllable weight place a role in tone assignment (Anghelescu 2012). However, Ikoma *grammatical* tone melodies have different surface realizations depending on the syllable structure of the verb (Aunio 2013). For example, the melodic H of the Subjunctive is assigned to the second syllable of the macrostem, but retracted to the first syllable of the macrostem if the first syllable is heavy. In some verb forms, for example in the Narrative, the melodic tone fails to surface if the penultimate syllable of the verb is not heavy. The same restriction is found in Isenye, but, again, occurs in different contexts. While Ikoma and Nata tone assignment rules count syllables up to two, Isenye differs from the others in that syllables are counted up to three. Ngoreme, on the other hand, assigns all lexical tones in relation to syllable weight – a system that is previously unattested in Bantu languages.

This paper will discuss the different syllable types found in Ikoma-Nata-Isenye and Ngoreme, showing how syllable weight is used in assigning both lexical and grammatical tones. Although these language varieties are geographically and historically closely related and they all make use of a phenomenon which is not common across Bantu languages, the details of the tone–syllable weight interaction are different in all four varieties. This paper also gives new evidence for the claim that syllables, not moras, are TBUs in some Bantu languages (Marlo & Odden forthcoming).

References

Anghelescu, A. 2012. Morphophonology and tone in Nata. *UBC Linguistics Qualifying Papers* 2: 75–88.

Aunio, L. 2013. Ikoma verbal tone. *Nordic Journal of African Studies* 22(4): 274–321.

Aunio, L. 2010. Ikoma nominal tone. *Africana Linguistica* XVI: 3–30.

Marlo, M. & D. Odden forthcoming. Tone. In: K. Boestoen, D. Nurse, G. Philippson & M. Van den Velde (eds), *The Bantu Languages*, 2nd revised edn. London: Routledge.

Odden, D. 1999. Typological issues in tone and stress in Bantu. In: S. Kaji (ed.), *Proceedings of the Symposium Cross-Linguistic Studies of Tonal Phenomena, Tonogenesis, Typology, and Related Topics*, 187–215. Tokyo: ILCAA.

Presentation submission for Fonologi i Norden, 2018

Introducing *NordAS* – Automatic Segmentation of Nordic Languages

Nathan J. Young • Queen Mary, University of London • nathan.j.young@qmul.ac.uk

Automatic segmentation is a tool that has helped progress phonological investigations of the world's major languages for over a decade. But a divide persists. While English or Spanish research benefit from this tool, Nordic phonologists still devote resources and productivity to manual segmentation. The divide is even more pronounced for large corpora such as *DanPASS* (Grønnum, 2009), where time spent on segmentation could take up to 400 times real time or 30 seconds per phone (Yuan, Ryant, Liberman, Stoloke, Mitra, & Wang, 2013).

To address this, I introduce *Automatic Segmentation of Swedish* (*SweAS*) and *Automatic Segmentation of Danish* (*DanAS*) as part of the *Automatic Segmentation of Nordic Languages* software suite (*NordAS*). Norwegian is not part of the release but is planned for the future.

NordAS is built on the original architecture of *Forced Alignment and Vowel Extraction* (*FAVE*; Rosenfelder, Fruehwald, Evanini, & Yuan, 2011). It incorporates the Hidden Markov Model Toolkit (*HTK*; Young, Woodland, & Byrne, 1993) to convert sound files from their orthographic transcriptions into a phonetically-segmented TextGrid for Praat (Boersma & Weenink, 2017). Like the original FAVE – and unlike Prosodylab-aligner (Gorman, Howell, & Wagner, 2011) or MAUS (Schiel, 2015) – NordAS does not require the one-by-one input of intonational phrases. It accepts an entire sound file of any duration.

SweAS is the most developed of the two and currently exists for Central Swedish. Its phonetic dictionary contains more than 2.8 million entries, which include elided and syncopated pronunciations (*konstnärerna >> konsnärna*), inflected forms (*prata*, *pratar*), and most common compound words (*otrevlig*, *jättetrevlig*). Moreso, it has multiethnolectal entries. It also has a "powersandher" that identifies retroflex coalescence (*för sig >> fö rsig*) and apocopes (*ringde >> ringd*). It codes vowels for lexical pitch accent 1, 2, and compound-word pitch accent 2.

Tested on a casual speech recording of young multiethnolectal men in Stockholm, the phonetic dictionary covered 99.8% of all words (n=6284). Compared with manual alignment for 606 monophones, mean boundary displacements at onsets were 0.021 seconds and 0.020 seconds at offsets. Root mean square deviations were 0.030 and 0.029 for onsets and offsets, respectively.

DanAS' pronunciation dictionary contains over 200,000 entries and covers 99.5% (n=53,976) of the dialogue transcriptions in DanPASS (Grønnum, 2009). Multiethnolectal slang and schwa-assimilated pronunciations are not yet included but will be part of the next release (spring 2018). The prototype's test of 144 Copenhagen monophones has rendered promising results.

Literature

Boersma, Paul & Weenink, David (2017). *Praat: doing phonetics by computer* [Computer program]. Version 6.0.29, retrieved 24 May 2017 from http://www.praat.org/

Gorman, K., Howell, J., & Wagner, M. (2011). Prosodylab-aligner: A tool for forced alignment of laboratory speech. *Canadian Acoustics, 39(3)*, 192-193.

Grønnum, N. (2009). A Danish phonetically annotated spontaneous speech corpus (DanPASS), *Speech Communication, 51(7)*, 594-603.

Rosenfelder, I., Fruehwald, J., Evanini, K., & Yuan, J. (2011). *F.A.V.E.* (*Forced Alignment and Vowel Extraction*) Program Suite. Retrieved from http://fave.ling.upenn.edu.

Schiel F (2015): A statistical model for predicting pronunciation. In: *Proc. of the International Conference on Phonetic Sciences*, Glasgow, United Kingdom, paper 195.

Young, SJ., Woodland, PC. & Byrne, WJ. (1993). *HTK Version 1.5*: User, Reference and Programmer Manual. Publ. Washington DC: Entropic Research Laboratories.

