Ponapean Song Meter in Optimality Theory

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ABSTRACT

The exploration of poetry and songs has been essential to the progress of generative metrical theory that is concerned with the linguistic study of versification. The main issue is that the majority of work is highly concentrated on English poetry. Research on the poetic meter of other languages is thus crucial for a sufficient understanding of meter and metrical rules even though other perspectives and theoretical approaches are utilised. Bearing such a goal in mind, the current study aims to examine the meter in Ponapean songs in the light of Optimality Theory. It found that Ponapean songs are regulated by poetic meter that constrains both the size of the line with a fixed number of morae as well as the prominence that requires stressed morae. The proposed OT analysis derives the restriction on the size of the line with minimality and maximality constraints along with obligatoriness and alignment constraints that account for the prominence. Further rhythmic constraints are needed to regulate the alteration between stressed and unstressed morae. OT is shown in this study to be a framework which is capable of predicting the well-formed nature of rhythmic meter that constrains both the phonological constituency and prominence with regard to Ponapean songs. The proposed analysis might be used for other rhythmic meter that constrains the size and prominence at the same metric level, such as Luganda.

INTRODUCTION

Meter, in particular, is a fundamental aspect of any organised rhythmic verse or lines in verse. It is generally recognisable in poetry and songs from prosodic regularities including quantity, rhythm and phrasing (Hayes 1988). Concerning rhythm, many linguistic approaches have classified meter into two main types: rhythmic (regulates the size and prominence) and non-rhythmic meters (regulates only the size, and does not create rhythm) (Fabb 2016: 449). The current study examines the meter in certain oral literature of the Eastern Caroline Islands, Micronesia, which were previously recognised by Fischer (1959) in the Ponape District. The collected Ponapean songs revealed a quantitative meter that constrains the number of morae per line. Building upon the work of Fischer (1959), this study aims to analyse the meter of Ponapean songs under an Optimality-Theoretic approach (hereafter OT) founded by Prince and Smolensky (1993). To achieve this aim, two questions are addressed:

1. How can the rhythmic meter in Ponapean songs be generated using OT?
2. What is the relation between rhythmic meter and the phonology of ordinary language?

The study is presented as follows. It begins with some background on generative theory in general and meter in particular. Essential issues regarding Ponapean language and the songs that are relevant to this research are provided in the next section. The following section looks in more depth at describing Ponapean songs meter through Optimality Theory (OT) constraints. The conclusion, set out in the final section provides a summary of the study and its findings.

PONAPEAN SONGS

The Ponapean language (known also as Pohnpeian) belongs to the largest language family in Austronesian language family, with almost 29,000 speakers. It is spoken in the State of Ponape (or Pohnpei) in the Eastern Caroline Islands, Micronesia (Takahashi 2005). The songs of Ponapean were collected by Fischer from 1949-1953 based on mythical and historical events of Truk Lagoon and the Mortlocks in the Truk District, and Ponape, Ngatik, Mokil, and Pingelap, in the Ponape District. The following are the original lyrics of one of the Ponapean songs that the Kava origin myth lines take from Fischer (1959: 50). In this song, all of the lines are seven morae, with the exception of line 13 (a single compound word) and 33 (final exclamation), with few considerations regarding suffix *ki* in line 13, which might be lengthened to fulfil the poetic meter requirement though this suffix normally shortened (Fischer 1959: 50).

1.	Lu:k ko:sang (i) leng,	Lu:k came from heaven,
2.	ko:la Pesi:ko,	went to Pesi:ko
3.	a'pw(a)la diaridi	He went [and] discovered
4.	Kedin(i) Kasaunok	Kedin Kasaunok.
5.	a e mwareki:eng	she gave a love gift to him
6.	a: likin(i) pwake.	of her likin pwake ('bracelet'?)
7.	a e dipungki:da	And he responded to it with
8.	kilin peikin ne:.	the skin of the back of his heel.
9.	a'pw(a)la poadokedi;	she then went and planted it;
10.	i:me wia:da	this is what started
11.	sekewen Pesi:ko	the kava of Pesi:ko.
12.	make mwedengeier,	The rat got to it quickly,
13.	sakaukila:r.	became intoxicated from it.
14.	a:pw (a)la ke:di	It then went and nibbled on
15.	neira seun-eir,	their (daul) southern sugarcane (variety name),
16.	kenei-sakauki.	made a relish to the kava from it.
17.	sukusuk Eirilap,	Pounding in the Great South (i.e., kava pounding)
18.	ra pa enge:ngerek.	they suddenly made a commotion.
19.	likiliked pwu:pwu	The kava pounding rhythm
20.	a pa sansarek(i) leng.	was heard in heaven.
21.	Liteme Litepwira	Liteme and Litepwira
22.	ira ko:sang(i) leng.	came from heaven
23.	ko:di, pirapa	came down, stole
24.	karain(i)mes uwen.	that kava cutting.
25.	ira samwekida:r	They departed with it
26.	poad duwienleng;	planted it in the Kava Plot of heaven;
27.	pwuredi poadokedi	Came back down and planted it
28.	pohn Saladak (u)wet.	here in Saladak.
29.	i: me wia:da	That is what formed
30.	mwohden(i) aramas.	a sitting person.
31.	i' ede Li-Saladak;	This is her name, Saladak Woman;
32.	i: me i rong(i) met,	this is what I hear,
33.	e:il	Yes!'

