

**TOWARDS THE DEVELOPMENT OF AN INTONATION-BASED PROSODIC MODEL
FOR THE MASORETIC CANTILLATION ACCENTS OF TIBERIAN HEBREW**

by

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DISSERTATION SUBMITTED IN ACCORDANCE WITH THE REQUIREMENTS FOR THE
DEGREE OF

**MASTER OF ARTS
WITH SPECIALISATION IN HEBREW**

IN THE FACULTY OF THE HUMANITIES

UNIVERSITY OF THE FREE STATE

BLOEMFONTEIN

SOUTH AFRICA

DATE SUBMITTED: 26 NOVEMBER 2017

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DECLARATION

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ABSTRACT

The system of vocalisation encoded in the *ṭa ʿămê hammiqrā* represents one of the most prominent expressions of the oral nature of the Hebrew Bible, yet the value of investigating extant cantillation traditions has been largely dismissed in nonliturgical scholarship. Dresher (1994) gives the first linguistic account of the *ṭa ʿămê hammiqrā* as a prosodic system within a modern prosodic framework, but like Wickes (1887), Dotan (1978), Yeivin (1980), Aronoff (1985), Janis (1987), and Price (2010), he treats pausal phenomena, rather than intonation, as their central organising feature. In this dissertation I analyse an extant Ashkenazi cantillation tradition of the *ṭa ʿămê hammiqrā* using modern prosodic theory and the musical concept of conjunct and disjunct melodic motion to demonstrate that the *ṭə ʿāmîm* have a highly structured intonational basis that organises the system and conforms substantially to cross-linguistic prosodic norms. The intonation-based prosodic model for Tiberian Hebrew I propose in this study offers a solution to the limitation Dresher (1994) encounters with the intonational phrase domain of his prosodic model.

I investigate the prosodic nature of the *ṭa ʿămê hammiqrā* in the following steps: 1) describe, classify, and catalogue the types of melodic patterns and intervals that conjunctive and disjunctive *ṭə ʿāmîm* are able to form; 2) determine the organisational prosodic structure of the *ṭa ʿămê hammiqrā* and compare it to the cross-linguistic prosodic model developed by Selkirk (2009, 2011); 3) test how well this intonation-based model for Tiberian Hebrew identifies and locates cross-linguistic prosodic structures for restrictive and nonrestrictive relative clauses. The

biblical corpus used to test this model is comprised of all the overtly headed *’āšer* relative clauses in the twenty-one books of the Hebrew Bible, of which representative examples are presented and discussed in detail. My analysis indicates that Tiberian Hebrew distinguishes three prosodic classes of relatives, a finding that accords with and refines cross-linguistic prosodic norms for these syntactic constructions and largely corroborates Holmstedt’s (2016) analysis of the restrictive semantics of relative clauses in the Hebrew Bible. A catalogue for this corpus of relative clauses is compiled in Appendix B.

Keywords

Ashkenazi, accents, cantillation, Law of Continuous Dichotomy, Masoretic Text, prosodic recursion, prosody, Strict Layer Hypothesis, syntax-phonology interface, Tiberian Hebrew.

ACKNOWLEDGEMENTS

To my Father and Redeemer—for whom all things are possible—*the blessed and only Sovereign, the King of kings and Lord of lords. For from Him, and through Him, and to Him are all things, to Him be the glory forever!*

To my parents, Billy and Gwendolyn, who among many other things provided me violin lessons from a tender age and a unique childhood education at Akiba-Schechter that laid a strong foundation for my studies in Hebrew. Thank you for your example and many sacrifices along the way. *Whoever trusts in his own mind is a fool, but he who walks in wisdom will be delivered.*

To my husband, my best friend—Andrew, you know I could not have done this without your daily support, encouragement, and care of me and our family. *Je t'aime. I am a rose of Sharon, a lily of the valleys.*

To my girls—Jasmin, Isabel Rose, and Violet, you continually inspire me to give and be my best. Love God and people. Devote yourselves to the Word. Be lifelong learners. Be creative, dream big, develop your vision. Pursue excellence. *Je vous aime. For our boast is this, the testimony of our conscience, that we behaved in the world with simplicity and godly sincerity, not by earthly wisdom but by the grace of God.*

To the Koopman family—many, many thanks, dear friends, for the very practical help and encouragement you freely and joyfully offered during the time when the deadline for submitting this dissertation and an international move for our family intersected. *A friend loves at all times, and a brother is born for adversity.*

To my advisors, Prof. Jacobus Naudé & Prof. Cynthia Miller-Naudé—thank you for helping me to make this dissertation my best!

To Prof. Kevin Chau who has helped me to see the different sides of storytelling in scholarship, thank you—I hope mine proves compelling!

To Andrew
אני לדודי ועלי תשוקתו:

TABLE OF CANTILLATION ACCENTS—THE DISJUNCTIVES

◊	<i>sōf-pāsûq</i>
^	<i>'etnaḥtā'</i>
\	<i>tippəḥā'</i>
˘	<i>təbir</i>
:	<i>zāqēp qāṭōn</i>
⋮	<i>zāqēp gādōl</i>
\	<i>pašṭā'</i>
<	<i>yətib</i>
◊	<i>rəbī'ī</i>
└	<i>munnāḥ ləgarmê</i>
⋮	<i>seggōl</i>
˘	<i>zarqā'</i>
/	<i>'azlā'</i>
/	<i>gērēš</i>
⋮	<i>gēršayim</i>
φ	<i>təlīšā' gədōlā</i>
∞	<i>qarnê pārā</i>
└	<i>pāzēr</i>
≠	<i>šalšelet</i>

TABLE OF CANTILLATION ACCENTS—THE CONJUNCTIVES

,	<i>mērka'</i>
┘	<i>munnaḥ</i>
<	<i>mahpāk</i>
\	<i>kadmā'</i>
⸚	<i>dargā'</i>
⸚	<i>tālīšā' qəṭannā</i>
„	<i>mērka' kəpûlâ</i>
∨	<i>yārēaḥ ben yômô</i>

TRANSCRIPTION OF HEBREW CHARACTERS¹

Consonants

א	ʿ	ל	l		
ב	b	מ/ם	m		
ג	g	נ/ן	n		
ד	d	ס	s		
ה	h	ע	ʿ		
ו	w	פ/ף	p		
ז	z	צ/ץ	ṣ		
ח	ḥ	ק	q		
ט	ṭ	ר	r		
י	y	ש	ś		
כ/ך	k	שׁ	š		
		ת	t		

Vowels

אֵ	ā	אֶ	â	אָ	ə
אִ	a	אֵי	ê	אֵי	ǎ
אֵי	e	אֵי	ê	אֵי	ě
אֵי	ē	אֵי	î	אֵי	ǫ
אִי	i	אֹ	ô		
אֹ	ō	אֹ	û		
אִי	u				
אֵי	o				

¹ This Hebrew transliteration convention is based on *The SBL Handbook of Style* with two exceptions: 1) I do not make a distinction between a short and long vowel when there is no distinction in the orthography (for example, I only contrast *ḥireq* written defectively, *i*; and the *ḥireq* written with a ʿ for *mater lectionis*, *î*) and 2) I use ə for the vocal *šəwāʿ*.

ABBREVIATIONS AND NOTATIONS

DF	Domain of focus
ESV	English Standard Version
F	Focused constituent
HL	High-low
LCD	Law of Continuous Dichotomy
LH	Low-high
MaP	Major phonological phrase
MiP	Minor phonological phrase
MT	Masoretic Text
NP	Noun phrase
OT	Optimality Theory
pl.	Plural
PP	Prepositional phrase
S	Sentence
sg.	Singular
SLH	Strict Layer Hypothesis
T	Tone (Intonation)
TH	Tiberian Hebrew
ToBI	Tones and Break Indices
U	Utterance
VP	Verb phrase
ι	Intonational phrase
π	Prosodic constituent
φ	Phonological phrase (corresponds closely to the MiP)
φ_1	Phonological phrase complex (corresponds closely to the MaP)
φ_a	MaP
φ_i	MiP
ω	Prosodic word
*	ungrammatical

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CHAPTER 1

INTRODUCTION

1.1 Background and Purpose of Research

The tradition of Jewish cantillation is an ancient one, deeply integral to the vocalisation of the Hebrew Scriptures.² I believe that the tradition's longevity is owing primarily to two facts: 1) the Hebrew Bible, as Miller-Naudé & Naudé assert, is “the living fossil of an essentially oral text” (2016:77) and 2) those responsible for performing and transmitting this sacred text over the millennia believed its precise vocal expression endows it with components essential to its meaning. Prosody, the music of speech, is one of these essential components. Himmelmann & Ladd (2008) define the phonetic features of prosody as: 1) pitch, “the property that distinguishes one musical note from another . . . [corresponding] roughly to the fundamental frequency (F0) of the acoustic signal, which corresponds roughly to the rate of vibration of the vocal chords” (246); 2) the duration of phonetic segments, measured by the extent to which an utterance can be divided into “phonetic segments with clearly defined boundaries” (247); 3) voice quality, which can be “described by such impressionistic terms as ‘harsh,’ ‘breathy,’ ‘creaky,’ and so on, [and] are based on different configurations of the glottis” (247); and 4) stress, “the property that makes one syllable in a word more prominent than its neighbours” (248).

These universal elements of speech are so fundamental to how speakers convey meaning that without them an utterance can be rendered ambiguous or even unintelligible (Cutler & Swinney 1987:147-148). While the oral nature of the Hebrew Bible is often overlooked outside of Jewish

² Here, vocalisation refers to uttering the text out loud (i.e. reading the text in the sense of **אָרָא**).

liturgical settings, oral and auditory means for crafting the biblical text have always played a critical role in its transmission and reception (Naudé & Miller-Naudé, 2016). The Masoretes understood this and therefore dedicated themselves to preserving not only the consonantal and vocalic text, but also its prosodic features, codified in a cantillation system known as the *ṭa'āmē hammiqrā'*. This study focuses primarily on the first and second phonetic features of prosody (intonation and the segmentation of pitch patterns); the third phonetic feature (voice quality) is not applicable to Tiberian Hebrew (TH).

The *ṭa'āmē hammiqrā'* are a set of Masoretic graphic symbols consisting of conjunctive and disjunctive accent marks called *ṭa'āmîm* (sg. *ṭa'am*). *Ṭa'āmîm* represent groups of pitches (melodic motifs or tropes) and indicate the proper intonational vocalisation of the biblical text. Generally speaking, conjunctive *ṭa'āmîm* conjoin words to form a cohesive unit, while disjunctive *ṭa'āmîm* mark the end of a cohesive unit. Although these Masoretic notations did not likely appear before 600 CE (Yeivin 1980:164), the Talmud records the requirement that the Hebrew Scriptures be publicly performed with *נעימה* (melody) (Jacobson 2002:6), and it interprets Nehemiah 8:8 as implicitly referencing the use of these melodies to illuminate the meaning of the text (Yeivin 1980:163). Before these melodic motifs were transcribed, however, they were represented in hand gestures to aid the *בעל קריאה* (cantor), a practice known as chironomy that is still observed in some liturgical settings today (Yeivin 1980:164). Commentators of the tradition of chironomy have noted that many of the graphic symbols reflect the shape of these hand gestures (Jacobson 2002:5). Of the three systems of notation that were developed to represent the chanting melodies (Tiberian, Palestinian, and Babylonian), the

Tiberian model for the *ṭa'āmê hammiqrā'* as represented in the Leningrad Codex (the oldest complete manuscript of the Hebrew Scriptures) has become authoritative. The more than 2000 year old tradition of delineating a distinct interpretation of the Hebrew Scriptures by chanting the text continues to thrive in Jewish communities worldwide, and master cantors who perform this duty clearly regard its function as fundamentally prosodic in nature (Jacobson 2002:5-6; Rubin and Baron 2006:71-72; Yeivin 1980:158). However, many exegetes of the Hebrew Scriptures outside of these liturgical settings are often far removed from this experience, and the purpose and function of the *ṭa'āmê hammiqrā'*, in large part, remain a mystery.

Furthermore, many scholars, like Wickes (1887), Dotan (1978), Yeivin (1980), Aronoff (1985), Janis (1987), and Price (2010), who have produced in-depth academic treatments of the *ṭa'āmê hammiqrā'*, have not analysed the systems of intonation preserved in the many extant cantillation traditions. Even Drescher (1994), the first to give a linguistic account of the *ṭa'āmê hammiqrā'* as a prosodic system within a modern prosodic framework, fails to recognise that the intonational structures of extant cantillation traditions may contain information pertinent to their analysis as a prosodic system. However, given 1) the longstanding belief among those who preserved and transmitted the Hebrew Scriptures, at least as far back as the compilation of the Talmud, that the particular manner in which the biblical text is orally rendered encodes essential components of meaning; 2) intonation is one of the primary components of prosody; and 3) systems of intonation have always been the most salient features of the Masoretic oral tradition (Yeivin 1980:168-169)—a reasonable question remains: *Why do the diverse intonational patterns of extant cantillation traditions continue to either be dismissed as a semantically indiscriminate*

concatenation of melodies, or regarded as merely ancillary to how the system functions? (e.g. Drescher 1994:47; Aronoff, 1985:33-34). Even Wickes (1887) who developed the Law of Continuous Dichotomy (LCD), the modern conceptual framework for understanding the *ta'āmē hammiqrā'*, acknowledges that “the Hebrew accentuation is essentially a musical system” (1), but concludes that its musical values only served to delineate “logical” pauses within the text, so as to properly express its meaning:

From the first, the aim had been so to arrange the musical declamation as to give suitable expression to the meaning of the Sacred Text. For this purpose, the logical pauses of the verse were duly marked—and that according to their gradation—by pausal melodies, later by the accentual signs that represented those melodies; and where no logical pause occurred in a clause, the syntactical relation of the words to one another and to the whole clause was indicated by suitable melodies—partly pausal, partly conjunctive—and their corresponding signs. In this way, the originators of the system, and the accentuators who aimed at stereotyping their work, sought to draw out the sense and impress it on the minds of both readers and hearers (2).

Yeivin (1980) outlines the traditional understanding of the three functions of the *ta'āmē hammiqrā'* as: 1) a representation of the melodic motifs “to which the biblical text was chanted in the public reading” (158), with the purpose of “emphasising the logical relationships of the words” (158); 2) a guide to the semantic (not structural) syntax of the text, as the *ta'āmim* are grouped into “semantic units, which are not always identical with syntactic units” (158); and 3)

an indication of the locus of stress in a word, as most *ṭə ʿāmîm* are placed above or below the first consonant of the stressed syllable (158).

The second function of the *ṭa ʿāmê hammiqrā* has been the most enigmatic and has garnered the most attention, as scholars have found it difficult to determine the precise nature of the relationship between the melodies, syntax, and semantics of the biblical text. Yeivin (1980:161) cites the grammarians of the 16th century as the first to describe the disjunctives' function, not in relation to their melodic features, but as primarily indicating pausal phenomena to varying degrees. The introduction of this pausal function seems largely artificial since the melodies of the *ṭə ʿāmîm* have been the focus of its earliest descriptions. Nevertheless, pausal phenomena continue to be the central organising feature for understanding the function of the disjunctives. Over the centuries, the disjunctive *ṭə ʿāmîm* have been organised and reorganised into various groups or classes according to their relative pausal strength as manifested by the order in which they form dichotomies within a verse.

However, as research in the field of prosody continues to illuminate the centrality of intonation in organising speech and listening comprehension, scholars of the *ṭa ʿāmê hammiqrā* now have a compelling framework for conceptualising the melodic patterns of these systems, and reason to believe that the systematic study of extant cantillation traditions will be rewarding and productive. Although the melodies of these traditions have evolved (some more so than others), the methods of text preservation of the Hebrew Scriptures over the millennia—both written (as corroborated by the Dead Sea scrolls) and oral (as recorded in the Talmud)—have proven

effective. It is not unreasonable to expect, then, that even the oral traditions of the *ṭa ʿămê hammiqrā* have features that can be traced back to organising principles within the original Masoretic system. The purpose of this study, therefore, is to establish a rationale and theory for an intonation-based prosodic model for the *ṭa ʿămê hammiqrā* by identifying prosodic structures within one of the most widely practiced cantillation traditions in the world today and demonstrating that they are analogous to the cross-linguistic prosodic model developed in large part by Selkirk (1972, 1986, 1995, 2000, 2009, 2011).

1.2 Research Problem

It is important to consider the factors that have hindered research on the extant cantillation traditions as a means of understanding the purpose and function of the *ṭa ʿămê hammiqrā*. One primary factor is biblical scholars' assumption that TH "prosody and pitch prominence patterns are inaccessible" (Floor 2004:11; Holmstedt 2016:208) because the Masoretic intonational tradition has undoubtedly evolved. This assumption has led scholars like Aronoff (1985) to conclude the following:

Because of our ignorance of the original musical values of the symbols, it is difficult to understand much of the system from a musical point of view: we can tell that certain regularities must have been musically motivated originally, but can go no further. We cannot give a particular musical explanation without knowing the original melodies which motivated the phenomena. Thus, though the musical significance of these symbols is what people are most aware of when they use the accents, the study of this phenomenon holds less reward than one might expect (33-34).

It must be noted, however, that Aronoff wrote this when the study of prosody in the modern era was just beginning to gain real momentum. Research in the field of prosody since then has revealed that intonation is essential to organising speech and listening comprehension (Cutler & Swinney 1987; Hirschberg 1999; Gussenhoven 2002a; Adell et al. 2005; Gilbert 2008; Erekson 2010; Benjamin & Schwanenflugel 2010; Stephens 2011; Hedberg et al. 2014; Overstreet 2014; Büring 2016; Beňuš n.d.; Li et al. 2008; Lopes et al. 2015), which means scholars of the *ta'āmê hammiqrā'* now have firmer grounds for understanding the melodic patterns of this system. And while the cantillation melodies have evolved, the rabbinic and Masoretic methods of text preservation have been shown to be reliable and painstakingly guarded. In fact, Dotan (1978:1410) states:

Undoubtedly the division of the text into minimal units—the verses, and even the division of every unit into parts, the accents—is also part of correct transmitted division. This transmission, like all oral tradition, while it strives for great precision and generally achieves it, still contains some doubtful instances and contradictions between different traditions which have to be decided.

Rubin and Baron (2006:71-72) also affirm this record of preservation throughout the various stages of the oral tradition's development:

The assignment of musical signs was based on their reading of the text, which had been preserved with surprising (though not total) fidelity through centuries of scribal copying, and which was painstakingly studied, debated, edited, and reedited over hundreds of years in the course of producing their final version.

While Rubin and Baron (2006) are dubious as to whether the study of extant melodies can tell us anything about the original organising principles of the *ṭa'āmê hammiqrā'*, they concede that “[i]t is likely that the basic logical rules for cantillation served as a vehicle for different melodies over time, as the orally transmitted musical motives [i.e. pitch patterns] were continually adjusted to conform to musical styles of host cultures” (Rubin & Baron 2006:69) (Newman 2000).

Another hindrance to the research of extant cantillation traditions is the long held view that the disjunctives primarily encode pausal phenomena of relative strength within a verse, which allow the *ṭa'āmîm* to be organised into a class hierarchy (Yeivin 1980:161-162). However, one fundamental flaw of grouping the disjunctives into these classes is that the *ṭa'āmîm* within a particular class are not interchangeable. For example, in most models of the hierarchy for the disjunctive *ṭa'āmîm*, *'etnaḥtā'* and *sōf-pāsûq* form a single class. However, *'etnaḥtā'* can by no means intonationally replace the disjunctive *sōf-pāsûq*, nor can *sōf-pāsûq* intonationally replace *'etnaḥtā'*. Not only would the conjunctives that serve them no longer have the proper pitch patterns to form a cohesive phonological phrase, but the pitch patterns of these disjunctives would not provide the right information for the hearer to perceive an expected continuation within the utterance, joining two closely-related units, as is the case with *'etnaḥtā'*, or an expected closure of the utterance, as is the case with *sōf-pāsûq*. Just as the pitch patterns of *'etnaḥtā'* and *sōf-pāsûq* encode and convey specific information, it is reasonable to expect that the other *ṭa'āmîm* which form distinct patterns of distribution throughout the text do so as well.

Viewing the *ṭa ʿāmê hammiqrā* solely through the lens of Wickes' LCD appears to limit and even distort our understanding of the prosodic functions of the *ṭə ʿāmîm*.

Furthermore, by concluding that an analysis of the extant intonational patterns of the *ṭa ʿāmê hammiqrā* is of little value since the original melodies are no longer accessible, former and contemporary scholars of the *ṭa ʿāmê hammiqrā* have essentially elevated dichotomy production and pausal phenomena—if the *ṭə ʿāmîm* even explicitly encode this information—to the status of a central organising principle. Pausal phenomena that are assumed to be encoded at the phonological boundaries of disjunctive *ṭə ʿāmîm* may be entirely optional (with the exception of *ʿetnaḥtā* and *sōf-pāsûq* whose meanings, 'rest' and 'end of verse,' clearly signify intentional pause),³ and not a prescription of the system itself, intended to position pauses within the text.⁴ In fact, linguistic data provided in chapter 4 suggest that the recursive prosodic structures Drescher (1994) posits for the disjunctives cannot be properly analysed without considering intonation.⁵

³ According to Dotan (1978:1454), the disjunctive *rəbīʿī* means 'resting' in Aramaic. I argue in §5.2 (see footnotes 230 and 231) that *rəbīʿī* is one of the most prevalent disjunctives, other than *ʿetnaḥtā*, that marks intonational phrase boundaries (i.e. intentional places of pause) within a verse. If so, this may explain why *rəbīʿī*, like *ʿetnaḥtā* and *sōf-pāsûq*, has a name that appears to suggest its affinity toward pause.

⁴ In §5.2 I argue that while slight pauses often coincide with the disjunctive boundaries (i.e. phonological phrase boundaries), they are not consistently present. Furthermore, slight pauses that coincide with these boundaries are fundamentally different from longer, intentional pauses that often coincide with intonational phrase boundaries. In short, while pauses of all sorts (long, short, intentional, coincidental) exist within the prosodic domains of phonological and intonational phrases, organising the disjunctives into a hierarchy based on pausal strength seems to be an artificial imposition on the *ṭa ʿāmê hammiqrā*. Instead, the most salient features of the *ṭa ʿāmê hammiqrā* that are likely relevant to their analysis include the unique intonational and rhythmic values of each *ṭa ʿam*.

⁵ A discussion of current prosodic research in §4.4.3 connects prosodic hierarchies or nested prosodic structures within an utterance to shifts in intonation.

It is also important to note that Aronoff (1985) considers the grammarians of the 10th to the 14th centuries, who were among the first to write descriptions of the *ṭa ʿāmê hammiqrā*, to have known “little” about the Masoretes (31)—and I would argue, by extension, their intended purpose for the *ṭə ʿāmîm*. Aronoff bases this conclusion on the fact that the grammarians treated the Masoretic annotations “as a given part of the text—something to be explained” (31). In other words, the grammarians approached the *ṭa ʿāmê hammiqrā* as any scholar would based on the available evidence, with no special access to Masoretic intent. The first mention of disjunctive *ṭə ʿāmîm* operating within a hierarchy based on pausal value did not appear in the literature on the *ṭa ʿāmê hammiqrā* until 1538 (Yeivin 1980:161), and it took several hundred more years for a specific classification of the disjunctives to be outlined according to their rank in pausal strength (1718) and dichotomy formation (1887) (Yeivin 1980:162-163).⁶ Yeivin (1980:168-169) judiciously notes that this was an innovation mainly favoured by Christian scholars of the Renaissance. This means that the currently accepted organising principle for understanding the *ṭa ʿāmê hammiqrā* is based on a theoretical framework developed by scholars who were likely removed from the liturgical tradition of chanting the Scriptures. Furthermore, this principle almost completely ignores the original function of the *ṭə ʿāmîm*—namely, to provide a semantically rich intonational value for each word in the biblical text. Concerning the element of the *ṭa ʿāmê hammiqrā* that was most salient for the Masoretes, Yeivin (1980) states:

⁶ It is helpful to remember that the Masoretes, and even the earliest grammarians, did not use the words ‘disjunctive’ and ‘conjunctive’ to classify and refer to the *ṭə ʿāmîm*. An understanding of the original terminology for the *ṭə ʿāmîm* will likely provide more insight into their intended meaning and function than the terms ‘disjunctive’ and ‘conjunctive,’ as this nomenclature undoubtedly shapes how we interpret these symbols. It was not until the 9th century that names were used to describe the two types of *ṭə ʿāmîm* (Yeivin 1980:164): Mar Şemaḥ ben Ḥayyim Gaʿon (883-896) referred to conjunctive *ṭə ʿāmîm* as **משרתות** ‘servants’ and disjunctive *ṭə ʿāmîm* as **פסקי** ‘verses’ (or perhaps ‘groupings’). For a brief discussion of the implications of the nomenclature of the *ṭə ʿāmîm* on interpreting their function, see §5.2. While the term ‘disjunctive’ has become synonymous with pause, I conclude that disjunctive *ṭə ʿāmîm* are better understood as forming phonological groupings that are largely binary in nature (see §4.3 example (42); §3.3.2 and §5.3.2, and Appendix A).

This classification based on music is the only one found in the Masorah or the early treatises. Christian scholars of the Renaissance classified the accents according to their pausal value into four grades, to which they gave names such as emperors, kings, dukes, counts. Some Jewish writers, such as Zalman, Hanau, and ben Ze'ev, also used this type of classification. Wickes opposes classification in this way (as did others before him), and indeed it does give a false impression of the accent system (168-169).

Wickes even calls the classifications of the *ṭə'āmîm* that early Christian writers promoted “fanciful and misleading distinctions” (1887:15). In particular, he bemoans the fact that the theory of hierarchical classification is promulgated in standard works like *Gesenius' Hebrew Grammar* (15). For example, Wickes objects to grouping 'etnaḥtā' and *sōf-pāsûq* in the same class because he regards 'etnaḥtā' as subordinate to *sōf-pāsûq* in the same way that *zāqēp* is subordinate to 'etnaḥtā' (15).

Dresher's work (1994) toward establishing a prosodic basis for the *ṭə'āmê hammiqrā'* is a noteworthy accomplishment because it affirms the longstanding, intuitive rabbinic and cantorial claims regarding the nature and purpose of chanting the Hebrew Scriptures. The modern linguistic prosodic framework Dresher constructs for the *ṭə'āmê hammiqrā'* moves us closer to understanding how the *ṭə'āmîm* help make sense of the text. However, as linguists and educators learn more about how prosody, and particularly intonation, organises speech and listening comprehension, it appears increasingly appropriate to reconsider the *ṭə'āmê hammiqrā'* in light of their research.

For this reason, the systematic study of the melodic patterns of one of the eight main cantillation traditions for the *ṭa'āmê hammiqrā'* may clarify the purpose and function of the system. If these extant melodies indeed encode prosodic features, as I believe they do, their analysis has the potential to illuminate the means by which the listener is intended to grasp an orally rendered text, capturing salient patterns, topics and themes within it. Simply put, a systematic analysis of the melodic patterns of the *ṭa'āmê hammiqrā'* may be the key that unlocks a guide for the listener to encounter a particular interpretation of the biblical text, opening rich, new exegetical dimensions, while shedding further light on exactly how prosody functions to convey meaning. Therefore, the problem this study will investigate is as follows: *Can an intonational analysis of an extant Ashkenazi tradition of cantillation reveal a prosodic model for TH that is analogous to the cross-linguistic prosodic model developed by Selkirk (2009, 2011)?*

1.3 Hypothesis and Theoretical Framework

The rationale for a new approach to understanding the *ṭa'āmê hammiqrā'* is based on the observation that the widely-accepted conceptual framework for previous analyses (i.e. Wickes' LCD) does not adequately account for the complex distribution of the *ṭa'āmîm* because it groups them into classes that disregard how their most salient feature—namely, the system of intonation—functions within and across verses.

My hypothesis is that a systematic analysis of the melodic patterns of an extant tradition of cantillation will reveal that the *ṭa'āmê hammiqrā'* encode internally coherent and cohesive

intonational structures and features that organise syntactic constituents in a manner analogous to that which is posited within Selkirk's framework of prosodic theory. Selkirk's model conceptualises a prosodic hierarchy (consisting of the prosodic word, phonological phrase, intonational phrase, and utterance)⁷ that mediates an indirect syntax-phonology interface, where "phonological rules can refer to limited syntactic information as domains for their application" (Yahya 2013:10).

According to Yahya (2013), the following four main concepts form the basis of the indirect reference account for the syntax-phonology interface: 1) indirect reference, which requires phonological rules to "refer directly to abstract prosodic constituents built from . . . syntactic structures" (11); 2) mediation, which requires phonological rules to only "refer to intermediate abstract structures built from syntax and known as the prosodic hierarchy" (11); 3) nonisomorphism "between phonological domains and syntactic structures at the levels of the phonological phrase and the intonational phrase" (11), which forms the main argument against direct reference prosodic theories; and 4) syntax-phonology mapping rules that consist of "the alignment constraints within the end-based theory" (11-12), a theory which determines the mapping algorithms for the formation of the prosodic domains above the prosodic word. Concerning the syntax-phonology mapping algorithms, Selkirk (2009) proposes that languages have constraints that only allow the right or left edge of a syntactic structure to map respectively to the right or left edge of its corresponding prosodic structure.

⁷ The prosodic domains below the prosodic word are not analysed in this study.

Finally, Selkirk’s prosodic theory (2009, 2011) incorporates Optimality Theory (OT) to account for the prosodic variation languages exhibit—variation that results when universal, violable constraints are ranked differently in different languages. There are four main sets of constraints within Selkirk’s framework: 1) constraints on prosodic domination that comprise the Strict Layer Hypothesis; 2) phonological constraints “regulating the size of a prosodic constituent” (Yahya 2013:19); 3) interface constraints that “define the syntax-phonology mapping” (Yahya 2013:19); and 4) prominence constraints that govern both the relation between intonation and prosodic stress, and the prominence of focus.

While Dresher’s prosodic model for the *ṭa ‘āṃê hammiqrā*, rooted in the LCD, conceptualises the segments formed by the *ṭa ‘āṃîm* as pausal phenomena that produce structural dichotomies within a verse, I argue that these segments more accurately reflect the intonational groupings that organise the complex interplay of melodic patterns and syntactic constructions within a prosodic system. The approach to the *ṭa ‘āṃê hammiqrā* I develop in this study exploits the musical concept of conjunct and disjunct melodic motion to demonstrate how finely adapted the individual pitch patterns of the *ṭa ‘āṃîm* are to the organisation and structure of this prosodic system.⁸ I argue that the melodies of the *ṭa ‘āṃîm* are not constructed haphazardly or without internal coherence, but follow prosodic parameters that allow the hearer to perceive a gradient of intonational continuity or discontinuity, where individual pitch patterns of the *ṭa ‘āṃîm* are designed to organise the text through a variety of melodic intervals that conjoin, disjoin, or nest its syntactic constituents. The syntax-phonology interface of the intonation-based prosodic

⁸ Conjunct and disjunct melodic motion, discussed in detail in §4.3, is a fundamental concept of music theory that describes the nature of a melodic interval between two adjacent pitches.

hierarchy I develop for TH is then tested within the syntactic domain of the TH relative clause. It is within this syntactic domain that I demonstrate the new prosodic model accurately identifies cross-linguistic prosodic traits for restrictive and nonrestrictive relative clauses. These relative clauses provide an accessible domain to test my model because they have attested cross-linguistic prosodic features (Dresher 1994:13).

1.4 Corpus and Research Method

There are two sets of prosodic representations of the *ta'āmê hammiqrā*, one set for the three books of the Hebrew Bible largely known as the poetic books (Job, Psalms, and Proverbs), and one set for the remaining twenty-one known as the prose books. This study analyses the prosodic representations for the twenty-one books of prose.

There are eight main extant cantillation traditions (and many variants within a tradition) that interpret the prosodic representations of the *ta'āmê hammiqrā* (Portnoy & Wolff 2000).⁹ The intonational system analysed in this study focuses on an Eastern European Ashkenazi tradition transmitted through A.W. Binder, a professor of liturgical music at Hebrew Union College and 20th century authority on this family of cantillation traditions (Milken Archive of Jewish Music n.d.; Portnoy and Wolff 2000:4; Binder 1959:5-6). The individual melodies (or pitch patterns)

⁹ According to Portnoy & Wolff (2000:69-70), the eight main cantillation traditions are: 1) Southern Arab Peninsula, including Yemen and Hadramaut; 2) The Middle East, including Iran, Bukhara, Kurdistan, Georgia, and the northern parts of Iraq; 3) The Near East, including Turkey, Syria, central Iraq, Lebanon, and Egypt (Eastern Sephardic Tradition); 4) North Africa, including Libya, Tunisia, Algeria, and Morocco; 5) Italy; 6) The Sephardic and Portuguese communities of Europe (Western Sephardic Tradition); 7) Western European Ashkenazim, including German-speaking countries, France, and communities of Netherlands and England; 8) Eastern European Ashkenazim, including Ashkenazi communities of Israel and English-speaking countries. (Malin 2016; Ben-Shalom et al. 2014; Jacobson 2002)

for each of the *ṭə ʿāmîm* were taken from Portnoy & Wolff (2000). I chose Portnoy & Wolff for this study primarily because of my experience with the Ashkenazi cantillation tradition in a liturgical setting when I attended Akiba Schechter Jewish Day School in Chicago, Illinois from 1979-1986. Later, as an adult, I spent several years studying cantillation using Portnoy & Wolff's *The Art of Torah Cantillation*.

To reiterate, my decision to begin investigating the intonational systems of extant cantillation traditions is based on a sense that intonation is the most salient prosodic feature represented by the *ṭə ʿāmîm* and most central to its prosodic organisation. Although we no longer have the same melodies the Masoretes used when they transcribed this prosodic system, many of its underlying structural features have been preserved in extant traditions. It is this internal intonational “logic” that I expect is still accessible today and can reveal new ways of understanding the prosodic organisation of the *ṭə ʿāmê hammiqrā*, and as we learn more, even the functions of this Masoretic innovation. While I am optimistic that further research will reveal analogous intonational structures in other traditions, suggesting a common underlying Masoretic tradition, at this point in my research I cannot say that they do. Ultimately, it is my hope that this research will open up new avenues for conceptualising the prosodic nature of TH and the Masoretic cantillation accents.

The prosodic model I develop for TH is based on an analysis of the varied melodic structures that the conjunctive and disjunctive *ṭə ʿāmîm* form. I determine the intonational structures for the *ṭə ʿāmîm* by analysing the pitch patterns of all the individual *ṭə ʿāmîm* in Portnoy & Wolff (2000),

as discussed in §4.3 and §4.4, and by cutting out the musical representations of these pitch patterns (i.e. notes represented on a musical staff) and manually arranging them according to the varied combinations they form in the MT. Although the domains of the new prosodic model I introduce in this study have some congruent features with the prosodic model Drescher (1994) establishes for the *ṭa ʿāme hammiqrā* (namely the rules of stress and tone lengthening that apply within the prosodic word domain and the three rules of external sandhi that apply within the phonological phrase domain), I argue that an intonational analysis yields a complete prosodic hierarchy whose domains are characterised in fundamentally different ways. The biblical corpus used to test this intonation-based prosodic model is comprised of all the overtly headed *ʿāšer* relative clauses in the twenty-one books, of which representative examples are presented and discussed in detail.

I investigate the prosodic nature of an Ashkenazi cantillation tradition in the following steps: 1) describe, classify, and catalogue the types of melodic patterns and intervals that conjunctive and disjunctive *ṭə ʿāmîm* are able to form; 2) determine the organisational prosodic structure of the *ṭa ʿāme hammiqrā* and compare it to the cross-linguistic prosodic model developed by Selkirk (2009, 2011); 3) test how well the new intonation-based prosodic model for TH identifies and locates cross-linguistic prosodic structures for restrictive and nonrestrictive relative clauses.

1.5 Organisation of the Study

In chapter 2, I provide a traditional description of the conjunctive and disjunctive *ṭə ʿāmîm*, and present an overview of the organisation and function of the disjunctives based on the

longstanding theoretical framework of Wickes' (1887) LCD. I argue that this theory does not adequately account for the diversity of melodic patterns or their complex distribution, as the disjunctive *ṭə'āmîm* are grouped into classes that disregard how their individual pitch patterns function within and across verses. I also review previous literature on the *ṭə'āmîm* by Dotan (1978), Yeivin (1980), Aronoff (1985), Janis (1987), Price (2010), and Dresner (1994).

In chapter 3, I discuss the modern theoretical approach to Selkirk's (2009, 2011) prosodic hierarchy and four sets of OT constraints within her prosodic framework including: 1) the constraints on prosodic domination (SLH), 2) phonological constraints on the size of prosodic constituents, 3) interface constraints on syntax-phonology mapping, and 4) prominence constraints that govern prosodic stress and focus. I present the fundamental principles of standard prosodic theory and discuss several well known phonological rules of TH that Dresner (1994) contextualises within his prosodic model for TH. I conclude the chapter with a brief exposition of Dresner's application of the OT constraints within his prosodic model for TH.

In chapter 4, I provide a detailed exposition of the theory of intonation for a new intonation-based prosodic model for the *ṭa'āmê hammiqrā'*, including an original description of the intonational structure of the *ṭə'āmîm*, demonstrating how finely tuned the individual pitch patterns are to their organisation and structure. I argue that the melodies encoded by the conjunctives are not constructed haphazardly or without an internal logic, but follow intonational parameters that allow the hearer to perceive a gradient of intonational conjunction and disjunction, where individual pitch patterns of the *ṭə'āmîm* are designed to prosodically organise

the text through a variety of intonational intervals that conjoin, disjoin, or nest the text's constituents. I argue that the prosodic system as represented by the *ṭa'āmê hammiqrā'* is organised primarily around these individual pitch patterns rather than a hierarchy of disjunctives that produce pausal dichotomies within the verse, as is widely supposed. I also argue that the default structure for the disjunctive *ṭə'āmîm* is not recursive or nested, as proposed by Drescher (1994:22, 35-36), but instead the *ṭə'āmîm* only form recursive structures in certain intonational environments. I conclude chapter 4 by describing the melodic parameters for intonational discontinuity which provide the foundation for understanding the intonational phrase boundary in TH.

In chapter 5, utilising the principles of the theory of intonation developed in the previous chapter, I propose a new intonation-based prosodic model for TH, and apply Selkirk's OT constraints to it. The syntax-phonology interface for this prosodic model is then tested within the syntactic domain of the relative clause. I present data that demonstrate how this model refines the locus of the TH restrictive relative clause within an intonational phrase, prosodically differentiating restrictive and nonrestrictive relatives. I also argue that the data provide preliminary evidence that suggests prosodic iteration in TH has a coordinating function, while prosodic recursion has a subordinating one. I conclude the chapter with a brief review of Holmstedt's (2016) analysis of relative clause types and show that a prosodic analysis largely corroborates his research on the restrictive semantics of relative clauses in the Hebrew Bible.

In chapter 6, I present my conclusions and outline areas of further research.

CHAPTER 2

AN EXPOSITION OF THE *Ṭa'āmê Hammiqrā'*

2.1 Introduction

In this chapter I provide a traditional description of the conjunctive and disjunctive *ṭə'āmîm* (§2.2). I present an overview of Wickes' (1887) LCD (§2.3), the longstanding theoretical framework that undergirds the classification and function of the disjunctive *ṭə'āmîm*. I argue that this framework does not adequately account for their diversity of melodic patterns or their complex distribution within the biblical text. I also review literature on the *ṭə'āmîm* by Dotan (1978) (§2.4), Yeivin (1980) (§2.5), Aronoff (1985) (§2.6), Janis (1987) (§2.7), Price (2010) (§2.8), and Drescher (1994) (§2.9).

2.2 The Conjunctive and Disjunctive *Ṭə'āmîm*

Three systems of notation were developed to represent the chanting melodies of the *ṭa'āmê hammiqrā'*: Tiberian, Palestinian, and Babylonian (Ginsburg 1897; Revell 2000; Shoshany 2013; Monger 2012). Dotan (1978:1453) describes the Tiberian system as the most complete and sophisticated:

The Tiberian system, unlike the other two, was a consolidated, complete system of disjunctive accents and conjunctive accents with defined functions, complete orderliness, and a very uniform textual transmission.

According to the traditional conceptualisation, the *ṭə'āmîm* have three functions (Dotan 1978:1453): 1) they indicate the pausal divisions of a verse, 2) they indicate the melody for the

public reading of the text, and 3) they indicate the locus of lexical stress. Dotan (1978:1453) states that these three functions were important “not only for correct reading of the Bible but also for recognizing the grammatical structure of the language.”

Each word in the MT bears either a conjunctive *ta‘am* or a disjunctive *ta‘am* (pl. *ṭə‘āmîm*). Most *ṭə‘āmîm* mark the locus of lexical stress and indicate the syllable on which the intonational contour is chanted. Other *ṭə‘āmîm* are placed on or before a word’s first letter (prepositive) or on the last letter of a word (postpositive). The names of the *ṭə‘āmîm* are in Aramaic and Hebrew, and refer to their melody, manner of reading, shape, or corresponding hand gesture (chironomy) (Dotan 1978:1454).

There are eight conjunctive *ṭə‘āmîm* and nineteen disjunctives *ṭə‘āmîm*, each with its own distinct intonational pattern. Conjunctives are traditionally described as accents that have no pausal power (i.e. they flow right into the adjacent word) (Dotan 1978:1453) and “indicate some sort of connection to the next word” (Scott 2007:26). Disjunctives are understood to be representations of pause that produce dichotomies within a verse.

The two disjunctives *sōf-pāsûq* and *’etnaḥtā’* form the highest pausal tier, the D0 class. This class makes the first divisions in the verse and has the strongest pausal values. *Sōf-pāsûq*, which means ‘end of verse,’ marks the last prosodic word of a verse and has the strongest pausal value. *’etnaḥtā’*, which means ‘rest,’ marks some juncture within the verse with the second longest pause. Apart from the class that forms *sōf-pāsûq* and *’etnaḥtā’*, there is often considerable

disagreement regarding class distribution of the *ṭə ‘āmîm* and even the number of distinct *ṭə ‘āmîm* that are relevant for classification, as the disjunctives in some models are simply considered allographs. For example in (1), Scott (2007), Portnoy & Wolff (2000), Yeivin (1980), and Price (2010) establish four different classifications for the disjunctives—the class members and the order of the hierarchy of disjunctives within the classes differ. D0 disjunctives form the first divisions in a verse and constitute the strongest pausal class. D3 disjunctives form the last divisions in a verse and constitute the weakest pausal class. D1 and D2 disjunctives have relative pausal strengths that are ranked between D0 and D3.¹⁰

(1a) Scott’s classification of the disjunctives (2007:27-31):

D0	D1	D2	D3
<i>sōf-pāsûq</i>	<i>ṭippəḥā’</i>	<i>rəbī’ī</i>	<i>gērēš</i>
<i>’etnaḥtā’</i>	<i>zāqēp qāṭōn</i>	<i>zarqā’</i>	<i>gēršayim</i>
	<i>zāqēp gādōl</i>	<i>pašṭā’</i>	<i>munnaḥ ləgarmē</i>
	<i>seggōl</i>	<i>yəṭīb</i>	<i>pāzēr</i>
	<i>šalšelet</i>	<i>təbīr</i>	<i>qarnē pāṛā</i>
			<i>təlišā’ gādōlā</i>

¹⁰ Portnoy & Wolff identify one more disjunctive in their D3 class than does Scott. This is to distinguish *’azlā’* from *gērēš*. Although the symbols for these disjunctives are the same, their pitch patterns and distribution within the biblical text are not. Scott likely does not make this distinction because he does not regard the intonational values of the *ṭə ‘āmîm*. Furthermore Scott (2007:31) classifies *’azlā’* as a conjunctive; this same conjunctive is identified as *kadmā’* by Portnoy & Wolff. Scott also identifies an additional conjunctive, *māyālā’*, a variant of *ṭippəḥā’*. The conjunctive *māyālā’* is not recognised by Portnoy & Wolff.

Yeivin’s classification differs the most in order and number; he classifies more *ṭə ‘āmîm* as allographs. Again, these differences likely arise because Yeivin’s classification does not take in to account the pitch patterns of the *ṭə ‘āmîm*. For example, his model lacks *yəṭīb* because he considers it a “musical variant” of *pašṭā’* (1985:194). I believe the different patterns of distribution for *pašṭā’* and *yəṭīb* are better explained in terms of the distinct discourse functions within a narrative—an area for further research. Yeivin’s classification also completely lacks the disjunctive *qarnē pāṛā*, perhaps because it only appears sixteen times in the MT (Wickes 1887:21).

For the sake of consistency, I adopt the class names Drescher (1994) assigns to the four groups of disjunctive *ṭə ‘āmîm*. Unfortunately, Drescher does not identify the individual *ṭə ‘āmîm* that constitute his groups. Scott refers to his classes as Group 1, Group 2, Group 3, Group 4; Portnoy & Wolff refer to them as Emperors, Kings, Dukes, Officers; Yeivin refers to them as I, II, III, IV; Price refers to them as I, II, III, IV, V.

(1b) Portnoy & Wolff's classification of the disjunctives (2000:72):

D0	D1	D2	D3
<i>sōf-pāsûq</i>	<i>seggōl</i>	<i>tippəḥā'</i>	<i>təbīr</i>
' <i>etnaḥtā'</i>	<i>šalšelet</i>	<i>paštā'</i>	<i>gērēš</i>
	<i>zāqēp qāṭōn</i>	<i>yətib</i>	' <i>azlā'</i>
	<i>zāqēp gādōl</i>	<i>zarqā'</i>	<i>gēršayim</i>
	<i>rəbī'ī</i>	<i>munnāḥ ləgarmē</i>	<i>pāzēr</i>
			<i>təlīšā' gādōlā</i>
			<i>qarnē pārá</i>

(1c) Yeivin's classification of the disjunctives (1980:169):¹¹

D0	D1	D2	D3
<i>silluq</i>	<i>seggōl</i>	<i>zarqā'</i>	<i>pāzēr</i>
' <i>atnāḥ</i>	<i>šalšelet</i>	<i>paštā'</i>	<i>təlīšā'</i>
	<i>zāqēp</i>	<i>təbīr</i>	<i>gērēš</i>
	<i>tippəḥā'</i>	<i>rəbī'ī</i>	<i>munnāḥ ləgarmē</i>

Price's (2010) hierarchy in (1d) differs significantly from the others as it has five classes, making a distinction between *sōf-pāsûq* and *silluq*. This interpretation is unique because most scholars understand *silluq* to be an additional symbol (not intended to be chanted, much like *meteg*) that simply marks the accented syllable of a word ending with the postpositive *sōf-pāsûq*.¹²

¹¹ Yeivin considers the symbol *silluq* and not *sōf-pāsûq* as the intended *ta'am* that signals the close of a verse. Also note that he refers to '*etnaḥtā'*' using the Hebrew equivalent '*atnāḥ*'. Both Yeivin and Price do not make a distinction between *zāqēp qāṭōn* and *zāqēp gādōl*.

¹² In this way, the postpositive *sōf-pāsûq* is similar to *paštā'* (לְפָתָהּ) since an additional *paštā'* symbol is often needed to mark the prosodic word's locus of lexical stress (in this example, the stressed פָּ; it is on this stressed syllable that the intonational contour of the *ta'am* is chanted).

(1d) Price’s classification of the disjunctives (2010:24):¹³

D0	D1	D2	D3	D4
<i>sōf-pāsûq</i>	<i>silluq</i>	<i>ṭippəḥā’</i>	<i>təbīr</i>	<i>gērēš</i>
	<i>’atnāḥ</i>	<i>zāqēp</i>	<i>pašṭā’</i>	<i>pāzēr</i>
		<i>seggōl</i>	<i>zarqā’</i>	<i>təlišā’ gədōlā</i>
			<i>rəbī’ī</i>	

There are, however, scholars who do not adhere to these types of classifications for the disjunctive *ṭə ’āmîm*. For example, Wickes, a 19th century Christian mathematician who is cited for his development of the LCD, analyses the distribution of the disjunctives individually, not by class.¹⁴ Similarly, Binder (1959) makes no effort to organise the disjunctives into classes, but simply identifies the disjunctives as ‘Lords’ and the conjunctives as ‘Servants,’ while characterising the distinct intonational pattern of each *ṭa ’am*.

2.3 Wickes

Wickes’ LCD is a schema for the *ṭə ’āmîm* based on a number of highly complex variables that determine how a verse is to be continuously divided in two by the disjunctives.¹⁵ According to Wickes (1887:29), this system of dichotomies “served to mark the logical and syntactical

¹³ Price, like Yeivin, refers to *’etnaḥtā’* with its Hebrew equivalent *’atnāḥ*, and does not make a distinction between *zāqēp qāṭōn* and *zāqēp gādōl*. Furthermore, Price’s classification does not include the disjunctives *šalšelet*, *munnāḥ ləgarmē*, or *qarnē pārā*.

¹⁴ The LCD is the prevailing theoretical framework for understanding the *ṭa ’āmē hammiqrā’*. It is, perhaps, important to note that many of the early grammarians whose analyses of the *ṭə ’āmîm* dominated the field were not Jewish and likely not intimately acquainted with the practice of chanting the Hebrew Scriptures (Yeivin 1980:162, 168-169). As a result, the focus of their description of the *ṭə ’āmîm* may diverge significantly from the original purpose and functions of the *ṭa ’āmē hammiqrā’*.

¹⁵ In his 1887 treatise, Wickes builds on the work of previous Christian grammarians. Concerning the development of the LCD, Wickes asserts: “Jewish writers on the accents had no more idea of this law than they had of many of the chief grammatical rules. Its discovery is due to the unwearied diligence, with which the study of the accents was pursued by Christian scholars of the 17th century” (29).

interpunction” of the text. The general principle governing these divisions is that they occur between parallel or complementary segments, a feature Wickes attributes to its poetical origins (30).¹⁶ In an attempt to give a simplified overview of this schema below, many of the variables that Wickes claims influence the distribution of the *ṭə ‘āmîm* are not included. My main objective in this presentation is to underscore the inadequacy of this model to account for the distribution of the *ṭə ‘āmîm*, particularly given their diversity in number and distinct melodic patterns.

The first division of the verse results in two halves—one half ending in *’etnaḥtā’*, the other ending in *sōf-pāsûq*. Wickes refers to the segment of words that precede a word bearing an *’etnaḥtā’* or *sōf-pāsûq* as comprising the *’etnaḥtā’* clause or the *sōf-pāsûq* clause. Although the governing principle for division as described by Wickes is parallelism, the first division made by *’etnaḥtā’* can occur anywhere in the verse and does not necessarily result in an equal parts division, as the examples in (2) show.

(2a) וַיְהִי שְׁנֵיהֶם עֲרוּמִים הָאָדָם וְאִשְׁתּוֹ וְלֹא יִתְבַּשְׁשׁוּ:
 And the two of them were naked, the man and **his wife**, and they were not ashamed.
 (Genesis 2:25)

(2b) וַיֹּאמֶר אֱלֹהִים הִנֵּה נָתַתִּי לָכֶם אֶת-כָּל-עֵשֶׂב | זֶרַע זֶרַע אֲשֶׁר עַל-פְּנֵי
 כָּל-הָאָרֶץ וְאֶת-כָּל-הָעֵץ אֲשֶׁר-בּוֹ פְּרִי-עֵץ זֶרַע זֶרַע לָכֶם יִהְיֶה לְאֹכֶלָה:
 And then God said: ‘Behold I give to you every grass bearing seed which is upon the face
 of all the earth and every tree in which the fruit of the tree is bearing **seed**, it will be food
 for you. (Genesis 1:29)

¹⁶ The feature of parallelism (or bilateralism) within the context of the *ṭə ‘āmê hammiqrā’* is better understood as a feature of its prosodic nature—a feature that marks orality (see §4.3 footnotes 74 and 76).

(2c) וְשֵׁם-הַנָּהָר הַשֵּׁנִי גִיחֹן הוּא הַסּוּבֵב אֶת כָּל-אֶרֶץ כּוּשׁ:

And the name of the second river is **Gihon**; it is the one surrounding the whole land of Cush. (Genesis 2:13)

If the verse does not contain *'etnahtā'*, Wickes considers the segmental division ending with *tippəḥā'* to be the first main “parallel” dichotomy (Wickes 1887:61).¹⁷ However, I would argue that this is an arbitrary classification. For example, in (3) there are two disjunctives within the verse—*tabir* (וּבְכֹל) and *tippəḥā'* (וְהָאָרֶץ); it seems arbitrary to call the segment ending in *tippəḥā'* (וְהָאָרֶץ) the “first main division,” as either could be considered so.

(3) וּבְכֹל הַשָּׁמַיִם וְהָאָרֶץ וְכָל-צְבָאָם:

And they were finished, the heavens **and the earth**, and all their host. (Genesis 2:1)

After the first main division is made, if there are at least three prosodic words in the *sōf-pāsûq* clause (not including the blue word marked by *sōf-pāsûq*), a second minor division is made by the *tippəḥā'* (Wickes 1887:64).¹⁸ However, if we compare the dichotomies in the *sōf-pāsûq* clauses in (4), it is clear that although each verse contains four prosodic words and has a *tippəḥā'* (represented by the prosodic word in red), the verses are not all divided in the same manner.¹⁹

¹⁷ Note that the presence of an *'etnahtā'* is not dependent on whether a verse is long or short. Compare 1Kings 17:2 : וַיְהִי דְבַר-יְהוָה אֵלָיו לֵאמֹר: (a short verse which does not contain *'etnahtā'*) with Exodus 28:18 : וְהָטוּר הַשֵּׁנִי נֶפֶד סָפִיר וְיָהֳלָם: (a short verse which does contain *'etnahtā'*).

¹⁸ In this way, Wickes understands the *tippəḥā'* to be subordinate to the *sōf-pāsûq* and thus a part of, or as Drescher would say, nested in its clause.

¹⁹ For the remainder of this section, the *ṭə'āmîm* pertinent to this discussion are colour coded to highlight patterns of distribution within the verses.

- (4a) שִׁים־נָא יָדְךָ תַּחַת יָרְכִי:
Place-please your hand, under my thigh. (Genesis 24:2)
- (4b) וְלָקַחְתָּ אִשָּׁה לְבָנִי לְיִצְחָק:
And you will take a wife, for my son for Isaac. (Genesis 24:4)
- (4c) וְאַבְיִשָׁג הַשְּׁוֹנַמִּית מְשָׁרֶת אֶת־הַמֶּלֶךְ:
And Abishag the Shunamite, was serving, the king. (1Kings 1:15)
- (4d) וַיִּצְוֵנו אֶת־שְׁלֹמֹה בְּנֹו לֵאמֹר:
And then he commanded, Solomon his son, saying. (1Kings 2:1)
- (4e) מִי־יְהִיָּה אֲשֶׁר־פָּדָה אֶת־נַפְשִׁי מִכָּל־צָרָה:
As the LORD lives, who ransomed my soul, out of every adversity. (1Kings 1:29)
- (4f) וַיַּעַשׂ זָר־זָהָב לְמַסְנַרְתּוֹ סָבִיב:
And he made a border of gold for its rim all around. (Exodus 37:12)

For example, the third prosodic words in (4a) (תַּחַת) and (4b) (לְבָנִי) bear the conjunctive *mērkā*’, while the third prosodic words in (4c) (מְשָׁרֶת), (4d) (בְּנֹו), (4e) (אֶת־נַפְשִׁי), and (4f) (לְמַסְנַרְתּוֹ) all bear the disjunctive *tippāhā*’. A comparison of (4b) with (4d) shows different distributions of the *ṭā’amîm* within these verses, even though they have similar syntactic structures. The first prosodic word in each verse is a verb followed by its direct object, but the verb in (4b) bears the conjunctive *mērkā*’ (וְלָקַחְתָּ), while the verb in (4d) bears the disjunctive *tabir* (וַיִּצְוֵנו). Likewise, the verb (וַיִּצְוֵנו) and its direct object (אֶת־שְׁלֹמֹה בְּנֹו) in (4d) could have been conjoined by a conjunctive as these same syntactic constituents are in (4f) (the conjunctive

on the verb וַיַּעַשׂ intonationally conjoins its direct object וְזֶה־זֶה—but they are not. Furthermore in (4a), the disyllabic preposition מִתַּחַת could have been conjoined to its NP יָרְכִי: by a *maqṣef* like the disyllabic preposition מִכָּל־ is conjoined to its NP צָרָה: in (4e). Wickes’ LCD does not provide a clear and compelling explanation that accounts for this variety—particularly, why one dichotomy production surfaces and not another, even in similar syntactic and phonological environments.²⁰

In a somewhat bewildering array of governing conditions, Wickes goes on to explain the distribution of *tə ‘āmîm* based on the number of words and minor dichotomies the verse contains. For example, Wickes describes the *sōf-pāsûq* clause in (5a) as having two minor dichotomies (not including *tippəḥā’* in red), the first of which is marked by *zāqēp* (בְּעֵבֶר־ךָ) (1887:66). However, this is not always the case as (5b)-(5d) show—the first minor division is marked with *təbîr* (in light blue). Although each of the verses in (5) have seven prosodic words, they are all parsed very differently. From a syntactic standpoint, the first prosodic words in (5b)-(5d) are *wayyiqtol* verbs, but none is marked with the same disjunctive, and only (5b) is conjoined to its subject via the conjunctive *dargā’* (וַיִּלְכְּדֵי). In (5c) the disjunctive *gēršayim* (וַיִּסְמְכוּ) divides this same syntactic segment. Wickes’ LCD does not adequately account for variations in type and distribution of conjunctive and disjunctive *tə ‘āmîm* (Wickes 1887:44-59).

²⁰ According to Yeivin (1980:231), יָרְכִי: (like צָרָה:) is disyllabic because “vocal [šəwā’] does not form a syllable.”

- (5a) לְמַעַן יִיטַב־לִי בְעִבוּרְךָ וְחַיִּיתָה נַפְשִׁי בְּגִלְגָּלֶיךָ :
on account that it will go well for me **because of you**, and **my life** will be spared for your sake. (Genesis 12:13)
- (5b) וַיֵּלְכוּ בְנֵי־יִשְׂרָאֵל אִישׁ לְנַחֲלָתוֹ לְרִשֵּׁת אֶת־הָאָרֶץ :
 And the **sons of Israel** went, each to **his inheritance**, in order to possess the land. (Judges 2:6)
- (5c) וַיִּסְמְכוּ אֶתְרוֹן וּבָנָיו אֶת־יָדֵיהֶם עַל־רֹאשׁ הָאֵיל :
And they leaned, (Aaron **and his sons**), **their hands**, on the head of the ram. (Leviticus 8:22)
- (5d) וַיִּשְׁכַּב עִם־אֲבֹתָיו וַיִּמְלֹךְ נָדָב בְּנוֹ תַחַתָּיו :
And he laid down with his fathers, and **he reigned** (Nadab **his son**) after him. (1Kings 14:20)

Wickes describes the *sōf-pāsûq* clause comprised of seven prosodic words in (6a) as having three minor dichotomies (not including *tip̄pəḥā*’ in red), the first two of which are marked by *zāqēp̄* (אֶת־קִיָּן) (1887:66). Again, this is not always the case as (6b) shows the first two minor divisions are *zāqēp̄* (הַצִּדְקָה) and *pašṭā*’ (לָךְ), respectively. Not only do the first two minor divisions differ in (6a)-(6c),²¹ but the disjunctives that form the third minor divisions in these examples differ as well: the third minor division for (6a) is made by *pašṭā*’ (וְתַהֲרֹר), while the divisions in (6b), (6c), and (6d) are made by *rəbī’ī* (אֶתְרִי־כִין), *yaṭīb* (בִּי), and *talīšā’ gādōlā* (לְלַטּוֹשׁ), respectively.

²¹ The first two minor dichotomies (purple and brown) in (6b) and (6d) are the same.

- (6a) וַתֵּהָרַג וַתֵּלֶד אֶת־קַיִן וַתֹּאמֶר קָנִיתִי אִישׁ אֶת־יְהוָה:
And she conceived, and she bore **Cain**, **and she said**: I have gotten **a man** with [the help of] the LORD. (Genesis 4:1)
- (6b) אַחֲרֵי־כֵן יִקְרָא לָךְ עִיר הַצְּדִיק קְרִיָּה נֹאמָנָה:
Afterward, it will be proclaimed **of you**, the city of **the righteous**, **a city**, faithful. (Isaiah 1:26)
- (6c) כִּי הוֹאִיל יְהוָה לַעֲשׂוֹת אֶתְכֶם לָךְ לְעָם:
Because he was willing (**the LORD**) to make **you** a people **for himself**. (1Samuel 12:22)
- (6d) לְלִטּוֹשׁ אִישׁ אֶת־מַחְרָשְׁתּוֹ וְאֶת־אֲתוֹ וְאֶת־קַרְדָּמוֹ וְאֶת־מַחְרָשְׁתּוֹ:
To sharpen, each his plowshare **and his mattock**, **and his axe**, **and**, his sickle. (1Samuel 13:20)

As we consider Wickes' schema of dichotomy, it is important to note that he does not make a distinction between *zāqēp qāṭōn* (in (6a) (אֶת־קַיִן)) and in (6b) (הַצְּדִיק)) and *zāqēp gādōl* (in (6a) (וַתֹּאמֶר)), which have different pitch patterns and distinct patterns of distribution within the text.

The half of the verse governed by 'etnaḥtā' operates in a similar fashion. When an 'etnaḥtā' clause has only two prosodic words (7a), the first dichotomy is made with *ṭippəḥā* (וַיִּגְרֵשׁ) (Wickes 1887:69).

- (7a) וַיִּגְרֵשׁ אֶת־הָאָדָם
 And then he drove out the man . . . (Genesis 3:24)

Likewise, if the first main dichotomy falls on the second prosodic word before *'etnaḥtā'* (8a), it too, is made with *ṭippəḥā'* (אֶת־שָׂרָה) (Wickes 1887:69). However, this rule does not always hold because it can also be made with *zāqēp̄* (8b), and *tabīr* (8c).

- (8a) וַיְהִינָה פֶקֶד אֶת־שָׂרָה כַּאֲשֶׁר אָמַר
 And the LORD visited **Sarah** as he had said . . . (Genesis 21:1)
- (8b) וַיֹּאמֶר אֱלֹהִים יִקְוּוּ הַמַּיִם מִתַּחַת הַשָּׁמַיִם אֶל־מְקוֹם אֶחָד וְתִרְאֶה הַיַּבֵּשָׁה
 And then God said: “Let the waters under the heavens be gathered to **one** place, and let the dry land appear. (Genesis 1:9)
- (8c) הָעֵידוּתִי בְכֶם הַיּוֹם אֶת־הַשָּׁמַיִם וְאֶת־הָאָרֶץ כִּי־אָבֹד תֵּאבְדוּן מִהָרָּמַיִם מֵעַל
 הָאָרֶץ אֲשֶׁר אַתֶּם עֹבְרִים אֶת־הַיַּרְדֵּן שָׂמָּה לְרִשְׁתָּהּ
 I call to witness against you today, heaven and earth, for you will quickly perish from the land, which you are crossing **the Jordan**, toward there, to possess. (Deuteronomy 4:26)

If the dichotomy is made on the third prosodic word before *'etnaḥtā'*, it is made with *zāqēp̄* (9a) (Wickes 1887:69); although this is not always the case (9b). Both examples have five prosodic words and identical *ṭə'āmîm* on the last three prosodic words, but the disjunctives that mark the second prosodic words in each *'etnaḥtā'* clause differ.²² In (9a), the first two prosodic words conjoin a verb with its subject (וַיַּעַשׂ אֱלֹהִים), while in (9b) this same segment is comprised of a verbal infinitive construct and its finite form (בָּנְיָהּ בְּנִיתִי). Again, Wickes' LCD provides no clear and compelling account that explains the use of different disjunctive patterns for these segments of the verse.

²² Note that the conjunctive *ṭə'āmîm* conform to the disjunctive *ṭə'āmîm* they serve, in other words, if the disjunctive differ, so will their preceding conjunctives.

(9a) וַיַּעַשׂ אֱלֹהִים אֶת־שְׁנֵי הַמְּאֹרֹת הַגְּדֹלִים
And God made the two great lights . . . (Genesis 1:16)

(9b) בָּנִיתִי בַּיִת זָבֹל לָךְ
I have indeed built an exalted house for you . . . (1Kings 8:13)

My main objection to Wickes' schema is that it does not satisfactorily account for the diverse patterns of distribution of the *ʔə'āmîm* in the text. The rules and exceptions he outlines for dividing the verse become increasingly complex and inconsistent as verses get longer, and they do not provide a clear explanation of why some verses of similar length or similar syntactic structure use more conjunctives while others use a variety of disjunctives. Furthermore, Wickes' LCD provides no compelling reason for why so many different types of *ʔə'āmîm* and melodic variation are necessary. In short, the LCD has too many unexplained variables and exceptions to be truly helpful in decoding the internal logic of the *ʔa'āmê hammiqrā'*. Most importantly though, the LCD provides little insight into the most salient feature of the *ʔa'āmê hammiqrā'*—intonation—and particularly, how it functions to enhance the cohesion and coherence of the text and to reflect discourse and information structure for the hearer. I believe the patterns of distribution for the *ʔə'āmîm* Wickes and others attempt to describe using the LCD are a byproduct of a more central organising principle—one I argue in §3-§5 is prosodic in nature and best understood through intonational analysis.