Yuan, J., Ryant, N., Liberman, M., Stolcke, A., Mitra, V. & Wang, W. (2013, August). Automatic phonetic segmentation using boundary models. In *Proceedings of Interspeech,* 2306-2310.

A Cross-Language Study of Tonal Alignment in Scania Swedish and Mandarin Chinese

Man Gao[1], Malin Svensson Lundmark[2], Susanne Schötz[2] & Johan Frid[2]
[1]Dalarna University, [2]Lund University

The investigation of pitch-to-segment alignment can be traced back as early as the 1970s, when Bruce (1977) promoted the concept of linking pitch contour and segments in time and found evidence from the word accents in Swedish. Since then, this issue has been addressed in a wide variety of languages. There has been a lot of evidence from previous studies suggesting the existence of stable alignment patterns between prosodic units and segmental units within a given language, but these patterns may vary across languages or even varieties of the same language (Prieto et al. 2005, Ladd et al., 2009; Vanrell et al., 2013; etc.). However, such cross-linguistic comparison has only been made among non-tonal (intonation) languages, but not between languages in which the prosodic events are used to contrast lexical meanings. In this study, we aim to investigate the alignment of F0 peaks and valleys between Mandarin Chinese and South (Scanian) Swedish.

Chinese, a tone language, uses five lexical tones to distinguish monosyllabic words, or to contrast meanings among otherwise homophonous syllables. Swedish, along with e.g. Norwegian and Japanese, is classified as a pitch accent language, which uses pitch variations to differentiate certain pairs of words. In order to make the comparison possible and meaningful, disyllabic words in both languages are constructed to match in terms of segmental string, syllable structure and tonal combinations. Theoretically, there are two possible combinations of Chinese lexical tones that correspond to word accents in South Swedish, i.e. T1T3 (H-L) and T4T5 (HL-none) vs. Accent 1 (H*L); T3T4 (L-HL) and T2T3 (LH-L) vs. Accent 2 (L*HL). Simultaneous kinematic and acoustic data are collected from native speakers of these two languages, who are instructed to utter the target words in carrier sentences at a normal speech rate. A comparison of the F0-to-segment alignment patterns in the target words from the two languages would allow us to address the following questions: 1) whether word accents in South Swedish present similar alignment patterns with any of the combinations of Chinese lexical tones, 2) if tone languages and pitch-accent languages display some degree of consistency in terms of tonal alignment which is not observed among intonation languages.

The authors gratefully acknowledge support from the Lund University Humanities Lab.

References:

Bruce, G. (1977). Swedish word accents in sentence perspective. Lund: Gleerups.

Ladd, D. R., Schepman, A., White, L., Quarmby, L. M., & Stackhouse, R. (2009). Structural and dialectal effects on pitch peak alignment in two varieties of British English. Journal of Phonetics, 37(2), 145-161.

Prieto, P., D'Imperio, M., & Barbara, G. F. (2005). Pitch accent alignment in romance: Primary and secondary associations with metrical structure. Language and Speech, 48, 359-96.

Vanrell, M. d. M., Stella, A., Fivela, B. G., & Prieto, P. (2013). Prosodic manifestations of the effort code in Catalan, Italian and Spanish contrastive focus. International Phonetic Association.Journal of the International Phonetic Association, 43(2), 195-220.

Danish stød in recursive prosodic words

Jennifer Bellik & Nick Kalivoda
University of California, Santa Cruz

Introduction. The Danish glottal accent (stød) can only attach to sonorous second moras in monosyllabic feet (Ito & Mester 2015; henceforth I&M). The fate of stød in compounds depends on the compound's prosodic structure. We present an OT system using Match Theory (Selkirk 2011) that derives I&M's prosodic structures for Danish 2-word compounds; explore its predictions for 3-word compounds; and sketch its typological implications.

Danish compounds. In 2-member compounds, stød disappears in initial 1σ words, such as *to:g* 'train' in (1b). This is prosodically driven; outside of compounds, and compound-finally as in (1c), *to:ˀg* bears stød (I&M). Longer words like *passage:ˀr* 'passenger' (1c) bear stød even when compound-initial. (Examples are in orthography, plus the length mark 'ː' and stød mark 'ˀ'.)

(1) a. ruːg-**brøːˀd** 'rye bread' (cf. ***ruː:ˀg*** 'rye') b. to:g-passa**ge:ˀr** 'train passenger' c. passa**ge:ˀr**-**to:ˀg** 'passenger train' d. medi**ci:ˀn**-indus**tri:ˀ** 'medicine industry'

Following I&M, we assume that stød disappears when its would-be host σ is not ω-final. Whether an σ is ω-final in a compound depends on prosodic constraints. Assuming ω-recursivity as a property of Gen, a high-ranking binarity constraint can force longer syntactic words (X^0s) into their own embedded ωs, even when this means violating NonRecursivity, as shown in (2).

(2) *Short X^0 + Long X^0* → [$_\omega$ *Ft* [$_\omega$ *Ft Ft*]]

/to:g+passage:r/	**BinMax(ω,Ft)**	**NonRec**	**Match(X^0,ω)**
a. ▸ [$_\omega$ (to:g) [$_\omega$ (passa)(**ge:ˀr**)]]	0	1	1
b. [$_\omega$ [$_\omega$ (**to:ˀg**)] [$_\omega$ (passa)(**ge:ˀr**)]]	e_0	W_2	L_0
c. [$_\omega$ (to:g)(passa)(**ge:ˀr**)]	W_1	L_0	W_2

The same logic forces (1c) into the structure [$_\omega$ [$_\omega$ Ft Ft] Ft]. Here, both *ge:r* and *to:g* are ω-final, in the minimal and maximal ωs, respectively. This accounts for the asymmetry between (1b-c).

Experiment. We employ the JavaScript application Syntax-Prosody for OT (Bellik, Bellik and Kalivoda 2017) in conjunction with OTWorkplace (Prince, Tesar and Merchant 2015) to systematically generate and evaluate possible prosodic parses for two- and three-member syntactic compound structures. The design crossed the length of each member of the compound (1 or 2 feet) with the number of members in the compound (2 or 3) and the branchingness of the compound (left/right -- applicable only in three member compounds).

