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The Syntax-Prosody Interface: An Interview with Emily Elfner

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ReVEL – We would like to start by approaching two different models within the syntax-prosody interface field: Match Theory, which assumes Optimality Theory principles, and ideas from the work of Nespor & Vogel (1986)². Your dissertation, “Syntax-prosody interactions in Irish”, published in 2012, uses the Match Theory as a theoretical background. Can you introduce this model to our readers? What are the differences between this approach and the one from Nespor & Vogel (1986), for example?

EMILY ELFNER – Match Theory (Selkirk 2011) is a theory of the syntax-phonology interface which proposes that syntactic constituents of different types (namely, syntactic clauses, syntactic phrases, and syntactic words) systematically correspond to certain prosodic constituents in the prosodic hierarchy. For example, a syntactic clause (CP or ForceP) corresponds to an Intonational Phrase (ι or IPh), a syntactic phrase (XP or XMax) corresponds to a Phonological Phrase (φ or PPh), and a syntactic word (Xo) corresponds to a Prosodic Word (ω or PWd). In Selkirk’s original 2011 proposal, this correspondence is governed by three OT-style constraints called Match constraints, one for each syntactic constituent type: Match-Clause, Match-Phrase, and Match-Word. On their own, these constraints call for a one-to-one or direct mapping between hierarchical syntactic structure and prosodic structure, organized into the prosodic hierarchy. In particular, the prosodic structure produced

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² Nespor M, Vogel I. 1986. *Prosodic Phonology*. Dordrecht, Neth.: Foris

using Match constraints is recursive, mimicking the nesting of words, phrases and clauses found in syntactic structure. The main difference between the hierarchical syntactic structure and the corresponding prosodic structure is that syntactic category labels are not deemed to be relevant to the prosody. For example, at the phrase level, the DPs, NPs, and PPs are distinct types of syntactic phrases, but each of these would be mapped to phonological phrases (ϕ) in the prosodic structure, reflecting prosodic phrasing rather than syntactic detail.

Since OT constraints are violable, these Match constraints can be ranked with respect to other types of constraints, such as prosodic markedness or well-formedness constraints. These constraints govern aspects of prosodic structure such as binarity and other types of eurhythmic constraints. This means that, like earlier theories of the syntax-prosody interface (such as that proposed by Nespor & Vogel 1986), the mapping between syntactic and prosodic structure is assumed to be imperfect, leading to (potential) mismatches between syntactic structure and prosodic phrasing. However, in Match Theory there is an implicit assumption that the mapping between syntactic and prosodic structure is overall more direct than in earlier approaches, including the model proposed by Nespor and Vogel. This makes Match Theory particularly interesting from the perspective of syntactic theory, because if syntactic and prosodic structure are more closely related than we previously thought, then prosody can itself be used as a diagnostic for syntactic constituent structure.

The model proposed in the book *Prosodic Phonology* by Nespor and Vogel (1986) is part of a more general approach to prosodic phrasing developed in the 1980s called the Strict Layer Hypothesis, and which also builds off work such as Selkirk (1986) and Pierrehumbert and Beckman (1988). One of the main differences between Match Theory and the Strict Layer Hypothesis is that the Strict Layer Hypothesis requires that prosodic structure be fundamentally non-recursive (resulting in a less faithful mapping from syntactic structure), while Match Theory proposes that prosodic structure is by default recursive (resulting from a more faithful mapping from the syntax). This leads to different predictions about how closely syntactic and prosodic structure correspond to one another.

ReVEL – Still on your dissertation, you studied Conamara, an Irish dialect. What motivated the study of such a dialect? How can the study of different languages advance our understanding of the syntax-prosody interface?

EMILY ELFNER – My interest in Irish prosody, and specifically Conamara (or Connemara) Irish began while I was starting my PhD studies at the University of Massachusetts Amherst. While I already had a general interest in prosodic phonology, I had developed an interest in the syntax-phonology interface as a result of coursework and discussions with two professors in particular, Elisabeth Selkirk and Kyle Johnson, and I was especially interested in finding concrete examples of languages where prosody appeared to affect word order. This eventually led me to the phenomenon of pronoun postposing in Goidelic Celtic languages (Irish and Scottish Gaelic), drawing on theoretical analyses such as Chung and McCloskey (1987), Adger (1997), and McCloskey (1999). Pronoun postposing is a process which occurs in Irish and Scottish Gaelic which involves the displacement of weak object pronouns from sentence-medial to sentence-final position, and which seems to have no effect on interpretation or information structure. Since the process targets phonologically weak words (non-pronouns stay in situ), the displacement of the pronoun is arguably motivated by prosodic rather than syntactic factors.