2.4 Dotan

Dotan (1978:1453) conceptualises the *ṭaʿāmê hammiqrāʾ* as fundamentally a system of punctuation, where each *ṭaʿam* indicates a different degree of pause—conjunctives marking zero degrees of pause, and the various disjunctives marking relative degrees of pause depending on their position within a verse. Dotan (1978:1453) asserts that the melodic diversity exhibited by the conjunctive *ṭəʿāmîm* was designed only for musical variation: “It was only for musical variation that different conjunctive accents were established for words which are connected in different contexts.” Furthermore, Dotan (1978:1454) takes a very literal approach to the LCD, distilling its principles into two main components:

- 1) each division is always into two only—a dichotomy, i.e., the result of every division is always only two smaller units and never more; 2) the dichotomy continues time after time in every one of the resultant units until there remain in each small unit only two words (which do not have to be divided) or until all the accentuation signs have been used and there are technically no more possibilities for indicating another division.

Both Dotan and Aronoff hold to this strict interpretation of the LCD: “Each verse of the Bible is divided into two parts, and each of these in two, and so on until no group of more than two words remains undivided” (Aronoff 1985:34-35). Janis, however, is critical of this simplistic reading of Wickes:

“Aronoff [1985], reading Wickes somewhat carelessly perhaps, claims (pp. 34-35) that the dichotomy process continues “until no group of more than two words remains undivided.” This assertion, aside from the fact that it contradicts Wickes, is easily

proven false: one frequently finds sequences of three or even four unhyphenated words that are not divided by any disjunctive accent (Janis 1987:217).

2.5 Yeivin

The basis for Yeivin's (1980) classification of the *ṭə'āmîm* is modelled, in large part, on the dichotomy principles outlined by Wickes, whereby a verse is continuously divided in two until only "single words or groups of words joined by conjunctives" are left (172). However, unlike Wickes, Yeivin concludes that the disjunctives form a graded hierarchy, "some marking a major break, others a minor one" (167).

Yeivin catalogues the history of how the *ṭə'āmîm* were conceptualised, noting that the earliest treatises on the *ṭa'āmê hammiqrā'* divided them into two or three categories based on musical features. For example, the "major pausal accents" (including *sōf-pāsûq*, *'etnaḥtā'*, *ṭippəḥā'*, *zāqēp̄*, and *pašṭā'*) were given names which mean low/standing/stopping (168), while the "lesser pausal accents" (including *pāzēr*, *təlišā'*, *gērēš*, and *šalšelet* in the first category, and *zarqā'*, *rəbī'ī*, *təbir*, and *munnāḥ ləgarmê* in the second) were given the names high/raising/exalting-the-voice, and high/raised, respectively (168). This classification based on intonation would yield a melodic contour of a verse that begins high and then lowers as the verse concludes (168). Later, during the Renaissance, Christian scholars promulgated a classification of the disjunctives based primarily on a rigid hierarchy—emperors, kings, dukes, and counts—of absolute pausal values. It was this conceptualisation of the *ṭə'āmîm* that essentially supplanted intonation with pausal phenomena.

While Yeivin cautions that the classification of the disjunctives into grades according to pausal value can be misleading because “[o]ne cannot argue that the pause after one accent must be longer than the pause after another. The value of the accents is relative” (169), he does support a hierarchical classification of the disjunctives into four grades—I, II, III, IV—according to their relative pausal strength as manifested by the order in which they form dichotomies within a verse:

The general tendency of the accentuation is to divide [via pause] a larger unit into two smaller units, and as a rule a unit ending with a disjunctive of one grade is divided by one of the grade below. Thus a unit ending with a disjunctive of grade I is divided by one of grade II, not by one of grade III, and so on. The difference between the scheme proposed here and the earlier gradings into emperors, kings, etc., is that the pausal value of the grades in this scheme is relative, not absolute. I.e. disjunctives of grade II are not characterised by a longer pause than those of grade III, but by the fact that their clause is normally divided by a disjunctive of grade III. For this reason, in a short verse, the real disjunctive value of a disjunctive of grade II might be less than that of a disjunctive of grade IV in a long verse or in a different circumstance (169).

Although Aronoff (1985), Price (2010), and Drescher (1994) highlight different functional analyses for the *ʔə ʿāmîm*, they, like Yeivin, essentially adopt a distillation of Wickes’ LCD as the basis of their theoretical frameworks for the *ʔa ʿāmê hammiqrāʾ*. Furthermore, while Janis (1987) is highly critical of the LCD and proposes an alternative theory of distribution for the *ʔə ʿāmîm*

based on their prosodic features, he does not situate his theory within a modern prosodic framework, nor does his analysis stem from a description of an extant tradition of intonation which would provide insight into how the written representations of the *תְּאֵמִים* are prosodically organised. Janis' theoretical approach, therefore, results in an algorithm for the *תְּאֵמִים* that effectively generates the pausal structure of unspecified phrases of intonation.

2.6 Aronoff

Aronoff's (1985) summary analysis of the *תְּאֵמֵ הַמִּיֻּרָא* is that it is an orthography that comprises "the most detailed, complete, syntactically based system of punctuation ever used" (34). His study delineates a syntactic theory based on Wickes' principles of dichotomy:

Each verse of the Bible is divided into two parts, and each of these in two, and so on . . .

A disjunctive accent is placed at each dividing point, the accents being ranked such that the higher division is marked by a higher-ranking accent. As for the principle by which the division is made . . . the accents are arranged so as to provide a complete, unlabelled, binary, constituent structure analysis of each verse (35).

Aronoff analyses many syntactic constituent structures formed by the *תְּאֵמִים* that he finds relevant to the development of his theory for the *תְּאֵמֵ הַמִּיֻּרָא* including V-initial sentences, topicalised preverbal elements, noun phrases, conjunctions, clitics, and direct speech phrases. Aronoff (1985:53) then proposes the Masoretic Parsing Principle, a theory of phrase structure, which defines the main rule that governs the placement of the *תְּאֵמִים*:

Given a constituent X_i of category X , divide it into two continuous subconstituents such that one of them is the maximal continuous constituent of the same category X within X_i . For example, given a typical V-initial sentence, the principle finds the longest constituent sentence, and makes the major break at the end of it.

My main objection to Aronoff's analysis is that although he provides a disclaimer acknowledging that syntax was not the Masoretes' intended focus for the *ṭa 'āmē hammiqrā'*, his theoretical model is entirely syntax based:

I do not claim that the purpose of the accentuation was syntactic analysis, or that the Masoretes were primarily syntacticians. What they wanted to do was bring out as clearly as possible the literal meaning of the text—its sense, in the terminology of modern semantics; and they saw that they could best do this by marking the exact relations of the words of the text to one another, down to the finest detail (35).

This purely syntactic model undermines the Masoretic prosodic devices that are likely at the system's core. Furthermore, Aronoff completely dismisses the intonational relevance of the *ṭa 'āmîm* (66) and considers a prosodic framework for the *ṭa 'āmē hammiqrā'* to be entirely unacceptable:

On the assumption that each accent had a fixed intonational value, this particular distribution could serve only to obscure the natural intonation of the text, since there is no simple one-to-one correspondence between accents and the syntactic unit with which intonation is correlated. This lack of correspondence is only aggravated in modern recitation, where there is a tendency for the rarer accents to be more prominent—with

the result that, the greater the syntactic break, the less distinguished musically. The Masoretic system is not merely inefficient from a prosodic point of view, it is downright confusing; however, from a purely syntactic point of view, as a way of indicating the relationships among the parts, it is perfectly reasonable (67-68).

The confusion Aronoff describes above regarding the relevance of “fixed intonational values” for each *ṭa‘am* arguably stems from an underdeveloped concept of prosody. This is understandable, given that at the time of his work, prosodic theory was in its infancy.²³ Modern prosodic theory, however, provides an apropos theoretical framework to understand the intonational relationships represented by the *ṭa‘ămê hammiqrā’* and the ways in which this system maps intonation to syntax—whether that be isomorphically or nonisomorphically. Contrary to Aronoff’s assessment of the *ṭə‘āmîm* above, I present data in §5 that show a direct correspondence between the prosodic structure of the *ṭə‘āmîm* and the syntactic constituents of relative clauses.

2.7 Janis

In accordance with rabbinic tradition and liturgical practice, Janis (1987) regards the *ṭa‘ămê hammiqrā’* as fundamentally prosodic in nature:

I assume that the Masoretes intended the accents to help convey the sense of the text, not abstractly but through utterance (10). . . . In my view, Masoretic accentuation is a system for representing this intonational aspect of the correct recitation of the Biblical text.

²³ Some of the most influential early works in prosodic theory include: Selkirk’s (1972) PhD thesis entitled “The Phrase Phonology of English and French,” Liberman’s (1975) PhD entitled “The Intonational System of English,” Ladd’s (1978) PhD thesis entitled “The Structure of Intonational Meaning,” and Pierrehumbert’s (1980) PhD thesis entitled “The Phonology and Phonetics of English.”

Syntactic grouping is, I propose, the basis and point of departure for the distribution of the intonation contours which the Masoretic accents represent (12).

This perspective on the *ṭa'āmê hammiqrā'* marks a significant point of departure from the traditional framework that predominated since Wickes. For Janis, the *ṭə'āmîm* are representations of spoken language, “functionally equivalent to the intonation contours of speech” (17), not a record of Masoretic syntactic analysis or exegesis. With this in mind, he builds a descriptive grammar of the *ṭa'āmê hammiqrā'* based on two sets of rules—phrasing rules and countdown rules—that specify the distribution of the *ṭə'āmîm* within a verse. Phrasing rules regroup the words and convey the sense of the verse by “providing phrases simple and short enough to be readily uttered and understood and which are at the same time systematically related to underlying structure (i.e., to sense)” (27). Countdown rules distinguish the disjunctives that terminate a “phrase of intonation” from those that form the sequence leading to a phrasal pause. Countdown rules convey meaning by “enabling the listener to anticipate, at any point in the recitation, the quantity and the syntactic status of the word-groupings which are still to be recited and which he will need to parse and comprehend” (85). According to Janis, the purpose for the variety in distinct disjunctive *ṭə'āmîm* is to signal varying “degrees of finality” within a verse:

If the purpose of the accent were simply to signal the end of an intonational group, it would be sufficient to have the same accent do the job at the end of each group. The reason for this variety is to distinguish degrees of finality (67).

Janis does not, however, ground his rules for the *ṭə'āmîm* in a theory of intonation, but only generally references an undeveloped notion of “intonational phrasing.” His analysis of the intonational phrasing of the MT is not based on a proposal for the prosodic structure of the *ṭə'āmîm*, but on his assumptions regarding natural phrasings for syntax and pause. Unconvinced that the intonation structure of extant cantillation traditions have a “musical life or logic of [their] own” (18), Janis constructs his analysis of the *ṭə'āmîm* apart from any extant system of intonation. Furthermore, his countdown and phrasing rules are based on the assumption that the intonational groupings he proposes for the *ṭə'āmîm* are of a single type (i.e. all the groupings belong to the same prosodic domain), and that the function of the melodic variety of the *ṭa'āmê hammiqrā'* is to provide the listener with a predictable sequence of intonation that maps the “degrees of finality” for syntactic groupings at any point in an utterance. These sequences of intonation that map degrees of finality recall Wickes’ description of pausal melodies (1887:2), the main difference being that Janis recognises these melodies are, in fact, prosodic in nature—i.e. intonational contours of an utterance: “My theory assumes that cantillation motifs (or, more precisely, sequences of cantillation motifs) are functionally equivalent to the intonation contours of speech” (Janis 1987:18).

Despite the fact that Janis is highly critical of Wickes’ LCD, he still adopts a classification of the disjunctives (i.e. D0, D1, D2, D3, etc.) that largely flows from Wickes. His proposal attempts to illuminate the prosodic nature of the *ṭə'āmîm*, but it, too, is effectively a theory based on features of phrasal pause, not intonational analysis. While pausal phenomena form one aspect of prosody, I maintain that intonation is the most salient feature of this Masoretic innovation, and therefore

intonational analyses of extant cantillation traditions are arguably better suited to illuminate the prosodic structure the *ṭə ʿāmîm* represent. Although headed in the right direction, Janis is missing the prosodic framework and an analysis of intonation that situate the *ṭa ʿămê hammiqrā* in an appropriate theoretical context for a fully productive analysis.

2.8 Price

Much like Aronoff (1985), Price (2010, 2016) considers the *ṭa ʿămê hammiqrā* to “have their own laws of grammar and syntax” (2010:23), which “complements the grammar and syntax of Hebrew, preserving the traditional understanding of the text” (2010:7). Through his analysis of the *ṭə ʿāmîm*, Price constructs a hierarchy of rules that “govern the placement of the accents in a verse” (2010:xv). Wickes’ LCD plays an important role in Price’s theoretical model as it provides the underlying framework for his own rules for the *ṭə ʿāmîm*:

[E]very verse has at least one division. The disjunctive accents first divide a verse into two dichotomous segments; then these two segments are each divided into two lesser segments, and so forth, until dichotomous divisions can no longer take place. Dichotomous division occurs where the grammar and syntax of Hebrew admit the natural separation of clauses and phrases. Division ceases where grammar and syntax call for close, inseparable relations between contiguous words, in which case conjunctive accents are used (Price 2010:32).

Price's critique of Wickes is also strong as he finds many inadequacies with the underlying principles of the LCD including what Price calls an "unnatural binary restraint" (Price 2010:35).

Concerning this restraint Price asserts:

No natural language is limited to binary rules of grammar and syntax. In addition to pairs, complementary and parallel elements of a language may appear in triplets and quadruplets, or in fact any multiple within the natural limits of language. Hebrew is no different. Wickes noted this problem, but attempted to justify this binary restraint: "In certain cases, indeed, the same accent is repeated in the division of the clause; but, from the very nature of the continuous dichotomy, it loses in disjunctive value each time of repetition" (Wickes 1887:31).²⁴ But this certainly must be doubted in many cases (2010:35).

While Price dismisses the binary restraints that the LCD places on syntax and grammar, I argue that the feature of bilateralism which the LCD attempts to define is more properly understood within a prosodic framework because it is a primary feature of orality, not syntax or grammar. Furthermore, I do not explain the consecutive repetition of *ṭā 'āmîm* within a verse as the LCD's method of regulating binary structure, but instead as a means for the *ṭā 'āmê hammiqrā'* to extend the functional governance of a *ṭā 'am* over additional discourse constituents. Again, I believe this particular phenomenon is best understood within the framework of orality where prosodic features reflect the text's discourse and information structure.

²⁴ Citing Yeivin's *Introduction to the Tiberian Masorah* (1980:170), Price notes that "Yeivin agreed with Wickes on this point" (Price 2010:35).

Price is also dissatisfied with the complexity of Wickes' model, stating: "The complexity of Wickes' laws of the accents led me to search for a simpler scheme" (2010:40). The three laws Price proposes as a simpler scheme for the *ṭa'āme hammiqrā'* include the Law of Hierarchical Governance, the Law of Substitution, and the Law of Conjunctives.

The Law of Hierarchical Governance observes a hierarchical order among the disjunctives where: 1) "a disjunctive accent governs the domain of a segment of a verse" (2010:25); 2) "the domain of a given disjunctive accent may include lesser segments governed by disjunctive accents immediately subordinate [defined as "near" or "remote"] to the given accent" (2010:25); 3) "the domain of a disjunctive may be empty, containing only the word-unit bearing the given accent; fractional, containing only a near subordinate segment; or full, containing a near and one or more remote subordinate segments" (2010:25); 4) "the distinguishing characteristic of each hierarchic rank is that it embraces the segments of the next lower rank in its domain" (2010:26).

The Law of Substitution recognises that some disjunctive accents "do not appear in the laws of hierarchic governance, but serve the role of designated substitutes" (2010:27). Price, following Wickes (1887:78-79, 100-101), notes that substitutions "take place for musical reasons" (2010:27-28).

The Law of the Conjunctives maintains a sequence of words that are closely related grammatically and syntactically, such that 1) "the first and intermediate words in the sequence have conjunctive accents, and the last word has a disjunctive accent" (2010:28), and 2) "a

conjoined sequence of words functions as a single word (or word-unit), [where] the presence of conjunctive accents has little or no effect on the syntax of the disjunctive accents” (2010:28).

As with all of the models for the *ṭa ʿāme hammiqrā* reviewed thus far, Price’s model does not take into account the diverse intonational features of the *ṭa ʿāmîm* as manifested by extant cantillation traditions, but instead interprets the disjunctive *ṭa ʿāmîm* as representations of pausal phenomena.

2.9 Dresher

Although Dresher, like Janis, conceptualises the *ṭa ʿāme hammiqrā* to be fundamentally prosodic in nature, Dresher’s 1994 article is the first linguistic treatment to outline a modern prosodic approach to understanding their structure. Dresher (2013:288) states that the *ṭa ʿāmîm* convey the meaning of the Hebrew text semantically, syntactically, and prosodically:

In simple sentences, the three levels are often isomorphic: the logical relations between the words are conveyed by the syntax, and both are directly mirrored by the prosody. It is in more complex cases that we will be able to distinguish between these representations.

In his 1994 article, Dresher accounts for nonisomorphism—the lack of congruity between the three levels—by arguing that the *ṭa ʿāme hammiqrā* is a representation of a prosodic system. Dresher takes the view that the relationship between phonology and syntactic structure is mediated through a prosodic representation and that “phonological rules operate in a

hierarchically organized set of prosodic domains that make up the ‘prosodic hierarchy’” (Dresher 2013:289, 1994:9; Dresher 1989, 2008). Although a full presentation of Dresher’s prosodic analysis is not given here, chapter 3 details the phonological rules Dresher establishes for TH (§3.4.2) and the prosodic hierarchy he formalises for the *ṭə ‘āmîm* (§3.5 and §3.6).

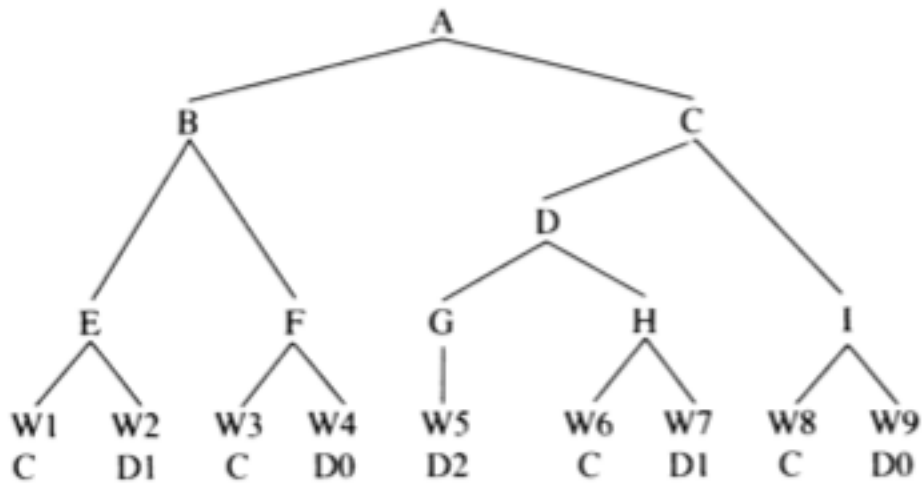
The tree dichotomy in (10) illustrates Dresher’s application of the principles of the LCD to a TH verse. Node (A) governs the entire verse, containing nine prosodic words (W1-W9). The first division in the verse is made by the D0 disjunctive, *’etnaḥtā’*, producing nodes (B) and (C). Node (C) governs the second half of the verse, so its final node (node (I)) receives the *sōf-pāsûq*. Both halves of the verse (i.e. the *’etnaḥtā’* clause and the *sōf-pāsûq* clause) are further divided by a D1 disjunctive from a subordinate tier in the hierarchy.²⁵ This division produces two binary nodes in the *’etnaḥtā’* clause (nodes (E) and (F)), and two binary nodes in the *sōf-pāsûq* clause (nodes (H) and (I)). Since there are five prosodic words in the *sōf-pāsûq* clause, a third division (node (G)) is made by a D2 disjunctive from a subordinate tier in the hierarchy. D0 disjunctives form the highest tier; they make the first divisions and have the strongest pausal values. D1, D2, and D3 disjunctives make consecutive divisions in a verse based on their class, and have pausal strengths that grow increasingly weaker as the disjunctive’s rank in the hierarchy decreases.

²⁵ For a list of the proposed hierarchies for the disjunctives, see §2.2, (1).

(10) Dresher's (1994:5) tree representation of the division of Isaiah 1:10

שְׁמַעוּ דְבַר־יְהוָה קְצִינֵי סֹדֶם הָאֲזִינוּ תוֹרַת אֱלֹהֵינוּ עִם עֲמֹרָה:

Hear the word of the LORD, O rulers of Sodom, and pay attention to the law of our God,
O people of Gomorrah. (Isaiah 1:10)



Dresher's hierarchy for the *ʔə'āmîm* entails the nesting of disjunctive phonological units of level D_i in disjunctive phonological units of level D_{i-1} . D_i represents a disjunctive's level in the hierarchy, where i is the disjunctive class 0, 1, 2, or 3. For example, D3 disjunctives are nested in D2 disjunctives, D2 disjunctives are nested in D1 disjunctives, and D1 disjunctives are nested in D0 disjunctives. D0 disjunctives occupy the first tier of the hierarchy, and thus do not exhibit any nesting.

While Dresher's four-tiered hierarchy for the disjunctives simplifies the LCD schema considerably, his prosodic framework reinforces one of the main weaknesses of the traditional

model—a disregard for an analysis of the intonational systems of extant traditions as a means for establishing the prosodic structure and function of the *ṭa‘āṃê hammiqrā’*.

2.10 Summary

In this chapter I presented a traditional exposition of the conjunctive and disjunctive *ṭə‘āmîm*. Particular attention was given to the organisation and function of the disjunctives according to the longstanding theoretical framework of Wickes’ LCD. I also reviewed the literature of several major linguistic treatments of the *ṭa‘āṃê hammiqrā’* including Dotan (1978), Yeivin (1980), Aronoff (1985), Janis (1987), Price (2010), and Dresher (1994). Both Dresher’s and Janis’ work represent a major point of departure from the traditional framework because they regard the *ṭa‘āṃê hammiqrā’* to be fundamentally prosodic in nature. However, Dresher’s work is most notable because he is the first linguist to argue for the prosodic nature of the *ṭa‘āṃê hammiqrā’* within a modern prosodic framework and to formalise a prosodic hierarchy for TH.

CHAPTER 3

MODERN THEORETICAL APPROACH TO THE PROSODIC HIERARCHY

3.1 Introduction

Selkirk (1972, 1986, 1995, 2000, 2009, 2011) is one of the foremost proponents of the standard prosodic hierarchy—a mediated interface between phonology and syntax that accounts for the way phonology maps to syntactic structure. Selkirk describes typological differences in prosodic structure using OT, a theoretical framework in which differing rankings of universal constraints account for the diversity in the surface structure of languages.

In this chapter I present an overview of the standard prosodic hierarchy (§3.2) and four sets of OT constraints (§3.3) that operate within this prosodic framework. The constraints pertinent to TH include the following: 1) the constraints on prosodic domination (§3.3.1); 2) the constraints of weight and balance on prosodic constituents (§3.3.2); 3) the syntax-phonology interface constraints (§3.3.3); and 4) the constraints that govern both the relation between intonation and prosodic stress (§3.3.4), and the prominence of focus (§3.3.5).

I also discuss the fundamental principles of standard prosodic theory, which include the notion that prosody is not always isomorphic with syntax (§3.4.1), and that the domains of the prosodic hierarchy have rules that govern their phonological constituents (§3.4.2).

I conclude the chapter with a presentation of Drescher's prosodic model for the *ṭa 'āṃê hammiqrā'* (§3.5) and a discussion of the OT constraints he considers within his model (§3.6). Special attention is given to Drescher's work on the *ṭa 'āmîm* because he is the first to develop a linguistic account of the *ṭa 'āṃê hammiqrā'* as a prosodic system within a modern prosodic framework.

3.2 Selkirk's Standard Prosodic Hierarchy

The standard theory of prosodic structure organises phonological representations into a universal prosodic hierarchy (24) (Selkirk 2009:5; 2011:437). The prosodic domains with which this study is primarily concerned are all above the prosodic word: the phonological phrase, the intonational phrase, and the utterance.

There is little consensus among typologists regarding the organisation of the phonological phrase, as they attempt to differentiate features that are language specific from those that are truly universal. However, generally speaking, the phonological phrase groups prosodic words into a cohesive phonological unit, and is the main domain of the syntax-phonology interface (Selkirk 2011; Elordieta 2008; Goldstein 2014; Inkelas 1990; Pullum & Zwicky 1988; Black 1999; Chomsky 1982; Lasnik & Lohndal 2010; Nespors 2010; Peperkamp 1999; Philippaki-Warbuton 1986-1987; Vigário 2010).

The intonational phrase is primarily associated with postlexical meaning (von Heusinger 2007), or intonation that affects meaning above the prosodic word domain. For example, in response to the comment "I heard your motorcycle broke down" an intonation contour can assign focus to

‘car’ in “My CAR broke down” (Lambrecht 1994).²⁶ Pitch contour at the level of the intonational phrase is not to be confused with contrastive pitch in tonal languages, in which tone melodies are phonemic and therefore distinguish lexemes with otherwise identical morphology, e.g. in Kikamba [Kenya], *nùnì* ‘bird’ vs. *núní* ‘kale’ (Kakui p.c. 2018). However tonal languages can also encode meaning at the postlexical level. For example, in Igbo [Nigeria], negation can be expressed by changing the tone pattern of the sentence, i.e. *ò jè kọ* ‘he is going’ vs. *ó jé kọ* ‘he isn’t going’ (Hyman 2011:203).

The intonational phrase domain also has characteristic features that include distinct boundary tones and easily perceived pauses. The utterance (U), perhaps the most structurally arbitrary, is a semantically and pragmatically determined unit of speech. The framework of the hierarchy below assumes that lower level prosodic domains are nested in higher level domains—the prosodic word is nested in the phonological phrase, the phonological phrase is nested in the intonational phrase, and so on:

(11a) *Standard prosodic hierarchy* (Selkirk 2009:5; 2011:437):

Utterance (U)
Intonational phrase (i)
Phonological phrase (φ)
Prosodic word (ω)

In order to accommodate a wider variety of linguistic data, Selkirk (2000, 2011) includes a further distinction—namely, that the phonological phrase domain is comprised of a distinct

²⁶ This description of ‘postlexical’ meaning accords with Jun (2005:431, 440).

major (MaP) and minor (MiP) phonological phrase. The defining feature of the MaP is that it is the domain of prosodic phrasing that aligns with syntactic structure (Selkirk 2000:232). The defining feature of the MiP is that it is the locus of intonational stress of a prosodic unit (2000:244). There is still disagreement among typologists regarding the nature and number of distinct tiers within the phonological phrase domain (Beckman & Pierrehumbert (1986); Truckenbrodt (1995, 2007); Selkirk (2009, 2011); Jun (2007); Ito & Mester (2009)), primarily due to the fact that “there are no phonological properties which universally characterize this level of phrasing,” (Selkirk 2000:256). My research, however, supports the presence of a MiP and a MaP for TH, therefore I accept the prosodic hierarchy in (11b) that distinguishes these distinct levels within the phonological phrase domain:

(11b) *Standard prosodic hierarchy with φ_a/φ_i* (Selkirk 2000, 2011):

Utterance (U)
 Intonational phrase (t)
 Phonological phrase (φ)
 Major phonological phrase (φ_a)²⁷
 Minor phonological phrase (φ_i)²⁸
 Prosodic word (ω)

3.3 Optimality Theory Constraints within Selkirk’s Prosodic Framework

Very generally, OT posits the existence of universal, violable constraints that are ranked differently in different languages; a given constraint is violated only to avoid the violation of

²⁷ The MaP is also known as the Maximal phonological phrase or the Intermediate Phrase.

²⁸ The MiP is also known as the Minimal phonological phrase or the Accentual Phrase because it is the locus of the accent of a prosodic word.

higher ranked constraints. Within this theoretical framework, differences in the rankings of constraints account for typological differences among languages.²⁹ Working within the framework of OT, Selkirk advances universal constraints (i.e. operating in all languages) that determine the prosodic realisation of any particular language.

3.3.1 Constraints on Prosodic Domination: Strict Layer Hypothesis

Selkirk's Strict Layer Hypothesis (SLH) establishes constraints on the structure of the prosodic hierarchy and defines the parameters of its organisation. The four universal constraints on prosodic domination that comprise the SLH include: layeredness, headedness, exhaustivity, and nonrecursivity (2009:6).

3.3.1.1 Layeredness, Headedness, Exhaustivity, and Nonrecursivity

The layeredness constraint is summarised in (12a). C^n indicates some prosodic category, and requires that the prosodic domain of a lower level not dominate one of a higher level. For example, this means the prosodic word (ω) cannot dominate the phonological phrase (φ).

- (12a) *Layeredness* (Selkirk 2009:6)
No C^i dominates a C^j , $j > i$
e.g. No ω dominates a φ .

²⁹ See Archangeli (1997) for an exceptionally clear and concise overview of OT and its implications for phonological research.

The headedness constraint is summarised in (12b). It requires that a prosodic domain of a higher level dominate the domain directly under it. For example, this means a phonological phrase (φ) must dominate a prosodic word (ω).

(12b) *Headedness* (Selkirk 2009:6)

Any C^i must dominate a C^{i-1}

e.g. A φ must dominate a ω .

The exhaustivity constraint in (12c) does not allow a prosodic domain in the hierarchy to skip domain levels in order to dominate the domains of lower levels. For example, this means that no intonational phrase (ι) immediately dominates a prosodic word (ω).

(12c) *Exhaustivity* (Selkirk 2009:6)

No C^i immediately dominates a constituent C^j , $j < i-1$

e.g. No ι immediately dominates a ω .

Finally, the nonrecursivity constraint in (12d) does not allow the nesting of prosodic domains of the same level. For example, this means that no prosodic word (ω) dominates another prosodic word (ω).

(12d) *Nonrecursivity* (Selkirk 2009:6)

No C^i dominates C^j , $j = i$

e.g. No ω dominates a ω .

Selkirk (2011:438) argues that the strict layering constraints on prosodic domination predict that:

the edge of a higher-level prosodic category will always coincide with the edge of the category at the next level down in the hierarchy, with the consequence that the right edge of the sentence should always show the phonological properties of the right edge of phonological phrase and right edge of prosodic word, in addition to the properties of right edge of intonational phrase.

In short, the phonological properties of the prosodic domains are in alignment, such that if a word's placement of stress is at its right edge, the pitch contours of the phonological phrase and the intonational phrase will also be at their right edges.³⁰

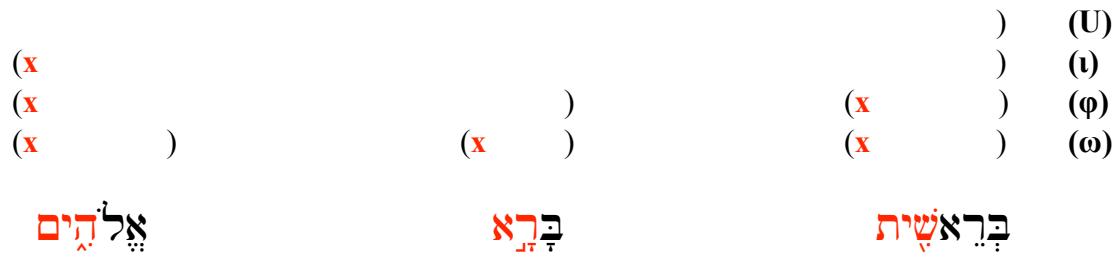
3.3.1.2 Layeredness and Headedness in Tiberian Hebrew

An analysis of the metrical phonology of the first three words of Genesis illustrate how the constituents of the prosodic domains are phonologically layered (13).³¹ The red **x**'s mark the locus of lexical stress and intonational contour. TH layers its prosodic domains by aligning the right edge of the phonological constituents of a prosodic word with the right edge of the intonational contour of a phonological and intonational phrase. As the metrical grid in (13) illustrates, an utterance is made up of an intonational phrase; an intonational phrase is made up of a phonological phrase; a phonological phrase is made up of a prosodic word.

³⁰ 'Right-edged, 'right-headed' 'left-edged,' 'left-headed,' refer to a standardised orientation of speech which starts on the left and ends on the right—that is, the beginning of the word or phrase starts at the left and ends at the right.

³¹ Metrical phonology is the organisation of phonological segments into groups of relative prominence or stress.

(13)³²



Exhaustivity and nonrecursivity with relation to TH are discussed in the context of Dresner's prosodic model (§3.6) and the new intonation-based prosodic model (§5.3.1). since TH's violation of or adherence to these constraints can only be understood in relation to the prosodic structure proposed for the *ṭa 'āmê hammiqrā'*.

3.3.2 Constraints of Weight and Balance on the Major Phonological Phrase

In addition to the constraints that comprise the Strict Layer Hypothesis, Selkirk (2000:244) proposes three constraints that regulate the weight and balance of the major phonological phrase by limiting its minimum and maximum size. Typological differences between languages can be ascertained by their adherence to one of three binary constraints:

(14a) *Binary Maximum* (MaP) (Selkirk 2000:244)

A major phonological phrase may consist of at most two minor phonological phrases.

³² The metrical grid as a framework for analysing stress patterns in words and phrases is based on the grid and analysis in Truckenbrodt (2007:436).

(14b) *Binary Minimum* (MaP) (Selkirk 2000:244)
A major phonological phrase must consist of at least two minor phonological phrases.

(14c) *Binary* (MaP) (Selkirk 2000:244)
A major phonological phrase consists of just two minor phonological phrases.

I believe there is a connection to be made between Selkirk’s universal binary constraints and Miller Naudé & Naudé’s assertion that “[m]emory is most efficient in storing, classifying, and retrieving items that are mimetic, rhythmic, and bilateral . . . [and o]ral style . . . is characterised by mimetic, rhythmic, bilateral, and repetitive expressions” (Miller Naudé & Naudé 2016:59). The binary phenomena Selkirk proposes for the MaP may find its roots in the nature of orality. Furthermore, Wickes’ painstaking description of binary phenomena “where only two words come together, either as forming an independent clause, or as simply left together in the course of the accentual division” (1887:44), may also be a byproduct or surface expression of the constraints of weight and balance on prosodic constituents.

The constraints of weight and balance with relation to TH are discussed in the context of the new intonation-based prosodic model (§5.3.2).

3.3.3 Syntax-Phonology Interface Constraints

Match constraints are the set of syntax-phonology interface constraints that “[call] for the constituent structures of syntax and phonology to correspond” (Selkirk 2011:439; Bellik & Kalivoda 2016):

(15a) *Match Clause* (Selkirk 2011:439)

The left and right edge of a clause in syntactic constituent structure must match the left and right edge of a corresponding prosodic constituent, call it (ι), in the phonological representation.

(15b) *Match Phrase* (Selkirk 2011:439)

The left and right edge of a phrase in syntactic constituent structure must match the left and right edge of a corresponding prosodic constituent, call it (φ), in the phonological representation.

(15c) *Match Word* (Selkirk 2011:439)

The left and right edge of a word in syntactic constituent structure must match the left and right edge of a corresponding prosodic constituent, call it (ω), in phonological representation.

The syntax-phonology interface constraints with relation to TH are discussed in the context of the new intonation-based prosodic model (§5.3.3).

3.3.4 Constraints on the Relation Between Intonation and Prosodic Stress

Selkirk (2011:472) proposes the constraints in (16) to account for the fact that the intonation of prosodic constituents is always associated with prosodically prominent or stressed syllables.

(16a) *No Toneless π Stress* (Selkirk 2011:472)

The prosodically prominent (stressed) syllable of a prosodic constituent must be associated to some tone T.

(16b) *No π Stress-less Tone* (Selkirk 2011:472)

A tone T must be associated to a prosodically prominent (stressed) syllable of a prosodic constituent of domain π .

The alignment constraint assigns the prosodic prominence or stress of a prosodic constituent of domain π to its rightmost or leftmost edge (Prince 1983; McCarthy & Prince 1993; Kadooka 1995; Truckenbrodt 1995; Selkirk 1986, 2011):

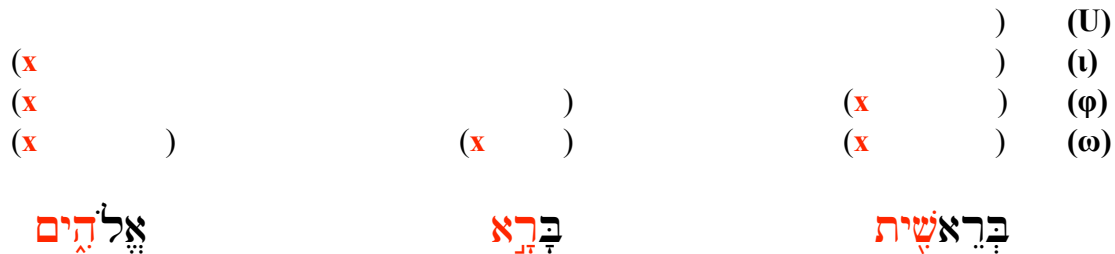
(17) *Edgemost-Left/Right* (Prominence- π , Edge- π)

(Selkirk 2009; 2011:458, 471; Truckenbrodt 1995:221-224)

The prosodic prominence or stress of a prosodic constituent of domain π must align with the left or right edge of its domain.

TH's strict adherence to this constraint can clearly be seen in the first three prosodic words of Genesis 1:1 in example (18) where lexical stress and the intonational contour extend through the rightmost edge of each prosodic level (π) of the prosodic hierarchy.

(18)



Example (18) also illustrates TH’s strict adherence to no toneless π stress and no π stress-less tone. No toneless π stress requires that the stressed syllable of a prosodic constituent be associated with a tone, which is clearly the case in TH as the primary stressed syllable of every prosodic word receives either a conjunctive or disjunctive pitch pattern. The stressed syllables of the three prosodic words (in red) are all associated with the melisma of a *ta‘am*—a group of notes (i.e. intonational contour) chanted on a single syllable.³³ Furthermore, the constraint no π stress-less tone, which requires that a tone be associated with a prosodically stressed syllable within each domain of the prosodic hierarchy, is also strictly adhered to in TH since the melisma of each *ta‘am* always aligns with the prominent syllable of the prosodic constituent within each prosodic domain.

3.3.5 Constraint on Focus

The last of Selkirk’s (2011) prosodic constraints relevant to this study on the *ta‘amê hammiqrā’*, is the constraint on focus that Truckenbrodt (1995:160) formalises in (19). The focus constraint requires that the focused constituent (F) be the most prominent constituent within the domain of focus (DF).

- (19) *Focus* (Selkirk 2011:471; Truckenbrodt 1995:160)
 If F is a focus and DF is its domain, then the highest prominence in DF will be within F.

³³ This is true even for prepositive and postpositive *ta‘amim* whose graphic symbols do not visually align with the prosodically prominent syllable. For a description and example of the constituent parts of a *ta‘am*, including its melisma, see §4.3.

The constraint on focus with relation to TH is discussed in the context of the new intonation-based prosodic model (§5.3.5).

3.4 Fundamental Principles of Standard Prosodic Theory

3.4.1 Nonisomorphism of Prosody with Syntax

One axiom of standard prosodic theory is the notion that prosodic category types found in phonological representations and category types of syntactic representations are not identical—that is, while prosodic constituents can show alignment with syntactic constituents (i.e. isomorphism), they often do not (i.e. nonisomorphism) (Dresher 1994:16). This axiom is based on Chomsky and Halle’s observation (Chomsky & Halle 1968:372) that prosody does not operate directly on surface syntactic structure. Their famous English example of nonisomorphism between syntax and prosody is presented in (20), where the prosodic phrasings in (20b) cut across major syntactic divisions in (20a):

(20a) This is [the cat that caught [the rat that stole [the cheese]]]

(20b) (This is the cat) (that caught the rat) (that stole the cheese)

Wickes (1887:31) observed this phenomenon quite clearly within the MT, and even explained the nonisomorphic structures of the *ṭə ʿāmîm* as a property of “recitation.”³⁴

³⁴ Aronoff (1985:66-68), Janis (1987:54-55), Dresher (1994:8), and Price (2010:119-120) also note this phenomenon, although only Dresher and Janis explain it as a characteristic feature of prosody.

[T]he position of the dichotomy (main or minor) . . . is found, where the main logical pause of the clause, or the rules for syntactical division require it. But as has been pointed out, pp. 3-4, there are many notable exceptions. I would here only once more remind the reader that we have to do with a system of public recitation, the main object of which (like that of all effective delivery) was to bring out and impress upon the minds of the hearers the full meaning of the Sacred Text. And I would add that unless we are prepared to recognise the utmost freedom in the application of the dichotomy, we shall never be able to explain to ourselves the accentual division.

These “notable exceptions,” involving prosodic constituents that do not match syntactic constituents, are more appropriately understood within a prosodic framework whose characteristic trait is its capacity and propensity to deviate from syntax.

The examples in (21) illustrate this phenomenon in TH. For example, (21a) shows the prosodic phrasing of a verse exhibiting nonisomorphism with its syntactic phrase structure in accordance with Chomsky and Halle’s example in (20). The first prosodic unit in red parentheses cuts across the syntactic boundaries of a VP (in green) and a subject NP (in purple). The second prosodic unit aligns with the syntactic constituent of an NP functioning as an indirect object (in orange). The third prosodic unit consists of an entire sentence, including the interrogative pronoun functioning as the subject (in pink), and a demonstrative pronoun (in light blue) functioning simultaneously as a predicate adjective and head of the unmarked relative clause (in brown).

(21a)

[(וַיֹּאמֶר) [יְהוָה אֱלֹהִים] [לְאִשָּׁה] [מִן-] [נָאֵת] [עָשִׂית)]
[(And the LORD God] [said)] [(to the woman:)] [(“What] is [this] [that-you-have
done?”)]” (Genesis 3:13)

The example of nonisomorphism in (21b) is organised differently from Chomsky and Halle’s example in (20), but perhaps more clearly demonstrates how prosody and syntax are nonisomorphic. In this example, the verb **וַיֹּלֶד**, forms a VP with only one of its adverbial constituents—namely, the PP **בְּדַמוֹתָו** in red parentheses—while the second PP **כְּצַלְמוֹ**, which is a part of the same VP is excluded from the prosodic unit.

(21b)

[(וַיֹּלֶד בְּדַמוֹתָו) (כְּצַלְמוֹ)] וַיִּקְרָא אֶת־שְׁמוֹ שֵׁת:
[(And-he-begat in his likeness,) (according to his image.)] And he called his name Seth. (Genesis 5:3)

3.4.2 Dresher’s Phonological Rules within the Prosodic Domains of Tiberian Hebrew

Another axiom of standard prosodic theory is that each prosodic tier of the hierarchy represents a domain within which specific phonological rules apply. While Dresher notes the nonisomorphic structures the *ʔə‘āmîm* form, he considers the fact that phonological rules can be mapped to specific prosodic domains delineated by the *ʔə‘āmîm* stronger evidence that they are prosodic in nature (Dresher 1994:8).

3.4.2.1 Phonological Rules for the Tiberian Hebrew Prosodic Word

Dresher assigns the phonological rules of stress and tone lengthening for prosodic clitics to the domain of the TH prosodic word (Dresher 1994, n.d.). Prosodic clitics—optionally cliticised words having no main stress of their own, joined to an adjacent word by a *maqṣep*—form a single phonological word. For example, when the direct object marker אֶת is cliticised (22a), it loses its stress and bears a short vowel (אֶתְ). However, as an independent prosodic word (22b), it exhibits tone lengthening and word stress (אֶתְ) (Dresher 1994:9; Jouon 1947:72, 2006).

(22a) וַיִּרְא אֱלֹהִים אֶת־הָאֹר

And God saw the light . . . (Genesis 1:4)

(22b) בְּרֵאשִׁית בְּרָא אֱלֹהִים אֶת הַשָּׁמַיִם

In the beginning, God created the heavens . . . (Genesis 1:1)

Although Dresher only assigns phonological rules of spirantisation for *begadkephat* consonants to the domain of the TH phonological phrase, this phenomenon is also exhibited in the prosodic word domain. For example, the spirantisation of a *begadkephat* consonant in a word surfaces when a vowel precedes it. In (23) compare the spirantisation of ב in the word וּבֵינַן when there is a vowel in front of it with ב in the same word בֵּין when there is not.

(23) וַיַּבְדֵּל אֱלֹהִים בֵּין הָאֹר וּבֵין הַחֹשֶׁךְ :

And God made a separation between the light and between the darkness. (Genesis 1:4)

3.4.2.2 Phonological Rules for the Tiberian Hebrew Phonological Phrase

Dresher identifies the TH phonological phrase as the prosodic unit that is formed when prosodic words are grouped together by conjunctives. Dresher calls this domain the C-phrase or conjunctive phrase, and assigns three rules of external sandhi to it, including spirantisation (24), external gemination (25), and stress shift (26) (Dresher 1994:10-11; Gesenius 1910:33-34, 70-75; Jouon 1947:17, 52-59, 77-79; Blau 2010:141; Liberman & Prince 1977; Revell 1987, 1988; Hayes 1984; Hedánek 2011).

A vowel can only affect the spirantisation of *begadkephat* consonants across a word boundary within a cohesive phonological phrase. For example, (24a) and (24b) are lexically and syntactically equivalent, but their distribution of *ʔə ʾāmîm* are not. This results in a different phonological realisation for the ב in each clause. In (24a) the verb marked by the disjunctive *gēršayim* (וַיִּרְדּוּ) produces a phonological phrase boundary that separates it from its object (בְּרִגְתַּת הַיָּם). The vowel at the end of the verb (וַיִּרְדּוּ) is in a separate phonological phrase, and thus cannot affect the spirantisation of the adjacent ב—בְּרִגְתַּת הַיָּם. However, in (24b) the verb marked by the conjunctive *təlīšāʾqəʔannā* (וַיִּרְדּוּ) is not separated from its object by a phonological phrase boundary, so the vowel at the end of the verb (וַיִּרְדּוּ) exerts phonological influence over its object (בְּרִגְתַּת הַיָּם), transforming the ב with a *dāgēš lene* into a ב without one.

(24a) (וַיִּרְדּוּ) (בְּרִגְתַּת הַיָּם)

... (and let them have dominion) (over the fish of the sea) ... (Genesis 1:28)

(24b) (וַיִּרְדּוּ בְּרִגְתַּת הַיָּם)

... (and let them have dominion over the fish of the sea) ... (Genesis 1:26)

The example in (25) exhibits what Dresher calls external gemination.³⁵ In this example, the final vowel on the verb (בְּטַחְתָּ) is conjoined to the adjacent word (לְךָ) by the conjunctive *munnaḥ*.

The absence of a phonological phrase boundary between these constituents allows the vowel to exert phonological pressure on the ל, transforming it into a geminate ל > לל.

(25) (בְּטַחְתָּ לְךָ) (Dresher 1994:10-11)

... (you, yourself, trust) ... (2Kings 18:21)

In (26a), the verb תִּלְךָ exhibits the normal placement of lexical stress—the ultima (תִּלְךָ).³⁶ The conjunctive *mērka'* conjoins this verb to the adjacent prosodic word הַאֲשֶׁר. Within this prosodic unit, notice that the placement of stress on these words does not clash (i.e. there is no need for rhythmic stress shift because there are unstressed syllables between them).

³⁵ Joüon (1947:§18h) notes this sandhi phenomenon and cites evidence of it in the *Secunda of the Hexapla*.

³⁶ Lexical stress refers to the stress pattern of a word when it is not influenced by external phenomena.

- (26a) אֲלֵי (לֹא־תֵלֵךְ הָאִשָּׁה) אַחֲרָי :
 . . . perhaps (the woman will not follow) me. (Genesis 24:39)

However in (26b), this same verb is conjoined to the prosodic word :קָרַב whose lexical stress immediately follows the verb's lexical stress. The occurrence of adjacent prosodic words with consecutive loci of stress creates a rhythmic clash (:תֵּלֵךְ קָרַב:). In order to alleviate phrase-internal stress clash, this verb shifts its normal placement of stress from the ultima to the penultima.

- (26b) אַחֲרָיִךְ (תֵּלֵךְ קָרַב:)
 . . . after you, (the sword will go.) (Jeremiah 48:2)

Although Drescher (1994) identifies this stress-shift rule as a means of alleviating phrase-internal stress clash, his rule does not take into account the numerous instances in the MT where stress clash within the phonological phrase is not alleviated (26c) (Revell 1987, 2016:70).

- (26c) (הֲאֶפְרַתִּי אַתָּה)
 (Are you an Ephraimite?) (Judges 12:5)

3.4.2.3 Phonological Rules for the Tiberian Hebrew Intonational Phrase

Dresher (1994:12-13) assigns, with reservation, the phonological process that transforms the contextual form of a word into its pausal form to the domain of the intonational phrase.³⁷

Dresher's phonological rules for this domain (Dresher 1994:11; Blau 2010:146-154) are described and illustrated in (27).

If the contextual form has a stressed short vowel, it will be lengthened in its pausal form (27a)

(Dresher 1994:11):

	Contextual	Pausal
(27a)	כְּתֹב	כְּתֹב

If the contextual form has a deleted vowel, it reappears in its pausal form with stress (27b)

(Dresher 1994:11):

(27b)	כְּתֹבָה	כְּתֹבָה
-------	----------	----------

The lengthened historical vowel of a contextual form can reappear in its pausal form (27c)

(Dresher 1994:11):

(27c)	אֶרְיָ	אֶרְיָ
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³⁷ According to Dresher (1994:11) a pausal form typically coincides with a major break, while a contextual form is the more common form of a word within the text.

While the pausal forms are found most often at the *'etnaḥtā'* or *sōf-pāsûq* juncture, Drescher (1994:12) cites Revell's (1980) observation that roughly 25% of the pausal forms in the Book of Deuteronomy occur on lesser accents. This presents a problem for Drescher's prosodic model because, according to him, pausal forms should only occur at major breaks (i.e. D0 *ṭa'āmîm*, *'etnaḥtā'* and *sōf-pāsûq*). For Drescher, the presence of pausal forms in the MT are evidence that a prosodic domain above the phonological phrase exists. However, since the distribution of these forms occur on lesser accents, and even some conjunctives (Drescher 1994:13; Price 2006:5), he concludes that the *ṭa'āmê hammiqrā'* do not contain a fully functional intonational phrase domain. Revell's observation is significant, with many implications for understanding a prosodic model of the *ṭa'āmê hammiqrā'*. Therefore, a more detailed discussion of the distribution of pausal forms in the MT and their significance for an intonation-based prosodic model of TH is discussed in §5.2.

3.4.2.4 Phonological Rules for the Tiberian Hebrew Utterance

Drescher assigns the phonological unit of the TH verse to the prosodic domain of the utterance, although he is unable to identify phonological rules that strictly apply to this domain. Furthermore, he asserts that “no prosodic or phonological phenomena span more than one verse” (1994:15).³⁸

³⁸ In §4.4.5 example (67c), (footnote 206), I present preliminary evidence that directly challenges Drescher's assertion. I believe further research into the cantillation traditions of the *ṭa'āmê hammiqrā'* will reveal a complex, interconnected system of melodic patterns between verses that reflect the discourse of the text.

Aronoff (1985) argues that the verse is “a linguistically arbitrary unit” (1985:67). From a syntactic standpoint, this arbitrariness is not easily reconciled. However, if the verse is understood to represent the prosodic utterance, its arbitrary nature becomes much more tenable, as utterances take on a variety of forms—they can be long or short, comprised of complete clauses, phrases, or even single words or sounds (i.e. interjections, exclamations, and non-lexical conversational sounds). In fact, Drescher states “there is no precise definition of what may constitute a single utterance and what may not” (1994:15), which seems to fit the nature of the biblical verse. For Drescher (1994:15), the correlation of the verse with the utterance is corroborated by the verse’s likely oral origins:

Dotan (1978:§1.3.2) observes that the tradition of division into verses is ancient, and was handed down orally for many generations. He adds, however, that this tradition also extended into the division of verses into parts, i.e. accentuation. So it is not clear that the tradition of division into verses developed entirely apart from the tradition(s) which culminated in the Tiberian system of accentuation.

Aronoff, however, strongly disputes the notion that verse delineations could have originated from an oral tradition represented by the *ṭa‘āmē hammiqrā’* even though he concedes a long and “fairly rigorous tradition of recitation” (67):

Since the Biblical verse is the domain of rules governing the distribution of the accents, we MUST [his emphasis] assume that the division into verses is prior to the assignment of accents, whether or not this reflects actual history (36). . . . My point is that the

Masoretic accents do not represent such a direct codification of a traditional recitation (67).

3.5 Dresher's Prosodic Model for the *Ṭa 'āmê Hammiqrā'*

A model of the prosodic hierarchy Dresher proposes for the *ṭa 'āmê hammiqrā'* is outlined in (28). Dresher's prosodic hierarchy for TH (28b) is compared alongside Selkirk's standard prosodic hierarchy (28a).

(28a) <i>Standard prosodic hierarchy:</i> (Selkirk 2009, 2011)	(28b) <i>Dresher's hierarchy for TH:</i> (Dresher 1994)
Utterance (U)	Biblical verse (V)
Intonational phrase (ι)	Not fully developed in the MT
Phonological phrase (φ)	Disjunctive phrase (D_i) D_i , where $0 \leq i \leq 3$: D0 Strongest pausal value, first divisions in the verse D1 D2 D3 Weakest pausal value, last divisions in the verse Conjunctive phrase (C) is dominated by a disjunctive D_i , and is nested at one of four phonological phrase levels: $i - 1$.
Prosodic word (ω)	Prosodic word (ω) any word bearing its own conjunctive or disjunctive <i>ṭa 'am</i>

Dresher is able to propose congruent TH prosodic structures for the domains of the prosodic word, phonological phrase, and utterance, but concludes that the TH intonational phrase is not

fully developed in the MT. TH prosodic words are words or word units bearing a conjunctive or disjunctive *ta'am*. TH phonological phrases are nested conjunctive phrases dominated by a hierarchy of disjunctives. The biblical verse corresponds to an utterance.

3.5.1 Dresher's Intonational Phrase Domain for Tiberian Hebrew

The TH intonational phrase is problematic for Dresher because he concludes that pausal forms should most naturally coincide with major prosodic breaks marked by D0 disjunctives, even though they often appear at junctures marked by lower ranked disjunctives.³⁹ For Dresher, these inconsistencies in the phonological rules for the TH intonational phrase indicate a poorly developed prosodic domain: “The reason for the inconsistent matching of pausal forms with accents is that the Tiberian representation has no means of consistently marking this level of the prosodic hierarchy” (1994:14).

3.5.2 Dresher's Phonological Phrase Domain for Tiberian Hebrew

Dresher conceptualises a predominately recursive structure for the TH phonological phrase, where a D_i disjunctive is allocated to a conjunctive nested at level $i-1$.⁴⁰ Due to its complexity, a description of the phonological phrase domain in Isaiah 1:10 (29) and the levels of nesting Dresher proposes for this prosodic unit is detailed below.⁴¹

³⁹ Price's (2006) study shows that these “pausal forms” can also be marked with conjunctives. A more detailed discussion of these findings is discussed in §5.2.

⁴⁰ Dresher defines recursion as the nesting of a structure within another structure of the same type. D_i represents a disjunctive's level in the hierarchy, where i is the disjunctive class 0, 1, 2, or 3. (see §2.9 example (10)).

⁴¹ The division of this verse is also discussed in §2.9.

(29) שְׁמַעוּ דְבַר־יְהוָה קְצִינֵי סֹדֶם הָאֲזִינִי תוֹרַת אֱלֹהֵינוּ עִם עֲמֻרָה:

Hear the word of the LORD O rulers of Sodom, and pay attention to the law of our God,
O people of Gomorrah. (Isaiah 1:10)

Isaiah 1:10 is comprised of nine prosodic words. Four prosodic words in black bear conjunctives and are phonologically connected to prosodic words bearing disjunctives of level D_i . The second (קְצִינֵי) and fourth (עִם) of these words are assigned D_0 *ʔə-āmîm* (i.e. the disjunctives marking סֹדֶם and עֲמֻרָה, respectively); the first (שְׁמַעוּ) and third (תוֹרַת) are assigned D_1 *ʔə-āmîm* (i.e. the disjunctives marking דְבַר־יְהוָה and אֱלֹהֵינוּ, respectively). The two phonological phrases that bear D_0 disjunctives ((קְצִינֵי סֹדֶם) and (עִם עֲמֻרָה)) exhibit no nesting. The two phonological phrases that bear D_1 disjunctives ((שְׁמַעוּ דְבַר־יְהוָה) and (תוֹרַת אֱלֹהֵינוּ)) are nested in the D_0 phonological phrases ((קְצִינֵי סֹדֶם) and (עִם עֲמֻרָה)). The prosodic word in light blue ((הָאֲזִינִי)) forms a phonological phrase on its own because it is not conjoined to any other prosodic word. This single-membered phonological phrase bears a D_2 disjunctive and is nested in the D_1 phonological phrase ((תוֹרַת אֱלֹהֵינוּ)).

3.6 Drescher's Application of Optimality Theory Constraints within His Prosodic Model

Of the sets of prosodic constraints outlined in §3.3, Drescher (1994) only discusses the SLH in relation to his prosodic model for the *ʔa-āmê hammiqrā*.⁴² Based on the configuration of the

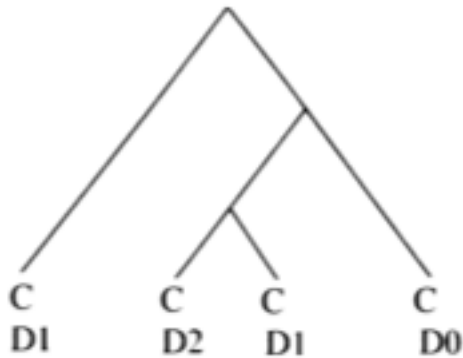
⁴² Drescher (1994) discusses earlier formulations of the syntax-phonology interface constraints, but these are not treated in this study.

prosodic model he proposes, Dresher regards the constraints of layeredness and headedness to be highly ranked in TH, while exhaustivity and nonrecursivity have lower rankings and are thus easily violable (1994:22).

The violation of nonrecursivity occurs frequently in Dresher's prosodic model as a result of the nested structures he proposes for the phonological phrase domain. As a verse is continuously divided by pause, forming phonological phrases marked by D_i disjunctives, Dresher argues that these prosodic units are themselves nested in phonological phrases at level D_{i-1} .⁴³ Dresher produces the tree diagram in (30) to illustrate this recursive phenomenon schematically, where C represents a phonological phrase formed by conjunctive *tə 'āmîm*. For example, the phonological phrase D2 is nested in the phonological phrase D1, exhibiting a clear violation of nonrecursivity, which prohibits the nesting of prosodic domains of the same domain type. Furthermore, Dresher argues that the diagram also illustrates the violation of exhaustivity because the conjunctive phrases (C-phrases) are not all dominated by the same D_i constituents: three C-phrases are dominated by disjunctives at three different prosodic levels—D0, D1, and D2.

⁴³ D_i represents a disjunctive's level in the hierarchy, where i is the disjunctive class 0, 1, 2, or 3.

(30) Dresher (1994:22)



3.7 Summary

In this chapter I presented a brief exposition of Selkirk's prosodic theory, including a description of the standard prosodic hierarchy and the four sets of OT constraints pertinent to the phonological structure of TH. I also discussed the two fundamental principles of standard prosodic theory—nonisomorphism and the phonological rules that operate within the domains of the prosodic hierarchy—and presented examples of how each are expressed in TH.

I presented the prosodic model Dresher (1994) proposes for the *ʔə 'āmîm* and gave an illustration of how the conjunctives and disjunctives function within his model to form a TH prosodic domain that he corresponds to the phonological phrase domain of the standard prosodic hierarchy. I also noted that the stress shift rule Dresher formulates for the phonological phrase does not take into account the many instances where this rule is not applied. Dresher's prosodic model for TH, however, is incomplete because he is unable to reconcile his conceptualisation of the structure of the *ʔə 'āmê hammiqrā'* with a fully functioning intonational phrase domain.

Finally, I discussed the OT constraints Drescher applies to his prosodic model for TH. In the next chapter, I present a theory of intonation for a new prosodic model for the *ṭa'āmê hammiqrā'* based on an intonational analysis of an extant Ashkenazi cantillation tradition.

CHAPTER 4

THEORY FOR A NEW INTONATION-BASED PROSODIC MODEL FOR THE *Ṭa'āmê Hammiqrā'*

4.1 Introduction

In this chapter I introduce a theory of intonation for a new prosodic model for the *ṭa'āmê hammiqrā'*. As a prelude to this discussion, I present a prosodic description of the symbolic representation of the *ṭa'āmê hammiqrā'* (§4.2), including an original exposition of the conjunctive *ṭā'āmîm* (§4.3) where I introduce the principle of conjunct and disjunct melodic motion—a basic principle of music theory that forms a significant basis for the intonation-based prosodic model I develop in this chapter and the next.

The theory of intonation for this prosodic model (§4.4) is primarily based on the observation that the melodic intervals between conjunctive and disjunctive *ṭā'āmîm* can be classified as forming conjunct melodic motion (the movement of pitch by steps) or disjunct melodic motion (the movement of pitch by jumps),⁴⁴ and that these intervals intonationally encode phonologically cohesive or distinct units at varying levels and degrees. *Ṭā'āmîm* that form intervals of a unison and a second encode intonational continuity and produce iterative prosodic structures (§4.3).

Ṭā'āmîm that form melodic intervals of a third and a fourth are also conjunctive in nature, but

⁴⁴ Conjunct melodic motion is the movement of pitch by intervals of a unison or a second (Schmidt-Jones 2013:2). An interval between two pitches is a unison if both pitches are the same; an interval between two pitches is a second if there is only one pitch between the two pitches. However, within the intonational system of this Ashkenazi cantillation tradition, intonational cohesion includes the movement of pitch by intervals up to and including a fourth (with intervals of a third and a fourth signalling prosodic recursion). Disjunct melodic motion is observed between *ṭā'āmîm* whose intervals are a fifth or greater. Conjunctive *ṭā'āmîm* cannot form melodic intervals greater than a fourth with the *ṭā'āmîm* they serve because this system's intonational structure encodes discontinuity by intervals of a fifth or greater. See §4.3 for a detailed discussion of conjunct and disjunct melodic motion.

produce recursive prosodic structures (§4.4.1; §4.4.2; §4.4.4; §4.4.5 example (66d); §5.2 example (74)). I support my correlation of moderate intonational shifts and prosodic recursion with research from Féry (2009) and Hunyadi (2010) that suggest measuring change in intonation at phrase boundaries is a more effective indicator of prosodic recursion than the presence of pausal phenomena (§4.4.3).

As I develop a theory of intonation for TH, I introduce the concepts of the phonological phrase and the phonological phrase complex, which can be compared to Selkirk’s MiP and MaP (§3.2)—prosodic words are not only grouped into phonological phrases, but they are also grouped into larger, intonationally related phonological phrase complexes.⁴⁵ I identify the *paštā’/zāqēp qāṭōn* phonological phrase complex as one of the most common recursive structures in the MT (§4.4.4), and although an in depth discussion is beyond the scope of this study, I assign the function of this complex as marking the prosodic focus of the verse because its constituents are the most intonationally prominent.

I conclude the chapter with a discussion of intonational discontinuity, encoded by disjunct melodic motion—melodic intervals of a fifth or greater (§4.4.5). As an intonational structure designed to prosodically mark verse medial intonational phrase boundaries, I argue that only the suffixes of disjunctives, not conjunctives, form these intervals with adjacent *ṭə ‘āmîm*.

⁴⁵ The ordered set of intonational groupings that forms the domain of the phonological phrase complex (a prosodic domain that closely corresponds to Selkirk’s MaP) is outlined and discussed in Appendix A.

4.2 The Symbolic Representation of the *Ṭa ʿāmê Hammiqrā*’ as a Prosodic System

The *ṭa ʿāmê hammiqrā*’ are a transcription of the prosodic system for TH intended to symbolically represent the structural organisation of the intonational components of an orally performed biblical text (Revell 1980; Janis 1987; Drescher 1994, 2013).⁴⁶ As a constituent of the prosodic hierarchy,⁴⁷ the prosodic word is the domain of lexical stress (Peperkamp 1999:15). In the MT, a prosodic word is one that bears a *ṭa ʿam*. A prosodic word can be comprised of multiple words if they are joined together by a *maqqēp*. Words conjoined in this way have only one *ṭa ʿam*—that is, one intonational contour that coincides with one place of primary stress:⁴⁸

- (31a) A single prosodic word comprised of two words (עַל and פְּנִי) joined by *maqqēp*; the conjunctive *munnāḥ* (פְּנִי) marks the locus of lexical stress.

עַל-פְּנִי

⁴⁶ Dotan (1978:1453) states that “the Tiberian system of accentuation is the only means for establishing the intonation structure in ancient Hebrew.”

⁴⁷ See §3 for a general discussion of the standard prosodic hierarchy and its individual domains including the prosodic word, phonological phrase, intonational phrase, and utterance.

⁴⁸ An exception I noted is Deuteronomy 5:15 which provides an example of two words joined by *maqqēp* that both receive their own *ṭa ʿam* (פְּנִי-עַבְדְּךָ)—*munnāḥ/mahpāk*. See §4.4.1 for a discussion of this conjunctive combination.

Prosodic words can also bear more than one *ṭa‘am*; the first of which is the word’s secondary stress:

- (31b) A single prosodic word bearing the conjunctive *munnāh* (מִנְנָה), marking the locus of secondary stress, and the disjunctive *zāqēp qāṭōn* (זָקֵפְּ קָטֹן), marking the locus of primary stress.

מִנְנָה

Every prosodic word in the MT bears a cantillation mark or *ṭa‘am*, and thus its own pitch pattern or intonational contour. When a word bearing a *ṭa‘am* is chanted, the pitch pattern is superimposed onto the word as it is vocalised. *Ṭə‘āmîm* function as either conjunctives, conjoining words, or disjunctives, separating words. Although the term ‘disjunctive’ in English, as it refers to the *ṭə‘āmîm*, has become synonymous with ‘pause,’ I believe this description does not capture the original intent for the group of *ṭə‘āmîm* assigned to this category. While pauses may coincide with disjunctive *ṭə‘āmîm*, it is perhaps an oversimplification to say that disjunctives, regardless of context, always encode pause.

