



Centrum pro studium člověka a společnosti a Fonetický ústav FF UK srdečně zvou všechny zájemce
na dvě přednášky v rámci semináře

Learning and adaptation in first- and second-language speech

Přednášející

prof. Paul Boersma a dr. Silke Hamann, University of Amsterdam:

prof. dr. Paul Boersma

„Phonological category
emergence in deep bidirectional
neural networks“

dr. Silke Hamann

„The help and hindrance of
orthography in second-
language acquisition“

24.4. 15:00 – 16:30

25.4. 17:00 – 18:30

Šporkův palác, **Hybernská 3**, místnost **H303** (podkroví)



Abstrakty:

Paul Boersma
(University of Amsterdam)

Phonological category emergence in deep bidirectional neural networks

Deep Boltzmann Machines are artificial neural networks, known from deep learning technology, in which information can flow bottom-up as well as top-down along the same connections, i.e. they are bidirectional. We show that this type of network is capable of simulating bottom-up phonological category creation. For instance, when the network listens to many tokens of the five Czech vowels, without being told that Czech has five vowels or which token belongs to which vowel category, the network will figure out that Czech has five vowels. Moreover, the network will be able to recognize each vowel token that it hears as the appropriate vowel category, and after having been told the “meaning” of each vowel the network will also pronounce each meaning correctly. As another example, the network will figure out that Polish has three sibilant places of articulation. This type of network therefore replicates the results found with competitive networks by Boersma, Benders & Seinhorst (2013) and Chládková (2014). One of the advantages of Deep Boltzmann Machines is that we can perform our simulations 100 times faster. Other differences between the approaches are subject to discussion.

Silke Hamann
(University of Amsterdam)

The help and hindrance of orthography in second-language acquisition

Several experimental studies on second-language acquisition have shown that learners can create a phonemic distinction in their L2 with the help of orthography (see e.g. Escudero & Wanrooij 2010). In this talk, I will discuss two cases of such orthographic influences on the L2, and provide formalizations of both with the help of a *reading grammar* (Hamann & Columbo 2017). The first case is the acquisition of Portuguese rhotics by Mandarin native learners, where L2 orthography supports the learners’ distinction between /r/ and /l/ in the L2 (collaboration with Chao Zhou). In the second case, Italian native speakers of English create an intervocalic contrast between singleton and geminate obstruents in their L2 on the basis of their L1 orthography (Bassetti 2017), even though geminates do not exist in English.