Results. The constraint ranking that gives us Danish two-word compounds yields results for three-member compounds that are equivalent to those of a cyclic structure-building approach. Long words are always parsed into their own ω, but short words never are. Thus, a short word at the left edge of a compound is never at the right edge of ω, and can never bear stød there. We plan to collect data on longer Danish compounds to test these predictions.

The typology contains only two languages besides Danish, despite the large number of prosodic parses considered (>30,000). In one language Match(X^0,ω) is undominated, and prosodic structures perfectly mirror syntactic constituency. In the other language, NonRec is undominated, yielding completely flat prosodic structures for compounds.

Morpho-syntactic restrictions on right- and left-headed maximal prosodic words in Mainland Scandinavian.

Björn Lundquist, UiT: The Arctic University of Norway

Compounds in Swedish and Norwegian have main stress on the first stressed syllable, and get assigned accent 2. Riad (2014) and Myrberg & Riad (2015) argue that certain compounds are formed in the syntax, and give particle verbs in Northern Swedish and Norwegian dialects (Kristoffersen 2000) as examples (1a). Here the verb and the particle form an accent unit with main stress on the first stressed syllable (ϖ-maxL below). In Swedish the verb and particle still form an accent unit, but the main stress falls on the particle, leaving the verb de-accentuated.

1. a. $^{2}((TA)_{\varpi}\ (opp_{\varpi}))_{\varpi}$max (NOR) b. $((ta)_{\varpi}\ ^{1}(UPP_{\varpi}))_{\varpi}$max (SWE) ("Take up")

Myrberg & Riad propose a strong one-to-one principle, where every maximal prosodic word should contain exactly one accent, and argue that particle verbs, and other right headed prosodic phrases with preceding de-accentuated material should be analyzed as maximal prosodic words (ϖ-maxR below), on par with the Norwegian ϖ-maxL. I will take this proposal as a starting point for my presentation and point out fundamental morpho-syntactic differences and similarities between ϖ-maxL (1a) and ϖ-maxR (1b) across Scandinavia, relating to agreement and locality, with the aim to uncover the status of the two structures.

Agreement: We never find any ϖ-maxL that contain agreeing elements. The dialects with accent 2 on particle verbs tend to have a fairly large amount of ϖ-maxL, exemplified with species names (2) and adjective incorporation (3) (see Julien 2005), contrasted with Swedish that defaults to (ϖ-maxR):

2. a.^{2}(Rost-gump-paradis-monark) (Nor) b. (Rost-bukig ^{2}PARadis-monark)(Swe)
3. a. (NY-bil-n) (North. Swe, Trønd) b. den nya BILen (Swe)

Crucially, the a-examples contain no potential agreeing element, as opposed to the b-examples. Compare the Swedish and Norwegian examples with species names: SWE*: vi såg en (tretåig ^{2}HACKspett)/flera (tre-tåiga ^{2}HACKspettar)*, NOR*: Vi så en/flere ^{2}(TRE-tå-spett(er))* "We saw one/several three-toed woodpeckers". Further, as far as I am aware, there is no dialect with ϖ-maxL particle verbs that have agreeing participles, e.g. NOR: de ble ^{2}(kjøpt(-*e) opp) "they were bought up". However, agreement is restricted in ϖ-maxR too. Dialects with ϖ-maxR particle verbs that have obligatory participle agreement trigger incorporation / prefixation of the particle, leaving the agreement on the outside of the compound: SWE *De blev ^{2}(UPP-köpt-a) -- *De blev (köpta ^{1}UPP)*. In ϖ-maxR species names (2b), agreement is not straightforward either, as is evident in cases with further compounding: a potentially agreeing element is only licit in cases where the two heads agree in gender. Compare the agreeing modifier "tretåig" with the non-agreeing modifier "större" in Common.—Common and Neuter—Common compounds: *en (större ^{2}HACKspett-s-unge); en (tretåig ^{2}HACKspett-s-unge); ett (större ^{2}HACKspett-s-bo);*, *??ett (tretåig(t) ^{2}HACKspett-s-bo)*.

Locality: ϖ-maxL have strict requirements on linear adjacency. The accent unit is broken as soon as a non-clitic (e.g an adverb or a subject NP) intervenes between the verb and the particle: c.f. *I går ^{2}(TOK han den ut) -- *Han ^{2}(TOK den ikke ut) i går*. This restriction is presumably not triggered by length or weight (c.f. 2a). ϖ-maxRs are less sensitive to interveners, and de-accentuation of verbs takes place more or less obligatory even when an NP or an adverb intervenes (I make no prosodic notations here, as the prosodic status of the intervening subject is unknown): *Igår gav sig läraren IN i diskussionen* (accented particle, verb deacc.)- *Igår gav sig läraren efter första försöket* (acc. on verb, no particle). However, locality restrictions arise for ϖ-maxR as well, which is only seen when ϖ-maxRs are stacked: so-called preverbal adverbials form a ϖ-maxR with the following verb (*Igår (nästan ^{2}SVIMMA) Kalle när han kom hem*). The following verb may be a particle verb, leading to stacking of unaccented elements, but strict adjacency is required then, similar to ϖ-maxLs: *Kalle (nästan tuppa ^{1}AV) när han kom hem -- ??I går nästan tuppa Kalle AV när han kom hem*.