The graphic symbol of a *ṭa‘am* is typically positioned above or below the accented syllable (32a). The intonational contour of a *ṭa‘am* is vocalised on the stressed syllable, even when the *ṭa‘am* is not positioned directly above or below it (32b).

- (32a) The disjunctive *rəḇīṭ* is positioned above the penultima (ס), the stressed syllable.

רַבִּיטְ

- (32b) The prepositive disjunctive *təliṣā'gədōlā* is positioned over the first letter of the word, but is still vocalised on the penultima (ס), the stressed syllable.⁴⁹

רַבִּיטְ

Conjunctive symbols are often oriented to the left, in the direction the text is read, to indicate the closest, most fundamental phonological connection between adjacent words (33a),⁵⁰ while the symbols for disjunctives are often oriented to the right to visually indicate a phonological separation or boundary after the word is read (33b).⁵¹

⁴⁹ A prepositive is a *ṭa'am* that appears before, above or below the first letter of the prosodic word. Similarly, a postpositive is a *ṭa'am* that appears after, above, or below the last letter of the prosodic word.

⁵⁰ I am not aware of another scholar who makes explicit the iconicity of the *ṭə'āmīm*—the connection between their graphic representation and function. This concept is discussed further in §4.4 example (47) and §4.4.4 example (61).

⁵¹ The traditional understanding of how the disjunctive *ṭə'āmīm* function is that each disjunctive signals a pause of some sort. Throughout this study, I argue that the conjunctives and the particular disjunctives they serve function to form cohesive phonological phrases, where pauses perhaps often, but not necessarily, coincide with disjunctives at the boundaries of these phrases. In other words, I believe the primary function of disjunctive *ṭə'āmīm* is not to encode pausal phenomena, but to intonationally mark boundaries of distinct phonological units that are ordered within an intonational phrase.

(33a) *tālīšā`qəṭannā* (אֶל־הַיָּם) is a conjunctive that is oriented in the direction the text is read, indicating the seamless vocalisation of its prosodic word with the one following it:

וַיַּעַשׂ אֱלֹהִים אֶת־חַיֵּי הָאָרֶץ

And he-made **God** the living creatures of the earth

And God made the living creatures of the earth . . . (Genesis 1:25)

(33b) *tālīšā`gəḏōlā* (הָאָרֶץ) is the mirror image of the *tālīšā`qəṭannā^h* in (3a), but it functions as a disjunctive and is oriented to the right to indicate a phonological boundary after the word is read:

וְלִכְל־חַיֵּי הָאָרֶץ (וְלִכְל־עוֹף הַשָּׁמַיִם)

. . . and every living creature of **the earth**), and every bird of the heavens . . . (Genesis 1:30)

In terms of prosodic theory, conjunctive *tə`āmîm* are not accents, but instead govern the formation of phonological phrases by grouping words into larger prosodic constituents whose most prominent intonational stress resides on the word bearing the disjunctive. These phonological phrases may or may not coincide with syntactic phrase structure.

For example, in (34a) the head noun **וְיָרַח**, which is marked with the conjunctive *munnāh*, conjoins with its genitive **אֶל־הַיָּם** to form a cohesive phonological unit (as represented by the parentheses) that corresponds to the syntactic unit of the construct chain.

(34a) (רִיחַ אֱלֹהִים)

and the Spirit of God

. . . and the Spirit of God . . . (Genesis 1:2)

However, in (34b) the verb בָּרָא, which is marked with the conjunctive *munnāh*, forms a cohesive phonological unit with the subject אֱלֹהִים despite the presence of an intervening syntactic boundary.⁵²

(34b) (בָּרָא אֱלֹהִים)

created God

. . . God created . . . (Genesis 1:1)

4.3 The Pitch Patterns of the *Ṭə'āmîm*: Conjunct and Disjunct Melodic Motion

The following analysis of the pitch patterns of conjunctive *ṭə'āmîm* represents original research.⁵³

⁵² Although not fully shown here, the *ṭa'am* on the subject (אֱלֹהִים) in this verse also dissects the VP, separating the verb בָּרָא from its objects : אֶת הַשָּׁמַיִם וְאֶת הָאָרֶץ. The nonisomorphic nature of prosody with syntax is discussed further in §3.4.1.

⁵³ All of the pitch patterns used in this study were taken from Portnoy & Wolff (2000). At the start of their book that teaches the art of cantillation, Portnoy and Wolff do point out that the combination of *tippəḥā'* with *mērkā'* is “easy” because “*tippəḥā'* begins on the same note on which *mērkā'* ends” (2000:9), but this is the extent of their exposition of the structure of intonation between the *ṭə'āmîm*.

The prosodic components of an intonational contour of a *ṭa'am* include the following:⁵⁴

i) the onset, which comprises the leading tone or prefix of the *ṭa'am*



ii) the nucleus, which comprises the main intonational contour of the *ṭa'am*, called the melisma; the melisma is a group of notes chanted on a single syllable, corresponding to the locus of lexical stress.



iii) the coda, which comprises the suffix of the *ṭa'am* and is either a continuing tone (which conjoins to the following tone of an adjacent *ṭa'am* to extend the prosodic unit) or a final tone (as is the case with the suffix of *sōf-pāsûq*).



⁵⁴ The *ṭa'am* used in this illustration is *təbīr*.

A close look at a few of the pitch patterns of conjunctive *ṭa‘āmîm* shows that phonologically cohesive units form when the suffix (the final pitch) of a conjunctive merges with the prefix (the leading pitch) of a *ṭa‘am* on an adjacent word in one of three ways:⁵⁵

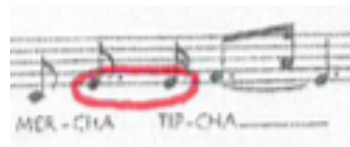
i) the suffix of the conjunctive is the same pitch as the prefix of the *ṭa‘am* on the adjacent word (36), in music theory this is called perfect unison (Harnum 2001:199)—this is the most prevalent way phonological units are formed:

(36) Pitch patterns of the conjunctive *mērkā’* (מֵרְכָּה) followed by the disjunctive *ṭippəḥā’* (תִּפְּחָה):⁵⁶

מֵרְכָּה תִּפְּחָה

And-it-was word of the LORD

And the word of the LORD came . . . (1Kings 17:2)



⁵⁵ In *Music in Jewish History and Culture* (2006), Rubín and Baron use the terms prefix and suffix to refer to the leading and final pitches of a *ṭa‘am*.

⁵⁶ These pitch patterns are represented on the musical staff. The suffix pitch of the conjunctive occupies the same line on the staff as the prefix pitch of the *ṭa‘am* on the adjacent word (i.e. the suffix and prefix are the same pitch (E) and form an interval of a unison).

ii) the suffix of the conjunctive and the prefix of the adjacent *ta 'am* form an interval of a second—i.e. the suffix is one pitch above the prefix (the conjunctive and adjacent *ta 'am* form a descending melodic line) (37) or one pitch below the prefix (the conjunctive and adjacent *ta 'am* form an ascending melodic line):⁵⁷

(37) Pitch patterns of the conjunctive *munnaḥ* (מִתְנַחֵל) followed by the disjunctive 'etnaḥtā' (תְּשִׁתָּה):

מִתְנַחֵל תְּשִׁתָּה

... **from the river** you will drink ... (1Kings 17:4)



⁵⁷ A descending melodic line occurs when consecutive pitches go from higher notes to lower notes on the musical staff (from left to right). For example, in (37) the pitch of the suffix is B while the pitch of the prefix is A—that is, the suffix is one pitch above the prefix (i.e. an interval of a second). An ascending melodic line occurs when consecutive pitches go from lower notes to higher notes.

iii) the interval between the conjunctive's suffix and the prefix of the *ta'am* on the adjacent word is a third (38a) or a fourth (38b)—i.e. the suffix is between two and three pitches above or below the prefix; conjunctives that form these intervals with adjacent *ta'amim* constitute a special class:

(38a) Pitch patterns of the conjunctive *munnaḥ* (נִי) followed by the conjunctive *mahpāk* (אֶם-מְלֵא):⁵⁸

נִי אֶם-מְלֵא

... **except a** filling ... (1Kings 17:12)



(38b) Pitch patterns of the conjunctive *talšā' qəṭannā* (כֹּה) followed by the conjunctive *kadmā'* (və'azlā') (אָמַר):⁵⁹

כֹּה אָמַר יְהוָה

... **thus** says the LORD ... (1Kings 17:14)



⁵⁸ In (38a), the pitch of the suffix is A while the pitch of the prefix is F—that is, the suffix is two pitches above the prefix (i.e. an interval of a third). Other examples of this conjunctive combination include: Genesis 2:3; Genesis 2:4; Genesis 8:21; Exodus 6:1; 1 Samuel 26:24; 2 Samuel 4:1; Isaiah 6:5; Isaiah 7:8.

⁵⁹ In (38b), the pitch of the suffix is D while the pitch of the prefix is A—that is, the suffix is three pitches above the prefix (i.e. an interval of a fourth). Other examples of this conjunctive combination include: Genesis 1:25; Genesis 1:26; 1 Genesis 1:29; Genesis 2:5; Genesis 3:21.

I have identified five non-repeating conjunctive combinations that form intervals of a third or a fourth where the conjunctive's suffix is between two and three pitches above or below the pitch of an adjacent conjunctive's prefix. The conjunctive combinations that exhibit an interval of a third are *munnaḥ* followed by *mahpāk* and *munnaḥ* followed by *dargā*'. Conjunctive combinations that exhibit an interval of a fourth are *tālīšā*' *qəṭannā* followed by *kadmā*' (*və`azlā*'); *mērkā*' (*ṭippəḥā*') followed by *munnaḥ* (*mahpāk*); and *kadmā*' followed by *mērkā*' (*ṭippəḥā*'/*sōf-pāsūq*)—note that *kadmā*' followed by *mērkā*' (*təbir*) form an interval of a unison instead of a fourth (cf. §4.4.1 examples (54b) and (54c)). Each of these conjunctive combinations is discussed in detail in §4.4.1.

Conjunctives that form melodic intervals of a third or a fourth deserve further discussion because the strict musical definition of conjunct melodic motion is an interval no larger than a second, or one pitch apart (Schmidt-Jones 2013:2). I argue that conjunctives that have this trait share prosodic features that differ from those with the traits described in (36) and (37). A detailed discussion of the prosodic significance of intervals of a third and fourth can be found in §4.4.1, §4.4.2, and §4.4.3.

In terms of repeating conjunctive combinations that form intervals of a third or fourth, I have identified two types: *munnaḥ* (*zarqā*') followed by *munnaḥ* (*zarqā*') (Leviticus 17:5; Joshua 22:5) and *munnaḥ* (*seggōl*) followed by *munnaḥ* (*seggōl*) (Genesis 22:9; 2 Kings 16:14; Isaiah 8:23; Ezra 1:4).

- (38c) Pitch patterns of the repeated conjunctive combinations *munnāḥ* (*zarqā'*) and *munnāḥ* (*seggōl*):⁶⁰



The phonological units in (36) and (37) clearly exhibit conjunct melodic motion as the consecutive pitches form intervals of a unison or second—that is, these intervals are no more than one pitch apart. Based on the nature of the intonational structure of conjunctive *ṭə'āmîm* and their role in melodically connecting adjacent pitches, I contend that conjunct melodic motion is a phenomenon particularly suited to phonological processing in that it allows the ear to perceive an uninterrupted intonational sequence between consecutive pitches, thereby phonologically connecting prosodic constituents within cohesive prosodic units.

The conjunctive relationships in (38), however, differ slightly from those found in (36) and (37) because the intervals in (38) are two (an interval of a third) and three (an interval of a fourth) pitches apart—that is, they form intervals that jump or skip pitches as the intonational contour proceeds. While the melodic intervals of a third and a fourth cannot strictly be identified as conjunct melodic motion because they form melodic jumps instead of melodic steps (Schmidt-

⁶⁰ The melodic interval between the *munnāḥ* (*zarqā'*) conjunctives is a third—the suffix (E) is two pitches below the prefix (G); the interval between the *munnāḥ* (*seggōl*) conjunctives is a fourth—the suffix (D) is three pitches above the prefix (A).

Jones 2013:2; Musical Links Investigation n.d.; Pooley 2014; Schreuder 2006),⁶¹ these intervals are nonetheless intonationally cohesive. I accept this premise in part because this particular Ashkenazi cantillation tradition associates these intervals with conjunctive *ṭə ‘āmîm*, but also because there is evidence that, at least with regard to an interval of a third, the ear can perceive this interval more like a step and less like a major jump (Huron 2016:73). Perhaps more importantly though, within this particular cantillation tradition, there are no attested conjunctive combinations with intervals of a fifth or greater. This intonational system, then, treats the melodic intervals of a third and a fourth as not so great as to be considered acoustically discontinuous or a distinctly separate prosodic unit. However, intervals of a fifth or more (i.e. consecutive pitches that are at least four pitches apart) are clearly perceived as disjunct melodic motion—intervals comprised of large jumps that signal clear intonational discontinuity.

The prosodic theory of intonation for the *ṭə ‘āmê hammiqrā* I develop in this chapter stipulates that the phonological units created by conjunctive and disjunctive *ṭə ‘āmîm* form three prosodic domains above the prosodic word: two distinct phonological phrase domains (prosodic structures that closely correspond to Selkirk’s MiP and MaP) and an intonational phrase

⁶¹ A melodic step is movement from one pitch to another in a stepwise fashion, i.e. without skipping pitches—for example, in an ascending melodic line, pitches move from A to B to C; in a descending melodic line, pitches move from G to F to E. Melodic jumps move from pitch to pitch by skipping pitches as the melodic line advances—for example, in an ascending melodic line, pitches move from A to C to E, or in a descending melodic line, pitches move from G to D to A.

domain.⁶² Intonational phrases are internally unified by sustained intonational connectivity between phonological phrase constituents. This means a unified intonational phrase is comprised of phonological units whose disjunctive phrase boundaries exhibit conjunct melodic motion. Conjunct melodic motion, then, not only connects adjacent prosodic words marked by conjunctives—connecting the prosodic words within the parentheses, but also adjacent words marked by disjunctives—connecting the prosodic units within the brackets—using the same conjunctive-like intervals of a unison and a second (shown in (39a) and (39b)), or a third and a fourth (shown in (39c) and (39d)).

- (39a) The pitch patterns of adjacent disjunctives *təbīr* (הַשָּׁמַיִם) and *tippəḥā* (וְהָאָרֶץ) exhibit conjunct melodic motion with an interval of a unison between the suffix and prefix (i.e. the suffix and prefix are the same pitch):⁶³
 [(הַשָּׁמַיִם) (וְהָאָרֶץ)]⁶⁴
 [(These are the generations of **the heavens**) (**and the earth**)] . . . (Genesis 2:4)



⁶² See §3 for a general discussion of the standard prosodic hierarchy and its individual domains including the prosodic word, phonological phrase, and intonational phrase. The prosodic framework for the *ta'āmē hammiqrā* I propose in §5 stipulates that conjunctive and disjunctive *ṭə'āmīm* form distinct minor phonological phrases that group into larger, intonationally related major phonological phrases. Conjunctives are conjoined to the disjunctives they serve according to the rules of merging outlined in (36), (37), and (38). An intonational phrase is comprised of major phonological phrases that are conjoined by intonational continuity. A verse, which corresponds to the utterance within the standard prosodic hierarchy, is composed of multiple intonational phrases, most often including the nonterminal intonational phrase signalled by the disjunctive *'etnahtā*', and always including the terminal intonational phrase signalled by the disjunctive *sōf-pāsūq*.

⁶³ In (39a), the suffix pitch of the disjunctive *təbīr* is on the same line of the musical staff as the prefix pitch of the disjunctive *tippəḥā*—this means they are the same pitch (E) and form a unison interval.

⁶⁴ The parentheses represent the small, cohesive prosodic units that constitute a larger cohesive prosodic unit represented by the brackets.

- (39b) The pitch patterns of adjacent disjunctives *seggōl* (אֲשַׁתְּךָ) and *paštā'* (וַתֹּאכַל) exhibit conjunct melodic motion with an interval of a second between the suffix and prefix (i.e. the suffix and prefix are one pitch apart):⁶⁵

[(כִּי־שָׁמַעְתָּ לְקוֹל אִשְׁתְּךָ) (וַתֹּאכַל)]

[(For you listened to the voice of **your wife**) (**and** you ate)] (Genesis 3:17)



- (39c) The pitch patterns of adjacent disjunctives *'azlā'* (וְהָאָדָם) and *rabī'ī* (וְאִשְׁתּוֹ) exhibit a special type of connectivity with an interval of a third between the suffix and prefix (i.e. the suffix and prefix are two pitches apart):⁶⁶

[(וְאִשְׁתּוֹ) (וְהָאָדָם)]

[(and he hid himself **the man**) (**and** his wife)] (Genesis 3:8)



- (39d) The pitch patterns of adjacent disjunctives *rabī'ī* (כִּי) and *tābīr* (בַּיּוֹם) exhibit a special type of connectivity with an interval of a fourth between the suffix and prefix (i.e. the suffix and prefix are three pitches apart):⁶⁷

[(כִּי) (בַּיּוֹם) (אָכַלְתָּ מִמֶּנּוּ)]

[(**for**) (**in** the day of) (your eating from it)] (Genesis 2:17)



⁶⁵ In (39b), the pitch of the suffix is E while the pitch of the prefix is D—that is, the suffix is one pitch above the prefix (i.e. an interval of a second).

⁶⁶ In (39c), the pitch of the suffix is A while the pitch of the prefix is F—that is, the suffix is two pitches above the prefix (i.e. an interval of a third).

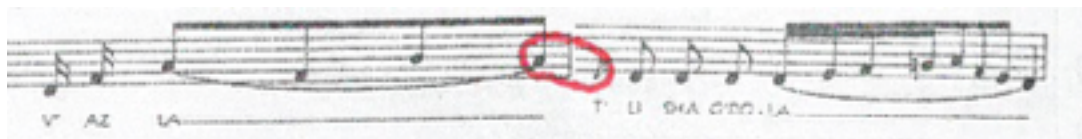
⁶⁷ In (39d), the pitch of the suffix is B while the pitch of the prefix is E—that is, the suffix is three pitches below the prefix (i.e. an interval of a fourth).

Disjunctives at intonational phrase boundaries signal the end of this large prosodic unit by forming intervals of a fifth or greater with adjacent *ṭə'āmîm* (39e). These intervals mark clear melodic discontinuity, an intonational relationship not attested by any conjunctive.

(39e) The pitch patterns of the disjunctives 'azlā' (אֲזַלָּא) followed by *ṭalīšā'gədōlā* (טַלְיִשָּׁא גְדוֹלָא) produce an intonational boundary of disjunct melodic motion—the interval between the suffix and the prefix is a fifth (i.e. the suffix and prefix are four pitches apart):⁶⁸

[(אֲזַלָּא)] [(טַלְיִשָּׁא גְדוֹלָא)]

[(And brought forth **the earth**)] [(vegetation)] . . . (Genesis 1:12)



Some conjunctives, like *munnāḥ*, have multiple pitch patterns to accommodate the different disjunctives they serve. This versatility in pitch patterns preserves the intonational continuity between conjunctives and their adjacent *ṭə'āmîm* (40).

⁶⁸ In (39e), the suffix is an A and the prefix is a D—that is, the suffix is four pitches above the prefix (i.e. an interval of a fifth).

- (40a) The pitch patterns of the conjunctive *munnāḥ* followed by the disjunctive 'etnaḥtā' exhibit conjunct melodic motion as described in (37)—the suffix and prefix form an interval of a second (i.e. the suffix and prefix are one pitch apart):⁶⁹

בְּרָא אֱלֹהִים

created God

... God created ... (Genesis 1:1)

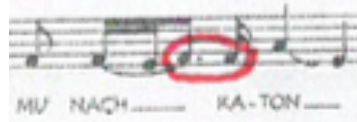


- (40b) The pitch patterns of the conjunctive *munnāḥ* (same symbol and name as in (40a), but a different pitch pattern) followed by the disjunctive *zāqēp qāṭōn* exhibit conjunct melodic motion as described in (36)—the suffix and prefix form an interval of a perfect unison (i.e. the suffix and prefix are the same pitch):⁷⁰

וְרִיחַ אֱלֹהִים

and the Spirit of God

... and the Spirit of God ... (Genesis 1:2)



The examples in (41) demonstrate why conjunctive *ṭə'āmîm* with the same symbol but different pitch patterns are not interchangeable by showing that the suffix of a conjunctive must conform to the prefix of its adjacent *ṭa'am*. If the suffix of the conjunctive does not conform to the adjacent *ṭa'am*, the conjunctive cannot function conjunctively by forming a cohesive phonological unit. In other words, the ear will not perceive intonational continuity between the

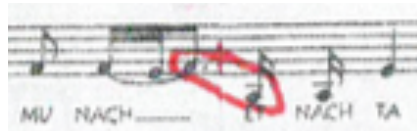
⁶⁹ In (40a), the suffix is a B and the prefix is an A—that is, the suffix is one pitch above the prefix (i.e. an interval of a second).

⁷⁰ The suffix and the prefix in (40b) are both F (i.e. an interval of a unison).

two words. This phenomenon is easily illustrated in (41) by interchanging the pitch patterns of the two forms of the conjunctive *munnaḥ* in (40).

For example, when the conjunctive *munnaḥ*, intended to serve *zāqēp qāṭōn*, is placed before 'etnaḥtā' (41a), it is no longer able to produce a cohesive phonological unit with the adjacent *ta'am* because the interval between the suffix and the prefix is a sixth (i.e. five pitches apart). This interval produces clear intonational discontinuity. A similar phenomenon occurs when the conjunctive *munnaḥ*, intended to serve 'etnaḥtā', is placed before *zāqēp qāṭōn* (41b). The non-attested nature of the conjunctive *ṭa'amim* combinations in (41) is a prediction I have made based on 1) the intonational structure of this cantillation tradition, 2) the principles of conjunct and disjunct melodic motion, and 3) the many *ṭa'amim* combinations I have identified in my reading of the MT.

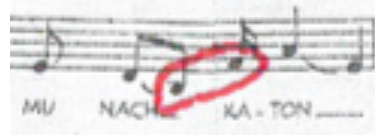
- (41a) The pitch patterns of the conjunctive *munnaḥ* (intended to serve the disjunctive *zāqēp qāṭōn*) followed by the disjunctive 'etnaḥtā' exhibit melodic disjunction because the suffix and prefix form an interval of a sixth (i.e. the suffix and prefix are five pitches apart):⁷¹



NOT ATTESTED

⁷¹ In (41a), the suffix is an F and the prefix is an A—that is, the suffix is five pitches above the prefix (i.e. an interval of a sixth apart).

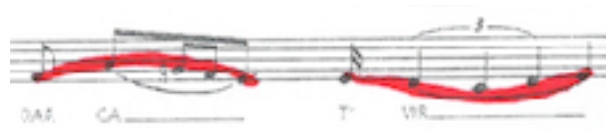
- (41b) The pitch patterns of the conjunctive *munnāḥ* (intended to serve the disjunctive ‘*etnaḥtā*’) followed by the disjunctive *zāqēp qāṭōn* exhibit melodic disjunction because the suffix and prefix form an interval of a fifth (i.e. the suffix and prefix are four pitches apart):⁷²



NOT ATTESTED

Furthermore, the pitch patterns of conjunctives also conform to the *ṭə‘āmīm* they serve by forming melodically cohesive groupings (42). This is perhaps more difficult to see than hear, but in (42) the pitch patterns of the disjunctives intonationally respond to the call of their adjacent conjunctive *ṭə‘āmīm*. For example, in (42a) the conjunctive *dargā*’ calls to the disjunctive *tābīr*; *tābīr* answers the call of *dargā*’. With this pair, notice how the intonational contour of the disjunctive mirrors the intonational contour of the conjunctive.

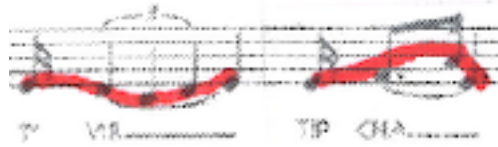
- (42a) The disjunctive *tābīr* answers the call of the conjunctive *dargā*’, forming a cohesive phonological phrase.



This same call/response phenomenon can be seen in (42b) between two disjunctives that comprise a larger cohesive prosodic unit.

⁷² In (41b), the suffix is a B and the prefix is an F—that is, the suffix is four pitches below the prefix (i.e. an interval of a fifth apart).

- (42b) The disjunctive *tippəḥā*’ answers the call of the disjunctive *təbīr*, forming a cohesive prosodic unit larger than the phonological phrase (MiP)—the phonological phrase complex (MaP).⁷³



The call/response feature of phonological groupings within the prosodic structure of the *ta ʾāmē hammiqrā*’ forms the basis of its bilateral nature—that is, it is primarily an expression of the binary maximum constraint on the MaP (see §3.3.2 and §5.3.2 for a description of this constraint).⁷⁴ In fact, these bilateral call/response phonological groupings embody the four principal features that serve memory and constitute the basis of orality.⁷⁵ According to Miller-Naudé & Naudé (2016:59):

Memory is most efficient in storing, classifying, and retrieving items that are mimetic, rhythmic, and bilateral. Repetition is seen as a critical means for identifying patterns and formulas that would facilitate memory. Oral style, then, promotes the memory of traditions and is characterised by mimetic, rhythmic, bilateral, and repetitive expressions.

⁷³ The term I coin the TH phonological phrase complex closely corresponds to Selkirk’s MaP, and is discussed in more detail in §4.4 and §5.2. This prosodic unit is the domain just above the TH phonological phrase, which closely corresponds to Selkirk’s MiP. See the prosodic hierarchies in §3.2 example (11b) and §5.2 example (72b).

⁷⁴ See Appendix A for a catalogue of disjunctive *tə ʾāmîm* according to their membership in intonational families. Each bilateral grouping in the biblical verse is composed of disjunctives taken from the same intonational family.

⁷⁵ Ong (2005:1) defines orality as the “management of knowledge and verbalisation” within a primarily oral culture (Miller II 2011).

This description of memory and its oral-based components concisely describe the purpose of the *ṭa'āmē hammiqrā'* and why they are such an effective prosodic tool. While rhythmic and repetitive features of the *ṭa'āmē hammiqrā'* are easily observable (the former in the distinct rhythms of the pitch patterns of the *ṭə'āmîm*, the latter in their repetitive implementation throughout the biblical text), this study primarily addresses the binary nature of the *ṭa'āmē hammiqrā'*, as it is a feature that largely influences their prosodic structure and organisation.⁷⁶

In (42c), the suffix of the conjunctive *mērkā'* is a continuing tone, one that intonationally anticipates a corresponding melodic unit. The prefix of the adjacent disjunctive *ṭippəḥā'* is the same pitch as the conjunctive's continuing tone (conjunct melodic motion), and provides the melodic response that concludes the phonological phrase. Note, however, that the suffix of *ṭippəḥā'* is also a continuing tone, which signals the continuation of a larger prosodic unit (i.e. the phonological phrase complex, intonational phrase, utterance).

⁷⁶ Jacobson (2002:10) notes: “[i]n preliterate societies (or those in which books are scarce), melody is used as an effective means of assisting memory,” citing the observation of 12th century French Tosafists that “[t]hey would teach the Mishnah using a melody because they learned it from memory, and the melody made it easier to memorise.” By extension, Jacobson concludes that one of the functions of the *ṭa'āmē hammiqrā'* is to aid memory (10).

Repetition is an intrinsic feature of the *ṭa'āmē hammiqrā'* that can be easily observed as the *ṭə'āmîm* are continuously interwoven throughout the biblical text. Rhythm, an equally intrinsic feature of the *ṭa'āmē hammiqrā'*, is evident in the pitch patterns of the *ṭə'āmîm* exhibited in examples (36)-(42). Repetition and rhythm, however, are not explored in this study. An exposition of the mimetic quality of the *ṭa'āmē hammiqrā'* is also outside of the scope of this study, but constitutes an important area of further research.

Examples of the binary nature of the intonational groupings of conjunctive/disjunctive and disjunctive/disjunctive pairs is demonstrated in (42a) and (42b). An exposition of the bilateral groupings formed by disjunctive *ṭə'āmîm* is outlined in Appendix A. I have identified these groupings based on: 1) the cross-linguistic phonological constraint of weight and balance that requires a TH phonological phrase complex (Selkirk's major phrase (MaP)) to consist of at most two phonological phrases (Selkirk's minor phrase (MiP)); 2) an analysis of the graphic representations of the *ṭə'āmîm*; and 3) an analysis of the pitch patterns of pairs of *ṭə'āmîm*. All three components provide a window into the prosodic organisation of the *ṭa'āmē hammiqrā'* and form the basis for the structure of the prosodic domains of TH outlined in §5. Illustrations of these groupings are provided in numerous examples in §§4 and 5. See Appendix A for a discussion of the intonational groupings I propose for the disjunctives.

- (42c) The conjunctive *mērkā* ' is conjoined to the disjunctive *tippəḥā* ' via a continuing tone that signals more to come within the phonological phrase. The disjunctive *tippəḥā* ' ends with the same continuing tone, signalling more to come within the prosodic units that follow.⁷⁷



This same phenomenon of the continuing tone can be seen between disjunctives that constitute a larger cohesive prosodic unit (42d).

- (42d) The disjunctive *təbir* is conjoined to the disjunctive *tippəḥā* ' via a continuing tone that signals more to come within the the larger cohesive prosodic unit of the phonological phrase complex (MaP). The disjunctive *tippəḥā* ' also ends on the same continuing tone, signalling more to come within the intonational phrase.⁷⁸



Continuing tones between conjoined *tə'āmîm* can be compared in function to the French liaison, which phonologically connects two adjacent words (Selkirk 1972:205; Booij & De Jong 1987). In (43a) a phonological unit is formed by conjoining the adjective with its head noun; the /t/ at the end of the adjective *petit* forms a liaison with *âne*.

⁷⁷ The pitch of this continuing tone is E. Within this particular intonational system, E is the most prevalent continuing pitch that conjoins prosodic words, phonological phrases, phonological phrase complexes, and intonational phrases.

⁷⁸ The pitch of this continuing tone is also E. Genesis 47:26 provides an example of the disjunctives *təbir* and *tippəḥā* ' in a consecutive sequence.

- (43a) **Le peti(t â)**ne aime les carottes.
 /lə pətitaŋ ɛm le kaʁot/
 ‘The little donkey loves carrots.’

Notice, however, that unlike TH conjunctives, the French liaison is only able to cross the syntactic boundary between the NP and VP to form a cohesive phonological unit when the NP is a pronoun, as in (43b). For example, the /t/ at the end of the NP *le petit* does not form a liaison with the verb *aime*, because *le petit* is not a pronoun. However, in (43c), the /s/ at the end of the plural personal pronoun *Ils* obligatorily forms a liaison with the verb *ont* (Booij & De Jong 1987:1010).

- (43b) **Le petit** aime les carottes.
 /lə pəti ɛm le kaʁot/
 ‘The little one loves carrots.’

- (43c) **Il(s o)**nt mangé les carottes.
 /ilzõ mãʒe le kaʁot/
 ‘They ate the carrots.’

The repetition of the intonational groupings of the *ʔə ʻāmîm* trains the ear to perceive and anticipate the prosodic constituents of phonological phrases. Analysing the intonational system of the *ʔa ʻāmê hammiqrā* in terms of conjunct and disjunct melodic motion reveals why the pitch patterns of conjunctives are effective in forming cohesive phonological units—melodic motion helps the ear discern the presence of cohesive phonological units. Intervals of a fourth or less

signal intonational continuity within a cohesive unit, while intervals of a fifth or greater signal strong discontinuity between distinct units.

4.4 Theory of Intonation for the *Ṭa‘āme Hammiqrā*

The new theoretical model for the *ṭa‘āme hammiqrā* is based on an integrated analysis of the intonational values of conjunctive and disjunctive *ṭa‘āmîm*. The functions of the *ṭa‘āmîm* in a verse are determined, in part, by their individual pitch patterns and the types of melodic intervals that exist between them. The same criteria used to identify conjunct and disjunct melodic motion for the conjunctives (see §4.3 examples (36)-(41)) are applied to the disjunctives, with the result that melodic intervals and distinct intonational patterns between any *ṭa‘am* combination signal the continuity or discontinuity of larger phonological constituents.

For example, in (44a) if Drescher’s approach to the disjunctives is used to delimit phonological boundaries, where the presence of a disjunctive automatically signals an encoded pause, Genesis 3:3 would be divided as follows—each phonological unit in a box ends with a disjunctive marked on the prosodic word in purple:

(44a)

מִמֶּנּוּ	לֹא תֹאכְלוּ	אָמַר אֱלֹהִים	אֲשֶׁר בְּתוֹךְ-הַגָּן	וּמִפְּרֵי הָעֵץ
from it	not you shall eat	said God	which is in the midst of the garden	But from the tree

But from the tree, which is in the midst of the garden, God said, “You shall not eat, from it, . . .” (Genesis 3:3)

However, a close look at the melodic intervals between the disjunctive *ṭə‘āmîm* (in purple) reveals conjunct melodic motion—from the first prosodic word through the sixth prosodic word—delimiting a new cohesive phonological unit:

(44b)

(אָמַר אֱלֹהִים)	(אֲשֶׁר בְּתוֹךְ-הַגָּן)	(וּמִפְּרֵי הָעֵץ)
(said God)	(which is in the midst of the garden)	(But from the tree)
לֹא תֹאכְלוּ מִמֶּנּוּ		
from it not you shall eat		

But from the tree which is in the midst of the garden God said: “You shall not eat from it . . .” (Genesis 3:3)

In (44b), the first prosodic word (וּמַנְחָה) bears the conjunctive *munnāḥ* and is intonationally conjoined to the disjunctive *zarqā'* on the second prosodic word (זָרְקָה), forming a distinct phonological phrase as indicated by parentheses. This is an expected conjunctive relationship with a melodic interval of perfect unison between the suffix and the prefix—that is, the suffix of the conjunctive is the same pitch as the prefix of the disjunctive (45a). This is the most prevalent melodic relationship conjunctives have with the disjunctives they serve (cf. §4.3 (36)).

(45a) The conjunctive *munnāḥ* conjoined to the disjunctive *zarqā'* by a unison:⁷⁹



However, the disjunctive on the second prosodic word also exhibits conjunct melodic motion with the adjacent constituent because it, too, is intonationally conjoined to the conjunctive on the third prosodic word (זָרְקָה) by an interval of a perfect unison, preserving the melodic continuity of the larger intonational phrase (45b).

⁷⁹ In (45a), the pitch of the suffix and the prefix are both E. Within this intonational system, the pitch E is the most prevalent continuing tone conjoining not only individual *ṭə'āmim*, but also conjoining distinct phonological and intonational phrases (cf. §4.3 examples (42c) and (42d), where the concept of a continuing tone is first introduced).

(45b) The disjunctive *zarqā*’ conjoined to the conjunctive *munnaḥ* (*seggōl*) by a unison:⁸⁰



This larger intonational phrase continuity is represented by the constituents’ placement in the same row (45c).

(45c)

(אָמַר אֱלֹהִים)	(אֲשֶׁר בְּתוֹךְ-הַגַּן)	(וּמִפְרֵי הָעֵץ)
(said God)	(which is in the midst of the garden)	(But from the tree)
לֹא תֹאכְלוּ מִמֶּנּוּ		
from it not you shall eat		

But from the tree which is in the midst of the garden God said: “You shall not eat from it . . .” (Genesis 3:3)

In an expected conjunctive/disjunctive relationship, the suffix of the conjunctive *munnaḥ* on the third prosodic word exhibits conjunct melodic motion with its adjacent disjunctive—that is, the conjunctive *munnaḥ* is intonationally conjoined to the disjunctive *seggōl* on the fourth prosodic

⁸⁰ In (45b), the pitch of the suffix and the prefix are both A.

word (בְּתוֹךְ-הַנֶּגֶז) by an interval of a unison (45d). This phonological unit forms another distinct phonological phrase (as indicated by parentheses).

(45d) The conjunctive *munnaḥ* conjoined to the disjunctive *seggōl* by a unison:⁸¹



This same intonational pattern of conjunct melodic motion is continued for the two consecutive prosodic words regardless of whether the word bears a disjunctive (45e) or a conjunctive (45f), extending the cohesive unit of the larger intonational phrase.

(45e) The disjunctive *seggōl* (בְּתוֹךְ-הַנֶּגֶז) is conjoined to the conjunctive *munnaḥ* (*rəbī ṭī*) on the fifth prosodic word (רַבִּי-טִי) by a unison:⁸²



(45f) The conjunctive *munnaḥ* on the fifth prosodic word conjoined to the disjunctive *rəbī ṭī* (רַבִּי-טִי) on the sixth prosodic word by a unison:⁸³



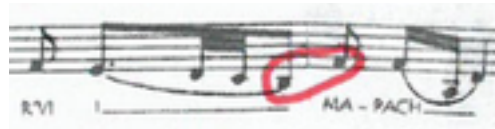
⁸¹ In (45d), the pitch of the suffix and the prefix are both D.

⁸² In (45e), the pitch of the suffix and the pitch of the prefix are both E.

⁸³ In (45f), the pitch of the suffix and the pitch of the prefix are both F.

In fact, the first place of melodic disjuncture in the verse occurs only after the sixth prosodic word (רַבִּי־יְהוֹשֻׁעַ), where the melodic interval between the disjunctive *rəbī'ī* on this word and the conjunctive *məhpāk* on the seventh prosodic word (מַחְפָּקֵי) is a fifth (45g).

(45g) Melodic discontinuity realised in the interval of a fifth between the disjunctive *rəbī'ī* and the conjunctive *məhpāk*:⁸⁴



This marks the point in the verse where the ear perceives distinct intonational discontinuity, or disjunct melodic motion, and thus a juncture where an intentional break or pause in the intonational phrase is prosodically encoded.⁸⁵ This place of disjuncture delimits the end of one intonational phrase and the beginning of another, as represented by the the second row (45h). The first intonational phrase (represented by the first row), therefore, is comprised of six prosodic words that are divided into three phonological phrases made up of *ʔə'āmîm* conjoined by conjunct melodic motion.

⁸⁴ In (45g), the pitch of the suffix is B, while the pitch of the prefix is F—the suffix is four pitches below the prefix (i.e. an interval of a fifth).

⁸⁵ The literal English translation of the Hebrew word that was first coined to describe the disjunctive *ʔə'āmîm* is פְּסָקִי 'verses' or perhaps 'groupings' not 'disjunctive' (Yeivin 1980:164). The Masoretes did not describe the function of these *ʔə'āmîm*, instead grammarians who came centuries after the Masoretes, argued that the separation these *ʔə'āmîm* produced were pausal in nature (Yeivin 1980:161). Separation, however, need not imply pause. The separation or grouping function of the *ʔə'āmîm* could also entail the demarcation of distinct intonational patterns.

(45h)

(אָמַר אֱלֹהִים)	(אֲשֶׁר בְּתוֹךְ-הַגַּן)	(וּמִפְּרֵי הָעֵץ)
(said God)	(which is in the midst of the garden)	(But from the tree)
לֹא תֹאכְלוּ מִמֶּנּוּ		
from it not you shall eat		

But from the tree which is in the midst of the garden God said: “You shall not eat from it . . .” (Genesis 3:3)

Example (46a) exhibits the parsing of this verse into the three highest tiers of the prosodic hierarchy: 1) the prosodic word domain (six prosodic words), 2) the phonological phrase domain represented by intonational groupings of disjunctives and their conjunctives within parentheses (three distinct phonological phrases comprised of six prosodic words bearing conjunctives (in green) and disjunctives (in purple)), and 3) the intonational phrase domain represented by the rows (two intonational phrases—the first intonational phrase comprised of three phonological phrases; the second intonational phrase only shows the first prosodic word in its phonological phrase). Unlike Dresher’s pausal prosodic model, the new intonational model is able to clearly distinguish the prosodic tiers above the prosodic word domain—that is, it clearly distinguishes the phonological phrase from the intonational phrase.

(46a)

(אָמַר אֱלֹהִים)	(אֲשֶׁר בְּתוֹךְ-הַגַּן)	(וּמִפְּרֵי הָעֵץ)
(said God)	(which is in the midst of the garden)	(But from the tree)
לֹא)		
not)		

But from the tree which is in the midst of the garden God said: “Not . . . (Genesis 3:3)

Furthermore, the intonational system of the *ta‘āmê hammiqrā’* has much to say about how phonological phrases are organised because it does not simply group prosodic words into distinct phonological phrases, but also groups them into larger phonological phrase complexes, whose boundaries are determined by an ordered set of intonational patterns. The distinct TH domains of the phonological phrase and the phonological phrase complex closely correspond to Selkirk’s MiP and MaP, respectively.⁸⁶

For example, Portnoy & Wolff (2000:75) classify the disjunctives *zarqā’* (הָעֵץ) and *seggōl* (בְּתוֹךְ-הַגַּן) as together forming a unified intonational family—a unit I call the phonological phrase complex. This means that although the first and the second prosodic words (וּמִפְּרֵי הָעֵץ) and the third and fourth prosodic words (אֲשֶׁר בְּתוֹךְ-הַגַּן) form distinct phonological phrases,

⁸⁶ See the Selkirk’s prosodic model represented in §3.2 example (11b). The ordered set of intonational groupings that form the phonological phrase complex domain are outlined and discussed in Appendix A.

together, they comprise a single phonological phrase complex, as indicated by their placement in the same box (46b):

(46b)

	(אָמַר אֱלֹהִים)	(וּמִפְּרֵי הָעֵץ) (אֲשֶׁר בְּתוֹךְ-הַגָּן)
	(said God)	(But from the tree) (which is in the midst of the garden)
לֹא)		
not)		

But from the tree which is in the midst of the garden God said: “Not . . . (Genesis 3:3)

The *zarqā*’/*seggōl* combination functions together to form a cohesive phonological phrase complex despite the fact that they are both disjunctives. The intonational contour of the disjunctive *zarqā*’ functions like a conjunctive, in that it forms a melodic call that the *seggōl* answers. In §4.3 (42a), I discuss how this call-response feature of conjunctives and the disjunctives they serve is characteristic of the formation and cohesion of distinct phonological phrases. In fact, the symbol for the disjunctive *zarqā*’ is an iconic sign of its conjunctive nature because it is oriented in the direction the text is read, indicating a continuation and cohesion of the phonological phrase complex.⁸⁷ Furthermore, the close affiliation *seggōl* and *zarqā*’ share is represented in the fact that *seggōl* resembles a cluster of grapes and *zarqā*’ a pruning knife used to harvest the cluster. Illustrations of these conjunctive-like attributes are shown in (47), where

⁸⁷ This feature of conjunctives is discussed in §4.2 example (33) and §4.4.4 example (61).

the symbol for *zarqā*' (47a) is juxtaposed with symbols for the conjunctive *munnāḥ* (47b) and the disjunctives *tippəḥā*' (47c), *seggōl* and *rəbī'ī* (47d).

(47a) The disjunctive *zarqā*' (זְרַקָּא) is oriented to the left, in the direction the text is read, indicating a continuation of the phonological phrase complex.

$\varphi_1(\varphi(\text{זְרַקָּא} \text{בְּתוֹךְ-הַגִּזְוֹן})) \varphi(\text{וּמִפְּרֵי הָעֵץ})$

(47b) The conjunctive *munnāḥ* (אֲשֶׁר) is oriented to the left, in the direction the text is read, indicating a continuation of the second phonological phrase.

$\varphi_1(\varphi(\text{אֲשֶׁר} \text{בְּתוֹךְ-הַגִּזְוֹן})) \varphi(\text{וּמִפְּרֵי הָעֵץ})$

(47c) The disjunctive *tippəḥā*' (תִּפְּעֵי) is oriented to the right, indicating the end of a phonological phrase.

$\varphi(\text{וְלֹא תִפְּעֵי})$

(47d) The disjunctives *seggōl* (בְּתוֹךְ-הַגִּזְוֹן) and *rəbī'ī* (אֵלֵּהֶם) are not oriented to the right or the left, instead their vertical orientation indicates the end of their respective phonological phrase complexes.⁸⁸

$\varphi_1(\varphi(\text{אֵלֵּהֶם} \text{אֲמַר})) \varphi_1(\varphi(\text{בְּתוֹךְ-הַגִּזְוֹן} \text{אֲשֶׁר})) \varphi(\text{וּמִפְּרֵי הָעֵץ})$

Just as the first four prosodic words together form a distinct phonological phrase complex, so do the fifth and sixth prosodic words (second box), and the seventh, eighth, and ninth prosodic words (third box, second row) of the verse in (48). The third phonological phrase complex forms the beginning of the second intonational phrase as represented by its placement in a distinct row.

⁸⁸ The *rəbī'ī* phonological phrase complex is comprised of a single phonological phrase.

(48)

	(אָמַר אֱלֹהִים)	(וּמִפְּרֵי הָעֵץ) (אֲשֶׁר בְּתוֹךְ-הַגָּן)
	(said God)	(But from the tree) (which is in the midst of the garden)
(לֹא תֹאכְלוּ מִמֶּנּוּ)		
(not you shall eat from it)		

But from the tree which is in the midst of the garden, God said: “You shall not eat from it . . . (Genesis 3:3)

The conjunctive *mahpāk* on the seventh prosodic word (אֲשֶׁר) is intonationally conjoined to the disjunctive on the eighth prosodic word (תֹּאכְלוּ) by an interval of a unison (49a).

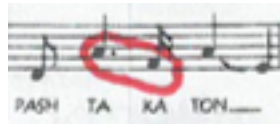
(49a) Conjunct melodic motion exhibited by the conjunctive *mahpāk* conjoined to the disjunctive *pašṭā*’ by a unison:⁸⁹



The intonational relationship between the eighth (תֹּאכְלוּ) and ninth (מִמֶּנּוּ) prosodic words signals a unique prosodic structure. The interval between the suffix of the *ta’am* on the eighth prosodic word and the prefix of the *ta’am* on the ninth word is a third (49b).

⁸⁹ In (49a), the pitch of the suffix and the pitch of the prefix are both D.

- (49b) The disjunctive *pašṭā*’ conjoined to the disjunctive *zāqēp̄ qāṭōn* by an interval of a third:⁹⁰



The unique intervals of a third and a fourth, discussed in the next two sections, deserve particular attention.

4.4.1 Recursive Prosodic Structures: Melodic Intervals of a Third and a Fourth

The intervals of a third and a fourth were first introduced in §4.3 (38) as rare intervals formed by five particular conjunctive combinations:

- i) the conjunctive *munnāḥ* (in red) followed by the conjunctive *mahpāk* (in blue) exhibits an interval of a third:

(50a) נִבְרַךְ אֱלֹהִים אֶת-יָוִם הַשְּׁבִיעִי וַיְקַדֶּשׁ אֹתוֹ כִּי בּוֹ שָׁבַת מִכָּל-מְלָאכְתּוֹ

And God blessed the seventh day, and consecrated it, **for on it** he rested from all his work . . . (Genesis 2:3)

⁹⁰ In (49b), the pitch of the suffix is A, while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). In §4.3 I argued that since the interval of a third and fourth are intonational intervals that conjunctive *ṭə'āmîm* form, they are essentially conjunctive in nature. These intervals, however, form a particular type of conjunctive relationship—an intonationally nested or recursive one—and are discussed in detail in §4.4.1, §4.4.2, and §4.4.3.

ii) the conjunctive *munnaḥ* (in green) followed by the conjunctive *dargā'* (in purple) exhibits an interval of a third:

(51a) כִּי יִצַּר לֵב הָאָדָם רָע מִנְעֻרָיו

For **the intentions of the heart** of man are wicked from his youth . . . (Genesis 8:21)

iii) the conjunctive *talīšā' qəṭannā* (yellow) followed by the conjunctive *kadmā' (və'azlā')* (orange) exhibits an interval of a third:

(52a) כִּי לֹא הִמְטִיר יְהוָה אֶל־הָאָרֶץ

For not cause to rain the LORD God upon the earth . . .

For the LORD God did not cause it to rain upon the earth . . . (Genesis 2:5)

iv) the conjunctive *mērkā' (ṭippəḥā')* (dark blue) followed by the conjunctive *munnaḥ (mahpāk)* (light green) exhibits an interval of a third:

(53a) וְהַכֹּהֵן הַגָּדוֹל מֵאָחָיו אֲשֶׁר־יוֹצֵק עַל־רֹאשׁוֹ | שֶׁמֶן הַמִּשְׁחָה

And the priest who is chief among his brothers, **upon whom was poured on his head** the oil of anointing . . . (Leviticus 21:10)

v) the conjunctive *kadmā'* (pink) followed by the conjunctive *mērkā' (ṭippəḥā')* (light blue) exhibits an interval of a third:

(54a) וּבַשָּׁנִים עָשָׂר הָדָשׁ הוּא־תְּדָשׁ אָדָר בְּשָׁלוֹשָׁה עָשָׂר יוֹם

And in the twelfth month (that is the month of Adar), **on the three** [and] **ten** day . . .

(Esther 9:1)

These intervals are fundamentally conjunctive in nature because they are formed by conjunctive *ṭə'amîm*. However, they also differ from the most prevalent types of conjunctives that produce conjunct melodic motion where the suffix and the prefix of two adjacent *ṭə'amîm* conjoin using

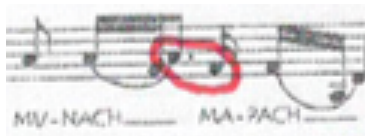
the same pitch, or an interval that is no more than a pitch apart. As an intermediate prosodic construction that lies between strict conjunct melodic motion (intervals of a unison and a second) and intonational discontinuity (intervals of a fifth or greater), the third and fourth intervals form intonationally nested structures. In other words, intervals of a third and fourth, which represent moderate shifts in intonation, encode prosodic recursion. Prosodic recursion results in the nesting of syntactic constituents. This syntactic nesting is represented in the examples that follow by placing a syntactic constituent on a line under the syntactic constituent in which it is nested. Below are examples of the recursive prosodic structures that each of these five conjunctive combinations produce.

In example (50b), the *munnāḥ* (in red)/*mahpāk* (in blue) conjunctive combination exhibits prosodic recursion between the first (כִּי) and second (כִּי) prosodic word. The interval of a third between these two words results in an intonational downstep, which marks the syntactic nesting of the subordinate clause כִּי בֹּשֶׁבֶת inside the subordination particle כִּי.

(50b)

<p>כִּי בּוֹ שָׁבַת (מִכָּל-מַלְאכָתוֹ)</p>
<p>(For on it he rested) (from all his work)</p>

The conjunctive *munnaḥ* conjoined to the conjunctive *mahpāk* by an interval of a third:⁹¹



Additional examples of the recursive prosodic structure formed by the *munnaḥ/mahpāk* conjunctive combination are catalogued in (50c)-(50h) below. Each of the examples in (50) will also be examined in further detail in §4.4.4 and §4.4.5.

⁹¹ In (50b), the pitch of the suffix is A while the pitch of the prefix is F—that is, the suffix is two pitches above the prefix (i.e. an interval of a third).

(50c)

(כַּאֲשֶׁר נִדְלָגָה נַפְשִׁיךָ) (הַיּוֹם הַזֶּה)	(וַהֲבִיטָה)
(just as your life was considered precious) (this day)	(And behold)
	(בְּעֵינַי)
	(in my eyes)
	כֵּן תִּנְבְּל נַפְשִׁי (בְּעֵינַי יְהוָה)
	(so let be considered precious my life) (in the eyes of the LORD)

And behold, just as your life was considered precious in my eyes this day, so may my life be considered precious in the eyes of the LORD . . . (1 Samuel 26:24)

(50d)

	(וַיִּשְׁמַע בֶּן שָׁאוּל)
	(And then the son of Saul heard)
כִּי מֵת אַבְנֵר (בְּחֶבְרוֹן)	
(that Abner was dead) (in Hebron)	

And then the son of Saul heard that Abner was dead in Hebron . . . (2 Samuel 4:1)

(50e)

כִּי אִם־מָלֵא כַּף־קֶמַח (בַּכֹּר)	(חַי־יְהוָה אֱלֹהֶיךָ) (אִם־יֵשׁ־לִי מְעֻג)	(וַתֹּאמֶר)
(except a filling of a palm of flour) (in the jar)	(As the LORD your God lives there is for me nothing baked)	(And then she said)

And then she said: “As the LORD your God lives, there is nothing baked, except a handful of flour in the jar . . . “ (1 Kings 17:12)

(50f)

	(אָוִי־לִי כִי־נִדְמִיתִי)	(וְאָמַרְ)
	(Woe to me because I am undone)	(And then I said)
כִּי אִישׁ טִמְא־שִׁפְתַיִם) (אֲזַכֵּר)		
(For a man of unclean lips) (am I)		

And then I said: “Woe to me because I am undone, for I am a man of unclean lips . . .” (Isaiah 6:5)

(50g)

	(וְרֹאשׁ דַּמָּשֶׁק)	כִּי רֹאשׁ אֲרָם) (דַּמָּשֶׁק)
	(and the head of Damascus)	(For the head of Syria) (is Damascus)
(רֵזִין)		
(is Rezin)		

For the head of Syria is Damascus and the head of Damascus is Rezin . . .
(Isaiah7:8)

(50h)

(מֵאֶרְצוֹ :)	(יִגְרֹשֵׁם)	(וּבְיַד חֲזָקָה)	כִּי (בְּיַד חֲזָקָה) (יִשְׁלַחֵם)
(from his land)	(he will drive them)	(and by a strong hand)	(For by a strong hand) (he will send them out,)

For by a strong hand he will send them out, and by a strong hand he will drive them from his land.
(Exodus 6:1)

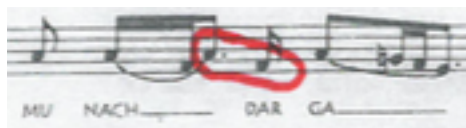
Similarly, the interval of a third between the adjacent conjunctives *munnaḥ* (in green)/*dargā*´ (in purple) forms a recursive prosodic structure. The recursive structure in (52b) nests the genitive of a construct chain inside its head noun.

(51b)⁹²

		(כִּי)
		(For)
	(יָצַר) (לֵב הָאָדָם) (רָע)	
	(the intention of the heart of man) (is wicked)	
(מִנְעָרָיו)		
(from his youth)		

For the intention of the heart of man is wicked from his youth . . . (Genesis 8:21)

The conjunctive *munnaḥ* conjoined to the conjunctive *dargā*´ by an interval of a third:⁹³



⁹² It is clear that *tālīšā*´ *gādōlā* (כִּי) should not be grouped in the same phonological phrase complex as *tābir* because *tālīšā*´ *gādōlā* forms an interval of a fifth with the conjunctive *munnaḥ* (יָצַר) serving this complex.

⁹³ In (51b), the pitch of the suffix is A while the pitch of the prefix is F—that is, the suffix is two pitches above the prefix (i.e. an interval of a third).

Examples (52b)-(52f) illustrate recursive prosodic structures formed by the melodic interval of a fourth between the conjunctive combination *tālīšā' qəṭannâ* (brown)/*kadmā' (və'azlā')* (orange). These examples illustrate the prosodic nesting of a subordinate clause in the subordination particle פִּי (52b); the matrix verb nesting its subject (52c)-(52e); and the subordination particle פִּי conjoined to the cataphoric demonstrative כֵּן nesting the clause's verb and subject (52f).

(52b)

<p>(יְהוָה אֱלֹהִים) (עַל-הָאָרֶץ)</p>	<p>פִּי לֹא הִמְטִיר (לא המטיר)</p>
<p>(the LORD God) (upon the earth)</p>	<p>(For not cause to rain)</p>

For the LORD God did not cause it to rain upon the earth . . . (Genesis 2:5)

The conjunctive *tālīšā' qəṭannâ* conjoined to the conjunctive *kadmā' (və'azlā')* by an interval of a fourth:⁹⁴



⁹⁴ In (52b), the pitch of the suffix is D while the pitch of the prefix is A—that is, the suffix is three pitches above the prefix (i.e. an interval of a fourth).

(52c)

(אֶת־הָאָדָם)	(וַיִּצַר) (יְהוָה אֱלֹהִים)
(Adam)	(And then fashioned the LORD God)

And then the LORD God fashioned Adam . . . (Genesis 2:7)

(52d)

(מִן־הָאֲדָמָה)	(וַיִּצַר) (יְהוָה אֱלֹהִים)
(from the ground)	(And then fashioned the LORD God)

And then the LORD God fashioned from the ground . . . (Genesis 2:19)

(52e)

(לְכַף־רַגְלָהּ)	(וְלֹא־מָצְאָה) (תִּיּוֹנָה מְנוּחַת)
(for the palm of her foot)	(And did not find the dove rest)

And the dove did not find rest for the palm of her foot . . . (Genesis 8:9)

(52f)

(אֱלֹהֵי יִשְׂרָאֵל)	כִּי כֹה אָמַר יְהוָה
(God of Israel)	(For thus says the LORD)

For thus says the LORD, God of Israel . . . (1King 17:14)

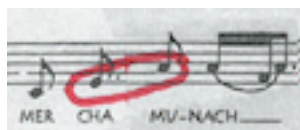
(53b) provides an example of the recursive prosodic structure formed by the melodic interval of a fourth between the conjunctive combination *mērkāʾ* (*tippəḥāʾ*) (dark blue)/*munnāḥ* (*mahpāk*) (light green). This example illustrates the prosodic nesting of an adjunct PP in a relative clause.

(53b)

	(וְהַכֹּהֵן הַגָּדוֹל מֵאָחָיו)
	(And the priest who is chief among his brothers)
(אֲשֶׁר־יִזְכָּק עַל־רֵאשׁוֹׁ שֶׁמֶן הַמִּשְׁחָה)	
(upon whom was poured on his head the oil of anointing)	

And the priest who is chief among his brothers, upon whose head the oil of anointing is poured out . . .
(Leviticus 21:10)

The conjunctive *mērkāʾ* (*tippəḥāʾ*) conjoined to the conjunctive *munnāḥ* (*mahpāk*) by an interval of a fourth:⁹⁵



⁹⁵ In (53b), the pitch of the suffix is E while the pitch of the prefix is A—that is, the suffix is three pitches below the prefix (i.e. an interval of a fourth).

(54b) provides an example of the recursive prosodic structure formed by the melodic interval of a fourth between the conjunctive combination *kadmā*' (pink)/*mērkā*' (*tippəḥā*') (light blue). This example illustrates the prosodic nesting of a cardinal number inside another one.

(54b)⁹⁶

<p>(בְּשָׁלוֹשָׁה) (עֶשְׂרֵי יוֹם)</p>	<p>(הוּא-תָדֵשׁ אָדָר)</p>	<p>(וּבְשָׁנִים עֶשְׂרֵי אָדָשׁ)</p>
<p>(on the three ten day)</p>	<p>(that is the month of Adar)</p>	<p>(And in the twelfth month)</p>

And in the twelfth month (that is the month of Adar), on the three [and] ten day . . . (Esther 9:1)

The conjunctive *kadmā*' conjoined to the conjunctive *mērkā*' (*tippəḥā*') by an interval of a fourth:⁹⁷



⁹⁶ Other examples of this conjunctive combination include: Exodus 29:21; 2 Kings 2:3; 2 Kings 2:5. However, it is important to note that this combination could also be *kadmā*' followed by *mērkā*' (*təbir*), not *mērkā*' (*sōf-pāsūq*). If so, the *kadmā*'/*mērkā*' combination would form an interval of a unison instead of a fourth:

(54c) Pitch pattern of the conjunctive combination *kadmā*'/*mērkā*' (*təbir*)—the suffix and the prefix are both F (an interval of a unison):

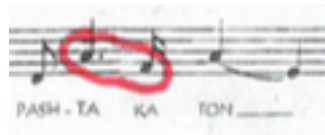


⁹⁷ In (54b), the pitch of the suffix is F while the pitch of the prefix is C—that is, the suffix is three pitches above the prefix (i.e. an interval of a fourth).

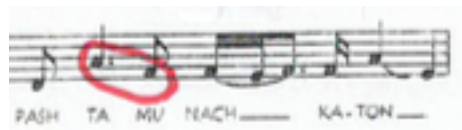
4.4.2 Recursive Prosodic Structures Formed by Disjunctive *Ṭə 'āmîm*

Disjunctive *ṭə 'āmîm* also form these conjunctive-like, recursive prosodic structures when their suffixes produce intervals of a third or a fourth with the prefixes of adjacent *ṭə 'āmîm*. The fact that the *ṭə 'āmê hammiqrā'* configure intervals of a third and a fourth with conjunctive *ṭə 'āmîm* indicates that these intervals are primarily cohesive prosodic structures, not structures that signal intonational discontinuity or sharp boundaries. The following examples catalogue combinations of disjunctives and adjacent *ṭə 'āmîm* that form recursive structures using melodic intervals of a third (55) and a fourth (56).

- (55a) The interval of a third formed by disjunctives *pašṭā'* and *zāqēp qāṭōn*:⁹⁸



- (55b) The interval of a third formed by the disjunctive *pašṭā'* and the adjacent conjunctive *munnāḥ* (*zāqēp qāṭōn*):⁹⁹



⁹⁸ In (55a), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive combination can be found in most verses, beginning with Genesis 1:2.

⁹⁹ In (55b), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive/conjunctive combination can be found in most verses, beginning with Genesis 1:7.

- (55c) The interval of a third formed by the disjunctive *tippəḥā'* and the adjacent conjunctive *mērka'*:¹⁰⁰



- (55d) The interval of a third formed by the disjunctives (*kadmā'*) *və'azlā'* and *rəbī'ī*:¹⁰¹



- (55e) The interval of a third formed by the disjunctives *rəbī'ī* and *pašṭā'*:¹⁰²



- (55f) The interval of a third formed by the disjunctive *təbīr* and the adjacent conjunctive *mērka'* (*tippəḥā'*):¹⁰³



¹⁰⁰ In (55c), the pitch of the suffix is E while the pitch of the prefix is C—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive/conjunctive combination can be found in most verses, beginning with Genesis 1:1.

¹⁰¹ In (55d), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive combination include: Genesis 2:7; 2:19; Genesis 3:8; Genesis 8:9; Genesis 8:17; Exodus 32:1; 1Kings 16:31.

¹⁰² In (55e), the pitch of the suffix is B while the pitch of the prefix is D—the suffix is two pitches below the prefix (i.e. an interval of a third). Examples of this disjunctive combination include: Genesis 2:7; Genesis 2:17; Genesis 15:5; Exodus 5:14; 1King 17:12.

¹⁰³ In (55f), the pitch of the suffix is E while the pitch of the prefix is C—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive/conjunctive combination include: Genesis 2:9; Genesis 8:17.

- (55g) The interval of a third formed by the disjunctive *rəbīṭ* and the adjacent conjunctive *kadmāʾ* (*mahpāk*):¹⁰⁴



- (55h) The interval of a third formed by the disjunctive *zāqēṭ* *gādōl* and the adjacent conjunctive *mērkāʾ* (*tippəḥāʾ*):¹⁰⁵



- (55i) The interval of a third formed by the disjunctive *zāqēṭ* *qāṭōn* and the adjacent conjunctive *mērkāʾ* (*tippəḥāʾ*):¹⁰⁶



- (55j) The interval of a third formed by the disjunctives *gēršayim* and *munnāḥ* *ləgarmē*:¹⁰⁷



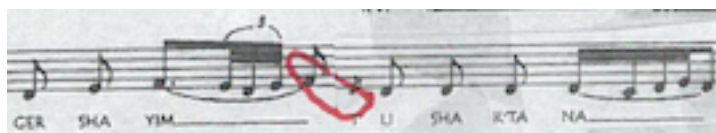
¹⁰⁴ In (55g), the pitch of the suffix is B while the pitch of the prefix is D—the suffix is two pitches below the prefix (i.e. an interval of a third). Examples of this disjunctive/conjunctive combination include: Exodus 5:11; Leviticus 17:15; Leviticus 20:13; Leviticus 20:14; Leviticus 20:15; Leviticus 20:16.

¹⁰⁵ In (55h), the pitch of the suffix is E while the pitch of the prefix is C—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive/conjunctive combination include: Genesis 3:10; Numbers 4:49; Numbers 33:55; Deuteronomy 2:29.

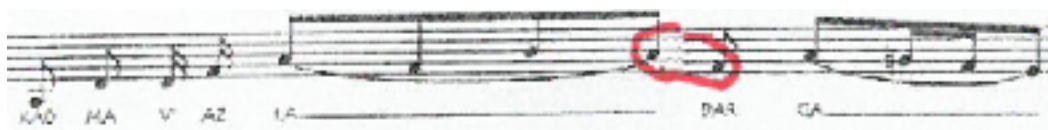
¹⁰⁶ In (55i), the pitch of the suffix is E while the pitch of the prefix is C—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive/conjunctive combination include: Genesis 2:3; Exodus 3:9; 1 Samuel 3:13; Ruth 4:3.

¹⁰⁷ In (55j), the pitch of the suffix is F while the pitch of the prefix is D—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive combination include: Genesis 8:20; Deuteronomy 2:14; Deuteronomy 9:7; Joshua 13:3.

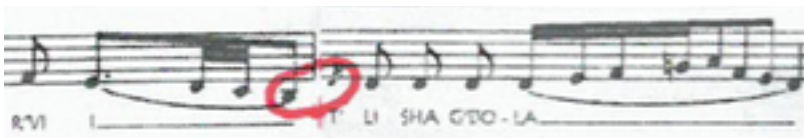
- (55k) The interval of a third formed by the disjunctive *gēršayim* and the adjacent conjunctive *tālīšā' qəṭannā'*:¹⁰⁸



- (55l) The interval of a third formed by the disjunctive (*kadmā'*) *və'azlā'* and the adjacent conjunctive *dargā'*:¹⁰⁹



- (55m) The interval of a third formed by the disjunctives *rəbī'ī* and *tālīšā' gədōlā'*:¹¹⁰



¹⁰⁸ In (55k), the pitch of the suffix is F while the pitch of the prefix is D—the suffix is two pitches above the prefix (i.e. an interval of a third). An example of this disjunctive/conjunctive combination includes: Esther 6:13.

