

## Navigating the Phonology-Syntax Interface and Tri-P Mapping

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In any language, there are phonological processes that apply (or do not apply) based on the morpho-syntactic structure. In English, for example, there are three differentiated stress patterns based on whether the string in question is a word, a compound, or a phrase.

- (1)    Word: **blue, berry**  
        Compound: **blueberry**  
        Phrase: blue **berry**

The question is then how phonology knows what to apply and where. In this talk, I present my current work on the subject, beginning with an overview of my dissertation work (Miller 2018) which consisted of a side-by-side test of the three main approaches in the literature to mapping/predicting phonological domains: Relational Mapping (e.g. Nespov & Vogel 1986, Vogel 2019), Syntax-Driven Mapping (e.g. Selkirk 2011, Elfner 2012), and the Syntactic Spell-Out Approach (e.g., work by Ahn, Samuels, Šurkalović, McPherson, and Pak). I test each using data from two “polysynthetic” languages: Kiowa and Saukteaux Ojibwe. I argue their extreme morphosyntactic complexity form the critical test case for such theories. After showing that no current approach satisfactorily accounts for the data, I present work underway towards a new theory: Tri-P Mapping (Phase-based Prosodic Phonology).

As seen in Table 1, the approaches differ along four axes: the manner in which phonology references syntax (directly vs. indirectly), whether morphology forms its own independent component of the grammar, whether phonological domains may exhibit recursion, and which (morpho)-syntactic objects are available for to phonology for reference.

	Reference	Separate Morphology	Recursion	Syntactic Objects
<b>Relational Mapping</b>	Indirect	Yes	No	Classic ( $X^0$ , XP)
<b>Syntax-Driven Mapping</b>	Indirect	No	Yes	Classic ( $X^0$ , XP)
<b>Syntactic Spell-Out</b>	Direct	No	Yes	Phases

Table 1. Comparison of approaches

As expected, these assumptions yield differing predictions for the size and shape of domains. Consider the Kiowa clause (including a maximal verb complex) in (2), provided with each approach’s predicted domains bracketed and labeled. Primarily, the approaches differ in terms of whether or not verb-internal domains are predicted. Syntax-Driven Mapping (SD) never predicts internal domains, as it references lexical  $X^0$ s at the surface to map phonological words ( $\omega$ ), and the entire verb complex is understood to be a single  $X^0$ . Conversely, Relational Mapping (RM) references roots and patterning suffixes when mapping  $\omega$ , predicting verb-internal domains. Syntactic-Spell-Out Approach (SS) also predicts (slightly different) verb-internal domain by appealing to morpheme-level phases (i.e. categorizing heads as phase heads).

- (2)    **RM:** [[[Subject] $_{\omega}$ ] $_{\phi}$  [[Object] $_{\omega}$  Ppfx-[Adv] $_{\omega}$ -[N] $_{\omega}$ -[V] $_{\omega}$ -[Stem-Inflect/Modal-Synt] $_{\omega}$ ] $_{\phi}$ ] $_{\iota}$   
        **SD:** [[[Subject] $_{\omega}$ ] $_{\phi}$  [[[Object] $_{\omega}$ ] $_{\phi}$  [Ppfx-Adv-N-V-Stem-Inflect/Modal-Synt] $_{\omega}$ ] $_{\phi}$ ] $_{\iota}$   
        **SS:** [Subject [Object] $_{n}$  Ppfx-[Adv] $_{a}$ -[N] $_{n}$ -[V] $_{v}$  -[Stem] $_{v}$  -I/M-Synt] $_{c}$

Based on a comprehensive analysis of the application domains of eleven phonological processes in Kiowa, I find clear evidence for domains of three sizes including verb-internal domains. Of the three approaches, RM is the most successful in predicting the phonological domains in Kiowa. All three approaches, however, fail to account for the two domains observed in the Saukteaux Ojibwe verb complex (examining nine phonological processes). While the SD and SS accounts are unsalvageable, RM's account may succeed but only by a complete reanalysis of pronominal clitics and assuming future analysis never shows preverbal modifiers behaving as independent phonological domains. As modifiers consist of full stems, this is highly unlikely. Thus, a new proposal is necessary.

In work underway, I advance a new such proposal: Tri-P Mapping (Phase-based Prosodic Phonology). Aiming to address the successes and failures of the three approaches above, the current proposal eliminates the need for a separate morphological component, and it indirectly references (morpheme- and clause-level) syntactic cycles to map the Phonological Word ( $\omega$ ), Phonological Phrase ( $\phi$ ), and Intonational Phrase ( $\iota$ ). Below  $\phi$ , recursion is banned, necessitating at least one intermediate constituent above  $\omega$ . To avoid referencing morphology-specific information, I propose mapping may reference prosodic structure in addition to syntactic structure. The precise definition of the intermediate constituent and implementation of prosodic mapping is an open question and the primary focus of my current research.

Even with open questions, I believe Tri-P Mapping is preferred over all previously mentioned approaches. I will show this in reference to Kiowa and Saukteaux Ojibwe data again. While RM is overall most successful, its strict separation of morphology and syntax is not necessary and is unnecessarily powerful. This is clear, since SS allows for the same level of success predicting verb-internal domains in Kiowa with morpheme-level phases. SS runs into trouble, however, because directly referencing syntax and the recursive application of phonological processes does not allow for intermediate domains of different characteristics. Similarly, SD allows for recursive constituents. In both cases, compound-specific processes pose an issue as nothing distinguishes a compound from its component roots. There is nothing to explain why compounds exhibit markedly different phonology from their component roots. Thus, Tri-P Mapping is preferred for economic reasons (a syntax-only approach) and for predictive power (non-recursive independent prosodic structures). This preference easily outweighs the theoretical cost of any additional theoretical machinery like a prosodic mapping procedure.

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