PONAPEAN SONG METER

The Ponapean songs are grouped into either two or three lines each, although they are mostly formed as a sequence of couplets in a pair of seven morae lines (Fischer 1959: 48). The words of the songs are usually altered to fit the poetic meter requirement by inserting [i] between consonant clusters, as shown in the text above in parentheses (1959: 50). The recitation of Ponapean songs is in couplets, where the first line ends with a pause on a rising intonation and the second line on a longer pause with a falling intonation (1959: 48). Another issue is that the odd-numbered morae tend to be stressed, which consequently creates a trochaic rhythm. Apparently, it is evident that the poetic meter controls the individual line. The pause is not the same length, as it is adjustable according to the line length in which it is equivalent to one mora or even three morae if the line is five or seven morae, respectively. In the performance of Ponapean songs, there is no systematic connection between the note's length and the syllable length (one or two morae length) which leads to the fact that it is the counting of morae that is undoubtedly essential in the organisation of song forms rather than the way in which it is sung (Fabb 2015). This is actually similar to the Japanese haiku, and perhaps the correspondence between the poetic meter of Ponapean songs and

Japanese poetry, which are based on seven and five morae lines; this is perhaps due to a possible historical connection as the Japanese ruled the Carolines during the World War (Fischer 1959: 48). This study will argue that the meter of Ponapean songs constrain size as well as prominence over the same constituents, more precisely the mora. Its size constraints require the line to have exactly seven morae. The prominence constraints require a stress on every odd-numbered mora. The line, thus, is the domain of the prominence constraints and the size constraints.

LITERATURE REVIEW

In the versification of language, a metrical text such as a song is 'a text whose phonological form is governed by a set of metrical rules' (Fabb 2016: 449). The metrical rules which are known as a meter are concerned with two phonological aspects: phonological constituency, and (in rhythmic meters) phonological strength (Fabb 2016: 449). As far as the rhythmic meter is concerned, it regulates both the size (phonological constituency as syllable or mora) and prominence (phonological strength like stress) over the same metrical constituent (such as line). This study will assume that the meter in Ponapean songs regulates both the size and prominence over the level of line.

Several theoretical perspectives have studied the structure of verse in many disciplines. Generative metrics is an 'approach to the theory and typology of versification that takes linguistics both as a methodological model and as a source of explanatory principles' (Kiparsky 2020: 659). The crucial concept of generative metrics is that the poetry is grounded in the same principles as non-poetic language; more precisely, both the poetic meter and the prosody of language can be analysed using the same tools that Fabb (2010) called the 'Development Hypothesis'. It arises from the general generative principles of minimalism, where the smallest number of constraints is strongly preferred. It holds the fact that poetic meter should be analysed based only on the prosodic hierarchy in a language (Mora < Syllable < Foot < Word < Intonational Group < Utterance) and not the metrical hierarchy in verse (Beat < Foot < Dipod < Half Line < Line < Couplet < Quatrain < Poem). However, some work accepts the line as a metrical primitive (Golston and Riad 2005). Following this approach, this study will evaluate the meter of Ponapean songs by proposing a markedness analysis in parallel OT founded by Prince and Smolensky (1993).