¹⁰⁹ In (55l), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive/conjunctive combination includes: Genesis 3:6; Genesis 8:22; Leviticus 4:22; Numbers 4:12.

¹¹⁰ In (55m), the pitch of the suffix is B while the pitch of the prefix is D—the suffix is two pitches below the prefix (i.e. an interval of a third). Examples of this disjunctive combination include: Genesis 7:7; Genesis 8:21; Numbers 17:5; 2 Kings 20:13. Genesis 7:7 provides a nice example of multiple intonationally nested structures in a verse (the large parentheses enclose the intonational phrases, the smaller parentheses enclose the phonological phrases; cohesive phonological phrase complexes are indicated by matching colored parentheses; *nt* identifies a nonterminal intonational phrase, while *t* identifies a terminal one, i.e. the end of the verse): ((Noah entered (and his sons (and his wife and the wives of his sons with him))))*nt* ((to the ark))*nt* ((from before (the waters of the flood))))*t*.

- (55n) The interval of a third formed by the disjunctive *rəbīṭ* and the adjacent conjunctive *munnāḥ* (*təlišā' gədōlā* or *təlišā' qəṭannā*):¹¹¹



- (55o) The interval of a third formed by the disjunctive *təlišā' gədōlā* and the adjacent conjunctive *dargā'*:¹¹²



- (55p) The interval of a third formed by the disjunctive *gērēš* and the adjacent conjunctive *dargā'*:¹¹³



- (55q) The interval of a third formed by the disjunctive *yəṭīb* and the adjacent conjunctive *mahpāk*:¹¹⁴



¹¹¹ In (55n), the pitch of the suffix is B while the pitch of the prefix is D—the suffix is two pitches below the prefix (i.e. an interval of a third). Examples of this disjunctive combination include: Genesis 19:2; Exodus 33:1; 1 Kings 2:5; 2 Kings 23:11.

¹¹² In (55o), the pitch of the suffix is D while the pitch of the prefix is F—the suffix is two pitches below the prefix (i.e. an interval of a third). Examples of this disjunctive/conjunctive combination include: Leviticus 27:11; 1 Kings 17:14.

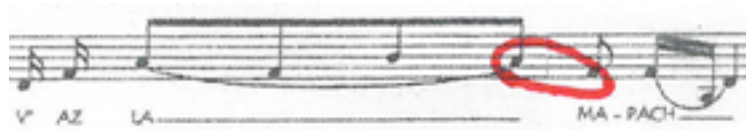
¹¹³ In (55p), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive/conjunctive combination include: Exodus 6:26; 2 Kings 13:6; Daniel 11:38. Note that the pitch pattern for the disjunctive *gērēš* is the same as the last four notes in the pitch pattern for the disjunctive *'azlā'* (in *kadmā' və'azlā'*)—for an example cf. (55s).

¹¹⁴ In (55q), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). An example of this disjunctive combination includes: Genesis 22:16.

- (55r) The interval of a third formed by the disjunctive *yətib* and the adjacent conjunctive *munnāh* (*zāqēp qātōn*):¹¹⁵



- (55s) The interval of a third formed by the disjunctive (*kadmā*) *və'azlā*' and the adjacent conjunctive *mahpāk*:¹¹⁶



- (55t) The interval of a third formed by the disjunctives *yətib* and *zāqēp qātōn*:¹¹⁷



- (55u) The interval of a third formed by the disjunctives *paštā*' and *rəbī*'ī:¹¹⁸



¹¹⁵ In (55r), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive combination include: Genesis 2:5; Genesis 3:11; Genesis 3:15.

¹¹⁶ In (55s), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive combination include: Genesis 2:5; Genesis 24:7; Leviticus 16:2; Numbers 6:5; Judges 20:13.

¹¹⁷ In (55t), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). An example of this disjunctive combination includes: Genesis 2:23.

¹¹⁸ In (55u), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive combination include: 1 Kings 17:19; Ezekiel 40:44.

- (55v) The interval of a third formed by the disjunctive *'etnaḥtā'* and the adjacent conjunctive *mērkā'* (*tippəḥā'*):¹¹⁹



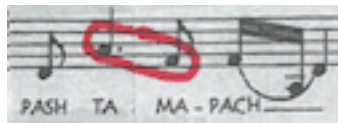
- (55w) The interval of a third formed by the disjunctive *gērēš* and the adjacent conjunctive *mahpāk*:¹²⁰



- (55x) The interval of a third formed by the disjunctive (*kadmā'*) *və'azlā'* and the adjacent conjunctive *mērkā'* (*təbīr*):¹²¹



- (55y) The interval of a third formed by the disjunctive *paštā'* and the adjacent conjunctive *mahpāk*:¹²²



¹¹⁹ In (55v), the pitch of the suffix is E while the pitch of the prefix is C—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive combination include: Genesis 13:14; Judges 11:1; Judges 11:32.

¹²⁰ In (55w), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). Examples of this disjunctive/conjunctive combination include: Exodus 32:15; 2 Kings 14:9; Jeremiah 44:14; Ruth 2:9; Esther 8:5.

¹²¹ In (55x), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). An example of this disjunctive/conjunctive combination includes: Genesis 27:33; Exodus 29:1.

¹²² In (55y), the pitch of the suffix is A while the pitch of the prefix is F—the suffix is two pitches above the prefix (i.e. an interval of a third). An example of this disjunctive/conjunctive combination includes: Deuteronomy 4:2; 2 Samuel 15:35.

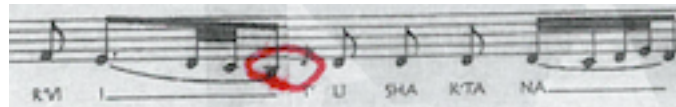
(55z) The interval of a third formed by the disjunctives *rəbī'ī* and *gēršayim*.¹²³



(55aa) The interval of a third formed by the disjunctive *gēršayim* and the adjacent conjunctive *kadmā'*.¹²⁴



(55bb) The interval of a third formed by the disjunctive *rəbī'ī* and the adjacent conjunctive *təlīšā' qəṭannā'*.¹²⁵



¹²³ In (55z), the pitch of the suffix is B while the pitch of the prefix is D—the suffix is two pitches below the prefix (i.e. an interval of a third). Examples of this disjunctive combination include: Judges 21:19; 2 Kings 14:25.

¹²⁴ In (55aa), the pitch of the suffix is F while the pitch of the prefix is D—the suffix is two pitches above the prefix (i.e. an interval of a third). An example of this disjunctive/conjunctive combination includes: Genesis 3:8; Leviticus 13:46; Numbers 15:23; Deuteronomy 4:48; Deuteronomy 12:5; 1 Kings 17:20.

¹²⁵ In (55bb), the pitch of the suffix is B while the pitch of the prefix is D—the suffix is two pitches below the prefix (i.e. an interval of a third). Examples of this disjunctive combination include: Genesis 1:29; Leviticus 16:10; 1 Kings 14:8; 2 Kings 17:36.

- (55cc) The interval of a third formed by the disjunctive *gēršayim* and the adjacent conjunctive *munnāḥ* (*dargā*):¹²⁶



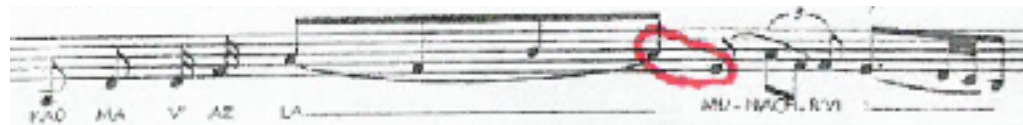
- (56a) The interval of a fourth formed by the disjunctive *tālīšā* *gədōlā* and the adjacent conjunctive *kadmā* (*və* *azlā*):¹²⁷



- (56b) The interval of a fourth formed by the disjunctives *rābī* *ī* and *tābīr*:¹²⁸



- (56c) The interval of a fourth formed by the disjunctive (*kadmā*) *və* *azlā* and the adjacent conjunctive *munnāḥ* (*rābī* *ī*):¹²⁹



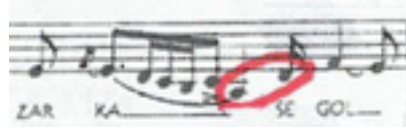
¹²⁶ In (55cc), the pitch of the suffix is F while the pitch of the prefix is A—the suffix is two pitches below the prefix (i.e. an interval of a third). An example of this disjunctive/conjunctive combination includes: Numbers 4:14.

¹²⁷ In (56a), the pitch of the suffix is D while the pitch of the prefix is A—the suffix is three pitches above the prefix (i.e. an interval of a fourth). Examples of this disjunctive/conjunctive combination include: Genesis 2:5; Genesis 8:13; Genesis 8:22; Leviticus 20:18; Numbers 2:34.

¹²⁸ In (56b), the pitch of the suffix is B while the pitch of the prefix is E—the suffix is three pitches below the prefix (i.e. an interval of a fourth). Examples of this disjunctive combination include: Genesis 2:4; Genesis 2:17; Exodus 6:3; Numbers 16:34; Deuteronomy 17:3; Isaiah 6:5.

¹²⁹ In (56c), the pitch of the suffix is A while the pitch of the prefix is E—the suffix is three pitches above the prefix (i.e. an interval of a fourth). Examples of this disjunctive/conjunctive combination include: Genesis 1:26; Exodus 32:13; Exodus 39:5; Leviticus 5:23; Judges 16:5; 1 King 17:12; 1 King 17:14.

- (56d) The interval of a fourth formed by the disjunctives *zarqā'* and *seggōl*:¹³⁰



- (56e) The interval of a fourth formed by the disjunctive *zāqēp qāṭōn* and the adjacent conjunctive *munnāḥ (mahpāk)*:¹³¹



- (56f) The interval of a fourth formed by the disjunctive *'etnaḥtā'* and the adjacent conjunctive *munnāḥ (mahpāk)*:¹³²



- (56g) The interval of a fourth formed by the disjunctives *rəbī'ī* and *zarqā'*:¹³³



¹³⁰ In (56d), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is three pitches below the prefix (i.e. an interval of a fourth). Examples of this disjunctive combination include: Genesis 1:7; Genesis 1:28; Genesis 2:23; Numbers 14:9; Deuteronomy 22:24; Joshua 22:7; Judges 15:18, 1 Samuel 10:8; 1 Samuel 14:45; 1 Samuel 17:26; 1 Samuel 23:10; 1 Kings 17:1.

¹³¹ In (56e), the pitch of the suffix is E while the pitch of the prefix is A—the suffix is three pitches below the prefix (i.e. an interval of a fourth). An example of this disjunctive/conjunctive combination includes: 1 Kings 17:12.

¹³² In (56f), the pitch of the suffix is E while the pitch of the prefix is A—the suffix is three pitches below the prefix (i.e. an interval of a fourth). An example of this disjunctive/conjunctive combination includes: 1 Samuel 26:24. This combination nests one intonational phrase in another intonational phrase (see §4.4.5 (66d) for an illustration of this phenomenon).

¹³³ In (56g), the pitch of the suffix is B while the pitch of the prefix is E—the suffix is three pitches below the prefix (i.e. an interval of a fourth). Examples of this disjunctive combination include: Genesis 3:17; Genesis 22:9; Numbers 14:14; 1 Kings 10:2; Ezekiel 23:22.

- (56h) The interval of a fourth formed by the disjunctive *gērēš* and the adjacent conjunctive *munnāḥ* (*rəbī'ī*):¹³⁴



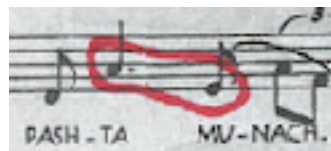
- (56i) The interval of a fourth formed by the disjunctives *zāqēp qāṭōn* and *gērēš*:¹³⁵



- (56j) The interval of a fourth formed by the disjunctive *gēršayim* and the adjacent conjunctive *mērkā'* (*tippəḥā'*):¹³⁶



- (56k) The interval of a fourth formed by the disjunctive *pašṭā'* and the adjacent conjunctive *munnāḥ* (*rəbī'ī*):¹³⁷



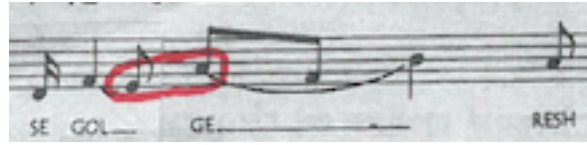
¹³⁴ In (56h), the pitch of the suffix is A while the pitch of the prefix is E—the suffix is three pitches above the prefix (i.e. an interval of a fourth). An example of this disjunctive/conjunctive combination includes: Leviticus 13:45; 1 Kings 18:23; 2 Kings 14:9; Jeremiah 50:37; Ezekiel 20:6.

¹³⁵ In (56i), the pitch of the suffix is E while the pitch of the prefix is A—the suffix is three pitches below the prefix (i.e. an interval of a fourth). An example of this disjunctive combination includes: Exodus 6:26.

¹³⁶ In (56j), the pitch of the suffix is F while the pitch of the prefix is C—the suffix is three pitches above the prefix (i.e. an interval of a fourth). An example of this disjunctive/conjunctive combination includes: Deuteronomy 20:6.

¹³⁷ In (56k), the pitch of the suffix is A while the pitch of the prefix is E—the suffix is three pitches above the prefix (i.e. an interval of a fourth). Examples of this disjunctive combination include: Genesis 9:12; 1 Kings 2:24; 1 Kings 21:4; 2 Kings 19:6.

(561) The interval of a fourth formed by the disjunctives *seggōl* and *gērēš*:¹³⁸



4.4.3 The Intonational Characteristics of Recursive Prosodic Structures in Hungarian, English and German

The recursive structures Dresher posits for the disjunctive *ṭə‘āmîm* based on a hierarchy of relative pausal strength seem arbitrary, not only because there is no Masoretic evidence that disjunctives were designed to specifically encode pausal cues, but also because there is nothing inherent about pauses in speech (even of differing lengths) that make them necessarily recursive. For example, in (57) the pauses between items in a list in English are considered to create flat, iterative prosodic structures, not recursive ones (Féry 2009:3). According to Karlsson (2010), the main difference between recursion and iteration is that “recursion builds structure by increasing embedding depth whereas iteration yields flat output structures which do not increase depth,” (43). In other words, a recursive structure is one that nests its constituents hierarchically, while the constituents of an iterative structure are flat and consecutive. The iterative structure of a list of items does not suddenly become recursive if the pause lengths between the listed items are not exactly the same, that is if pauses are even present at all. As the example in (57) suggests, the fact that lists create this type of iterative structure has more to do with the structures of the phonological and intonational phrases themselves than with pausal phenomena.

¹³⁸ In (561), the pitch of the suffix is E while the pitch of the prefix is A—the suffix is three pitches below the prefix (i.e. an interval of a fourth). An example of this disjunctive combination includes: 2 Kings 14:9.

(57)¹³⁹ Anna ran some errands and bought (a bottle of orange juice)_(t), (an apple)_(t),
(sugar)_(t), (butter)_(t), (and a pair of socks)_(t).

However, Drescher's prosodic model would indiscriminately place every prosodic construction (except for prosodic words bearing the D0 disjunctives 'etnaḥtā' and *sōf-pāsûq*) in increasingly nested structures. This type of arbitrary assignment of recursion does not seem to capture the true nature of recursion in prosody.

Research conducted by Féry (2009) and Hunyadi (2010) in the area of recursion at the level of the intonational phrase provides a more helpful framework for understanding recursive prosodic structures. To begin with, Hunyadi argues that understanding recursion in intonational phrases should be based on variation of pitch and intensity as opposed to pause:

. . . Watson & Gibson 2004 [show] that pauses do not always occur at intonational phrase boundaries and, in addition, syntactic structure does not determine the size of a pause, although it may affect the probability of a boundary. In view of such observations and results, we may rightly ask how and to what extent prosody with its limited symbolic inventory (lexicon) of just pitch, intensity and duration (pause) can contribute to the generation of prosodic structure. Since, as we have seen, there is no necessary direct relation between syntactic and pausal phrasing, we might want to turn our attention to prosodic phrasing brought about by variation of pitch and intensity, and, as a result, tonal phrasing and find out how tonal and pausal phrasing participate in their joint venture of representing prosodic (and syntactic) phrases (Hunyadi 2010:346).

¹³⁹ The example in (57) is taken from Féry (2009:3).

Hunyadi reports that recursive syntactic structures were consistent with lowering the speaking range (i.e. lowering the pitch), which in turn is indicative of recursive intonational phrase structures. In other words, “the deeper the embedding in the syntactic hierarchy, the lower the speaking range or pitch value for a given embedded phrase” (Hunyadi 2010:347). For example, sentence (58a) in Hungarian shows two syntactically nested phrases—the phrase ‘that the dog . . . bit’ followed by the innermost nested phrase ‘that was rabid’:

(58a)¹⁴⁰ (*A macska,*)_(t) (*amit a kutya,*)_(t) (*ami megveszett,*)_(t) (*megharapott,*)_(t) (*elszaladt*)_(t).
 (the cat)_(t) (that the dog)_(t) (that was rabid)_(t) (bit)_(t) (ran away)_(t)
 ‘The cat, that the dog that was rabid bit, ran away.’

The various levels of nesting of the four intonational phrases can be represented by different colours. The intonational phrases at the top level (red) are flat (*A macska* and *elszaladt*)—this indicates there is no nesting at this level. The intonational phrases at the first level of nesting are green (*amit a kutya* and *megharapott*). The intonational phrase at the second or innermost level of nesting is blue (*ami megveszett*). Hunyadi argues that prosodic recursion is evident because at each level of nesting the pitch value for the intonational phrase lowers.

For example, the pitch values for the intonational phrases in red (i.e. the first and fifth) have a theoretical pitch value of x ; the pitch values for the intonational phrases in green (i.e. the second and fourth) have a theoretical pitch value of $x-1$; the pitch value for the intonational phrase in

¹⁴⁰ The examples in (58) are taken from Hunyadi (2010:348).

blue (i.e. the third) has a pitch value of $x-2$. This means that the utterance begins with an intonational phrase that has a pitch value of x , and then immediately signals prosodic recursion by lowering the pitch value of the second intonational phrase to $x-1$. Another level of prosodic recursion is signalled by lowering the pitch value of the third intonational phrase to $x-2$. These downsteps in pitch are reversed to signal the de-nesting of the fourth intonational phrase to the first level of nesting, a pitch value that corresponds to $x-1$. Another upstep in pitch signals the de-nesting of the fifth intonational phrase to an intonational value that corresponds to the initial pitch x .

(58b) [The cat [that the dog [that was rabid] bit] ran away].

Furthermore, Hunyadi (2010:351) states that the English equivalent of the Hungarian utterance in (58b) “shows the effect of a similar prosodic mechanism.” This type of prosodic recursion seems justified in a way that the recursion Drescher proposes for the disjunctive *ṭə ‘āmîm* do not.

The research of Féry (2009) shows similar downstep and reset pitch patterns in German that appear to mark recursive prosodic structures. In her study, she analyses the prosodic realisation of the responses to the question: “Why does Anna think that craftsmen have more expensive cars than musicians?” (2009:4). These utterances in (59) have the following structure (2009:4):

(59a) A while [B and C].

[Weil der Maler einen Jaguar hat]A, [[während die Sängerin einen Lada besitzt]B,
und [der Geiger einen Wartburg fährt]C]

[‘Because the painter has a Jaguar]A, [[while the singer possesses a Lada]B, and [the
violinist drives a Wartburg]C].’

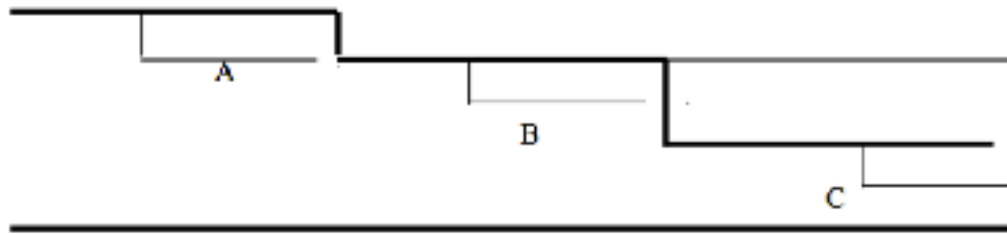
(59b) [A and B] while C.

[[Weil die Sängerin einen Lada besitzt]A, [und der Geiger einen Wartburg
fährt]B], [während der Maler einen Jaguar hat]C]

[‘Because the singer possesses a Lada]A, [and the violinist drives a Wartburg]B], [while
the painter has a Jaguar.]C’

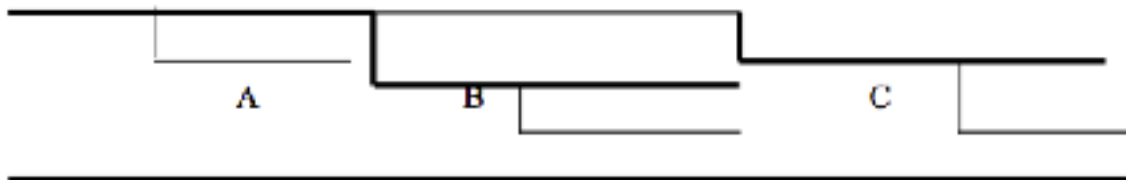
The prosodic pattern that emerges from utterance (59a) is represented in (60a) and exhibits progressive intonational downstep from constituent A to constituent B to constituent C. The highest pitch within constituent A (represented by the vertical line to the left of A) is above the highest pitch within constituent B (represented by the vertical line to the left of B), and the highest pitch within constituent B is above the highest pitch within constituent C (represented by the vertical line to the right of C). In other words, the speaker uses intonational downstep to relate each prosodic unit to the other. Féry (2009:5) calls these shifts in intonation ‘tone scaling’—a phenomenon that marks recursive prosodic structures in German, and one that is “sensitive to the syntactic structure of an utterance.”

(60a)¹⁴¹



While the prosodic pattern that emerges from utterance (59b) is slightly different, it also represents prosodic recursion. In this utterance, constituents A and B are coordinated, and C is the outlier. The intonational pattern of in (60b) exhibits a downstep in pitch from A to B (just like in (60a)), and then a partial reset of the highest pitch within constituent C to just above the highest pitch within constituent B. Again, the relevant aspect of this research to my study is that the speaker uses shifts in intonation—prosodic recursion—to communicate the syntactic/semantic relation between prosodic units.

(60b)



¹⁴¹ The figures in (60) are taken from Féry (2009:5).

The research of Hunyadi (2010) and Féry (2009) suggest that intonation may be a more reliable indicator of recursive prosodic structures than pausal phenomena (Hayashi 2004; Féry 2016; Hwang 1989; Ito & Master 2007, 2009; Karlsson 2010; Tokizaki 2001; Wagner 2005, 2007, 2010; Truckenbrodt 2002; Féry & Truckenbrodt 2005), and that identifying syntactic constructions that exhibit similar shifts in intonation may be an effective way to locate recursive prosodic phenomena in the MT. Their research further underscores the need to study the pitch patterns of extant intonational systems of the *ṭa ʿāmē hammiqrā*.

4.4.4 *Pašṭā* / *zāqēp qāṭōn* Phonological Phrase Complex and Prosodic Focus

The most prevalent disjunctive combination that forms a recursive prosodic structure (i.e. an interval of a third or a fourth, representing a moderate shift in intonation) in the MT is the *pašṭā* / *zāqēp qāṭōn* combination—one that can be found in almost every verse. This *ṭa ʿāmīm* combination is like the *zarqā* / *seggōl* combination discussed in §4.4, in that it functions together to form a single phonological phrase complex. In fact, most phonological phrase complexes are composed of two disjunctives which together form intonationally related pitch patterns.¹⁴²

As with the disjunctive *zarqā*, the intonational contour of the disjunctive *pašṭā* functions like a conjunctive, in that it forms a melodic call that *zāqēp qāṭōn* answers. Furthermore, just as *zarqā* is an iconic sign of its conjunctive nature (see §4.4 (47a)-(47d)), so is the symbol for the

¹⁴² Another example of a phonological phrase complex is the *munnāḥ ləgarmē/rəbī* disjunctive combination (see Habakkuk 3:16). The symbol for *munnāḥ ləgarmē* (𐤌𐤍𐤏𐤁𐤀𐤌𐤁𐤀) looks like a conjunctive—visually reinforcing its conjunctive-like intonational features that cohere the *rəbī* phonological phrase complex—and thus can quite easily be mistaken for the conjunctive *munnāḥ*. Portnoy & Wolff (2000) organise the pitch patterns for the *ṭa ʿāmīm* into clauses. I group the *ṭa ʿāmīm* into phonological phrase families that correspond to the prosodic domain of the TH phonological phrase complex (i.e. MaP). These phonological phrase families are based on the melodic patterns and structures I have identified in this study; see Appendix A for a detailed discussion.

disjunctive *pašṭā*’ because it is oriented in the direction the text is read, indicating a continuation of the phonological phrase complex.¹⁴³ An illustration of this is shown in (61), where the symbol for *pašṭā*’ (61a) is juxtaposed with symbols for the conjunctive *mērkā*’ (61b) and the disjunctive *tippəḥā*’ (61c).

(61a) The disjunctive *pašṭā*’ (אֲבִיר) is oriented to the left, in the direction the text is read, indicating a continuation of the phonological phrase complex.

φ₁(φ(בְּחֶבְרוֹן)) φ(אֲבִיר)

(61b) The conjunctive *mērkā*’ (וְאֵשׁ) is oriented to the left, in the direction the text is read, indicating a continuation of the phonological phrase.

φ(וְאֵשׁ) φ(דְּמִשְׁק)

(61c) Although the disjunctive *zāqēp qāṭōn* (בְּחֶבְרוֹן) is not oriented to the right or the left, its vertical placement indicates an end of the phonological phrase complex.

φ₁(φ(בְּחֶבְרוֹן)) φ(אֲבִיר)

Despite the common features the disjunctive *pašṭā*’ shares with conjunctives, it fundamentally differs from a typical conjunctive in that its primary purpose is to signal prosodic prominence within a verse. More specifically (although this aspect is not developed in this study), the *pašṭā*’/ *zāqēp qāṭōn* phonological phrase complex contains information the speaker intends to intonationally foreground. This complex signals the most important mainline constituent that carries the narrative forward within a verse, and is, therefore, fundamentally a discourse tool.

¹⁴³ This feature of conjunctives is also discussed in §4.2 example (33) and 4.4 example (47).

This feature of the *paštā*ʼ/*zāqēp qātōn* complex also makes it fundamentally different from other phonological phrase complexes like *zarqā*ʼ/*seggōl*.

The *paštā*ʼ/*zāqēp qātōn* complex's function as the prosodic focus of a verse is primarily evident in its intonational prominence. The top of the pitch range within the melodic contour of *paštā*ʼ itself, dramatically extends to the top of the pitch range within which all but three of the *ṭa*ʼ*āmîm* function.¹⁴⁴ A description of the tonic pitch and melodic range of the *ṭa*ʼ*āmê hammiqrā*ʼ detailed below, provides the basis for understanding the intonational prominence of the *paštā*ʼ/*zāqēp qātōn* complex.

The suffix pitch of *sōf-pāsûq* is the tonic (i.e. beginning) pitch of the scale (i.e. melodic range) within which all the *ṭa*ʼ*āmîm* function.¹⁴⁵ This tonic pitch brings final intonational resolution to the distinct melodies of the *ṭa*ʼ*āmîm*. In contrast, the intonational contour of *paštā*ʼ (which means 'extend') dramatically extends to the top of the scale, a pitch an octave above the tonic pitch—that is, the same pitch A, only seven pitches above the tonic A. The pitch pattern of *paštā*ʼ consists of two pitches, D and A. The interval between these pitches constitutes a large or dramatic jump—an interval of a fifth (62a).

¹⁴⁴ The pitch patterns of *yātīb*, *zāqēp gādōl*, *pāzēr*, *šalšelet* all comprise the pitch B—the pitch that exceeds the top of the melodic range of the *ṭa*ʼ*āmîm* by one pitch. However, none of the pitch patterns has the same dramatic internal interval of a fifth like *paštā*ʼ (see example (62a)). Under certain semantic/discourse pragmatic conditions (not yet established), *yātīb* replaces *paštā*ʼ in the *zāqēp qātōn* complex, and has a striking intonational effect (e.g. the scope of *yātīb*'s prosodic focus may extend beyond that of *paštā*ʼ). The pitch patterns for *zāqēp gādōl*, *pāzēr*, and *šalšelet* all pass through the pitch B in a stepwise fashion (i.e. they are less intonationally dramatic than *paštā*ʼ). See the pitch pattern in (62b) for an illustration of this stepwise progression.

¹⁴⁵ Within this particular intonational system, the tonic pitch is A.

(62a) The dramatic interval of a fifth within the pitch pattern of the disjunctive *pašṭā'*:



Although several *ṭə'āmīm* pitch patterns pass through the pitch at the top of the scale (i.e. the pitch A circled in red)—and even exceed it by one pitch—none of them displays such a dramatic jump to A as the disjunctive *pašṭā'* (62b).

(62b) The stepwise motion of the pitch pattern of the disjunctive *pāzēr* passing through an ascending melodic line from D to A:



Pašṭā' is the only disjunctive whose pitch pattern is comprised of an interval of a fifth.¹⁴⁶ The effect that *pašṭā'* has on the word it marks renders it prosodically prominent. The word bearing *pašṭā'* within the *zāqēp qāṭōn* complex is marked as the intonational peak of the verse. Although the intonational peak rests on *pašṭā'*, the whole complex (including all conjunctives serving *pašṭā'* and *zāqēp qāṭōn*) is under prosodic focus.¹⁴⁷ This description of the *zāqēp qāṭōn*

¹⁴⁶ *Mahpāk* is the only conjunctive whose pitch pattern is comprised of an interval greater than a fourth—interestingly, this conjunctive primarily serves *pašṭā'*.

¹⁴⁷ Further research is needed to understand the nature of this highlighted or focused prosodic constituent, and how the *pašṭā'*/*zāqēp qāṭōn* complex and other *ṭə'āmīm* relate to syntactically focused constituents in TH.

phonological phrase complex allows for a more complete analysis of the prosodic structures in the examples in §4.4.1.

The examples in §4.4.1 (50), reprinted in (63), now reveal multiple nested structures, distinct phonological phrases, cohesive phonological phrase complexes, and prosodically focused constituents. (63a) exhibits one intonational phrase (represented by the first row) comprised of three distinct phonological phrase complexes (represented by the three boxes) and four phonological phrases (enclosed in parentheses).¹⁴⁸ The first recursive prosodic structure is formed by the interval of a third between the two conjunctives *munnāḥ* (כִּי) and *mahpāk* (בּוֹ), prosodically nesting the temporal subordinate clause (בּוֹ שָׁבַת) in the causal subordination particle כִּי. This recursive structure represents a downstep in pitch,¹⁴⁹ and is indicated by the placement of these constituents (בּוֹ שָׁבַת) on the second line—the line beneath the constituent which nests it (כִּי).

The second recursive prosodic structure is formed by the interval of a third between the two disjunctives *pašṭā* (in green) and *zāqēp qātōn* (in purple), where the PP adjunct, in the form of a construct chain (מִכָּל-מְלֹאכְתּוֹ), is nested in the subordinate clause (בּוֹ שָׁבַת). Likewise, this

¹⁴⁸ The first box represents the *zāqēp qātōn* phonological phrase complex, comprised of the conjunctives *munnāḥ* and *mahpāk* which serve the disjunctive *pašṭā*, and the disjunctive *zāqēp qātōn*. Together these two disjunctives and their conjunctives form two distinct phonological phrases. The second box represents the *ṭippəḥā* phonological phrase complex, comprised of the conjunctive *mērkā* and the disjunctive *ṭippəḥā*. The *sōf-pāsūq* phonological phrase complex in this verse is comprised of the sole disjunctive *sōf-pāsūq*.

¹⁴⁹ Note that not all recursive intervals shift downward; some shift upward. Further investigation is needed to determine if semantic and/or discourse pragmatic information is encoded in these HL, LH intonational shifts.

recursive structure is represented by the placement of **מִכָּל-מְלֹאכְתּוֹ** on the third line—the line beneath the constituent which nests it (**בּוֹ שָׁבַת**). The verb **שָׁבַת** within the prosodically focused *zāqēp qāṭōn* phonological phrase complex [in brackets] bears the disjunctive *pašṭā*, and thus marks the intonational peak of the verse.

The third recursive structure is created by the interval of a third between the disjunctive *zāqēp qāṭōn* (**מִכָּל-מְלֹאכְתּוֹ**) and the adjacent conjunctive *mērka*’ (**אֲשֶׁר-בָּרָא**). This third recursive prosodic structure is not formed within a cohesive phonological phrase complex, but between two distinct complexes (as indicated by the the placement of the nested constituent (**אֲשֶׁר-בָּרָא אֱלֹהִים**) in its own box). Recursion between these phonological phrases is represented by the placement of **אֲשֶׁר-בָּרָא אֱלֹהִים** on the fourth line of its box—the line beneath the constituent which nests it (**מִכָּל-מְלֹאכְתּוֹ**). The relative clause (**אֲשֶׁר-בָּרָא אֱלֹהִים**) is nested in its head noun—a PP in the form of a construct chain (**מִכָּל-מְלֹאכְתּוֹ**). The third phonological phrase complex forms an iterative prosodic structure with the second phonological phrase complex, as indicated by the placement of the constituent **לַעֲשׂוֹת** on the same line that the second complex’s constituent ends.

(63a)

(לַעֲשׂוֹת:)	(אֲשֶׁר-בָּרָא אֱלֹהִים)	כִּי] בּוֹ שָׁבַת [מִכָּל-מְלָאכְתּוֹ]
([by] doing)	(which God created)	[(For on it he rested) (from all his work)]

For on it he rested from all his work, which God created by doing. (Genesis 2:3)

Although the phonological phrase complexes and the intonational phrases are prosodically parsed in (63b),¹⁵⁰ the first half of the verse is presented to provide context for the portion of the second half under analysis. The first prosodically recursive structure in the third intonational phrase is formed by the interval of a third between the two conjunctives *munnāḥ* (כִּי) and *mahpāk* (תִּנְדָּל), nesting the verb and its subject (תִּנְדָּל נַפְשִׁי) in the adverbial particle כִּי. The second prosodically recursive structure is formed by the interval of a third between the disjunctives *paštā* (נַפְשִׁי) and the conjunctive *munnāḥ* (*zāqēp qātōn*) (בְּעֵינַי), where the PP in the form of a construct chain (בְּעֵינַי יְהוָה) is nested in the matrix VP תִּנְדָּל נַפְשִׁי. The subject

¹⁵⁰ The first box represents the *rəbīṭ* phonological phrase complex, comprised of only the disjunctive *rəbīṭ*. The second box represents the *tippəḥā* phonological phrase complex, comprised of two phonological phrases (the disjunctive *təbīr* with its conjunctives *kadmā* and *dargā* and the disjunctive *tippəḥā* with its conjunctive *mērkā*). Although the first two phonological phrase complexes form increasingly recursive prosodic structures, they are still a part of one cohesive intonational phrase. The second intonational phrase is created by the interval of a fifth between *tippəḥā* (תִּנְדָּל), and *etnaḥtā* (the disjunctive in the third phonological phrase complex (בְּעֵינַי)). The interval of a fifth is discussed in detail in §4.4.5.

NP נִפְשִׁי within the prosodically focused *zāqēp qāṭōn* phonological phrase complex [in brackets]

bears *paštā'*, and thus marks the intonational peak of the verse.

(63b)

<p>(כַּאֲשֶׁר נִדְלָה נַפְשִׁי) (הַיּוֹם הַזֶּה)</p>	<p>(וַהֲיָה)</p>
<p>(just as your life was considered precious) (this day)</p>	<p>(And behold)</p>
	<p>(בְּעֵינַי)</p>
	<p>(in my eyes)</p>
	<p>כֵּן] תִּגְדַל נַפְשִׁי [בְּעֵינַי יְהוָה)]</p>
	<p>[(so let be considered precious my life) (in the eyes of the LORD)]</p>

And behold, just as your life was considered precious, this day, in my eyes, so may my life be considered precious in the eyes of the LORD . . . (1 Samuel 26:24)

In (63c),¹⁵¹ the first prosodically recursive structure is created by the interval of a third between the two conjunctives *munnaḥ* (כִּי) and *mahpāk* (מֵת אֲבִנֵר), nesting the subordinate clause מֵת אֲבִנֵר in the subordination particle כִּי. The second recursive structure is formed by the interval of a third between the two disjunctives *paštā*' (אֲבִנֵר) and *zāqēp qāṭōn* (בְּחֶבְרוֹן), where the PP בְּחֶבְרוֹן is nested in the phrase מֵת אֲבִנֵר. The subject NP אֲבִנֵר within the prosodically focused *zāqēp qāṭōn* phonological phrase complex [in brackets] bears *paštā*', and thus marks the intonational peak of the verse.

(63c)

	(וַיִּשְׁמַע בֶּן שָׁאוּל)
	(And then the son of Saul heard)
כִּי] מֵת אֲבִנֵר [בְּחֶבְרוֹן]	
[(that Abner was dead) (in Hebron)]	

And then the son of Saul heard, that Abner was dead in Hebron . . . (2 Samuel 4:1)

¹⁵¹ The first box represents the *rəbīṭ* phonological phrase complex, comprised of the phonological phrase *munnaḥ* and the disjunctive, *rəbīṭ*. This phonological phrase stands alone in the first intonational phrase. The second intonational phrase is formed by the interval of a fifth between the disjunctive *rəbīṭ* and the adjacent conjunctive *munnaḥ* (*mahpāk*) cf. §4.4.5 example (64f).

In (63d),¹⁵² the first prosodically recursive structure is formed by the interval of a third between the disjunctive *paštā*ʾ (אֶל־הֵיךָ) and the conjunctive *munnāḥ* (אִם־יִשְׁלִי מְעוֹג), nesting the clause אִם־יִשְׁלִי מְעוֹג in the oath introduction חִי־יִתְנֶה אֶל־הֵיךָ. The second recursive structure is formed by the interval of a fourth between the disjunctive *zāqēp qāṭōn* (אִם־יִשְׁלִי מְעוֹג) and the conjunctive *munnāḥ* (כִּי), nesting the subordination particle כִּי in the clause אִם־יִשְׁלִי מְעוֹג. The third prosodically recursive structure is formed by the interval a third between the two conjunctives *munnāḥ* (כִּי) and *mahpāk* (אִם־מְלֵא), nesting the subordination particle אִם and construct chain מְלֵא כִּי־קָמַח in the subordination particle כִּי. The fourth recursive structure is formed by the interval of a third between the two disjunctives *paštā*ʾ (כִּי־קָמַח) and *zāqēp qāṭōn* (בְּכֹד), where the PP בְּכֹד is nested in the exceptive clause אִם־מְלֵא כִּי־קָמַח.

This verse illustrates a special, although frequently occurring phenomenon, where a pitch pattern or group of pitch patterns is repeated back to back. I propose that the repetition of a particular *taʿam* occurs, in part, in order to extend the scope of the constituents it governs.¹⁵³ In this example, the prosodically focused constituents extend from חִי־יִתְנֶה to בְּכֹד, as represented by the brackets. The domain of prosodic focus within this verse has two intonational peaks—the NPs אֶל־הֵיךָ and כִּי־קָמַח—as both of these constituents are bear the disjunctive *paštā*ʾ.

¹⁵² The first box represents the *rəbīʿ* phonological phrase complex, comprised of only one phonological phrase—the disjunctive *rəbīʿ*. The single *rəbīʿ* phonological phrase complex comprises the first intonational phrase. The second intonational phrase is formed by the interval of a fifth between the disjunctive *rəbīʿ* and the adjacent conjunctive *mahpāk*.

¹⁵³ This phenomenon is essentially a discourse tool, although there are likely other phenomena that produce the repetition of *ṭəʿāmîm* (for an example see §5.5 example (83)).

(63d)

		(וְתֹאמֶר)
		(And then she said)
כִּי אִם־מְלֵא כַף־קֶמַח [בַּדָּר]	מֵי־יְהוָה אֱלֹהֶיךָ [אִם־יֵשְׁלִי מְעוֹנ]	
[(except a filling of a palm of flour) (in the jar)]	[(As lives the LORD your God) (there is for me nothing baked)]	

And then she said: “As the LORD your God lives, I have nothing baked, except a handful of flour in the jar . . .” (1 Kings 17:12)

In (63e),¹⁵⁴ the first prosodically recursive structure is formed by the interval of a third between the two conjunctives *munnaḥ* (כִּי) and *mahpāk* (אִשׁ), nesting the adjectival construct chain אִשׁ אֱלֹהֵי־יְהוָה in the causal subordination particle כִּי. The second recursive structure is formed by the interval of a third between the disjunctives *paštā’* (טָמְא־שִׁפְתַיִם) and *zāqēp qāṭōn* (אֲנֹכִי),

¹⁵⁴ The first box represents the *gēršayim* phonological phrase complex, comprised of the single disjunctive *gēršayim*. Portnoy & Wolff (2000) group *gēršayim* and *rəbī’ī* within the same intonational family. Based on the binary constraints for TH (discussed in §5.3.2), the patterns of distribution for *gēršayim* within the MT, and its graphic representation, I do not classify *gēršayim* as sharing the same phonological phrase complex as *rəbī’ī*. Furthermore, the graphic symbol for *gēršayim* has characteristics of a disjunctive, not a conjunctive, which is evidence that it forms the head of its own phonological phrase complex.

where the subject pronoun אֲנִי is nested in the construct chain that modifies it. The AP טְמֵא־שִׁפְתָיִם within the prosodically focused *zāqēp qātōn* phonological phrase complex [in brackets] bears *paštā'*, and thus marks the intonational peak of the verse.

(63e)¹⁵⁵

	(אֲוִי־לִי כִי־נִדְמִיתִי)	(וְאָמַרְתִּי)
	(Woe to me because I am undone)	(And then I said)
כִּי] אִישׁ טְמֵא־שִׁפְתָיִם) [אֲנִי]		
[(For a man of unclean lips, am I)]		

And then I said: “Woe to me, because I am undone. For I am a man of unclean lips . . .” (Isaiah 6:5)

In (63f), there are two intonational phrases as represented by the two rows. Only the last phonological phrase complex of the second intonational phrase is analysed here. The first prosodically recursive structure is created by the interval of a third between the two conjunctives *munnaḥ* (כִּי) and *mahpāk* (רָאשׁ), nesting the construct chain רָאשׁ אָרֶם in the causal subordination particle כִּי. The second recursive structure is formed by the interval of a third

¹⁵⁵ Note that the parsing of the intonational phrase domains in this verse favours a full stop (i.e. an intentional break) between the clauses “. . . I am undone. For I am a man . . .”

The example in (63g) exhibits one intonational phrase (as represented by the single row), containing four phonological phrase complexes (two *zāqēp qātōn* complexes, a *tippəḥā* complex, and a *sōf-pāsûq* complex). The prosodically focused *zāqēp qātōn* complex is comprised of two recursive structures. The first recursive prosodic structure is created by the interval of a third between the two conjunctives *munnāḥ* (כי) and *mahpāk* (כי), nesting the PP and its adverbial modifier *כי תזקה* inside the causal subordination particle *כי*. The second recursive structure is formed by the interval of a third between the disjunctives *paštā* (תזקה) and *zāqēp qātōn* (ישלחם), where the VP *ישלחם* is nested in its adjunct phrase (*כי תזקה*). The adjective *תזקה* marked by *paštā* is the intonational peak of the domain of prosodic focus. The second *zāqēp qātōn* complex (*ויבנה תזקה*) forms an iterative structure with the VP that precedes it (*ישלחם*), extending the scope of prosodic focus to include the adverbial modifier of the following clause. The intonational phrase concludes with two additional phonological phrase complexes (a *tippəḥā* complex and a *sōf-pāsûq* complex). These last three complexes form prosodically iterative structures as a result of the conjunct melodic motion that exists between them.¹⁵⁶ The iterative prosodic structures they form are represented by the placement of *יגרושם* and *מארכו* on the third lines of their respective boxes—the same line on which the adjacent complex's constituent ends.

¹⁵⁶ The suffixes and prefixes at the boundaries of each of these phonological phrase complexes are all the same pitch (i.e. all intervals of a unison).

(63g)

(מֵאֶרְצוֹ)	(יִגְרֹשֵׁם)	[[יִבְנֶה חֲזָקָה]]	[[כִּי יִבְנֶה חֲזָקָה יִשְׁלַחֵם]]
(from his land)	(he will drive them out)	[[and by a strong hand]]	[[For by a strong hand he will send them out]]

For by a strong hand he will send them out, and by a strong hand he will drive them out from his land.
(Exodus 6:1)

4.4.5 Intonational Discontinuity: Melodic Intervals of a Fifth or Greater

The final class of intervals to be described are the *ṭə ʿāmîm* combinations that form intervals of a fifth or greater.¹⁵⁷ Unlike intervals that are conjunctive in nature, including those of a perfect unison and a second (i.e. conjunct melodic motion), and those of a third and a fourth (i.e. intervals that mark recursive structures), intervals of a fifth are not conjunctive in nature. Intervals of a fifth or greater are designed to prosodically mark intonational discontinuity at the juncture of two distinct intonational phrases. Only the suffixes of disjunctives can form these intervals—conjunctives do not conjoin to other *ṭə ʿāmîm* using intervals greater than a fourth.

¹⁵⁷ An exception to this rule is the *ṭə ʿāmîm* combination of *pašṭā* followed by *pašṭā*—see (64d). I propose that this repeating *ṭə ʿāmîm* combination should be understood as the way in which *pašṭā* extends its scope of the intonational peak within the DF to include an additional prosodic word (for a discussion of prosodic focus and intonational peak of the DF see §4.4.4 and §5.3.5). Therefore, the interval of a fifth between the suffix and prefix of two consecutive *pašṭā ṭə ʿāmîm* do not signal the juncture of an intonational phrase boundary.

The majority of the pitch patterns catalogued below (including (64a), (64i), (64l), (64m), (64n), (64o), (64q), (64r), (64s), (64t), (64u), (64v), (64x), (64y), (64z), (64aa), (64cc), (64ee), and (64ff)), exhibit a suffix pitch that is higher than the prefix. A relatively higher pitch at the end of a medial intonational phrase is perhaps to be expected when compared with the low tonic suffix pitch of *sōf-pāsûq*, the terminal intonational phrase boundary of a verse. The remaining pitch patterns catalogued below (including (64b), (64c), (64e), (64f), (64g), (64h), (64j), (64k), (64p), (64w), (64bb), and (64dd)) exhibit a suffix pitch that is lower than the prefix, which results in a relatively higher intonational phrase boundary at the start of the following phrase. Further research may show that intonational phrase boundaries that end on a relatively lower pitch, cue different semantic information than those that end on a relatively higher pitch.¹⁵⁸

- (64a) The interval of a fifth formed by the disjunctives *tippəḥā* and *'etnaḥtā*:¹⁵⁹



- (64b) The interval of a sixth formed by the disjunctive *rəbī ṭ* and the adjacent conjunctive *munnāḥ (zarqā)*:¹⁶⁰



¹⁵⁸ There is likely semantic significance associated with the types of tone boundaries that phonological and intonational phrases form. For example, in English, statements typically end with a low pitch boundary, whereas yes/no questions end with high or rising pitch contours.

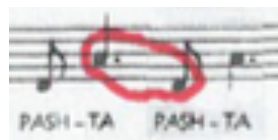
¹⁵⁹ In (64a), the pitch of the suffix is E while the pitch of the prefix is A—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). This disjunctive combination is very common.

¹⁶⁰ In (64b), the pitch of the suffix is B while the pitch of the prefix is G—the suffix is five pitches below the prefix (i.e. an interval of a sixth apart). An example of this disjunctive/conjunctive combination includes: Leviticus 5:2; 1 Samuel 10:19; 2 Kings 11:9; Daniel 12:7.

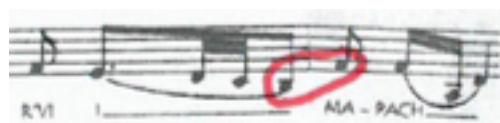
(64c) The interval of an octave formed by the disjunctives *rəbī'ī* and *yətib*:¹⁶¹



(64d) **EXCEPTION**—The interval of a fifth formed by the disjunctives *paštā'* and *paštā'* does **NOT** signal intonational discontinuity:¹⁶²



(64e) The interval of a fifth formed by the disjunctive *rəbī'ī* and the adjacent conjunctive *mahpāk*:¹⁶³

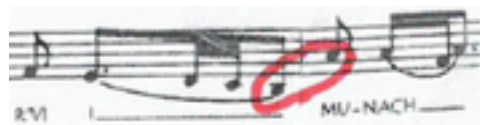


¹⁶¹ In (64c), the pitch of the suffix is B while the pitch of the prefix is an octave higher (B)—the suffix is seven pitches below the prefix (i.e. an interval of an octave apart). Examples of this disjunctive combination include: Genesis 2:5; Genesis 2:11; Genesis 22:16; Exodus 16:23; Leviticus 25:10; Numbers 14:22; Micah 7:14.

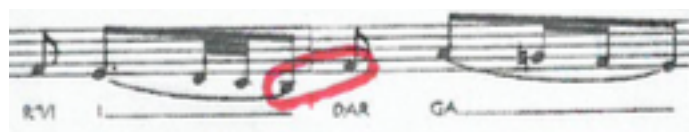
¹⁶² In the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: Genesis 1:7; Genesis 2:19; Judges 10:8. This *paštā'*/*paštā'* combination (an example of which is given in the verse in red below) combination is a special construction, as the repetition of these *tə'āmîm* is a means of placing the intonational peak of the focused phonological phrase on more than one constituent while maintaining the constraints of weight and balance on a prosodic constituent (see §3.2.2): **וַיֵּשׁ אֱלֹהִים אֶת־הָרְקִיעַ וַיְבַדֵּל בֵּין הַמַּיִם אֲשֶׁר מִתַּחַת לְרִקִיעַ** (Genesis 1:7). That the repeated *paštā'* combination does NOT signal intonational discontinuity is supported by the fact that the relative clause highlighted in red is identified by Holmstedt (2016:207) as a restrictive relative. A prosodic analysis of this relative clause according to parameters outlined in §5.4 classifies the relative in red as a prosodically marked restrictive because both prosodic words that bear *paštā'* comprise the same phonological phrase complex. For a discussion regarding the use of prosodic analysis to distinguish relative clause types and the relatives in this verse in particular, see §5.4 and §5.5 example (83), respectively. The second relative clause construction in green is a prosodically undifferentiated relative. Cf. footnote 212 example (67d) for an additional example of a *paštā'*/*paštā'* combination. Note that the prosodic words that bear *paštā'* comprise the same intonational phrase.

¹⁶³ In (64e), the pitch of the suffix is B while the pitch of the prefix is F—the suffix is four pitches below the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive/conjunctive combination include: Genesis 1:11; Genesis 1:14; Genesis 2:19; Genesis 3:16; Genesis 8:9; Genesis 15:1; Genesis 16:5; Genesis 18:31; Genesis 21: 7; Genesis 22:7; Genesis 22:12; 1 Samuel 26:16; 2 Samuel 11:7; 2 Samuel 11:10; 1 Kings 17:12; 1 Kings 17:14; Isaiah 7:8; Jonah 3:3; 1 Chronicles 16:7; 1 Chronicles 17:7 (this verse actually exhibits a *sətūmā'* (in red)—a closed paragraph symbol—in between these *tə'āmîm*: **וַעֲתָה כֹּה־תֹאמַר לְעַבְדֵי לְדָוִד ׀ כֹּה אָמַר יְהוָה זְבֹאוֹת**).

- (64f) The interval of a seventh formed by the disjunctive *rəbī'ī* and the adjacent conjunctive *munnāḥ* (*mahpāk*):¹⁶⁴



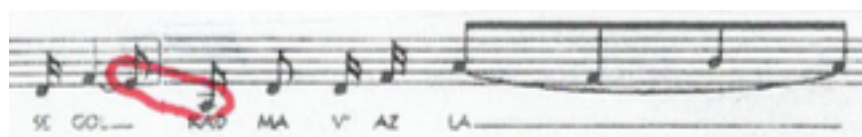
- (64g) The interval of a fifth formed by the disjunctive *rəbī'ī* and the adjacent conjunctive *dargā'*:¹⁶⁵



- (64h) The interval of a fifth formed by the disjunctives *zāqēp gādōl* and *yātīb*:¹⁶⁶



- (64i) The interval of a fifth formed by the disjunctive *seggōl* and the adjacent conjunctive *kadmā'* (*və'azlā'*):¹⁶⁷



¹⁶⁴ In (64f), the pitch of the suffix is B while the pitch of the prefix is A—the suffix is six pitches below the prefix (i.e. an interval of a seventh apart). Examples of this disjunctive/conjunctive combination include: Genesis 18:10; Exodus 10:2; Leviticus 25:10; Leviticus 8:9; Numbers 13:32; Deuteronomy 18:20; 2 Samuel 4:1; Isaiah 6:5.

¹⁶⁵ In (64g), the pitch of the suffix is B while the pitch of the prefix is F—the suffix is four pitches below the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive/conjunctive combination include: Genesis 3:11; Genesis 8:17; Leviticus 27:29; Deuteronomy 11:22.

¹⁶⁶ In (64h), the pitch of the suffix is E while the pitch of the prefix is B—the suffix is four pitches below the prefix (i.e. an interval of an fifth apart). An example of this disjunctive combination includes: Genesis 3:11; Exodus 32:7.

¹⁶⁷ In (64i), the pitch of the suffix is E while the pitch of the prefix is A—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive/conjunctive combination include: Genesis 1:28; Genesis 8:21; Genesis 24:7; Genesis 42:21; Deuteronomy 28:51; Jeremiah 21:4.

- (64j) The interval of a fifth formed by the disjunctive *təlīšā' gəḏōlā* and the adjacent conjunctive *munnāḥ* (*dargā'* or *mahpāk*):¹⁶⁸



- (64k) The interval of a fifth formed by the disjunctives *zāqēp qāṭōn* and *yəṭīb*:¹⁶⁹



- (64l) The interval of a fifth formed by the disjunctives (*kadmā'*) *və'azlā'* and *təlīšā' gəḏōlā*:¹⁷⁰



- (64m) The interval of a fifth formed by the disjunctive *'etnaḥtā'* and the adjacent conjunctive *kadmā'* (*və'azlā'*):¹⁷¹



¹⁶⁸ In (64j), the pitch of the suffix is D while the pitch of the prefix is A—the suffix is four pitches below the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive/conjunctive combination include: Genesis 1:12; Genesis 8:21.

¹⁶⁹ In (64k), the pitch of the suffix is E while the pitch of the prefix is B—the suffix is four pitches below the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: Genesis 1:11; Genesis 22:2; Genesis 3:1; Exodus 25:9.

¹⁷⁰ In (64l), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). An example of this disjunctive combination includes: Genesis 1:12.

¹⁷¹ In (64m) the pitch of the suffix is E while the pitch of the prefix is A—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: 1 Kings 17:12; Exodus 32:1. See (66d) for a discussion of this unique *tə'āmîm* combination.

- (64n) The interval of a fifth formed by the disjunctives *paštā'* and *munnāḥ ləgarmê*:¹⁷²



- (64o) The interval of a fifth formed by the disjunctives (*kadmā'*) *və'azlā'* and *munnāḥ ləgarmê*:¹⁷³



- (64p) The interval of a seventh formed by the disjunctive *zarqā'* and the adjacent conjunctive *munnāḥ (zarqā')*:¹⁷⁴



- (64q) The interval of a fifth formed by the disjunctive *paštā'* and the adjacent conjunctive *munnāḥ (təlišā' gədōlā)*:¹⁷⁵



¹⁷² In (64n), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: Exodus 32:1; 1 Samuel 21:10.

¹⁷³ In (64o), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: Genesis 26:18; Leviticus 8:26; 1 Samuel 21:10; 1 Samuel 30:21.

¹⁷⁴ In (64p), the pitch of the suffix is A while the pitch of the prefix is G—the suffix is six pitches below the prefix (i.e. an interval of a seventh apart). Examples of this disjunctive/conjunctive combination include: Leviticus 17:5; Joshua 22:5; 2 Chronicles 35:24.

¹⁷⁵ In (64q), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: Deuteronomy 34:4; 1 Samuel 14:45; Jeremiah 41:16; Ezekiel 13:20.

- (64r) The interval of a fifth formed by the disjunctive (*kadmā*ʾ) *və*ʾ*azlā*ʾ and the adjacent conjunctive *kadmā*ʾ:¹⁷⁶



- (64s) The interval of an octave formed by the disjunctive *pašṭā*ʾ and the adjacent conjunctive (*kadmā*ʾ) *və*ʾ*azlā*ʾ:¹⁷⁷



- (64t) The interval of a sixth formed by the disjunctive (*kadmā*ʾ) *və*ʾ*azlā*ʾ and the adjacent conjunctive *mērkā*ʾ (*tippəḥā*ʾ):¹⁷⁸



¹⁷⁶ In (64r), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: Exodus 12:39; Joshua 2:10; Isaiah 66:22; Ezekiel 41:15.

¹⁷⁷ In (64s), the pitch of the suffix is A while the pitch of the prefix is an octave higher (A)—the suffix is seven pitches above the prefix (i.e. an interval of an octave apart). Examples of this disjunctive combination include: Exodus 36:3; Deuteronomy 12:18; Deuteronomy 28:14; Judges 20:31; 2 Kings 23:15; 1 Chronicles 26:26.

¹⁷⁸ In (64t), the pitch of the suffix is A while the pitch of the prefix is C—the suffix is five pitches above the prefix (i.e. an interval of a sixth apart). An example of this disjunctive/conjunctive combination includes: Leviticus 21:10; Deuteronomy 27:3; 2 Kings 25:19; Jeremiah 52:25; Ezekiel 8:6. Note that this *mērkā*ʾ (*tippəḥā*ʾ) could also be *mērkā*ʾ (*təbīr*ʾ); if so, its pitch pattern forms an interval of a third with *kadmā*ʾ (*və*ʾ*azlā*ʾ). An example of this *tə*ʾ*āmîm* combination is in §4.4.2 (55x).

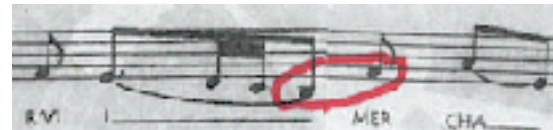
- (64u) The interval of a fifth formed by the disjunctive (*kadmā*ʾ) *və*ʾ*azlā*ʾ and the adjacent conjunctive *munnāḥ* (*tālīšā*ʾ *gədōlā*ʾ):¹⁷⁹



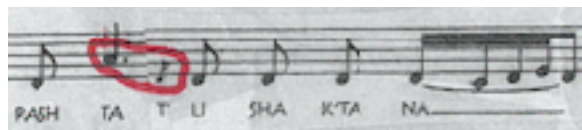
- (64v) The interval of a fifth formed by the disjunctive *gērēš* and the adjacent conjunctive *kadmā*ʾ:¹⁸⁰



- (64w) The interval of a fifth formed by the disjunctive *rəbī*ʾ*ī* and the adjacent conjunctive *mērka*ʾ (*təbīr*):¹⁸¹



- (64x) The interval of a fifth formed by the disjunctive *paštā*ʾ and the adjacent conjunctive *tālīšā*ʾ *qəṭannā*ʾ:¹⁸²



¹⁷⁹ In (64u), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). An example of this disjunctive/conjunctive combination includes: Deuteronomy 17:5.

¹⁸⁰ In (64v), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive/conjunctive combination include: Deuteronomy 6:10; Judges 2:17; 2 Samuel 12:15; 2 Kings 20:18; Isaiah 39:7.

¹⁸¹ In (64w), the pitch of the suffix is B while the pitch of the prefix is F—the suffix is four pitches below the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive/conjunctive combination include: Genesis 35:12; Leviticus 20:21; Joshua 5:15; 1 Kings 7:48; Jeremiah 5:17.

¹⁸² In (64x), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). An example of this disjunctive/conjunctive combination includes: Deuteronomy 21:1.

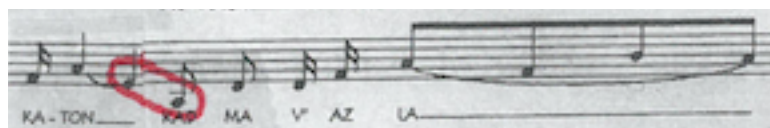
- (64y) The interval of a fifth formed by the disjunctive (*kadmā'*) *və'azlā'* and the adjacent conjunctive *təlīšā' qəṭannā'*:¹⁸³



- (64z) The interval of a fifth formed by the disjunctives *gērēš* and *munnāḥ ləgarmê'*:¹⁸⁴



- (64aa) The interval of a fifth formed by the disjunctive *zāqēp qāṭōn* and the adjacent conjunctive *kadmā' (və'azlā')*:¹⁸⁵



- (64bb) The interval of a fifth formed by the disjunctives *zarqā'* and *zarqā'*:¹⁸⁶



¹⁸³ In (64y), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive/conjunctive combination include: Numbers 3:39; 1 Samuel 18:5; Daniel 10:11.

¹⁸⁴ In (64z), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: Numbers 15:30; 1 Kings 12:33; Jeremiah 7:14.

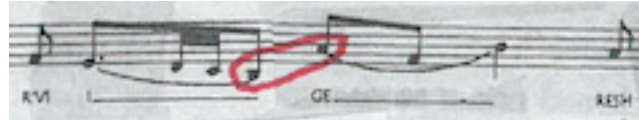
¹⁸⁵ In (64aa), the pitch of the suffix is E while the pitch of the prefix is A—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: Leviticus 17:3; Leviticus 17:13; Leviticus 20:22; Deuteronomy 31:13; Deuteronomy 32:47; 2 Samuel 2:5.

¹⁸⁶ In (64bb), the pitch of the suffix is A while the pitch of the prefix is E—the suffix is four pitches below the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: 1 Samuel 26:5; 2 Kings 7:13; Isaiah 45:1 (see §5.4 for a discussion of this unique verse); 2 Chronicles 34:9.

(64cc) The interval of a fifth formed by the disjunctives *pašṭā*' and *təlišā*' *gədōlā*:¹⁸⁷



(64dd) The interval of a seventh formed by the disjunctives *rəbī*' *ī* and *gērēs*:¹⁸⁸



(64ee) The interval of a fifth formed by the disjunctive *pašṭā*' and the adjacent conjunctive *kadmā*':¹⁸⁹



(64ff) The interval of a fifth formed by the disjunctives *yətib* and *pašṭā*':¹⁹⁰



¹⁸⁷ In (64cc), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: 1 Kings 18:10; Esther 4:7.

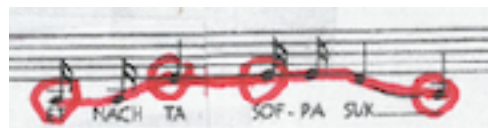
¹⁸⁸ In (64dd), the pitch of the suffix is B while the pitch of the prefix is A—the suffix is six pitches below the prefix (i.e. an interval of a seventh apart). An example of this disjunctive combination includes: Deuteronomy 6:10; Jeremiah 44:14; Esther 8:5.

¹⁸⁹ In (64ee), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive/conjunctive combination include: Joshua 14:9; Ruth 2:19; Ruth 4:11; Ruth 8:17.

¹⁹⁰ In (64ff), the pitch of the suffix is A while the pitch of the prefix is D—the suffix is four pitches above the prefix (i.e. an interval of a fifth apart). Examples of this disjunctive combination include: Leviticus 5:2; Deuteronomy 1:4; Isaiah 5:24.

Apart from intonational phrases that are encoded by melodic intervals of a fifth or greater, the pitch patterns of the disjunctives *'etnaḥtā'* and *sōf-pāsûq*, automatically signal an intonational phrase boundary. *Sōf-pāsûq* marks the boundary of a terminal intonational phrase, bringing closure to the verse, while *'etnaḥtā'* marks the boundary of the verse's main nonterminal intonational phrase (i.e. a verse's primary medial intonational phrase boundary).¹⁹¹ *Sōf-pāsûq* appropriately marks the boundary of a terminal intonational phrase because its final pitch is the tonic (i.e. the bottom or beginning of the melodic range of the *ṭə 'āmîm*). *Sōf-pāsûq* is the only *ṭə 'am*, other than *zarqā'*, whose suffix is the tonic pitch. Although *zarqā'* has the same suffix pitch, it is fundamentally a conjunctive-like disjunctive—that is, it conjoins its phonological phrase (MiP) to a larger, cohesive phonological phrase complex (MaP). Therefore, *zarqā'* cannot signal a close to the utterance like *sōf-pāsûq*. With final tonic pitch pattern that resolves the call of *'etnaḥtā'*, *sōf-pāsûq* does not leave the ear expecting more and provides a fitting closure to the verse.

(65) The disjunctive *sōf-pāsûq* answers the call of the disjunctive *'etnaḥtā'*:¹⁹²



¹⁹¹ *Sōf-pāsûq* means 'end of verse'; it is the terminal intonational phrase boundary of a verse. *'etnaḥtā'* means 'rest'; it is the main nonterminal intonational phrase boundary of a verse.