The Tetrameter Template and the Iambic-Trochaic Asymmetry in Verse

Patrik Bye, Nord University, Campus Bodø

In *An Introduction to English Poetry*, James Fenton notes a curious asymmetry between iambic and trochaic metres which to date remains unexplained. The iambic pentameter is most richly attested, and the tetrameter, in its iambic and trochaic forms, follow close behind. The trochaic pentameter, however, is essentially unknown (Fenton 2003: 39). In this talk, I will explain this **Trochaic Pentameter Gap**, and a related metrical asymmetry, starting with the assumption that the composition and appreciation of metrical verse engages two separate modules of the human mind: language (prosody in particular), and a more general capacity for rhythm that manifests itself in other forms of artistic expression such as music and dance as well (cf. Hayes 1988; Minkova 2009). This position is strictly speaking incompatible with the founding analogy of Generative Metrics (Halle and Keyser 1966, *et seqq.*), that the rules governing the relation between metrical and prosodic structure constitute a "grammar". This entails that metrical structure is generated independently of prosodic structure, and the relation between the prosodified text and the metrical pattern must essentially be a pragmatic one: the intended metrical pattern is inferred from the prosody, which serves as its ostensive stimulus (Sperber and Wilson 1996). Unfettered from prosodic considerations, constraints on metrical structure like MAXIMAL ARTICULATION (Prince 1980), BINARITY, and EVEN DISTRIBUTION (Piera 1980) predict that the metrical verse line should universally adhere to a basic tetrameter template, (λ (κ ππ)κ (κ ππ) κ)λ (where π = verse foot; κ = colon; λ = verse line). The pentameter and hexameter are motivated augmentations of the basic tetrameter template, with left adjunction of an additional foot to the left or right colon, or both (Kiparsky 1977). Given MAXIMAL ARTICULATION, adjunction is the only way to incorporate an extra verse foot in either colon. The iambic pentameter is thus (λ (κ ππ)κ (κ π (κ ππ)κ)κ)λ, although augmentation of the left colon, to give (λ (κ π (κ ππ)κ)κ (κ ππ)κ)λ, is also possible, and empirically distinguishable (e.g. Tarlinskaya 1983). The hexameter has left adjunction to both cola, i.e. (λ (κ π (κ ππ)κ)κ (κ π (κ ππ)κ)κ)λ. Verse lines that appear to be significantly shorter (e.g. monometer) or longer (e.g. octameter) are an artefact of typography, which also serves as the proxy, on the printed page, of spoken prosody. The pentameter and hexameter represent the projection, at higher levels of verse structure, of the Iambic-Trochaic Asymmetry (e.g. Hayes 1995). According to this principle, an alternating series of short and long pulses, … – ⏑ – ⏑ – ⏑…, will be grouped into right-prominent uneven structures, i.e. … – (⏑ –) (⏑ –) ⏑…, while a sequence of short pulses, … × × × × × × …, will be parsed into left-prominent even structures, i.e. … (× ×) (× ×) (× ×) …. Uneven structures must be right-branching, not only at the level of the verse foot, but also at the level of the colon. Furthermore, right-branching uneven structure is only licensed at the colon level if present on the verse foot level, reminiscent of Prince's UNIFORMITY constraint. On the assumption that the pentameter is an augmentation of a more basic universal tetrameter design, we can also explain another gap among logically possible metres, which we can call the **Catalectic Pentameter Gap**. Tetrameter verse regularly exploits catalexis, i.e. a final (weak) position is prosodically unexpressed. Indeed, tetrameter catalectic, where each line typically ends in a stressed syllable, is vastly preferred to the acatalectic form in the English verse tradition. In the similarly widely used 'common metre', tetrameter alternates with trimeter to produce couplets in a 4:3 pattern. Given BINARITY, however, the metrical module cannot generate trimeter structures. The only possible analysis of an apparent trimeter line is as a metrical tetrameter, but with catalexis of a verse foot. The function of catalexis emerges in this picture as pragmatic, serving to enhance a prosodic boundary, which is why it is generally found in final position. This is consistent with the observation that final catalexis is incompatible with enjambment (catalectic lines are not run on). The reason that an analogous hypothetical 5:4 metre (alternating pentameter and tetrameter verse lines) is not attested is that a tetrameter line could not be interpreted as a pentameter with a catalectic verse foot. Such an interpretation would be harmonically bounded by a straightforward acatalectic tetrameter, depriving catalexis of its pragmatic effect.

The phonological and morphosyntactic acquisition of Swedish and French by simultaneously bilingual children

The development of nominal and determiner phrases at the age of 22-32 months

(Acquisition phonologique et morphosyntaxique du suédois et du français par des enfants bilingues simultanés. Le développement de phrases nominales et déterminatives à l'âge de 22-32 mois.)

Fanny Carlström Plaza

Abstract

The present study examines the development of determiner phrases (DPs) by 22-32 months old simultaneously bilingual (2L1) children in French and Swedish. It aims to observe the relation between phonological and morphosyntactic aspects during DP acquisition of the target languages and compare it with existing descriptions on monolingual (L1) children. The latest research on children's morphosyntactic acquisition suggests it is a bootstrapping process, where the first lexical productions are phonologically constrained and function words omitted due to lack of prosodic saliency.

It is debated whether children's first lexical units follow a universal prosodic template or the prosody of the target language. Data from 2L1 children in languages of different phonological structure might provide information, where a lexical template following phonological features of the target language would mean different lexical units for each language (trochaic structure in Swedish, accentual arc structure in French). The results indicate a similar phonological development as described for L1 children, except for code switching by 2L1 children. The DPs with a syllable length exceeding the prosodic competence of the child are truncated and the determiner omitted, where truncation patterns seem to rely on phonological properties of the target language, not on a universal prosodic unit.

Fedorova Ekaterina
Martin Kramer

Variable stress in Russian truncated adjectives and quality sensitivity

Stress in Russian is considered to be rather unpredictable: it is not fixed to a certain position in the word. Russian stress tends to vary within the same word, so even most native speakers are not sure where to put stress in a particular word.

The current project considers the position of stress in Russian truncated adjectives[1], i.e. either stress occurs on the stem or on the flexion of a particular word. There are some truncated adjectives which inherit the distribution of stress from the common (long) adjectives, but there are some cases where we observe variation. These two patterns are demonstrated in Table 1:

Table 1: Stress in Truncated Adjectives

Common adjectives	**Truncated adjectives**				**Gloss**
	Masculine	**Feminine**	**Neutral**	**Plural**	
1.krasívij	krasív	krasíva	krasívo	krasívi	‘handsome’
2.vídnij	víden	vídna/ vidná	vídno/ vidnó	vídni/ vidní	‘visible’

In Table 1, first adjective exhibits the same stress pattern in all the forms of the truncated adjective (in masculine, in feminine, in neutral, and in plural). The last adjective experiences variation, i.e. the stress can be either trochaic or iambic. So, which stress pattern is more common for the truncated adjectives in Russian?