THE METER OF PONAPEAN SONG IN OPTIMALITY THEORY

Having set out the basic rules of the meter of Ponapean songs, this section proposes a proper analysis of the meter of Ponapean songs using an OT approach (Prince and Smolensky 1993) to derive metricality via markedness constraints. With the parallel evaluation of all possible outputs in light of a set of universal constraints, the language must settle on relative prioritisation or ranking in order to solve conflicting demands between constraints. OT grammar is used to metrically derive constraints via markedness, which then combined with faithfulness constraints, enforcing faithfulness to the lexical form of the text, not the meter, to derive meter. In Ponapean songs, the meter constrains the size of the line and neglects the size of any prosodic constituent below the line. Given that this meter does not have any constituents resembling poetic feet, this implies that the analysis must treat the line as a metrical primitive. Skilton (2016: 33) proposes the general size molecule parameters given below to determine which constituent of the poetic prosodic hierarchy is constrained for size, the size atom parameter, and which constituent is used to measure the size molecule (Skilton 2016: 34):

MinMolecule: Assign one violation for every SIZE ATOM by which the SIZE MOLECULE falls short of n SIZE ATOMS.

MaxMolecule: Assign one violation for every SIZE ATOM by which the SIZE MOLECULE exceeds n SIZE ATOMS.

Indeed, the **MaxMolecule** and **MinMolecule** constraints are generalised from the commonly used constraints **MinWord** and **MaxWord** that are used to derive the restriction on the size of phonological words to enforce minimality as well as maximality requirements in the ordinary phonology of a language (Broselow 1982, DeLacy 2008). The two constraints will be used to formalise size requirements in Ponapean song meters that regulate the size of the line and set the

same target for every line of the songs by the following the markedness constraints **MinLine** and **MaxLine** as follows:

MinLine: Assign one violation for every mora by which the line falls short of seven morae.

MaxLine: Assign one violation for every mora by which the line exceeds seven morae.

In addition to the size constraints, Skilton (2016: 36) further proposes parameter for prominence constraints in which the first sets the relatively prominent atom and the second sets the relatively prominent molecule. The number as well as the position of prominences is set within the **OBLIG** and **ALIGN** constraints, respectively as follows:

OBLIG (ATOM, MOLECULE): The PROMINENCE MOLECULE contains at least n PROMINENCE ATOMS. Assign one violation if not.

ALIGN-X (ATOM, MOLECULE): THE PROMINENCE ATOM is aligned with the RIGHT/LEFT edge of the PROMINENCE MOLECULE. Assign one violation if not.

Similar to the size constraints, the prominence constraints are drawn from the family of OBLIGATORINESS constraints of the word stress and high tone in the ordinary phonology of a language (Hyman 2006: 241) and ALIGN constraints used to derive the position of stress feet and other kinds of metrical prominence relative to the edge of either prosodic or morphological domain (Skilton 2016: 36). The prominence constraints will be utilised in order to capture the prominence in Ponapean song meters as follows:

OBLIG (STRESS, LINE): The line contains at least four stressed morae. Assign one violation if not.

ALIGN-R (STRESS, LINE): The stressed mora is aligned with the RIGHT edge of the Line. Assign one violation if not.

Since the songs of Ponapean are rhythmic, a further rhythmic markedness constraint is needed in order to mandate a regular alteration between stressed and unstressed morae. The two purely rhythmic constraints are **CLASH** (avoidance of two adjacent stress phonological constituents) and **LAPSE** (avoidance of two adjacent stressless phonological constituents) can be formalised into a single constraint **RHYTHMμ** (Golston 1998: 748) which is violated by any string that contains two adjacent stressed or stressless morae as follows:

RHYTHMμ: CLASHμ: No sequences (xx) of stressed morae.

LAPSEμ: No sequences (..) of stressless morae.

Along with the above markedness size and prominence constraints, the following faithfulness constraint **Faith** is essential to ensure the avoidance of deletion or epenthesis (McCarthy and Prince 1993).

FAITH: The output is identical to the input. Assign one violation per segment or tone different in the output and the input.

Concerning the ranking of the markedness as well as the faithfulness constraints, all of the prominence constraints are unviolated. The two size constraints **MinLine** and **MaxLine** are also unviolated. The **Faith** constraint is ranked higher above all constraints in order to avoid deletion or epenthesis.