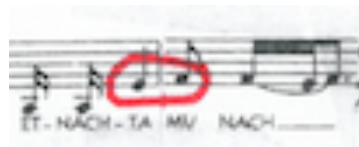
¹⁹² The first (A) and last (E) pitches of *'etnaḥtā'* are the inverse of the first (E) and last (A) pitches of *sōf-pāsûq*. *Sōf-pāsûq* mirrors the call of *'etnaḥtā'* and resolves the melodies of the verse with the tonic (A). Also note that the prefix of *sōf-pāsûq* picks up the leading tone (E) of *'etnaḥtā'*.

Sōf-pāsûq is unique among the *ṭə ‘āmîm* because it signals the end of an utterance represented by the biblical verse—a cognitive unit of speech that is intended for the hearer to process as a whole by means of the prosodic features of intonation that facilitate listening comprehension. In this way, the biblical verse as an utterance may be compared conceptually to Nicolle’s notion of a discourse paragraph (2016:8) which he defines as an easily processed unit of speech. Concerning this he states:

. . . what we call ‘paragraphs’ in discourse analysis refers to parts of a text that can be easily processed as units. As such, paragraphs in the discourse analysis sense are also found in speech. In spoken narratives, paragraphs may be indicated through pauses and through a change of pitch (for example, one paragraph might end on a low pitch and the next paragraph will start on a higher pitch).¹⁹³

Iterative prosodic structures are the most prevalent nonterminal (i.e. verse medial) intonational phrase forms. Nonterminal intonational phrases form iterative prosodic structures when the intervals between the *ṭə ‘āmîm* at these boundaries exhibit conjunct melodic motion (66a).

(66a) The disjunctive *etnaḥtā’* and the adjacent conjunctive *munnaḥ* (*zāqēp qāṭōn*) form an interval of a second (i.e. the suffix is one pitch above the prefix):¹⁹⁴



¹⁹³ See the discussion on the HL/LH pitch boundaries of TH intonational phrases in §4.4.5.

¹⁹⁴ In (66a) the pitch of the suffix is E while the pitch of the prefix is F—that is, the suffix is one pitch below the prefix (i.e. an interval of a second).

A specific example is found in example in (66b),¹⁹⁵ where the first intonational phrase (first row) forms an iterative structure with the second intonational phrase (second row) because the suffix of 'etnaḥtā' (תְּנַחֲתָּהּ) forms conjunct melodic motion with the prefix of the conjunctive *munnāḥ* (זָאֲקֵ֫פַּ֫תְּ֫וֹן). This iterative prosodic structure between the first and second intonational phrases is represented by the placement of the first phonological phrase constituent (וְרַבִּי־) (אֶל־הַיָּם) on the second line of its box—the same line on which the the adjacent intonational phrase ends.

¹⁹⁵ The example in (66b) illustrates the use of the conjunctive *mērkā*' (מֶרְכָּאֵ) before *paštā*' in lieu of *mahpāk* and *kadmā*', the usual conjunctives that serve it (cf. Genesis 20:3). According to Yeivin (1980:196), *mērkā*' replaces *mahpāk* when the primary stress of a word bearing *paštā*' falls on its first syllable and is preceded by a word bearing a conjunctive whose primary stress is on its last syllable. While rhythm is clearly influential in determining which *ṭā'amim* is used in these instances, intonational factors may also be at play since different *ṭā'amim* combinations produce different prosodic structures. For example, in (66b), the conjunctive *mērkā*' may function at the starred (*) juncture to form an iterative prosodic structure between the constituents of the *rəbī'ī* phonological phrase complex (first box) and the *zāqēp qātōn* phonological phrase complex (second box). If the disjunctive *rəbī'ī* (רַבִּי־) preceded a *mahpāk*, these *ṭā'amim* would form an interval of a fifth (see §4.4.5, example (64e)), creating an intonational phrase boundary. If *rəbī'ī* preceded *kadmā*', these *ṭā'amim* would form an interval of a third (see §4.4.2, example (55g)), creating a recursive structure between the two complexes. However, in (66b), *rəbī'ī* forms conjunct melodic motion with the adjacent conjunctive *mērkā*' because the interval between these *ṭā'amim* is a second (66c):

- (66c) The disjunctive *rəbī'ī* and the adjacent conjunctive *mērkā*' form an interval of a second (i.e. the suffix (B) is one pitch below the prefix (C)):



(66b)

(עַל־פְּנֵי תְהוֹם)	(וְחֹשֶׁךְ)	(הָיְתָה תְהוֹם)* [וְבָהוֹ]	(וְהָאָרֶץ)
(over the face of the deep)	(and darkness)	[(was formless) (and void)]	(and the earth)
	(עַל־פְּנֵי הַמַּיִם ;)	(מְרַחֶפֶת)	(וַיְרִיחַ אֱלֹהִים)
	(over the face of the waters)	(hovering)	(and the Spirit of God)

And the earth was formless and void, and darkness was over the face of the deep, and the Spirit of God was hovering over the face of the waters. (Genesis 1:2)

Intonational phrases can also form recursive structures when the intervals between the *ṭə ʿāmîm* at these boundaries are a third or a fourth. In (66d), the second and the third intonational phrases form a recursive structure, as the third intonational phrase is nested in the second one—that is, the suffix of *ʿetnaḥtā* (בְּעִינֵי) forms an interval of a fourth with the prefix of the conjunctive *munnaḥ* (*mahpāk*) (בֵּן).¹⁹⁶ This recursive structure between intonational phrases is indicated by the placement of בֵּן on the fourth line of its box—one line beneath the phrase (בְּעִינֵי) in which it is nested.

¹⁹⁶ See §4.4.2 example (56f) for an illustration of the pitch patterns of *ʿetnaḥtā* followed by *munnaḥ* (*mahpāk*). The only other recursive prosodic structure *ʿetnaḥtā* forms with adjacent *ṭə ʿāmîm* that I have been able to identify is *ʿetnaḥtā* followed by *mērkā* (55v).

(66d)

<p>(כַּאֲשֶׁר נִדְלָה נַפְשִׁיךָ) (הַיּוֹם הַזֶּה)</p>	<p>(וְהִזָּה)</p>
<p>(just as your life was considered precious) (day this)</p>	<p>(And behold)</p>
	<p>(בְּעֵינַי)</p>
	<p>(in my eyes)</p>
	<p>כֵּן] תִּנְדָּל נַפְשִׁי [בְּעֵינֵי יְהוָה)]</p>
	<p>[(so let be considered precious my life) (in the eyes of the LORD)]</p>

And behold, just as your life was considered precious in my eyes this day, so may my life be considered precious in the eyes of the LORD . . . (1 Samuel 26:24)

The description of the *ṭə ʿāmīm* combinations that form intervals of a fifth or greater (indicating the boundaries of nonterminal intonational phrases within a verse),¹⁹⁷ along with the intonational phrase boundaries of *ʿetnaḥtā* and *sōf-pāsûq*, allow for a more complete analysis of the prosodic structures in the examples in §4.4.1. These examples, reprinted in (67), now reveal complex (i.e. nonterminal, terminal, recursive, iterative) intonational phrase boundaries.

In (67a), the first intonational phrase is comprised of two phonological phrase complexes: the prosodically focused *zāqēp qāṭōn* complex (first box in brackets); and the *ṭippəḥā* complex (second box). Recursion in the prosodically focused complex is represented by the placement of nested constituents on the line beneath the constituent in which it is nested. No prosodic recursion exists between the first and second complexes. Instead, they form iterative prosodic structures because the interval between them exhibits conjunct melodic motion (i.e. the melodic interval between these constituents is no greater than a second).¹⁹⁸ This iterative structure is represented by the placement of **וַיְקַדְּשׁוּ** on the second line of its box—the same line on which the preceding complex ends.

The second intonational phrase is signalled by intonational discontinuity between the disjunctives *ṭippəḥā* (**וַיְקַדְּשׁוּ**) and *ʿetnaḥtā* (**אֲתָנָה**), a combination that forms an interval of a fifth. The second intonational phrase is represented in the chart by the placement of **אֲתָנָה** in the

¹⁹⁷ Nonterminal intonational phrase boundaries include *ʿetnaḥtā* and all intervals of a fifth or greater within a verse except *sōf-pāsûq* (i.e. the verse’s sole terminal intonational phrase boundary).

¹⁹⁸ Here, the interval between the suffix (*zāqēp qāṭōn*) and the prefix (*ṭippəḥā*) is a unison—that is, the pitch of the suffix is the same as the pitch of the prefix (E).

second row. No prosodic recursion exists at the boundaries of these two intonational phrases (instead they form iterative prosodic structures), so the first prosodic word in the second intonational phrase (אֲתָנוּ) begins on the second line of its box—the same line on which the preceding intonational phrase ends. There is only one phonological phrase complex in the second intonational phrase—the *'etnaḥtā'* complex (first box, second row, consisting of the sole disjunctive *'etnaḥtā'* in its phonological phrase).

The third intonational phrase is signalled by the disjunctive *'etnaḥtā'*, and is represented in the chart by the placement of אֲתָנוּ in the third row. This intonational phrase begins with a recursive prosodic structure because the interval between *'etnaḥtā'* (אֲתָנוּ) and *munnāḥ (mahpāk)* (אֲתָנוּ) forms a melodic interval of a fourth. This recursive structure is indicated by the placement of אֲתָנוּ on the third line of its box—one line beneath the phrase in which it is nested. The third intonational phrase is comprised of three phonological phrase complexes: the verse's second prosodically focused *zāqēp qāṭōn* complex (first box, third row, in brackets); the verse's second *tippəḥā'* complex (second box, third row); and the *sōf-pāsūq* complex (third box, third row). No prosodic recursion exists at the boundaries of the *tippəḥā'* and *sōf-pāsūq* complexes. Instead, these complexes form iterative structures as a result of the conjunct melodic motion that exists between them.

Prosodic recursion between the second *zāqēp qāṭōn* complex and the second *tippəḥā'* complex is indicated by the placement of the nested constituents (אֲשֶׁר-בְּרֵא אֱלֹהִים) on the line beneath

the constituent in which it is nested (מִכָּל-מְלֵאכֶתָו). Similarly, recursion within the prosodically focused *zāqēp qāṭōn* complex is indicated by the placement of nested constituents on the line beneath the constituents that nest them.¹⁹⁹ The prosodic words אֱלֹהִים and שָׁבַת bear the intonational peaks of the two prosodically focused complexes of this verse. The subordinate relationship of the כִּי causal clause to its compound matrix clause (וַיִּבְרָא and וַיִּקְדֵּשׁ) is signalled by the *munnāḥ/mahpāk* pitch pattern sequence, and the recursive prosodic structure that is formed by the melodic interval at the boundaries of the second and third intonational phrases.²⁰⁰

The following is a translation of the verse in (68a) that highlights the prosodic phrasing of the prosodically focused constituents (the underlined portion is under prosodic focus, with the intonational peaks of the verse falling on the prosodic words ‘God’ and ‘he-rested’): “And God blessed the seventh day and consecrated, it, for on it he rested from all his work which God created by doing” (Genesis 2:3).²⁰¹

¹⁹⁹ This verse is also discussed in §4.4.1 example (50b) and §4.4.4 example (63a).

²⁰⁰ The pitch pattern *munnāḥ/mahpāk* appears to have a subordinating function. See the discussion in (67c) and footnote 205.

²⁰¹ Commas mark the presence of nonterminal intonational breaks as well as smaller prosodic groupings (i.e. phonological phrase or phonological phrase complex) within the translated text.

(67a)

	(וַיְקַדֵּשׁ)	[[וַיְבָרַךְ אֱלֹהִים]] [[אֶת־יְוֹם הַשְּׁבִיעִי]]
	(and consecrated)	[(And God blessed) (the seventh day)]
		(אֹתוֹ)
		(it)
(לַעֲשׂוֹת:)	(אֲשֶׁר־בָּרָא אֱלֹהִים)	[[כִּי]] בְּיַום שַׁבָּת [[מִכָּל־מְלַאכְתּוֹ]]
(by doing.)	(which God had created)	[[for on it he rested (from all his work)]]

And God blessed the seventh day and consecrated, it, for on it he rested from all his work which God had created by doing. (Genesis 2:3)

In (67b), the first intonational phrase is comprised of two distinct phonological phrase complexes: the *rābī'ī* phonological phrase complex (first box, first row); and the *tippəḥā'* phonological phrase complex (second box, first row). Prosodic recursion between these complexes is a result of the interval of a third that forms between their boundaries—the prosodic word **כְּאַשֶׁר** is nested in the word **וְהִנֵּה**. Likewise, within the *tippəḥā'* complex the prosodic word **הַיּוֹם** is nested in the word **נִפְשָׁהּ**, as these *ṭə 'āmîm* form a melodic interval of a third.²⁰²

The second intonational phrase is signalled by intonational discontinuity between the disjunctives *tippəḥā'* (**תִּפְּחָהּ**) and '*etnaḥtā'*' (**בְּעִינֶיךָ**), a combination that forms an interval of a fifth, represented in the chart by the placement of **בְּעִינֶיךָ** in the second row. No prosodic recursion is present at the boundaries of these two intonational phrases, as indicated by the placement of **בְּעִינֶיךָ** on the third line of its box—the same line on which the preceding intonational phrase ends.

The third intonational phrase is signalled by the disjunctive '*etnaḥtā'*', represented in the chart by the placement of **בְּנֶיךָ** in the third row. This intonational phrase begins with a recursive prosodic structure because the interval between '*etnaḥtā'*' (**בְּעִינֶיךָ**) and the conjunctive *munnāḥ* (*mahpāk*) (**בְּנֶיךָ**) is a fourth. The recursive prosodic structure between these intonational phrases is indicated by the placement of **בְּנֶיךָ** on the fourth line of its box—the line beneath the constituent that nests it.

The third intonational phrase is comprised of three phonological phrase complexes: the

²⁰² These *ṭə 'āmîm* combinations are illustrated in §4.4.2 examples (55g) and (55f), respectively.

prosodically focused *zāqēp qāṭōn* complex (first box, third row, in brackets); the verse’s second *ṭippəḥā’* complex (second box, third row); and the *sōf-pāsûq* complex (third box, third row). No prosodic recursion exists at the complex boundaries of *zāqēp qāṭōn*, *ṭippəḥā’*, or *sōf-pāsûq*, as the intervals between these constituents exhibit conjunct melodic motion.²⁰³ Recursion within the prosodically focused complex (first box, third row) is represented by the placement of nested constituents beneath the constituent that nests it.²⁰⁴ The prosodic word נַפְשִׁי bears the intonational peak of the prosodically focused phonological phrase complex.

The following is a translation of the verse in (67b) that highlights the prosodic phrasing of the prosodically focused constituents (the underlined portion is under prosodic focus, with the intonational peak of the verse falling on the prosodic word ‘my-life’): “And behold just as your life was considered precious this day, in my eyes, so let be considered precious my life in the eyes of the LORD and rescue me from all distress” (1 Samuel 26:24).

²⁰³ Here, the interval between the suffix (*zāqēp qāṭōn*) and the prefix (*ṭippəḥā’*) is a unison (i.e. the suffix and prefix are both E).

²⁰⁴ This verse is also discussed in §4.4.1 example (50c) and §4.4.4 example (63b).

(67b)

	<p>(כַּאֲשֶׁר נִדְלָה נַפְשְׁךָ) (הַיּוֹם הַזֶּה)</p>	<p>(וְהִנֵּה)</p>
	<p>(just as your life was considered precious) (day this)</p>	<p>(And behold)</p>
		<p>(בְּעֵינַי)</p>
		<p>(in my eyes)</p>
<p>(מִכָּל-צָרָה:)</p>	<p>(וַיִּצְלַנִּי)</p>	<p>[כֵּן] תִּהְיֶה נַפְשִׁי [בְּעֵינֵי יְהוָה]</p>
<p>(from every trouble)</p>	<p>(and may he deliver me)</p>	<p>[(so let be considered precious my life) (in the eyes of the LORD)]</p>

And behold just as your life was considered precious this day, in my eyes, so let be considered precious my life in the eyes of the LORD and may he rescue me from every distress. (1 Samuel 26:24)

In (67c), the first intonational phrase is comprised of a single phonological phrase complex (first box, first row): the *rəbīṭ* complex, containing the conjunctive *munnāḥ* (וַיִּשְׁמַע) and the disjunctive *rəbīṭ* (בֶּן־שְׂאוּל). The second intonational phrase is signalled by intonational discontinuity between the disjunctive *rəbīṭ* (שְׂאוּל) and the adjacent conjunctive *munnāḥ* (*mahpāk*) (פִּי), a combination that forms an interval of a fifth. No prosodic recursion is present at the boundaries of these intonational phrases.

The second intonational phrase's subordination to the matrix verb in the first intonational phrase is signalled by the *munnāḥ/mahpāk* pitch sequence at this intonational phrase boundary.²⁰⁵ This pitch sequence signals subordination regardless of whether an intonational phrase boundary (cf. Genesis 2:3; Isaiah 6:5; Isaiah 7:9) or even a verse boundary (cf. Isaiah 7:7 and 7:8) intervenes.²⁰⁶ There are two phonological phrase complexes in the second intonational phrase: the prosodically focused *zāqēp qāṭōn* complex (first box in brackets, second row) and the *tippəḥā'* complex (second box, second row). Recursion in the prosodically focused phonological phrase is represented by the placement of nested constituents beneath the constituent that nests it.

²⁰⁵ Note: any nonterminal intonational phrase boundary other than *'etnaḥtā'* is unable to encode iteration or recursion; a melodic interval can encode conjunct melodic motion, recursion, or disjunct melodic motion, but not more than one simultaneously. In this example, *rəbīṭ* followed by *munnāḥ* (*mahpāk*) encodes a distinct intonational boundary, but this interval is not also able to describe the prosodic structure of the adjacent intonational phrase boundaries (i.e. whether the structures are iterative or recursive—that is, whether the constituents of these phrases have a coordinate structure or a subordinate one. Instead, the subordination of the complement in the second intonational phrase to the matrix verb in the first intonational phrase is signalled by the *munnāḥ/mahpāk* pitch pattern sequence.

²⁰⁶ This is evidence that directly challenges Drescher's assertion that "no prosodic or phonological phenomena span more than one verse" (Drescher 1994:15).

The third intonational phrase is formed by the interval of a fifth between the disjunctives *tippəḥā* (וַיִּרְפֹּן) and *’etnaḥtā* (וַיִּדְרֹן). The default prosodic structure between the second and third intonational phrases is iterative as prosodic recursion cannot be simultaneously encoded in the interval of a fifth.²⁰⁷ This iterative prosodic structure is represented by the placement of וַיִּדְרֹן on the third line of its box—the same line on which the adjacent intonational phrase ends. The third intonational phrase consists of a single *’etnaḥtā* phonological phrase complex (first box, third row), comprised of one phonological phrase, the disjunctive *’etnaḥtā*.

The fourth intonational phrase is signalled by the disjunctive *’etnaḥtā*. The prosodic structure between the third and fourth intonational phrases (i.e. between *’etnaḥtā* (וַיִּדְרֹן) and *tippəḥā* (וּכְלִי-יִשְׂרָאֵל)) is iterative because the interval between them is a second. This iterative prosodic structure is represented by the placement of וּכְלִי-יִשְׂרָאֵל on the third line of its box. Notice how the iterative structure between the third and fourth intonational phrases contrasts with the recursive prosodic structure between the first and second intonational phrases. The subordinate syntactic structure between the first and second intonational phrases is reflected in its recursive prosodic structure: “And Saul heard—that . . .” Similarly, the iterative prosodic structure that exists between the third and fourth intonational phrases is reflected in the independent syntactic

²⁰⁷ This fact may partly explain the need for so many different *tə’āmîm*. For example, in instances like this one, if a recursive structure is required, another set of pitch patterns must be employed (cf. footnote 205).

nature of the clauses in the first and second halves of the verse: “. . . the hands of Saul failed—all of Israel were troubled.”²⁰⁸

The fourth intonational phrase is comprised of two phonological phrase complexes—the *ṭippəḥā*’ (first box, fourth row) and the *sōf-pāsûq* complex (second box, fourth row). The prosodic structure between these complexes is iterative.

The following is a translation of the verse in (67c) that highlights the prosodic phrasing of the prosodically focused constituents (the underlined portion is under prosodic focus, with the intonational peak of the verse falling on the prosodic word ‘Abner’): “And then the son of Saul heard, that Abner was dead in Hebron and they failed, his hands, and all of Israel were troubled” (2 Samuel 4:1).

²⁰⁸ An interval of a unison is present between the disjunctives ‘*etnaḥtā*’ and *ṭippəḥā*’. Both the suffix of ‘*etnaḥtā*’ and the prefix of *ṭippəḥā*’ are E.

(67c)

	(וַיִּשְׁמַע בֶּן־שָׁאוּל)
	(And then the son of Saul heard)
(וַיִּרְפוּ)	פִּי] מֵת אֲבִנֵר) [בְּחֶבְרוֹן)]
(they failed)	[(that Abner was dead) (in Hebron)]
	(יָדָיו)
	(his hands)
(נִבְהָלוּ:)	(וְכָל־יִשְׂרָאֵל)
(were troubled)	(then all of Israel)

And then the son of Saul heard, that Abner was dead in Hebron and they failed, his hands, and all of Israel were troubled. (2 Samuel 4:1)

In (67d), the first intonational phrase is comprised of a single phonological phrase complex (first box, first row): the *rəbī'ī* complex, containing the sole disjunctive *rəbī'ī* (וַתֹּאמֶר). The second intonational phrase is signalled by intonational discontinuity between the disjunctive *rəbī'ī* and the adjacent conjunctive *mahpāk* (וַתִּיָּהַנֵּד), a combination that forms an interval of a fifth. The

default prosodic structure between these two intonational phrases is iterative. Note that the direct speech that begins with the oath formula **חִי־יְהוָה**, forms an iterative intonational phrase structure with the speech verb **וַתֹּאמֶר**. There are three phonological phrase complexes in the second intonational phrase: two *zāqēp qāṭōn* complexes, which are prosodically focused (first and second boxes, second row, in brackets), and the *ṭippəḥā'* complex (third box, second row). The two *zāqēp qāṭōn* complexes exhibit the typical recursive prosodic structure, while the *ṭippəḥā'* complex forms an iterative structure with its adjacent complex. Two *zāqēp qāṭōn* complexes are needed to extend prosodic focus over all of the constituents in these complexes.²⁰⁹

The third intonational phrase is formed by the interval of a fifth between the disjunctives *ṭippəḥā'* (**וַיִּזְעַט-שְׁמֹן**) and *'etnaḥtā'* (**בְּצַפְתָּהּ**). The default structure between the second and third intonational phrases is iterative. The fourth intonational phrase boundary is signalled by *'etnaḥtā'*. Interestingly, the melodic interval between the disjunctive *'etnaḥtā'* and the adjacent conjunctive *kadmā'* (*və'azlā'*) (**וַהֲנִי**) is a fifth. Therefore, even though the disjunctive *'etnaḥtā'* itself encodes a nonterminal intonational phrase boundary, this interval may signal stronger discontinuity within a verse. Further research is needed to determine if this interval of a fifth has semantic value.²¹⁰

²⁰⁹ The binary constraint limits the size of a phonological phrase complex, so the repetition of the *zāqēp qāṭōn* complex is often needed to highlight all of the pertinent constituents.

²¹⁰ Most *ṭə'āmîm* that follow the disjunctive *'etnaḥtā'* form an iterative (i.e. conjunct melodic motion—a unison or interval of a second) or recursive (i.e. an interval of a third or a fourth) prosodic structure. A catalogue of the prosodic structures *'etnaḥtā'* forms with adjacent *ṭə'āmîm* are compiled in §4.4.2 and §4.4.5.

The fourth intonational phrase is comprised of five phonological phrase complexes: the *'azlā'* complex (first box, fourth row); the verse's second *rəbī'ī* complex (second box, fourth row);²¹¹ its third *zāqēp qātōn* complex (third box, fourth row);²¹² the verse's second *tippəḥā'* complex (fourth box, fourth row); and the *sōf-pāsūq* complex (fifth box, fourth row). The first three complexes of the fourth intonational phrase form recursive structures, while the last two form iterative structures. With regards to the prosodically focused *zāqēp qātōn* complexes, notice that the verse's first set of complexes exhibit two consecutive MaPs that function as the DF. This prosodic structure allows the prosodic focus to include both the oath formula, whose intonational peak rests on the grounds or basis of the oath (אֱלֹהֵיךָ), and the exceptive clause, whose intonational peak rests on the object of the oath (כִּי־קָמַח). The verse's second prosodically focused complex extends the intonational peak (i.e. the two consecutive prosodic words marked with *paštā'* (וּבְאֵתֵי and וְעֲשִׂיתִיהֶן)) to unify the compound VP. The extended *zāqēp qātōn* complex is further unified because the call of the disjunctive *paštā'*, which marks the two verbs is answered by the disjunctive *zāqēp qātōn*, which marks the dual dative lamed constructions (לִּי וּלְבָנִי).

The following is a translation of the verse in (67d) that highlights the prosodic phrasing of the prosodically focused constituents (the underlined portion is under prosodic focus, with the

²¹¹ The *rəbī'ī* complex functions as a topicaliser. The presence of two *rəbī'ī* complexes in one verse may be further evidence that the interval of a fifth after *'etnaḥtā'* signals a stronger intonational boundary.

²¹² This prosodically focused *zāqēp qātōn* complex provides an example of a repeated *paštā'* combination in a complex that extends the scope of the intonational peak to include adjacent constituents. For a more detailed discussion of the effects a repeated *ṭə'āmîm* combination has on a verse's prosodic structure see §4.4.5 example (64d) and §5.5 example (83).

intonational peaks of the verse falling on the prosodic words ‘your God’, ‘a-palm-of-flour’, ‘and-I-will-come’, and ‘and I-will-make-it’): “And she said: ‘As the LORD your God lives I have nothing baked, except a handful of flour in the jar and a little oil, in the jar, and behold me gathering two sticks and I will come and make something for me and for my son and we will eat it and die” (1 Kings 17:12).

(67d)

				(וְהֵאמֵר)
		(וּמַעַט־שֶׁמֶן)	כִּי אִם־מֶלֶא [כַּף־קֶמַח [בְּכֹר)]	[חַי־יְהוָה אֱלֹהֵיךָ] (אִם־יֶשׁ־לִי מֵעוֹג)
				(בַּצִּפְחָת)
(וּמְתַנּוּ:)	(וְאֶכְלָנָהוּ)	[וּבְאֹתִי וַעֲשִׂיתִיהוּ] [לִי וּלְבִנִי]	(שְׁנַיִם עֵצִים)	(וְהִנְנִי מְקַשֶּׁשֶׁת)

				(And she said)
		(and a little oil)	[(except a filling of a palm of flour) (in the jar)]	[(Lives the LORD your God,) (there is for me nothing baked)]
				(in the pot)
(and die)	(and we will eat it)	[(and I will come and I will make it) (for me and for my son)]	(two sticks)	(And behold me gathering)

And she said: “As the LORD your God lives I have nothing baked, except a handful of flour in the jar and a little oil, in the jar, and behold me gathering two sticks and I will come and make something for me and for my son and we will eat it and die.” (1 Kings 17:12)

In (67e), the first intonational phrase is comprised of two phonological phrase complexes: the *gēršayim* complex, containing the sole disjunctive *gēršayim* (וְאִמְרָה) (first box, first row); and the *rəbīṭ* complex (second box, first row), containing the conjunctive *munnāḥ* (אִי־לִי) and the disjunctive *rəbīṭ* (כִּי־נִדְמִיתִי).

The second intonational phrase is signalled by intonational discontinuity between the disjunctive *rəbīṭ* and the adjacent conjunctive *munnāḥ* (*mahpāk*) (כִּי),²¹³ a combination that forms an interval of a fifth. The default prosodic structure between these two intonational phrases is iterative. There are three phonological phrase complexes in the second intonational phrase: two prosodically recursive *zāqēp qātōn* complexes (first and second boxes, second row, in brackets) that extend the scope of prosodic focus to include the parallel NPs אִישׁ טָמֵא־שְׁפָתָיִם and עַם־טָמֵא שְׁפָתָיִם; and the *ṭippəḥā*' complex (third box, second row) which contains one phonological phrase—the sole disjunctive *ṭippəḥā*' (אֲנָכִי).

The third intonational phrase is formed by the interval of a fifth between the disjunctives *ṭippəḥā*' and *'etnaḥtā*' (יֹשֶׁב); the default structure between these two intonational phrases is iterative. The fourth intonational phrase is signalled by the disjunctive *'etnaḥtā*'. The prosodic structure between *'etnaḥtā*' and the adjacent disjunctive *rəbīṭ* (כִּי) is iterative because the interval between them is a second. Notice how the two *rəbīṭ* complexes function as a

²¹³ Note the subordinating function of the *munnāḥ/mahpāk* pitch pattern sequence.

“bookmark” of sorts that connects the matrix clause “Woe to me because I am undone—” to the main causal clause in the fourth intonational phrase “— for the LORD of Hosts my eyes have seen.” The fourth intonational phrase is comprised of the verse’s second *rəbī’ī* complex (first box, fourth row), the *ṭippəḥā’* complex (second box, fourth row), and the *sōf-pāsûq* complex (third box, fourth row). These three complexes all form recursive prosodic structures.

The following is a translation of the verse in (67e) that highlights the prosodic phrasing of the prosodically focused constituents (the underlined portion is under prosodic focus, with the intonational peaks of the verse falling on the prosodic words ‘unclean lips’ and ‘and-in-the-midst-of’): “And I said: ‘Woe to me because I am undone, for a man of unclean lips I am and in the midst of a people of unclean lips I am, dwelling, for the king, the LORD of hosts my eyes have seen’” (Isaiah 6:5).

(67e)

	(אוי-לי קינד-מית)	(ואמר)
(אנכי)	(ובתוך) [עם-טמא שפתים]	[כי] איש טמא-שפתים) [אנכי]
		(ישב)
(ראו עיני)	(את-המלך) (יהודה זבאות)	(כי)

	(Woe to me because I am undone)	(And I said)
(I am)	[(and in midst of) (a people of unclean lips)]	[(for a man of unclean lips) (I am)]
		(dwelling)
(my eyes have seen)	(the king,) (the LORD of hosts)	(for)

And I said: “Woe to me because I am undone, for a man of unclean lips I am and in the midst of a people of unclean lips I am, dwelling, for the king, the LORD of hosts my eyes have seen.” (Isaiah 6:5)

In (67f),²¹⁴ the first intonational phrase is comprised of a single *seggōl* phonological phrase complex (first box, first row), which contains two phonological phrases—the *zarqā*’ phonological phrase (זָרְקָא יְהוּדָה) and the *seggōl* phonological phrase (אֶתְרֵי תְּנִיחֹתָי). The second intonational phrase is signalled by intonational discontinuity between the disjunctive *seggōl* and the adjacent conjunctive *kadmā*’ (*və’azlā*) (וְאִזְלָא), a combination that forms an interval of a fifth. The default prosodic structure between these intonational phrases is iterative. There are five phonological phrase complexes in the second intonational phrase: the *’azlā*’ complex; the *rəbī’ī* complex; the *ṭəlišā*’ *gəḏōlā* complex; the *zāqēp qāṭōn* complex; and the verse’s second *ṭəlišā*’ *gəḏōlā* complex. Notice how the two *ṭəlišā*’ *gəḏōlā* complexes function to connect the matrix clause (לֵא-אֲסַף) to the subordination particle (כִּי) of its causal clause, despite the intervening prosodically focused constituent (fourth box, second row).²¹⁵

The third intonational phrase is comprised of a single *ṭippəḥā*’ complex formed by the interval of a fifth between the *ṭəlišā*’ *gəḏōlā* (כִּי) and the conjunctive *munnaḥ* (*dargā*) (וְצִרָה) (first box, third row). A fourth intonational phrase is formed by the interval of a fifth between the verbless predicate (עָרָה) (first box, third row) and its temporal adjunct (מִנְעֵרֵי) (first box, fourth row).

²¹⁴ Due to the length of this verse, each intonational phrase begins in the first box of its row.

²¹⁵ Compare the prosodic relationship of the subordination particle (כִּי) to its clause in this example with the prosodic relationship of these constituents in example (67e). Unlike the examples of a prosodically nested subordinate clause in its subordinator ((67e) first box, second row and first box, fourth row), (67f) provides an example of a subordinator (fifth box, second row) forming a separate intonational phrase from its subordinate clause (first box, third row).

The fifth intonational phrase is signalled by the disjunctive *’etnaḥtā’* (מִנְעִרְיוֹ). However, the *’etnaḥtā’* disjunctive does not form an iterative prosodic structure with the adjacent conjunctive *mērkā’* (וְלֹא-אֶסְרֶה) because the melodic interval between these *ṭə-āmîm* is a third. Since these constituents do not form an iterative prosodic structure, I propose translating the conjunctive *vav* at the beginning of the fifth intonational phrase as ‘so’ or ‘therefore’ in order to make explicit the semantic subordination of the recursive prosodic structure between these constituents; the use ‘and’ encodes a more linear or equal semantic structure between constituents.²¹⁶ The final phonological phrase complexes, *ṭippəḥā’* and *sōf-pāsûq*, form an iterative prosodic structure.

The following is a translation of the verse in (67f) that highlights the prosodic phrasing of the prosodically focused constituents (the underlined portion is under prosodic focus, with the intonational peak of the verse falling on the prosodic word ‘the ground’): “And then the LORD smelled the pleasing smell, and the LORD said to his heart: ‘I will not again curse the ground on account of man for, the intention of the heart of man is evil, from his youth, **therefore** I will not again strike down all life as I have done” (Genesis 8:21).

²¹⁶ The ESV translates this portion of the verse: “I will never again curse the ground because of man, for the intention of man’s heart is evil from his youth. **Neither** will I ever again strike down every living creature as I have done.” The ESV places a full stop after ‘youth’ separating it from the clause that precedes it. This results in a more coordinate semantic relationship between the propositions. My translation, on the other hand, renders a closer, subordinate relationship between the two propositions.

(67f)

				(וַיִּגְרַח יְהוָה) (אֶת־הַיִּתְּ תַּנְיִחוּ) ^ו
(כִּי)	[לְקַלֵּל עוֹד אֶת־הָאָדָמָה] [בְּעִבּוֹר הָאָדָם]	(לֹא־אָסַף)	(אֶל־לִבּוֹ)	(וַיֹּאמֶר יְהוָה)
				(וַיִּצֹר לֵב הָאָדָם) (רַע)
				(מִנְעָרָיו)
			(כִּי־אֲשֶׁר עָשִׂיתִי:)	(וְלֹא־אָסַף עוֹד) (לְהַכּוֹת אֶת־כָּל־חַי)

				(And then the LORD smelled) (the smell of soothing ,)
(for)	[(to curse again the ground) (on account of man,)]	(I will not continue)	(to his heart)	(and said the LORD)
				(the intention of the heart of man) (is evil)
				(from his youth)
			(as I have done)	(so I will not continue again) (to strike down all life)

And then the LORD smelled the pleasing smell, and the LORD said to his heart: “I will not again curse the ground on account of man for, the intention of the heart of man is evil, from his youth, **therefore** I will not again strike down all life as I have done.” (Genesis 8:21)

The verse in (67g) begins with two prosodically focused *zāqēp qāṭōn* phonological phrase complexes. The prosodic division of this complex is notable because it includes the formulaic verb and subject construction that introduces direct speech (וַיֹּאמֶר יְהוָה) in one complex, and the first portion of that speech (עֲתֵהּ תִּרְאֶה) in the other *zāqēp qāṭōn* complex.²¹⁷ The independent relative clause (אֲשֶׁר אֵשָׂה) is placed in its own *tippəḥā*’ complex (third box, first row). This relative clause construction forms a recursive prosodic structure with the adjacent complex, as the disjunctive *zāqēp qāṭōn* (תִּרְאֶה) and the adjacent conjunctive *mērkā*’ (אֲשֶׁר) form a melodic interval of a third.

The second intonational phrase is formed by the interval of a fifth between the disjunctives *tippəḥā*’ (אֲשֶׁר) and *’etnaḥtā*’ (לְפָרְעָה); the default structure between these two intonational phrases is iterative. The third intonational phrase is signalled by the disjunctive *’etnaḥtā*’. The prosodic structure between the second and third intonational phrases is recursive because *’etnaḥtā*’ and the adjacent conjunctive *munnāḥ* (*mahpāk*) (כִּי) form an interval of a fourth.²¹⁸ The constituents within the prosodically focused *zāqēp qāṭōn* complex (first box, third row) also exhibit recursion. The final three complexes of the third intonational phrase—*zāqēp qāṭōn*, *tippəḥā*’, and *sōf-pāsūq*—all form iterative prosodic structures.

²¹⁷ Notice the second *zāqēp qāṭōn* is missing its *paštā*’ phonological phrase, as is the *zāqēp qāṭōn* complex in the sixth box.

²¹⁸ Note the subordinating function of the *munnāḥ/mahpāk* pitch pattern sequence.

The following is a translation of the verse in (67g) that highlights the prosodic phrasing of the prosodically focused constituents (the underlined portion is under prosodic focus, with the intonational peaks of the verse falling on the prosodic words ‘the-LORD’ and ‘strong’): “And the LORD said to Moses: ‘Now you will see that which I will do, to Pharaoh, for with a strong hand he will send them out and with a strong hand he will drive them out from his land” (Exodus 6:1).

(67g)

	(אֲשֶׁר אֶעֱשֶׂה)	[(עַתָּה תֵּרְאֶה)]	[(וַיֹּאמֶר יְהוָה) [אַל־מֹשֶׁה)]
	(that which I will do)	[(Now you will see)]	[(And the LORD said) (to Moses)]
			(לְפָרֹעַ)
			(to Pharaoh)
(מֵאֶרְצוֹ)	(וַיִּגְרֹשֵׁם)	[(וַיִּבְנֶד בְּחִזְקָה)]	[(כִּי) בְּיַד חֲזָקָה) [יִשְׁלְחֵם)]
(from his land)	(he will drive them out)	(and with a strong hand)]	[(for with a strong hand) (he will send them out)]

And the LORD said to Moses: “Now you will see that which I will do, to Pharaoh, for with a strong hand he will send them out and with a strong hand he will drive them out from his land.” (Exodus 6:1)

4.5 Summary

In this chapter I provided a description of the *ṭa'āme hammigrā*' as a prosodic system, and introduced an original theory of intonation for the system, the basis of which is an integrated analysis of the numerous and varied intonational patterns the *ṭa'āmim* form. These intonational patterns reveal an internally cohesive intonational structure for the *ṭa'āmim*, making clear distinctions between adjacent *ṭa'āmim* that form intervals of a unison and a second, intervals of a third and fourth, and intervals of a fifth or greater.

Intervals of a unison and a second encode intonational continuity. Conjunctives form these intervals with the disjunctives they serve, and together these units comprise the prosodic domain of the phonological phrase. Intervals of a unison and a second also encode iterative prosodic structures between cohesive phonological phrases, phonological phrase complexes, and intonational phrases within a verse. Preliminary evidence suggests that iterative prosodic structures mark syntactically and/or semantically coordinate structures.

Intervals of a third and fourth, which represent moderate shifts in intonation, encode prosodic recursion. Research conducted by Féry (2009) and Hunyadi (2010) provide evidence of a strong correlation between shifts in intonation and prosodic recursion. Hunyadi, in particular, contends that locating shifts in intonation is a more effective method for identifying prosodic recursion than the detection of pausal phenomena. Recursion is exhibited on many levels within the prosodic structure of TH—within phonological phrases, within phonological phrase complexes, and within and between intonational phrases. I identify the *paštā' /zāqēp qāṭōn* phonological

phrase complex as one of the most common recursive structures in the MT and assign its function as marking prosodic focus within the verse. I also identified the conjunctive combination *munnāḥ/mahpāk* as an intonational unit that signals syntactic subordination within and across verses. Preliminary evidence suggests that recursive prosodic structures mark syntactically and/or semantically subordinate structures.

Finally, intervals of a fifth or greater between *ṭə 'āmîm* encode intonational discontinuity at intonational phrase boundaries. The individual pitch patterns of the disjunctives *sōf-pāsûq* and *'etnaḥtā'* signal a verse's main intonational phrase boundaries. *Sōf-pāsûq* and *'etnaḥtā'* (when it is present) form the cohesive unit of an utterance, connecting the two halves of a verse. The terminal intonational phrase boundary signalled by *sōf-pāsûq* exhibits the inverse pitch pattern of *'etnaḥtā'*. I identified and catalogued all *ṭə 'āmîm* combinations that form intervals of a third, a fourth, and a fifth or greater, and I provided multiple examples of these prosodic structures.²¹⁹

²¹⁹ Intervals of a third, fourth, and fifth are marked prosodic structures in TH—specialised structures signalling recursion and intonational discontinuity. Intervals between *ṭə 'āmîm* of a unison and a second are unmarked prosodic structures in TH—the most common, nonspecialised prosodic structures that cohere prosodic constituents within the domains of the prosodic hierarchy. I have not catalogued all of the *ṭə 'āmîm* combinations that form these intervals.

CHAPTER 5

THE APPLICATION OF AN INTONATION-BASED PROSODIC MODEL FOR THE *Ṭa 'āmê Hammiqrā'* AND ITS RELEVANCE FOR EXEGESIS

5.1 Introduction

In this chapter I propose a new prosodic model for the *ṭa 'āmê hammiqrā'*. I compare the prosodic hierarchy for TH with Selkirk's cross-linguistic hierarchy (§5.2), and I apply Selkirk's OT constraints outlined in §3.3 to the intonation-based prosodic model for TH (§5.3). I then test this model to determine if it accurately identifies and locates cross-linguistic prosodic structures for restrictive and nonrestrictive clauses (§5.4). The biblical corpus used in this investigation consists of all the overtly headed *'āšer* relative clauses in the twenty-one books.²²⁰

Finally, I compare my relative clause data with samples from Holmstedt's (2016) relative clause data to determine if a prosodic analysis confirms his assessment of restrictive and nonrestrictive relatives (§5.5). My conclusion is that my prosodic model is sound, and that an analysis of the prosodic structure of relative clauses is another exegetical tool that can be used to distinguish the restrictive nature of relative clauses, shedding new light on the text. Perhaps more importantly, these findings suggest that prosodic analysis has great potential for productive research and exegesis.

²²⁰ I conducted an Accordance Bible software search for *'āšer*, and then manually located and classified all of the 4,175 overtly headed *'āšer* relative clauses in the twenty-one books: 1,323 prosodically marked restrictive; 495 prosodically marked nonrestrictive; 2,357 prosodically undifferentiated.

5.2 A New Intonation-Based Prosodic Model for the *Ṭa 'āmê Hammiqrā'*

In this section, a new prosodic hierarchy for the *ṭa 'āmê hammiqrā'* is introduced based on the theory of intonation developed in the chapter 4. Unlike Drescher's prosodic model, the one I propose does not place the disjunctive *ṭa 'āmîm* in a hierarchy of pausal strength, or rank the order in which disjunctives divide a verse. Instead, this new model identifies the pitch patterns of the *ṭa 'āmîm* as the central feature of the prosodic system and exploits their intonational diversity to allow for a more productive interpretation of their prosodic functions.

I argue the *ṭa 'āmîm* form distinct call/response groupings that constitute phonological phrases and larger, but nevertheless intonationally unified, phonological phrase complexes.²²¹ The TH phonological phrase domain, which is comprised of a single disjunctive and the conjunctive(s) that serve it, corresponds to Selkirk's (2011) MiP. The TH phonological phrase complex is comprised of, at most, two disjunctives (and their related conjunctives). The TH phonological phrase complex corresponds to Selkirk's (2011) MaP. These TH intonational groupings yield a hierarchical structure in which no more than two phonological phrases (MiPs) are nested within a single phonological phrase complex (MaP). Multiple phonological phrase complexes form cohesive intonational phrases when their adjacent boundaries are conjoined by intervals of a fourth or less.

Selkirk (2011:473) defines the MiP as the locus of the accent of a prosodic word. In Lekeitio Basque, pitch accents are assigned lexically, which means pitch is used to differentiate similar

²²¹ See Appendix A for a listing of the intonationally related pitch patterns of disjunctive *ṭa 'āmîm* that form intonational families or phonological phrase complexes (i.e. MaPs).

words.²²² Example (68) illustrates Selkirk’s representation of the MiP in Lekeitio Basque. MiPs can contain a single accented word (68a), a sequence of unaccented words followed by an accented word (68b), or one or more unaccented words (68c) (Selkirk 2011:473-474).

- | | | | |
|-------|--|---|----------------------|
| (68a) | (lag <u>ú</u> n-en) φ_i
friend-pl-gen | (libur <u>ú</u> -ak) φ_i
book-pl-abs | “the friends’ books” |
| (68b) | (lagun-en libur <u>ú</u> -ak) φ_i
friend-sg-gen book-pl-abs | | “the friend’s book” |
| (68c) | (lagun-en dirua) φ_i
friend-sg-gen money | | “the friend’s money” |

Similarly, MiPs in TH can contain a sole prosodic word accented with a disjunctive (69a), or words marked with conjunctive *ʔə ‘āmîm* followed by a word accented with a disjunctive *ʔa ‘am* (69b). However no MiP in TH consists solely of conjunctive *ʔə ‘āmîm* (69c). Like Lekeitio Basque, a TH MiP can only have one pitch accent (i.e. one disjunctive *ʔa ‘am*).

- | | | |
|-------|---|-----------------------------|
| (69a) | φ_i (<u>אָ</u> רְאִי) | “and then I said” |
| (69b) | φ_i (אֶת־הָאָדָמָה לְקַלֵּל עוֹד) | “to curse again the ground” |
| (69c) | φ_i (וַיְבָרֵךְ) | *“and then he blessed” |

²²² Tokyo Japanese is similar in this regard (Selkirk 2011:473).

The Lekeitio Basque MaP can be identified by a low-high (LH) boundary tone that marks its left edge (70) (Selkirk 2011:474).

- (70a) **LH**
 ((lagun-en liburú-ak) φ_i) φ_a
 friend-sg-gen book-pl-abs “the friend’s book”
- (70b) **LH**
 ((lagun-en dirua) φ_i) φ_a
 friend-sg-gen money “the friend’s money”

A close look at the MiPs in (70c), however, shows a curious phenomenon—the second MiP exhibits a “downstepping of tone” represented by the ‘!’ (2011:474). Selkirk interprets this shift in intonation as signalling the coordination of these two MiPs within a single MaP.

- (70c) **LH** **!LH**
 ((lagún-en) φ_i (liburú-ak) φ_i) φ_a
 friend-pl-gen book-pl-abs “the friends’ books”

The TH MaP, on the other hand, is determined by the cohesive intonational groupings that the *tə ‘āmîm* form and by a highly ranked binary constraint that regulates the weight and balance of this prosodic domain (discussed further in §5.3).²²³ For example, in (71a), the disjunctives *zarqā*’ (זָרְקָא) and *seggōl* (סֵגְגוֹל) form a cohesive phonological phrase complex or MaP.

²²³ The graphic symbols of the *tə ‘āmîm* are iconic representations of the cohesive intonational groupings the disjunctives form. See Appendix A for a discussion of this topic.

(71a)

(וּמִפְּרֵי הָעֵץ) (אֲשֶׁר בְּתוֹךְ-הַגָּן)
(But from the tree) (which is in the midst of the garden)

However, unlike Selkirk's prosodic representation of Lekeitio Basque MaPs, I have analysed the shifts in intonation at the boundaries of TH MiPs as prosodic recursion (represented by the placement of the nested constituent beneath the constituent in which it is nested) (71b). This marks a significant difference I have with Selkirk—moderate shifts in intonation (i.e. intervals of a third or a fourth) signal prosodic recursion and syntactic/discourse pragmatic subordination (see §4.4.3 for a discussion that relates shifts in intonation to prosodic recursion).

(71b)

כִּי בּוֹ שָׁבַח (מִכָּל-מְלָאכָתּוֹ)
(For on it he rested) (from all his work)

Intonational phrases in TH are comprised of intonationally cohesive phonological phrase complexes (MaPs) conjoined by melodic intervals of a fourth or less. Intervals between *ṭə* 'āmîm of a fifth or greater encode intonational discontinuity, signalling an intonational phrase boundary.

Phonological phrases (MiPs), phonological phrase complexes (MaPs), and intonational phrases form iterative prosodic structures when the *ṭə ʿāmîm* at their phrase boundaries exhibit conjunct melodic motion (i.e. conjoined by intervals of a unison or a second).²²⁴ Recursive prosodic structures are formed when adjacent *ṭə ʿāmîm* at these phrase boundaries form intervals of a third or a fourth.²²⁵ The disjunctives *ʿetnaḥtā* (‘rest’) and *sōf-pāsûq* (‘end of verse’) automatically signal discontinuity within a verse. Although *ʿetnaḥtā* and *sōf-pāsûq* form their own complexes, together they signal parallel halves of a verse—the domain of the utterance.

In my schema for the *ṭə ʿāmê hammiqrā* only two *ṭə ʿāmîm*—*ʿetnaḥtā* and *sōf-pāsûq*—automatically encode an intentionally placed pause.²²⁶ I argue this in part based on the nomenclature of the *ṭə ʿāmîm*.²²⁷ We can only safely assume *ʿetnaḥtā* and *sōf-pāsûq* were intended to encode pausal phenomena because *ʿetnaḥtā* means ‘rest,’ signalling a pragmatically positioned nonterminal pause, while *sōf-pāsûq* means ‘end of verse,’ clearly bringing closure to a unit of speech. The fact that only one of the disjunctives is named ‘rest’ (two if *rəbīʿa*—also known as *rəbīʿī*—is included) is a strong indicator that the primary function of the other

²²⁴ Iterative prosodic structures are flat and consecutive—a series of structures on the same level. Prosodic recursion yields a series of structures that are nested within each other. Numerous examples of these prosodic structures are provided in §4.

²²⁵ See §4.4.5 examples (66) for illustrations of prosodic constituents forming iterative and recursive structures by conjunct melodic motion. Also see §4.4.4 for a catalogue of the *ṭə ʿāmîm* combinations that form recursive structures by intervals of a third or a fourth.

²²⁶ *Rəbīʿī* may also encode pause under certain conditions (see §5.2 footnotes 230 and 231) because Dotan (1978:1454) states that this *ṭə ʿam*, which he calls *רביעי*, means ‘resting’ in Aramaic. Portnoy & Wolff (2000:72), however, call this *ṭə ʿam* *רביעי*, ‘four-square’. Further research is needed to determine if intonational discontinuity necessarily encodes pausal phenomena. At this point in my research, I have not concluded that it does.

²²⁷ Additional evidence that the primary function of the *ṭə ʿāmîm* is not the encodement of pausal phenomena can be found in the fact that pausal boundaries at the juncture of each disjunctive are not faithfully observed in the liturgical practice of cantillation.

disjunctives did not include the encodement of pausal phenomena, even if optional or coincidental pauses may have coincided with these disjunctive boundaries. Furthermore, if the *tə 'āmîm* were designed to merely divide the text via pause, there would be little need for so many different *tə 'āmîm*, each with a distinct intonational pattern. Likewise, if the different *tə 'āmîm* were not intended to represent phonological differences, there would be no way of orally communicating their visual distinctions in the written text.

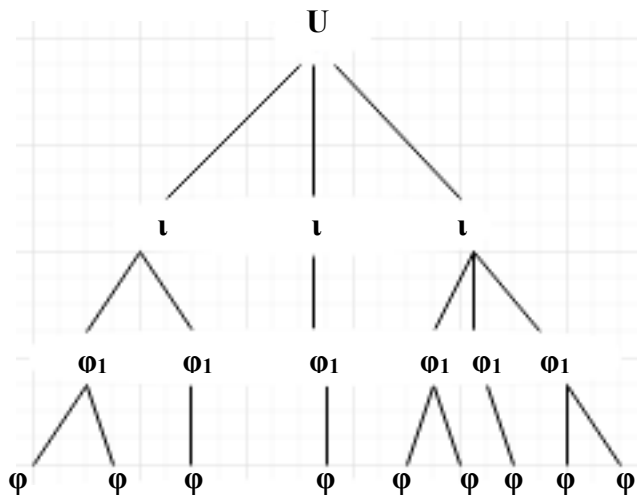
Below, a new intonation-based prosodic hierarchy for TH (72b) is compared alongside Selkirk's standard prosodic hierarchy (72a).²²⁸

²²⁸ Note that the framework of a hierarchy assumes that lower level prosodic domains are nested in higher level prosodic domains, i.e. the prosodic word is nested in the phonological phrase, the phonological phrase is nested in the intonational phrase, and so on.

(72a) <i>Standard prosodic hierarchy:</i> (Selkirk 2000, 2011)	(72b) <i>NEW intonation-based prosodic hierarchy for TH:</i>
Utterance (U)	Biblical verse (U)
Intonational phrase (ι)	Terminal & Nonterminal (ι) <ul style="list-style-type: none"> • <i>sōf-pāsûq</i> forms the terminal (ι) boundary • adjacent <i>ṭə ‘āmîm</i> intervals \geq a fifth and <i>’etnaḥtā</i> form nonterminal (ι) boundaries (the <i>ṭə ‘āmîm</i> in these adjacent intonational phrases signal the end of one ι and the beginning of another, encoding discontinuity and perhaps intentional pause in speech.)
Major phonological phrase (φ _a)	Phonological phrase complex (φ₁) <ul style="list-style-type: none"> • a group of related pitch patterns that are members of the same intonational family; a phonological phrase complex can contain no more than two disjunctives and the conjunctives that serve them.
Minor phonological phrase (φ _i)	Phonological phrase (φ) <ul style="list-style-type: none"> • a group of a single disjunctive and the conjunctive(s) that serve it. <p>While pauses within the phonological phrase and phonological phrase complex may exist, these pauses are qualitatively different from the major breaks and pauses that are characteristic of the intonational phrase; the TH system primarily uses differences in intonational patterns to encode groupings and phrasings—not pause. Intentional pauses in the TH system are principally identified by the names given to the disjunctives whose pitch patterns were designed to encode them (e.g. <i>’etnaḥtā</i> means “rest” and <i>sōf-pāsûq</i> means “end of verse”).</p>
Prosodic word (ω)	Prosodic word (ω) any word bearing its own conjunctive or disjunctive <i>ṭa ‘am</i>

A diagram of the intonation-based prosodic model above the prosodic word domain is illustrated in (73). Phonological phrases (φ —distinct pitch pattern groupings composed of conjunctives and the single disjunctives they serve) are nested in a series of phonological phrase complexes (φ_1 —intonationally related pitch patterns that form cohesive phrase families). Phonological phrase complexes are nested in a series of intonational phrases (ι —intonational phrases signalled by clear intonational discontinuity). Together, these prosodic domains comprise a cohesive biblical verse (U —an utterance).

(73)



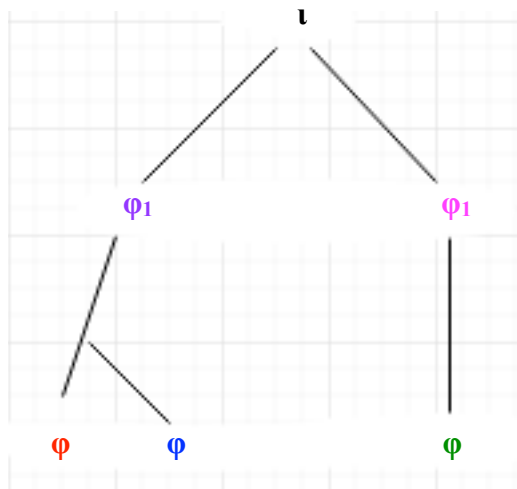
Each verse has at least two phonological phrases and phonological phrase complexes (*tippəḥā'* and *sōf-pāsûq*), and at least one intonational phrase (ending in *sōf-pāsûq*).²²⁹ Most verses have at least two intonational phrases (one signalled by *'etnaḥtā'*, the other by *sōf-pāsûq*). Many verses have more than two intonational phrase boundaries depending on the patterns of intonational discontinuity that exist within a verse. This conceptualisation of intonational phrases within a

²²⁹ Genesis 26:23 and Genesis 21:3 are examples.

biblical verse is consistent with standard prosodic theory which does not limit the number of intonational phrases an utterance can have (Dresher 1994:14).

The diagrams in (74) provide another visual representation of the types of prosodic structures that are common in TH verses. The intonational phrase (ι) in (74a) exhibits an iterative prosodic structure between the first (φ₁) and second (φ₁) phonological phrase complexes. Within φ₁, the first (φ) and second (φ) phonological phrases form a recursive prosodic structure as φ is nested in φ. This is a representation of the first intonational phrase in example (67a).

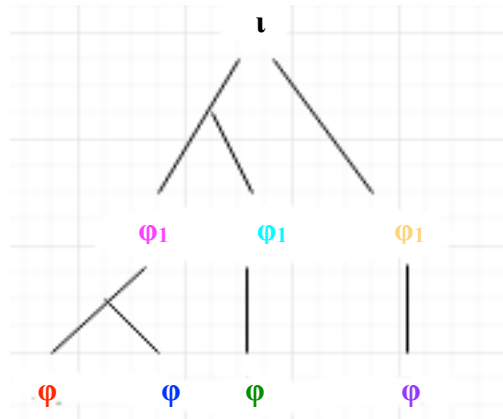
(74a)



The intonational phrase (ι) in (74b) is comprised of three phonological phrases complexes: φ₁, φ₁, and φ₁. Within φ₁, the first (φ) and the second (φ) phonological phrases form a recursive prosodic structure as φ is nested in φ. The first (φ₁) and the second (φ₁) phonological phrase complexes form a recursive structure as φ₁ is nested in φ₁. The second (φ₁) and third (φ₁) phonological phrase complexes each consist of a single phonological phrase (φ and φ,

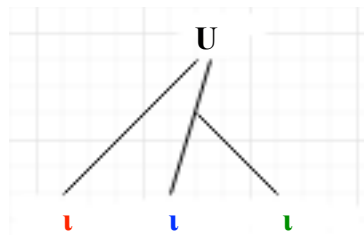
respectively), and form iterative prosodic structures. This is a representation of the third intonational phrase in example (67a).

(74b)



The utterance (U) in (74c) exhibits an iterative prosodic structure between the first (U) and second (U) intonational phrases. The second (U) and third (U) intonational phrases form a recursive prosodic structure as U is nested in U. This is a representation of the three intonational phrase structures in example (67a).

(74c)



There are four main differences between Dresher's prosodic hierarchy for the *ṭa ʾāme hammiqrā*' in §3.5 (28b) and the new intonation-based hierarchy I propose in (72b): i) the prosodic domains are determined by patterns of intonation instead of dichotomies produced by pausal phenomena; ii) prosodic domains above the prosodic word (i.e. the MiP, the MaP, and the intonational phrase domains) only form recursive structures via intervals of a third or fourth; iii) the phonological phrase domain, in fact, has two distinct tiers, the phonological phrase (the MiP) and the phonological phrase complex (the MaP); and iv) the intonational phrase domain is fully represented and functional in TH.

One of the difficulties Dresher identifies in constructing a complete prosodic model for the *ṭa ʾāme hammiqrā*' is Revell's (1980) observation that roughly 25% of the pausal forms in the Book of Deuteronomy occur on *ṭa ʾāmim* other than the D0 disjunctives *'etnaḥtā*' and *sōf-pāsûq* (Dresher 1994:12). This presents a problem because, according to Dresher, pausal forms should only coincide with major breaks (i.e. D0 *ṭa ʾāmim*). Revell's data may be explained, in part, by recent prosodic research on pausal phenomena conducted by Rao (2010). Rao (2010:69-70,72) locates pauses in Spanish speech at both the intonational and phonological phrase domains. His research reveals final lengthening of syllables and words at the ends of phonological phrases, regardless of pause, as well as at the ends of intonational phrases. Rao (2010:70,76) also concludes that any type of pause increases lengthening over instances with no pause. These findings accord with Revell's observation that a significant number of pausal forms can be found at junctures other than the major breaks in a verse signalled by *'etnaḥtā*' and *sōf-pāsûq*. Furthermore, the finding that pauses increase lengthening over instances with no pause, is

precisely the phenomenon observed in the MT: TH pausal forms overwhelmingly coincide with *'etnaḥtā'* and *sōf-pāsûq* (Revell 1971/72 1980, 1981, 1987, 1988, 2015, 2016; Price 2006:5), the two disjunctives that most likely encode pause as per their nomenclature (i.e. 'rest' and 'end of verse,' respectively). Moreover, Rao (2010:76) states:

When there are no pauses, the [φ] boundary is cued via melodic means, though F0 is not specifically measured. In phrase boundaries with pauses, durational effects combine with melodic effects like F0 rises at the majority of [φ] boundaries, and final lowering at [ɿ] boundaries . . .

Rao's findings help explain the presence of 'pausal' forms at the junctures of *ṭə 'āmîm* other than *'etnaḥtā'* and *sōf-pāsûq*, because it provides clear evidence that phonological lengthening does not exclusively coincide with the major breaks of intonational phrase boundaries. TH pausal forms, then, may more accurately be described as lengthened forms. Rao's findings and a shift in the nomenclature for TH 'pausal forms' to 'lengthened forms' accord with the prosodic model for the *ṭə 'āmê hammiqrā'* I have proposed. I have argued that the primary function of the disjunctives is not pausal, but instead a means of delineating distinct intonational groupings that encode prosodic structure, and very likely a host of discourse and information structure phenomena.

The intonation-based prosodic model for the *ṭə 'āmê hammiqrā'* may also clarify the distribution of lengthened forms among the *ṭə 'āmîm* quantified by Price (2006). In his study on pausal forms with non-pausal accents, Price (2006:5) surveys all of the lengthened forms in the prose books

and finds that the most prevalent pausal forms on *ṭə‘āmîm* other than *’etnaḥtā’* and *sōf-pāsûq* coincide with *zāqēp qāṭōn* (595 forms), *ṭippəḥā’* (91 forms), and *rəbī’ī* (87 forms). Some of these pausal forms very likely coincide with the boundaries of verse-medial intonational phrases formed by *ṭə‘āmîm* whose melodic intervals are a fifth or greater. Of the *ṭə‘āmîm* combinations I have identified as forming verse-medial intonational phrase boundaries, the disjunctives *ṭippəḥā’* and *rəbī’ī* are commonly found at these junctures.²³⁰ Further research is needed to determine if some of these loci of intonational discontinuity indeed coincide with the pausal forms marked by *ṭippəḥā’* and *rəbī’ī*.²³¹ However, based on Rao’s research, we need not expect to find lengthened forms exclusively at boundaries where pauses are present.

According to Price, *zāqēp qāṭōn* is the most prevalent non-pausal accent to mark pausal forms. Although I have only identified two *ṭə‘āmîm* combinations involving *zāqēp qāṭōn* that produce intonational discontinuity,²³² this particular disjunctive has a prominent function within the prosodic model. I have identified *zāqēp qāṭōn* as the head of one of the most salient phonological phrase complexes in the MT, whose function is to place its constituents in prosodic

²³⁰ See §4.4.5 examples (64a), (64b), (64c), (64e), (64f), (64g), (64w), and (64dd) for the *ṭə‘āmîm* combinations with *rəbī’ī* and *ṭippəḥā’* that form intervals of a fifth or greater.

²³¹ Jacobson (2002:341) cites four examples of non-pausal accents that mark lengthened forms: one coincides with intonational discontinuity (Exodus 32:24), the other three do not (Genesis 43:23; Malachi 1:6; Isaiah 49:18).

²³² See §4.4.5 examples (64k) and (64aa) for the *ṭə‘āmîm* combinations with *zāqēp qāṭōn* that form intervals of a fifth or greater.

focus. As such, it is not surprising that the prosodic head of a DF would also include lengthened forms.²³³

5.3 Selkirk's Optimality Theory Constraints Applied to the Intonation-Based Prosodic Model

In §3.3, I outline four sets of universal constraints pertinent to TH prosodic structure: 1) constraints on prosodic domination (SLH); 2) constraints of weight and balance on the MaP; 3) syntax-phonology interface constraints; and 4) prominence constraints that govern the relation between intonation and prosodic stress, and the prominence of focus. In the remaining sections of §5.3 I apply these constraints to the intonation-based prosodic model for TH.

5.3.1 Constraints on Prosodic Domination: Strict Layer Hypothesis

Of the four constraints on prosodic domination—layeredness, headedness, exhaustivity, and nonrecursivity, only nonrecursivity appears to be easily violable within the intonational model for the *ṭa'āmê hammiqrā'*.²³⁴ Layeredness requires that the prosodic domain of a lower prosodic domain not dominate one of a higher domain. Headedness requires that a prosodic domain of a higher domain dominate the domain directly under it. Exhaustivity does not allow a prosodic

²³³ Price (2006:5) has identified 16 pausal (or lengthened) forms for the disjunctive *paštā'*—the intonational peak of the domain of focus—and the fifth most prevalent non-pausal accent after *zāqēp gādōl* (22); *zāqēp gādōl* belongs to the same intonational family as *paštā'* and *zāqēp qātōn* (see Appendix A). The other non-pausal accents Price lists as coinciding with these lengthened forms include: *gērēš* (7); *tābir* (6); *munnāḥ* (6); *gēršayim* (3); *pāzēr* (3); *šalšelet* (3); *mahpāk* (2); *munnāḥ ləgarmê* (1); *zarqā'* (1). Of the *ṭa'āmim* Price identifies in his study of pausal forms on nonpausal accents, I have identified the disjunctives *rəbī't*, *ṭippəḥā'*, *zāqēp qātōn*, *paštā'*, *zāqēp gādōl*, *munnāḥ ləgarmê*, *zarqā'*, and the conjunctives *munnāḥ* and *mahpāk* as forming combinations that produce intervals of discontinuity (see §4.4.5 for a catalogue of these *ṭa'āmim*).