I initially developed a prosodic analysis of pronoun postposing for one of my Generals Papers, which eventually led to a collaboration with Jim McCloskey and Ryan Bennett at UC Santa Cruz, who were also interested in investigating the syntax-prosody interface in Irish. This resulted in a co-authored publication on pronoun postposing in Irish (Bennett et al. 2016), where we developed a Match Theory analysis of this phenomenon. However, during that time, I was also developing the proposal for my PhD dissertation. I was interested in further investigating the prosodic motivation for pronoun postposing, which led to a general interest in studying prosody and more specifically, prosodic phrasing, in Irish.

Irish seemed like an ideal language in which to study prosodic phrasing and the syntax-prosody interface, because while there was little existing work on sentence-level prosody, the syntax of the language was relatively well understood

from a theoretical perspective, due primarily to the work of Jim McCloskey. Since my interest was primarily phonological and interface-related, I was able to dive into my study of prosodic phrasing and syntax-prosody mapping with a good understanding of the syntax of the language already established, meaning that I was able to test interesting theoretical questions at the interface right away. This was important because Irish is in many other ways an understudied and endangered language.

The decision to focus on Connemara Irish in particular was partly due to the availability of native speakers with whom I could work with. During the initial phases of my research, I had worked closely with a native Irish speaker who lived in Boston, who was originally from a village west of Galway in the Connemara region of Ireland. I had also visited this region to study Irish, and later, during my fieldwork trips to Ireland, recruited speakers based on contacts in Galway and Carraroe (a village in western Ireland). Almost all of the speakers that I was able to recruit for my study were speakers of the Connemara dialect, so it made sense to focus on that dialect for my analysis. This was also convenient as the other two major dialects of Irish, northern (Donegal) and southern (Munster), are quite distinctive in terms of their prosody compared to Connemara Irish, so studying them as well would have greatly increased the scope of the project.

ReVEL – What are the biggest theoretical and methodological challenges faced by researchers interested in the study of the syntax-prosody interface?

EMILY ELFNER – At the theoretical level, I would say that the biggest challenge, especially for students or researchers who are just beginning to work in this area, is that the mastery of the literature and relevant theories can be daunting. The syntax-prosody interface, by its nature, interfaces with almost every other sub-field of linguistics: phonetics, phonology, syntax, semantics/pragmatics, information structure, and sentence processing are all involved in determining how prosodic phrasing, prominence, and other aspects of prosody are realized. This means that researchers need to have some understanding of the literature, theories, and methodologies in each of these sub-fields. In addition, the syntax-prosody interface

itself has numerous complex theoretical debates that have evolved over the years. For example, researchers have debated whether the prosodic hierarchy is even necessary to understand prosodic phenomena. In recent years, proposals like Match Theory have addressed some of these questions in a new way. All this being said, it can be challenging to become immersed in the literature on the syntax-prosody interface, but it can be quite rewarding once you get there, as it is fascinating to see how prosody can be affected by so many interacting factors.

At the methodological level, it can be challenging to collect the type of data that is needed to test out theoretical questions. On the one hand, like much work in laboratory phonology and phonetics, minimal pairs of recorded utterances elicited under controlled conditions is crucial for answering specific questions. This type of data is best collected in a lab-type setting or during traditional fieldwork elicitation settings, often using tasks where participants are asked to read or translate sentences. On the other hand, sentence-level prosody and intonation are natural parts of speech which best emerge in natural, spontaneous and unscripted speech. Read or elicited speech, while it has its uses, can also run the risk of losing some of the naturalness of spontaneous speech. However, the prosody of spontaneous speech can be difficult to study from a methodological perspective because it does not control for properties of speech like syntactic structure, information structure, word-level prominence, or even the segmental content of the words themselves, which can each have an effect on the phonetics and phonology of prosody. So spontaneous speech can be difficult to analyze without a prior understanding of the prosodic system of a language, which comes from careful analysis of minimal pairs. Some researchers have addressed these methodological issues by developing innovative methodologies to study prosody, such as tasks involving controlled discourse (such as map tasks, Anderson et al. 1991) or semi-scripted speech (such as describing a picture). An interesting discussion of some of these issues in endangered languages can be found in Caldecott and Koch (2014).

One consequence of these theoretical and methodological challenges is that the best-studied languages in terms of prosody are primarily global languages, like English, which have been the subject of much experimental and theoretical work, and where there are a multitude of native speakers. The syntax-prosody interface thus

runs into a problem where our knowledge of prosodic typology is relatively limited compared to other areas of linguistics, in part because understanding the sentence-level prosody of a language also requires relatively in-depth study not only of prosody, but also syntax, phonetics, word-level phonology, and information structure. This makes even the basic description of prosodic systems in understudied languages a challenge.

I would argue that we need more researchers who are willing to put in the time to provide careful, theoretically-informed and descriptive work on endangered and understudied languages. As in the theoretical domain, this can be a challenging task but ultimately a rewarding one.