	FAITH	OBLIG (STRESS, LINE)	ALIGN-R (STRESS, LINE)	RHYTHMμ	MinLine	MaxLine
a) μ μ μ μ μμ μ 'a e d'ipungk'i:d'a						
b) μ μ μ μμ μ e d'ipungk'i:d'a	*!	*			*	
c) μμ μ μ μμ μ a'e dip'ungki':da		*				
d) μμ μ μ μμ μ 'a'e d'ip'ungki:da			*	*		

	FAITH	OBLIG (LH, LINE)₁	ALIGN-R (LH, LINE)₁	OBLIG (HL, LINE)₂	ALIGN-R (HL, LINE)₂
a) i: me↘wia:da | sekewen↗Pesi:ko	*!*	*		*	
b) i: me↘wia:da | sekewen↘Pesi:ko	*!	*			
c) i: me↗wia:da | sekewen↗Pesi:ko	*!			*	
d) i: me↗wia:da | sekewen↘Pesi:ko					

The next tableau presents the evaluation of the line in Ponapean song showing the interaction between the size as well as the prominence constraints along with the rhythm constraint.

Candidate (b), with the deletion of the first vowel, fatally violates **FAITH**, alongside the violations of **MinLine** (six morae instead of seven) and **OBLIG (STRESS, LINE)** (only three morae stressed rather than four). Candidate (c) also violates **OBLIG (STRESS, LINE)** as it has only three stressed morae than the required number. Candidate (d) has two violations: the **RHYTHMμ** and **ALIGN-R (STRESS, LINE)** with the first adjacent stressed morae, even though it satisfied the size constraints. Candidate (a) is the optimal output, as it fulfils the size and prominence constraint requirements. With such a basic ranking of markedness and faithfulness constraints, it can accurately generate the meter of the Ponapean song line but not the couplet. The first line of the couplet in the songs ends with a rising intonation, while the second line ends with a falling one. Likewise, the **OBLIG** and **ALIGN** constraints can be further used to capture the rising intonation of the first line and the falling intonation of the second line of each couplet, resulting in the following set of prominence constraints:

OBLIG (LH, LINE)₁: The odd-numbered line contains at least one LH tone. Assign one violation if not.

ALIGN-R (LH, LINE)₁: The LH tone is aligned with the RIGHT edge of the odd-numbered Line. Assign one violation if not.

OBLIG (HL, LINE)₂: The even-numbered line contains at least one HL contour. Assign one violation if not.

ALIGN-R (HL, LINE)₂: The HL contour is aligned with the RIGHT edge of the even-numbered Line. Assign one violation if not.

For the sake of clarity, the proposed inputs in the following evaluation of couplet in lines (10) and (11) satisfied the size and prominence constraints.

In this evaluation, the losing candidates (a), (b) and (c) fatally violate the faithfulness as well as the markedness constraints because they contain illicit intonation contours creating ill-formed lines. Thus, candidate (d) wins because it satisfies the prominence intonational constraints, providing a rising intonation at the end of the first line and a falling intonation at the end of the second line of the couplet, as in Ponapean songs. Indeed, this markedness-based analysis supports the assumption, which is essential to generative metrics, that general phonology and poetic meter arise from the same source. In sum, the crucial ranking of size and prominence constraints that is capable of generating the meter in Ponapean songs is given below:

FAITH >> OBLIG (STRESS, LINE), ALIGN-R (STRESS, LINE), OBLIG (H, LINE)₁, ALIGN-R (H, LINE)₁, OBLIG (L, LINE)₂, ALIGN-R (L, LINE)₂, RHYTHMμ >> MinLine, MaxLine

CONCLUSION

This paper presents a preliminary analysis using a set of optimality theoretic constraints that is capable of predicting the well-formedness of Ponapean song lines. The markedness-based analysis is capable of positing parametric definitions of constraints generating the meter of Ponapean songs that can clearly regulate both the size and prominence at the level of the line fulfilling the aim of the study. Also, it is internally consistent with the development hypothesis, as it uses representations and constraints that are already used in the phonology of ordinary language, and captures similarities between poetic meter and the prosody of non-poetic language. In sum, a unified set of size constraints is used to enforce the minimality and maximality requirement in the poetic meter along with prominence constraints to account for the obligatory appearance of stress as well as alignment to derive the position of stressed morae per line. Further rhythmic constraint is used to capture the rhythmic properties of the line as it mandates a regular alteration between stressed and unstressed morae. The evaluation of candidate outputs in the spirit of OT can nevertheless generate

desirable realistic results regarding Ponapean song meter. Such an analysis can perhaps be extended to provide a better explanation for other rhythmic meters that constrain the size and prominence at the same metrical level, such as Luganda.

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