²³⁴ The layeredness constraint states: No C^i dominates a C^j , $j > i$; the headedness constraint states: Any C^i must dominate a C^{i-1} ; the exhaustivity constraint states: No C^i immediately dominates a constituent C^j , $j < i-1$; the nonrecursivity constraint states: No C^i dominates C^j , $j = i$. For an explanation of these constraints see §3.3.1.1.

domain in the hierarchy to skip domain levels. The structure and organisation of the intonation-based prosodic model exhibits strict adherence to these three constraints. However, as I have illustrated in numerous examples in §4 and in the tree diagrams in §5.2 (74), the constraint governing nonrecursivity is often violated, as phonological phrases, phonological phrase complexes, and intonational phrases all form nested prosodic structures with constituents of the same level. Therefore, layeredness, headedness, and exhaustivity rank higher than nonrecursivity within this new prosodic model for TH.

The two fundamental differences in the way I have applied the SLH to my prosodic model as compared to Dresher and Selkirk's application of the SLH to their models are as follows: 1) Dresher's prosodic model, which configures the data for the *ʔə 'āmim* quite differently, posits the violation of both exhaustivity and nonrecursivity; and 2) although Selkirk acknowledges the presence of two distinct phonological phrases (the MiP and the MaP), she holds that "these are both instances of the prosodic category φ . . . [and] that interface Match Phrase constraints appeal only to a single prosodic category φ " (2011:473). This caveat results in default recursivity within the φ domain of her prosodic model for Lekeitio Basque (75a). At the same time, however, she concedes that other phonological constraints "may recognise distinctions between sub-types of φ " (2011:473).

(75a) *Prosodic hierarchy for Lekeitio Basque:*

Utterance (U)
Intonational phrase (t)
Phonological phrase (φ)
 Major phonological phrase (φ_a)
 Minor phonological phrase (φ_i)
Prosodic word (ω)

I contend, however, that the intonational organisation of the *tə'āmîm* (i.e. the distinct phonological phrase families of the *tə'āmîm*) justifies recognising the TH MiP (phonological phrase) and MaP (phonological phrase complex) as two distinct domains between the prosodic word and the intonational phrase (75b).

(75b) *Intonation-based prosodic hierarchy for TH:*

Utterance (U)
Intonational phrase (t)
Phonological phrase complex (φ_1) => Major phonological phrase (φ_a)
Phonological phrase (φ) => Minor phonological phrase (φ_i)
Prosodic word (ω)

Therefore, the manner in which recursion is conceptualised in my model differs substantially from the recursive structures Selkirk proposes for Lekeitio Basque (cf. §5.2) and Dresher for TH (cf. §3.6).

5.3.2 Constraints of Weight and Balance on the Major Phonological Phrase

Selkirk (2000:244) asserts that typological difference between languages can be ascertained based on the binary constraints a particular language assumes: either binary maximum (where a MaP may consist of at most two minor phonological phrases), binary minimum (where a MaP must consist of at least two minor phonological phrases), or binary (where a MaP consists of just two minor phonological phrases). I have postulated a binary maximum constraint for TH based on: 1) the patterns of melodic intervals some of the *tə* 'āmîm form (e.g. 'etnahtā' and *tippəhā*' form an interval of a fifth, so they cannot belong to the same phonological phrase complex); 2) the phonological phrase families in which the *tə* 'āmîm can be grouped (as determined by similarities in their graphic representations and their call/response intonational patterns); and 3) the patterns of distribution of the *tə* 'āmîm observed in the MT and illustrated in the charted examples throughout this study. For example, *təbir* is parsed with the *tippəhā*' phonological phrase complex because: 1) when *təbir* immediately precedes *tippəhā*', the interval between these two disjunctives is a unison, thereby indicating a close intonational structure between the two disjunctives; 2) the graphic representation of *təbir* iconically symbolises its conjunctive-like relation to *tippəhā*'; 3) the pattern of distribution of *təbir* in the MT consistently positions *təbir* in sequence with *tippəhā*'. An analysis of the disjunctive *tə* 'āmîm with respect to these factors has revealed a binary maximum constraint that is ranked high in TH, as there are never more than two phonological phrases (MiPs) within a phonological phrase complex (MaP).

5.3.3 Syntax-Phonology Interface Constraints

Among the constraints that are reviewed in this study, the syntax-phonology match constraints are likely ranked the lowest in TH. Match constraints regulate the correspondence of constituent structures of syntax and phonology, where: match clause, match phrase, and match word require the left and right edge of a syntactic clause, phrase, and word to match the intonational phrase, phonological phrase, and prosodic word, respectively (Selkirk 2011:439).

In terms of the match word constraint in TH, a word almost always corresponds to a prosodic word. However, rules governing cliticisation will often conjoin two or more words by a *maqfef* to form a single prosodic word (76).

(76) טָמֵא-שְׁפָתַיִם

The match phrase constraint for the phonological phrase domain as Selkirk (2011) formalises it does not recognise the distinct prosodic tiers of the MiP and MaP: “. . . Match Phrase constraints appeal only to a single prosodic category φ ” (2011:473). Herein lies a major difference between the phonological phrase domain of Selkirk’s prosodic model and that of TH—although Selkirk argues for the existence of a MiP and a MaP, she asserts that the match constraints for the phonological phrase do not recognise the distinct prosodic characteristics of the MiP and MaP, and simply treat them as recursive structures of the phonological phrase. However, my analysis of the pitch patterns of the *tə ‘āmîm* and the prosodic structure they represent strongly suggests a clear distinction is to be made between the TH phonological phrase and phonological phrase

complex (prosodic domains that are analogous to Selkirk’s MiP and MaP), and that these prosodic tiers truly constitute their own domains. Recursion in the intonation-based prosodic model is not a default structure of the disjunctive *tə ‘āmîm*, but is instead signalled by a melodic interval of a third or fourth. Furthermore, with regards to the match clause constraint, the intonational phrase domain in TH rarely corresponds to a single clause. The examples in (77) are representative of the ways in which syntax maps to prosodic domains in TH.

In (77a), the first phonological phrase complex (MaP) corresponds to a dependent clause. This MaP consists of two MiPs; the first is the subordination particle + subject NP (כִּי רֵאשׁ אֲרָם), the second is the predicate NP (דִּבְּרָהּ). Therefore, in this example, the first MiP more closely corresponds to a syntactic phrase, while the MaP corresponds to a syntactic clause. However, the syntax-phonology map for the second and third MaPs are different. The second MaP consists of a single MiP, corresponding to the subject NP (וְרֵאשׁ דִּבְּרָהּ) of the second dependent clause. The third MaP, also a single MiP, comprises the second clause’s predicate NP (וְרֵצִי). The first intonational phrase, then, is comprised of a dependent clause + the subject NP of the coordinating clause that follows it (i.e. a dependent clause and a half). The second intonational phrase also shows considerable divergence from match clause as it corresponds not to a clause but to a predicate NP.

(77a)

	(וְרֹאשׁ דַּמָּשֶׁק)	כִּי רֹאשׁ אֲרָם (דַּמָּשֶׁק)
	(and the head of Damascus)	(For the head of Syria) (is Damascus)
(רֵצִין)		
(is Rezin)		

For the head of Syria is Damascus and the head of Damascus is Rezin . . .
(Isaiah7:8)

The example in (77b) shows similar variability. The first MaP consists of a single MiP that corresponds to the presentative וְהִנֵּה. The second MaP corresponds to a dependent clause, containing two MiPs—one comprises the dependent clause, the other a temporal phrase (הַיּוֹם). The first intonational phrase in this example more closely corresponds to match clause. The second intonational phrase shows greater divergence from match clause as it simultaneously corresponds to a syntactic PP and prosodic word (בְּעֵינַי). The third intonational phrase is comprised of two clauses. The first MaP of the third intonational phrase contains two MiPs—one that corresponds to a clause (כִּן הִגִּדְלִי נַפְשִׁי), the other that corresponds to a PP (בְּעֵינַי).

(יְהוָה). The second MaP is comprised of a single MiP that corresponds to a clause (וַיִּצְלַנִּי). The third MaP, also comprised of a single MiP, corresponds to an adjunct PP (:מִכָּל-צָרָה).

(77b)

	(כַּאֲשֶׁר נִדְלְגָה נַפְשִׁי) (הַיּוֹם הַזֶּה)	(וְהִיָּה)
	(just as your life was considered precious) (day this)	(And behold)
		(בְּעֵינַי)
		(in my eyes)
(מִכָּל-צָרָה:)	(וַיִּצְלַנִּי)	[כִּי] תִּנְדָּל נַפְשִׁי [בְּעֵינַי יְהוָה]
(from all trouble)	(and may he deliver me)	[(so let be considered precious my life) (in the eyes of the LORD)]

And behold just as your life was considered precious this day, in my eyes, so let be considered precious my life in the eyes of the LORD and rescue me from all distress. (1 Samuel 26:24)

The examples in (77) illustrate the highly variable nature of the syntax-phonology map for TH. For this reason, match constraints in TH are ranked very low.

5.3.4 Constraints on the Relation Between Intonation and Prosodic Stress

The three prominence constraints that relate to intonation and prosodic stress include: no toneless π stress (which stipulates that the stressed syllable of a prosodic constituent must bear a tone), no π stress-less tone (which stipulates that a tone must be associated to a stressed syllable), and edgemostright (which stipulates that the prosodic prominence of a prosodic constituent must align with the left or right edge of its domain). These constraints are strictly adhered to in TH as seen by the alignment of lexical stress and the intonational contour of a *ṭa‘am* to each prosodic domain’s rightmost edge. In §3.3.4 example (18) I discuss and demonstrate TH’s strict adherence to all three constraints using the stress patterns of the first three words of Genesis 1:1.

5.3.5 Constraint on Focus

The final prominence constraint relates prosodic phenomena to focus within a verse. The focus constraint requires that the focused constituent be the most prominent constituent within the DF. In §4.4.4 I identify the domain of focus in TH as the *zāqēp qāṭōn* phonological phrase complex (a *zāqēp qāṭōn* MaP). Within this complex, I identified the word or words marked with *pašṭā’* (or *yəṭīb*) as the focused constituent because its melodic contour is the most intonationally prominent—with its tone dramatically extending to the top of the verse’s melodic range.²³⁵

²³⁵ In §4.4.4 I discussed the fact that at times *yəṭīb* replaces *pašṭā’*, and that *yəṭīb* appears to have a larger DF with broader discourse implications for a narrative that may extend outside the boundaries of the verse.

According to Truckenbrodt, “in a sentence with no focus, stress on the rightmost lexical word is strongest . . .” (1995:152). Truckenbrodt takes Newman’s (1946) example to illustrate this: *The man walked away*. In this sentence, there is no focus, so stress is on ‘away.’ However, Truckenbrodt, continues:

when focus comes into play, as in Newman’s *It was this man who walked away*, focus may direct the stress on an earlier element in the clause, here to the word *this*, and . . . the stress is no longer the rightmost element of the clause . . . (1995:152).

TH exhibits the same phenomenon. For example, Genesis 1:1 does not have the prosodically focused MaP constituent *zāqēp qāṭōn*, therefore, the most prominent intonational stress aligns with the intonational boundaries of *’etnaḥtā’* (אֱלֹהִים, ‘God’) and *sōf-pāsûq* (הָאָרֶץ, ‘the-earth’) (79a).²³⁶

(79a) בְּרֵאשִׁית בְּרָא אֱלֹהִים אֶת הַשָּׁמַיִם וְאֶת הָאָרֶץ:
 In the beginning, **God** created the heavens and **the earth**. (Genesis 1:1)

However, verses that exhibit a prosodically focused *zāqēp qāṭōn* MaP constituent show a shift of greater intonational prominence to this constituent. For example, Genesis 1:2 exhibits the first prosodically focused MaP constituent of the MT. The constituent F (הִיְתָה תְהוֹם, ‘was **formless**’)

²³⁶ Additional verses that exhibit this phenomenon include: Genesis 2:1; Genesis 2:4; Genesis 2:12; Genesis 3:2; Genesis 3:4; Genesis 6:22; Genesis 15:14; Genesis 16:15; Genesis 25:7; Genesis 25:10; Judges 17:1; 2 Samuel 6:1; 1 Kings 17:7; Ruth 1:3. I believe these verses largely contain information that the storyteller intends to intonationally background (or mark as parenthetical) within a narrative, while the *zāqēp qāṭōn* MaP contains information the storyteller intends to intonationally foreground. This MaP signals the most important mainline constituent that carries the narrative forward within a verse, and is, therefore, fundamentally a discourse tool.

is the intonational peak of the DF (הִיְתָה רֵהוּ וְבָהוּ), ‘was formless and void’) (79b). This MaP is more intonationally prominent than any other MaP in the verse—it has greater intonational prominence than *’etnahtā’* (עַל־פְּנֵי תְהוֹם, ‘over the face of the deep’) or *sōf-pāsûq* (עַל־פְּנֵי הַמַּיִם, ‘over the face of the waters’). Also note the second *zāqēp qāṭōn* MaP (וְרוּחַ אֱלֹהִים, ‘the Spirit of God’) in the *sōf-pāsûq* clause of the verse. This second *zāqēp qāṭōn* complex, however, does not have the *paštā’* intonational peak. I believe there is a notable discourse/information structure feature that links multiple prosodically focused MaPs within a verse—a topic that requires further research outside the scope of this study.²³⁷

(79b) וְהָאָרֶץ (הִיְתָה רֵהוּ וְבָהוּ) וְחֹשֶׁךְ עַל־פְּנֵי תְהוֹם (וְרוּחַ אֱלֹהִים) מְרַחֶפֶת
עַל־פְּנֵי הַמַּיִם:

And the earth (was **formless** and void), and darkness **was over the face of the deep**, (and the Spirit of God) was hovering **over the face of the waters**. (Genesis 1:2)

5.4 Distinguishing Relative Clause Types Using the Intonation-Based Prosodic Model

According to Downing (1978:375) all languages use relative clauses to modify nouns. Although features of relative clauses vary considerably among languages (Downing 1978:377-378; Hwang 1990; Kaland & van Heuven 2010; Poschmann & Wagner 2016; Lehmann 1986; Mtenje 2011; Cheng & Downing 2007; Féry & Schubö 2011; Özçelik 2014), the following are two universal properties of relatives: 1) they are subordinate to, not complements of, a matrix clause, and 2) they are connected to their matrix clauses by “a nominal pivot”—a head noun that plays two

²³⁷ It is likely significant that some verses that have more than one prosodically focused MaP have a *paštā’* intonational peak for each *zāqēp qāṭōn* complex (e.g. Genesis 2:3), while others do not (Genesis 1:2).

roles, that of the matrix clause and that of the head of the relative (Holmstedt 2016:7-9).

Restrictive and nonrestrictive are the two main types of semantic relationship between a relative head and its modifying relative clause (Holmstedt 2016:196). Restrictive relatives “[provide] information necessary for the head to be correctly identified among a set of possible discourse referents” (Holmstedt 2016:196), nonrestrictive relatives [do] not define or limit [their] NP head[s], . . . but simply [add] information that the speaker/writer has deemed salient to the narrative. In other words, a restrictive relative clause identifies the head noun by modifying it in a way that restricts (or narrows) its reference. A nonrestrictive relative clause is appositional in nature; it simply modifies the head noun with supplementary information.

In terms of prosody, certain syntactic constructions, like nonrestrictive relative clauses, form their own intonational phrase boundaries (Selkirk 1995:553):

Boundary tones appear to be more uniformly exploited crosslinguistically. In English, and in languages as diverse as Chinese, Japanese, Serbo-Croatian, Hungarian, and Igbo, a sentence-final boundary tone may mark whether a sentence is an assertion, a contradiction, a question, etc. Medial boundary tones may set off topics, focus, parenthetical expressions, nonrestrictive relative clauses, and other syntactically definable classes of constituents.

Although nonrestrictives are “rarely separated from their heads—e.g., by extraposition . . . *My father came in, who runs his own business” (Holmstedt 2016:197), they do exhibit prosodic separation or intonational discontinuity from their head nouns, while restrictive relative clauses remain prosodically connected.

The relative clause types pertinent to this study include overtly headed *'āšer* restrictive and nonrestrictive relatives. An analysis of the intonational patterns of each overtly headed *'āšer* relative clause in the twenty-one books not only confirms the cross-linguistic prosodic features of restrictive and nonrestrictive relatives, but also refines this characteristic typology for TH. Three prosodic distinctions can be made of the TH overtly headed *'āšer* relative clause: 1) prosodically marked restrictives, 2) prosodically marked nonrestrictives, and 3) prosodically undifferentiated relatives.²³⁸ The constituents of prosodically marked restrictive relative clauses (head noun, relative pronoun, and relative clause) are all members of a single phonological phrase complex (MaP) within a cohesive intonational phrase (80). Some of these relative clause constituents exhibit conjunct melodic motion (i.e. intervals of a unison or a second—(80a)-(80d), (80g), and (80m)-(80o)), while others exhibit recursive prosodic structures (i.e. intervals of a third or a fourth—(80e)-(80f), (80h)-(80l), (80p), and (80q)). Prosodically marked nonrestrictive clauses exhibit clear intonational discontinuity (i.e. intervals of a fifth or greater) between the relative clause and its head noun, separating these constituents into distinct intonational phrases (81). Prosodically undifferentiated relative clauses do not make a prosodic distinction with regards to restriction and have clause constituents that comprise a cohesive intonational phrase, but these constituents do not all belong to the same phonological phrase complex (MaP) (82). Appendix B provides an exhaustive catalogue of all of the overtly headed relative clauses in the twenty-one books based on these prosodic parameters.

²³⁸ A prosodically marked form is defined as a form that is differentiated by distinct prosodic features that give it special meaning.

The portion of the verse in (80a) has already been analysed in §4.2. This verse exhibits a head noun, relative pronoun, and a relative clause that are all conjoined by conjunct melodic motion—by intervals of perfect unison. These restrictive clause constituents all comprise a single MaP, namely the *seggōl* phonological phrase complex. The first place of melodic disjuncture occurs between (אֱלֹהִים) and (לֹא), as the melodic interval between these prosodic words is a fifth, clearly signalling intonational discontinuity. As no disjuncture prosodically separates the relative clause from its head noun at the intonational phrase level, this relative clause construction is consistent with the prosodic parameters Dresher references for a restrictive clause. More importantly, the prosodic representation of restrictive clause constituents in (80a), refines the description of the locus of the relative clause cited by Dresher, narrowing the scope of its locus within a cohesive intonational phrase to the phonological phrase complex (MaP).

(80a)

	(אָמַר אֱלֹהִים)	(וּמִפְּרֵי הָעֵץ) (אֲשֶׁר בְּתוֹךְ הַגָּן)
	(said God)	(But from the tree) (that is in the midst of the garden)
(לֹא תֹאכְלוּ) [מִמֶּנּוּ]		
[(not you shall eat) (from it)]		

Genesis 3:3

The following is a translation of the verse in (80a) that highlights the prosodic phrasing of the restrictive relative clause (note the placement of the comma and colon) and the prosodically focused constituents (the underlined portion is under prosodic focus, with the intonational peak of the verse falling on the prosodic word ‘eat’): “But from the tree that is in the midst of the garden, God said: ‘You shall not eat from it . . .’” (Genesis 3:3).

The portion of the verse shown in example (80b) contains a prosodically marked restrictive relative clause construction within a single phonological phrase complex and a cohesive intonational phrase. The head noun, relative pronoun, and a relative clause are all constituents of the prosodically focused *zāqēp qāṭōn* complex (third box). Within this MaP, the head noun (which forms an appositional construction (אֶת־בְּנֵי אֶת־יִתְדֵיהֶּן)) and functions as the direct object of the matrix verb (קָח־נָא), the relative pronoun, and the relative clause are all conjoined by conjunct melodic motion. In fact, in this example, the head noun and the prosodically marked restrictive relative clause (אֲשֶׁר־אֵלֶּבֶת) form a single phonological phrase and prosodic word (as represented by the first set of parentheses in third box) within the complex.²³⁹ The constituent אֶת־יִצְחָק is appositional to the preceding NPs. Together, the compound direct object are all under prosodic focus because they constitute the prosodically focused *zāqēp qāṭōn* MaP.

²³⁹ Further research of the pitch patterns of restrictive relative clauses may reveal why some relative clause constituents are spread out among multiple phonological phrases within a complex, while others are contained within a single phonological phrase.

(80b)

<p>(אֶת־בְּנֶךָ אֶת־יְחִידְךָ אֲשֶׁר־אַהַבְּךָ) [אֶת־יִצְחָק]</p>	<p>(קַח־נָא)</p>	<p>(וַיֹּאמֶר)</p>
<p>[(your son your only one whom you love) (Isaac)]</p>	<p>(Take-please)</p>	<p>(And then he said)</p>

Genesis 22:2

The following is a translation of the verse in (80b) that highlights the prosodic phrasing of the restrictive relative clause and the prosodically focused constituents (the underlined portion is under prosodic focus, with the intonational peak of the verse falling on the prosodic word ‘whom you love’): “And then he said: ‘Take-please, your son your only one whom you love, Isaac . . .” (Genesis 22:2).

The prosodically marked restrictive relative clause in (80c) forms a single phonological phrase nested within a cohesive phonological phrase complex, which is nested inside a cohesive intonational phrase. The head noun (אִשָּׁה) is conjoined to the relative pronoun and its clause (אֲשֶׁר־לְקַחְתָּ) by an interval of a unison. These constituents, together with the preceding phonological phrase (וְהִנֵּה מָת), form the prosodically focused *zāqēp qāṭōn* MaP. Notice that unlike the recursive *vav* construction in the *ṭippəḥā*’ MaP of example (67f), the *vav* construction in the *ṭippəḥā*’ MaP of this example (וְהִנֵּה) forms a prosodically iterative structure with the constituents of the preceding complex. This may indicate a more semantically equally relationship between the two constituents in these complexes, rendering the semantic function of

the *vav* a coordinator (i.e. “and on account that she is a man’s wife”) and not subordinator (i.e. “because she is a man’s wife”).

(80c)²⁴⁰

		(בַּחֲלוֹם הַלַּיְלָה)	(אֵל-אַבִּימֶלֶךְ) (וַיָּבֹא אֱלֹהִים)
		(in a dream at night)	(And God came) (to Abimelech)
(בְּעֵלְתָּ בַּעַל:)	(וְהִיא)	(הַנֹּגֵד מֵת) [עַל-אִשָּׁה אֲשֶׁר-לָקַחְתָּ]	(וַיֹּאמֶר לוֹ)
(a wife of a husband)	(and she)	[(Behold you are dying) (on account of the woman whom you took)]	(and he said to him)

Genesis 20:3

The following is a translation of the verse in (80c) that highlights the prosodic phrasing of the restrictive relative clause and the prosodically focused constituents (the underlined portion is under prosodic focus, with the intonational peak of the verse falling on the prosodic word ‘dying’): “And God came to Abimelech in a dream at night, and he said to him: ‘Behold you are dying, on account of the woman whom you took, and (on account that) she is a man’s wife” (Genesis 20:3).

²⁴⁰ Due to the length of this verse, each intonational phrase begins in the first box of its row.

The relative clause in (80d) is prosodically marked as restrictive because its constituents all comprise a single *rəbīṭ* MaP. The head noun (בַּעֲנֹן) is conjoined to the relative pronoun and its clause (אֲשֶׁר־יָדַע) by an interval of a unison.

(80d)

	(וְהִגַּדְתִּי לּוֹ)
(כִּי־שֹׁפֵט אֲנִי) (אֶת־בַּיִתּוֹ)	(And I declare to him)
(that I am judging) (his house)	
	(עַד־עוֹלָם)
	(forever)
	(בַּעֲנֹן אֲשֶׁר־יָדַע)
	(on account of the iniquity that he knew about)
	[כִּי־מִקְלָלִים לָהֶם] [בְּנֵיוֹ]
	[(because it was meaningless to them) (his sons)]

1 Samuel 3:13

The following is a translation of the verse in (80d) that highlights the prosodic phrasing of the restrictive relative clause and the prosodically focused constituents (the underlined portion is

under prosodic focus, with the intonational peak of the verse falling on the prosodic word ‘to them’): “And I declare to him that I am judging his house, forever, on account of the iniquity that he knew about, because it was meaningless to them, his sons . . .” (1 Samuel 3:13).

The verse in (80e) exhibits a prosodically marked restrictive relative clause (אֲשֶׁר־נִהְיָה לְנֶחֱשׁ) that forms a recursive structure with its head noun (וְהַמִּטָּה). These constituents comprise the same *tippəḥā*’ MaP.

(80e)

		[הִנֵּה] [יֵצֵא הַמִּיָּמָה]	(בִּבְקָר)	(לֵךְ אֶל־פַּרְעֹה)
(עַל־שֵׁפֶת הַיַּאֲר)	(וּנְצַבְתָּ לִקְרֹאתוֹ)			
(on bank of the canal)	(and you will position yourself to meet him)	[(behold) (he is going out to the waters)]	(in the morning)	(Go to Pharaoh)
				(וְהַמִּטֵּה) (אֲשֶׁר־נִהְיָה לְנָחָשׁ)
			(תִּקַּח בְּיָדְךָ :)	
				(And the staff) (that was turned into a snake)
			(you will take in your hand)	

Go to Pharaoh in the morning, *behold* when he goes out to the waters, you will position yourself to meet him at the bank of the Nile. And the staff that was turned into a snake, you will take in your hand. (Exodus 7:15)

The verse in (80f)²⁴¹ exhibits a prosodically marked restrictive relative clause (אֲשֶׁר-יִשְׁתַּט) (אֶת-הָעֵלָה) that forms a recursive structure with its head noun (בְּמִקּוֹם). These constituents comprise a single *tippəḥā*’ MaP.

²⁴¹ Due to TH’s strict adherence to the binary maximum constraint, an additional *zāqēḇ qāṭōn* MaP is required (second box) in order to extend the scope of the prosodic focus to additional constituents. Notice how all three phonological phrases (MiPs)—(וְשָׁטַט אֹתוֹ) (עַל-רֵאשׁ הַשָּׁעִיר) (וְסִמְנָה יָדוֹ)—are unable to fit into one MaP without violating binary maximum.

(80f)

(לְפָנַי יְהוָה)	(בְּמָקוֹם) (אֲשֶׁר-יִשְׁחַט אֶת-הַעֹלָה)	[[וְשָׁחַט אֹתוֹ]]	[[וְסָמַךְ יָדוֹ]] [[עַל-רֹאשׁ הַשְּׂעִיר]]
(before the LORD)	(in a place) (that he slaughters the burnt offering)	[[and he will slaughter it]]	[[And he will lay his hand (on the head of the goat)]]
		(הוּא)	(חַטָּאת)
		(it is)	(a sin offering)

And he will lay *his hand* on the head of the goat, and he will slaughter it in a place that he slaughters the burnt offering, in the presence of the LORD; it is a sin offering. (Leviticus 4:24)

The verse in (80g) exhibits a prosodically marked restrictive relative clause whose head noun is conjoined to it by a *maqqef*, forming a single prosodic word (מִכֹּל-אֲשֶׁר-לְךָ). This prosodic word simultaneously constitutes one MiP and a single member 'etnahtā' MaP.

(80g)

	(וְאִם-אֶקַח)	(אִם-מִחוּט) (וְעַד שְׂרוֹךְ-נֶעֱלֵל)
	[(I will not take)]	[(if a thread) (and as far as a strap of a sandal)]
		(מִכֹּל-אֲשֶׁר-לְךָ)
		(from anything that belongs to you)
(הֲעִשְׂרֵתִי אֶת-אַבְרָם:)	(אֲנִי)	(וְלֹא תֹאמַר)
(I-made rich Abraham)	(I)	(so that you will not say)

... that *a thread* or a strap of a sandal I will not take, from anything that belongs to you, so that you will not say 'I have made Abraham rich.' (Genesis 14:23)

The verse in (80h) exhibits a prosodically marked restrictive relative clause (אֲשֶׁר יַעֲבֹדוּ) that forms a recursive structure with its head noun (וְגַם אֶת־הַגּוֹיִם). These constituents comprise a single *tippəḥā*’ MaP.

(80h)

			(וְגַם אֶת־הַגּוֹיִם) (אֲשֶׁר יַעֲבֹדוּ)
			(and also the nations) (that they will serve)
		(הֵן אֲנִי)	
		(judging I am)	
(בְּרִכְשׁ גְּדוֹלָה:)	(וְאַחֲרֵי־כֵן יֵצְאוּ)		
(with possessions great)	(and after thus they will go out)		

And also the nations that they will serve I am judging, and afterwards they will go out with great possessions. (Genesis 15:14)

The verse in (80i) exhibits a prosodically marked restrictive relative clause (אֲשֶׁר־יִלְבֹּדָה הַגֵּר) that forms a recursive structure with its head noun (בְּנֵי). These constituents comprise a single *tippəḥā*’ MaP.

(80i)

			(וַתֵּלֶד הַגֵּר לְאַבְרָם)
			(and Hagar bore to Abraham)
		(בֵּן)	
		(a son)	
(יִשְׁמָעֵאל:)	(וַיִּקְרָא אַבְרָם שֵׁם בְּנוֹ) (אֲשֶׁר־יָלְדָה הַגֵּר)		
(Ishmael)	(and Abraham called the name of his son) (that Hagar bore)		

And Hagar bore to Abraham a son, and Abraham called the name of his son that Hagar bore, Ishmael. (Genesis 16:15)

The verse in (80j) exhibits a prosodically marked restrictive relative clause (אֲשֶׁר־בָּאוּ אֵלָיךְ) that forms a recursive structure with its head noun (הָאֲנָשִׁים). These constituents comprise a single *tippəḥā'* MaP.

(80j)

	(אֵיךָ הָאֲנָשִׁים) (אֲשֶׁר-בָּאוּ אֵלֶיךָ)	[וַיִּקְרְאוּ אֶל-לוֹט] [וַיֹּאמְרוּ לוֹ]
	(Where are the men) (who came to you)	[(and they called to Lot) (and they said to him)]
		(תַּלְיָלָה)
		(night)
(אֲתָם:)	(וַיְבַרְעָה)	[(הוֹצִיאֵם אֵלֵינוּ):]
(them)	(so that we may know)	(bring them out to us)

And they called to Lot and they said to him: “Where are the men who came to you, at night? Bring them out to us so that we may know them.” (Genesis 19:5)

The verse in (80k) exhibits a prosodically marked restrictive relative clause (**אֲשֶׁר-יָלְדָה תַּגְרָה**)

that forms a recursive structure with its head noun (**בְּנֵי תַגְרָה לְלוֹ**). These constituents comprise

a single *tippəḥā*’ MaP.

(80k)

(יִצְחָק:)	(אֶת־שֵׁם־בְּנוֹ תִּנּוֹלַד־לּוֹ) (אֲשֶׁר־יִלְדָה־לוֹ שָׂרָה)	(וַיִּקְרָא אַבְרָהָם)
(Isaac)	(the name of his son that was born to him) (who Sara bore to him)	(And Abraham called)

And Abraham called the name of his son the one born to him that Sara bore to him, Isaac. (Genesis 21:3)

The verse in (80l) exhibits a prosodically marked restrictive relative clause (אֲשֶׁר אָמַר־לּוֹ) (אֶל־הַמָּקוֹם) that forms a recursive structure with its head noun (הָאֱלֹהִים) that forms a recursive structure with its head noun (אֶל־הַמָּקוֹם). These constituents comprise a single *seggōl* MaP. Note that the recursive structure forms as a result of the interval of a fourth between the repeated *munnaḥ* (*seggōl*) conjunctives—אֲשֶׁר אָמַר־לּוֹ (i.e. between the relative pronoun and its clause).

(801)

(ויַעֲרֹד) (לְעֵצִים:)	[וַיִּבֶן שָׁם אֲבָרָהָם] [אֶת־הַמִּזְבֵּחַ]	אֶל־הַמָּקוֹם (אֲשֶׁר) אָמַר־לוֹ הָאֱלֹהִים	(וַיָּבֵאוּ)
			(אֶת־הָעֵצִים)
	(מִמֶּעַל)	[וַיִּשָּׂם אֹתוֹ] [עַל־הַמִּזְבֵּחַ]	[וַיַּעֲקֹד] [אֶת־יִצְחָק בְּנוֹ]

(and he arranged)	[(and Abraham built) (the altar)]	(to the place) (that God told to him)	(And then they came)
			(the wood)
(to the wood)	(from above)	[(and then he placed him) (on the altar)]	[(and then he bound) (Isaac his son)]

And then they came to the place that God told him, and *Abraham* built there the altar and then he arranged, the wood, and then he bound Isaac his son and then he placed *him* upon the altar on top of the wood. (Genesis 22:9)

The verse in (80m) exhibits a prosodically marked restrictive relative clause whose constituents all comprise a single *tippəḥā'* MaP. The head noun (וַתִּפְעָרָה) is conjoined to the relative pronoun and its clause (אֲשֶׁר־בּוֹ) by an interval of a unison.

(80m)

		(השדה) (נתתי לך)	(לא אֲדַבֵּר שְׁמִיעָנִי)
(לך נתתי)	(והמערה אשר-בו)		
(to you I give it)	(and the cave that is in it)	[(the field) (I give to you)]	(No, my lord, hear me)
			(לְעֵינֵי בְנֵי-עַמִּי) (נתתיה לך)
		(קבר מתד :)	
		(bury your dead)	(to the eyes of the sons of my people) (I give it to you)

No, my lord, hear me: *the field* I give to you, and the cave that is in it, to you I give it. In the presence of the sons of my people I give it to you—bury your dead. (Genesis 23:11)

The verse in (80n) exhibits a prosodically marked restrictive relative clause whose head noun is conjoined to it by a *maqgef*, forming a single prosodic word (בְּכָל-אֲשֶׁר-לוֹ). This prosodic word simultaneously constitutes one MiP and a single member 'etnahtā' MaP.

(80n)

		(וַיֹּאמֶר אַבְרָהָם)
(הַמְשִׁיל)	[אַל-עֲבָדוֹ] [זְקֵן בֵּיתוֹ]	
(the one in charge of)	[(to his servant) (the elder of his house)]	(And then Abraham said)
		(בְּכָל-אֲשֶׁר-לוֹ)
		(everything that belonged to him)
	(פָּתַח יָרְכִי :)	(שִׁים-גַּא יָרֵךְ)
	(under my thigh)	(place-please your hand)

And then Abraham said *to his servant*, *the elder of his house*, the one in charge of everything that he owned: Place-please your hand under my thigh. (Genesis 24:2)

The relative clause in (80o) is prosodically marked as restrictive because its constituents all constitute a single *tippəḥā'* MaP. The head noun (וְהָאֲנָשִׁים) is conjoined to the relative pronoun and its clause (אֲשֶׁר-עִמּוֹ) by an interval of a unison.

(80o)

	(הוא) (והאנשים אשר-עמו)	(ויאכלו וישתו)
	(he) (and the men who were with him)	(and they ate and they drank)
		(וילינו)
		(and they stayed overnight)
(שלחני לאדני :)	(ויאמר)	[[ויקומו בבקר]]
(send me off to my lord)	(and he said)	[[and they arose in the morning]]

And they ate and drank, he and the men with him, and they stayed overnight. And they arose in the morning, and then he said: “Send me off to my lord.” (Genesis 24:54)

The relative clause in (80p) exhibits a prosodically marked restrictive relative clause (אֲשֶׁר־קָנָה אַבְרָהָם) that forms a recursive structure with its head noun (הַשָּׂדֶה). These constituents comprise the same *tippəhā*³ MaP..

(80p)²⁴²

		(מֵאֶת בְּנֵי־חִתִּים)	(הַשָּׂדֶה) (אֲשֶׁר־קָנָה אַבְרָהָם)
		(from the sons of Hittites)	(the field) (that Abraham bought)
(וְשָׂרָה אִשְׁתּוֹ):	(שָׁמָּה) (קָבַר אַבְרָהָם)		
(and Sarah his wife)	(there) (Abraham was buried)		

The field that Abraham bought from the Hittites, there Abraham was buried, and Sara his wife. (Genesis 25:10)

The verse in (80q) exhibits two relative clauses. The first is a prosodically marked restrictive because its head noun (תְּדַרְדֹּר) and clause (אֲשֶׁר צִוִּיתָם) constitute a single *zāqēp qātōn* MaP.

The second is a prosodically undifferentiated restrictive clause because its head noun (אֱלֹהֵי) and clause (אֲשֶׁר הִעֲלִיךָ) do not comprise a cohesive MaP. Additional examples of prosodically undifferentiated relative clauses are illustrated in (83).

²⁴² Note the parallel structure of the MaPs (intonational patterns and content) in this verse. The first and third *tippəhā*³ MaPs correspond, as do the second ('*etnahtā*³') and fourth (*sōf-pāsūq*).

(80q)

	(עָגַל)	(עָשׂוּ לָהֶם)	[מִן־סִדְרָה] [אֲשֶׁר צִוִּיתָם]	(סָרוּ מִהָר)
				(מִסְכָּה)
(מֵאֶרֶץ מִצְרַיִם:)	(אֲשֶׁר הֶעֱלֶה)	[אֱלֹהֵי אֱלֹהֵיךָ] [יִשְׂרָאֵל]	[נִיאָמְרוּ]	[וַיִּשְׁתַּחֲוּ־לוֹ] [וַיִּזְבְּחוּ־לוֹ]

	(a calf)	[(they made for themselves)]	[(from the way) (that I commanded them)]	(They quickly turned away)
				(a molten one)
(from the land of Egypt)	(which brought you up)	[(these are your gods)] [(O Israel)]	[(and they said)]	[(and they worshipped it)] [(and they sacrificed to it)]

They quickly turned away from *the way* that I commanded them; they made for themselves a molten calf. And they worshipped *it* and sacrificed to it, and they said: “These are *your gods*, O Israel, which brought you up from the land of Egypt. (Exodus 32:8)

The examples in (81) illustrate prosodically marked nonrestrictive relative clauses identifiable by the intervals of intonational discontinuity that prosodically separate head nouns from their relative clauses. The verse in (81a) exhibits a prosodically marked nonrestrictive relative clause because the relative clause (אֲשֶׁר אָמַר יְהוָה) is separated from its compound proper head noun (אֶתֵּן וּמִשָּׂה) by intonational phrase boundaries. In fact, all three of these constituents form distinct intonational phrases.

(81a)²⁴³

			(הוא אהרן)
			(It is Aaron)
		(וּמֹשֶׁה)	
		(and Moses)	
(עַל־צְבֹאֲתָם:)	(אֶת־בְּנֵי יִשְׂרָאֵל) (מֵאֶרֶץ מִצְרַיִם)	(הוֹצִיאֵם)	[(אֲשֶׁר אָמַר יְהוָה)] [לָהֶם]
(according to heir hosts)	(the children of Israel) (from the land of Egypt)	(lead out)	[(to whom the LORD said) (to them)]

It is Aaron, and Moses, to whom the LORD said to them: “Lead out the children of Israel, from the land of Egypt, according to their hosts.” (Exodus 6:26)

The verse in (81b) exhibits a prosodically marked nonrestrictive relative clause because the relative clause (אֲשֶׁר הוֹצִיאֵם) is separated from its proper head noun (אֶת־יִשְׂרָאֵל) by an intonational phrase boundary, clearly showing these relative clause constituents form separate intonational phrases.

²⁴³ (81a) provides a good example of why *gērēs* (הוֹצִיאֵם) is parsed as forming its own phonological phrase complex. It cannot be included with either the complex before or after it as this would violate the binary maximum constraint (§5.3.2). Additional evidence that *gērēs* does not belong to the *zāqēp qāṭōn* and *tippəḥā*’ MaPs is described in Appendix A.

(81b)

(פֶּן־תִּשְׁכַּח)	[(הִשָּׁמֵר לָךְ)]
(lest you forget)	[(Guard yourselves)]
	(אֶת־יְהוָה)
	(the LORD)
(מִבֵּית עֲבָדִים:)	(אֲשֶׁר הוֹצִיאָךְ) (מֵאֶרֶץ מִצְרַיִם)
(from the house of slavery)	(who led you out) (from the land of Egypt)

Guard yourselves, lest you forget, the LORD, who led you out from the land of Egypt, from the house of slavery. (Deuteronomy 6:12).

The verse in (81c) exhibits a prosodically marked nonrestrictive relative clause because the relative clause (אֲשֶׁר הוֹצִיאָךְ) is separated from its compound definite head noun (אֶת־יְהוָה) by intonational phrase boundaries, clearly showing these relative clause constituents form separate intonational phrases.²⁴⁴

²⁴⁴ In this example the second NP comprises its own intonational phrase, this places additional prosodic emphasis on הַמִּגְדָּל ('the tower'), as it is a key prop in the story. Example (81a) where additional emphasis is similarly placed on מֹשֶׁה ('Moses') is similar.

(81c)

(לְרֹאֵת אֶת־הָעִיר)	[(יֵרֵד יְהוָה)]
(to see the city)	[(And the LORD came down)]
	(וְאֶת־הַמִּגְדָּל)
	(and the tower)
(בְּנֵי הָאָדָם :)	(אֲשֶׁר בָּנוּ)
(the sons of mankind)	(which they had built)

And the LORD came down to see the city and the tower, which the sons of mankind built. (Genesis 11:5)

The verse in (81d) exhibits a prosodically marked nonrestrictive relative clause because the relative clause (אֲשֶׁר הוּצְאָתִיד) is separated from its proper head noun (יְהוָה) by an intonational phrase boundary, clearly showing these relative clause constituents form separate intonational phrases.

(81d)

		(וַיֹּאמֶר)
		(And he said)
		(אֵלָיו)
		(to him)
		(אֲנִי יְהוָה)
		(I am the LORD)
(לְרִשְׁתָּהּ:)	(לְתֵת לָךְ) (אֶת־הָאָרֶץ הַזֹּאת)	[אֲשֶׁר הוֹצֵאתִיךָ] [(מֵאֶרֶץ כַּשְׂדִּים)]
(to possess it)	(in order to give you) (this land)	[[who caused you to go out] (from the land of Ur of the Chaldeans)]

And he said, to him: “I am the LORD, *who brought you out* of the land of Ur of the Chaldeans, in order to give you this land to possess it.” (Genesis 15:7)

The verse in (81e) exhibits a prosodically marked nonrestrictive relative clause because the relative clause (אֲשֶׁר הוֹצֵאתִיךָ לְךָ שָׂרָה) is separated from its proper head noun (וַיֹּאמֶר) by an intonational phrase boundary, clearly showing these relative clause constituents form separate intonational phrases.

(81e)

	(אָקִים אֶת־יִצְחָק)	(וְאֶת־בְּרִיתִי)
	(I will establish with Isaac)	(and my covenant)
(הָאַחֶרֶת:)	(בַּשָּׁנָה)	(אֲשֶׁר תֵּלֵד לָךְ שָׂרָה) [לְמוֹעֵד הַזֶּה]
(the other)	(in the year)	[[who Sara will bear to you] (at this appointed time)]

And my covenant I will establish with Isaac, who Sara will bear to you, at this appointed time in the next year. (Genesis 17:21)

The verse in (81f) exhibits a prosodically marked nonrestrictive relative clause because the relative clause (אֲשֶׁר יֵלְדָה) is separated from its proper head noun (רַבֵּקָה) by an intonational phrase boundary, clearly showing these relative clause constituents form separate intonational phrases.

(81f)

		(וַיְהִי־וַאֲ)
(הִנֵּה רִבְקָה יֹצֵאת)	(טָרַם) (כִּלְה לְדַבֵּר)	
(behold Rebekah was going out)	(before) (he finished speaking)	(And then it happened that he)
		(אֲשֶׁר יָלְדָה)] [לְבֶתְוַאֵל בֶּן־מִלְכָּה)]
(אָחִי אַבְרָהָם)	(אִשְׁתַּ נְחֹר)	
(brother of Abraham)	(wife of Nahor)	[(who was born) (to Bethuel the son of Milcah)]
	(עַל־שִׁכְמָהּ :)	(וּבִדְהָ)
	(on her shoulder)	(and her jar)

And then before he was finished speaking, behold Rebekah was going out, who was born to Bethel the son of Milcah, the wife of Nahor, brother of Abraham. (Genesis 24:15)

The verse in (81g) exhibits a prosodically marked nonrestrictive relative clause because the relative clause (אֲשֶׁר־תִּי) is separated from its definite head noun (שְׁנֵי־חֵי אַבְרָהָם) by an intonational phrase boundary, clearly showing these relative clause constituents form separate intonational phrases.

(81g)

(יָמֵי) (שְׁנֵי־תַנִּי אַבְרָהָם)	(וְאֵלֶּה)
(are the days of) (the years of the life of Abraham)	(And these)
	(אֲשֶׁר־חָי)
	(which he lived)
(וְחָמֵשׁ שָׁנִים:)	(מֵאֵת שָׁנָה) (וְשִׁבְעִים שָׁנָה)
(and five years)	(one hundred year) (and seventy year)

These are the days of the years of the life of Abraham, which he lived—175 years. (Genesis 25:7)

Finally, the verse in (81h) exhibits two prosodically marked nonrestrictive relative clauses. The first relative clause (אֲשֶׁר יֵלְכוּ) is separated from its head noun (אֱלֹהִים—not proper or definite)

by an intonational phrase boundary. The second relative clause (אֲשֶׁר הֶעֱלָנוּ) is also separated from its definite head noun (הָאִישׁ) by an intonational phrase boundary.²⁴⁵

²⁴⁵ There are five intonational phrases in this verse!

(81h)

		[וַיִּרְא הָעָם]
(לְרֵדַת מִן־הָהָר)	(כִּי־בָשַׁשׁ מֹשֶׁה)	
	(עַל־אֶהְרֹן)	(וַיִּקְהַל הָעָם)
		(וַיֹּאמְרוּ אֵלָיו)
		(קוּם) (עֲשֵׂה־לָנוּ אֱלֹהִים)
	(כִּי־זָה) (מֹשֶׁה הָאִישׁ)	[אֲשֶׁר יִלְכּוּ] [לְפָנָיו]
	(לֹא יִדְעֶנּוּ)	[אֲשֶׁר הֵעֲלֵנוּ] [מֵאֶרֶץ מִצְרַיִם]
(מִהֲתִקֶּה לוֹ:)		

(to come down from the mountain)	(that Moses delayed)	(And then the people saw)
	(against Aaron)	(and the people gathered themselves)
		(and they said to him)
		(arise) (make for us gods)
	(for this) (Moses the man)	[(who will go) (before us)]
(what has happened to him)	(we do not know)	(who caused us to go up) (from the land of Egypt)

And then the people saw that Moses delayed coming down from the mountain. And the people gathered themselves against Aaron, and they said to him: “Arise, make for us gods, which will go before us, for this Moses, the man, who caused us to go up from the land of Egypt, we do not know what has happened to him.” (Exodus 32:1)

The examples in (82) illustrate prosodically undifferentiated relative clauses: clauses which may be semantically restrictive or nonrestrictive, but are not distinguished as such prosodically. The prosodic features for undifferentiated relative clauses are distinguished by the fact that their constituents comprise a cohesive intonational phrase, but do not all belong to the same phonological phrase complex. For example, in (82a), a prosodically undifferentiated relative

clause (אֲשֶׁר מִצְרַיִם לֹחֲצִים אֹתָם)—semantically restrictive—constitutes a separate MaP from its definite head noun (אֶת־הַלְחִץ).²⁴⁶

(82a)

(בָּאָה אֵלַי)	(הִנֵּה) (צַעֲקַת בְּנֵי־יִשְׂרָאֵל)	(וְעַתָּה)
(has come to me)	(behold) (the cry of the children of Israel)	(And now)
(לֹחֲצִים אֹתָם:)	(אֲשֶׁר מִצְרַיִם)	(וְגַם־רָאִיתִי) [אֶת־הַלְחִץ]
(is oppressing them)	(with which Egypt)	[(and I have also seen) (the oppression)]

And now behold, the cry of the children of Israel has come to me, and also I have seen the oppression, with which Egypt is oppressing them. (Exodus 3:9)

The verses in (82b) exhibit two relative clauses. The first relative clause (אֲשֶׁר־אֹתָהּ שָׁם)—which provides the context for the second relative clause—is prosodically undifferentiated because it forms a separate MaP from its definite head noun (הַמְּקוֹם).²⁴⁷ The second relative

²⁴⁶ The head noun belongs to the *zāqēp qāṭōn* MaP; the relative clause is divided between the *ṭippəḥā* and the *sōf-pāsūq* MaPs.

²⁴⁷ The first head noun belongs to the *ṭippəḥā* MaP; its relative clause belongs to the *’etnaḥtā* MaP.

clause (אֲשֶׁר־אֶתְּהָ שָׁם) is marked prosodically restrictive because it comprises the same *tippəḥā* MaP as its head noun (כָּל־הָאָרֶץ). Both relative clauses in this example are semantically restrictive.

(82b)

			[אֶחָדִי] [הַפָּרֶדֶד־לֹט מֵעִמּוֹ] [וְרֵאָה]	(אָמַר אֶל־אֲבָרָם)	(וַיִּהְיֶה)
(אֲשֶׁר־אַתָּה שָׂם)	(מִן־תְּמָקוֹם)	[שָׂא] נָא עֵינֶיךָ [וְרֵאָה]			
				(וַקְרָמָה וַיִּמָּה:)	(צָפְנָה וַנִּגְבָּה)
				(לֵךְ אֶתְנַגְנֶה)	(כִּי אֶת־כָּל־הָאָרֶץ) (אֲשֶׁר־אַתָּה רֵאָה)
				(עַד־עוֹלָם:)	(וְלִזְרַעָה)

(in which you are there)	(from the place)	[(lift up- please your eyes) (and look)]	[(after) (separating of Lot from his people)]	(said to Abram)	(And the LORD)
				(and east and west)	(north and south)
				(to you I give it)	(For all the land) (which you are seeing)
				(until forever)	(and to your offspring)

And the LORD said to Abram *after* Lot’s separation from his people: “Lift up-please *your eyes* and look from the place, in which you are—north and south, and east and west. For all of the land that you are seeing, to you I will give it, and to your offspring, forever. (Genesis 13:14-15)

The verse in (82c) exhibits a prosodically undifferentiated relative clause (אֲשֶׁר אִתּוֹ)—
semantically restrictive—that constitutes a separate MaP from its definite head noun
(הַמְּלָכִים).²⁴⁸

²⁴⁸ The first head noun belongs to the *ṭippəḥā* MaP; its relative clause belongs to the *ʿetnaḥtā* MaP.

(82c)

			(אַחֲרֵי שׁוּבוֹ)	(וַיֵּצֵא מֶלֶךְ־סֹדֶם) (לִקְרֹאתוֹ)
(אֲשֶׁר אִתּוֹ)	(וְאֶת־הַמְּלָכִים)	(מִהַכּוֹת)] [אַת־כְּדָר־לְעֹמֵר)]		
(who were with him)	(and the kings)	[(from battling Chedorlaomer)]	(after his return)	(And the king of Sodom went out) (to meet him)
		(עֵמֶק הַמֶּלֶךְ:)	(הוּא)	[(אֶל־עֵמֶק שָׁוֵה)]
		(Valley of the Kings)	(it is)	[(to the Valley of Shaveh)]

And the king of Sodom went out to meet him after his return from battling Chedorlaomer and the kings who were with him; to the Valley of Shaveh—that is, the Valley of the kings. (Genesis 14:17)

The verse in (82d) exhibits a prosodically undifferentiated relative clause (אֲשֶׁר בְּקִרְבָּהּ:)—likely semantically restrictive—that constitutes a separate MaP from its definite head noun (חֲמִשִּׁים צְדִיקִים).²⁴⁹

(82d)

	(בְּתוֹךְ הָעִיר)	(אוֹלֵי יֵשׁ) (חֲמִשִּׁים צְדִיקִים)
	(are in the midst of the city)	(What if) (fifty righteous ones)
(אֲשֶׁר בְּקִרְבָּהּ:)	(לְמַעַן) (חֲמִשִּׁים צְדִיקִים)	[(תֵּאָרֵךְ תִּסְפֶּה) [וְלֹא-תִשָּׂא לְמָקוֹם]]
(who are in its midst)	(on account of) (the fifty righteous ones)	[(will you really sweep away) (and will you not spare the place)]

What if there are fifty righteous ones in the midst of the city? Will you really sweep away and not spare the place on account of the fifty righteous ones who are in its midst? (Genesis 18:24)

The verse in (82e) exhibits a prosodically undifferentiated relative clause (אֲשֶׁר דִּבְרָתָהּ)—semantically restrictive—that constitutes a separate MaP from its definite head noun (הָעִיר).²⁵⁰

²⁴⁹ The head noun belongs to the *tippəḥā*’ MaP; its relative clause belongs to the *sōf-pāsûq* MaP.

²⁵⁰ The head noun belongs to the *tippəḥā*’ MaP; its relative clause belongs to the *sōf-pāsûq* MaP.

(82e)

(לְדַבֵּר תְּזַה)	(גַּם)	[(הִנֵּה)] [(נְשַׂאתִי פְּנֵיֶךָ)]	[(נִיאָמַר אֵלָיו)]
(for this thing)	(also)	[(behold) (I will grant you)]	[(And he said to him)]
		(אֲשֶׁר דִּבַּרְתָּ):	(בְּלִתִּי) (הַפְּכִי אֶת־הָעִיר)
		(of which you have spoken)	(not) (I will not destroy the city)

And he said to him: “*Behold, I will grant you, also this thing; I will not destroy the city of which you have spoken.*” (Genesis 19:21)

The verse in (82f) exhibits a prosodically undifferentiated relative clause (אֲשֶׁר־אָמַר־לּוֹ)—
semantically restrictive—that constitutes a separate MaP from its definite head noun
(הַמְּקוֹם).^{251,252}

²⁵¹ The head noun belongs to the *tippəḥā*’ MaP; its relative clause belongs to the *sōf-pāsûq* MaP.

²⁵² Within the second intonational phrase, note that binary maximum requires a second *zāqēp qāṭōn* MaP since two *zāqēp qāṭōn* MiPs and a *paštā*’ MiP all in one MaP will violate binary maximum (see §5.3.2 for a discussion of this constraint in relation to TH).

(82f)

						(וַיִּשְׁכֶּם אַבְרָהָם)
(יִצְחָק בְּנוֹ)	(וְאֵת)	(אֶת־שְׁנֵי נְעָרָיו) [אִתּוֹ]	(וַיִּקַּח)	(וַיִּתְחַבֵּשׁ) [אֶת־חֲמֹרֹו]	(בַּבֹּקֶר)	
				(אֶל־הַמָּקוֹם)	[וַיֵּקָם וַיֵּלֶךְ]	(וַיִּבְקַע) [עֵצֵי עֹלָה]
			(אֲשֶׁר־אָמַר־לּוֹ הָאֱלֹהִים):			

(Isaac his son)	(and)	[(two of his young servants) (with him)]	(and he took)	[(and he saddled up) (his donkey)]	(in the morning)	(And Abraham arose early)
			(which he said to him God)	[(to the place)]	[(and he set off)]	[(and he split) (wood for sacrifice)]

And Abraham arose early in the morning, *and he saddled up* his donkey and he took *two of his young servants with him*, and Isaac his son; *and he split* the wood for the sacrifice, and he set off to the place which God told him. (Genesis 22:3)

The verse in (82g) exhibits a prosodically undifferentiated relative clause (אֲשֶׁר אֶרְאֶה:)—
 semantically restrictive—that constitutes a separate MaP from its definite head noun (הָאָרֶץ).²⁵³

(82g)

	(לָךְ-לְךָ) (מֵאֶרֶץְךָ וּמִמּוֹלַדְתְּךָ)	[וַיֹּאמֶר יְהוָה] [אֶל-אַבְרָם]
(מִבֵּית אָבִיךָ)	(you yourself go) (from your land and from your birthplace)	[(And the LORD said) (to Abram)]
	(אֲשֶׁר אֶרְאֶה:)	(אֶל-הָאָרֶץ)
	(which I will show you)	(to the land)

And the LORD said to Abram: “You, yourself go, from your land and from your birthplace, and from your father’s house, to the land which I will show you.” (Genesis 12:1)

The verse in (82h) exhibits a prosodically undifferentiated relative clause (אֲשֶׁר-יֵצֵאתָ מִשָּׁם:)—
 semantically restrictive—that constitutes a separate MaP from its definite head noun (הָאָרֶץ).²⁵⁴

²⁵³ The head noun belongs to the *tippəḥā*’ MaP; its relative clause belongs to the *sōf-pāsûq* MaP.

²⁵⁴ The head noun belongs to the *tippəḥā*’ MaP; its relative clause belongs to the *sōf-pāsûq* MaP.

(82h)

		[אילי] [לא־תאבֶהָהָאִשָּׁה)]	[וַיֹּאמֶר אֵלָיו] [הַעֲבֹד)]
(אֶל־הָאָרֶץ הַזֹּאת)	(לָלֶכֶת אַחֲרַי)		
(to this land)	(to follow me back)	[(What if) (the woman is not willing)]	[(And he said to him) (the servant)]
	(אֲשֶׁר־יָצָאתָ מִשָּׁם:)	(אֶל־הָאָרֶץ)	[הֲהָשִׁב אָשִׁיב] [אֶת־בְּנִיךָ)]
	(from which you went out)	(to the land)	[(Am I indeed to bring back) (your son)]

And the servant said to him: “What if the woman is not willing to follow back me to this land? Must I bring back your son to the land from which you went out?” (Genesis 24:5)

The verse in (82i) exhibits a prosodically undifferentiated relative clause (אֲשֶׁר הֵעֲלִיךָ)—
semantically restrictive—that constitutes a separate MaP from its definite head noun (אֱלֹהֶיךָ).²⁵⁵

²⁵⁵ The head noun belongs to the *zāqēp qāṭōn* MaP; its relative clause belongs to the *ṭippəḥā'* MaP. Although the vocative, O Israel, separates the head noun from its relative clause, placing these two constituents in separate phonological phrase complexes, they both comprise the same intonational phrase.

(82i)

			(וַיִּקַּח מֵיָדָם)
			(And then he took from their hand)
	(עֲגֹל מִסַּכָּה)	(וַיַּעֲשֶׂהוּ)	(וַיִּצַר אֹתוֹ) [בְּחֶרֶט]
	(a molten calf)	(and he made it)	[(And he formed it) (with an engraving tool)]
(מֵאֶרֶץ מִצְרַיִם:)	(אֲשֶׁר הֶעֱלִיף)	(אֱלֹהֵי אֱלֹהֵי) [יִשְׂרָאֵל]	(וַיֹּאמְרוּ)
(from the land of Egypt)	(which caused you to go up)	[(these are your gods) (O Israel)]	[(And they said)]

And then he took from their hand, and he formed *it* with an engraving tool and he made it—a molten calf. And then they said: “These are *your gods*, O Israel, which caused you to go up from the land of Egypt.” (Exodus 32:4)

The verse in (82j) exhibits a prosodically undifferentiated relative clause (אֲשֶׁר הֵעֲלִיתָ מֵאֶרֶץ מִצְרַיִם) —semantically nonrestrictive— that constitutes a separate MaP from its definite head noun (עַמֶּיךָ).²⁵⁶

(82j)

		(וַיְדַבֵּר יְהוָה)
		(And then the LORD spoke)
		(אֶל־מֹשֶׁה)
		(to Moses)
		(לְךָ־יָרֵד)
		(go down)
(מֵאֶרֶץ מִצְרַיִם)	(אֲשֶׁר הֵעֲלִיתָ)	(כִּי) [שִׁתָּת עַמֶּיךָ]
(from the land of Egypt)	(who you brought up)	[(for corrupted your people)]

And then the LORD spoke to Moses: “Go down, for your people have corrupted themselves, those who you brought up from the land of Egypt.” (Exodus 32:7)

²⁵⁶ The head noun belongs to the *zāqēp qāṭōn* MaP; its relative clause belongs to the *tippəḥā’* and *sōf-pāsūq* MaPs.

The verse in (82k) exhibits a prosodically undifferentiated relative clause (אֲשֶׁר־מָנַע מִמֶּנִּי) (פְּרִי־בֶטֶן) —semantically nonrestrictive—that constitutes a separate MaP from its head noun (אֱלֹהִים).²⁵⁷

(82k)

		(וַיֹּאמֶר)
		(And he said)
(פְּרִי־בֶטֶן)	(אֲשֶׁר־מָנַע מִמֶּנִּי)	[(הִתְחַת אֱלֹהִים) [אֲנִכִּי)]
(fruit of the womb)	(who has withheld from you)	[(In the place of God) (am I)]

And he said: “Am I in the place of God, who has withheld from you the fruit of the womb.” (Genesis 30:2)

The verse in (82l) exhibits a prosodically undifferentiated relative clause (אֲשֶׁר־אֲנִי נֹתֵן לְבָנָי) (יִשְׂרָאֵל) —semantically nonrestrictive—that constitutes a separate MaP from its head noun (אֶת־אֶרֶץ כְּנָעַן).²⁵⁸

²⁵⁷ The head noun belongs to the *zāqēp qāṭōn* MaP; its relative clause belongs to the *ṭippəḥā*’ and *sōf-pāsūq* MaPs.

²⁵⁸ The head noun belongs to the *zāqēp qāṭōn* MaP; its relative clause belongs to the *ṭippəḥā*’ and *’etnaḥtā*’ MaPs.

(821)

(שְׁלַח-לְךָ אַנְשִׁים)	(וַיִּתְּרוּ) [אַתְּ-אֶרֶץ כְּנָעַן]	(אֲשֶׁר-אֲנִי נֹתֵן) (לְבָנֵי יִשְׂרָאֵל)
[(send men)]	[(and spy out) (the land of Canaan)]	(which I am giving) (to the sons of Israel)

Send men *to spy out* the land of Canaan, which I am giving to the sons of Israel. (Numbers 13:2)

5.5 A Prosodic Analysis of Holmstedt's Relative Clauses

A prosodic classification of all the overtly headed *'ăšer* relative clauses in the twenty-one books as catalogued in Appendix B confirms that the prosodic parameters for distinguishing relative clause types described in the numerous examples in (80), (81), and (82) are consistent. Furthermore, the prosodic parameters for distinguishing restrictive and nonrestrictive relatives in TH also largely accords with Holmstedt's (2016) assessment.²⁵⁹

For example, Holmstedt (2016:207) identifies the relative clauses in Genesis 1:7 as being without question semantically restrictive:

וַיַּעַשׂ אֱלֹהִים אֶת-הַרְקִיעַ וַיְבַרְכֵהוּ בֵּין הַמַּיִם אֲשֶׁר מִתַּחַת לְרָקִיעַ וּבֵין הַמַּיִם אֲשֶׁר מֵעַל לְרָקִיעַ
וַיְהִי-כֵן:

²⁵⁹ According to Holmstedt (2016:207), the “vast majority of relative clauses in the Hebrew Bible are restrictive.” My data of overtly headed *'ăšer* relatives in Appendix B confirm this assertion as there are many more restrictives than nonrestrictives among the relative clauses that are prosodically differentiated.

‘and God made the firmament; and he divided between the waters that were below the firmament and the waters that were above the firmament’ (Gen 1:7)

The two relative clauses [above] delimit the referents, distinguishing the waters above the firmament from those below. There is no question that these are restrictive relatives because each one supplies crucial identifying information about its respective head that enables the reader/listener to distinguish between the two groups of waters being mentioned.

A prosodic analysis of Genesis 1:7 presents complications, but nonetheless reveals a restrictive and undifferentiated prosodic structure for the two relative clauses. The main complication is in determining how to interpret a repeated *ʔə ʿāmîm* combination. For example, in (83a), notice the two consecutive *paštā*’ prosodic units in red.

(83a) וַיַּעַשׂ אֱלֹהִים אֶת־הַרְקִיעַ וַיַּבְדֵּל בֵּין הַמַּיִם אֲשֶׁר מֵעַל לַרְקִיעַ מֵהַמַּיִם אֲשֶׁר מֵתַחַת לַרְקִיעַ וַיְבַרֵךְ אֶת־הַמַּיִם אֲשֶׁר מֵעַל לַרְקִיעַ

I propose analysing this *paštā*’/*paštā*’ combination not as a combination that produces intonational discontinuity (i.e. a verse medial intonational phrase boundary; see §4.4.5 example (64d)), but one that simply extends the governance of *paštā*’ to include an additional word. In effect, this extends the scope of the intonational peak of the DF to include not only the head noun (הַמַּיִם), but also the relative pronoun (אֲשֶׁר), creating a single MiP (83b).²⁶⁰

²⁶⁰ For a discussion of the DF see §3.3.5 and §5.3.5.

(83b) $\varphi_i(\text{הַמַּיִם אֲשֶׁר})$
 (**the waters that**) φ_i

This MiP forms a larger cohesive MaP with the verbless VP (מִתְנַחֵת לְרִקִּיעַ), placing all of the relative clause constituents in a single MaP.

(83c) $\varphi_a(\varphi_i(\text{מִתְנַחֵת לְרִקִּיעַ}) \varphi_i(\text{הַמַּיִם אֲשֶׁר}))$
 ((**the waters that**) φ_i (**were under the firmament**) φ_i) φ_a

The second relative clause is prosodically undifferentiated because all of its relative constituents comprise separate MaPs (φ_a) within a cohesive intonational phrase (ι).

(83d) $\iota(\varphi_a(\varphi_i(\text{לְרִקִּיעַ מֵעַל})) \varphi_a(\varphi_i(\text{אֲשֶׁר})) \varphi_a(\varphi_i(\text{הַמַּיִם})))$
 (((**the waters**) φ_i) φ_a ((**that**) φ_i) φ_a ((**were above the firmament**) φ_i) φ_a) ι

Holmstedt classifies both relatives in Genesis 1:7 as restrictive; a prosodic analysis of the same data distinguishes the first relative as prosodically restrictive and the second relative as prosodically undifferentiated. Therefore, the prosodic analysis for this verse corroborates Holmstedt's analysis.