This issue was investigated by Lavitskaya and Kabak (2014), Crosswhite (2003), and Nikolaeva (1971), among others. All the researchers conducted similar experiments, finding out the frequency of the both stress patterns [left-edged one and right-edged one]. Crosswhite (2003) and Nikolaeva (1971) concluded that Russian can be considered an iambic language, while Lavitskaya and Kabak (2014) claim that Russian is a trochaic language. So, there is two opposite conclusions we examined in our research.

We present the results of an experiment where 10 native speakers of Russian were asked to read a text (250 words) with 25 truncated adjectives. Stress patterns in the recordings were extracted and statistically analysed. In our data, the right edge of the adjectives was stressed more often than the left edge. Apart from position in the word, syllable quantity (heavy vs light syllables) and vowel quality were considered. While syllable weight proved to be irrelevant, vowel quality is: high vowels more frequently attract stress. In words with a high and a mid vowel, the high vowel is always stressed, regardless of its position in the word. In words with a low vowel, the low vowel is always stressed, whether it competes with a mid or a high vowel.

Quality-sensitive stress assignment gives preference to high sonority vowels (Kenstowicz 1997), i.e., in a form with vowels of various heights, the lowest attracts stress.

In our data, the high vowels, i.e., those with lowest sonority attract stress. Russian is thus quality-sensitive, but in a different way than previously observed quality-sensitive systems. Low vowels are preferred over high vowels, which are preferred over mid vowels as prominence peaks. This is schematically illustrated in (1).

(1) Quality-sensitive stress scales
  a. Sonority: Low > mid > high
  b. Russian: Low > high > mid

Stress assignment in Russian truncated adjectives provides evidence that shows that Kenstowicz’s account of quality-sensitive stress was too restrictive. A theory that maintains the Free Ranking Hypothesis (Prince & Smolensky 1993/2004) and doesn’t attribute quality-sensitivity to sonority only fares better in the analysis of the pattern contributed by Russian.

References

Crosswhite, K. 2003. Morphological Effects on Default Stress in Novel Russian Words. *The Cambridge Handbook of Phonology*. Cambridge: Cambridge University Press, 151-164.

Kenstowicz, M. 1997. Quality-sensitive stress. *Rivista di Linguistica* 9, 157-188.

Lavitskaya, Y., Kabak, B. 2014. Phonological Default in the Lexical Stress System of Russian: Evidence from Noun Declension. *Lingua* 150, 363 – 385.

Nikolaeva, T. 1971. Mesto Udarenija i Fonetičeskij Sostav Slova (Rasstanovka Udarenija v Neizvestnykh Slovakh Inostrannogo Proizkhoždenija)

[1] A form of adjectives that agrees with a noun in gender, number, and case, like a common adjective: *krasivij*-M.SG.NOM (common adjective) – *krasiv*-M.SG.NOM (truncated adjective) ‘handsome’

Some intonational properties of Chinese imperative discourse

Presentation by Guohua Hu, master student, Lund University

Previous studies of Chinese declarative intonation found an overall downtrend in declarative sentences with different tonal context (Shen 1985, Gårding 1987). Shih (2000) found a declination effect in sequences of H(igh) tones in decontextualized sentences beginning with a L(ow) and ending with the neutral tone (i.e. toneless e.g. the 了 –le aspect marker). There is no final lowering in this kind of toneless syllable due to the target H preceding the toneless ones. Note that only initial L and final toneless enclosing sequence H are tested in declarative sentences. Only declination being manifested might be questioned here.

Concerning Chinese imperative intonation, it was found that the boundary tone tends to raise the bottom line of the pitch range (Gao 2001) and that the duration of the focus tones concerning an absolute order is shortened (Shen 1995). However, only acoustic factors like pitch and duration were focused in their studies but nothing is mentioned about the relation between lexical tone and imperative intonation. There is also a lack of knowledge of the interplay between imperative grammar and intonation. Additionally, very little in the interaction between the local tone and the global imperative intonation has been based on natural speech flow.

The two properties of Chinese imperative in this study are 1) an inversion ordering OV in 把 bǎ with an L (e.g. 把面倒进碗里 bǎmiàn dàojìn wǎnlǐ, literal: bǎ-flour pour in bowl in, *idiomaticly*: *pour the flour into the bowl*) is often used in imperative and 2) a sentence-final mood (M) marker 吧 ba can also feature the imperative (e.g. 加面吧 jiāxiànba, literal: add flour M, *idiomaticly: add flour*). An interactive experiment was designed with 6 dyad (instructor-learner) groups in order to understand the properties of imperative intonation. The only data analyzed was that produced by the instructors. The sentences with 把 bǎ and 吧 ba were collected and normalized. Three kinds of intonational contours are found: escalation, concave and declination. An initial 把 bǎ will be manifested as an LH due to the following H, which performs escalation. Once the H precedes 把 bǎ it is realized as an L which also performs a global concave. Declination is only found in components where the final mood marker 吧 ba appears due to the preceding target H. This study points in the direction that contours may play a role in intonation.

A Feature Geometry account of glottalisation in Chichimeco

Anneliese Kelterer
Lund University

In this poster presentation, I describe the distribution of glottalisation in Chichimeco (Oto-Manguean, Mexico) and argue for a prosodic governing of laryngeal features. In particular, this concerns non-modal vowels and glottal, constricted and aspirated consonants. For this purpose, I analysed recordings I made in Mexico in spring 2017 as well as recordings enclosed in Lastra (2009a, 2016).

Descriptions of this language have been published since the 1930s but glottals and their distribution have not received the attention they deserve. Only recently, the first studies on breathy voice (Herrera 2014) and variation concerning glottals (Lastra 2009b, 2011) were published.

In my study, I found that glottal sounds occur in several positions in this language. Phonological breathy /V̤/ and creaky vowels /V̰/ only occur in the stressed syllable. The glottal stop /ʔ/ and the glottal fricative /h/, and constricted consonants /p' t' k' ʦ' ʧ'/ and aspirated consonants /pʰ tʰ kʰ/ occur syllable-initially in the stressed stem syllable. Furthermore, constricted consonants and the glottal stop can also occur syllable-finally in the stressed stem syllable. Nevertheless, in the examination of the co-occurrence of these sounds it becomes clear that they are related to each other in Chichimeco.

