

Phonetics in phonology, typological markedness and knowledge of grammar

Office Hours	TBA & by appointment
E-mail	jongho@snu.ac.kr
Phone	880-6169

Prerequisite: an introductory graduate-level phonology course (& at least basic knowledge of Optimality Theory)

Description & Goals

It is a general assumption among phonologists that people have knowledge of abstract linguistic regularities. In pre-OT theories, such regularities are stored in the form of *rules*. In OT, rules are replaced with *markedness constraints* which are argued to be innate and universal. Linguistic universals, i.e., regularities attested across languages, are attributed to the *universal* markedness constraints.

There are several recent theories which do not agree with OT about how to explain speakers' knowledge of their language and language universals. Controversies can be summarized as the debates of mind vs. body and nature vs. nurture. Specifically, we will address the following questions ((i-iii) and (iv-v) can be subsumed under the "mind vs. body" and "nature vs. nurture" debates, respectively):

- (i) What is the role of phonetics in phonology?
- (ii) Is the influence of phonetics on phonology direct or indirect?
- (iii) Which of the two, phonetics or phonology, is more responsible for patterns of loanword adaptation and non-native sequence production/perception?
- (iv) What is the origin of speakers' knowledge of their language, (possibly innate) universal grammatical restrictions on language structure or language-specific linguistic experience?
- (v) Are language universals due to cognitive bias (analytic bias in Moreton's terminology) or systematic phonetic errors in transmission (channel bias)?

In seeking answers to these questions, the following competing theories will be discussed.

1. Optimality Theory (OT): Markedness is a main part of the grammar. Phonetics influences phonological grammar, only indirectly.
2. Phonetically-based Phonology (PBP): Markedness is a main part of the grammar. Phonetics influences phonological grammar, more directly (phonetic optimization).
3. Evolutionary Phonology: Markedness is not part of the grammar. Typological universals are the result of historical sound changes (no phonetic optimization).

In the first half of the course, I will focus on the discussion of PBP while comparing it to standard OT and Evolutionary Phonology. In the latter half of the course, I will mostly discuss (psycho-linguistic) experimental studies which have been carried out to explore issues, presented above as questions.

Tentative Class Schedule (PBP = Hayes, Kirchner and Steriade eds. (2004))

Week	Topics & readings
1. Sept 3	Phonetic functionalism
2. Sept 10	Introduction to PBOT: Hayes (1997/1999*), Hayes & Steriade (PBP*)
3. Sept 17	Perception: Steriade (1997/1999, 2001, 2009*)
4. Sept 24	Wright (PBP*), Jun (PBP*), Kochetov & So (2007), Kaun (PBP*: ㄴ-)
5. Oct 1	Articulation: Kirchner (PBP*); Flemming (PBP*)
6. Oct 8	{Zhang (PBP), Gordon (PBP)}*, Kawahara (2006*)
7. Oct 15	Inferred input: {Jun (2002 ms), Flemming (2008 ms)}*
8. Oct 22	no class
9. Oct 29	Evolutionary Phonology: Blevin & Garrett (PBP*), Hale & Reiss (2000*)
10. Nov 5	Non-native sound (sequence): Dupoux et al. (1999*), Kabak & Idsardi (2007*), Davidson (2006*, 2007)
11. Nov 12	Berent et al. (2007*), Berent et al. (2008), Berent et al. (2009*)
12. Nov 19	Paradis & La Charite (1997), Peperkamp & Dupoux (2003), Peperkamp et al. (2008*)
13. Nov 26	Hayes & Wilson (2007*), Albright (2007*)
14. Dec 3	Artificial language learning: Moreton (2006*), Wilson (2006*), Zuraw (2007) Summary & conclusion
15. Dec 10	Term-paper Presentation

Readings

Required readings	A single copy of PBP papers and other papers which cannot be downloaded from the library or authors' website will be put in the reserve box. You must xerox and return it quickly for other students.
Optimality Theory	Kager, René (1999) <i>Optimality Theory</i> . Cambridge University Press.
Phonetics	Ladefoged, Peter (2006) <i>A course in Phonetics</i> . Thomson/Wadsworth. Johnson, Keith (2003) <i>Acoustic and Auditory Phonetics</i> . 2 nd ed. Blackwell.