The prosodic analysis of a sampling of other relative clauses Holmstedt (2016) features are not as ambiguous. For example, the verse in (84) exhibits an overtly headed *'ăšer* relative clause

Holmsted (2016:215) classifies as restrictive. A prosodic analysis of this verse corroborates Holmstedt's analysis: it is a prosodically restrictive relative because all the relative clause constituents (head (בְּמִקּוֹם), relative pronoun-relative clause (אֲשֶׁר-יִשְׁחַט אֶת-הָעֹלָה)) belong to a single MaP (φ_a).

- (84) וְשָׁחַט אֹתוֹ בְּמִקּוֹם אֲשֶׁר-יִשְׁחַט אֶת-הָעֹלָה לְפָנַי יְהוָה
 $\varphi_a(\varphi_i(\text{אֲשֶׁר-יִשְׁחַט אֶת-הָעֹלָה}) \varphi_i(\text{בְּמִקּוֹם}))$
 ((in a place) φ_i (where he will kill the burnt offering) φ_i) φ_a
 Leviticus 4:24

This prosodic analysis holds for a variety of relative clauses types Holmstedt identifies—representative examples of these clause types include: וְ -relatives (85), הַ -relatives (86), שֶׁ -relatives (87), כִּי -relatives (88), zero relatives (89).

For example, Holmstedt (2016:208-209) classifies the וְ -relative in (85) as nonrestrictive. A prosodic analysis confirms this: this is a prosodically nonrestrictive relative because the relative clause is separated from its head noun by an intonational boundary, clearly placing the relative clause constituents in separate intonational phrases (t).

(85)²⁶¹ הָלֹא יִהְיֶה זֶה קְטָאנוּ לֹא

$\iota(\varphi_a(\varphi_i(\text{לֹא קְטָאנוּ}))) \varphi_a(\varphi_i(\text{זֶה})) \iota(\varphi_a(\varphi_i(\text{יִהְיֶה})))$

$((\text{the LORD})_{\varphi_i})_{\varphi_a} \iota (((\text{against whom})_{\varphi_i})_{\varphi_a} ((\text{we have sinned})_{\varphi_i})_{\varphi_a}) \iota$

Isaiah 42:24

Holmstedt (2016:213) classifies the $\bar{\eta}$ - bound relative in (86) as restrictive. A prosodic analysis confirms this: it is a prosodically restrictive relative because the head noun (מְקוֹם) and relative clause (תְּפִיחַ) form a single MaP (φ_a).

(86) וְרָחַב מְקוֹם תְּפִיחַ חֲמֵשׁ אַמּוֹת סָבִיב | סָבִיב :

$\varphi_a(\varphi_i(\text{מְקוֹם תְּפִיחַ}))$

$((\text{the place of the free space})_{\varphi_i})_{\varphi_a}$

Ezekiel 41:11

Holmstedt (2016:) classifies the $\bar{\psi}$ - bound relative in (87) as restrictive. A prosodic analysis confirms this: it is a prosodically restrictive relative because the head noun (מְקוֹם) and relative clause (שִׁפּוּל הָעֵץ) form a single MaP (φ_a).

²⁶¹ The disjunctive $\gamma\bar{a}t\bar{i}b$ (וְ) replaces the $pa\check{s}\bar{t}\bar{a}$ in the $pa\check{s}\bar{t}\bar{a}'/z\bar{a}q\bar{e}\bar{p} q\bar{a}t\bar{o}n$ phonological phrase (MaP), and likely has a broader scope of focus than $pa\check{s}\bar{t}\bar{a}'$ (i.e. $\gamma\bar{a}t\bar{i}b$ may function beyond the domain of the verse).

- (87) מְקוֹם שִׁפּוֹל הָעֵץ
 $\varphi_a(\varphi_i(\text{מְקוֹם שִׁפּוֹל הָעֵץ}))$
 ((the place where the tree falls) φ_i) φ_a
 Ecclesiastes 11:3

Holmstedt (2016:302) classifies the two מ - bound relatives in (88) as both restrictive. A prosodic analysis confirms this: they are prosodically restrictive relatives because the constituents of both relatives form a single MaP (φ_a).

- (88) מִי אֲשֶׁר חִפֵּץ בְּיוֹאָב וּמִי אֲשֶׁר-לְדָוִד אַחֲרַי יוֹאֵב :
 $\varphi_a(\varphi_i(\text{מִי אֲשֶׁר חִפֵּץ בְּיוֹאָב}) \varphi_i(\text{וּמִי אֲשֶׁר-לְדָוִד}))$
 ((whoever delights in Joab) φ_i (and whoever is for David) φ_i) φ_a
 2 Samuel 20:11

Holmstedt (2016:214-215) classifies the zero-relative in (89) as restrictive. A prosodic analysis confirms this: it is a prosodically marked restrictive because the construct (מְקוֹם) of the null-head ([those]) and the relative clause (לא־יָדַע-אֵל) form a single MaP (φ_a).

- (89) אֶדְ-אֵלֶּה מִשְׁכְּנוֹת עֵגֶל וְזֶה מְקוֹם לֹא-יָדַע-אֵל :
 $\varphi_a(\varphi_i(:\text{מְקוֹם לֹא-יָדַע-אֵל}))$
 ((the place of [those] who do not know God) φ_i) φ_a
 Job 18:21

Regarding head nouns that are cliticised to their relative clauses Holmstedt (2016:212-213) states:

There is only one clear feature in Hebrew that distinguishes restrictive relatives from nonrestrictive ones, and it is neither syntactic nor is it always employed: the presence of a head noun in the bound or cliticized form.

A prosodic analysis of two cliticised forms corroborates this assertion. In example (90a) the relative is prosodically restrictive because the relative clause constituents all belong to a single MaP (φ_a). In example (90b) the relative is semantically restrictive, but prosodically undifferentiated because the clause constituents belong to separate MaPs within a cohesive intonational phrase (ι).

(90a) **בְּעֵזֶן אֲשֶׁר־יָדַע**
 $\varphi_a(\varphi_i(\text{בְּעֵזֶן אֲשֶׁר־יָדַע}))$
 ((on account of an iniquity that he knew) φ_i) φ_a
 1 Samuel 3:13

(90b) **מְקוֹם אֲשֶׁר־אָסִיְרֵי תַּמְלִיד אֲסוּרִים**
 $\iota(\varphi_a(\varphi_i(\text{תַּמְלִיד אֲסוּרִים}))) \varphi_a(\varphi_i(\text{מְקוֹם}))$
 (((a place) φ_i) φ_a ((where [there were] prisoners of the king) φ_i) φ_a) ι
 Genesis 39:20

However, a preliminary review of Holmstedt's relative clause data reveals minor discrepancies between his analysis and a prosodic analysis. For example, Holmstedt (2016:2013) classifies the ψ -bound relative clause in (91) as restrictive, but a prosodic analysis clearly classifies it as

prosodically nonrestrictive: the head noun and other relative constituents form separate intonational phrases (ι).

- (91) אֶל-מְקוֹם שֶׁהַנְּחָלִים הֹלְכִים שָׁם הֵם שָׁבִים לָלֶכֶת:
 ι(φ_a(φ_i(הֹלְכִים))) φ_a(φ_i(שֶׁהַנְּחָלִים)) ι(φ_a(φ_i(אֶל-מְקוֹם)))
 (((to a place)_{φ_i})_{φ_a})ι (((where the streams)_{φ_i})_{φ_a}) ((are flowing)_{φ_i})_{φ_a})ι
 Ecclesiastes 1:7

Furthermore, Holmstedt asserts that relative clauses whose head nouns are proper must be nonrestrictive (2016:209):

As I indicated . . . proper nouns in English (unless two referents use the same proper noun designation, e.g. John A. and John B.) cannot be modified by restrictive relatives. Hebrew relative clauses are similarly constrained. Thus . . . since the proper name is certainly not an ambiguous reference in the Hebrew Bible, the relative clauses serve to provide additional information about, e.g., his character, actions, or words.

While prosodic analysis of the relative clauses in the MT largely confirms this assertion (see representative examples in (81)), I noted three exceptions—Numbers 11:20; 2 Samuel 19:11; Isaiah 49:7. These three verses exhibit prosodically marked restrictive relative clauses whose head nouns are proper. Interestingly, the feature all of these examples have in common is that the proper head noun and relative clause form a recursive structure within the *pašṭā' /zāqēp qāṭōn*

MaP. Further research may reveal the necessity for additional distinctions to be made within the prosodic structure of relative clause types based on this feature.²⁶²

These exceptions could also be a result of Masoretic emendations to an earlier prosodic structure of the text, a phenomenon Cohen (1972) cites in Isaiah 45:1, the only verse in the MT that exhibits the disjunctive *zarqā*’ without its accompanying disjunctive *seggōl* (92a).

(92a)²⁶³

		(כֹּה־אָמַר יְהוָה)
		(Thus says the LORD)
[(לְרַד־לְפָנָיו) (גוֹיִם)]	†(לְכוֹרֶשׁ) (אֲשֶׁר־הִחַזְקֵתִי בְיָמִינוֹ)	(לְמָשִׁיחוֹ)
[(to subdue before him) (nations)]	(to Cyrus) (whom I have strengthened his right hand)	(to his anointed)

Thus says the LORD, to his anointed, to Cyrus whose right hand I have strengthened in order *to subdue before him* nations. (Isaiah 45:1)

²⁶² The fact that these relative clauses are constituents of the DF and bear the prosodic phrasing of the *pašṭā*’/zāqēp qātōn MaP may take precedence over the normal prosodic phrasing constraints on relative clauses whose head nouns are proper, resulting in these relatives receiving the prosodic phrasing of the DF, not the prosodic phrasing that is expected of nonrestrictives.

²⁶³ The dagger in the third box marks the *ṭa’am munnāḥ* (לְכוֹרֶשׁ). Cohen identifies this *ṭa’am* as the disjunctive *munnāḥ laḡarmê*. BHS and the software Accordance identify it as the conjunctive *munnāḥ*. Typically, the disjunctive is differentiated from the conjunctive by the presence of a *pasēq* (י) directly following the word marked by *munnāḥ*. Since this is a representation of Cohen’s example, I have prosodically parsed the *munnāḥ* as the disjunctive *munnāḥ laḡarmê*.

Regarding this anomaly, Cohen states: “It is clear that the accents have been tampered with, and it is possible to attempt a reconstruction of the changes which led to the present text” (4). Cohen argues that the original configuration of the *ʔə ʾāmîm* likely resembled (92b), and that the change was made in order to disassociate Cyrus, a foreign pagan king, from a close connection with the messiah (literally ‘his anointed one’ (מְשִׁיחֹו)). Cohen states (1972:5-6):

In light of the rabbinic Midrash, however, it became necessary to rephrase this verse so that the offensive expression was no longer present. . . . Thus, it was possible to re-accent the verse according to the Midrashic interpretation, to produce a configuration of the accents which was, at least to the Masoretes on the basis of their understanding of the accents, reasonably acceptable, and to let it be obvious to that reader, because of the anomalous accentuation, that an alteration in the natural arrangement of the accents had been made.²⁶⁴ The Masoretic text represents here, then, a hybridisation of the simple understanding of the verse and the Midrashic interpretation.

²⁶⁴ An area of further research would be to identify and analyse additional instances of anomalous accentuation.

(92b)

[לְרַד־לְפָנָיו) [גוֹיִם)]	(אֲשֶׁר־הִחַזְקֹתִי בְיָמִינוֹ)	(כֹּה־אָמַר יְהוָה) (לְמָשִׁיחוֹ לְכוּרֶשׁ)
[(to subdue before him) (nations)]	(whom I have strengthened his right hand)	(Thus says the LORD) (to his anointed to Cyrus)

Thus says the LORD, to his anointed to Cyrus whose right hand I have strengthened in order *to subdue before him nations*. (Isaiah 45:1)

Despite the three examples (Numbers 11:20; 2 Samuel 19:11; Isaiah 49:7) noted above of proper head nouns within the prosodic structure of restrictive relative clauses, proper nouns are more commonly found in prosodically marked nonrestrictive relative clauses, in accordance with Holmstedt (2002:115-118): Numbers 4:45; Deuteronomy 9:2; 2 Samuel 10:16; 2 Samuel 16:23; 2 Samuel 21:16; 1 Kings 8:9b; 1 Kings 8:40b; 1 Kings 11:23; 1 Kings 16:13; 1 Kings 18:31; 1 King 21:15; Isaiah 11:10; Isaiah 13:1; Isaiah 13:17; Jeremiah 29:3—to name a few.

There are other preliminary generalisations that can be gleaned from the data in Appendix B regarding the prosodic, syntactic, and discourse structure of relative clauses. To begin with, most relative clauses with כּל as the head noun will form a prosodically restrictive clause, whether it is conjoined to the relative pronoun by a *maqfep* (93a), or stands as its own prosodic word (93b). This prosodic structure is not surprising, as *kōl* (i.e. the *maqfep* form) is a phonological clitic (cf. Holmstedt's (2016:86, 212-213) description of *ʿāšer* as a phonological clitic). Furthermore, as the head noun of a relative clause, I would expect כּל (its clitic or prosodic word form) to govern a restrictive relative because it is by nature a quantifier. As such, כּל facilitates the identification of the contextual parameters relevant to the relative clause (Naudé 2011a, 2011b; Naudé & Miller-Naudé 2015).

(93a)

[וַיִּרְא אֱלֹהִים]
[אֶת־כָּל־אֲשֶׁר עָשָׂה]
[(And then God saw)
(all that he had made)]

And then *God* saw all that he had made . . . (Genesis 1:31)

(93b)

(תִּנְכַּרְוּ)	(כָּל־) (אֲשֶׁר־יִקְרָא אֵלֶיךָ)	[(וַעֲשִׂיתָ)]	[(תִּשְׁמַע הַשָּׁמַיִם)] [(מְכוּן שְׁבִיתֶךָ)]	(אַתָּה)
(the foreigner)	(according to all) (which he will proclaim to you)	[(and you will do)]	[(you will hear the heavens) (the fixed place of your dwelling)]	(You)

You, you will hear from the heavens, the fixed place of your dwelling, and you will do according to all that the foreigner requests of you. (1 Kings 8:43a)

On occasion, כּל is the head noun of a prosodically undifferentiated relative clause (93c)—here, the placement of כּל in a phonological phrase complex separate from the relative clause appears to prosodically emphasise the head noun:

(93c)

(אֲשֶׁר צִוִּיתִיךָ)	(כָּל־)	[(לַעֲשׂוֹת)]	(דָּוִד אָבִיךָ) [בְּתָם-לֵבָב וּבִישָׁר]	(כַּאֲשֶׁר הָלַךְ)	(אִם-תֵּלֶךְ לְפָנַי)	(וְאַתָּה)
(that I commanded you)	(all)	[(doing)]	[(David your father) (with integrity of heart and uprightness)]	(just as he walked)	(If you walk before me)	(And you)

You, if you walk before me just as he walked, David your father with integrity of heart and in uprightness, doing according to all, which I have commanded you . . . (1 Kings 9:4)

I only noted one instance of כל as the head noun of a nonrestrictive relative clause (93d), where the prosodic prominence of כל is considerably heightened because it is separated from its relative by an intonational phrase boundary.²⁶⁵

²⁶⁵ Construct forms and the direct object marker exhibit patterns of prosodic phrasing similar to כל—that is, they are 1) most often conjoined to their associated constituents by a *maqgef* or a conjunctive; 2) occasionally separated from their associated constituents by phonological phrase/phonological phrase complex boundaries; 3) very rarely separated from their associated constituents by intonational phrase boundaries. Although one might expect construct forms and the direct object marker to always be conjoined to their genitives and direct objects by conjunctives, these forms often bear disjunctives which heighten their prosodic prominence in the verse (i.e. these constituents become the heads of their phonological phrases or phonological phrase complexes).

For example, the direct object marker (את) in Genesis 29:13 is conjoined to its direct object (כל־הַדְּבָרִים) by a conjunctive, but in Genesis 21:5 it (את) forms a separate phonological phrase complex from its direct object (יִצְחָק). Similarly, the construct (מֵאֵת) in Genesis 21:5 is conjoined to its genitive (שָׁנָה) by a conjunctive, but in Genesis 5:3 the construct (וּמֵאֵת) forms a phonological phrase separate from its genitive (שָׁנָה), and in Genesis 2:12 the construct (וַיְהִי) and the genitive (הָאָרֶץ) form separate phonological phrases.

Genesis 2:9 provides an example of the construct לֵץ forming a phonological phrase complex separate from its genitive (הַדֶּעַת). In this verse, טוֹב וְרַע serves as the construct of the coordinate genitive :טוֹב וְרַע, and a phonological phrase complex boundary also separates these syntactic constituents. While the construct form and the direct object marker can be separated from their genitives or direct objects by phonological phrase and phonological phrase complex boundaries, I expect that these constituents, like כל, only rarely for discourse pragmatic purposes, form separate intonational phrases. Genesis 21:4 provides an example of this, where the prosodic prominence of the construct שָׂמְנָה is greatly heightened because it forms a separate intonational phrase from its genitive (יָמִים); for an additional examples see Genesis 24:3, where the construct וְאֵלֶּהי forms an intonational phrase separate from its genitive (הָאָרֶץ), and Deuteronomy 1:4, where the direct object marker (את) forms a separate intonational phrase form its direct object (סִיחֹן).

(93d)²⁶⁶

		(כָּל) (as all)
		(אֲשֶׁר אֲנִי) (מְרַאֶת אוֹתְךָ) (which I am showing you)
(תְּבַנֶּיֶת כָּל-כֵּלָיו)	(וְאֵת)	(אֵת) (תְּבַנֶּיֶת הַמִּשְׁכָּן)
(the pattern of all its vessels)	(and)	(direct object marker) (the pattern of the tabernacle)
	(תַּעֲשֶׂוּ:)	(וְכֵן)
	(you will do)	(and thus)

According to all, which I show you, concerning *the* pattern of the tabernacle and the pattern of all its utensils, thus you will do. (Exodus 25:9)

Two notable instances of restrictive relative clauses can be found in 1 Kings 13:14 (94a) and Ezekiel 38:17 (94b). These are important exemplars because they are found in direct speech in the frame of a question that interrogates the identity of the referent of the relative clause. Since

²⁶⁶ In example (93d), note that the direct object marker (אֵת) bears the disjunctive *yatib*. This direct object marker is the intonational peak of the verse. Since the Hebrew direct object marker does not have an English analogue, I have highlighted ‘*the*’ in green to represent its placement in the structure of the verse; ‘*the*’ is also italicised to represent the structural placement of the verse’s intonational peak.

this type of question is by nature identifying, and it is reasonable to expect direct speech to have retained its original prosodic phrasing, these relative clauses are very clearly semantically restrictive and exhibit a prosodic structure as such.

(94a)

		(וַיֹּאמֶר אֵלָיו)
		(And he said to him)
(וַיֹּאמֶר אֲנִי :)	(הֲאַתָּה אִישׁ־הָאֱלֹהִים) (אֲשֶׁר־בָּאתָ מִיְהוּדָה)	
(And he said I am)	(Are you the man of God) (who came from Judah?)	

And he said to him: “Are you the man of God who came from Judah?” And he said I am. (1 Kings 13:14)

(94b)

(בְּיָמַי קְדָמוֹנִים)	(הֲאַתָּה־הוּא אֲשֶׁר־דִּבַּרְתִּי)	(אֲדֹנָי יְהוִה)	(כֹּה־אָמַר)
(in former days)	(Are you he of whom I spoke)	(the LORD God)	(Thus says)

Thus says the LORD God: “Are you he of whom I spoke in former days . . .” (Ezekiel 38:17)

I also observed many instances of semantically nonrestrictive relative clauses within the frame of direct speech that exhibited a prosodically marked nonrestrictive structure: 1 Samuel 21:10; 1

Samuel 25:33; 1 Kings 12:9a; 2 Kings 17:26; Ezekiel 16:45; Ezekiel 16:52a.²⁶⁷ In each of these examples, the referent of the relative clauses is clearly known to the addressee; (95) is a representative illustration.

(95)

(חֶרֶב־נְלִיַּת הַפְּלִשְׁתִּי)	(אָתָּה הוּא)] [יְהִנֶּה הָאֵלִים)]
(the sword of Goliath the Philistine)	(And the priest said)
	(אֲשֶׁר־הִכִּיתָ בְּעַמֻּק הַאֵלָה)
	(whom you struck down) (in the Valley of Elah)

And the priest said: “The sword of Goliath the Philistine, who you struck down in the Valley of Elah . . . (1 Samuel 21:10)

The undifferentiated prosodic structure for relative clauses is by far the most common in the twenty-one books. Prosodically undifferentiated relative clause constituents form a cohesive intonational phrase but do not all belong to a single phonological phrase complex. They can be semantically restrictive or nonrestrictive, but their prosodic phrasing does not identify them as such (see examples in (82)).

²⁶⁷ This list is not exhaustive.

Finally, I noted that prosodic symmetry within a cohesive discourse is one of the most notable features of prosodic phrasing—intonational symmetry is particularly suited to facilitating a cohesive link throughout a larger discourse. For example, the following relative clause pairs are verses that exhibit similar, if not identical, lexical and prosodic phrasings—that is, the same prosodic structure rendered for the same lexical structure: Deuteronomy 20:5, 6, and 7; Judges 7:1 and 2; Judges 16:7 and 8; 1 Samuel 1:17 and 27; 2 Kings 1:4, 6b, and 16; 2 Kings 1:4, 6b, and 16; 2 Kings 2:3 and 5; 2 Kings 13:2 and 11; Jeremiah 36:23a,b; Esther 6:6, 7, 9, and 11. Ezekiel 20:34 and 41, illustrated in (96), is an example of lexical and intonational symmetry spanning a gap of six verses.

(96)

	(בָּם)	(אֲשֶׁר נְפֹצְתֵם)	[(וְקִבְצֵתִי אֶתְכֶם) (מִן־תְּאֲרִצוֹת)]	[(וְהוֹצֵאתִי אֶתְכֶם) [מִן־תְּעֹמִים]]
		(שְׂפוּקָה:)	(וּבְחִמָּה)	[בְּגֵר חֹנְקָה] [וּבְזָרוּעַ נְטוּיָה]
	(בָּם)	(אֲשֶׁר נְפֹצְתֵם)	[(מִן־תְּאֲרִצוֹת) (וְקִבְצֵתִי אֶתְכֶם)]	[בְּרִיחַ נִיחָח] (אֲרֻצָּה אֶתְכֶם)
			(לְעֵינֵי הַגּוֹיִם:)	(וּנְקֻדְשֵׁתִי בְכֶם)

	(in them)	(which you scattered)	[(and gather you) (from the lands)]	[(and I bring you out) (from the peoples)]
		(poured out)	(and in wrath)	[(and with a strong hand) (and an outstretched arm)]
(in them)	(which you scattered)	[(and gather you) (from the lands)]	[(when I bring you out) (from the peoples)]	(as pleasing smell) (I accept you)
			(in the eyes of the nations)	(I shown sacred among you)

And I will bring you out from the peoples and I will gather you from the lands, among which you are scattered—with a strong hand and an outstretched arm, in wrath poured out. . . . As a pleasing aroma I will accept you, when I bring you out from the peoples and I gather you from the lands among which you are scattered, and I will be shown sacred among you in the eyes of the nations. (Ezekiel 20:34 and 41)

I also noted examples of similar (if not identical) lexical phrasing that exhibit different prosodic phrasing: 2 Samuel 15:2 and 4; Leviticus 2:8 and 11; Numbers 26:63 and 64—Jeremiah 7:10-11 is a representative illustration (97). The constituents of the the first relative clause (first row, third box) reside in a *zāqēp qāṭōn* phonological phrase complex; the constituents of the second relative clause (second row, second box) reside in a *ṭippəḥā'* complex.²⁶⁸ Notice that although both verses have the same number of prosodic words before the relative clause, they have different prosodic phrasing. The syntactic structure of these first prosodic words are similar enough that they could have been assigned an identical prosodic structure (cf. the lexical and prosodic structure of Ezekiel 20:34 and 41 (97)). For example, the two verbs in the first verse (וּבְאֵתָם וְעַמְדָּתָם) could have been grouped together in a *rəbī'ī* complex like the construct NP (הַמְעַרְתָּ פְּרָצִים) at the beginning of the second verse. Furthermore, the first relative clause is introduced under prosodic focus, but the same relative clause is repeated in verse 11 using a *ṭippəḥā'* complex, a less prominent intonational pattern. Interestingly, verse 11 does not exhibit a prosodically focused complex, but it does contain a fronted noun phrase that indicates syntactic focus (van der Merwe, Naudé, & Kroeze 2017:339, 346). All of these are strong indications that the *ṭə'āmîm* do not primarily represent pausal phenomena, but instead serve discourse pragmatic functions.

²⁶⁸ Only the *'etnaḥtā'* clause of each verse is illustrated in (97).

(97)

	[בבֵּית הַיהוָה] [אֲשֶׁר נִקְרָא שְׁמִי עָלָיו]	(וַעֲמַדְתֶּם לְפָנַי)	(וּבָאתֶם)
(וְאָמַרְתֶּם)	[[in this house] (which is called by my name)]	(and stand before me)	(and then you will come)
			(נִצַּלְנוּ)
			(we are saved)
		(הֲלֹא תִבֵּית הַיהוָה) (אֲשֶׁר-נִקְרָא שְׁמִי עָלָיו)	(הַמְעַרְתָּ פְרָצִים)
		[[is this house] (which is called by my name)]	(a den of robbers)
			(בְּעֵינֵיכֶם)
			(in your eyes)

And then you will come and stand before me in this house which is called by my name, and you will say we are saved . . . Is this house which is called by my name a den of robbers, in your eyes? (Jeremiah 7:10a and 11a)

Jonah 4:11 presents another type of symmetry, composed of two lexically distinct relative clauses that are both prosodically marked nonrestrictive, albeit using different patterns of intonation (98). There are a few notable features of this verse's syntactic and prosodic structure worth mentioning: 1) the explicit subject pronoun (אָנִי) is in a place of syntactic prominence as it is not required in the clause; this pronoun's prominence is prosodically reinforced as it bears *pašṭā*, the intonational peak of the DF (i.e. *zāqēp qāṭōn* the complex); 2) the PP (עַל־הַיַּנְנִיָּה) and its appositional NP (תְּעִיר הַגְּדֹלָה) are conjoined by conjunct melodic motion within a cohesive intonational phrase.²⁶⁹

²⁶⁹ I expect that further study of syntax and prosody within the context of a larger discourse will help clarify the prosodic functions of individual *ṭə'āmîm*.

(98)

(הָעִיר הַגְּדוֹלָה)	(עַל־נִינְוָה)	(וְאֲנִי) [לֹא אֲחֻס׃]
(the great city)	(upon Nineveh)	[I (not pity)]
	(אָדָם)	(אֲשֶׁר) (תְּרַבֶּה מִשְׁתִּים־עֶשְׂרֵה רְבֹו) (נֶשְׁבָּה)
	(man)	(in which there are) (more than 120,000)
(רַבָּה׃)	(וּבְהֵמָה)	(אֲשֶׁר לֹא־יָדַע) [בֵּין־יְמִינֹו לְשִׂמְאֹלוֹ]
(many)	(and cattle)	[(who does not know) (his right to his left)]

Should *I* not have pity upon Nineveh, the great city, in which there are more than 120,000 men, who do not know their right form left, and many cattle? (Jonah 4:11)

5.6 Summary

In this chapter I introduced a new intonation-based prosodic model for the *ta'āmê hammiqrā'*. I proposed two distinct domains between the prosodic word and the intonational phrase—namely, the phonological phrase (MiP) and phonological phrase complex (MaP). The phonological phrase domain is formed by a single disjunctive and the conjunctive(s) that serve it. The

phonological phrase complex domain is comprised of a group of disjunctives that form an intonational family.²⁷⁰ The intonational phrase consists of cohesive phonological phrase complexes, which themselves are comprised of cohesive phonological phrases. Prosodic cohesion within an utterance is formed and sustained by the melodic continuity of conjunct melodic motion and recursion—intervals of a fourth or less. Intonational phrase boundaries are singled by the disjunctives *sōf-pāsûq* and *'etnaḥtā'*, as well as adjacent disjunctives that form melodic intervals of a fifth or greater. The fact that there are numerous *ṭə'āmîm* combinations within a verse that can signal intonational boundaries suggests a possible solution to a limitation Drescher identifies in his prosodic model for TH. Drescher is unable to reconcile the presence of intonational phrase boundaries within a verse at junctures other than *'etnaḥtā'* and *sōf-pāsûq*. His prosodic model does not explain, therefore, the curious occurrence of “pausal” forms marked by “lesser accents.” However, cross-linguistic prosodic data on lengthened forms and the intonation-based prosodic model for the *ṭə'āmê hammiqrā'* provide new direction for understanding the presence of lengthened forms with *ṭə'āmîm* other than *'etnaḥtā'* and *sōf-pāsûq*—an area of significant future research.

The data within this chapter also confirm a correspondence between the domains of the prosodic hierarchy of TH and Selkirk's cross-linguistic prosodic hierarchy—most notably the close correspondence of the TH phonological phrase and phonological phrase complex with Selkirk's MiP and MaP. Furthermore, the four sets of universal constraints were shown to be applicable to the prosodic model I have proposed, with the binary maximum constraint being particularly key

²⁷⁰ Appendix A describes the intonational families the disjunctives form.

to understanding the organisation and structure of the prosodic domains above the prosodic word.

With relation to the constraints that govern the surface prosodic structure of TH, the intonation-based prosodic model suggests that the following constraints are ranked high: 1) layeredness and headedness—constraints on prosodic domination; 2) binary maximum—the constraint of weight and balance on the MaP; 3) match word—syntax-phonology interface constraint; and 4) no toneless stress, no stress-less tone, edgemostright, and focus—prominence constraints that govern both the relation between intonation and prosodic stress and the prominence of focus. The constraints that are ranked low in TH include: 1) exhaustivity and nonrecursivity—constraints on prosodic domination and 2) match clause and match phrase—syntax-phonology interface constraints.

A major difference between the intonation-based prosodic model for TH and Selkirk's cross-linguistic model is that although she argues for the existence of a MiP and a MaP, she asserts that the match constraints for the phonological phrase do not recognise the distinct prosodic characteristics of the MiP and MaP, and simply treat them as recursive structures of the phonological phrase. However, my analysis of the pitch patterns of the *tə 'āmîm* and the prosodic structure they represent, strongly suggests a clear distinction is to be made between the TH phonological phrase (MiP) and phonological phrase complex (MaP), and that these prosodic tiers truly constitute their own domains. Recursion in the intonation-based prosodic model, then, is

not a default structure of the disjunctive *ʔə 'āmîm*, but instead is signalled by a melodic interval of a third or fourth.

Furthermore, the intonation-based prosodic analysis of TH presented in this chapter directly challenges the traditional assertion that “due to the written nature of our ancient data, if ancient Hebrew once used intonational means to demarcate a nonrestrictive relative, we no longer have access to this feature” (Holmstedt 2016:208). My research challenges this claim not only because I have outlined an internally coherent theory of intonation that supports the empirical data of the *ʔə 'āmîm*, but also because it clearly corresponds to Selkirk’s cross-linguistic prosodic model. Furthermore, I have demonstrated that this intonation-based prosodic model reliably identifies cross-linguistic prosodic traits for restrictive and nonrestrictive clauses—prosodically marked nonrestrictive relative clauses form their own intonational phrase boundaries, while prosodically marked restrictive relative clauses remain intonationally connected within a cohesive phonological phrase complex (MaP). A third category of relative clauses consists of relatives that are not prosodically differentiated.

A catalogue of these three types of prosodic structures for all 4,175 overtly headed *'ăšer* relative clauses in the twenty-one books is compiled in Appendix B, which can be used as a database for future research in the area of prosody, syntax, and discourse structure. A preliminary review of the prosodic relative clause database in Appendix B confirms much of Holmstedt’s research and analysis of relative clauses. Furthermore, four generalisations can be made regarding the prosodic, syntactic, and discourse structure of relative clauses in TH based on a preliminary

review of the data: 1) most relative clauses with כֹּל as the head noun will form a prosodically restrictive clause (§5.5 examples (93a) and (93b)); 2) occasionally כֹּל is the head noun of a prosodically undifferentiated or nonrestrictive relative clause, which appears to place prosodic emphasis on the head noun (§5.5 examples (93c) and (93d)); 3) relative clauses in direct speech are good exemplars for further research on prosody, syntax and discourse structure—I noted two that were semantically restrictive (1 Kings 13:14 and Ezekiel 38:17) that revealed prosodic restriction (§5.5 examples (94a) and (94b)) and six that were semantically nonrestrictive (1 Samuel 21:10; 1 Samuel 25:33; 1 Kings 12:9a; 2 Kings 17:26; Ezekiel 16:45; Ezekiel 16:52a) that revealed prosodic nonrestriction (§5.5 examples (95)); and 4) prosodic symmetry within a cohesive discourse is one of the most notable features of prosodic phrasing—intonational symmetry is particularly suited to facilitating a cohesive link throughout a larger discourse (§5.5 examples (96), (97), and (98)).

CHAPTER 6

CONCLUSIONS AND FUTURE RESEARCH

This study emerged out of a desire to develop a theoretical framework for the *ṭa ʿāmê hammiqrā* that accords with the long-held rabbinic and cantorial intuition that the intonational phrasing of the biblical text is essential to its meaning. In this dissertation I argue in favour of studying extant cantillation traditions in light of modern prosodic theory. This approach directly challenges most nonliturgical scholarship, as much of it dismisses the relevance of these traditions as a means to accessing the original prosodic intent of the Masoretes. Scholars, in large part, have concluded that “prosody and pitch patterns are inaccessible” (Floor 2004:11) (Aronoff 1985; Janis 1987; Drescher 1994; Rubin & Baron 2006; Holmstedt 2016), and therefore chosen to elevate dichotomy production and pausal phenomena (i.e. the LCD) to the status of a central organising principle. For example, when referring to the function of the *ṭa ʿāmîm* in the first verse of the Hebrew Bible, Portnoy & Wolff (2000:71) illustrate and defend a commonly regarded version of the LCD:

The English translation demonstrates the elegant manner in which the tropes fulfill their most important function—revealing the meaning of the sacred text:

In the beginning God created the heavens and the earth.

You may have noticed that the space or pause after “In the beginning” is half as long as the space or pause after “created.” This is due to the fact that while [*ʿetnaḥtā*] and [*tippəḥā*] are both מְפָסֵיקִים pauses,^[271] [*ʿetnaḥtā*] is the stronger one. It is considered

²⁷¹ In this study, I have argued that the English word ‘pauses’ is not an appropriate translation for the term מְפָסֵיקִים. Instead, I prefer ‘groupings’ to describe the prosodic units the disjunctive *ṭa ʿāmîm* delineate.

an “emperor,” while [*tippəḥā*] is considered a “king,” one rung lower in the cantillation “hierarchy.” When you chant this verse, you will want to pause considerably after *sōf-pāsûq*, clearly pause after *’etnaḥtā*’, and pause slightly after *tippəḥā*’. If you do this, the meaning of the words will become clear.

The notion that the symbolically and melodically diverse array of *tə’āmîm* primarily represent pausal phenomena seems largely artificial and overly simplistic. Despite the pervasive disinterest in a prosodic approach to the *tə’āmîm* among scholars of the MT, Janis (1987) and Drescher (1994) argue that the *ta’ămê hammiqrā*’ fundamentally represent a prosodic system—Drescher being the most notable of the two because he is the first to do so from a modern prosodic framework. However, even Drescher’s account of the *ta’ămê hammiqrā*’ does not challenge the underlying assumptions of the LCD, so his prosodic model is limited in its ability to explain the most enigmatic features of the system—particularly why there are so many *tə’āmîm* symbols and such melodic variety.

The prosodic model for TH I propose differs significantly from Drescher and Janis with regard to the most salient features of the prosodic system, its organisation, and how it functions because my research is rooted in an analysis of prosody through intonation—an intonational analysis of the prosodic structure the *ta’ămê hammiqrā*’ represent. The primary objective of this study has been to develop a rationale and theoretical framework for reestablishing intonation as the central organising feature of the *ta’ămê hammiqrā*’, as the earliest descriptions of this system suggest (Yeivin 1980). I contend that the *ta’ămê hammiqrā*’, in all their variety and complexity, are

prosodic representations of TH designed primarily to communicate meaning through intonation, not pause, and to reflect a cohesive discourse structure with appropriate aural cues that correspond to cross-linguistic prosodic norms.

The intonation-based prosodic model for TH, then, represents a significant paradigm shift: it directly challenges Aronoff's (1985:66) assertion that "though the accents may have had musical values, the relations among the accents did not have a musical basis," and the common assumption that "prosody and pitch prominence patterns are inaccessible" (Floor 2004:11; Aronoff 1985; Janis 1987; Drescher 1994; Rubin & Baron 2006; Holmstedt 2016). The theory for this new prosodic model is supported by an original exposition of the types of melodic intervals conjunctive *tə'āmîm* do and do not form based on the musical concept of conjunct and disjunct melodic motion. I argued that the principles of conjunct and disjunct melodic motion provide an appropriate conceptual framework for understanding the intonational structure of disjunctive *tə'āmîm*—namely that the intonational structure of the disjunctives also function conjunctively to connect smaller cohesive prosodic units to larger cohesive prosodic units. Intervals of a unison and a second (strict conjunct melodic motion) encode intonational continuity; intervals of a third and a fourth, also conjunctive in nature, encode prosodic recursion. The melodic continuity of intervals of a fourth or less form the basis of the melodic relationship between conjunctives and the disjunctives they serve (i.e. phonological phrases). Intervals of a fourth or less between disjunctives and their adjacent *tə'āmîm* also form the basis of melodic continuity within the larger prosodic structures of the phonological phrase complex, the intonational phrase, and the utterance. While both conjunctives and disjunctives are able to form intervals of a fourth or less,

only disjunctives encode intonational discontinuity, i.e. intervals of a fifth or greater. I also catalogued all the distinct *ṭə ʿāmîm* combinations that form intervals of a third, fourth, and fifth or greater for future reference and research (§4.4.1, §4.4.2, and §4.4.3).²⁷²

Furthermore, I illustrated numerous examples of the organisation of the prosodic domains of TH. One key prosodic structure developed in this study is the notion of prosodic recursion. In TH prosodic recursion is essentially a conjunctive intonational structure—it encodes melodic continuity. Unlike Drescher’s prosodic model where prosodic recursion is a default structure of the system, the intonation-based prosodic model defines recursion as moderate shifts in intonation, intervals between prosodic constituents of a third or a fourth. These prosodic structures can be found between prosodic words within cohesive phonological phrases, between phonological phrases within cohesive phonological phrase complexes, between phonological phrase complexes within cohesive intonational phrases, and even between intonational phrases within cohesive utterances. Research conducted by Féry (2009) and Hunyadi (2010) support the notion that moderate shifts in intonation called tone scaling is a more effective phonological feature for locating recursive prosodic structures than pausal phenomena. Furthermore, preliminary data from my research on prosodic recursion and research from Féry (2009) and Hunyadi (2010) suggest that prosodic recursion often encodes subordination, while iterative structures often encode coordination. Another preliminary finding is that the *zāqēp qāṭōn* phonological phrase complex marks the DF, with the *pašṭā*’ phonological phrase marking its

²⁷² Intervals of a third, fourth, and fifth are marked prosodic structures in TH—specialised structures signalling recursion and intonational discontinuity. *Ṭə ʿāmîm* combinations that form intervals of a unison and a second are unmarked prosodic structures in TH—the most common forms in the MT that cohere prosodic constituents within the domains of the prosodic hierarchy. These pitch pattern combinations have not been individually catalogued in this study.

intonational peak.²⁷³ The *paštā*’/zāqēp qātōn phonological phrase complex is one of the most common prosodic structures in the MT, as it is present in most verses. While further research is needed to confirm and refine these preliminary findings, my proposal concerning this prosodic structure is that it has a mainline discourse function as it helps to mark foregrounded information—information most pertinent to the progression of the narrative (§5.3.5 footnote 234).²⁷⁴

I synthesised the theory of intonation for the *tə*’*āmīm* with modern prosodic theory and proposed an intonation-based prosodic hierarchy for TH. This new prosodic hierarchy largely corresponds to Selkirk’s cross-linguistic hierarchy, with the most notable correspondence being the correlation between the TH phonological phrase and the minor phonological phrase (MiP), as well as between the phonological phrase complex and the major phonological phrase (MaP). I also demonstrated that the four sets of OT prosodic constraints are relevant and functional within the intonation-based prosodic model for TH. Specifically, TH strictly adheres to three of the four constraints on prosodic domination: layeredness, headedness, and exhaustivity, while nonrecursivity is a lower ranked constraint and easily violable (§5.3.1). These findings differ from Dresher (1994:22) as his model assumes the violation of both nonrecursivity and exhaustivity. TH also strictly adheres to binary maximum, a constraint that limits the size of a TH MaP to a maximum of two MiPs (§5.3.2). In terms of TH’s adherence to syntax-phonology interface constraints, match word is ranked higher than match phrase and match clause—

²⁷³ The notion of prosodic focus introduced in this study needs refinement and elaboration. The *paštā*’/zāqēp qātōn phonological phrase complex appears to be central to foregrounding or mainlining the constituents of the verse that carry the narrative forward.

²⁷⁴ In §4.4.4 I discussed the fact that at times *yətib* replaces *paštā*’, and that *yətib* appears to have a larger DF with broader discourse implications for a narrative that may extend outside the boundaries of the verse.

syntactic words and the prosodic word domain align much closer than syntactic phrases with the phonological phrase and syntactic clauses with the intonational phrase (§5.3.3). Finally, TH shows strict adherence to all four prominence constraints including no toneless π stress, no π stress-less tone, edgemostright, and the prominence of focus (§5.3.4 and §5.3.5). These prominence constraints all require that focused constituents or tone-bearing constituents align with the prosodically prominent or stressed syllable at a prosodic constituent's rightmost edge.

Of the four sets of OT constraints discussed, the one most pertinent to unlocking the structural organisation of the *ta ʾāmē hammiqrā*' is the binary maximum constraint of weight and balance on the MaP. It is not unreasonable to posit that the binary phenomena the constraints of weight and balance govern and the binary phenomena described by the LCD are both bilateral expressions that find their roots in the oral nature of the biblical text (Miller-Naudé & Naudé 2016).

One of the notable differences between the prosodic hierarchy for TH I propose and the one proposed by Drescher is that the intonation-based model allows for a fully-functioning intonational phrase domain. One of the major limitations of Drescher's prosodic model for TH is that he is unable to reconcile his conceptualisation of the intonational phrase domain with the distribution of "pausal" forms on "lesser accents" (i.e. disjunctives outside of the D0 class). Drescher (1994:12) states that a "successful prosodic theory would distinguish those phrases which end in pausal forms from those which do not." While I have not completely solved the problem of "pausal forms," the intonation-based prosodic model of TH offers a solution to this

limitation because it identifies junctures of intonational discontinuity, which signal intonational phrase boundaries between a host of *ṭə ʿāmîm* combinations (§4.4.5). Theoretically, then, the intonation-based prosodic model offers numerous opportunities for “pausal forms” to appear on *ṭə ʿāmîm* other than the traditional D0 disjunctives, *ʿetnaḥtā* and *sōf-pāsûq*. Further research is needed to determine if some of these loci of intonational discontinuity indeed coincide with these lengthened forms.

Additional evidence that the intonation-based prosodic model is a theoretical model that corresponds to modern linguistic data is found in Roa’s (2010:69-70,72) research, where he concludes that pauses in Spanish speech are associated with both the intonational and phonological phrase domains. Perhaps more significantly, Roa (2010:70,76) observes final lengthening of syllables, vowels, and words at the ends of intonational and phonological phrases regardless of pause, although pauses increase lengthening over instances with no pause. These data correspond to my assertion that, other than *etnaḥtā* and *sōf-pāsûq* (and perhaps *rabi ʿī* and the junctures of verse medial intonational discontinuity), the *ṭə ʿāmîm* may not explicitly encode pausal phenomena at all. Therefore, TH “pausal” forms may be more appropriately understood as lengthened prosodic forms found at phonological and intonational phrase boundaries, associated with or without pauses. Reconceptualising pausal forms as lengthened forms may also explain why these forms often coincide with “lesser” disjunctives and conjunctives.

Finally, I tested the robustness of the prosodic model by determining how accurately the intonation-based model identifies restrictive and nonrestrictive relative clauses. I discovered that

TH prosodically classifies three types of relative clauses (§5.4): 1) prosodically marked restrictive relatives which form a cohesive phonological phrase complex with all of their relative clause constituents, 2) prosodically marked nonrestrictive relatives which form distinct intonational phrases separate from their head nouns, and 3) prosodically undifferentiated relatives which do not prosodically differentiate the restriction of a relative clause. This classification accords with and refines the cross-linguistic prosodic traits of relative clauses (Dresher 1994:13; Selkirk 1995:553). A survey of all the overtly headed *'ăšer* relative clauses in the twenty-one books largely confirmed this classification. The analysis throughout this study and the relative clause data in particular, therefore, suggest that Aronoff's (1985) assertions are in need of revision:

The Masoretic system is purely relational; it marks only constituent breaks, and gives no labels for the constituents themselves (36). . . . One assumption is that each accent had a fixed intonational value, this particular distribution could serve only to obscure the natural intonation of the text, since there is no simple one-to-one correspondence between accents and the syntactic units with which intonation is correlated (68).

Furthermore, a preliminary review of the prosodic relative clause database I compiled in Appendix B confirmed much of Holmstedt's research and analysis of relative clauses, with only a few instances of outright discrepancies (§5.5 example (91) and the three prosodically restrictive relative clauses I noted whose head nouns are proper (Numbers 11:20; 2 Samuel 19:11; Isaiah 49:7)). The data in Appendix B on the prosodic status of overtly headed *'ăšer* relative clauses not only confirm the validity of the prosodic model, but can also serve as a springboard for new

areas of research. One area of further research would be to conduct a comprehensive comparison of Holmstedt's (2016) theoretical model on the syntactic structure of restrictive and nonrestrictive relative clauses and the prosodic relative clause database I have produced to determine more precisely where syntax and prosody converge and diverge. For example, Holmstedt states: "non-restrictive relatives . . . provide discourse-new information; even if the referential heads they modify are not discourse-new" (281). It would be interesting to see if a discernible pattern exists between certain types phonological phrase complexes and nonrestrictive relative clauses. These complexes, then, could be used to study the discourse features of the *ṭə'āmîm*. I believe further research into the cantillation traditions of the *ṭa'āmê hammiqrā'* will uncover a complex, interconnected system of intonational patterns between verses that reflects the discourse structure of the text.

Finally, four generalisations can be made regarding the prosodic, syntactic, and discourse structure of relative clauses in TH based on a preliminary review of the database in Appendix B:

1) most relative clauses with כּל as the head noun will form a prosodically restrictive clause (§5.5 examples (93a) and (93b)); 2) occasionally כּל is the head noun of a prosodically undifferentiated relative clause, which appears to place prosodic emphasis on the head noun (§5.5 example (93c));²⁷⁵ 3) relative clauses in direct speech are good exemplars for further research on prosody, syntax and discourse structure—I noted two that were semantically restrictive (1 Kings 13:14 and Ezekiel 38:17) that revealed prosodic restriction (§5.5 examples

²⁷⁵ I only noted one instance of כּל as the head noun of a nonrestrictive relative clause (§5.5 example (93d)), where the prosodic prominence of כּל is considerably heightened because it is separated from its relative by an intonational phrase boundary. Also see footnote 265 in §5.5.

(94a) and (94b)) and six that were semantically nonrestrictive (1 Samuel 21:10; 1 Samuel 25:33; 1 Kings 12:9a; 2 Kings 17:26; Ezekiel 16:45; Ezekiel 16:52a) that revealed prosodic nonrestriction (§5.5 examples (95)); and 4) prosodic symmetry within a cohesive discourse is one of the most notable features of prosodic phrasing—intonational symmetry is particularly suited to facilitating a cohesive link throughout a larger discourse (§5.5 examples (96), (97), and (98)).

In conclusion, the prosodic tradition codified in the *ṭa ʿāmê hammiqrā* represents one of the most prominent expressions of the oral nature of the Hebrew Bible. In this dissertation I have argued that an intonation-based prosodic model for TH is better suited than a pausal model to reveal the ways in which the host of intonationally distinct *ṭa ʿāmîm* augment the meaning of the biblical text. Moreover, an intonational prosodic approach to the *ṭa ʿāmê hammiqrā* provides a new theoretical framework for analysing discourse pragmatics and information structure in the MT. With regard to a modern theoretical prosodic approach to the *ṭa ʿāmê hammiqrā*, Drescher (1994:49) summarises the way forward aptly:

We have only begun to investigate phonology above the word and the mapping from syntax to prosody. . . . A prosodic interpretation of the Tiberian transcription suggests aspects of prosodic structure which remain to be explored. It may be expected, in turn, that continuing study of the prosodic structure of modern languages will shed more light on the prosody of Biblical Hebrew and on the Tiberian system of accents.

In my opinion, one of the main aspects of prosodic structure in the MT which remains to be explored is intonation as expressed in extant cantillation traditions.

Additional areas of future research:

I. Comparative analyses of the prosodic structure of TH with that of other languages:

ToBI (Tones and Break Indices) is a scheme for transcribing intonation. At least eleven ToBI models have been proposed for the following languages: Mainstream American English, standard German, Athens Greek, Neapolitan Italian, Serbo-Croatian, Tokyo Japanese, Seoul Korean, Mandarin, Cantonese, Chickasaw, Bininj Gun-wok (Jun 2005:430-453). One area of further research includes proposing a TH ToBI model, which would allow the intonational structures of TH to be compared to a wide range of languages (Beckman & Pierrehumbert 1986; Beckman et al. 2005; Jun 1998, 2005, 2014; Beckman & Hirschberg 2005; Watson & Gibson 2004).²⁷⁶ There are also many analyses of the prosodic structure of the intonation of languages that do not use the ToBI model. A review of this literature is needed for the purpose of comparing and contrasting the proposed prosodic structure of TH with that of other languages (Alzaidi 2014; Bögel 2009; Carlson et al. 2012; Devine & Stephens 1990; Elfner 2012, 2015; Frota & Moraes 2016; Goldsmith 1972; Gussenhoven 2002b; Heston 2015; Kratzer & Selkirk 2007; Ladd 1978; Lian 1980; Lee 2015; Liberman 1975; Lui 2009; Marín et al. 2002; Michaud 2015; Mitshiko 2003; Mueller-Liu 2004; Turner 2006; Günes 2015; Heston 2015; Himmelmann & Ladd 2008; Vigário & Frota 2003; Wennerstrom 2001; Xu 2015; Yaeger-Dror 2002; Zerbian et al. 2009).

²⁷⁶ The ToBI system is particularly suited to assess the prosodic feature of intonation. Jun (2005) identifies two distinct phonological phrase domains: the accentual phrase and the intermediate phrase, which correspond to Selkirk's MiP/MaP and TH's phonological phrase/phonological phrase complex (cf. the prosodic structure for Japanese proposed by Beckman & Pierrehumbert (1986)).

II. Analysis of the distribution of the *ʔā`āmîm*:

One of the hypothesis regarding the function of the *ʔā`āmîm* I have held throughout this paper is that the distribution of a *ʔā`am* is related to its discourse function. Therefore, a study of the distribution of the *ʔā`āmîm* should also include an exploration of discourse and information structure within well-defined pericopes (Alter 1981; Alzaidi 2014; Asghar 2013; Asr & Demberg 2012; Barrick n.d.; Büring 2005; Chen 2007; Christensen 1989; De Ruiter 2010; Dooley & Levinsohn 2000; Dooley 2005, 2007; Fairclough 1992; Fraser 1999; Furkó 2008; Gussenhoven 2002a; Hansson 1999; Horne et al. 1999; Ward & Birner 2001; Herman 1998; Heusinger 1999; Hirschberg & Nakatani 1996; Hornkohl 2003; Kadooka 2008; Komar 2007; Kornai 1990; Kruijff-Korbayová & Steedman 2001; Koizumi 1995; Jacobsen 1993; Lier 2012; Liu 2009; Lode 1994, 2002; Longacre 2008, 2012; Longacre & Hwang 2012; Levinsohn 2015; Lutzky 2006; Masahito et al. 1996; McKee 2007; Meek 1945; Mueller-Liu 2004; Naudé & Miller-Naudé 2017b; Nicolle 2016; Paggio 2006, n.d.; Prieto 2005; Redeker 1991; Roberts 1998; Schiffrin 2001; Scheler 1996; Stede & Schmitz 2000; Steedman 2004; Sun 2011; Tseng 2010, n.d.; Tseng & Su n.d.; Tseng et al. n.d.; Tyler 2012; von Heusinger & Umbach 2005; van der Merwe 2010; Wichmann n.d.; Winther-Nielsen 1992; Yilmaz 2004). A good place to begin researching the discourse functions of the *ʔā`āmîm* is with the disjunctives *pašṭā`*, *yətib*, *`azlā`*, and *rəbī`*. These four disjunctives appear to have patterns of distribution that may be easily connected to discourse/pragmatic features within the biblical text.

III. Analysis of the *ʔa ʿāmê hammiqrā* with regard to the four principle features of orality:

As a prosodic representation, the structure, organisation, and function of the *ʔa ʿāmê hammiqrā* should exhibit expressions of the four principle features of orality—mimetic, rhythmic, bilateral, and repetitive expressions (De Hoop 2000, 2008; 2013a, 2013b; Moore 1993; Yun & Connine 1999; Wang 2004; Shen 2015; Liu 2010; Mair 2014; Culter 1991; Dauer 1987; Arvaniti 2009; Mołczanow & Wiese 2014; Liberman & Prince 1977). A study of this topic is most easily conducted within a well-defined pericope that exhibits features of orality—Miller-Naudé & Naudé (2016) have identified and analysed Genesis 34 as such. Furthermore, a study of the *ʔa ʿāmîm* and the features of orality they exhibit should also include identifying the prosodic phrasings and features that are characteristic of speech verbs. One of the features I have noted is that quotative frames are most often prosodically parsed separately from direct speech.²⁷⁷ Miller’s (1996/2003) book and article (Miller 1994) provide excellent grounding for research in this area because they constitute an extensive exploration of the “syntactic mechanisms for the introduction of direct discourse in Biblical Hebrew and their discourse-pragmatic functions” (Miller 1994:199). Additional areas of research within this topic include a study of the prosodic characteristics of vocatives, lists, and parenthetical expressions (Oliveira & Cunha 1997). Like restrictive and nonrestrictive relative clauses, these expressions have cross-linguistic prosodic features that can be used to test the intonation-based prosodic model.

²⁷⁷ This assertion directly challenges de Hoop’s (2013b) claim that “the Masoretes did not consider the [introduction to direct speech] as a syntactic feature which should be marked separately” (5). I contend the *ʔa ʿāmîm* mark prosodic not syntactical relationships, and their prosodic phrasing largely distinguishes the quotative frame from the quote.

IV. Study the *pašṭā* /*zāqēp qāṭōn* domain:

In this study, I have identified the *pašṭā* /*zāqēp qāṭōn* phonological phrase complex as the DF, with *pašṭā* marking its intonational peak. My hypothesis concerning the discourse function of the *pašṭā* /*zāqēp qāṭōn* complex is that it marks foregrounded information most pertinent to the mainline progression of the narrative. I have identified the following verses as those which have a discourse structure with backgrounded (or parenthetical) information, and a prosodic structure that reflects this. Furthermore, I have note that none of these verses contain the *pašṭā* /*zāqēp qāṭōn* domain: Genesis 1:1; Genesis 2:1; Genesis 2:4; Genesis 2:12; Genesis 3:2; Genesis 3:4; Genesis 6:22; Genesis 15:14; Genesis 16:15; Genesis 25:7; Genesis 25:10; Judges 17:1; 2 Samuel 6:1; 1 Kings 17:7; Ruth 1:3. Although I do not equate prosodic focus in TH with syntactic focus, a general exploration of syntactic focus is needed, both in TH and cross-linguistically (Aguilar et al. 2000; Alzaidi 2014; Bocci 2008; Buring 2012; Floor 2004; King 1997; Ladd & Morton 1997; Naudé & Miller-Naudé 2017a; Lee 2015; Vander Klok et al. 2014; Breen 2010; Calhoun 2006; Fraser 2000; Samek-Lodovici 2002, 2005; Schafer et al. 2000; Wagner et al. 2010).

V. Miscellaneous studies of the *ṭa* 'āmē *hammiqrā*':

There are a number of unrelated miscellaneous topics that require further study. First, continued study of the consecutive repetition of *ṭa* 'āmīm (i.e. repeated phonological phrases and phonological phrase complexes) is needed to determine their purpose and function. I have proposed that the repetition of a single *ṭa* 'am (or a series of *ṭa* 'āmīm) has the effect of extending

its scope of governance over adjacent words (§5.4 footnote 241; §5.5 example (83)). More research is needed to confirm this preliminary finding (Günes 2015).

Second, continued study of binary maximum is needed to determine the conditions under which a MaP/phonological phrase complex is composed of only one MiP/phonological phrase (see footnote 280 in Appendix A). In this study, I have identified binary maximum as one of the key constraints to unlocking the prosodic organisation of the *ta'āmê hammiqrā*' (see the discussion of this binary constraint in Appendix A). My hypothesis is that this constraint is largely responsible for the surface expressions of the binary phenomena described by the LCD and the bilateral expressions that find their roots in the oral nature of the biblical text (Miller-Naudé & Naudé 2016).

Third, further research is needed to confirm the preliminary observations regarding the prosodic phrasing of construct forms and the direct object marker (Blau 2010). In §5.5 footnote 265, I noted that these syntactic forms exhibit patterns of prosodic phrasing similar to כּל (§5.5 example (93)).

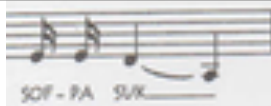
Fourth, further research is needed to explore the preliminary findings that connect syntactic/semantic coordination with prosodic iteration (intervals of a unison and a second) and syntactic/semantic subordination with prosodic recursion (intervals of a third and a fourth) (Hwang 1989; Ito & Master 2007; Karlsson 2010; Tokizaki 2001; Wagner 2005, 2007, 2010). How might

Piper's (1999) exegetical discussion on coordinate and subordinate syntactic relationships inform the exploration of this topic?

Finally, further research is needed to explore the rules that organise the prosodic structure of the intonational family that includes *'azlā'*, *gērēš*, *gēršayim*, *tālīšā' gadōlā*, *qarnē pārâ*, *pāzēr*, and *šalšelet* (see Appendix A). This intonational family is the largest, most complex, and most difficult to discern.

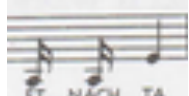
APPENDIX A: INTONATIONAL FAMILIES OF THE *Ṭə 'āmîm* AND PHONOLOGICAL PHRASE COMPLEX MEMBERS²⁷⁸

∴ *sōf-pāsûq*



SOF - PA SÛK

^ *'etnaḥtā'*



ET NACH TA

\ *tippəḥū'*



TIP OUA


γ *təbir*



T' VIR

²⁷⁸ *Ṭə 'āmîm* belonging to the same intonational family are indicated by like colours; *ṭə 'āmîm* belonging to the same phonological phrase complex are grouped together.

:	<i>zāqēp qāṭōn</i>
	 KA - TON _____
⋈	<i>zāqēp gādōl</i>
	 ZA KEF GA DOL _____
\	<i>pašṭā'</i>
	 PASH TA
<	<i>yāṭīb</i>
	 Y' - TIV _____

•	<i>rəbī'ī</i>
	 RVI _____
┘	<i>munnāḥ ləgarmê</i>
	 MU - NACH _____

∴	<i>seggōl</i>
	 SE - GOL
^	<i>zarqā'</i>
	 ZAR KA

'	<i>'azlā'</i>
	 AZ
'	<i>gērēš</i>
	 GE ... ŠEŠ
"	<i>gēršayim</i>
	 GE ŠAYIM
p	<i>tālīšā' gəḏōlā</i>
	 TALISHA GADOLA
o.o	<i>qarnê pāṛā</i>
	 QARN PAARA
+	<i>pāzēr</i>
	 PAZER
ε	<i>šalšelet</i>
	 SALSHELET

In my research on the prosodic organisation of the *ʔə ʿāmîm* and their unique pitch patterns, I have determined that the disjunctives can be classified into intonational families.²⁷⁹ These groupings are based on four factors:

- ❖ graphic representations of the *ʔə ʿāmîm*
- ❖ call/answer intonational patterns of the *ʔə ʿāmîm*
- ❖ patterns of distribution of the *ʔə ʿāmîm*
- ❖ binary maximum constraint²⁸⁰

The graphic representation of a *ʔa ʿam* visually indicates its affiliation with an intonational family.²⁸¹ While some of these similarities are more apparent than others, the symbolic forms of the *ʔə ʿāmîm* provide clues as to their association. Likewise, the pitch patterns of the *ʔə ʿāmîm* indicate which melodies are more closely related, as do the patterns of their distribution. For example, *zarqā ʿ* will always be followed by *seggōl*, indicating these two *ʔə ʿāmîm* are a part of the same intonational family and form a cohesive phonological phrase complex. This means the

²⁷⁹ Portnoy & Wolff (2000) organise the conjunctive and disjunctive *ʔə ʿāmîm* into clause groupings (“trope clauses” or “trope families”). However, their groupings and mine differ significantly. Further, Portnoy & Wolff do not explain how the *ʔə ʿāmîm* in each grouping are related.

²⁸⁰ Although binary maximum prefers to assign each MaP/phonological phrase complex two constituents (i.e. two MiPs/phonological phrases), there are conditions under which the MaP/phonological phrase complex will be composed of only one. My preliminary research has identified a few of these conditions: 1) some MaPs/complexes will only ever have one MiP/phonological phrase, namely *sōf-pāsūq* and *ʿetnahtā*; 2) some MaPs/complexes often appear alone, namely *zāqēp gādōl*, *rəbī ʿī*, and many of the disjunctives in the last intonational family; 3) repeated *ʔə ʿāmîm* often result in an uneven number of constituents (e.g. see the prosodic organisation of *munnāh ləgarmē* in Genesis 7:23 and 1 Samuel 30:21; the same phenomenon occurs with *zāqēp qāṭōn* in Genesis 15:17); and 4) *ʔə ʿāmîm* whose typical order is interrupted by a *ʔa ʿam* from a different intonational family (e.g. in Genesis 9:12 and 1 Kings 21:4 *rəbī ʿī* interrupts the *zāqēp qāṭōn* complex, forcing *pašṭā ʿ* to form a MaP of its own).

²⁸¹ This observation was made in the course of my research on the intonational patterns of the *ʔə ʿāmîm*. I am not aware of any previous scholarship on the *ʔa ʿamê hammiqrā ʿ* that has made a similar assertion.

disjunctive *zarqā*’ functions conjunctively, exhibiting its close connection to *seggōl*.²⁸² This is true of *paštā*’ and *zāqēp qātōn*, and of other disjunctives that form intonational families. Finally, the binary maximum constraint, which determines the phonological size of the MaP constituent, further clarifies the phonological phrase complex to which any given *ta’am* belongs. Binary maximum is highly ranked in TH and requires that a phonological phrase complex (MaP) be comprised of no more than two disjunctives. The last disjunctive in a phonological phrase complex is its head. The heads of most complexes are stable, although these constituents can be substituted by another disjunctive from the same intonational family.

The first intonationally related grouping is *sōf-pāsûq* and *’etnahtā*’. These two disjunctives relate to each other as corresponding halves of a cohesive utterance—that is, by joining two intonational phrases (see §4.4.5, (66) for a detailed description of the characteristics and functions of *sōf-pāsûq* and *’etnahtā*’). However *sōf-pāsûq* and *’etnahtā*’ are unique in that they each form their own phonological phrase complex comprised of only the conjunctives that serve them.

Ṭippəḥā’ and *təbir* form an intonational family, with *ṭippəḥā*’ functioning as the head of the phonological phrase complex. The graphic representation of *təbir* is very clearly related to

²⁸² Note that Portnoy & Wolff (2000:59, 72, 75) classify *zarqā*’ as both a conjunctive AND a disjunctive, although they do not explain this seemingly contradictory classification; it almost appears as though these different references to *zarqā*’ represent a typographical error. This is the only disjunctive classified as such, even though their groupings show that *ṭippəḥā*’ serves *sōf-pāsûq* (2000:73) and *munnāḥ ləgarmê* serves *rəbī’ī* (2000:74)—nevertheless, *ṭippəḥā*’ and *munnāḥ ləgarmê* are only ever classified as disjunctives.

tippəḥā’ and exhibits conjunctive-like qualities (see §4.3 example (42) for a description of the conjunctive-like qualities of *təbir*).²⁸³

In this study I have discussed the *zāqēp qāṭōn/paštā*’ complex extensively (see §4.2.4). While the graphic representations of *zāqēp qāṭōn* and *zāqēp gādōl* make it clear that these two disjunctives belong to the same intonational family (as do the graphic representations of *zāqēp qāṭōn* and *paštā*’, see §4.2.4 example (62)), the distribution of *paštā*’ and *yətib* indicates that all four disjunctives are closely related. Although *paštā*’ and *yətib* can appear together (Yeivin (1980:199) notes 11 instances), they are never a part of the same *zāqēp qāṭōn* phonological phrase complex. More frequently, however, *yətib* replaces *paštā*’ within the *zāqēp qāṭōn* complex. *Zāqēp qāṭōn* is most often the phonological phrase complex head, although *zāqēp gādōl*, *paštā*’, and even *yətib* can serve as the head of their complexes.²⁸⁴

The distribution of the disjunctives *rəbī’ī* and *munnāḥ ləgarmē* is a strong indicator of their close affiliation. Much like the single and consistent pairing of the disjunctives *zarqā’/seggōl*, *rəbī’ī* is the only disjunctive *munnāḥ ləgarmē* precedes in its intonational unit. Furthermore, the graphic representation of *munnāḥ ləgarmē* is clearly conjunctive-like. In fact, it looks exactly like the conjunctive *munnāḥ*, and is quite easily mistaken for it. The only distinguishing feature

²⁸³ *Tippəḥā*’ does not form a cohesive phonological phrase complex with *’etnaḥtā*’ (i.e. it is not a part of the same intonational family) primarily because the melodic interval between these *ṭə’āmīm* encode discontinuity. By extension of parallel forms, *tippəḥā*’ is also not a part of the *sōf-pāsūq* complex, even though the interval between these two disjunctives is conjunctive in nature (i.e. a unison).