This relationship is illustrated in a morphonological pluralisation rule by which the initial stem consonant is glottalised, i.e. constricted or aspirated. Whether this consonant is constricted or aspirated is connected to the voice quality of the stem vowel. The allowed and disallowed patterns of this morphonological rule as well as of the co-occurrence of different glottals in general can be described in terms of Feature Geometry. A laryngeal feature [constricted glottis] is assumed for creaky vowels, constricted consonants and the glottal stop, and a laryngeal feature [spread glottis] for breathy vowels, aspirated consonants and the glottal fricative. Modal vowels, voiceless obstruents and voiced sonorants are unmarked. The Obligatory Contour Principle (OCP) can explain why certain combinations of glottal sounds do occur within the same syllable and why some combinations do not.

The established restrictions do not only refer to certain sounds but to syllable structure. Thus, glottalisation is a suprasegmental phenomenon in Chichimeco.

References:

Herrera Zendejas, Esther. 2014. *Mapa fónico de las lenguas mexicanas (Formas sonoras 1 y 2)*. Mexico City: Colegio de México

Lastra, Yolanda. 2009a. Toward a study of language variation and change in Jonaz Chichimec. In Standford & Preston (eds.). *Variation in Indigenous Minority Languages*. 153-171

Lastra, Yolanda. 2009b. *Vocabulario piloto chichimeco*. Mexico City: UNAM, Instituto de Investigaciones Antropológicas

Lastra, Yolanda. 2011. Dos cambios fonológicos en curso en Chichimeco. In Butrageño (ed.). *Realismo en el análisis de corpus orales*. 83-92

Lastra, Yolanda. 2016. *Chichimeco de Misión de Chichimecas, San Luis de la Paz, Guanajuato*. Mexico City: El Colegio de México

Poster presentation preferred

Effects of phonetic reduction on rapid automatized naming

L.B. Kristensen[a], F. Trecca[b], K. Tylén[b], R. Fusaroli[b], D. Bleses[b] , A. Højen[b] , C. Dideriksen[b], & M.H. Christiansen[b,c] ([a] *University of Copenhagen,* [b]*Aarhus University,* [c]*Cornell University)*

Danish is characterized by a high degree of phonetic reduction (Basbøll 2005, Schachtenhaufen 2013). The reduction tendencies are particularly evident when examining Danish-Norwegian cognates. While some cognates are unreduced in both languages (e.g. 'house' *hus*/*hus*), the Danish version of a cognate is often characterized by consonant lenition and schwa assimilation, e.g. Danish *kage* ('cake') vs. Norwegian *kake* ('cake'). In this study we ask how these differences affect phonological representation and lexical retrieval processes.

In dyslexia studies, the terms phonological overspecification (e.g. Serniclaes et al. 2004) and phonological underspecification (e.g. Elbro 1998) are used to account for differences in phonological representation between dyslexic and non-dyslexic groups. We extend the use of the terms to account for differences between non-dyslexic Danes and non-dyslexic Norwegians. We hypothesize that reduced word forms in Danish are either underspecified or overspecified in Danish speakers compared to the corresponding Norwegian unreduced word forms in Norwegian speakers. To assess these hypotheses, we examine differences in ease of lexical retrieval during rapid automatized naming (RAN). If the representation of a word is underspecified in Danish compared to Norwegian, Danish speakers will exhibit slower retrieval for reduced word forms. If overspecified, Danish speakers can be hypothesized to exhibit faster retrieval.

In the present study, we compare RAN for reduced vs. unreduced word form in Danish vs. Norwegian. Following a classic RAN procedure (Denckla & Rudel 1976), participants are initially instructed to use specific labels for naming five images. For instance, upon seeing an image of a cake, Danish participants are instructed to rapidly produce the word *kage* and Norwegian participants are instructed to produce the word *kake*. We measure the number of correctly named images, the duration from onset of stimuli presentation to the naming of the last image as well as the duration of pauses and variations in the pronunciation of words.

There are two versions of the test: one with Danish and one with Norwegian instructions. The pictorial stimuli are identical between the two versions. Each participant follows the RAN procedure five times, each time with a different stimulus set:

- Set 1: one-syllable words, usually pronounced without reduction or lenition (e.g. *hus*/*hus*)
- Set 2: one-syllable words, usually pronounced with lenition in Danish (e.g. *løg*/*løk*)
- Set 3: two-syllable words, usually pronounced without reduction or lenition (e.g. *banan*/*banan*)
- Set 4: two-syllable words, usually pronounced with schwa assimilation in Danish (e.g. *konge*/*konge*)
- Set 5: two-syllable words, usually pronounced with lenition and schwa assimilation Danish (e.g. *kage*/*kake*)

We expect to find differences in the production measures, where the two languages differ in the degree of reduction, i.e. set 2, 4 and 5. For the two control sets with no differences in lenition and/or schwa assimilation (set 1 and 3), we expect that Danes and Norwegians will perform equally well.

We will present pilot data from an initial mini study of native speakers of Danish where we compare the production measures for the five sets, before conducting the Norwegian part of the study. Our RAN study will be part of a larger test battery for comparison of phonological representation in Danish vs. Norwegian.

Reshufflings among Swedish fricatives

Tomas Riad
Stockholm University

Alveopalatal [ʂ], palatal [ɕ] and velar fricatives [x] occur in several dialects of Swedish. A typical system of Central Swedish will have three main allophones distributed over two phonemes, as in (1).

