The evolution of phonotactic distributions in the lexicon
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In this talk I discuss how the simplest possible parallel five-level model of phonology and phonetics (Boersma 2005, Apoussidou 2006) already predicts four sources of phonological skewings in the lexicon:

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  'Meaning'                                      lexical constraints
    |Underlying Form|                                    faithfulness constraints
      |Surface Form|                                        structural constraints
        |Auditory Form|                              cue constraints
          |Articulatory Form|                    sensorimotor constraints
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One of the four sources of skewings involves the listener, whose first task it is to convert the raw incoming auditory-phonetic form into the discrete abstract phonological surface form. Especially during the acquisition of perception, but also when encountering novel vocabulary, multiple auditorily similar sounds will tend to be classified as the same phonological element. Computer simulations show that this bias is self-reinforcing, because learners cannot help phonologizing this bias into language-specific structural constraints.

That is probably the most familiar source of lexical skewings. The three remaining sources predicted by the parallel five-level model involve the speaker.

In order to see how the speaker can influence the contents of the lexicon, we first have to distinguish five levels of representation: the meaning of a morpheme in the lexicon, the underlying phonological form in the lexicon, the phonological surface form, the auditory-phonetic form, and the articulatory-phonetic form. Also, we have to assume that all these levels are connected with constraints, as in the figure. In this way, meaning is linked to the articulatory form by a chain of four kinds of constraints.

The final crucial assumption is that the speaker starts from a fixed intended meaning and chooses an optimal articulation on the basis of all constraints mentioned. In this choice, then, the speaker takes into account a globally intertwined set of lexical, faithfulness, cue, and sensorimotor constraints. In this way, the speaker manages to find the most optimal path from meaning to articulation, creating the three intermediate representations on the fly. Most crucially, the underlying form is just one of the three intermediate levels of representation that are activated when speaking (Apoussidou 2006). In other words, the underlying form is not the speaker's input; instead, the speaker chooses the underlying form partly on the basis of how well such
an underlying form can be made to satisfy the constraints that link it to the levels below.

The parallel five-level model of phonology and phonetics thus allows lexical selection on the fly, influenced by considerations at lower levels of representation. This is where the three speaker-based sources of lexical skewings arise. In production, cue constraints are satisfied best if the chosen auditory-surface pair have an unambiguous relationship; this leads the parallel-multi-level speaker to select underlying forms that correspond to salient auditory cues. Likewise, articulatory constraints are satisfied best if the chosen articulation is easiest; this leads the parallel-multi-level speaker to select underlying forms that link to easy articulations. Third, sensorimotor constraints are satisfied best if the chosen articulatory-auditory pair are unambiguously related; this leads the parallel-multi-level speaker to select underlying forms that link to articulations with predictable auditory results as well as to sounds that represent unambiguous articulations.

Over the generations, the four biases mentioned will give rise to a small lexical selection pressure, which will slowly but with certainty lead to observable skewings in the lexicon. I will give a typology of attested lexical skewings in terms of these four sources, and ask the audience and myself if there are more.