²⁸⁴ As heads of their phonological phrase complexes, the disjunctives *zāqēp gādōl*, *paštā*’, and *yətib* most often constitute single-membered complexes (i.e. MaPs that contain only one MiP).

of *munnāḥ ləgarmê* is the presence of a *pasēq* (l) after it (Portnoy & Wolff 2002:44). *Rəbī'ī* is always the head of its complex.

The strong intonational family formed by *seggōl* and *zarqā'* is discussed in detail in §4.4 example (47) and §5.5 example (92). *Seggōl* is always the head of its complex (except, of course, in the one instance of Masoretic emendation cited by Cohen (1972:4)).

The final intonational family is the largest, the most complex, and the most difficult to discern. While my preliminary research suggests that '*azlā'*, *gērēš*, *gēršayim*, *təlīšā' gədōlâ*, *qarnê pārá*, *pāzēr*, and *šalšelet* all belong in the same intonational family, more research is needed to justify the organisation of its prosodic structure. My provisional rationale is as follows:

- i) the graphic representations of '*azlā'*, *gērēš*, and *gēršayim* visually indicate these three form an intonational family,²⁸⁵ as do the graphic representations of *təlīšā' gədōlâ* and *qarnê pārá*;
- ii) the fact that the conjunctive *təlīšā' qəṭannâ* often serves *azlā'* (e.g. Genesis 31:42; Numbers 1:50), and the fact that *təlīšā' qəṭannâ* and *təlīšā' gədōlâ* are graphically and intonationally similar, provide further evidence that *təlīšā' gədōlâ* belongs to this intonational family; Leviticus 7:18 exhibits '*azlā'* and *təlīšā' gədōlâ* forming a MaP/complex that adheres to the binary maximum constraint.

²⁸⁵ '*azlā'* and *gērēš* look identical, so they are considered by some to be the same *ṭa'am*. However, '*azlā'* and *gērēš* have different patterns of distribution; this Ashkenazi cantillation tradition assigns them distinct pitch patterns.

- iv) the binary maximum constraint at work in Genesis 7:2 and Genesis 8:22 supports grouping *pāzēr* and *tālīšā' gādōlā* in a single MaP/complex (these disjunctives form conjunct melodic motion, unlike *ṭippəḥā'* and *'etnaḥtā'*); further, the binary maximum constraint at work in 1 Chronicles 28:1 supports grouping *pāzēr* and *qarnē pārā* in a single MaP/complex, and *pāzēr* and *'azlā'* in a single MaP/complex (for an additional example of a *pāzēr/'azlā'* MaP see Genesis 7:22)—these examples all suggest *pāzēr* belongs to this intonational family;
- v) the binary maximum constraint at work in Genesis 19:16 supports grouping *šalšelet* with *'azlā'*, drawing *šalšelet* into this intonational family;
- vi) *šalšelet* is a very rare *ṭa'am*—it appears 7 times in the MT—which is an indication of its highly specialised discourse pragmatic function;
- vii) the prosodic organisation of this intonational family is highly variable—that is, different binary and single combinations of the *ṭə'amîm* in this group appear regularly, resulting in highly variable MaPs/phonological phrase complexes.
- viii) finally, the pitch patterns of *tālīšā' gādōlā*, *qarnē pārā*, *pāzēr*, and *šalšelet* all have distinctive melodic runs (i.e. rapid successions of ascending and/or descending pitches) that suggest they are intonationally related.

APPENDIX B

AN INTONATION-BASED PROSODIC CLASSIFICATION OF OVERTLY HEADED *’ušer* RELATIVE CLAUSES IN THE TWENTY-ONE BOOKS

Prosodically Marked Restrictive Relative Clauses

<i>Genesis</i>	Gen	20:7	Gen	33:14	Exod	4:18	
Gen	1:7a	Gen	20:9	Gen	34:29	Exod	4:21
Gen	1:12	Gen	20:13b	Gen	35:2a,b	Exod	7:2
Gen	1:21	Gen	21:3	Gen	35:4a	Exod	7:15
Gen	1:29b	Gen	21:9	Gen	35:6b	Exod	7:17a,b
Gen	1:31	Gen	21:12	Gen	35:14	Exod	7:18
Gen	2:19	Gen	21:22	Gen	37:22	Exod	7:20a,b
Gen	2:22	Gen	22:2a	Gen	38:18a	Exod	7:21
Gen	3:3	Gen	22:9	Gen	38:25	Exod	9:3
Gen	3:12	Gen	23:9a	Gen	39:3	Exod	9:19a
Gen	4:11	Gen	23:11	Gen	39:5a,b	Exod	9:25
Gen	5:5	Gen	23:17c,d	Gen	39:6	Exod	10:12
Gen	6:4b	Gen	23:20	Gen	39:8	Exod	11:8
Gen	6:7	Gen	24:2	Gen	39:17	Exod	12:13
Gen	6:17b	Gen	24:36	Gen	39:22b	Exod	12:22a
Gen	6:21	Gen	24:54	Gen	41:43	Exod	16:16
Gen	7:4	Gen	25:5	Gen	41:48b	Exod	16:23
Gen	7:5	Gen	25:6	Gen	41:56	Exod	16:32a
Gen	7:8b	Gen	25:10	Gen	42:38	Exod	18:1
Gen	7:22a,b	Gen	28:15	Gen	43:26	Exod	18:8a,b
Gen	8:17	Gen	28:18	Gen	44:17	Exod	18:14a
Gen	9:2	Gen	28:20	Gen	45:10	Exod	19:8
Gen	9:3	Gen	28:22b	Gen	45:11	Exod	20:10
Gen	9:10	Gen	29:9	Gen	45:13	Exod	20:11
Gen	9:17a	Gen	29:27	Gen	45:27a	Exod	20:24
Gen	11:6	Gen	30:30	Gen	46:1	Exod	21:8
Gen	12:5a	Gen	30:33	Gen	46:27	Exod	21:30
Gen	12:20	Gen	30:35	Gen	46:31	Exod	22:15
Gen	13:1	Gen	30:38a	Gen	46:32	Exod	23:13
Gen	13:15	Gen	31:1	Gen	47:1	Exod	24:3
Gen	14:5	Gen	31:12	Gen	47:4	Exod	24:7
Gen	14:23	Gen	31:16b	Gen	48:6	Exod	25:2
Gen	15:14	Gen	31:18a	Gen	49:28b	Exod	25:22b
Gen	16:15	Gen	31:21	Gen	49:30b	Exod	28:8
Gen	18:8	Gen	31:43a	Gen	49:32	Exod	29:21
Gen	19:5	Gen	31:49			Exod	29:22
Gen	19:12	Gen	32:8	<i>Exodus</i>		Exod	29:26
Gen	20:3	Gen	33:11	Exod	4:9		

Exod 29:29	Lev 6:20a	Lev 22:20	Num 22:35
Exod 29:33	Lev 6:21	Lev 23:29	Num 23:13
Exod 29:35	Lev 6:23	Lev 25:30a	Num 23:26
Exod 30:33a	Lev 7:4a	Lev 25:45a	Num 24:12
Exod 30:37	Lev 7:7	Lev 27:9b	Num 25:18
Exod 30:38	Lev 7:8	Lev 27:28a,b	Num 30:1
Exod 31:6	Lev 7:20b	Lev 27:32	Num 30:5a,b
Exod 31:11	Lev 8:10		Num 30:6
Exod 32:8a	Lev 8:16	<i>Numbers</i>	Num 30:8
Exod 32:20	Lev 8:25	Num 1:50	Num 30:9a
Exod 32:33	Lev 8:30	Num 2:34	Num 30:10
Exod 33:17	Lev 9:6	Num 4:16	Num 30:12
Exod 34:10b	Lev 9:15	Num 4:25	Num 31:23b
Exod 34:18	Lev 10:3	Num 4:26b	Num 31:35
Exod 34:32	Lev 11:2a	Num 5:7	Num 31:50
Exod 35:10	Lev 11:9b	Num 5:9	Num 32:39
Exod 35:16	Lev 11:10a	Num 5:10	Num 33:54
Exod 35:21b	Lev 11:12	Num 6:4	Num 35:8b
Exod 35:24	Lev 11:26	Num 6:21a,c	Num 35:17
Exod 36:1b	Lev 11:32a	Num 9:13	Num 35:18
Exod 36:2b	Lev 11:33b	Num 10:29	Num 35:33b
Exod 37:16a	Lev 11:34b	Num 11:4	
Exod 38:22	Lev 13:51	Num 11:17	<i>Deuteronomy</i>
Exod 39:1	Lev 13:58	Num 11:20	Deut 1:14
Exod 39:39	Lev 14:28	Num 11:25	Deut 1:17
Exod 39:42	Lev 14:36	Num 13:32a,b,c	Deut 1:22b
Exod 40:9	Lev 14:41	Num 14:24	Deut 1:31a,b
	Lev 15:4b	Num 14:40	Deut 1:33
<i>Leviticus</i>	Lev 15:10	Num 15:23a	Deut 1:36
Lev 1:8a	Lev 15:11	Num 16:7	Deut 1:39a
Lev 1:12a	Lev 15:12	Num 16:26	Deut 1:41
Lev 3:4a	Lev 15:20a,b	Num 16:30	Deut 2:36a,b
Lev 3:10a	Lev 15:23	Num 16:32	Deut 2:37
Lev 3:15a	Lev 15:24	Num 16:33	Deut 3:21a
Lev 4:3	Lev 15:26b	Num 17:20a	Deut 4:18
Lev 4:9a	Lev 16:11a	Num 18:9	Deut 4:34
Lev 4:13	Lev 16:13	Num 18:12	Deut 5:14
Lev 4:24	Lev 16:15	Num 18:13a,b	Deut 5:26
Lev 4:27	Lev 16:18	Num 18:21	Deut 5:27a,b
Lev 4:35	Lev 18:3a	Num 19:13	Deut 5:28a,b
Lev 5:6	Lev 18:29	Num 19:14	Deut 6:2
Lev 5:10	Lev 18:30	Num 19:16	Deut 6:11a,b
Lev 5:13	Lev 20:17	Num 19:20	Deut 8:3
Lev 5:18	Lev 20:18	Num 19:22	Deut 8:9b
Lev 5:22	Lev 20:25a	Num 21:13	Deut 8:13
Lev 5:23b	Lev 21:18	Num 21:32	Deut 8:18
Lev 5:26	Lev 22:3a	Num 22:2	Deut 9:12b
Lev 6:11	Lev 22:5a,c	Num 22:17	Deut 9:18
Lev 6:18	Lev 22:6	Num 22:20	Deut 9:28a

Deut 10:14	Deut 28:23a,b	Josh 10:39	Judg 8:4
Deut 11:6	Deut 28:36a	Josh 11:4	Judg 8:26a
Deut 11:25	Deut 28:43	Josh 11:11	Judg 8:31
Deut 12:1a	Deut 28:55a	Josh 11:15	Judg 9:24a
Deut 12:11b	Deut 28:57a	Josh 12:2	Judg 9:25
Deut 12:12	Deut 28:67a	Josh 12:7	Judg 9:32
Deut 12:14b	Deut 28:68	Josh 12:9	Judg 9:33
Deut 12:15	Deut 29:1	Josh 13:4	Judg 9:34
Deut 12:17	Deut 29:8	Josh 13:9a,b	Judg 9:35
Deut 12:26a	Deut 29:25	Josh 13:16a,b	Judg 9:38a,b
Deut 13:3b	Deut 27:15	Josh 13:30	Judg 9:44a,b
Deut 13:7a	Deut 30:2	Josh 14:1a	Judg 9:45
Deut 13:16	Deut 30:5	Josh 14:6	Judg 9:48a,b
Deut 14:9b	Deut 31:20	Josh 14:8	Judg 10:18
Deut 14:10		Josh 15:46	Judg 11:24
Deut 14:21	<i>Joshua</i>	Josh 19:50	Judg 13:11
Deut 14:23	Josh 1:16a,b	Josh 21:44	Judg 13:13
Deut 14:26a,b	Josh 1:17	Josh 22:2a,b	Judg 13:14a,b
Deut 14:27	Josh 1:18b	Josh 22:9b	Judg 15:14b
Deut 14:29a	Josh 2:3	Josh 22:30a	Judg 15:19a,b
Deut 16:2	Josh 2:13	Josh 23:3	Judg 16:30b
Deut 16:11a	Josh 2:18	Josh 23:4	Judg 18:7
Deut 16:16	Josh 2:19a	Josh 23:16a	Judg 18:10a
Deut 17:10a	Josh 3:4	Josh 24:13a,b,c	Judg 18:24
Deut 17:11b,c	Josh 4:10b	Josh 24:17b	Judg 18:27
Deut 18:16	Josh 4:23		Judg 19:22
Deut 18:18	Josh 5:1a,b	<i>Judges</i>	Judg 19:26
Deut 18:20a	Josh 6:17a,b	Judg 2:15	Judg 20:4
Deut 19:14b	Josh 6:21	Judg 2:20	
Deut 19:17a	Josh 6:22	Judg 2:21	<i>1 Samuel</i>
Deut 20:14a	Josh 6:23	Judg 3:1a,b	1 Sam 1:28
Deut 20:20a	Josh 6:24	Judg 3:19	1 Sam 2:14
Deut 21:8	Josh 6:25a	Judg 3:20	1 Sam 2:22
Deut 21:17	Josh 7:14a,c	Judg 4:9	1 Sam 2:24
Deut 22:3	Josh 7:15	Judg 6:2	1 Sam 2:32
Deut 22:9	Josh 7:24	Judg 6:11a	1 Sam 3:12
Deut 22:24a,b	Josh 8:5	Judg 6:13	1 Sam 3:13
Deut 22:25	Josh 8:16	Judg 6:21	1 Sam 3:17a
Deut 22:28	Josh 8:18a,b	Judg 6:25a,b,c	1 Sam 5:12
Deut 23:9	Josh 8:24	Judg 6:28	1 Sam 6:4
Deut 23:17	Josh 9:1	Judg 6:30	1 Sam 6:15a,b
Deut 24:4a	Josh 9:9	Judg 6:31	1 Sam 8:7
Deut 24:5	Josh 9:10a	Judg 7:1	1 Sam 8:8
Deut 24:8	Josh 9:13	Judg 7:2	1 Sam 9:5
Deut 24:14	Josh 10:28	Judg 7:4	1 Sam 9:6a
Deut 25:6	Josh 10:30	Judg 7:5a,b	1 Sam 9:17
Deut 26:2b	Josh 10:32b	Judg 7:18	1 Sam 9:19
Deut 26:19	Josh 10:35a,b	Judg 7:19a	1 Sam 10:2
Deut 27:2a	Josh 10:37a,b		1 Sam 10:24

1 Sam 12:1	<i>2 Samuel</i>	2 Sam 17:7	1 Kgs 9:19a
1 Sam 12:13a	2 Sam 1:10a,b	2 Sam 17:11	1 Kgs 9:25
1 Sam 12:14	2 Sam 2:3	2 Sam 17:12a,b	1 Kgs 9:26
1 Sam 13:3	2 Sam 2:23	2 Sam 17:22a	1 Kgs 10:2
1 Sam 13:5	2 Sam 3:8	2 Sam 17:29	1 Kgs 10:13a
1 Sam 13:8	2 Sam 3:19	2 Sam 18:9	1 Kgs 10:27
1 Sam 14:2b	2 Sam 3:20	2 Sam 18:18	1 Kgs 10:28
1 Sam 14:7	2 Sam 3:21	2 Sam 18:32	1 Kgs 11:32
1 Sam 14:17	2 Sam 3:23	2 Sam 19:8	1 Kgs 11:34a
1 Sam 14:20	2 Sam 3:25	2 Sam 19:11	1 Kgs 11:36
1 Sam 14:24	2 Sam 3:31	2 Sam 19:39	1 Kgs 11:37
1 Sam 14:27	2 Sam 3:36	2 Sam 20:3	1 Kgs 11:38
1 Sam 14:28	2 Sam 6:2a	2 Sam 20:8	1 Kgs 11:41
1 Sam 14:43	2 Sam 6:4	2 Sam 20:10	1 Kgs 12:4
1 Sam 14:47	2 Sam 6:12	2 Sam 20:11a,b	1 Kgs 12:8b
1 Sam 15:3	2 Sam 6:22	2 Sam 20:15	1 Kgs 12:10b
1 Sam 17:25	2 Sam 7:3	2 Sam 21:5a	1 Kgs 12:18
1 Sam 17:40	2 Sam 7:7a	2 Sam 21:7	1 Kgs 12:32a,b
1 Sam 18:4	2 Sam 7:9a	2 Sam 21:8a	1 Kgs 12:33a
1 Sam 18:5	2 Sam 7:22	2 Sam 21:14	1 Kgs 13:3b
1 Sam 19:3	2 Sam 8:11a	2 Sam 23:16	1 Kgs 13:4b
1 Sam 19:18	2 Sam 9:9	2 Sam 24:2	1 Kgs 13:11a,b
1 Sam 19:22	2 Sam 9:11		1 Kgs 13:14
1 Sam 21:3a	2 Sam 10:13	<i>1 Kings</i>	1 Kgs 13:22
1 Sam 22:2	2 Sam 11:16	1 Kgs 1:41	1 Kgs 13:26a
1 Sam 23:22	2 Sam 11:22	1 Kgs 2:3a,b	1 Kgs 14:16a
1 Sam 23:23	2 Sam 11:27	1 Kgs 2:5a	1 Kgs 14:18
1 Sam 24:5b	2 Sam 12:3	1 Kgs 2:26	1 Kgs 14:20
1 Sam 25:6	2 Sam 12:31	1 Kgs 3:26	1 Kgs 14:21
1 Sam 25:7	2 Sam 13:10	1 Kgs 3:28	1 Kgs 14:22a
1 Sam 25:21a,b	2 Sam 13:15a	1 Kgs 4:12	1 Kgs 14:29
1 Sam 25:22	2 Sam 13:16	1 Kgs 4:20	1 Kgs 15:5
1 Sam 25:30	2 Sam 13:19	1 Kgs 5:8	1 Kgs 15:7
1 Sam 25:39	2 Sam 13:22	1 Kgs 5:13	1 Kgs 15:20
1 Sam 26:5a,b	2 Sam 14:7a,b	1 Kgs 5:30	1 Kgs 15:23a,b
1 Sam 26:16a	2 Sam 14:19	1 Kgs 6:22	1 Kgs 15:30a
1 Sam 27:8	2 Sam 14:20	1 Kgs 7:3	1 Kgs 15:31
1 Sam 29:4	2 Sam 14:26	1 Kgs 7:7	1 Kgs 16:7
1 Sam 29:8	2 Sam 14:31	1 Kgs 7:8a,b	1 Kgs 16:12
1 Sam 30:2	2 Sam 15:2	1 Kgs 7:41a	1 Kgs 16:14
1 Sam 30:4	2 Sam 15:4	1 Kgs 8:43a	1 Kgs 16:19a,b
1 Sam 30:9	2 Sam 15:7	1 Kgs 8:44b	1 Kgs 16:22a
1 Sam 30:17	2 Sam 15:15	1 Kgs 8:46	1 Kgs 16:24
1 Sam 30:18	2 Sam 15:30	1 Kgs 8:48b,c	1 Kgs 16:27a
1 Sam 30:19	2 Sam 16:11	1 Kgs 8:50a	1 Kgs 16:34
1 Sam 30:21b	2 Sam 16:14	1 Kgs 8:63	1 Kgs 17:1
1 Sam 30:22a	2 Sam 16:21b	1 Kgs 8:64b	1 Kgs 17:9
1 Sam 30:31	2 Sam 17:2	1 Kgs 9:3a,b	1 Kgs 18:24
1 Sam 31:7a	2 Sam 17:3	1 Kgs 9:7a,b	1 Kgs 18:26a

1 Kgs 18:38	2 Kgs 13:12a,b	2 Kgs 24:5	Jer 7:30
1 Kgs 19:1a,b	2 Kgs 14:3	2 Kgs 24:7	Jer 8:3
1 Kgs 20:4	2 Kgs 14:6	2 Kgs 24:9	Jer 9:8
1 Kgs 20:9	2 Kgs 14:9c	2 Kgs 24:19	Jer 10:25a
1 Kgs 20:34	2 Kgs 14:28a,b	2 Kgs 25:13b	Jer 11:1
1 Kgs 21:8	2 Kgs 15:3	2 Kgs 25:14	Jer 11:4b
1 Kgs 21:22	2 Kgs 15:6	2 Kgs 25:19b	Jer 11:8
1 Kgs 21:26a	2 Kgs 15:16	2 Kgs 25:28	Jer 13:4a
1 Kgs 22:31	2 Kgs 15:18		Jer 14:16
1 Kgs 22:39a,b	2 Kgs 15:21	<i>Isaiah</i>	Jer 17:4a
1 Kgs 22:46	2 Kgs 15:26	Isa 2:1	Jer 17:5
1 Kgs 22:54	2 Kgs 15:31	Isa 7:16	Jer 18:1
	2 Kgs 15:34	Isa 7:17	Jer 20:14b
<i>2 Kings</i>	2 Kgs 16:11	Isa 8:12	Jer 20:16
2 Kgs 1:2	2 Kgs 16:13	Isa 8:18	Jer 21:1
2 Kgs 1:6a	2 Kgs 16:14	Isa 19:17a	Jer 21:4a
2 Kgs 1:17	2 Kgs 16:16	Isa 22:25	Jer 22:12
2 Kgs 2:3	2 Kgs 17:9	Isa 36:22	Jer 22:25
2 Kgs 2:5	2 Kgs 17:15a,c	Isa 37:2	Jer 22:26a
2 Kgs 2:15	2 Kgs 17:27	Isa 37:6a	Jer 23:6
2 Kgs 3:3	2 Kgs 17:37	Isa 37:12a	Jer 26:8
2 Kgs 3:14	2 Kgs 17:38	Isa 37:34	Jer 29:8a
2 Kgs 4:13b	2 Kgs 18:3	Isa 38:8a	Jer 29:25
2 Kgs 5:16	2 Kgs 18:7	Isa 39:2a	Jer 29:32
2 Kgs 6:12a	2 Kgs 18:12	Isa 39:4a,b	Jer 30:1a,b
2 Kgs 6:16	2 Kgs 18:37	Isa 39:6	Jer 30:3
2 Kgs 7:2	2 Kgs 19:2	Isa 39:7b	Jer 30:11
2 Kgs 7:13a,b	2 Kgs 19:12a	Isa 45:1	Jer 31:37
2 Kgs 8:1	2 Kgs 19:33	Isa 49:7	Jer 31:33
2 Kgs 8:6	2 Kgs 20:11	Isa 50:1a	Jer 32:7
2 Kgs 8:23	2 Kgs 20:13a	Isa 55:11	Jer 32:8a
2 Kgs 9:15	2 Kgs 20:15a,b	Isa 59:21a	Jer 32:23
2 Kgs 9:27	2 Kgs 20:17a	Isa 60:12	Jer 32:31
2 Kgs 10:5	2 Kgs 21:8b	Isa 63:7a	Jer 32:34
2 Kgs 10:19	2 Kgs 21:11a	Isa 66:1	Jer 33:8b
2 Kgs 10:24a	2 Kgs 21:16		Jer 33:16
2 Kgs 10:29a	2 Kgs 21:17a	<i>Jeremiah</i>	Jer 34:1
2 Kgs 10:30	2 Kgs 21:21b	Jer 1:1	Jer 34:8a,b
2 Kgs 10:33	2 Kgs 23:12a,c	Jer 1:7a,b	Jer 34:18c
2 Kgs 10:34	2 Kgs 23:15c	Jer 1:17	Jer 35:1
2 Kgs 11:9	2 Kgs 23:16a	Jer 2:28	Jer 35:10
2 Kgs 12:6	2 Kgs 23:17b,c	Jer 5:9	Jer 35:14
2 Kgs 12:13	2 Kgs 23:20	Jer 5:29	Jer 35:18
2 Kgs 12:19	2 Kgs 23:27a,b	Jer 7:1	Jer 36:4
2 Kgs 12:20	2 Kgs 23:28	Jer 7:10	Jer 36:6
2 Kgs 13:2	2 Kgs 23:32	Jer 7:11	
2 Kgs 13:6	2 Kgs 23:37	Jer 7:12a	
2 Kgs 13:8	2 Kgs 24:2	Jer 7:14a	
2 Kgs 13:11	2 Kgs 24:4	Jer 7:23	

Jer	36:8	Ezek	9:6a	Ezek	37:23	
Jer	36:31	Ezek	11:7	Ezek	38:17	<i>Habakkuk</i>
Jer	37:2	Ezek	11:12	Ezek	39:21a	Hab 1:1
Jer	38:9a	Ezek	12:12	Ezek	40:4a,b	
Jer	39:9	Ezek	12:14	Ezek	41:6	<i>Zephaniah</i>
Jer	40:4	Ezek	12:16	Ezek	41:9a	Zeph 1:1
Jer	40:5	Ezek	12:27	Ezek	41:12	Zeph 3:7
Jer	40:10b	Ezek	13:14	Ezek	42:7	
Jer	40:11a	Ezek	13:19a	Ezek	42:13a,c	<i>Haggai</i>
Jer	40:12	Ezek	14:4	Ezek	42:14	Hag 1:9
Jer	41:2a	Ezek	14:7	Ezek	43:3b	Hag 2:18
Jer	41:7	Ezek	14:22b	Ezek	43:8	
Jer	41:11b	Ezek	14:23	Ezek	43:11	<i>Zechariah</i>
Jer	41:13a	Ezek	16:14	Ezek	43:19	Zech 1:4
Jer	41:16a	Ezek	16:17	Ezek	44:5	Zech 1:10
Jer	42:4	Ezek	16:19	Ezek	44:10b	Zech 2:2
Jer	42:5	Ezek	16:20	Ezek	44:14	Zech 7:14
Jer	42:20	Ezek	16:37a,b,c	Ezek	44:22	Zech 8:17
Jer	42:22	Ezek	16:52b	Ezek	44:25	
Jer	43:5b	Ezek	16:63	Ezek	46:9	<i>Malachi</i>
Jer	44:1	Ezek	17:19a	Ezek	47:9a,b,c	Mal 1:4
Jer	44:16	Ezek	18:21	Ezek	47:13	Mal 2:11
Jer	44:17	Ezek	18:22a,b	Ezek	48:8	Mal 2:12
Jer	46:13	Ezek	18:24b,c,d	Ezek	48:29	Mal 3:1a
Jer	46:28	Ezek	18:26			Mal 3:21
Jer	50:29	Ezek	18:27	<i>Hosea</i>		
Jer	50:37	Ezek	18:31	Hos 1:1	<i>Ruth</i>	
Jer	51:24	Ezek	20:15	Hos 2:15	Ruth 1:7	
Jer	51:60	Ezek	21:35	Hos 12:9	Ruth 2:9	
Jer	52:2	Ezek	22:4a,b	Hos 13:10	Ruth 2:11a	
Jer	52:17b	Ezek	23:7		Ruth 2:21a	
Jer	52:18	Ezek	23:28b	<i>Joel</i>	Ruth 3:4	
Jer	52:20a	Ezek	23:37	Joel 1:1	Ruth 3:5	
Jer	52:25b	Ezek	24:6	Joel 3:5a	Ruth 3:6	
Jer	52:32	Ezek	24:21	Joel 4:2	Ruth 3:11	
		Ezek	24:24		Ruth 3:15	
<i>Ezekiel</i>		Ezek	26:6	<i>Amos</i>	Ruth 3:16	
Ezek	1:26	Ezek	26:18	Amos 4:7	Ruth 4:1	
Ezek	1:28	Ezek	27:27b	Amos 9:15	Ruth 4:9a,b	
Ezek	3:10	Ezek	28:25a		Ruth 4:11a	
Ezek	3:20	Ezek	29:20	<i>Obadiah</i>	Ruth 4:15a	
Ezek	4:4	Ezek	33:13	Obad 20a		
Ezek	4:10	Ezek	33:16		<i>Ecclesiastes</i>	
Ezek	5:7a,b	Ezek	34:12	<i>Jonah</i>	Eccl 1:13	
Ezek	5:16a	Ezek	36:7	Jon 3:10	Eccl 1:16	
Ezek	6:9a,c	Ezek	36:20		Eccl 2:10	
Ezek	9:3a	Ezek	36:22a	<i>Micah</i>	Eccl 3:11	
		Ezek	37:19	Mic 1:1a	Eccl 3:14	

Eccl	4:16	Dan	1:10b	1 Chr	11:18	2 Chr	16:4
Eccl	5:17	Dan	8:20	1 Chr	13:14	2 Chr	18:30
Eccl	5:18	Dan	8:21	1 Chr	16:12	2 Chr	19:10
Eccl	6:2a,b	Dan	8:26	1 Chr	16:32	2 Chr	22:6
Eccl	7:21	Dan	9:7a	1 Chr	17:2	2 Chr	23:8
Eccl	8:3	Dan	9:10	1 Chr	17:6a	2 Chr	23:18
Eccl	8:14a	Dan	9:12a,b	1 Chr	17:8a	2 Chr	25:4
Eccl	8:15b	Dan	9:14	1 Chr	17:20	2 Chr	25:18c
Eccl	8:17	Dan	10:7	1 Chr	17:21b	2 Chr	26:4
Eccl	9:3	Dan	11:4	1 Chr	19:9	2 Chr	26:23
Eccl	9:4			1 Chr	19:14	2 Chr	27:2
Eccl	9:6	<i>Ezra</i>		1 Chr	20:3	2 Chr	28:15
Eccl	9:9a	Ezra	1:4a	1 Chr	21:17	2 Chr	29:2
Eccl	12:1	Ezra	10:8	1 Chr	27:28	2 Chr	29:32
		Ezra	10:14	1 Chr	28:12	2 Chr	30:8
<i>Lamentations</i>				1 Chr	29:16	2 Chr	32:7
Lam	2:17	<i>Nehemiah</i>		1 Chr	29:19	2 Chr	32:9
		Neh	1:2			2 Chr	32:14a
<i>Esther</i>		Neh	1:6a,b	<i>2 Chronicles</i>		2 Chr	32:18
Esth	1:20	Neh	2:8b	2 Chr	1:12b	2 Chr	32:31
Esth	2:6b	Neh	2:13	2 Chr	1:13	2 Chr	33:8b
Esth	2:13	Neh	2:17	2 Chr	1:15	2 Chr	34:4
Esth	2:15	Neh	2:19	2 Chr	1:16	2 Chr	34:16
Esth	3:3	Neh	4:17	2 Chr	2:4	2 Chr	34:21b
Esth	3:12a	Neh	5:13	2 Chr	2:5	2 Chr	34:33
Esth	4:1	Neh	5:14	2 Chr	2:8	2 Chr	35:3
Esth	4:5	Neh	5:15	2 Chr	2:14	2 Chr	35:18
Esth	4:7a	Neh	5:17	2 Chr	3:15	2 Chr	35:21
Esth	4:11a	Neh	5:19	2 Chr	6:20a	2 Chr	35:24
Esth	4:17	Neh	6:16	2 Chr	6:33a	2 Chr	36:8
Esth	5:2	Neh	8:4	2 Chr	6:34b		
Esth	5:8	Neh	9:6a,b	2 Chr	6:36		
Esth	5:11	Neh	9:17	2 Chr	6:38b,c		
Esth	5:12	Neh	9:32	2 Chr	7:7b		
Esth	6:13a	Neh	9:35b	2 Chr	7:20a,b		
Esth	7:8	Neh	9:37	2 Chr	7:21		
Esth	7:9a	Neh	13:17	2 Chr	8:6a		
Esth	8:9a			2 Chr	8:10		
Esth	8:11b	<i>1 Chronicles</i>		2 Chr	9:1		
Esth	9:3	1 Chr	4:22	2 Chr	9:12		
Esth	9:13	1 Chr	4:41	2 Chr	9:27		
Esth	9:15	1 Chr	5:6	2 Chr	10:4		
Esth	9:16	1 Chr	5:36a	2 Chr	10:8b		
Esth	9:18	1 Chr	6:34	2 Chr	10:10b		
Esth	9:25	1 Chr	10:7	2 Chr	10:18		
		1 Chr	10:11	2 Chr	12:13		
<i>Daniel</i>		1 Chr	10:13a	2 Chr	14:12		
Dan	1:4	1 Chr	11:10	2 Chr	15:13		

Prosodically Marked Nonrestrictive Relative Clauses

<i>Genesis</i>	Exod	20:4c	Num	9:17	Deut	13:1
Gen 3:11	Exod	22:8	Num	12:12	Deut	16:11c
Gen 9:15	Exod	25:9	Num	14:14	Deut	16:22
Gen 11:5	Exod	28:38	Num	14:29	Deut	17:5
Gen 11:7	Exod	29:30	Num	15:22	Deut	18:14
Gen 13:16	Exod	29:42	Num	15:30	Deut	18:20b,c
Gen 15:7	Exod	32:1a,b	Num	19:2b	Deut	19:4
Gen 17:14	Exod	32:23b	Num	21:11	Deut	19:5
Gen 17:21	Exod	36:3	Num	21:20	Deut	20:15
Gen 19:8			Num	24:4	Deut	21:1
Gen 19:19	<i>Leviticus</i>		Num	25:14	Deut	21:3a
Gen 24:7b,c	Lev	2:8	Num	26:63	Deut	23:5b
Gen 24:15	Lev	2:11	Num	26:64	Deut	23:16
Gen 25:12	Lev	5:2	Num	31:42	Deut	24:11
Gen 26:15	Lev	7:2	Num	31:52	Deut	25:19
Gen 26:18a	Lev	7:9	Num	33:1	Deut	26:11a
Gen 28:13	Lev	7:11	Num	35:6a	Deut	27:3
Gen 30:38b	Lev	7:36	Num	35:7	Deut	28:14
Gen 33:19	Lev	8:26	Num	35:8a	Deut	28:27
Gen 35:5	Lev	11:21	Num	35:33a	Deut	28:50
Gen 35:12	Lev	14:18	Num	35:34a,b	Deut	28:51
Gen 41:48a	Lev	14:30			Deut	28:64
Gen 41:50	Lev	16:32b	<i>Deuteronomy</i>		Deut	29:11
Gen 41:53	Lev	17:3b	Deut	2:22	Deut	29:24
Gen 42:21	Lev	17:8b	Deut	2:25	Deut	31:4
Gen 44:8	Lev	20:10a	Deut	4:3	Deut	31:13c
Gen 46:20	Lev	20:11	Deut	4:6	Deut	32:47
Gen 48:22	Lev	20:12	Deut	4:19	Deut	33:8
Gen 49:30c	Lev	20:20	Deut	4:44	Deut	34:4
Gen 50:13	Lev	20:22	Deut	4:45	Deut	34:10
	Lev	21:10	Deut	4:46b	Deut	34:11
<i>Exodus</i>	Lev	22:2	Deut	5:8c	Deut	34:12
Exod 1:8	Lev	23:4	Deut	6:10a		
Exod 1:15	Lev	23:10	Deut	6:12	<i>Joshua</i>	
Exod 3:5	Lev	23:30	Deut	8:20	Josh	1:7a
Exod 4:17	Lev	26:45	Deut	9:2	Josh	2:10a
Exod 6:26	Lev	27:29	Deut	9:26b	Josh	3:16
Exod 8:18			Deut	9:29	Josh	5:6b
Exod 9:18	<i>Numbers</i>		Deut	10:21a	Josh	5:15
Exod 9:24	Num	3:3	Deut	11:2a,b	Josh	6:26
Exod 10:6	Num	3:39	Deut	11:7	Josh	8:35b
Exod 11:6	Num	4:37	Deut	11:10c	Josh	11:19
Exod 12:39	Num	4:41	Deut	11:22	Josh	13:8
Exod 18:3	Num	4:45	Deut	11:32	Josh	13:21b
Exod 18:10b	Num	5:17	Deut	12:2b	Josh	14:1b
Exod 20:2	Num	7:89	Deut	12:18a	Josh	14:9

Josh 18:7	2 Sam 17:10a	2 Kgs 22:4	Jer 25:2
Josh 18:14	2 Sam 21:12a	2 Kgs 22:5	Jer 27:5
Josh 19:8	2 Sam 21:16	2 Kgs 23:5	Jer 27:9
Josh 19:51		2 Kgs 23:7b	Jer 27:20
Josh 22:5	<i>1 Kings</i>	2 Kgs 23:8a	Jer 28:3
Josh 24:17a	1 Kgs 1:33	2 Kgs 23:12b	Jer 29:3
	1 Kgs 2:24b	2 Kgs 23:15b	Jer 29:11
<i>Judges</i>	1 Kgs 2:44a	2 Kgs 23:16b	Jer 29:19
Judg 2:1	1 Kgs 3:19	2 Kgs 23:19a,b	Jer 31:32a,b
Judg 2:10a	1 Kgs 7:18	2 Kgs 23:24a	Jer 32:8b
Judg 2:12	1 Kgs 7:48b	2 Kgs 23:25	Jer 32:32
Judg 2:17	1 Kgs 8:9b	2 Kgs 25:15a,b	Jer 32:35
Judg 4:14	1 Kgs 8:21b	2 Kgs 25:19a	Jer 32:36
Judg 8:15	1 Kgs 8:38a,b		Jer 32:43
Judg 9:56	1 Kgs 8:40b	<i>Isaiah</i>	Jer 33:9a,b
Judg 10:4	1 Kgs 8:51	Isa 2:20	Jer 35:4a
Judg 10:8a	1 Kgs 8:59	Isa 6:13	Jer 38:19
Judg 11:26	1 Kgs 9:15	Isa 7:23	Jer 38:22
Judg 16:29	1 Kgs 9:19b	Isa 7:25	Jer 39:10
Judg 18:16	1 Kgs 9:23	Isa 11:10	Jer 41:2b
Judg 18:22a,b	1 Kgs 11:23	Isa 11:11	Jer 41:9b,c
Judg 20:31	1 Kgs 12:9a	Isa 13:1	Jer 42:9
	1 Kgs 13:5	Isa 13:17	Jer 42:16a
<i>1 Samuel</i>	1 Kgs 13:21a	Isa 18:1	Jer 43:5a
1 Sam 2:23	1 Kgs 13:32a	Isa 19:15	Jer 43:6
1 Sam 2:34	1 Kgs 16:13a,b	Isa 19:25	Jer 44:3a,b
1 Sam 3:11	1 Kgs 18:10	Isa 20:6	Jer 44:9
1 Sam 9:23b	1 Kgs 18:31	Isa 23:8	Jer 44:14
1 Sam 10:19	1 Kgs 19:18a	Isa 28:1	Jer 44:25
1 Sam 12:6a,b	1 Kgs 21:11a	Isa 30:13	Jer 45:1
1 Sam 12:16	1 Kgs 21:15	Isa 30:24	Jer 46:2b
1 Sam 12:21	1 Kgs 21:25b	Isa 31:7	Jer 49:20a
1 Sam 14:45	1 Kgs 22:25	Isa 38:7a	Jer 49:28
1 Sam 17:13		Isa 39:7a	Jer 50:45a
1 Sam 20:31	<i>2 Kings</i>	Isa 41:9	Jer 51:64
1 Sam 21:10	2 Kgs 10:24b	Isa 63:10	Jer 52:7
1 Sam 25:33	2 Kgs 11:10b	Isa 66:22	Jer 52:25a
1 Sam 26:23	2 Kgs 12:5b		
1 Sam 30:21a	2 Kgs 17:12	<i>Jeremiah</i>	<i>Ezekiel</i>
	2 Kgs 17:13b	Jer 1:2	Ezek 4:9
<i>2 Samuel</i>	2 Kgs 17:26	Jer 1:16	Ezek 6:11
2 Sam 7:14	2 Kgs 17:28	Jer 5:17	Ezek 6:13
2 Sam 7:23a	2 Kgs 17:29a	Jer 7:14b	Ezek 8:6
2 Sam 10:16	2 Kgs 19:6b	Jer 8:2c,d,e	Ezek 9:2
2 Sam 12:15	2 Kgs 20:18a	Jer 11:4a	Ezek 9:11
2 Sam 15:18	2 Kgs 21:4	Jer 11:10a	Ezek 10:1
2 Sam 16:8	2 Kgs 21:7c	Jer 19:5	Ezek 10:7
2 Sam 16:23	2 Kgs 21:12	Jer 21:4b	Ezek 10:20

Ezek	10:22	Mic	5:7	Esth	8:17	2 Chr	7:22
Ezek	11:15	Mic	5:14			2 Chr	8:6b
Ezek	12:2	Mic	7:20	<i>Daniel</i>		2 Chr	10:9a
Ezek	12:28			Dan	1:11	2 Chr	10:10a
Ezek	13:3	<i>Nahum</i>		Dan	9:1	2 Chr	10:15
Ezek	14:5	Nah	2:12	Dan	9:11	2 Chr	16:14a
Ezek	16:45			Dan	9:12c	2 Chr	18:24
Ezek	16:52a	<i>Habakkuk</i>		Dan	10:11	2 Chr	23:9b
Ezek	20:9b	Hab	2:5	Dan	12:7	2 Chr	24:22
Ezek	20:11					2 Chr	25:27
Ezek	20:42	<i>Zephaniah</i>		<i>Ezra</i>		2 Chr	32:17
Ezek	21:30	Zeph	1:6	Ezra	1:7	2 Chr	33:4
Ezek	23:20	Zeph	2:8	Ezra	2:2	2 Chr	33:7c
Ezek	29:3			Ezra	7:11	2 Chr	33:11
Ezek	32:24a	<i>Zechariah</i>		Ezra	7:27a	2 Chr	33:15
Ezek	32:27	Zech	1:6	Ezra	9:11a,c	2 Chr	33:22
Ezek	32:30	Zech	1:12			2 Chr	34:10
Ezek	35:12	Zech	1:15	<i>Nehemiah</i>			
Ezek	36:5	Zech	3:9	Neh	1:10		
Ezek	36:21a	Zech	7:3	Neh	4:14		
Ezek	36:36	Zech	7:12	Neh	8:3		
Ezek	37:25a,b	Zech	14:4	Neh	8:14		
Ezek	40:20			Neh	13:14		
Ezek	40:42	<i>Malachi</i>					
Ezek	40:45	Mal	2:14	<i>1 Chronicles</i>			
Ezek	40:46	Mal	3:22	1 Chr	1:43		
Ezek	41:15			1 Chr	4:33		
Ezek	44:10a	<i>Ruth</i>		1 Chr	12:32		
Ezek	46:20a,b	Ruth	2:19	1 Chr	16:16		
Ezek	48:11b	Ruth	4:11b	1 Chr	17:5		
				1 Chr	17:21a		
<i>Joel</i>		<i>Ecclesiastes</i>		1 Chr	26:26		
Joel	4:1	Eccl	7:20	1 Chr	29:27		
		Eccl	7:28				
<i>Amos</i>				<i>2 Chronicles</i>			
Amos	1:1b	<i>Lamentations</i>		2 Chr	1:5		
Amos	4:1	Lam	1:12b	2 Chr	2:6a,b		
		Lam	4:20	2 Chr	2:11b		
<i>Jonah</i>				2 Chr	2:13		
Jon	4:11a,b	<i>Esther</i>		2 Chr	2:16a		
		Esth	1:18	2 Chr	3:1b		
<i>Micah</i>		Esth	2:4	2 Chr	6:11b		
Mic	1:1b	Esth	2:6a,c	2 Chr	6:15		
Mic	2:3	Esth	4:3	2 Chr	6:29a,b		
Mic	3:3	Esth	6:2	2 Chr	6:31b		
Mic	5:6	Esth	8:2	2 Chr	7:6		
		Esth	8:9b	2 Chr	7:7a		
		Esth	8:11a				

Prosodically Undifferentiated Relative Clauses

<i>Genesis</i>	Gen	19:27	Gen	31:16a	Gen	43:19	
Gen	1:7b	Gen	19:29	Gen	31:18b	Gen	43:27
Gen	1:11	Gen	20:13a	Gen	31:19	Gen	43:29
Gen	1:29a	Gen	20:16	Gen	31:43b	Gen	44:2
Gen	1:30	Gen	21:2	Gen	31:51	Gen	44:5
Gen	2:2a,b	Gen	21:23a,b	Gen	32:11	Gen	44:15a,b
Gen	2:3	Gen	21:25	Gen	32:13	Gen	44:34
Gen	2:8	Gen	21:29	Gen	32:33	Gen	45:4
Gen	2:11	Gen	22:2b	Gen	33:5	Gen	45:6
Gen	3:1	Gen	22:3	Gen	33:8	Gen	45:27b
Gen	3:17	Gen	22:17	Gen	33:15	Gen	46:5
Gen	3:23	Gen	23:9b	Gen	33:18	Gen	46:6
Gen	5:29	Gen	23:16	Gen	34:1	Gen	46:15
Gen	6:2	Gen	23:17a,b,e	Gen	34:14	Gen	46:18
Gen	6:4a	Gen	24:3	Gen	35:3	Gen	46:20
Gen	6:15	Gen	24:5	Gen	35:4b,c	Gen	46:22
Gen	6:17a	Gen	24:7a	Gen	35:6a	Gen	46:25
Gen	6:22	Gen	24:14	Gen	35:12	Gen	47:14
Gen	7:2	Gen	24:24	Gen	35:13	Gen	47:22
Gen	7:8a	Gen	24:27	Gen	35:15	Gen	48:9
Gen	7:15	Gen	24:32	Gen	35:26	Gen	48:15
Gen	7:19	Gen	24:37	Gen	35:27	Gen	49:28a
Gen	7:23	Gen	24:40	Gen	36:5	Gen	49:29
Gen	8:1	Gen	24:42	Gen	36:6	Gen	49:30a
Gen	8:6	Gen	24:44	Gen	36:24	Gen	50:5
Gen	9:12a,b	Gen	24:47	Gen	36:31	Gen	50:10
Gen	9:16	Gen	24:48	Gen	37:6	Gen	50:11
Gen	9:17b	Gen	24:66	Gen	37:10	Gen	50:15
Gen	10:14	Gen	25:7	Gen	37:23	Gen	50:24
Gen	12:1	Gen	25:9	Gen	38:14		
Gen	12:5b	Gen	25:18	Gen	38:18b	<i>Exodus</i>	
Gen	13:3	Gen	26:1	Gen	38:30	Exod	1:14
Gen	13:4	Gen	26:2	Gen	39:1	Exod	3:7
Gen	13:14	Gen	26:3	Gen	39:19	Exod	3:9
Gen	13:18	Gen	26:18b	Gen	39:20	Exod	3:20
Gen	14:6	Gen	26:32	Gen	39:22a	Exod	4:28a,b
Gen	14:15	Gen	27:15	Gen	40:3	Exod	4:30
Gen	14:17	Gen	27:17	Gen	40:5a,b	Exod	5:8
Gen	14:20	Gen	27:27	Gen	40:7	Exod	5:14
Gen	14:24	Gen	27:41	Gen	40:13	Exod	6:4
Gen	15:17	Gen	28:4	Gen	41:28	Exod	6:5
Gen	17:10	Gen	28:22a	Gen	41:36	Exod	6:8
Gen	17:12	Gen	30:2	Gen	41:38	Exod	6:29
Gen	18:24	Gen	30:26a,b	Gen	42:9	Exod	8:8
Gen	19:11	Gen	30:37	Gen	42:14	Exod	8:17
Gen	19:21	Gen	31:13a,b	Gen	43:2	Exod	9:19b

Exod 9:26	Exod 25:22a	Exod 36:12	Lev 7:27
Exod 10:2	Exod 25:26	Exod 37:13	Lev 8:5
Exod 10:15	Exod 25:29	Exod 37:16b	Lev 8:31
Exod 11:5	Exod 25:40	Exod 38:8	Lev 8:36
Exod 12:7	Exod 26:5	Exod 38:21	Lev 9:8
Exod 12:22b	Exod 26:30	Exod 38:30	Lev 9:18
Exod 12:25	Exod 27:21	Exod 39:5	Lev 10:1
Exod 12:29	Exod 28:3	Exod 39:19	Lev 10:6
Exod 12:30	Exod 28:4	Exod 39:32	Lev 10:11
Exod 12:40	Exod 28:26	Exod 40:16	Lev 11:2b
Exod 13:3	Exod 29:1		Lev 11:9a
Exod 13:5	Exod 29:13	<i>Leviticus</i>	Lev 11:10b
Exod 13:12	Exod 29:23	Lev 1:5	Lev 11:23
Exod 14:12	Exod 29:27	Lev 1:8b	Lev 11:32b
Exod 14:13	Exod 29:32	Lev 1:12b	Lev 11:33a
Exod 14:31	Exod 29:38	Lev 1:17	Lev 11:34a,b
Exod 15:26	Exod 29:46	Lev 3:3	Lev 11:35
Exod 16:1	Exod 30:6a,b,c	Lev 3:4b	Lev 11:37
Exod 16:8	Exod 30:33b	Lev 3:5a,b	Lev 11:39
Exod 16:15	Exod 30:36	Lev 3:9	Lev 11:47
Exod 16:32b	Exod 31:7	Lev 3:10b	Lev 13:45
Exod 17:5	Exod 32:2	Lev 3:14	Lev 13:46
Exod 18:5	Exod 32:3	Lev 3:15b	Lev 13:52
Exod 18:9	Exod 32:4	Lev 4:2	Lev 14:13
Exod 18:10a	Exod 32:7	Lev 4:7a,b	Lev 14:16
Exod 18:11	Exod 32:8b	Lev 4:8	Lev 14:17
Exod 18:14b	Exod 32:11	Lev 4:9b	Lev 14:22
Exod 18:17	Exod 32:13a,b	Lev 4:14	Lev 14:27
Exod 18:18	Exod 32:14	Lev 4:18a,b,c	Lev 14:29
Exod 18:20	Exod 32:23a	Lev 4:22	Lev 14:34
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2 Kgs 18:26	2 Kgs 25:22	Isa 50:1b	Jer 16:15a,b,c
2 Kgs 18:35	2 Kgs 25:25	Isa 51:17	Jer 17:4b
2 Kgs 19:4a,b		Isa 51:23	Jer 17:7
2 Kgs 19:6a	<i>Isaiah</i>	Isa 54:9	Jer 17:19a,b
2 Kgs 19:10	Isa 1:1	Isa 56:4	Jer 18:4
2 Kgs 19:12b	Isa 1:29a,b	Isa 56:5	Jer 18:8a,b
2 Kgs 19:16	Isa 1:30	Isa 58:2	Jer 18:10
2 Kgs 19:21	Isa 2:22	Isa 58:11	Jer 19:2a,b
2 Kgs 19:28	Isa 7:18a,b	Isa 59:21b	Jer 19:3
2 Kgs 20:9	Isa 11:16	Isa 62:2	Jer 19:4
2 Kgs 20:13b	Isa 14:3	Isa 62:8	Jer 19:9
2 Kgs 20:17b	Isa 16:13	Isa 63:7b	Jer 19:11
2 Kgs 20:18b	Isa 17:9	Isa 65:10	Jer 19:13

Jer	19:14	Jer	29:1a,b	Jer	37:1	Jer	46:2a
Jer	19:15	Jer	29:4	Jer	37:19	Jer	49:19
Jer	20:2a,b	Jer	29:7	Jer	38:1	Jer	49:20b
Jer	20:6	Jer	29:8b	Jer	38:6	Jer	49:36
Jer	20:14a	Jer	29:14a,b	Jer	38:9b	Jer	50:1
Jer	20:15	Jer	29:16	Jer	38:14	Jer	50:21
Jer	22:11	Jer	29:17	Jer	38:16a,b	Jer	50:44
Jer	22:26b	Jer	29:18	Jer	38:21	Jer	50:45b
Jer	22:27	Jer	29:20	Jer	38:27	Jer	51:48
Jer	22:28	Jer	29:22a,b	Jer	38:28	Jer	51:59
Jer	23:3	Jer	29:23	Jer	39:17	Jer	52:14
Jer	23:7	Jer	30:4	Jer	40:1	Jer	52:15
Jer	23:8a,b,c	Jer	30:9	Jer	40:7a,b	Jer	52:17a
Jer	23:27	Jer	32:1	Jer	40:10a	Jer	52:20b
Jer	23:28a,b	Jer	32:2	Jer	40:11b	Jer	52:28
Jer	23:34	Jer	32:9	Jer	40:13		
Jer	23:39	Jer	32:22	Jer	41:3a,b	<i>Ezekiel</i>	
Jer	23:40	Jer	32:29	Jer	41:9a	Ezek	1:25
Jer	24:2	Jer	32:37	Jer	41:10a,b	Ezek	2:3
Jer	24:3	Jer	32:40	Jer	41:11a	Ezek	3:3
Jer	24:5	Jer	32:42	Jer	41:12	Ezek	3:6
Jer	24:8	Jer	33:5	Jer	41:13b	Ezek	3:23
Jer	24:9	Jer	33:8a,c	Jer	41:14	Ezek	4:13
Jer	24:10	Jer	33:9c	Jer	41:16b,c	Ezek	5:6
Jer	25:1	Jer	33:10	Jer	41:17	Ezek	5:14
Jer	25:5	Jer	33:14	Jer	41:18	Ezek	5:15
Jer	25:13a,b	Jer	33:24	Jer	42:3a,b	Ezek	5:16b
Jer	25:15	Jer	34:5	Jer	42:6	Ezek	6:9b
Jer	25:16	Jer	34:10	Jer	42:8	Ezek	8:3
Jer	25:17	Jer	34:11	Jer	42:10	Ezek	8:4
Jer	25:22	Jer	34:14	Jer	42:11	Ezek	8:9
Jer	25:26	Jer	34:15	Jer	42:14	Ezek	8:13
Jer	25:27	Jer	34:16	Jer	42:16b	Ezek	8:14
Jer	25:29	Jer	34:18a,b	Jer	42:17a,b	Ezek	8:17
Jer	26:2	Jer	35:4b	Jer	42:21	Ezek	9:3b
Jer	26:3	Jer	35:7	Jer	43:1	Ezek	9:6b
Jer	26:4	Jer	35:8	Jer	43:9	Ezek	10:11
Jer	26:5	Jer	35:15	Jer	43:10	Ezek	10:15
Jer	26:12	Jer	35:16	Jer	43:13	Ezek	11:16
Jer	26:13	Jer	35:17	Jer	44:2	Ezek	11:17
Jer	26:19	Jer	36:2	Jer	44:4	Ezek	11:23
Jer	27:8a,b	Jer	36:3	Jer	44:8	Ezek	11:24
Jer	27:11	Jer	36:7	Jer	44:10	Ezek	11:25
Jer	27:13	Jer	36:13	Jer	44:12	Ezek	12:10
Jer	28:1	Jer	36:14	Jer	44:21	Ezek	13:12
Jer	28:6	Jer	36:23a,b	Jer	44:22	Ezek	13:19b
Jer	28:7	Jer	36:27	Jer	44:24	Ezek	36:4a,b
Jer	28:8	Jer	36:28a,b	Jer	44:27	Ezek	13:20a,b
Jer	28:9a,b	Jer	36:32	Jer	45:5	Ezek	14:22a

Ezek 15:2	Ezek 36:23	<i>Hosea</i>	Zech 11:13
Ezek 15:6	Ezek 36:31	Hos 2:1a,b	Zech 14:12a,b
Ezek 16:36	Ezek 37:20	Hos 2:14a,b	Zech 14:15
Ezek 16:51	Ezek 37:21		Zech 14:18a,b
Ezek 16:54	Ezek 38:8	<i>Joel</i>	Zech 14:19
Ezek 17:3	Ezek 38:20	Joel 2:25a,b	
Ezek 17:16a,b	Ezek 38:22	Joel 2:26	<i>Malachi</i>
Ezek 17:19b	Ezek 39:4	Joel 3:5b	Mal 3:1b
Ezek 17:20	Ezek 39:8	Joel 4:7	Mal 3:17
Ezek 18:14	Ezek 39:17	Joel 4:19	Mal 3:19
Ezek 18:24a	Ezek 39:19		
Ezek 18:28	Ezek 39:21b	<i>Amos</i>	<i>Ruth</i>
Ezek 20:6	Ezek 39:26	Amos 1:1a	Ruth 2:3
Ezek 20:9a	Ezek 40:1	Amos 2:4	Ruth 2:11b
Ezek 20:13	Ezek 40:6	Amos 2:9	Ruth 2:12
Ezek 20:14	Ezek 40:22	Amos 3:1a,b	Ruth 2:20
Ezek 20:21	Ezek 40:40	Amos 5:1	Ruth 2:21b
Ezek 20:22	Ezek 40:44	Amos 5:26	Ruth 3:1
Ezek 20:28	Ezek 40:49	Amos 9:12	Ruth 3:2
Ezek 20:29	Ezek 41:9b		Ruth 4:3
Ezek 20:34	Ezek 41:22	<i>Obadiah</i>	Ruth 4:12a,b
Ezek 20:41	Ezek 42:1a,b	Obad 20b	Ruth 4:14
Ezek 20:43a,b	Ezek 42:3a,b		Ruth 4:15b
Ezek 21:34	Ezek 42:8	<i>Jonah</i>	
Ezek 22:13a,b	Ezek 42:11	Jon 1:5	<i>Song of Songs</i>
Ezek 22:14	Ezek 42:12	Jon 1:9	Song 1:1
Ezek 23:9	Ezek 42:13b	Jon 3:2	
Ezek 23:19	Ezek 42:15	Jon 3:8	<i>Ecclesiastes</i>
Ezek 23:28a	Ezek 43:1	Jon 4:10	Eccl 1:10
Ezek 23:40	Ezek 43:3a,c		Eccl 3:10
Ezek 26:17	Ezek 43:4	<i>Zephaniah</i>	Eccl 4:1
Ezek 26:19	Ezek 43:7	Zeph 2:3	Eccl 4:2
Ezek 27:27a	Ezek 44:9	Zeph 3:11	Eccl 4:3
Ezek 28:25b	Ezek 44:13		Eccl 4:13
Ezek 29:13	Ezek 44:15	<i>Haggai</i>	Eccl 4:15
Ezek 29:18	Ezek 44:19	Hag 2:3	Eccl 6:1
Ezek 31:9	Ezek 45:13		Eccl 7:19
Ezek 32:9	Ezek 46:4	<i>Zechariah</i>	Eccl 7:26
Ezek 32:23	Ezek 46:19	Zech 1:8	Eccl 8:9a,b
Ezek 32:24b	Ezek 46:24	Zech 2:4	Eccl 8:10
Ezek 32:29	Ezek 47:5a,b	Zech 4:1	Eccl 8:14b,c
Ezek 33:29	Ezek 47:16a,b	Zech 4:2	Eccl 8:15a
Ezek 34:2	Ezek 47:22	Zech 4:12	Eccl 8:16
Ezek 35:11	Ezek 47:23	Zech 7:7	Eccl 9:9b,c
Ezek 36:18	Ezek 48:9	Zech 8:9	Eccl 9:10a,b
Ezek 36:21b	Ezek 48:11a	Zech 8:16	Eccl 11:5
Ezek 36:28		Zech 8:23	Eccl 12:7
Ezek 36:22b		Zech 11:2	

<i>Lamentations</i>	Dan	8:2	Neh	9:7	1 Chr	19:16
Lam 1:7	Dan	8:6	Neh	9:12	1 Chr	21:19
Lam 1:10	Dan	9:2	Neh	9:15	1 Chr	21:29
Lam 1:12a	Dan	9:6	Neh	9:18	1 Chr	22:2
	Dan	9:7b	Neh	9:19	1 Chr	22:13
<i>Esther</i>	Dan	9:15	Neh	9:23	1 Chr	23:5
Esth 1:2	Dan	9:18	Neh	9:26	1 Chr	27:31
Esth 1:9	Dan	9:21	Neh	9:34	1 Chr	29:25
Esth 1:12	Dan	10:1	Neh	9:35a	1 Chr	29:30
Esth 1:16	Dan	10:12	Neh	9:36		
Esth 2:15	Dan	11:38	Neh	10:30		<i>2 Chronicles</i>
Esth 3:1	Dan	11:39	Neh	11:3	2 Chr	1:3a,b
Esth 3:2	Dan	12:1	Neh	12:1	2 Chr	1:6
Esth 3:6	Dan	12:6	Neh	13:7	2 Chr	1:11a,b
Esth 3:12b					2 Chr	1:12a
Esth 4:6	<i>Ezra</i>		<i>1 Chronicles</i>		2 Chr	2:11a,c
Esth 4:7b	Ezra	1:2	1 Chr	1:12	2 Chr	2:16b
Esth 4:8	Ezra	1:3a,b	1 Chr	2:7	2 Chr	3:1a
Esth 4:11b	Ezra	1:4b	1 Chr	2:9	2 Chr	3:4
Esth 5:4	Ezra	1:5	1 Chr	3:1	2 Chr	3:11
Esth 5:5	Ezra	2:1	1 Chr	4:18	2 Chr	4:12
Esth 5:13	Ezra	2:61	1 Chr	5:25	2 Chr	4:13
Esth 6:4	Ezra	2:68	1 Chr	5:36b	2 Chr	4:19
Esth 6:6	Ezra	3:12	1 Chr	6:16	2 Chr	5:1
Esth 6:7	Ezra	7:6	1 Chr	6:50	2 Chr	5:5
Esth 6:8a,b	Ezra	7:27b	1 Chr	7:14	2 Chr	5:6
Esth 6:9a,b	Ezra	9:11b	1 Chr	9:2	2 Chr	5:10
Esth 6:10	Ezra	10:18	1 Chr	10:13b	2 Chr	6:4
Esth 6:11			1 Chr	11:11	2 Chr	6:5
Esth 6:13b	<i>Nehemiah</i>		1 Chr	11:17	2 Chr	6:10
Esth 6:14	Neh	1:3	1 Chr	12:16	2 Chr	6:11a
Esth 7:5	Neh	1:7	1 Chr	12:21	2 Chr	6:17
Esth 7:9b	Neh	1:8	1 Chr	13:6a,b	2 Chr	6:18
Esth 7:10	Neh	1:9	1 Chr	14:4	2 Chr	6:19
Esth 8:3	Neh	2:8a,c	1 Chr	15:3	2 Chr	6:20b
Esth 8:5a,b	Neh	2:12	1 Chr	16:1	2 Chr	6:21
Esth 8:6	Neh	2:18a,b	1 Chr	16:39	2 Chr	6:25
Esth 8:8	Neh	3:25	1 Chr	16:40	2 Chr	6:27a,b
Esth 9:1a,b	Neh	4:6	1 Chr	16:41	2 Chr	6:30
Esth 9:20	Neh	5:9	1 Chr	17:6b	2 Chr	6:31a
Esth 9:22a,b	Neh	5:11	1 Chr	17:8b	2 Chr	6:32
Esth 10:2	Neh	6:8	1 Chr	17:10	2 Chr	6:33b
	Neh	6:14	1 Chr	17:11	2 Chr	6:34a,c
<i>Daniel</i>	Neh	7:6	1 Chr	17:23	2 Chr	6:37
Dan 1:10a	Neh	7:63	1 Chr	18:6	2 Chr	6:38a,d
Dan 1:18	Neh	8:1a,b	1 Chr	18:7	2 Chr	6:39
Dan 1:20a,b	Neh	8:12	1 Chr	18:11	2 Chr	7:10
			1 Chr	18:13	2 Chr	7:14

2 Chr	7:17	2 Chr	22:9
2 Chr	7:19	2 Chr	23:4
2 Chr	8:1	2 Chr	23:9a
2 Chr	8:2	2 Chr	25:9
2 Chr	8:4	2 Chr	25:10
2 Chr	8:7	2 Chr	25:13
2 Chr	8:8a,b	2 Chr	25:15
2 Chr	8:9	2 Chr	25:18a,b
2 Chr	8:11a,b	2 Chr	25:21
2 Chr	8:12	2 Chr	28:11
2 Chr	9:2	2 Chr	29:16
2 Chr	9:3	2 Chr	29:19
2 Chr	9:4	2 Chr	30:7
2 Chr	9:5	2 Chr	30:14
2 Chr	9:6	2 Chr	30:17
2 Chr	9:8	2 Chr	31:19
2 Chr	9:9	2 Chr	31:21
2 Chr	9:10	2 Chr	32:3
2 Chr	9:13	2 Chr	32:14
2 Chr	9:23	2 Chr	33:2
2 Chr	10:2	2 Chr	33:3
2 Chr	10:6	2 Chr	33:7a,b
2 Chr	10:8a	2 Chr	33:8a
2 Chr	10:9b	2 Chr	33:9
2 Chr	11:10	2 Chr	33:19
2 Chr	11:13	2 Chr	34:9
2 Chr	11:15	2 Chr	34:11
2 Chr	12:3	2 Chr	34:21a
2 Chr	12:4	2 Chr	34:23
2 Chr	12:5	2 Chr	34:24
2 Chr	12:9	2 Chr	34:26
2 Chr	13:4	2 Chr	34:28
2 Chr	13:8	2 Chr	35:20
2 Chr	15:8a,b	2 Chr	36:13
2 Chr	16:6	2 Chr	36:14
2 Chr	16:14b	2 Chr	36:23
2 Chr	17:2		
2 Chr	17:10		
2 Chr	18:2		
2 Chr	18:12		
2 Chr	18:16		
2 Chr	20:10		
2 Chr	20:11		
2 Chr	20:34		
2 Chr	21:7		
2 Chr	21:16		
2 Chr	22:7		
2 Chr	28:3		

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