(1) System A

/ɕ/	[ɕ] ˈtjäna ‘earn’, ˈkikare ‘binoculars’, beˈkänna ‘confess’; kiˈnes ‘Chinese’
/ʂ/	[x] ˈskjuta ‘shoot’, ˈsjäl ‘soul’, beˈskänka ‘serve’; juˈstera ‘adjust’
	[ʂ] ˈdusch ‘shower’, gaˈrage ‘id.’, lunch ‘id.’
/r+s/	[ʂ] ˈmars ‘March’, föˈrsöka ‘try’, annars ‘otherwise’

/ɕ/ occurs prevocalically, most often as the onset of a stressed syllable.
/ʂ/ occurs prevocalically and postvocalically with allophonic variation realized as [x] (often annotated as [ɧ] indicating some labialization) prevocalically and [ʂ] postvocalically. Moreover, [ʂ] appears as the assimilation product of /r+s/ by a rule called Retroflection (also known as Apicalization or Supradentalization). The output thus neutralizes with /ʂ/ in postvocalic position but also occurs in prevocalic positions, and across morpheme and word boundaries (Riad 2014).

There is an ongoing change in this system, where the single allophone of /ɕ/ spreads to the contexts for the [ʂ] allophone/assimilation product, as in (2).

(2) System B

/ɕ/	[ɕ] ˈtjäna ‘earn’, ˈkikare ‘binoculars’, beˈkänna ‘confess’; kiˈnes ‘Chinese’
	[ɕ] ˈdusch ‘shower’, gaˈrage ‘id.’, lunch ‘id.’
/r+s/	[ɕ] ˈmars ‘March’, föˈrsöka ‘try’, annars ‘otherwise’
/ʂ/	[x] ˈskjuta ‘shoot’, ˈsjäl ‘soul’, beˈskänka ‘serve’; juˈstera ‘adjust’

The change thus happens in two cases:
1. [ɕ] takes over the postvocalic position from /ʂ/ in forms like *dusch* ‘shower’
2. [ɕ] takes over any position where Retroflection applies, i.e. in forms like *föˈrsöka*.

The new system (B) would best be described with the phonemes /ɕ/ and /x/.

The change appears also to be sensitive also at the lexical level. For instance, words that contain /ʂ/ that are spelled with <sc> like *crescendo* and *fascist*, appear to resist neutralization with /ɕ/.

Neutralizations among corresponding fricatives are well-known from Norwegian varieties, where, however, the allophone [x] is absent (Osnes 1992, Dalbakken 1996, 1997).

In my presentation, I describe this phenomenon in greater detail and look for explanations for why the neutralization takes the form it does.

A morphophonological account of main-clause initial tones in Swedish

Mikael Roll, Lund University

This presentation proposes a new account of Roll's (2006) generalization that Central Swedish main clauses have a high (H) tone in the last syllable of their first prosodic word (1), which is absent in subordinate clauses. We suggest that the main clause-initial H might be a morphophonemic tone on a par with accent 2 (cf. Riad, 2012), specifically a floating tone phonologically realizing the C morpheme, a syntactic head sometimes realized as a complementizer. The main clause H is similar to a focal H (Bruce, 1977) in that it follows the word accent fall, but it occurs later than the focal H. It would even seem as if the tone "avoided" the focus-giving position in the stressed syllable. A major advantage of the present analysis compared to previous accounts of Roll's generalization in terms of a "left-edge boundary tone" (Roll, Horne, & Lindgren, 2009) or "initiality accent" (Myrberg, 2010; Myrberg & Riad, 2015) is that it does not imply obligatory correspondence between a syntactic main clause and a prosodic phrase at any level (Selkirk, 1984). The morphophonological hypothesis makes no direct reference to prosodic structure, but rather expands on an already well-known morpheme-tone association in Swedish. The hypothesis explains why a late-timed H is possible in *Gunnar* in (1) but not in (2) (Roll & Horne, 2011). In (1) Gunnar receives the H from C. In (2), *Gunnar* is not in CP. Another possible explanation could be that the late-timed, main clause-initial H is a presupposition-marking accent (cf. Horne, Hansson, Bruce, & Frid, 2001). However, presupposed information not expressed in CP (Petersson, 2014) does not allow a late H (4). The hypothesis can be tested on cases where there is not a complete CP as in small clauses like (5). These clauses should not admit a late H, which seems to be the case. This needs further research.

H

(1) [$_{CP}$ Harry slog Peter] och [$_{CP}$ Gunnar föll i andra ronden]
Harry hit Peter and Gunnar fell in the-second round

*H

(2) [$_{CP}$ Harry slog Peter och Gunnar hårt i andra ronden]
Harry hit Peter and Gunnar hard in the-second round

H

(3) [$_{CP}$ Harry slog Peter] men [$_{CP}$ kommer [$_{TP}$ Gunnar till andra ronden]]?
Harry hit Peter but comes Gunnar to the-second round?

*H

(4) som [$_{TP}$ Gunnar grisar ner sig!]
how Gunnar gets dirty!

*H

(5) Jag såg [$_{SC}$ Gunnar slå Harry]
I saw Gunnar hit Harry

All cases (1-5) admit a focal accent. This further indicates that the late initial H is not information structure-related. Thus, multiple foci are common in "all-new" sentences. A main-clause initial focal accent weaker than the nuclear accent is thus not unusual (Jackendoff, 1972).

References

Bruce, G. (1977). *Swedish word accents in sentence perspective*. Lund: Gleerups.
Horne, M., Hansson, P., Bruce, G., & Frid, J. (2001). Accent Patterning on Domain-Related Information in Swedish Travel Dialogues. *International Journal of Speech Technology, 4*(2), 93-102.
Jackendoff, R. (1972). *Semantic interpretation in generative grammar*. Cambridge, Mass.: MIT Press.
Myrberg, S. (2010). *The intonational phonology of Stockholm Swedish.* (Ph.D.), Stockholm University, Stockholm.
Myrberg, S., & Riad, T. (2015). The prosodic hierarchy of Swedish. *Nordic Journal of Linguistics, 38*(2).
Petersson, D. (2014). *The highest force hypothesis: Subordination in Swedish.* (Ph.D.), Lund University, Lund.
Riad, T. (2012). Culminativity, stress and tone accent in Central Swedish. *Lingua, 122*(13), 1352-1379.
Roll, M. (2006). Prosodic cues to the syntactic structure of subordinate clauses in Swedish. In G. Bruce & M. Horne (Eds.), *Nordic Prosody IX* (pp. 295-204): Peter Lang.
Roll, M., & Horne, M. (2011). Interaction of right- and left-edge prosodic boundaries in syntactic parsing. *Brain Research, 1402*, 93-100.
Roll, M., Horne, M., & Lindgren, M. (2009). Left-edge boundary tone and main clause verb effects on syntactic processing in embedded clauses—An ERP study. *Journal of Neurolinguistics, 22*(1), 55-73.
Selkirk, E. (1984). *Phonology and syntax. The relation between sound and structure*. Cambridge, Mass.: MIT Press.