ReVEL – What are the current main questions that syntax-prosody interface researchers seek to answer?

EMILY ELFNER – There are a number of questions currently facing researchers working on the syntax-prosody interface, so I will talk about a couple of big ones: the nature of the syntax-prosody interface and the architecture of the grammar.

Following on proposals by Chomsky and others within the generative framework of Minimalism in syntax (Chomsky 1995), there is a general consensus that the syntactic component of the grammar is the only truly generative component, and that a process of syntactic spell-out feeds into the phonological and ultimately the phonetic output form of utterances. This means that syntactic structure is built using purely syntactic operations, and that the output of syntactic structure is sent off to the phonological component (also referred to as Phonological Form or PF). As part of syntactic spell-out, hierarchical syntactic structure is transformed into phonological form through operations like vocabulary insertion (replacing abstract syntactic features with lexical items made up of phonemes), linearization (determining word order based on hierarchical structure), and the parsing of prosodic structure (correspondence between syntactic and prosodic constituents based on syntax-prosody mapping constraints or algorithms, such as the Match constraints proposed in Match Theory). This phonological parse is then eventually passed onto the phonetic output, which is what we actually pronounce.

The architecture of the grammar and the nature of syntactic spell-out has been debated widely, and forms the basis of some of the core questions that researchers are interested in pursuing from a theoretical perspective. For example, can the operations at Spell-Out interact with each other, or do they occur sequentially? This relates to the question that I first asked in my work on pronoun postposing in Irish, which investigated to what extent word order (or more specifically, linearization) can be directly influenced by prosodic factors.

The model that I described above, also called the Y-model of the grammar, assumes that the syntax-prosody interface can be thought of as a “one-way street”: where syntax influences prosodic structure but not vice-versa. In determining the word order of a sentence, for example, this means that prosodic factors cannot change the syntactic structure constructed during the syntactic component of the grammar; for example, prosody cannot be used to motivate syntactic movement. Rather, prosodic factors can only affect the linearization of elements, since this is an operation that occurs at Spell-Out. We would therefore predict that any changes to word-order that occur post-syntactically during spell-out would not affect the semantic interpretation of the utterance. This is what Bennett, McCloskey and I argued was the case in Irish pronoun postposing (Bennett et al. 2016): that weak pronouns in Irish are displaced only post-syntactically, and that this is why their movement does not affect the structure or interpretation of the sentence. For this reason, we argued that this is a case of purely prosodic movement occurring at syntactic spell-out, and that prosodic factors, in this case, do not affect the input syntactic structure but only the linearization of elements.

However, there are other examples of phenomena where it becomes less clear that the syntax-prosody interface is really a one-way street from syntax to prosody. For example, Contiguity Theory (Richards 2016) proposes that *wh*-movement (a syntactic movement operation) is directly influenced by prosodic phrasing, with the consequence that prosodic phrasing can actually determine whether or not syntactic movement takes place. There are also examples of word order flexibility in languages where information structure, and by extension, prosody, seem to play a role in determining word order as seen in, for example, scrambling in Japanese (Agbayani et al. 2015) or focus-driven movement in languages like Hungarian (Szendrői 2001,

2006). Questions about the architecture of the grammar include some of the big questions about the nature of language, and investigations at the syntax-prosody interface get at the heart of many of these issues.

ReVEL – We would like to finish this interview by kindly asking you what bibliographic references you would recommend for someone interested in studying the field of syntax-prosody interface, from introductory to more advanced texts.

EMILY ELFNER – In terms of textbooks, I have two main recommendations: Caroline Féry’s book *Intonation and Prosodic Structure* (Féry 2017) and D. Robert Ladd’s book *Intonational Phonology* (Ladd 2008 [1996]). Both of these volumes provide overviews of many of the theoretical and practical issues involved in the study of the syntax-prosody interface, as well as prosody and intonation in general. There are also a number of overview articles that can be a good entry into the field, as they include citations for many of the foundational, as well as more recent, literature in this area, and also are written from diverse perspectives. Some of the ones that I would recommend and have personally found useful (including two of my own) include: Elordieta (2008), Wagner and Watson (2010), Selkirk (2011), Wagner (2015), Cole (2015), Ishihara (2015), Elfner (2018), Bennett and Elfner (2019), and Ishihara and Kalivoda (2022). Some other relatively recent and useful edited volumes on the syntax-prosody interface and prosodic phonology include the two volumes on prosodic typology edited by Sun-Ah Jun (Jun 2005, 2014), a special issue of the journal *Phonology* edited by Elisabeth Selkirk and Seunghun Lee (Selkirk & Lee 2015), a special collection in the journal *Glossa* edited by Lauren Clemens and myself (Clemens & Elfner 2017), and a volume edited by Haruo Kubozono, Junko Ito and Armin Mester (Kubozono et al. 2022).

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