

Investigating Syntax-Prosody in Optimality Theory (SPOT)

<https://spot.sites.ucsc.edu/>

Jennifer Bellik, Richard Bibbs, Junko Ito, Nick Kalivoda, Armin Mester, Nick Van Handel
University of California, Santa Cruz

A sentence's prosody imperfectly mirrors its syntax. Phonological phrases tend to “match” syntactic phrases, but sometimes there are mismatches. For example, in the well-known mismatch in Japanese (Kubozono 1989; see also Dobashi 2003; Shinya et al. 2004; Ito and Mester 2013; Ishihara 2014), a uniformly left-branching four-word syntactic phrase is rebracketed into a symmetrically-branching phonological phrase:

$$[XP [XP [XP [XP \alpha] \beta] \gamma] \delta] \rightarrow (\varphi(\varphi \alpha \beta) (\varphi \gamma \delta))$$

Only the outermost syntactic phrase is matched in the prosody; the other two prosodic phrases do not correspond to any syntactic constituent. In the framework of Optimality Theory (Prince & Smolensky 2004), such mismatches can be understood to reflect the competition between mapping constraints (Match constraints [Selkirk 2011] or Align/Wrap constraints [Truckenbrodt 1995, 1999]) and constraints on prosodic well-formedness, which favor prosodic constituents that are equally sized, binary-branching, etc. However, OT also demands that the analysis consider all the possible prosodic structures, and evaluate and compare each of them. This is impossible to do manually, but can be done easily by a computer, using a tool we have developed—the SPOT App (Bellik, Bellik & Kalivoda 2014-19).

In this talk, we demonstrate how to use the SPOT application, and illustrate its ability to advance analyses of the imperfect mapping from syntax to prosody in several languages. SPOT's graphical user interface makes it easy to create, view and download a violation tableau, which can then be manipulated using other tools such as OTWorkplace (Prince, Merchant, and Tesar 2018). We will demonstrate how to use SPOT to automatically generate and evaluate prosodic candidates, as well as compare and develop theories, by walking through a case study of four-word phrases in Japanese. We also present a comparison of the interaction between phrasal phonology and the pitch accent systems of Japanese and Basque, and an OT system that includes both languages. This study highlights how the tonal diagnostics underdetermine phonological phrasing; SPOT's automatic candidate generation reveals candidates that are likely to be overlooked without such a tool.

Two further case studies illustrate SPOT's application to syntax-prosody problems in other languages. Italian is shown to have recursive phonological phrases, which can be analyzed in Match Theory if only XPs with phonologically overt heads are matched. Finally, the position of weak pronouns in Chamorro is captured with a generalized ALIGN constraint combined with Match Theory and STRONGSTART (Selkirk 2011).

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