Vietnamese tones in the syllable /*la*/ in the North and South and tones in Vietnamese reduplications

Vi Thanh Son

ABSTRACT

The paper provides a description and a small investigation of the Vietnamese tonal system in different dialects in which six Vietnamese tones and tones in reduplications contribute to lexical function and tone harmony. The aim of the study is to further understand the tonal system in Vietnamese as well as the usages of tone registers in different patterns of Vietnamese reduplications. It also aims to analyze the similarities and differences in Northern and Southern Vietnamese tones in the syllable /*la*/ and the prominent syllable in reduplicative disyllables. The passage including six tones in /*la*/ and some reduplicative words created by the author was recorded by two Vietnamese males in Northern (NVN) and Southern (SVN) dialects. The analysis made use of Praat to see different prosodic elements; typically pitch contour/level, duration, intensity and voice quality (creak and modal voice) in six tones of */la*/ and the prosodic prominence with a tone in the stressed syllable and tone registers in reduplicative disyllables. The results show that the falling *huyền*, the rising *sắc* and the level *ngang* tones are similar in Northern and Southern dialects regarding pitch contour, intensity and duration. They are mostly different in the tones *nặng, hỏi* and *ngã.* Regarding voice quality, in both NVN and SVN *sắc* tone is creaky while *ngã* tone is modal. However, they are different in *nặng, ngang and huyền* tones in which all three are slightly creaky in NVN but modal in SVN. One typical difference is that *hỏi* and *ngã* in SVN have merged into one tone with falling-rising contour. Moreover, the full and partial reduplicative words that create the meaning, being that of "intensification" or "attenuation" (Nguyen, 1997, p. 45), are tied with the tone harmony following strict rules on the tone registers (upper and lower), even though *hỏi* and *ngã* tones in SVN are spoken the same way. Additionally, it reveals that prosodic prominence is mostly on the second syllable in full reduplicative disyllables. Meanwhile, the prominence is on the syllable with high rising tones in partial reduplicative disyllables and in those cases they are the base. The prominence pattern found in the data is similar in both dialects. The analysis in the tonal system in NVN and SVN will, hopefully, further our understanding not only of how tones vary in Vietnamese dialects but also of how they relate to each other in Vietnamese reduplication disyllables within the phonological tonal system.

(For consideration as poster presentation)

Using non-word repetition to investigate the nature of phonological representations in adult speakers of Danish and Norwegian

F. Trecca[a], L.B. Kristensen[b], K. Tylén[a], R. Fusaroli[a], D. Bleses[a], A. Højen[a], C. Dideriksen[a], & M.H. Christiansen[a,c]
[a]*Aarhus University,* [b]*University of Copenhagen,* [c]*Cornell University*

It is widely acknowledged that Danish has an unusually opaque phonetic structure, which results from pervasive processes of segmental and syllabic reduction in both casual and distinct speech (Basbøll, 2005; Grønnum, 2003). One consequence of these reductions phenomena is a larger phonetic variability for words in Danish speech (e.g., the verb *(jeg) badede*, '(I) bathed', can be realized as [ˌbaːðəðə], [ˌbaːðəð], [ˌbaːðː], [ˌbaːðəd̥ə], [ˌbaːðəd̥], or [baːðd̥]) compared to other closely related languages (e.g., [ˌbɑːd̥ət] or [ˌbɑːd̥ɑ] in Norwegian; Bleses, Basbøll, & Vach, 2011).

Research has suggested that such phonetic opacity causes Danish-learning children to lag behind in early lexical and morphological development, compared to children learning other European and North-American languages (Bleses et al., 2008). However, little is known about whether the difficulties associated with the early acquisition of Danish have negative consequences for adult communication in Danish. In particular, it is an open empirical question whether the phonetic opacity of Danish speech may affect the nature of phonological representations in adult speakers of Danish, for instance their level of specification (e.g., Wheeldon & Waksler, 2004). One possibility is that phonological representations in Danish may be either less specified (*one-fits-many*) or more specified (multiple representations for each realization of a word) than in closely related languages, e.g. Norwegian. This would allow speakers of Danish to accommodate the recognition of more varied realizations of a single word in speech.

In this study, we use a Non-word Repetition Task (e.g., Vitevich & Luce, 1998) with adult speakers of Danish and Norwegian, in order to measure their ability to form novel phonological representation and to use these as the basis of articulation in production. The ability to repeat orally presented non-words closely matches the phonological component of word learning (e.g., Coady & Evans, 2008), and it can provide a good indication of the degree of specification of phonological representations. In the task, the participants are presented auditorily with a number of nonsense words varying between a minimum of three syllables (e.g., /taløjtɛk/) and a maximum of seven syllables (e.g., /hɔːbrom^{ʔ}trɛkspɛkman^{ʔ}venfɛr^{ʔ}/). The words are generated by combining phonological syllables (derived from phonologically-transcribed corpora of spoken Danish and Norwegian) in random order. The non-words are then compared to a dictionary of Danish and Norwegian, in order to exclude phonological neighbors among real words. The participants listen to and rapidly repeat each non-word, one by one, and are assessed on both accuracy and speed.

We predict that differences in the level of specification of phonological representations in Danish and Norwegian will be reflected in differences in performance across the two language groups. For instance, if Danes generally under-specify phonological representations of words (relative to Norwegians) we would observe lower performance of Danes. However, if Danes over-specify phonological representations of words, we would observe higher performance. Here, we will present preliminary results from a pilot version of the study based on native speakers of Danish only, before testing the Norwegian participants in the second stage of the study. Already in this within-language investigation we expect to see significant effects on performance, for instance as a function of (a) the degree to which different non-words can be phonetically reduced in Danish speech, and (b) the length of the non-words in syllables (we expect to observe stronger effects for longer words).