Requirements

- Readings and class participation
- Lead discussion of one paper in the reading list
- Abstract writing: Berent et al. (2007)
- A final term paper and its presentation

Final Term paper

- Select topic and meet with me by Oct 30.
- Submit a one-page progress report by Nov 19.
- Paper Presentation: Dec 10
- Paper Due: Dec 14

Bibliography

- ✓ Papers in Hayes, Kirchner and Steriade eds. (2004) *Phonetically Based Phonology*. Cambridge University Press.
- Albright, Adam (2007) Natural classes are not enough: Biased generalization in novel onset clusters. Ms, MIT.
- Berent, I; D. Steriade; T. Lennertz, and V. Vaknin (2007) What we know about what we have never heard: evidence from perceptual illusion. *Cognition* **104**.
(Peperkamp, Sharon (2007) Do we have innate knowledge about phonological markedness? Comments on Berent, Steriade, Lennertz, and Vaknin, *Cognition* 104, 631-637.)
(Berent, Iris and Tracy Lennertz (2007) What we know about what we have never heard before: Beyond phonetics, Reply to Peperkamp, *Cognition* 104, 638-643.)
- Berent, Iris, Tracy Lennertz, Jongho Jun, Miguel A. Moreno, and Paul Smolensky (2008) Language universals in human brains. In *PNAS* 105.14: 5321-5325.
- Berent, Iris, Tracy Lennertz, Paul Smolensky & Vered Vaknin-Nusbaum (2009) Listeners' knowledge of phonological universals: evidence from nasal clusters. *Phonology* 26.1, 75-108.
- Blevins, Juliette (2004) *Evolutionary Phonology: The emergence of sound patterns*. Cambridge University Press.
- Bybee, J. (2001) *Phonology and language use*. Cambridge: Cambridge University Press.
- Bybee, J. (2006) From usage to grammar: the mind's response to repetition. *Language*. 82.4.
- Davidson, Lisa (2006) Phonology, phonetics, or frequency: influences on the production of non-native sequences. *Journal of Phonetics* 34: 104-137.
- Davidson, Lisa. (2007) The relationship between the perception of non-native phonotactics and loanword adaptation. *Phonology*.
- Dupoux, E., Kakehi, K., Hirose, Y., Pallier, C., & Mehler, J. (1999). Epenthetic vowels in Japanese: A perceptual illusion?. *Journal of Experimental Psychology: Human Perception and Performance* 25, 1568–1578.
- Flemming, Edward (2008) The realized input. Ms, MIT.
- Hale, M. and C. Reiss (2000) Substance Abuse and Dysfunctionalism: Current Trends in Phonology. *LI* 31.1. (also, ROA-317)
- Hayes, Bruce (1999) Phonetically-driven phonology: the role of Optimality Theory and inductive grounding. In Michael Darnell, Edith Moravcsik, Michael Noonan, Frederick Newmeyer, and Kathleen Wheatly (eds.), *Functionalism and formalism in linguistics, volume I: general papers*. Amsterdam: John Benjamins, 243-85.
- Hayes, Bruce & Colin Wilson (2007) A maximum entropy model of phonotactics and phonotactic learning. *LI*.
- Johnson, K. (1997) Speech perception without speaker normalization. K. Johnson & J. W. Mullennix (eds.), *Talker variability in speech processing*, San Diego, California, Academic Press, 145-165.
- Jun, Jongho (2002) Positional faithfulness, sympathy and inferred input. Ms. (<http://ling.snu.ac.kr/jun/>)
- Kabak, Baris and William Idsardi (2007) Perceptual distortions in the adaptation of English consonant clusters: syllable structure or consonantal contact constraints?, *Language and Speech* 5.1, 23-52.
- Kawahara, S. (2006) A faithfulness ranking projected from a perceptibility scale: the case of [+voice] in Japanese. *Language* 82.3.
- Kochetov, Alexei & Connie K. So (2007) Place assimilation and phonetic grounding: a cross-linguistic perceptual study. *Phonology* 24.3.
- Löfstedt, Ingvar (?) Allomorphy as optimization of perceptual salience: the Swedish non-neuter singular definite article. Ms, UCLA.
- Moreton, Elliott. (2002) Structural constraints in the perception of English stop-sonorant clusters.

Cognition, 84, 55–71.

- Moreton, Elliott (2006) Phonotactic learning and phonological typology. Handout presented at NELS 37.
- Moreton, Elliott (2008) Analytic bias and phonological typology. *Phonology* 25.1.
- Paradis, Carole & Darlene LaCharite (1997) Preservation and minimality in loanword adaptation. *JL* 33, 379-430.
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- Steriade, Donca (1999) Phonetics in phonology: the case of laryngeal neutralization. In Matthew Gordon (ed.), *Papers in Phonology 3*. (UCLA Working Papers in Linguistics 2) Los Angeles: Department of Linguistics, UCLA, 25-146).
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- Wilson, Colin (2006) Learning phonology with substantive bias: An experimental and computational study of velar palatalization. *Cognitive science* 30, 945-82.
- Zuraw, Kie (2007) The role of phonetic knowledge in phonological patterning: Corpus and survey evidence from Tagalog infixation. *Language* 83.2, 277-316.